CITY OF PORTSMOUTH, NEW HAMPSHIRE

INFORMATION FOR BIDDERS FORMS FOR BID, AGREEMENT, AND BONDS, SPECIFICATIONS

FOR

PEIRCE ISLAND ROAD RESILIENCY PROJECT

BID NO. <u>08-24</u>

January 2024





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INVITATION TO BID

PEIRCE ISLAND ROAD RESILIENCY PROJECT CITY OF PORTSMOUTH NEW HAMPSHIRE BID NUMBER #08-24

OWNER: The City of Portsmouth, New Hampshire, hereby gives notice that sealed Bids will be received for the elevating and reconstruction of approximately 400' of Peirce Island Road and replacing the packed gravel former snow dump with grass pavers and vegetation.

TIME AND PLACE OF BID OPENING: Sealed Bids will be received until 2:00 p.m. Local Time on the [**29th**] day of [**February, 2024**]. Deliver sealed Bids to City Hall, 1 Junkins Avenue, 3rd Floor, Portsmouth, NH 03801 addressed to the Purchasing Coordinator. After the official Bid closing time, the Bids will be publicly opened and read aloud in the Seybolt Conference Room.

BIDDING DOCUMENTS: The Bidding Documents may be obtained from the City's web site: (https://www.cityofportsmouth.com/finance/purchasing-bids-and-proposals), by contacting the Finance/Purchasing Department on the third floor at the above address, or by calling the Purchasing Coordinator at 603-610-7227. No monetary deposit is required to obtain an electronic copy of the Bidding Documents from the City's Purchasing website. Any questions regarding bidding or technical information should be directed to the Purchasing Department at purchasing@cityofportsmouth.com. Addenda, if issued, shall be posted to the City's Purchasing website only a minimum of 5 business days prior to the bid date. Prospective bidders are responsible for obtaining addenda from the City's website prior to the bid date.

PRE-BID CONFERENCE: A mandatory pre-bid conference will be held prior to the Bid opening on [**February 14**th **2024**] at [**10:00 AM**] at the City of Portsmouth DPW, 680 Peverly Hill Road, Portsmouth, NH 03801 to familiarize Bidders with the Project. A site tour will follow.

BID SECURITY: Bid Security, certified treasurer's or cashier's check or bid bond in the amount of 5 percent of the Bid shall accompany each Bid in accordance with the Instructions to Bidders.

CONTRACT SECURITY: The Bidder to whom a Contract is awarded shall furnish a Performance Bond and a Payment Bond each in an amount equal to the Contract Price.

BID REJECTION/ACCEPTANCE: OWNER reserves the right to reject any and all Bids, waive informalities in bidding or to accept the Bid or Bids, should the OWNER deem it in the Public Interest to do so.

BID WITHDRAWAL: No Bid shall be withdrawn for a period of 90 days after the opening of Bids without consent of OWNER.

TIME FOR COMPLETION: The Work shall be completed within 151 calendar days from the date when the Contract Times commence to run.

The successful Bidder on this work is required to comply with the President's Executive Order No. 11246 entitled "Equal Employment Opportunity" as amended by Executive Order 11375 and Executive Order 13672.

The successful Bidder on this work must demonstrate compliance with the U.S. Environmental Protection Agency's DBE Rule in order to be deemed a responsible bidder. The successful Bidder shall maintain all records of its compliance with the requirements of 40 CFR Part 33, including documentation of its good faith efforts. Such records shall be provided to Owner upon request

The successful Bidder on this work is subject to U.S. Department of Labor's Davis Bacon wage provisions.

The successful bidder on this work is subject to the "American Iron and Steel (AIS)" requirements of the Water Resources Reform and Development Act of 2014, which requires the use of iron and steel products that are produced in the United States.

END OF SECTION

SECTION 00200

INSTRUCTION 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 and where the bidding procedures are to be administered.
 - B. Bidder The individual or entity who submits a Bid directly to Owner.
 - C. Successful Bidder The lowest, responsible Bidder submitting a responsive Bid to whom 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 in electronic format only may be obtained from City's Purchasing Website (https://www.cityofportsmouth.com/finance/purchasing-bids-and-proposals).
- 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.
- 2.04 Fee for Drawings and Documents:
 - A. No monetary deposit is required to obtain an electronic copy of the Bidding Documents.

ARTICLE 3 – QUALIFICATIONS OF BIDDERS

- 3.01 Owner's decision as to qualification of the Bidders shall be final.
- 3.02 Bidder is advised to carefully review those portions of the Bid Form requiring Bidder's representations and certifications.
- 3.03 Ability and Experience of Bidder:
 - A. No award will be made to any bidder who cannot satisfy the Owner that the Bidder has sufficient ability and experience in this class of work and sufficient capital and plant to enable the Bidder to prosecute and complete the Work successfully within the time

- named. The Owner's decision or judgment on these matters shall be final, conclusive, and binding.
- B. The Owner may make such investigations as it deems necessary, and the Bidder shall furnish to the Owner, under oath if so required, all such information and data for this purpose as the Owner may request.

ARTICLE 4 – EXAMINATION OF BIDDING DOCUMENTS, OTHER RELATED DATA, AND SITE

- 4.01 Subsurface and Physical Conditions:
 - A. All information given on the Drawings or in the other Contract Documents relating to subsurface and other conditions, natural phenomena, existing pipes, and other structures is from the best sources at present available to the Owner. All such information is furnished only for the information and convenience of bidders and is not guaranteed.
 - B. It is agreed and understood that the Owner does not warrant or guarantee that the subsurface or other conditions, natural phenomena, existing pipes or other structures encountered during construction will be the same as those indicated on the Drawings or in the other Contract Documents.
 - C. It is agreed further and understood that no bidder or contractor may make any claim or demand against the Owner or the Engineer, arising from or by reason of any variance which may exist between the information made available and the actual subsurface or other conditions, natural phenomena, existing pipes or other structures actually encountered during the construction work, except as may otherwise be expressly provided for in the Contract Documents.
 - D. The Supplementary Conditions identify:
 - 1. Those reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site.
 - 2. Those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).
 - E. Copies of reports and drawings referenced in Paragraph 4.01.D 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 4.02 of the General Conditions has been identified and established in Paragraph 4.02 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.
 - F. Borings have been made in the approximate locations indicated on the drawings. Logs of the borings are bound at the back of the documents in Appendix B.

4.02 Underground Facilities

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

4.03 Hazardous Environmental Condition

- A. The Supplementary Conditions identify any reports and drawings known to Owner relating to a Hazardous Environmental Condition identified at the Site.
- B. Copies of reports and drawings referenced in the Supplementary Conditions 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 4.06 of the General Conditions has been identified and established in Paragraph 4.06 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.
- 4.04 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 4.02, 4.03, and 4.04 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 4.06 of the General Conditions.
- 4.05 Prospective Bidders who wish to visit the site to conduct such examinations, investigations, explorations, tests, and studies as Bidder deems necessary for submission of a Bid can do so with prior permission by the Owner. 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. Bidder shall comply with all applicable Laws and Regulations relative to excavation and utility locating.
- 4.06 Reference is made to Article 7 of the Supplementary Conditions for the identification of the general nature of other work that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) that relates to the Work contemplated by these Bidding Documents. On request, Owner will provide to each Bidder for examination access to or copies of contract documents (other than portions thereof related to price) for such other work.
 - 4.07 It is the responsibility of each Bidder before submitting a Bid to:
 - A. examine and carefully study the Bidding Documents, and the other related data identified in the Bidding Documents;

- B. visit the Site and become familiar with and satisfy Bidder as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;
- C. become familiar with and satisfy Bidder as to all federal, state, and local 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 contiguous to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) that have been identified in Paragraph 4.02 of the Supplementary Conditions as containing reliable "technical data," and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have been identified in the Paragraph 4.06 of the Supplementary Conditions as containing reliable "technical data";
- E. consider the information known to Bidder; 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, including applying any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents; and (3) Bidder's safety precautions and programs;
- F. agree at the time of submitting its Bid that 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(s) 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. correlate 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;
- I. 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; and
- J. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work.
- 4.08 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 4, that without exception the Bid is premised upon performing and furnishing the Work required by the Bidding Documents and applying any specific means, methods, techniques, sequences, and procedures of

construction that may be shown or indicated or expressly required by the Bidding Documents, that Bidder has given Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Bidding Documents and the written resolutions thereof by Engineer are acceptable to Bidder, and that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work.

ARTICLE 5 – MANDATORY PRE-BID CONFERENCE

5.01 A mandatory pre-Bid conference will be held prior to the Bid opening on [February 14th, 2024] at [10:00 AM] to familiarize Bidders with the Project. Meet at the City of Portsmouth DPW at 680 Peverly Hill Rd, Portsmouth, NH 03801, and a site tour will follow.

ARTICLE 6 – SITE AND OTHER AREAS

- 6.01 The Site is identified in the Bidding Documents. Easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by Owner unless otherwise provided in the Bidding Documents.
- 6.02 All additional lands and access thereto required for temporary construction facilities, construction equipment, or storage of materials and equipment to be incorporated in the Work are to be obtained and paid for by Contractor.
- 6.03 The Contractor shall not work on property requiring obtaining of an easement until the Owner has obtained the necessary easement.
- 6.04 The Contractor shall have no claim for additional compensation or damage on account of any delay in obtaining the necessary easements.

ARTICLE 7 – INTERPRETATIONS AND ADDENDA

- 7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to the City's Purchasing Department in writing. Interpretations or clarifications considered necessary in response to such questions will be issued by Addenda. Addenda will be posted to the City's Purchasing Website only at least 5 business days prior to the bid date. Prospective bidders are responsible for obtaining addenda from the City's website prior to the bid date. Questions received less than ten days prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.
 - 7.02 To receive consideration, such questions shall be submitted in writing to the City's Purchasing Department at *purchasing@cityofportsmouth.com* at least seven days before the established date for receipt of Bids. In general, the Engineer will neither approve nor disapprove particular products prior to the opening of Bids; such products will be considered when offered by the Contractor for incorporation into the Work.
 - 7.03 The Engineer will set forth as Addenda, which shall become a part of the Contract Documents, such questions received as above provided as in his sole judgment are

appropriate or necessary and his decision regarding each. At least five business days prior to the receipt of Bids, he will post a copy of these Addenda to the City's Purchasing Website.

- 7.04 The Contractor agrees to use the products and methods designated or described in the Specifications as amended by the Addenda.
- 7.05 Items and Indeterminate Items:
 - A. The work to be done under this contract has been divided into parts or items to enable each bidder to bid on different portions of the work in accordance with his estimate of their cost and so that the actual quantity of work executed under each item may be paid for at the price bid for that particular item, even though such quantity is greater or less than the estimated quantity stated in the Bid.
 - B. Certain items in the Bid cover classes of work of doubtful necessity or work for which it is impractical to estimate approximate quantities. Such items have been marked "Indeterminate."

ARTICLE 8 – BID SECURITY

- 8.01 A Bid must be accompanied by Bid security made payable to Owner in amount of 5 percent of the Bidder's maximum Bid price and in the form of a certified check or a Bid Bond (on the form attached) issued by a surety meeting the requirements of Paragraphs 5.01 and 5.02 of the General Conditions.
- 8.02 The Bid security of the Successful Bidder will be retained until 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 returned. 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. The Bid security of other Bidders whom 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 Agreement or 91 days after the Bid opening, whereupon Bid security furnished by such Bidders will be returned.
- 8.03 Bid security of other Bidders whom Owner believes do not have a reasonable chance of receiving the award will be returned within seven days after the Bid opening.

ARTICLE 9 – CONTRACT TIMES

9.01 The Work shall be substantially completed within 151 days from the date when the Contract Times commence to run, and the Work shall be completed and ready for final payment within 263 days from the date when the Contract Times commence to run as set forth in the Agreement. On-site construction activities will be permitted between March 1st

and June 15^{th} . Any on-site construction activities not completed by June 15^{th} are required to be completed after September 2^{nd} .

ARTICLE 10 – LIQUIDATED DAMAGES

10.01 Provisions for liquidated damages are set forth in the Agreement.

ARTICLE 11 – SUBSTITUTE AND "OR-EQUAL" ITEMS

11.01 The Contract, if awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration of possible substitute or "orequal" items. Whenever it is specified or described in the Bidding Documents that a substitute or "or-equal" item of material or equipment may be furnished or used by Contractor if acceptable to Engineer, application for such acceptance will not be considered by Engineer until after the Effective Date of the Agreement.

ARTICLE 12 – BASIS OF DESIGN AND MAJOR EQUIPMENT ITEMS

12.01 Basis of Design

A. Unless otherwise indicated, design of this Project is based upon the material or Supplier's equipment named first in the list of manufacturers in the Specifications. Engineer has performed an evaluation of other listed manufacturers for compliance with the requirements of the Contract Documents. When other manufacturers are listed, Contractor may be required to make modifications or adjustments, at Contractor's expense, to coordinate the installation of the furnished equipment with associated elements of Work, such as piping and electrical connections, or support and mounting provisions.

ARTICLE 13 – PREPARATION OF BID

- A. The Bid Form is included with the Bidding Documents. All blanks on the Bid Form shall be completed in ink and Bid Form signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form.
- B. A Bid price shall be indicated for each **Bid item** listed therein.
- C. The Bid shall contain an acknowledgement of all Addenda, the numbers of which shall be filled in on the Bid Form.
- D. Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.
 - E. All names shall be printed in ink below the signatures.
 - F. It is the responsibility of the Bidder to submit a neat, accurate, and complete Bid.

- 13.02 The Bidder, when signing the Bid(s) shall meet the following requirements:
- A. A Bid by an individual shall show Bidder's name and Bidder's official address.
- B. A Bid by a partnership shall be executed in the partnership name and signed by a partner (whose title must appear under the signature) accompanied by evidence of authority to sign. The official address of the partnership shall be shown.
- C. A Bid by a corporation shall be executed in the corporate name by the president or a vice-president or other corporate officer accompanied by evidence of authority to sign. The corporate seal shall be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be shown.
- D. A Bid by a joint venture shall be executed by each joint venture in the manner indicated on the Bid form. The official address of joint venture shall be shown.
- E. A Bid by a limited liability company shall be executed in the name of the firm by a member 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.
- 13.03 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.

ARTICLE 14 – BASIS OF BID; COMPARISON OF BIDS

14.01 Unit Price

- A. Bidders shall submit a Bid on a unit price basis for each item of Work listed in the Bid schedule.
- B. The total of all estimated prices will be the sum of the products of the estimated quantity of each item and the corresponding unit price. The final quantities and Contract Price will be determined in accordance with Paragraph 11.03 of the General Conditions.
- C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

ARTICLE 15 – SUBMITTAL OF BID

15.01 A Bid shall be submitted no later than the date and time prescribed and at the place indicated in the advertisement or invitation to bid and shall be enclosed in a plainly marked package with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, and shall be accompanied by the Bid security and

other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED." A mailed Bid shall be addressed to **Purchasing Coordinator**, City Hall, 1 Junkins Avenue, Portsmouth NH 03801.

15.02 Bids received after the official Bid closure time will be returned to the Bidder unopened.

ARTICLE 16 - MODIFICATION AND WITHDRAWAL OF BID

- 16.1 Except as hereinafter in this subsection otherwise expressly provided, once his Bid is submitted and received by the Owner for consideration and comparison with other bids similarly submitted, the bidder agrees that he may not and will not withdraw it within 120 consecutive calendar days after the actual date of the opening of Bids.
- 16.2 Upon proper electronic or faxed written request and identification, Bids may be withdrawn only as follows:
 - 1. At any time prior to the designated time for the opening of Bids.
 - 2. Provided the Bid has not theretofore been accepted by the Owner, at any time subsequent to the expiration of the period during which the bidder has agreed not to withdraw his Bid.
- 16.3 Unless a Bid is withdrawn as provided above, the bidder agrees that it shall be deemed open for acceptance until the AGREEMENT has been executed by both parties thereto or until the Owner notifies a bidder in writing that his Bid is rejected or that the Owner does not intend to accept it, or returns his Bid deposit. Notice of acceptance of a Bid shall not constitute rejection of any other Bid.

ARTICLE 17 – OPENING OF BIDS

17.01 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 major alternates, if any, will be made available to Bidders after the opening of Bids.

ARTICLE 18 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE

18.01 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.

ARTICLE 19 – EVALUATION OF BIDS AND AWARD OF CONTRACT

19.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner further reserves the right to reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, to not be responsible. Owner may also reject the Bid of any Bidder if Owner believes that it would not be in the best interest of the Project to make an award to that

- Bidder. Owner also reserves the right to waive all informalities not involving price, time, or changes in the Work and to negotiate contract terms with the Successful Bidder.
- 19.02 More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.
- 19.03 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.
- 19.04 In evaluating Bidders, Owner will consider the qualifications of Bidders and may consider the qualifications and experience of Subcontractors, Suppliers, and other individuals or entities proposed for those portions of the Work for which the identity of Subcontractors, Suppliers, and other individuals or entities must be submitted as provided in the Supplementary Conditions.
- 19.05 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders, proposed Subcontractors, Suppliers, individuals, or entities proposed for those portions of the Work in accordance with the Contract Documents.
- 19.06 In the event that there is a discrepancy in the Bid between the lump sum or unit prices written in words and figures, the prices written in words shall govern.

ARTICLE 20 – CONTRACT SECURITY AND INSURANCE

20.01 Article 5 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance and payment bonds and insurance. When the Successful Bidder delivers the executed Agreement to Owner, it shall be accompanied by such bonds.

ARTICLE 21 – SIGNING OF AGREEMENT

21.01 When Owner issues a Notice of Award to the Successful Bidder, it shall be accompanied by the required number of unsigned counterparts of the Agreement along with the other Contract Documents which are identified in the Agreement as attached thereto. Within ten days thereafter, Successful Bidder shall sign and deliver the required number of counterparts of the Agreement and attached documents to Owner. Within ten days thereafter, Owner shall deliver one fully signed counterpart to Successful Bidder with a complete set of the Drawings with appropriate identification.

ARTICLE 22 – DBE RULE PROGRAM REQUIREMENTS (MBES AND WBES)

22.01 Bidders on this project are required to demonstrate compliance with the United States Environmental Protection Agency's MBE/WBE policy in order to be deemed responsive. The existing Fair Share Goals are 0.77% MBE and 6.62% WBE. The MBE/WBE

documentation, DBE Subcontractor Utilization Form and DBE Subcontractor Performance Forms (EPA Forms 6100-4 and 6100-3), shall be submitted with the bid. Bidders shall maintain all records documenting its compliance with the requirements of 40 CFR Part 33, including documentation of its good faith efforts. Such records shall be provided to Owner upon request. These forms shall be completed by the Bidder based on the value of the Base Bid (the sum of Bid Items 1 through 3). Should any of the Bid Alternates be executed, the Bidder shall revise and resubmit these forms to show compliance with the Fair Share Goals.

- 22.02 Bidders and contractors must comply with the following DBE Rule Program requirements until the project period for the federal grant has ended:
 - A. Fair share objectives (MBE/WBE goals);
 - B. Good Faith Efforts;
 - C. Annual Reporting;
 - D. Contract Administration Requirements and Forms;
 - E. Bidders List Requirements; and
 - F. Record Keeping.
- 22.03 The successful Bidder shall submit the New Hampshire State Revolving Fund BIDDERS LIST to the Owner within 15 days of bid opening.

ARTICLE 23 – AMERICAN IRON AND STEEL (AIS) PROVISIONS

- 23.01 The successful bidder on this work is subject to the "American Iron and Steel (AIS)" requirements of Water Resources Reform and Development Act of 2014, which requires the use of iron and steel products that are produced in the United States.
- 23.02 The <u>BIDDER'S AMERICAN IRON AND STEEL ACKNOWLEDGEMENT</u> shall be completed and signed by each Bidder, and included with each bid. Additionally, CONTRACTOR shall certify and document to OWNER with each Application for Payment, and upon completion of the project that all iron and steel goods subject to this provision have been produced in the United States.

ARTICLE 24 – DAVIS BACON WAGE RATES

- 24.01 This project is funded in whole or in part by a federal grant and hence is subject to federal Davis-Bacon wage provisions.
- 24.02 All laborers and mechanics employed by contractors or subcontractors on this project shall be paid wages at rates not less than those prevailing on projects of a character similar in the locality as determined by the U.S. Department of Labor (DOL) in accordance with Subchapter IV of Chapter 31 of Title 40, United States Code.

- 24.03 A copy of the applicable DOL wage determination(s) is included in Attachment B in Section 00900 FEDERAL PROVISIONS, RULES, REGULATIONS AND FORMS in these project documents.
- 24.04 If the applicable wage determination does not provide a rate for a classification of work to be performed, the Contractor must request additional classifications and wage rates to be added in conformance to the contract wage determination after contract award. You can find additional information on DBA Conformances in the US Department of Labor Learning Center.
- 24.05 The "Highway" wage decision applies to all work associated with this project.
- 24.06 The "Highway" General Wage Decision (GWD) for Rockingham County, NH20230040 Publication date 1/06/2023 is applicable to this project.
- 24.07 If multiple wage determinations apply, the Contractor shall be responsible for keeping track of all work performed under each wage rate determination. The Contractor is responsible for designating which wage rates are applicable to each employee on each certified payroll, including subcontractor payrolls.
- 24.08 Bidders shall refer to the above-referenced Section 00900 for additional information on Davis-Bacon requirements.

ARTICLE 25 – NON-DISCRIMINATION IN EMPLOYMENT

- 25.01 Contracts for work under this proposal obligate the contractors and sub-contractors not to discriminate in employment practices.
- 25.02 Bidders shall, if requested, submit a compliance report concerning their employment practices and policies in order to maintain their eligibility to receive the award of contract.
- 25.03 Successful bidders shall, if requested, submit a list of all subcontractors who will perform work on the project, and written signed statements from authorized agents of labor pools with which they will or may deal for employees on the work together with supporting information to the effect that such labor pools' practices and policies are in conformity with Executive Order No. 11246 as amended; that they will affirmatively cooperate in or offer no hindrance to the recruitment, employment, and equal treatment of employees seeking employment and performing work under the contract or, a certification as to what efforts have been made to secure such statements when such agents or labor pools have failed or refused to furnish them prior to award of the contract.
- 25.04 Successful bidders must be prepared to comply in all respects with the contract provisions regarding non-discrimination.
- 25.05 Bidders shall refer to Section 00900 Federal Provisions, Rules, Regulations and Forms for additional information.

ARTICLE 26 – STATE AND FEDERAL INSPECTION

- 26.01 Work performed on this project shall be subject to inspection by representatives of the NH Department of Environmental Services and the US Environmental Protection Agency. Such inspection shall in no sense make the State or Federal Government a party to this contract, unless said Government is also the Owner, and will in no way interfere with the rights of either party hereunder.
- 26.02 Representatives of the State of New Hampshire Department of Environmental Services and the US Environmental Protection Agency shall be given Right of Access to all portions of the proposed work, including but not limited to actual work site, storage yards, offsite manufacturing and fabricating location and job records.

END OF SECTION

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SECTION 00301

BID

PEIRCE ISLAND ROAD RESILIENCY PROJECT

CITY OF PORTSMOUTH, NEW HAMPSHIRE

BID NUMBER #08-24

ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

City of Portsmouth, NH Finance/Purchasing Department 1 Junkins Avenue Portsmouth, NH 03801

(Hereinafter called Owner)

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

ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Invitation to Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for the Bid withdrawal time period specified in the Invitation to Bid or Instructions to Bidders after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 – BIDDER'S REPRESENTATIONS

- 3.01 In submitting this Bid, Bidder represents that:
- A. Bidder has examined and carefully studied the Bidding Documents, other related data identified in the Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged:

Addendum No.	Addendum Date

- B. Bidder has carefully examined the sites of the proposed work and fully informed and satisfied himself as to the conditions there existing, the character and requirements of the proposed work, the difficulties attendant upon its execution and the accuracy of all estimated quantities stated in this Bid, and the Bidder has carefully read and examined the Bidding Documents therein referred to and knows and understands the terms and provisions thereof.
- C. Bidder 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.
- D. Bidder is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.
- E. 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 relating to existing surface or subsurface structures at the Site (except Underground Facilities) that have been identified in SC-4.02 as containing reliable "technical data," and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have been identified in SC-4.06 as containing reliable "technical data."
- F. Bidder has considered the information known to Bidder; 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, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents; and (3) Bidder's safety precautions and programs.
- G. Based on the information and observations referred to in Paragraph 3.01.E above, Bidder does not consider that 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 required, and in accordance with the other terms and conditions of the Bidding Documents.
- H. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
- I. 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.

J. 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.

ARTICLE 4 – BIDDER'S CERTIFICATION

- 4.01 Bidder certifies 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 collusive 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; and
- D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:
 - 1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process;
 - 2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
 - 3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and
 - 4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 5 – BASIS OF BID

- 5.01 Bidder will complete the Work in accordance with the Contract Documents for the following unit prices:
- A. Unit Price shall be computed in accordance with Paragraph 11.03 of the General Conditions.

Item No.	Estimated Quantity	Brief description; Unit or lump sum price bid in both words and figures	Total Figure
1	Lump Sum	Peirce Island Road Resiliency Project: the lump sum (LS) of:	
		andcents	\$
2	250*	Mass rock excavation and disposal, per cu. yd.,	
	cu. yd.	(minimum bid 75.00 per cu. yd.)** dollars and cents	\$
3	Allowance	Services of police details or flaggers, an allowance of:	
		Fifty Thousand dollars and No cents	\$ <u>50,000.00</u>

The undersigned agrees that for extra work, if any, performed in accordance with the terms and provisions of the annexed form of AGREEMENT, he will accept compensation as stipulated therein in full payment for such extra work.

If this BID is accepted by the Owner, the undersigned agrees to complete the entire work provided to be done under the Contract within the time stipulated in the AGREEMENT.

For informal comparison only and not to be considered as part of this BID, the total price for Items 1 to 3, inclusive, derived as described in the INFORMATION FOR BIDDERS under the heading "Comparison of Bids," is

	dollars
and	cents
\$	

^{*}Indeterminate; quantity assumed for comparison of bids.

^{**}Bidder must insert minimum price or greater and insert extended item prices.

ARTICLE 6 - TIME OF COMPLETION

- 6.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.
- 6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 – ATTACHMENT TO THIS BID

- 7.01 The following documents are submitted with and made a condition of this Bid:
 - A. Required Bid security in the form of a certified treasurer's or cashier's check or bid bond.
 - B. The BIDDER hereby certifies, by checking the boxes below, that the following documents are included with this bid proposal
 - □ DBE Subcontractor Utilization Form (EPA Form 6100-4, attached)
 - □ DBE Subcontractor Performance Forms (EPA Form 6100-3, attached) **Submit one form for each DBE subcontractor.**
 - ☐ Bidder's **American Iron and Steel** acknowledgement (attached)

ARTICLE 8 – DEFINED TERMS

8.01 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

0.01	This Did is solved to 11-
9.01	This Bid is submitted by:

If Bidder is:

An Individual

Name (typed or printed):	
By:	
, <u> </u>	(Individual's signature)
Doing business as: _	
A Partnership	
Partnership Name:	

By:	
By:(Signature of general partner attach evidence of authority to sign)	
Name (typed or printed):	
Corporation	
Corporation Name:	(SE
State of Incorporation:	
Type (General Business, Professional, Service, Limited Liability):	
By:	
By:(Signature attach evidence of authority to sign)	
Name (typed or printed):	
Title:	
Title:(CORPORATE SEAL)	
Attest	
Date of Qualification to do business in New Hampshire is/	
oint Venture	
Name of Joint Venture:	
First Joint Venturer Name:	(SE
By:	
(Signature of first joint venture partner attach evidence of authority t	o si
Name (typed or printed):	
Title:	
Second Joint Venturer Name:(SEAL)	
By:(Signature of first joint venture partner attach evidence of authority t	

Name (typed or printed):		
Title:		
, ,	t sign. The manner of signing for each tion that is a party to the joint venture	
Bidder's Business Address		
Phone No	Fax No	
E-mail		
SUBMITTED on	, 2024.	
State Contractor License No		
	Sworn and subscribed to before me	e this
	day of	, 2024.
	Notary or other officer authorized to	to administer oaths
	My commission expires:	, 20

(Bidders shall not add any conditions or qualifying statements to this Bid as otherwise the Bid may be declared irregular as being not responsive to the advertisement. BIDDERS SHALL USE THIS BID FORM IN SUBMITTING THEIR BIDS.)

END OF SECTION

NHDES-W-09-057



DISADVANTAGED BUSINESS ENTERPRISE (DBE) PROGRAM SUBCONTRACTOR PARTICIPATING FORM CLEAN WATER AND DRINKING WATER STATE REVOLVING LOAN FUND



FEDERAL RULE: 40 CFR Part 33 FORMERLY EPA-6100-2

An EPA Financial Assistance Agreement Recipient must require its prime contractors to provide this form to its DBE subcontractors. This form gives a DBE¹ subcontractor² the opportunity to describe work received and/or report any concerns regarding the EPA-funded project. (e.g., in areas such as termination by prime contractor, late payments, etc.) The DBE subcontractor can as an option, complete and submit this form to other EPA DBE Coordinator at any time during the project period of performance.

Subcontrator N	ame:		Project Name:		
Bid/Proposal No	D:	Assistance Agreem	ent ID: (if known)	Point of Contac	t:
Address:					
	reet # and Name		City/Town	State	ZIP
Telephone No:			Email:		
Prime Contracto	or Name:		Issuing Funding En	tity:	
Contract Item	Descripton of Work Re	eceive from the Prim	e Contractor Involvi	ing	Amount Received by
Number	Construction, Services	, Equipment or Supp	olies		Prime Contractor
Please use the s	space below to report a	ny concerns regardir	ng the above EPA-fu	ınded project:	
		,			
Cubcontractor			Γ		
Subcontractor			Printed Name:		
Signature: Title:			Data		
mue.			Date:		

¹ A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from with EPA accepts certifications as described in 40CFR 33.204-33.205. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

² Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.

NHDES-W-09-058



DISADVANTAGED BUSINESS ENTERPRISE (DBE) PROGRAM SUBCONTRACTOR PERFORMANCE FORM NHDES CLEAN WATER AND DRINKING WATERSTATE REVOLVING LOAN FUND



FEDERAL RULE: 40 CFR Part 33 FORMERLY EPA FORM 6100-3

This form is intended to capture the DBE³ subcontractor's⁴ description of work to be performed and the price of the work submitted to the prime contractor. An EPA Financial Assistance Agreement Recipient must require its prime contractor to have its DBE subcontractors complete this form and include all completed forms in the prime contractor's bid or proposal package. You will find NHDES bid information in Section A of the front-end documents.

Subcontrator Name	e:		Project Name:		
Bid/Proposal No:		Assistance Agreem	ent ID: (if known)	Point of Cor	ntact:
Address:					
	: # and Name		City/Town	St	ate ZIP
Telephone No:			Email:		
Prime Contractor N	lame:		Issuing Funding En	tity:	
Contract Item	•	k Submitted to the P		olving	Price of work submitted
Number	Construction, Serv	ices, Equipment or Si	upplies		to the Prime Contractor
DBE Certified by: [DOT SBA		Meets/exceeds EPA	Certification	Standards?
Other:			Yes	No	Unknown
Prime Contractor Signature:			Printed Name:		
Title:			Date:		
Subcontractor Signature:			Printed Name:		
Title:			Date:		

³ A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from with EPA accepts certifications as described in 40CFR 33.204-33.205. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

⁴ Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.



DISADVANTAGED BUSINESS ENTERPRISE (DBE) PROGRAM SUBCONTRACTOR UTILIZATION FORM

CLEAN WATER AND DRINKING WATER STATE REVOLVING LOAN FUND



FEDERAL RULE: 40 CFR Part 33

FORMERLY EPA FORM 6100-4

This form is intended to capture the prime contractor's actual and/or anticipated use of identified certified DBE subcontractors and the estimated dollar amount of each subcontract. An EPA Financial Assistance Agreement Recipient must require its prime contractors to complete this form and include it in the bid or proposed package. Prime contractors should also maintain a copy of this form on file. You will find NHDES bid information in Section A of the front-end documents.

THIS DOCUMENT MUST BE COMPLETED BY THE SUCCESSFUL BIDDER AND BOUND IN THE EXECUTED CONTRACT Prime Contractor Name: Project Name: Bid/Proposal No: Assistance Agreement ID: (if known) Point of Contact: Address: Street # and Name City/Town 7IP State Telephone No: Email: Issuing Funding Entity: I have identified potiental DBE certified subcontractors: Yes No If yes please complete the table below. If no, please explain: Company Contact Information Est. Dollar Currently DBE Subcontractor Name Street Number and Name, City/Town, State, ZIP Company Name **Amount** Certified? Phone and Email l Yes No Yes No Yes No Yes No Yes No Yes I certifiy under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitmment to use the subcontractors above. I am aware that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth tin 40 CFR Part 33 Section 33.302(c). **Prime Contractor** Printed Name: Signature:

Date:

Title:

NHDES-W-09-061



NEW HAMPSHIRE STATE REVOLVING FUND: BIDDERS LIST NHDES CLEAN WATER AND DRINKING WATER STATE REVOLVING LOAN FUND



PUBLIC LAW: 40 CFR § 33.501

The Contractor shall maintain and submit to the owner a bidders list, which the owner will use for compliance with the recordkeeping requirements of 40 CFR § 33.501. The list must include information regarding all entities that bid or quote on subcontracts under this contract, including both MBEs/WBEs and non-MBEs/WBEs. Projects funded by loan(s) of \$250,000 or less may be exempt from the requirement to maintain a bidders list [reference 40 CFR § 33.501(c)].

Project Name and Number:		Prime Contractor:		
Contact Information to include Company Name, Contact		Item Number and Work Description	Bid/Quote	Entity Status
Name, Phone, Street Address, Town/City, Email, State/ZIP	Item #	Description	Date	MBEs/WBEs
			/ /	
() -				Yes
			/ /	□No
			/ /	
() -				Yes
			/ /	☐ No
			/ /	
() -				Yes
			/ /	□ No
			/ /	
() -				Yes
			/ /	☐ No
			/ /	
() -				Yes
			/ /	No
			/ /	

NHDES-W-09-060



BIDDERS AMERICAN IRON AND STEEL ACKNOWLEDGEMENT NHDES CLEAN WATER AND DRINKING WATER STATE REVOLVING FUND



Public Law 113-76

_	completed and signed by the bidder's authorized representative, and conveyed information in Section A of the front-end documents.
Project Name	City/ Town/ Entity
Bidder Name	
it understands that this project is subject to the "Amm Development Act of 2014, the Consolidated Appropring requirement for the use of American Iron and Steel p	to and for the benefit of the Owner and the State of New Hampshire (State) that the state of Iron and Steel (AIS) requirements of the Water Resources Reform and riations Act of 2014 (Public Law 113-76), and subsequent laws that continue the products in State Revolving Fund construction projects, and these laws require roduced in the United States ("American Iron and Steel Requirement") including that to this Bid.
understands the American Iron and Steel Requirement been produced in the United States in a manner that requirement is approved, and (c) the Bidder will pro-	the benefit of the Owner and State that (a) the Bidder has reviewed and ent, (b) all of the iron and steel products used in the project will be and/or have t complies with the American Iron and Steel Requirement, unless a waiver of the vide any further verified information, certification or assurance of compliance ry to support a waiver of the American Iron and Steel Requirement, as may be
shall permit the Owner or State to recover as damag	t Documents, any failure to comply with this Acknowledgement by the Bidder ges against the Bidder any loss, expense, or cost (including without limitation liting from any such failure (including without limitation any impairment or loss cortany damages owed to the State by the Owner).
Additionally, The Bidder hereby acknowledges that the following American Iron and Steel contract lang	Bidder must include in all contracts and purchase agreements for this project guage:
understands the goods and service under this contract subject to statutory requirements commonly known of 2014, the Consolidated Appropriations Act of 2014 use of American Iron and Steel products in State Revused in the project to be produced in the United State provided under this contract or Agreement. The Sub Owner and the State that (a) the Subcontractor/Suppall of the iron and steel products used in the project with the American Iron and Steel Requirement, unless provide any further verified information, certification	the benefit of the (Owner) and the State of New Hampshire (State) that it ct or purchase agreement (Agreement) are being funded with monies that are as "American Iron and Steel" (the Water Resources Reform and Development Act (Public Law 113-76), and subsequent laws that continue the requirement for the folving Fund construction projects); that requires all of the iron and steel products ses ("American Iron and Steel Requirement") including iron and steel products occurractor/Supplier hereby represents and warrants to and for the benefit of the plier has reviewed and understands the American Iron and Steel Requirement, (by will be and/or have been produced in the United States in a manner that complies as a waiver of the requirement is approved, and (c) the Subcontractor/Supplier with or assurance of compliance with this paragraph, or information necessary to uirement, as may be requested by the Owner or the State.
(Signature of Certifying Bidder Representative)	Date
Printed Name	_

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SECTION 00410

BID BOND

	ngular reference to Bidder, Surety, C	Owner or oth	ner party	shall be considered plu	ral where applicable.
BIDDE	R (Name and Address):				
SURET	TY (Name and Address of Principal	Place of Bi	ısiness):		
BID Bio De Pe BOND Bo Da	R (Name and Address): ty of Portsmouth, NH 1 Junkins Ave Portsmouth, NH 03801 d Due Date: escription (Project Name and Including Includ			d	
Pe	nal sum	Words)			(Figures)
Bid Bo	and Bidder, intending to be legally and to be duly executed by an author		, agent, o	r representative.	below, do each cause this
Bid Bo	nd to be duly executed by an author	ized officer		r representative.	
Bid Bo	nd to be duly executed by an author		SURE	r representative.	(Seal)
Bid Bo BIDDE Bidder	nd to be duly executed by an author	ized officer	SURE	r representative. Γ Y	Seal (Seal)
Bid Bo BIDDE Bidder	rnd to be duly executed by an author ER S Name and Corporate Seal	ized officer	SURE Surety'	r representative. ΓΥ s Name and Corporate	Seal (Seal)
Bid Bo BIDDE Bidder	R S Name and Corporate Seal Signature	ized officer	SURE Surety'	r representative. FY S Name and Corporate Signature (Attach Po	Seal (Seal)
Bid Bo	s Name and Corporate Seal Signature Print Name	ized officer	SURE Surety'	r representative. FY S Name and Corporate Signature (Attach Por Print Name	Seal (Seal)
Bid Bo BIDDE Bidder' By: Attest:	s Name and Corporate Seal Signature Print Name Title	rized officer (Seal)	SURETS Surety' By:	r representative. TY S Name and Corporate Signature (Attach Por Print Name Title Signature Title	(Seal) Seal wer of Attorney)

EJCDC C-430 Bid Bond (Penal Sum Form)
Prepared by the Engineers Joint Contract Documents Committee.
Page 00410-1 of 00410-2

- 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 shall be Owner's sole and exclusive remedy upon default of Bidder.
- 2. Default of Bidder shall occur 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 shall 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 shall not in the aggregate exceed 120 days from Bid due date without Surety's written consent.
- 6. No suit or action shall 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 Bid due date.
- 7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
- 8. Notices required hereunder shall 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 Registered or Certified Mail, return receipt requested, postage pre-paid, and shall 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 shall 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 shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.
- 11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

NOTICE OF AWARD (EJCDC C-510)

Notice of Award

		Date:
Project: Peirce Island R	oad Resiliency Project	
Owner: City of Portsmo	outh, NH	Owner's Contract No.: 08-24
Contract:		Engineer's Project No.: 60700949
Bidder:		
Bidder's Address: [sena	l Notice of Award Certified Mail,	Return Receipt Requested]
	nat your Bid dated [] for tare awarded a Contract for [he above Contract has been considered. You are the
[In	ndicate total Work, alternates, or	sections of Work awarded.]
The Contract Price	of your Contract is [][] Dollars (\$[]).
[Insert appro	priate data if unit prices are used	d. Change language for cost-plus contracts.]
[] copies of the	ne proposed Contract Documents	(except Drawings) accompany this Notice of Award.
[] sets of the	Drawings will be delivered separa	ately or otherwise made available to you immediately.
You must comply Notice of Award.	with the following conditions pr	recedent within [10] days of the date you receive this
1. Deliver to t	he Owner [] fully executed	counterparts of the Contract Documents.
Instructions		ents the Contract security [Bonds] as specified in the eral Conditions (Paragraph 5.01), and Supplementary
3. Other cond. []	itions precedent:	
¥ •	with these conditions within the ce of Award, and declare your Bid	time specified will entitle Owner to consider you in security forfeited.
Within ten days aft counterpart of the Control		onditions, Owner will return to you one fully executed
	Owner	
	By:Authorized Sign	oture
	Authorized Sign	ature
Copy to Engineer	Title	
	ELCDC C 510 N	1.4

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AGREEMENT

THIS AGREEMENT is by and between	City of Portsmouth, NH	("Owner") and
		("Contractor").

Owner and Contractor hereby agree as follows:

ARTICLE 1 – WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described in Section – Summary of Work:

ARTICLE 2 – THE PROJECT

2.01 The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows:

Peirce Island Road Resiliency Project for the City of Portsmouth, New Hampshire

ARTICLE 3 – ENGINEER

3.01 The Project has been designed by AECOM (Engineer), which is to act as Owner's representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 – CONTRACT TIMES

- 4.01 *Time of the Essence*
 - A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.
- 4.02 Days to Achieve Substantial Completion and Final Payment
 - A. The Work will be substantially completed within 151 days after the date when the Contract Times commence to run as provided in Paragraph 2.03 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions within 263 days after the date when the Contract Times commence to run. On-site construction activities will be permitted between March 1st and June 15th. Any on-site construction activities not completed by June 15th are required to be completed after September 2nd.

B. Failure to achieve Substantial Completion within the time noted in Paragraph 4.02.A will result in liquidated damages being assessed as described in Paragraph 4.03 below.

4.03 *Liquidated Damages*

- A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial loss if the Work is not completed within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty), Contractor shall pay Owner \$2,000 for each day that expires after the time specified in Paragraph 4.02 above for Substantial Completion until the Work is substantially complete. After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by Owner, Contractor shall pay Owner \$2,000 for each day that expires after the time specified in Paragraph 4.02 above for completion and readiness for final payment until the Work is completed and ready for final payment.
- 4.04 Permitting Contractor or Surety to continue and finish the Work or any part of the Work after the times specified for completion, or after the date to which the times for completion may have been extended, shall in no way operate as a waiver on the part of Owner of its rights under the Contract.
- 4.05 Time limits for Substantial Completion and Final Completion are independent. Liquidated damages shall accrue simultaneously for each violation.

ARTICLE 5 – CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the prices stipulated in the Contractor's Bid attached to this Attachment.

ARTICLE 6 – PAYMENT PROCEDURES

- 6.01 *Submittal and Processing of Payments*
 - A. Contractor shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.
- 6.02 Progress Payments; Retainage
 - A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the last day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below. All such payments will be measured by the schedule of values established as provided in Paragraph 2.07.A 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 elsewhere in the Contract.

- 1. 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 Owner may withhold, including but not limited to liquidated damages, in accordance with Paragraph 14.02 of the General Conditions.
 - a. 90 percent of Work completed and of cost of materials and equipment not incorporated in the Work (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, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage.
- B. Upon Substantial Completion of the entire construction to be provided under the Contract Documents, Owner shall pay an amount sufficient to increase total payments to Contractor to 98 percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 14.02.D of the General Conditions and less 100 percent of the 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 Prior to final payment.
- C. The Owner will impose a set off in the amount equal to 2% of the Contract value from final completion to the end of the Correction period. Upon reaching the end of the Correction Period and contingent upon satisfactory completion of all warranty and/or remaining punch list item, the set off amount will be paid to the Contractor pursuant to Paragraph 6.03 of the Agreement.

6.03 Final Payment

A. Upon final completion and acceptance of the Work in accordance with Paragraph 14.07 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 14.07.

ARTICLE 7 – INTEREST

7.01 All moneys not paid when due as provided in Article 14 of the General Conditions shall bear interest at the rate of three percentage points above the rediscount rate then charged by the Federal Reserve Bank of Boston.

ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

- 8.01 In order to induce Owner to enter into this Agreement, Contractor makes the following representations:
 - A. Contractor has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.

- B. Contractor has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- C. Contractor is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.
- D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities), if any, that have been identified in Paragraph SC-4.02 of the Supplementary Conditions as containing reliable "technical data," and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have been identified in Paragraph SC-4.06 of the Supplementary Conditions as containing reliable "technical data."
- E. Contractor has considered the information known to Contractor; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, including any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Contract Documents; and (3) Contractor's safety precautions and programs.
- F. Based on the information and observations referred to in Paragraph 8.01.E above, Contractor does not consider that 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.
- G. 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.
- H. 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.
- I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
- J. In connection with the performance of Work under this Contract, Contractor agrees not to discriminate against any employee or applicant for employment because of age, race, religion, color, handicap, sex, physical condition or developmental disability. This provision shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training including apprenticeship. Contractor further agrees to take affirmative action to ensure equal employment opportunities for persons with disabilities. Contractor agrees to post in

conspicuous places, available for employees and applicants for employment, notices setting forth the provisions of the nondiscrimination clause. Form of notice is included in the Project Forms.

ARTICLE 9 – CONTRACT DOCUMENTS

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A.	Th	e Contract Documents consist of the following:
	1.	This Agreement (pages 00520-1 to 00520-9, inclusive).
	2.	Performance bond (pages 00610-1 to 00610-3, inclusive).
	3.	Payment bond (pages 00615-1 to 00615-3, inclusive).
	4.	General Conditions (pages 00700-1 to 00700-62, inclusive).
	5.	Supplementary Conditions (pages 00800-1 to 00800-16, inclusive).
	6.	Specifications as listed in the table of contents thereof.
	7.	Drawings consisting of 12 sheets with each sheet bearing the following general title: Peirce Island Road Resiliency Project, Bid No. 08-24.
	8.	Addenda (numbers to, inclusive).
	9.	Exhibits to this Agreement (enumerated as follows):
		a. Contractor's Bid (pages to, inclusive).
		b. Documentation submitted by Contractor prior to Notice of Award (pages to, inclusive).
	10.	The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:
		a. Notice to Proceed (pages to, inclusive).
		b. Work Change Directives.
		c. Change Orders.
B.		e documents listed in Paragraph 9.01.A are attached to this Agreement (except as pressly noted otherwise above).
C.	Th	ere are no Contract Documents other than those listed above in this Article 9.
D.	Th	e Contract Documents may only be amended, modified, or supplemented as provided

in Paragraph 3.04 of the General Conditions.

ARTICLE 10 – MISCELLANEOUS

10.01 *Terms*

A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions.

10.02 Assignment of Contract

A. No assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

10.03 Successors and Assigns

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

10.04 Severability

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

10.05 Contractor's Certifications

- A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:
 - 1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;
 - 2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

- 3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and
- 4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement. Counterparts have been delivered to Owner and Contractor. All portions of the Contract Documents have been signed or have been identified by Owner and Contractor or on their behalf. This Agreement will be effective on _____ (which is the Effective Date of the Agreement). **CONTRACTOR** OWNER: City of Portsmouth, NH Signature: Signature: By: Karen S. Conard By: _____ Title: City Manager (If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.) [CORPORATE SEAL] Attest Title: Title: Address for giving notices: Address for giving notices:

END OF SECTION

NOTICE TO PROCEED (EJCDC C-550)

Notice to Proceed

Date:	
Project: Peirce Island Roa	d Resiliency Project
Owner: City of Portsmouth, NH	Owner's Contract No.: 08-24
Contract:	Engineer's Project No.: 60700949
Contract	or:
Contractor's Address: [send Certified I	Mail, Return Receipt Requested]
You are notified that the Contract Times under the a []. On or before that date, you are to start perfor Documents. In accordance with Article 4 of the Agreer [], and the date of readiness for final payment achieve Substantial Completion is 151, and the num	rming your obligations under the Contract ment, the date of Substantial Completion is is [] [(or) the number of days to
payment is 26 Before you may start any Work at the Site, Paragraph 2 that you and Owner must each deliver to the other (wi additional insureds and loss payees) certificates of insu and maintain in accordance with the	2.01.B of the General Conditions provides th copies to Engineer and other identified urance which each is required to purchase
Also, before you may s	start any Work at the Site, you must:
	_ [add other requirements].
	Owner Given by:
	Authorized Signature
	Title
Copy to Engineer	Date





PERFORMANCE BOND (EJCDC C-610)

CONTRACTOR (name and address):	SURETY (name and address of principal place of business):
OWNER (name and address):	
OWILK (name and address).	
CONSTRUCTION CONTRACT Effective Date of the Agreement: Amount: Description (name and location):	
BOND	
Bond Number: Date (not earlier than the Effective Date of the Agreement of Amount:	
Modifications to this Bond Form: None	See Paragraph 16
this Performance Bond to be duly executed by an author CONTRACTOR AS PRINCIPAL	ereby, subject to the terms set forth below, do each cause orized officer, agent, or representative. SURETY
(seal) Contractor's Name and Corporate Seal	Surety's Name and Corporate Seal (seal)
Contractor's Ivanic and Corporate Scar	Surety s Name and Corporate Scar
By:	By:
Signature	Signature (attach power of attorney)
Print Name	Print Name
Title	Title
Attest:	Attest:
Signature	Signature
Title	Title
Notes: (1) Provide supplemental execution by any addition. Contractor, Surety, Owner, or other party shall be consider	al parties, such as joint venturers. (2) Any singular reference to red plural where applicable.
FICDC C 610	_ Parformance Rond

- 1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.
- 2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.
- 3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after:
 - 3.1 The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;
 - 3.2 The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
 - 3.3 The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.
- 4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.
- 5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:
 - 5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;
 - 5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;
 - 5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

- 5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:
 - 5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
 - 5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.
- 6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.
- 7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:
 - 7.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
 - 7.2 additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and
 - 7.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.
- 8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.
- 9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.
- 10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
- 11. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations

available to sureties as a defense in the jurisdiction of the suit shall be applicable.

- 12. Notice to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.
- 13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

14. Definitions

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

Contract Documents and changes made to the agreement and the Contract Documents.

- 14.3 Contractor Default: Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.
- 14.4 Owner Default: Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
- 14.5 Contract Documents: All the documents that comprise the agreement between the Owner and Contractor.
- 15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.
- 16. Modifications to this Bond are as follows:

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PAYMENT BOND (EJCDC C-615)

CONTRACTOR (name and address):	SURETY (name and address of principal place of business):		
OWNER (name and address):			
CONSTRUCTION CONTRACT Effective Date of the Agreement: Amount: Description (name and location):			
BOND			
Bond Number: Date (not earlier than the Effective Date of the Agreement of Amount:			
Modifications to this Bond Form: None	See Paragraph 18		
this Payment Bond to be duly executed by an authorize CONTRACTOR AS PRINCIPAL	ereby, subject to the terms set forth below, do each cause and officer, agent, or representative. SURETY		
(seal)	(seal)		
Contractor's Name and Corporate Seal	Surety's Name and Corporate Seal		
By:	Ву:		
Signature	Signature (attach power of attorney)		
Print Name	Print Name		
Title	Title		
Attest:	Attest:		
Signature	Signature		
Title	Title		
Notes: (1) Provide supplemental execution by any addition to Contractor, Surety, Owner, or other party shall be considered.	al parties, such as joint venturers. (2) Any singular reference dered plural where applicable.		

- The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms
- 2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.
- 3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.
- 4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.
- 5. The Surety's obligations to a Claimant under this Bond shall arise after the following:
 - 5.1 Claimants who do not have a direct contract with the Contractor,
 - 5.1.1 have furnished a written notice of nonpayment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
 - 5.1.2 have sent a Claim to the Surety (at the address described in Paragraph 13).
 - 5.2 Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).
- If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.

- 7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:
 - 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
 - 7.2 Pay or arrange for payment of any undisputed amounts.
 - 7.3 The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.
- 8. The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.
- 9. Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.
- 10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.
- 11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
- 12. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by

anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

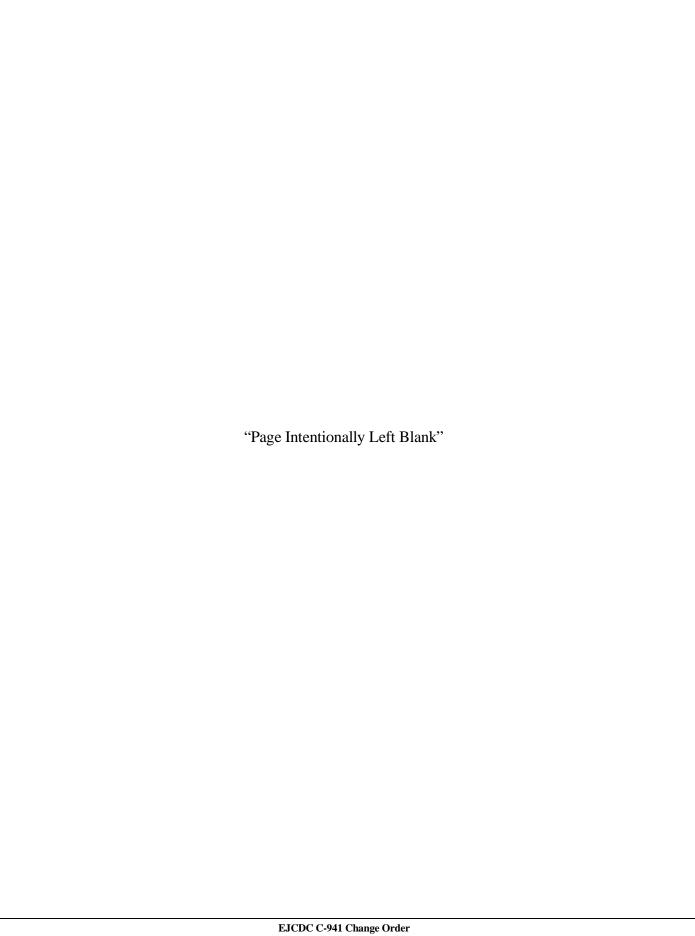
- 13. Notice and Claims to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.
- 14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.
- 15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

16. **Definitions**

- 16.1 **Claim:** A written statement by the Claimant including at a minimum:
 - 1. The name of the Claimant;
 - 2. The name of the person for whom the labor was done, or materials or equipment furnished;
 - 3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
 - A brief description of the labor, materials, or equipment furnished;
 - The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
 - The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
 - 7. The total amount of previous payments received by the Claimant; and
 - 8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.
- 16.2 Claimant: An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms of

"labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

- 16.3 Construction Contract: The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.
- 16.4 Owner Default: Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
- 16.5 **Contract Documents:** All the documents that comprise the agreement between the Owner and Contractor.
- 17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.
- 18. Modifications to this Bond are as follows:



CHANGE ORDER (EJCDC C-941)

Change Order

	No. []		
Date of Issuance:	Effective Date:		
Project: Owner:	Owner's Contract No.:		
Contract:	Date of Contract:		
Contractor:	Engineer's Project No.:		
The Contract Documents are modified as t	follows upon execution of this Change Order:		
Description:			
A44 1 4 00 4 1 4 4 4 4 4 4 4 4 4 4 4 4 4	`		
Attachments (list documents supporting cl	nange):		
CHANGE IN CONTRACT PRICE:	CHANGE IN CONTRACT TIMES:		
CHAI(GE II (COI(IIII) CI I III CE)			
Original Contract Price:	Original Contract Times: Working days Calendar days Substantial completion (days or date):		
\$	Ready for final payment (days or date):		
[Increase] [Decrease] from previously approved Change Orders No to No. :	[Increase] [Decrease] from previously approved Change Orders No to No:		
<u> </u>	Substantial completion (days): Ready for final payment (days):		
Contract Price prior to this Change Order:	Contract Times prior to this Change Order: Substantial completion (days or date):		
\$	Ready for final payment (days or date):		
[Increase] [Decrease] of this Change Order:	[Increase] [Decrease] of this Change Order: Substantial completion (days or date):		
\$	Ready for final payment (days or date):		
Contract Price incorporating this Change	Contract Times with all approved Change Orders: Substantial completion (days or date):		
\$	Ready for final payment (days or date):		

RECOMMENDED:	ACCEPTED:	ACCEPTED:
By:	By:	By:
Engineer (Authorized Signature)	Owner (Authorized Signature)	Contractor (Authorized Signature)
Date:	Date:	Date:
Approved by Funding Agency (if app		
		Date:



CERTIFICATE OF SUBSTANTIAL COMPLETION (EJCDC C-625)

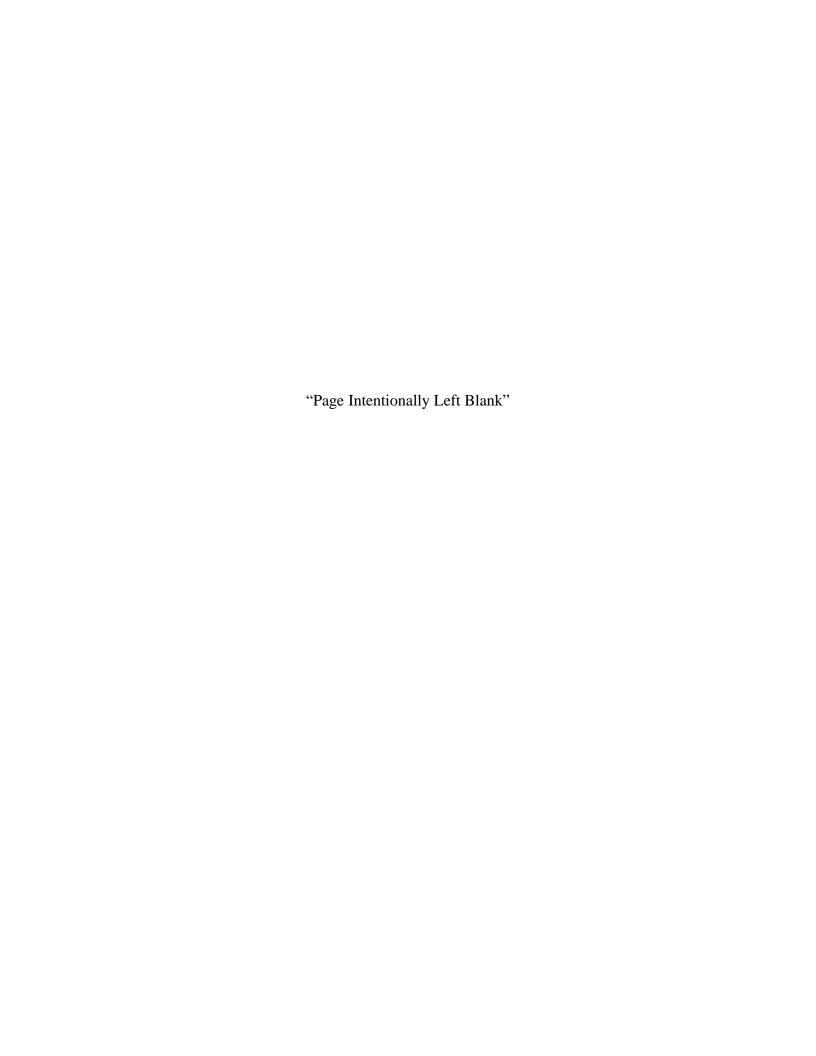
Certificate of Substantial Completion

Project: Peirce Island Road Resiliency	
Owner: The City of Portsmouth, NH	Owner's Contract No.: []
Contract:	Engineer's Project No.: 60700949
This [tentative] [definitive] Certificate of S	Substantial Completion applies to:
☐ All Work under the Contract Documents	\Box The following specified portions of the Work:
Date of	Substantial Completion
Contractor, and Engineer, and found to be so of the Project or portion thereof designation	has been inspected by authorized representatives of Owner, ubstantially complete. The Date of Substantial Completion ated above is hereby declared and is also the date of uired by the Contract Documents, except as stated below.
	completed or corrected is attached hereto. This list may not ny items on such list does not alter the responsibility of the nee with the Contract Documents.
	Contractor for security, operation, safety, maintenance, shall be as provided in the Contract Documents except
☐ Amended Responsibilities	□ Not Amended
Owner's Amended Responsibilities:	
Contractor's Amended Responsibilities:	

The following documents are attached to and made part of this Certificate:				
This Certificate does not constitute a Documents nor is it a release of Con Contract Documents.	<u> </u>			
Executed by Engineer	Date			
Accepted by Contractor	Date			
Accepted by Owner	Date			

CERTIFICATE OF FINAL COMPLETION

Owner's Pro	oject No. Engineer's Project N	No. 60700949	
Project	Peirce Island Road Resiliency Project		
Owner:	City of Portsmouth, NH		
Contractor:			
Engineer:	<u>AECOM</u>		
Agreement l	Date:		
Notice to Pr	oceed Date:		
Contractual	Substantial Completion Date as modified by Change Orc	lers:	
Actual Subs	tantial Completion Date:		
Contractual	Final Completion Date as modified by Change Orders:		
			₽ P
	Date of Final Completion		
Contract Do accordance	cate does not constitute an acceptance of any Work not in cuments nor is it a release of Contractor's obligation to c with the Contract Documents. The Warranty for all Wor of Substantial Completion expires one year from the date	complete the Work i k completed subseq	in Juent
Executed by	Engineer on:, <u>20</u>		
Ву:			
Contractor A	Accepts this Certificate of Final Completion on:	, <u>20</u>	
By:			
Owner Acce	epts this Certificate of Final Completion on:	, <u>20</u>	
Dv.			



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

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

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ASSOCIATED GENERAL CONTRACTORS OF AMERICA
AMERICAN SOCIETY OF CIVIL ENGINEERS

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Endorsed by



CONSTRUCTION SPECIFICATIONS INSTITUTE

These General Conditions have been prepared for use with the Suggested Forms of Agreement Between Owner and Contractor (EJCDC C-520 or C-525, 2007 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other. Comments concerning their usage are contained in the Narrative Guide to the EJCDC Construction Documents (EJCDC C-001, 2007 Edition). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (EJCDC C-800, 2007 Edition).

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 Defined Terms

- A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. 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 which is evidence of the agreement between Owner and Contractor covering the Work.
 - 3. Application for Payment—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 - 4. *Asbestos*—Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.
 - 5. *Bid*—The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 - 6. *Bidder*—The individual or entity who submits a Bid directly to Owner.
 - 7. *Bidding Documents*—The Bidding Requirements and the proposed Contract Documents (including all Addenda).
 - 8. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid security of acceptable form, if any, and the Bid Form with any supplements.
 - 9. *Change Order*—A document recommended by Engineer 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, issued on or after the Effective Date of the Agreement.
 - 10. *Claim*—A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.
 - 11. *Contract*—The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

- 12. *Contract Documents*—Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.
- 13. *Contract Price*—The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).
- 14. *Contract Times*—The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any; (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.
- 15. *Contractor*—The individual or entity with whom Owner has entered into the Agreement.
- 16. Cost of the Work—See Paragraph 11.01 for definition.
- 17. *Drawings*—That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.
- 18. *Effective Date of the Agreement*—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.
- 19. *Engineer*—The individual or entity named as such in the Agreement.
- 20. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.
- 21. General Requirements—Sections of Division 1 of the Specifications.
- 22. *Hazardous Environmental Condition*—The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto.
- 23. *Hazardous Waste*—The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.
- 24. Laws and Regulations; Laws or Regulations—Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
- 25. *Liens*—Charges, security interests, or encumbrances upon Project funds, real property, or personal property.
- 26. *Milestone*—A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

- 27. *Notice of Award*—The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.
- 28. *Notice to Proceed*—A written notice given 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 under the Contract Documents.
- 29. *Owner*—The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.
- 30. *PCBs*—Polychlorinated biphenyls.
- 31. *Petroleum*—Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.
- 32. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.
- 33. *Project*—The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.
- 34. *Project Manual*—The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.
- 35. *Radioactive Material*—Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.
- 36. Resident Project Representative—The authorized representative of Engineer who may be assigned to the Site or any part thereof.
- 37. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.
- 38. Schedule of Submittals—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.
- 39. *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.

- 40. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.
- 41. *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 for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.
- 42. *Specifications*—That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.
- 43. *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 at the Site.
- 44. Substantial Completion—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.
- 45. Successful Bidder—The Bidder submitting a responsive Bid to whom Owner makes an award.
- 46. *Supplementary Conditions*—That part of the Contract Documents which amends or supplements these General Conditions.
- 47. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or Subcontractor.
- 48. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
- 49. *Unit Price Work*—Work to be paid for on the basis of unit prices.
- 50. 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, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.
- 51. Work Change Directive—A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an

addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

1.02 Terminology

- A. The words and terms discussed in Paragraph 1.02.B through F are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. Intent of Certain Terms or Adjectives:
 - 1. The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.

C. Day:

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

D. *Defective*:

- 1. The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - a. does not conform to the Contract Documents; or
 - b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 - c. has been damaged prior to Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).
- E. Furnish, Install, Perform, Provide:

- 1. The word "furnish," when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
- 2. The word "install," when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
- 3. The words "perform" or "provide," when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
- 4. When "furnish," "install," "perform," or "provide" is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, "provide" is implied.
- F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 – PRELIMINARY MATTERS

- 2.01 Delivery of Bonds and Evidence of Insurance
 - A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
 - B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.
- 2.02 Copies of Documents
 - A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.
- 2.03 Commencement of Contract Times; Notice to Proceed
 - A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement 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 Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

2.04 *Starting the Work*

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

2.05 Before Starting Construction

- A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), 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 Documents;
 - 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.

2.06 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 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, 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 instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.07 Initial Acceptance of Schedules

- A. At least 10 days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.
 - 1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of

the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

- 2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
- 3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 Intent

- A. The Contract Documents are complementary; what is required by one is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result will be provided whether or not specifically called for, at no additional cost to Owner.
- C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

3.02 Reference Standards

- A. Standards, Specifications, Codes, Laws, and Regulations
 - 1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement 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, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 Reporting and Resolving Discrepancies

A. Reporting Discrepancies:

- 1. Contractor's Review of Contract Documents Before Starting Work: Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor discovers, or has actual knowledge of, and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.
- 2. Contractor's Review of Contract Documents During Performance of Work: If, 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) any standard, specification, manual, or code, or (c) 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 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.
- 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 Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:
 - a. the provisions of any standard, specification, manual, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference in the Contract Documents); 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 Amending and Supplementing Contract Documents

- A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.
- B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:
 - 1. A Field Order;
 - 2. Engineer's approval of a Shop Drawing or Sample (subject to the provisions of Paragraph 6.17.D.3); or

3. Engineer's written interpretation or clarification.

3.05 Reuse of Documents

- A. Contractor and any Subcontractor or Supplier shall not:
 - 1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions; or
 - 2. 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.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

3.06 Electronic Data

- A. Unless otherwise stated in the Supplementary Conditions, the data furnished by Owner or Engineer to Contractor, or by Contractor to Owner or Engineer, that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.
- B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.
- C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

4.01 Availability of Lands

A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the

Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

- 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 the Work is to be performed 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.

4.02 Subsurface and Physical Conditions

- A. *Reports and Drawings*: The Supplementary Conditions identify:
 - 1. those reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site; and
 - 2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).
- B. Limited Reliance by Contractor on Technical Data Authorized: Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "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:
 - the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
 - 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
 - 3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

4.03 Differing Subsurface or Physical Conditions

- A. *Notice:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed either:
 - 1. is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or
 - 2. is of such a nature as to require a change in the Contract Documents; or
 - 3. differs materially from that shown or indicated in the Contract Documents; or

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

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *Engineer's Review*: After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.

C. Possible Price and Times Adjustments:

- 1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition 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 meet any one or more of the categories described in Paragraph 4.03.A; and
 - 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 Paragraphs 9.07 and 11.03.
- 2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:
 - a. Contractor knew of the existence of such conditions at the time Contractor made a final 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
 - b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or
 - c. Contractor failed to give the written notice as required by Paragraph 4.03.A.
- 3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, neither Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall be liable to Contractor for any claims, costs, losses, or 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) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 Underground Facilities

- A. Shown or Indicated: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:
 - 1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data provided by others; and
 - 2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
 - a. reviewing and checking all such information and data;
 - b. locating all Underground Facilities shown or indicated in the Contract Documents;
 - c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction; and
 - d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. Not Shown or Indicated:

- 1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, 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 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
- 2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

4.05 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.

4.06 Hazardous Environmental Condition at Site

- A. Reports and Drawings: The Supplementary Conditions identify those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at the Site.
- B. Limited Reliance by Contractor on Technical Data Authorized: Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:
 - 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or
 - 2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
 - 3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.
- D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) 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 4.06.E.
- E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered written notice to Contractor: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.
- F. 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. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.
- G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- H. 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 a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 – BONDS AND INSURANCE

5.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.
- B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed each bond.
- C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

5.02 Licensed Sureties and Insurers

A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 Certificates of Insurance

- A. Contractor shall deliver to Owner, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.
- B. Owner shall deliver to Contractor, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.

- C. Failure of Owner to demand such certificates or other evidence of Contractor's full compliance with these insurance requirements or failure of Owner to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.
- D. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor.
- E. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.

5.04 Contractor's Insurance

- A. Contractor shall purchase and maintain such insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:
 - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;
 - 2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;
 - 3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
 - 4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:
 - a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or
 - b. by any other person for any other reason;
 - 5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and
 - 6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.
- B. The policies of insurance required by this Paragraph 5.04 shall:
 - 1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, be written on an occurrence basis, include as additional insureds (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, members, partners,

- employees, agents, consultants, and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;
- 2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;
- 3. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;
- 4. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);
- 5. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and
- 6. include completed operations coverage:
 - a. Such insurance shall remain in effect for two years after final payment.
 - b. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

5.05 *Owner's Liability Insurance*

A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

5.06 *Property Insurance*

- A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:
 - 1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of

them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee;

- 2. be written on a Builder's Risk "all-risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than that caused by flood), and such other perils or causes of loss as may be specifically required by the Supplementary Conditions.
- 3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);
- 4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;
- 5. allow for partial utilization of the Work by Owner;
- 6. include testing and startup; and
- 7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other loss payee to whom a certificate of insurance has been issued.
- B. Owner shall purchase and maintain such equipment breakdown insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee.
- C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other loss payee to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.
- D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under this Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.

5.07 Waiver of Rights

- A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or loss payees thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.
- B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for:
 - 1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and
 - 2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.
- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 Receipt and Application of Insurance Proceeds

- A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the loss payees, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order.
- B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

5.09 Acceptance of Bonds and Insurance; Option to Replace

A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, 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. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 Partial Utilization, Acknowledgment of Property Insurer

A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6 – CONTRACTOR'S RESPONSIBILITIES

6.01 Supervision and Superintendence

- A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

6.02 Labor; Working Hours

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.
- B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner's written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

6.03 Services, Materials, and Equipment

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.
- B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 Progress Schedule

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 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 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.
 - 2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 Substitutes and "Or-Equals"

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description 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 or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.
 - 1. "Or-Equal" Items: If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that:
 - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
 - 2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole; and
 - 3) it has a proven record of performance and availability of responsive service.
 - b. Contractor certifies that, if approved and incorporated into the Work:
 - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

2. Substitute Items:

- a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.
- b. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.
- c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented by the General Requirements, and as Engineer may decide is appropriate under the circumstances.
- d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
 - 1) shall certify that the proposed substitute item will:
 - a) perform adequately the functions and achieve the results called for by the general design,
 - b) be similar in substance to that specified, and
 - c) be suited to the same use as that specified;

2) will state:

- a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time,
- b) 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
- c) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;

3) will identify:

- a) all variations of the proposed substitute item from that specified, and
- b) available engineering, sales, maintenance, repair, and replacement services; and
- 4) shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.

- B. Substitute Construction Methods or Procedures: If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.
- C. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by a Change Order in the case of a substitute and an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.
- D. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- E. *Engineer's Cost Reimbursement*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. 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.
- F. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.
- 6.06 Concerning Subcontractors, Suppliers, and Others
 - A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.
 - B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or

- entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.
- C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:
 - 1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity; nor
 - 2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.
- D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.
- E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.
- F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as a loss payee on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

6.07 Patent Fees and Royalties

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

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

6.08 Permits

A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

6.09 Laws and Regulations

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear 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. However, it shall not be Contractor's responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.
- C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner

and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10 *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.

6.11 Use of Site and Other Areas

A. Limitation on Use of Site and Other Areas:

- Contractor shall confine construction equipment, the storage of materials and equipment, and
 the operations of workers to the Site and other areas permitted by Laws and Regulations, and
 shall not unreasonably encumber the Site and other areas with construction equipment or
 other materials or equipment. Contractor shall assume full responsibility for any damage to
 any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas
 resulting from the performance of the Work.
- 2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.
- 3. 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 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 by or based upon Contractor's performance of the Work.
- B. Removal of Debris During Performance of the Work: During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.
- C. Cleaning: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site 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 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 property to stresses or pressures that will endanger it.

6.12 Record Documents

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

6.13 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. 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, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.
- C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.
- D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.
- E. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts

any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

F. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 Safety Representative

A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.15 Hazard Communication Programs

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

6.16 *Emergencies*

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

6.17 Shop Drawings and Samples

A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. Shop Drawings:

- a. Submit number of copies specified in the General Requirements.
- b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.

2. Samples:

a. Submit number of Samples specified in the Specifications.

- b. 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 6.17.D.
- B. 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. Submittal Procedures:

- 1. Before submitting each Shop Drawing or Sample, Contractor shall have:
 - a. reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
 - c. determined and verified the suitability of all materials offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.
- 2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.
- 3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. Engineer's Review:

- Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
- 2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the

Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.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's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

E. Resubmittal Procedures:

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

6.18 *Continuing the Work*

A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 *Contractor's General Warranty and Guarantee*

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on representation of Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
 - 1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 - 2. normal wear and tear under normal usage.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
 - 1. observations by Engineer;
 - 2. recommendation by Engineer or payment by Owner of any progress or final payment;

- 3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
- 4. use or occupancy of the Work or any part thereof by Owner;
- 5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;
- 6. any inspection, test, or approval by others; or
- 7. any correction of defective Work by Owner.

6.20 Indemnification

- A. 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 performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable.
- B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.
- C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:
 - 1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
 - 2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

6.21 Delegation of Professional Design Services

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.
- B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.
- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

ARTICLE 7 – OTHER WORK AT THE SITE

7.01 Related Work at Site

- A. Owner may perform other work related to the Project at the Site with Owner's employees, or through other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:
 - 1. written notice thereof will be given to Contractor prior to starting any such other work; and
 - 2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.
- B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner, and Owner, if Owner is performing other work with Owner's employees, proper and safe

access to the Site, provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and properly coordinate the Work with theirs. 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. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.

C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, 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.

7.02 Coordination

- A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:
 - 1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;
 - 2. the specific matters to be covered by such authority and responsibility will be itemized; and
 - 3. the extent of such authority and responsibilities will be provided.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

7.03 *Legal Relationships*

- A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.
- B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's wrongful actions or inactions.
- C. Contractor shall be liable to Owner and any other contractor under direct contract to Owner for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's wrongful action or inactions.

ARTICLE 8 – OWNER'S RESPONSIBILITIES

- 8.01 *Communications to Contractor*
 - A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.
- 8.02 Replacement of Engineer
 - A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.
- 8.03 Furnish Data
 - A. Owner shall promptly furnish the data required of Owner under the Contract Documents.
- 8.04 Pay When Due
 - A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.
- 8.05 Lands and Easements; Reports and Tests
 - A. Owner's duties with respect to providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions relating to existing surface or subsurface structures at the Site.
- 8.06 Insurance
 - A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 5.
- 8.07 *Change Orders*
 - A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.
- 8.08 Inspections, Tests, and Approvals
 - A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.
- 8.09 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.

8.10 Undisclosed Hazardous Environmental Condition

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.11 Evidence of Financial Arrangements

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents.

8.12 *Compliance with Safety Program*

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 pursuant to Paragraph 6.13.D.

ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *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 Documents.

9.02 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 9.09. 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.

9.03 Project Representative

A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 Authorized Variations in Work

A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which 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. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

9.05 Rejecting Defective Work

A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.06 Shop Drawings, Change Orders and Payments

- A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.
- B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.
- C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.
- D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 Determinations for Unit Price Work

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

9.08 Decisions on Requirements of Contract Documents and Acceptability of Work

- A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question.
- B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believes that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.
- C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.
- D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 Limitations on Engineer's Authority and Responsibilities

- A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.
- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.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 9.09 shall also apply to the Resident Project Representative, if any, and assistants, if any.

9.10 *Compliance with Safety Program*

A. While at the Site, Engineer's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Engineer has been informed pursuant to Paragraph 6.13.D.

ARTICLE 10 - CHANGES IN THE WORK; CLAIMS

10.01 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 by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).
- B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

10.02 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 as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.D.

10.03 Execution of Change Orders

- A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:
 - 1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;
 - changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and
 - 3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of

executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 *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.

10.05 *Claims*

- A. *Engineer's Decision Required*: All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.
- B. *Notice:* Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Times shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).
- C. *Engineer's Action*: Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:
 - 1. deny the Claim in whole or in part;
 - 2. approve the Claim; or
 - 3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.
- D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.

- E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.
- F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

ARTICLE 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

11.01 *Cost of the Work*

- A. Costs Included: The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 11.01.B, and shall include only the following items:
 - 1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.
 - 2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
 - 3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.

- 4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
- 5. Supplemental costs including the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
 - c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
 - d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
 - e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
 - f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.06.D), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.
 - g. The cost of utilities, fuel, and sanitary facilities at the Site.
 - h. Minor expenses such as telegrams, long distance telephone calls, telephone 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 Contractor is required by the Contract Documents to purchase and maintain.
- B. Costs Excluded: The term Cost of the Work shall not include any of the following items:

- 1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.
- 2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
- 3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
- 4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
- 5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A.
- C. *Contractor's Fee:* When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.
- D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

11.02 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:
 - 1. Contractor agrees that:
 - a. 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
 - b. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in

the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. Contingency Allowance:

- 1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 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. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.
- 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. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:
 - 1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
 - 2. there is no corresponding adjustment with respect to any other item of Work; and
 - Contractor believes that Contractor is entitled to an increase in Contract Price as a result of
 having incurred additional expense or Owner believes that Owner is entitled to a decrease in
 Contract Price and the parties are unable to agree as to the amount of any such increase or
 decrease.

ARTICLE 12 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 Change of Contract Price

A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

- B. The value of any Work covered by a Change Order or of any Claim for 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, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or
 - 2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or
 - 3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).
- C. Contractor's Fee: The Contractor's fee for overhead and profit shall be determined as follows:
 - 1. a mutually acceptable fixed fee; or
 - 2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;
 - b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;
 - c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 12.01.C.2.a and 12.01.C.2.b is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;
 - d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;
 - e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
 - f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 Change of Contract Times

- A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 *Delays*

- A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.
- B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.
- D. Owner, Engineer, and their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall not be liable to Contractor for any claims, costs, losses, or 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) sustained by Contractor on or in connection with any other project or anticipated project.
- E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

ARTICLE 13 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 Notice of Defects

A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. Defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 Access to Work

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

13.03 Tests and Inspections

- A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.
- B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:
 - 1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;
 - 2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in Paragraph 13.04.C; and
 - 3. as otherwise specifically provided in the Contract Documents.
- 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 and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.

- E. 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.
- F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

13.04 Uncovering Work

- A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.
- B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, 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, furnishing all necessary labor, material, and equipment.
- C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such 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 Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.
- D. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

13.05 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, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 Correction or Removal of Defective Work

A. Promptly after receipt of written notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers,

architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).

B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 Correction Period

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 - 1. repair such defective land or areas; or
 - 2. correct such defective Work; or
 - 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
 - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.
- B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.
- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.
- E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

13.08 Acceptance of Defective Work

A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) 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 pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 Owner May Correct Defective Work

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct, or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 13.09, 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, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, 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 (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) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. 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 13.09.

ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 Schedule of Values

A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 *Progress Payments*

A. Applications for Payments:

- 1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.
- 2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
- 3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

B. Review of Applications:

- 1. Engineer will, within 10 days after receipt of each Application for Payment, 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 9.07, 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 Documents; or
 - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.
- 4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
 - a. to supervise, direct, or control the Work, or
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
 - d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
- 5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:

- a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;
- b. the Contract Price has been reduced by Change Orders;
- c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or
- d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. Payment Becomes Due:

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

D. Reduction in Payment:

- 1. Owner may refuse to make payment of the full amount recommended by Engineer because:
 - a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
 - b. 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;
 - c. there are other items entitling Owner to a set-off against the amount recommended; or
 - d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.
- 2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action 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, when Contractor remedies the reasons for such action.
- 3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1 and subject to interest as provided in the Agreement.

14.03 Contractor's Warranty of Title

A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

14.04 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 (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.
- 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 tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the tentative certificate to Owner, notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will, within said 14 days, execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.
- E. 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 tentative list.

14.05 Partial Utilization

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. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and 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 14.04.A through D for that part of the Work.
- 2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and 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 14.04 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 5.10 regarding property insurance.

14.06 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 is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 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, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.
- 2. The final Application for Payment shall be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.6;
 - b. consent of the surety, if any, to final payment;
 - c. a list of all Claims against Owner that Contractor believes are unsettled; and

- d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.
- 3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) 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.

B. Engineer's Review of Application and Acceptance:

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. 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. Payment Becomes Due:

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and will be paid by Owner to Contractor.

14.08 Final Completion Delayed

A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 Waiver of Claims

- A. The making and acceptance of final payment will constitute:
 - 1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and
 - 2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

15.01 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 notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

15.02 Owner May Terminate for Cause

- A. The occurrence of any one or more of the following events will 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 established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);
 - 2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;
 - 3. Contractor's repeated disregard of the authority of Engineer; or
 - 4. Contractor's violation in any substantial way of any provisions of the Contract Documents.
- B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:
 - exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion);

- 2. 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
- 3. complete the Work as Owner may deem expedient.
- C. If Owner proceeds as provided in Paragraph 15.02.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 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) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed 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.
- D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.
- E. 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. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.
- F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B and 15.02.C.

15.03 Owner May Terminate For Convenience

- A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
 - 1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
 - 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;
 - 3. 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) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and

- 4. reasonable expenses directly attributable to termination.
- B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 Contractor May Stop Work or Terminate

- A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 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 16 – DISPUTE RESOLUTION

16.01 Methods and Procedures

- A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.
- B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.
- C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:
 - 1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions; or

- 2. agrees with the other party to submit the Claim to another dispute resolution process; or
- 3. gives written notice to the other party of the intent to submit the Claim to a court of competent jurisdiction.

ARTICLE 17 – MISCELLANEOUS

17.01 Giving Notice

- A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:
 - 1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended; or
 - 2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 Computation of Times

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

17.03 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 Documents. 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.

17.04 Survival of Obligations

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

17.05 Controlling Law

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

17.06 *Headings*

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

SECTION 00800

SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (EJCDC No. C-700, 2007 Edition) and other provisions of the Contract Documents as indicated below. All provisions which are not specifically amended or supplemented hereby remain in full force and effect.

ARTICLE 1. DEFINITIONS

SC-1.01

Defined Terms:

Insert the following language before the word "Agreement" in the first sentence of the definition 1.01A.12 entitled "Contract Documents" in the General Conditions:

"Invitation to Bid, Instructions to Bidders,"

SC-1.01

Delete definition 1.01 A.42 entitled "Specifications" in the General Conditions in its entirety and insert the following in its place:

"Sections included under Division 1 through Division 2 of the Contract Documents."

SC-1.01

Delete the definition 1.01 A.44 entitled "Substantial Completion" in the General Conditions in its entirety and add the following in its place:

"The Work required by the Contract has been completed except for work having a Contract Price of less than one percent of the then adjusted total contract price, or substantially all of the Work has been completed and opened to Owner's use except for minor incomplete or unsatisfactory work items that do not materially impair the usefulness of the Work required by the Contract."

ARTICLE 2. PRELIMINARY MATTERS

SC-2.01

Delivery of Bonds and Evidence of Insurance

Delete paragraph 2.01B of the General Conditions in its entirety and insert the following in its place:

"B. Evidence of Insurance: 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 5."

SC-2.02

Copies of Documents

Delete Paragraph 2.02.A in its entirety and insert the following in its place:

A. Owner shall furnish Contractor copies of the Drawings and Project Manual in electronic format. Printed copies will be furnished upon request at the cost of reproduction.

SC-2.03

Commencement of Contract Times; Notice to Proceed:

Delete paragraph 2.03A of the General Conditions in its entirety and insert the following in its place:

"A. The Contract Time will commence to run on the tenth day following the effective date of the Agreement, or if a Notice to Proceed is issued, the Contract Time will commence to run on the date of the Notice to Proceed."

SC-2.05

Amend the first sentence of Paragraph 2.05.A.3 by inserting the words "except for Unit Price Work" at the beginning of the sentence.

ARTICLE 3. CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

SC-3.01

Intent:

Add a new paragraph immediately after paragraph 3.01A of the General Conditions which is to read as follows:

"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."

SC-3.01

Add the following new paragraph immediately after paragraph 3.01.C:

"D. Sections of Division 1 - General Requirements govern the execution of the work of all sections of the specifications."

ARTICLE 4. AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; REFERENCE POINTS

SC-4.02

Subsurface and Physical Conditions:

Delete paragraph 4.02A of the General Conditions in its entirety and insert the following in its place:

- "A. Reports and Drawings: In the preparation of Drawings and Specifications, Engineer or Engineer's Consultants have relied upon:
 - 1. Engineer has relied upon data obtained from subsurface investigations made at the site in the form of test borings. Such data is in the form of boring logs which are included in Appendix B to the Specifications. The locations of the test borings are indicated on the Drawings."

SC-4.04

Underground Facilities:

Delete the following words from line 5 of paragraph 4.04B.2 of the General Conditions:

"or not shown or indicated with reasonable accuracy"

SC-4.05

Reference Points:

Add a new paragraph at the end of paragraph 4.05A of the General Conditions which is to read as follows:

"B. Contractor to employ surveyor licensed in New Hampshire to provide reference points and monuments. 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."

ARTICLE 5. BONDS AND INSURANCE

SC-5.01

Add the following language at the end of Paragraph 5.01.C:

"In addition, no further progress payments under the Agreement will be made by OWNER until CONTRACTOR complies with the provisions of this paragraph."

SC-5.02

Licensed Sureties and Insurers:

Insert the following paragraphs at the end of Paragraph 5.02.A.:

- "B. The insurance policies and surety bonds required to be provided by the Contractor shall be written by a company or companies licensed by the State of New Hampshire which company or companies shall have not less than an A rating and a Class XV financial status as reported in the latest edition of Best's Insurance Guide. In addition all carriers are subject to approval by the OWNER.
- C. The CONTRACTOR shall name the OWNER as an Additional Insured on a primary and non-contributory basis to all polices except Works Compensation and Professional Liability."

SC-5.03

Certificates of Insurance:

Delete paragraph 5.03B of the General Conditions in its entirety.

SC-5.04

Contractor's Insurance:

Add the following new paragraph immediately after Paragraph 5.04.B.:

"C. The limits of liability for the insurance required by Paragraph 5.04 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

- 1. Worker's Compensation, and related coverage under Paragraphs 5.04.A.1 and 5.04.A.2 of the General Conditions:
 - a. State: Statutory
 - b. Applicable Federal

(e.g., Longshoreman's): Statutory

- 2. Contractor's General Liability under Paragraphs 5.04.A.3 through 5.04.A.6 of the General Conditions which shall include completed operations and product liability coverage's and eliminate the exclusion with respect to property under the care, custody, and control of Contractor or provide equivalent coverage under Builders Risk:
 - a. General Aggregate including per project aggregate endorsement: (Except Products-Completed Operations): \$5,000,000
 - b. Products-Completed

Operations Aggregate: \$5,000,000

c. Each Occurrence

(Bodily Injury and Property Damage): \$2,000,000 Property Damage liability insurance shall include Collapse and Underground coverages

d. If blasting is to be used, include explosion coverage.

Occurrence: \$2,000,000 Aggregate: \$5,000,000

- 2. Automobile Liability under Paragraph 5.04.A.6 of the General Conditions:
 - 1. Combined Single Limit for bodily injury and property damage: \$ 2,000,000
- 4. The Contractual Liability coverage required by Paragraph 5.04.B.3 of the General Conditions shall provide coverage for not less than the following amounts:
 - a. Bodily Injury:

Each Accident \$ 2,000,000 Annual Aggregate \$ 2,000,000

b. Property Damage:

Each Accident \$2,000,000 Annual Aggregate \$2,000,000

- 5. Owner does not have pollution property or liability coverage. Contractor shall maintain Pollution Liability Coverage in a commercially reasonably amount for this Project.
- 7. Coverage amounts may be satisfied by excess or umbrella policies provided Owner is satisfied as to the form of coverage.
- 8. Owner shall be listed as an additional insured on all liability policies. The City of Portsmouth shall be named as additional insured as follows:

City of Portsmouth Attn: Legal Department 1 Junkins Avenue Portsmouth, NH 03801

SC-5.05

Owner's Liability Insurance:

Delete paragraph 5.05 of the General Conditions in its entirety and insert the following in its place:

A. 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:

1. Bodily Injury:

Each Accident	\$ 2,000,000
Annual Aggregate	\$ 2,000,000

2. Property Damage:

Each Accident	\$ 2,000,000
Annual Aggregate	\$ 2,000,000

SC-5.07

Delete Section 5.07 in its entirety.

SC - 5.08

Delete section 5.08 in its entirety.

ARTICLE 6. CONTRACTOR'S RESPONSIBILITIES

SC-6.05

Substitutes and "Or Equals":

Add the following new subparagraphs immediately after Subparagraph 6.05.A.2.d.:

- e. The application for review of a substitute shall be on the Contractor's Application for Consideration of Substitution form provided in Section 01250 of the Project Manual and shall be included with the submittal. The Installation List included with the Application shall include only installations of the proposed substitute in applications of approximately the same size and complexity, and the same design as those proposed to be furnished for this Project. Include in the Installation List, as a minimum, the owner's name, address, and telephone number, Engineer's name, address and telephone number, location and name of project, installation date, startup date, and date of final acceptance by owner; and application of material or equipment.
- f. If the experience indicated by the Installation List does not demonstrate at least five years of successful operation of the proposed substitute item, Owner may require Contractor and Supplier to furnish, at Contractor's expense, a special performance guarantee with surety bond as required by Paragraph 6.05.D of the General Conditions with respect to the substitute. Only the time period between final acceptance of the proposed material or equipment on the referenced project and the Bid date for this Project will count towards the required satisfactory experience of the proposed substitute item. Engineer will be the sole judge of acceptability of experience, time credited, and whether the special performance guarantee will be required for a substitute item. Engineer will notify Contractor which proposed substitute(s) will require a special performance guarantee and surety bond.

SC-6.05

Substitutes and "Or Equals":

Add the following new paragraphs immediately after Paragraph 6.05.F.:

- "1. When a substitute item of material or equipment is proposed by Contractor and accepted by Engineer, and the substitution will require a change in any of the Contract Documents to adapt the design to the proposed substitute, Contractor shall notify Engineer of the changes and be responsible for the costs involved to revise the design and to make modifications or changes to the construction, including the costs associated with the Work of other contractors due to such changes in design or space requirements.
 - a. Redesign and drawing revisions will be prepared by Engineer and Contractor shall reimburse Owner for charges of Engineer for redesign and drawing preparation.

b. Reimbursement of Engineer shall be based on Engineer's direct labor costs, indirect labor costs, profit on the total labor, and any direct non-labor expenses such as travel or per diem."

SC-6.06

Concerning Subcontractor's, Suppliers, and Others:

Renumber subparagraph 6.06F to 6.06G and subparagraph 6.06G to 6.06H and add new subparagraph as follows:

"F. 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-6.08

Permits:

Add the following language at the end of Paragraph 6.08 of the General Conditions:

"The following permits and/or licenses will be obtained by the Owner:

- a. NHDES Wetland Permit
- b. The Contractor shall obtain flagger, blasting, and excavation permits for construction of the project from the City of Portsmouth if required. Permit and inspection fees from the City of Portsmouth for this project have been waived. The Contractor will be required to comply with all conditions in the permits issued by the City of Portsmouth, including inspections. All costs associated with obtaining and complying with permits issued by the City of Portsmouth (other than permit fees, which are waived for this project) shall be included in the Contractor's bid price for the project."

SC-6.16

Emergencies:

Add the following new paragraph immediately after Paragraph 6.16.A.:

"B. In emergencies affecting the safety or protection of persons or property or maintenance of temporary construction at the Site or adjacent thereto, and Contractor cannot be reached, Owner may act to attempt to prevent threatened damage, injury, or loss. Owner will give Contractor and Engineer prompt written notice of such action and the cost of the

correction or remedy shall be charged against Contractor. A Change Order will be issued to document the change in Contract Price."

SC-6.17

Shop Drawings and Samples:

Add the following new paragraphs immediately after Paragraph 6.17.E.:

- "F. Contractor shall furnish required submittals with sufficient information and accuracy in order to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing subsequent submittals of Shop Drawings, samples, or other items requiring approval and Contractor shall reimburse Owner for Engineer's charges for such time.
- G. After Engineer has reviewed and approved a Shop Drawing or Sample, Contractor shall provide the material or equipment approved. Engineer will not review subsequent submittals of a different manufacturer or Supplier unless Contractor provides sufficient information to Engineer that the approved material or equipment is unavailable, time of delivery will delay the construction progress but not as a result of Contractor's failure to timely pursue the Work or to coordinate various activities properly, or Owner requests a different manufacturer or Supplier."

SC-6.19

Contractor's General Warranty and Guarantee

Add the following new paragraph prior to Article 6.19, Paragraph A of the General Conditions:

A. The Contractor warrants the Work for a period of one year from substantial completion of the entire project or a part thereof, unless a longer warranty is specified for a particular item or element of the project, in which case the longer warranty period shall govern.

ARTICLE 7. OTHER WORK

SC-7.04

Add the following new paragraph at the end of Article 7 of the General Conditions:

"7.04 Damages to the Work or Property:

A. 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 arbitration 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 arbitration 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 arbiter which seeks to impose liability on or to recover damages from Owner, Engineer, or Engineer's Consultants, on such damage 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 12. 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 8. OWNER'S RESPONSIBILITIES

SC-8.06

Insurance

Delete paragraph 8.06 of the General Conditions in its entirety.

ARTICLE 9. ENGINEER'S STATUS DURING CONSTRUCTION

SC-9.03

Project Representative:

Add the following new paragraphs immediately after Paragraph 9.03.A.:

"1. ENGINEER will furnish a Resident Project Representative to assist ENGINEER in observing the performance of the Work. The duties and responsibility of the Resident Project Representative will be as enumerated in a document entitled "Duties, Responsibilities, and Limitations of the Authority of Resident Project Representative" and will be made available to CONTRACTOR at the start of his work."

SC-9.10

Add the following new paragraph immediately after Paragraph 9.10.A.:

"B. In the event Engineer and/or Owner determines that Contractor's safety plans, programs, and procedures do not provide adequate protection for Engineer and/or Owner, Engineer and/or Owner may direct its employees to leave the Project Site or implement additional safeguards for Engineer's protection. If taken, these actions will be in furtherance of Engineer and/or Owner's responsibility to its own employees only, and Engineer and/or Owner will not assume any responsibility for protection of any other persons affected by the Work. In the event Engineer and/or Owner observes situations which appear to have potential for immediate and serious injury to persons, Engineer may warn the persons who appear to be affected by such situations. Such warnings, if issued, shall be given based on general humanitarian concerns, and Engineer and/or Owner will not, by the issuance of any such warning, assume any responsibility to issue future warnings or any general responsibility for protection of persons affected by the Work."

ARTICLE 10 - CHANGES IN THE WORK; CLAIMS

SC-10.01

Authorized Changes in the Work:

Add the following new subparagraph immediately after Paragraph10.01.B.:

"1. By submission of a Claim Contractor certifies that the claim is made in good faith, that the supporting data are accurate and complete to the best of Contractor's knowledge and belief, and that the amount or time requested accurately reflects the Contract adjustment for which Contractor believes Owner is liable."

ARTICLE 11. COST OF THE WORK; CASH ALLOWANCES; UNIT PRICE WORK

SC-11.01

Cost of the Work:

In the second sentence of Paragraph 11.01.A.1, delete the word "superintendents."

SC-11.01

Cost of the Work:

In Paragraph 11.01.B.1 add "superintendents" after "engineers" in the first sentence.

SC-11.02

Allowances:

In Paragraph 11.02.B.1.b, add "Except where Contractor's costs are allowed in the description of the bid item in Section 01151 - Measurement and Payment," prior to the first sentence.

SC-11.03

Unit Price Work:

Delete Paragraph 11.03.D. in its entirety and insert the following in its place:

- "D. The unit price of an item of Unit Price Work shall be subject to reevaluation and adjustment under the following conditions:
 - 1. If the Bid price of a particular item of Unit Price Work amounts to 5 percent or more of the Contract Price and the variation in the quantity of that particular item of Unit Price Work performed by Contractor differs by more than 25 percent from the estimated quantity of such item indicated in the Agreement.
 - 2. If there is no corresponding adjustment with respect to any other item of Work.
 - 3. If Contractor believes that Contractor has incurred additional expense as a result thereof or if Owner believes that the quantity variation entitles Owner to an adjustment in the unit price, either Owner or Contractor may make a claim for an adjustment in the Contract Price in accordance with Article 10 if the parties are unable to agree as to the effect of any such variations in the quantity of Unit Price Work performed."

ARTICLE 12. CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

SC-12.01

Change of Contract Price:

Delete paragraph 12.01.C.1 of the General Conditions in its entirety.

SC-12.02

Change of Contract Times:

Add the following new paragraph immediately after Paragraph 12.02.B.:

C. Time extensions provided under Paragraph 12.03 of the General Conditions will only be allowed for controlling items of Work (critical path).

SC-12.03

Delete Paragraph 12.03.B in its entirety and insert the following in its place:

"B. If OWNER, ENGINEER, or other contractors or utility owners performing other work for the OWNER as contemplated by Article 7, or anyone for whom OWNER is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then CONTRACTOR shall be entitled to an equitable adjustment in the Contract Times. CONTRACTOR's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to CONTRACTOR's ability to complete the Work with the Contract Times. Such an adjustment shall be CONTRACTOR's sole and exclusive remedy for the delays described in this Paragraph 12.02.B."

ARTICLE 14. PAYMENTS TO CONTRACTOR AND COMPLETION

SC-14.02

Progress Payments:

Add new paragraphs immediately after paragraph 14.02A.3 of the General Conditions to read as follows:

- 4. Equipment accepted for delivery at the site or at a local bonded warehouse and included in progress estimates in advance of actual requirement will be subject to all conditions stated below.
- 5. Equipment will not be included in progress estimates until the following requirements have been fulfilled.
 - a. The Contractor must present an invoice to the Engineer for each item of equipment he is requesting payment for. The invoice must be broken down to show the costs for the actual equipment, and reasonable costs for O&M Manuals, spare parts, start-up certification, training, testing, final acceptance testing, and any other services required by Contract.
 - b. Sufficient monies have been allocated in the payment requisition line items to cover all of the costs listed in "a" above, plus the costs of physically installing the equipment.
 - c. The equipment has been submitted and accepted for use in this Project.
 - d. The equipment is acceptably stored and protected. Storage in a bonded warehouse will require proof of bonding, and insurance coverage specifically for the item being stored.

- e. The manufacturer's short and/or long term storage requirements have been received by the Engineer, prior to payment.
- f. The Contractor has established a program to implement the manufacturer's required storage procedures. Said program to consist of at the very least a written schedule of daily, weekly, monthly, etc., routine maintenance requirements for each piece of equipment. A copy of this schedule to be presented to the Engineer prior to each requisition submittal, signed by the Contractor, stating that the required maintenance has been performed.
- g. Signed, notarized Title Transfers, format to be furnished by the Engineer, must be furnished for each item of equipment.
- 6. When the above have been complied with to the satisfaction of the Engineer, payment will be authorized for the full invoice values of the item of equipment, less normal retainage and less all costs for O&M Manuals, spare parts, start-up certification, training, testing, final acceptance testing, and installation.

SC-14.02

Progress Payments:

Amend Paragraph 14.02.C.1. by striking out the words "Ten days" and inserting the words "Forty five days" in their place.

ARTICLE 16. DISPUTE RESOLUTION

SC-16.01

Methods and Procedures:

Add a new sentence at the end of paragraph 16.01A of the General Conditions which is to read as follows:

"D. 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."

ARTICLE 17. MISCELLANEOUS

SC-17.06

Delete paragraph 17.06 in its entirety and replace with the following:

"17.06 Headings:

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-17.07

Add new paragraph immediately after paragraph 17.06 of the General Conditions as follows:

"17.07 Legal Address of Contractor:

A. Contractor's business address and his office at or near the site of the Work are both hereby designated as places to which communications shall be delivered. The depositing of any letter, notice, or other communication in a postpaid wrapper directed to the Contractor's business address in a post office box regularly maintained by the Post Office Department or the delivery at either designated address of any letter, notice, or other communication by mail or otherwise shall be deemed sufficient service thereof upon Contractor, and the date of such service shall be the date of receipt. The first-named address may be changed at any time by an instrument in writing, executed and acknowledged by Contractor and delivered to Engineer. Service of any notice, letter, or other communication upon the Contractor personally shall likewise be deemed sufficient service."

END OF SECTION

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SECTION 00900

FEDERAL PROVISIONS, RULES, REGULATIONS AND FORMS TABLE OF CONTENTS

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Pertinent Federal Acts and Provisions

The Contractor shall comply with the regulations of the Davis-Bacon Act, the Contract Work Hours Standards Act, Executive Order 11246 (Federal Equal Employment Opportunity), and Title X of the Clean Air Act Amendments of 1990 (Disadvantage Business Enterprise), and any amendments or modifications thereto. The Contractor shall cause appropriate provisions to be inserted in subcontracts to ensure compliance with the above acts by all Subcontractors, as applicable.

The Contractor shall comply with the American Iron and Steel requirements of the Water Resources Reform and Development Act of 2014, the Consolidated Appropriations Act of 2014 (Public Law 113-76), and subsequent laws that continue the requirement for the use of American Iron and Steel products in State Revolving Fund construction projects.

The Contractor shall comply with Subpart B and Subpart C of 2 CFR Part 180 and 2 CFR Part 1532. By entering into this contract, the contractor certifies that neither the contractor's firm, nor any person or firm who has an interest in the contractor firm, is a debarred or suspended person or firm. Furthermore, by entering into this contract, the contractor certifies that no part of this contract will be subcontracted to a debarred or suspended person or firm. Contractors may access the federal government's Excluded Parties List System for verification of excluded parties at the following website: http://www.sam.gov.

The Contractor shall comply with prohibition on certain telecommunications and video surveillance services or equipment. This term and condition implements 2 CFR 200.216 and is effective for obligations and expenditures of EPA financial assistance funding on or after 8/13/2020. As required by 2 CFR 200.216, EPA recipients and subrecipients, including borrowers under EPA funded revolving loan fund programs, are prohibited from obligating or expending loan or grant funds 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 as a substantial or essential component of any system, or as critical technology as part of any system. As described in Public Law 115-232, section 889, covered telecommunications equipment is telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities). Recipients, subrecipients, and borrowers also may not use EPA funds to purchase:

- a. For the purpose of public safety, security of government facilities, physical security surveillance of critical Page 4 of 29 infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).
- b. Telecommunications or video surveillance services provided by such entities or using such equipment.
- c. Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

Consistent with 2 CFR 200.471, costs incurred for telecommunications and video surveillance services or equipment such as phones, internet, video surveillance, and cloud servers are allowable except for the following circumstances:

- a. Obligating or expending EPA funds for covered telecommunications and video surveillance services or equipment or services as described in 2 CFR 200.216 to:
 - (1) Procure or obtain, extend or renew a contract to procure or obtain;
 - (2) Enter into a contract (or extend or renew a contract) to procure; or
 - (3) Obtain the equipment, services, or systems. Certain prohibited equipment, systems, or services, including equipment, systems, or services produced or provided by entities identified in section 889, are recorded in the System for Award Management exclusion list.

Links for more Information

- U.S.DOL Prevailing Wage Resources
- General Wage Determinations
- U.S. DOL Certified Payroll Form WH-347
- WH-1321 "Employee Rights Under the Davis-Bacon Act" poster
- EPA's DBE Resources
- NHDOT Certified Disadvantaged Business Enterprise (DBE) Directory
- EPA American Iron and Steel (AIS) Requirement Guidance and Questions and Answers website
- AIS Approved National Waivers
- Sole Source Aquifers (SDWA)
- Protection and Enhancement of the Cultural Environment (1971)
- Fish and Wildlife Coordination Act
- Migratory Bird Treaty Act of 1918
- Systems for Award Management exclusion list

CONTRACTOR'S PAYROLL CERTIFICATION

AND

AMERICAN IRON AND STEEL CERTIFICATION

PUBLIC LAW: 113-76

This form will be submitted with each disbursement request.						
Project Name:	Project Number:					
Project Location:						
Contractor Name:						
Contractor Address:						
Street # and name	City/Town	State	ZIP			
Payment Application #	Payment Application End Date					
I hereby certify that all of the contract requirements as specified under the Labor Standards Provision for Federal and Federally Assisted Contracts have been complied with by the above named Contractor, and by each Subcontractor employing Laborers or Mechanics at the site of the work, or there is an honest dispute with respect to the required provisions. I hereby certify that the "American Iron and Steel" provisions of the Water Resources Reform and Development Act of 2014, the Consolidated Appropriations Act of 2014 (Public Law 113-76), and subsequent laws that continue the requirement for the use of American Iron and Steel products in State Revolving Fund construction projects as applicable, have been met, and that all iron and steel used in the project named above have been produced in the United States in a manner that complies with American Iron and Steel Requirements, and/or that applicable EPA-approved waivers have been obtained to comply with American Iron and Steel requirements.						
Contractor Signature:	Printed Name:					
Title:	Date:					

NOTICE TO LABOR UNIONS OR OTHER ORGANIZATIONS OF WORKERS NONDISCRIMINATION IN EMPLOYMENT

PUBLIC LAW: 41 CFR Part 60-1.4(b)-3.1

THIS DOCUMENT MUST BE COMPLETED BY THE SUCCESSFUL BIDDER AND BOUND IN THE EXECUTED CONTRACT

0 0 0	ntract or understanding, a notice to be provided advising the or's commitments under this section, and shall post copies of applicants for employment. To
undersigned currently holds contract(s) with	(Union or Organization). The(Applicant) involving
funds or credit of the U.S. Government or (a) subcontract(s)	, , , ,
of race, color, religion, national origin, sexual orientation or employment includes, but is not limited to, the following HIRING, PLACEMENT, UPGRADING, TRANSFER, OR DEMOTIC	3665 dated April 8, 2014 and Executive Order 13672 dated against any employee or applicant for employment because gender identity. This obligation not to discriminate in ON RECRUITMENT, ADVERTISING, OR SOLICITATION FOR PAY OR OTHER FORMS OF COMPENSATION, SELECTION FOR
Contractor Subcontractor	
Signature:	Printed Name:
Title:	Date:
COPIES OF THIS NOTICE WILL BE POSTED BY THE ABOVE SIG	GNED IN CONSPICUOUS PLACES AVAILABLE TO EMPLOYEES

Peirce Island Road Resiliency Project

EQUAL EMPLOYMENT OPPORTUNITY REQUIREMENTS (E011246)

(Executive Order 11246, as amended)

The Contractor shall comply with the equal opportunity requirements of Executive Order 11246, as amended, and as supplemented by 41 CFR Part 60, including the Equal Opportunity Clause at 41 CFR Part 60-1.4(b), and specific affirmative action obligations required by the Standard Federal Equal Employment Opportunity Construction Contract Specifications, as set forth in 41 CFR Part 60-4.

A. Equal Opportunity Clause (41 CFR Part 60-1.4(b))

During the performance of this contract, the contractor agrees as follows:

- 1. The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.
- 2. The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.
- 3. The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.
- 4. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- 5. The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
- 6. The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

- 7. In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.
- 8. The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance:

 Provided, however*, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the contractor may request the United States to enter into such litigation to protect the interests of the United States.
- B. Federal Equal Employment Opportunity Construction Contract Specifications (41 CFR Part 60-4.3)
 - 1. As used in these specifications:
 - a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;
 - b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;
 - c. "Employer identification number" means the Federal Social Security number used on the employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.
 - d. "Minority" includes:
 - (i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
 - (ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);
 - (iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands); and
 - (iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).
 - 2. Whenever the Contractor, or any subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000.00 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.
 - 3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it

has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

- 4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7a through p of these specifications. The Goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered Construction Contractors performing construction work in geographical areas where they do not have a Federal or federally-assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the *Federal Register* in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.
- 5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.
- 6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.
- 7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:
 - a. Ensure and maintain a working environment free of harassment, intimidation and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.
 - b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organization responses.
 - c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefore, along with whatever additional actions the Contractor may have taken.
 - d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligation.

- e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.
- f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.
- g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with on-site supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.
- h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to an discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.
- i. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students, and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.
- j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's work force.
- k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.
- I. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.
- m. Ensure that seniority practices, job classifications, work assignments and other personnel practices do not have a discriminatory effect by continually monitoring all personnel and employment-related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.
- n. Ensure that all facilities and company activities are non-segregated, except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.
- Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.
- p. Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

- 8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these Specifications provided that the Contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female work force participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.
- 9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner
- 10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.
- 11. The Contractor shall not enter into any subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.
- 12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.
- 13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.
- 14. The Contractor shall designate a responsible official to monitor all employment-related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, Contractors shall not be required to maintain separate records.
- 15. Nothing herein provided shall be construed as a limitation upon application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

CERTIFICATION OF NONSEGREGATED FACILITIES

Public Law: 41 CFR 60 (a) §60-1.8

APPLICABLE TO FEDERALLY ASSISTED CONSTRUCTION CONTRACTS AND RELATED SUBCONTRACTS EXCEEDING \$10,000 WHICH ARE NOT EXEMPT FROM THE EQUAL OPPORTUNITY CLAUSE.

THIS DOCUMENT MUST BE COMPLETED BY THE SUCCESSFUL BIDDER AND BOUND IN THE EXECUTED CONTRACT.

The federally assisted construction contractor certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained.

The federally assisted construction contractor certifies that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, sexual orientation, gender identity, or national origin cannot result.

The federally assisted construction contractor agrees that a breach of this certification is a violation of the Equal Opportunity clause in this contract.

As used in this certification, the term "segregated facilities" means any waiting rooms, work area, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, sex, sexual orientation, gender identity or national origin, because of habit, local custom, or otherwise.

The federally assisted construction contractor agrees that (except where he had obtained identical certifications from proposed subcontractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity clause, and that he will retain such certification in his files

Contractor	Subcontractor	
Signature:		Printed Name:
Title:		Date:

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

Disadvantaged Business Enterprises Rule- Program Requirements

Purpose: The Environmental Protection Agency (EPA) rule titled "Participation by Disadvantaged Business Enterprises in United States Environmental Protection Agency Programs", at 40 CFR Part 33 (DBE Rule), sets forth an EPA program that serves the compelling government interest to increase and encourage the utilization and participation of Disadvantaged Business Enterprises (DBEs) in procurements funded by EPA assistance agreements. Because the New Hampshire State Revolving Fund (SRF) Loan Programs receive funding from EPA, the DBE rule requirements apply to all SRF funded projects.

State Revolving Fund loan recipients and their contractors must comply with the following DBE Rule requirements throughout the SRF loan project period:

- 1. Good Faith Efforts.
- 2. Annual Reporting of MBE/WBE accomplishments (for projects that exceed \$250,000.
- 3. Contract Administration Requirements.
- 4. Bidders List Requirements.
- 5. Other Reporting.

The NHDES SRF programs must ensure that contracts and subcontracts that are funded with SRF loans comply with these federal requirements and must report to EPA on DBE accomplishments.

1. Good Faith Efforts

The Contractor shall make the following good faith efforts whenever procuring construction, equipment, services and supplies:

- a. Ensure DBEs are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities; including placing DBEs on solicitation lists and soliciting them whenever they are potential sources.
- b. Make information on forthcoming opportunities available to DBEs and arrange time frames for contracts and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process. This includes, whenever possible, posting solicitation for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.
- c. Consider in the contracting process whether firms competing for large contracts could be contracted with DBEs. This will include dividing total requirements when economically feasible into smaller tasks or quantities to permit maximum participation by DBEs in the competitive process.
- d. Encourage contracting with a consortium of DBEs when a contract is too large for one of these firms to handle individually.
- e. Use the services and assistance of the Small Business Administration and the Minority Business Development Agency of the U. S. Department of Commerce.
- f. Contractor shall maintain all records documenting Contractor's compliance with the requirements of 40 CFR Part 33, including documentation of Contractor's good faith efforts. Such records shall be provided to Owner upon request.

2. Annual Reporting of MBE/WBE Accomplishments

The Owner is required to report MBE/WBE utilization accomplishments to NHDES by October 15 of each year. The Contractor shall keep records of its MBE/WBE utilization, and prepare periodic reports in a timely manner as requested by the Owner to allow the Owner to complete and submit the required annual MBE/WBE reports to NHDES by the October 15 deadline. Contractor's utilization reports shall include the following for all MBE/WBE costs incurred in the reporting period (i.e., the October 1 through September 30 federal fiscal year):

- a. Name, address and telephone number of MBE/WBE
- b. Business enterprise status (MBE or WBE)

- c. Dollar value of cost(s) (Amount(s) paid to MBE/WBE in reporting period)
- d. Date(s) of cost(s) (Date(s) of payment(s) to MBE/WBE, mm/dd/yyyy)
- e. Type of product or services (Construction/Supplies/Services/Equipment)

Note that only costs incurred with certified MBE/WBE's are counted as MBE/WBE accomplishments.

{NOTE TO ENGINEER: This annual reporting requirement may not apply if the total funding budgeted for the project does not exceed \$250,000. Contact NHDES for guidance if you think this reporting requirement may not apply to your project}

3. Contract Administration Requirements

The Contractor shall:

- a. Pay all subcontractors for satisfactory performance no more than 30 days from the prime contractor's receipt of payment from the loan recipient.
- b. Notify Owner in writing prior to the termination of any DBE subcontractor for Contractor's convenience.
- c. Employ the good faith efforts when soliciting a replacement subcontractor if a DBE subcontractor fails to complete work under the subcontract for any reason.
- d. Employ the good faith efforts even if the prime contractor has achieved its fair share objective
- e. Comply with the following term and condition, as required by 40 CFR, Section 33.106:

The contractor shall not discriminate on the basis of race, color, national origin or sex in the performance of this contract. The contractor shall carry out applicable requirements of 40 CFR Part 33 in the award and administration of contracts awarded under EPA financial assistance agreements. Failure by the contractor to carry out these requirements is a material breach of this contract which may result in the termination of this contract or other legally available remedies. (Appendix A to 40 CFR Part 33—Term and Condition)

4. Bidders List Requirements

The Owner is required to maintain a bidders list in accordance with 40 CFR Section 33.501, and the Contractor shall provide bidders list information to the Owner for Owner's use in complying with this requirement. The Contractor shall maintain a Bidders List, which must include all firms that bid or quote on subcontracts under this Contract, including both MBE/WBEs and non-MBE/WBEs.

The Bidders List shall include the following information for all subcontractors who submit bids or quotes for subcontract work:

- (a) Entity's name with point of contact;
- (b) Entity's mailing address, telephone number, and e-mail address;
- (c) The procurement on which the entity bid or quoted, and when; and
- (d) Entity's status as an MBE/WBE or non-MBE/WBE.

6. Other Reporting

a. DBE Subcontractor Performance and Utilization Forms

The Bidder shall submit with its bid completed DBE Subcontractor Performance Forms NHDES W-09-58(formally EPA Form 6100-3), and DBE Subcontractor Utilization Form NHDES W-09-59(formally EPA Form 6100-4). The Owner is required to submit these forms to NHDES when requesting authorization to award the construction contract.

DBE Subcontractor Participation form

The contractor shall provide a copy of the DBE Subcontractor Participation Form NHDES-W-09-57 (formally EPA Form 6100-2) to each of its DBE subcontractors.

c. Bidders List Reporting

The Contractor shall provide the updated Bidders List to the Owner periodically upon Owner's request, and at project substantial completion.

American Iron and Steel

The Water Resources Reform and Development Act of 2014, the Consolidated Appropriations Act of 2014 (Public Law 113-76), and subsequent laws that continue the American Iron and Steel requirements of Public Law 113-76 include "American Iron and Steel (AIS)" requirements for the Clean Water and Drinking Water State Revolving Fund (SRF) programs. Under these laws, all Clean Water and Drinking Water SRF funded construction, alteration, maintenance, or repair of public water systems or treatment works projects must use iron and steel products that are produced in the United States. The Contractor shall comply with these AIS requirements.

1. EPA AIS Guidance

<u>EPA's State Revolving Fund American Iron and Steel Requirement</u> website includes detailed information on American Iron and Steel requirements and waivers.

The paragraphs in *italics* below are excerpts from the EPA AIS guidance available at the EPA website. Words in plain text are clarifications added by NHDES.

(a) Iron and Steel Products [5]

An iron or steel product is one of the following made primarily of iron or steel that is permanently incorporated into the project:

- Lined or unlined pipes and fittings.
- Manhole covers.
- Municipal castings (defined in more detail below).
- Hydrants.
- Tanks.Flanges.
- Pipe clamps and restraints.
- Valves.
- Structural steel (defined in more detail below).
- Reinforced precast concrete and.
- Construction materials (defined in more detail below).

(b) Permanently Incorporated into the Project⁶

Only items on the above list made primarily of iron or steel, permanently incorporated into the project must be produced in the US. 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.

(c) Primarily Iron or Steel⁷

Primarily iron or steel places constraints on the list of products above. For one of the listed products to be considered subject to the AIS requirements, it must be made of greater than 50% iron or steel, measured by cost. The cost should be based on the material costs.⁸

⁵ EPA guidance dated March 20, 2014, Question 11.

⁶ EPA guidance dated March 20, 2014, Question 18.

⁷ EPA guidance dated March 20, 2014, Question 12.

⁸ See example at EPA guidance March 20, 2014, Question 13.

(d) If a product is composed of more than 50% iron or steel, but is not listed in the above list of items, must the item be produced in the US? Alternatively, must the iron or steel in such a product be produced in the US?

The answer to both question is no. Only items on the above list must be produced in the US. Additionally, the iron or steel in a non-listed item can be sourced from outside the US.

(e) Steel 10

Steel means an alloy that includes at least 50 percent iron, between .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.

(f) Production in the United States¹¹

Production in the United States of the iron or steel products used in the project requires that all manufacturing processes¹², including application of coatings, must take place in the United States, with the exception of metallurgical processes involving refinement of steel additives. All manufacturing processes includes processes such as melting, refining, forming, rolling, drawing, finishing, fabricating and coating*. Further, if a domestic iron and steel product is taken out of the US 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 AlS 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.

* External Coatings Applied Outside of the United States¹³

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.

The exemption above 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.

(g) Municipal Castings¹⁴

Municipal castings are 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 surface infrastructure. They are typically made of grey or ductile iron, or steel. Examples of municipal castings are: Access Hatches:

- Ballast Screen;
- Benches (Iron or Steel);
- Bollards;

- Cast Bases:
- Cast Iron Hinged Hatches, Square and Rectangular;
- Cast Iron Riser Rings;
- Catch Basin Inlet;
- Cleanout/Monument Boxes;

⁹ EPA guidance dated March 20, 2014, Question 14.

¹⁰ EPA guidance dated March 20, 2014, Question 15.

¹¹ EPA guidance dated March 20, 2014, Question 16.

¹² Assembly and all other steps in the manufacturing process must take place in the US, except metallurgical processes involving refinement of steel additives in accordance with the EPA guidance dated March 20, 2014, Question 23]. There is also an additional exception for application of exterior coating.

¹³ EPA guidance dated March 16, 2015, Q/A No. 6.

¹⁴ EPA guidance dated March 20, 2014, Question 19.

- Construction Covers and Frames:
- Curb and Corner Guards;

(g) Municipal Castings (Cont.)

- Curb Openings;
- Detectable Warning Plates;
- Downspout Shoes (Boot, Inlet);
- Drainage Grates, Frames and Curb Inlets;

- Inlets:
- Junction Boxes:
- Lampposts;
- Manhole Covers, Rings and Frames, Risers;
- Meter Boxes;
- Service Boxes;

- Steel Hinged Hatches, Square and Rectangular;
- Steel Riser Rings;
- Trash receptacles;
- Tree Grates:
- Tree Guards;
- Trench Grates; and
- Valve Boxes, Covers and Risers.

(h) Structural Steel15

Structural steel is 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 H-piles, sheet piling, tie plates, cross ties, and those for other special purposes.

(i) Construction Materials¹⁶

Construction materials are those articles, materials, or supplies made primarily of iron and 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". This includes, but is not limited to, the following products: wire rod, bar, angles, concrete reinforcing bar, wire, wire cloth, wire rope and cables, tubing, framing, joists, trusses, fasteners (i.e., nuts and bolts), welding rods, decking, grating, railings, stairs, access ramps, fire escapes, ladders, wall panels, dome structures, roofing, ductwork, surface drains, cable hanging systems, manhole steps, fencing and fence tubing, guardrails, doors, and stationary screens.

[As noted above, ductwork is considered a "construction material" and must comply with the AIS requirements. Steel dampers, grilles and registers that are a permanently incorporated part of the ductwork are also subject to the AIS requirements.]

(j) Construction Materials (Additional Guidance¹⁷)

The AIS requirements include a list of specifically covered products, one of which is construction materials, a broad category of potential products. For construction materials, EPA's AIS guidance includes a set of example items that it considers construction materials composed primarily of iron and steel and covered by the Act. This example list in the guidance is not an all-inclusive list of potential construction materials. However, the guidance also includes a list of items that EPA specifically does not consider construction materials, generally those of electrical or complex-mechanical nature. If a product is similar to the ones in the non-construction material list (and it is also not specifically listed by the Act), it is not a construction material. For all other items specifically included in the Act, coverage is generally self-evident.

(k) Items that are not Construction Materials¹⁸

Mechanical and electrical components, equipment and systems are not considered construction materials. Mechanical equipment is typically that which has motorized parts and/or is powered by a motor. Electrical equipment is typically any machine powered by electricity and includes components that are part of the electrical distribution system.

¹⁵ EPA guidance dated March 20, 2014, Question 20.

¹⁶ EPA guidance dated March 20, 2014, Question 21.

¹⁷ EPA guidance dated September 10, 2014, Q/A No. 10.

¹⁸ EPA guidance dated March 20, 2014, Question 22.

The following examples (including their appurtenances* necessary for their intended use and operation) are NOT considered construction materials: pumps, motors, gear reducers, drives (including variable frequency drives (VFDs)), electric/pneumatic/manual accessories used to operate valves (such as electric valve actuators), mixers, gates (i.e., common sluice and slide gates), motorized screens (such as traveling screens), blowers/aeration equipment**, compressors, meters***), sensors, controls and switches, supervisory control and data acquisition (SCADA), membrane bioreactor systems, membrane filtration systems, filters, clarifiers and clarifier mechanisms, rakes, grinders, disinfection systems, presses (including belt presses), conveyors, cranes, HVAC (excluding ductwork), water heaters, heat exchangers, generators, cabinetry and housings (such as electrical boxes/enclosures), lighting fixtures, electrical conduit, emergency life systems, metal office furniture, shelving, laboratory equipment, analytical instrumentation, and dewatering equipment.

- * If products come from one manufacturer and are shipped together as a system, then this is generally considered a "packaged system" and those items used to connect the system are appurtenances. However, if the borrower or contractor must purchase items to connect the system (valves, piping, etc.) separately from another manufacturer, then these items would need to be domestic, or otherwise obtain a waiver.¹⁹
- **Aerators, similar to pumps, are mechanical equipment that do not need to meet the AIS requirements. "Blowers/aeration equipment, compressors" are listed in EPA's guidance as non-construction materials.²⁰
- *** "Meters" includes any type of meter, including: flow meters, wholesale meters, and water meters/service connections.²¹

(I) Assembled Products²²

AlS requirements only apply to the final product as delivered to the work site and incorporated into the project. Assemblies, such as a pumping assembly or a reverse osmosis package plant, are distinct products not listed and do not need to be made in the U.S. or composed of all U.S. parts. If a listed iron and steel product is used as a part for an assembled product that is nondomestic, the components, even if specifically listed in the Act, do not have to be domestically produced.

(m) Sluice and Slide Gates are not Valves, and are not Subject to AIS²³

Valves are products that are generally encased / enclosed with a body, bonnet, and stem. Examples include enclosed butterfly, ball, globe, piston, check, wedge, and gate valves. Furthermore, "gates" (meaning sluice, slide or weir gates) are listed in EPA's guidance as non-construction materials.

(n) Gate Valves are Subject to AIS²⁴

Valves are specifically listed in the Consolidated Appropriations Act of 2014 as an "iron and steel product" and therefore, absent a waiver, must be produced in the U.S. to be in compliance with the requirement if they are "primarily" iron and steel. Gates as referenced in the EPA March 20, 2014 guidance refer only to common sluice and slide gates, and not to gate valves.

(o) Reinforced Precast Concrete²⁵

While reinforced precast concrete may not be at least 50% iron or steel, in this particular case, the reinforcing bar and wire must be produced in the US and meet the same standards as for any other iron or steel product. Additionally, the

¹⁹ EPA AIS Refresher Webinar, December 15, 2016.

²⁰ EPA guidance dated September 10, 2014, Q/A No. 19 on aerators.

²¹ EPA guidance dated September 10, 2014, Q/A No. 14 on meters.

²² EPA guidance dated September 10, 2014, Q/A No. 11, AIS Refresher Webinar, December 15, 2016.

²³ EPA guidance dated September 10, 2014, Q/A No. 20.

²⁴ EPA guidance dated May, 30, 2014, Q/A No. 4.

²⁵ EPA guidance dated March 20, 2014, Question 24.

casting of the concrete product must take place in the US. 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 to be a construction material and must be produced in the US.

(p) Pre-stressed Concrete Cylinder Pipe²⁶

Pre-stressed concrete cylinder pipe (PCCP) or other similar concrete cylinder pipes would be comparable to pre-cast concrete which is specifically listed in the Consolidated Appropriations Act of 2014 as a product subject to the AIS requirement

(q) Valves and Actuators²⁷

Valves and actuators, while often purchased and shipped together, are two unique products that are manufactured separately and typically attached together during the final step of the process. Valves are included in the definition of "iron and steel products" in the AIS requirement. Actuators, whether manual, electric, hydraulic or pneumatic, are not listed as an "iron and steel product" under the AIS requirement of the Consolidated Appropriations Act of 2014, nor are they considered construction materials. Therefore, they do not need to be domestically produced in the U.S. in order to comply with the requirement.

(r) Electric Powered Motor Operated Valves²⁸

Electric powered motor operated valves are not excluded based on the valve being motorized equipment. The actuator, a motor that controls the valve, is considered a separate product, which is not listed as an "iron and steel product" under the AIS requirement of the Consolidated Appropriations Act of 2014, nor is it considered a construction material. Therefore, the actuator does not need to be domestically produced in the U.S. in order to comply with the requirement. See Q2 for further clarification.

(s) Tanks Used on Filtration Systems²⁹

Tanks that are specifically designed to be filters, or as parts of a filtration system, do not have to be domestically produced because these parts are no longer simply tanks, even if the filter media has not been installed and will be installed at the project site, as is customary to do for shipping purposes. These parts have only one purpose which is to be housing for filters and cannot be used in another fashion.

(t) Flanged Pipe³⁰

While the Consolidated Appropriations Act of 2014 does not specifically mention flanged pipe, since it does mention both pipe and flanges, both products would need to be domestically produced. Therefore, flanged pipe would also need to be domestically produced.

(u) Couplings, Expansion Joints, and other Similar Pipe Connectors³¹

These products would be considered specialty fittings, due to their additional functionality, but still categorized under the larger "fitting" categorization. Fittings are defined as a material that joins pipes together or connects to a pipe (AWWA,

²⁶ EPA guidance dated September 10, 2014, Q/A No. 2.

²⁷ EPA Q/A guidance dated May 30, 2014, Q/A No. 2.

²⁸ EPA guidance dated May 30, 2014, Q/A No. 3

²⁹ EPA guidance dated September 10, 2014, Q/A No. 4

³⁰ EPA guidance dated September 10, 2014, Q/A No. 5

³¹ EPA guidance dated September 10, 2014, Q/A No. 6

The Drinking Water Dictionary, 2000). Therefore, these products must comply with the AIS requirements and be produced domestically.

(v) Saddles and tapping Sleeves³²

These products are necessary for pipe repair, to tap a water main, or to install a service or house connection. Therefore, they are included under the larger "pipe restraint" category which is a specifically identified product subject to the domestic preference in the Consolidated Appropriations Act of 2014.

(w) Reused Items (i.e., existing pipe fittings, used storage tanks, reusing existing valves)³³

The AIS guidance does not address reuse of items. Reuse of items that would otherwise be covered by AIS is acceptable provided that the item(s) was originally purchased prior to January 17, 2014, the reused item(s) is not substantially altered from original form/function, and any restoration work that may be required does not include the replacement or addition of foreign iron or steel replacement parts. EPA recommends keeping a log of these reused items by including them on the assistance recipient's de minimis list, and stating therein that these items are reused products. The donation of new items (such as a manufacturer waiving cost for certain delivered items because of concerns regarding the origin of a new product) is not, however, considered reuse.

2. Certification

The Contractor, through its subcontractors, suppliers and manufacturers shall provide to the Owner written certification that all AIS materials provided for the project comply with the AIS requirements of the SRF programs, Manufacturer certification letters must include the following:

- Manufacturer name;
- SRF construction project name and location;
- A list of specific product(s) delivered to the project site;
- A statement that the product is in compliance with the American Iron and Steel requirement as mandated in EPA's SRF programs;
- The location of the foundry/mill/factory where the product was manufactured (City and State); and
- A signature by a manufacturer's responsible party.

EPA AIS guidance dated March 20, 2014 contains additional guidance on manufacturer certifications. <u>A sample</u> certification letter is included in this guidance.

3. Installation

All iron and steel products, as defined herein, shall be produced in the United States in accordance with the American Iron and Steel requirements of the Clean Water and Drinking Water State Revolving Fund programs. If a potentially non-compliant product is installed in the permanent work, the Contractor will be required to remove the non-domestic item from the project.

4. De Minimis Waiver

EPA's April 15, 2014 Nationwide Waiver for De Minimis incidental AIS components is part of this guidance, and is available for use on this project. Contractors who wish to use this waiver must consult with the Owner when determining the items to be covered by this waiver, and shall retain and provide to the Owner relevant documentation (i.e., invoices) for those items for the Owner's project files. The Contractor shall summarize in reports to the Owner: the types and/or categories of items to which this waiver is applied; the total cost of incidental components covered by the waiver for each type or category (including copies of invoices); and the calculations by which Contractor determined the total cost of materials used in and incorporated into the project. The Contractor shall include a complete and up-to-

³² EPA guidance dated September 10, 2014, Q/A No. 7

³³ EPA guidance dated September 10, 2014, Q/A No. 8

date <u>De Minimis Report</u> in each application for payment. The Contractor shall also provide the report to the Owner upon request.

(a) Fasteners under the De Minimis Waiver³⁴ []

There is no broad exemption for fasteners from the American Iron and Steel (AIS) requirements. Significant fasteners used in SRF projects are not subject to the de minimis waiver for projects and must comply with the AIS requirements. Significant fasteners include fasteners produced to industry standards (e.g., ASTM standards) and/or project specifications, special ordered or those of high value. When bulk purchase of unknown-origin fasteners that are of incidental use and small value are used on a project, they may fall under the national de minimis waiver for projects. The list of potential items could be varied, such as big-box/hardware-store-variety screws, nails, and staples. The key characteristics of the items that may qualify for the de minimis waiver would be items that are incidental to the project purpose (such as drywall screws) and not significant in value or purpose (such as common nails or brads). You can find further information on the EPA Website.

³⁴ EPA guidance dated September 10, 2014, Q/A No. 1

American Iron and Steel Manufacturer Example Certification

Date
Manufacturer Name Manufacturer Street Address City, State ZIP
RE: Project Name, Project Location
I,(Authorized Manufacturer Representative), certify that the following products and/or materials shipped/provided to the subject project are in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.
Item, Product and/or Materials
Manufacturing of the above items, products and/or materials took place at the following location(s):
Additionally, if any of the above compliance statements change while providing material to this project(Manufacturer) will immediatley notify
(Contractor) and the (Owner).
Manufacturer's Signature
Note: The signature must be by manufacturer's authorized responsible party, not the material distributor or supplier.

Manufacturer Certification Checklist

- ✓ Manufacturer name;
- ✓ SRF construction project name and location;
- ✓ A list of specific product(s) delivered to the project site;
- ✓ A statement that the product is in compliance with the American Iron and Steel requirement as mandated in EPA's SRF programs;
- ✓ The location of the foundry/mill/factory where the product was manufactured (City and State); and
- ✓ A signature by a manufacturer's responsible party.

American Iron and Steel Required Subcontract and Purchase Agreement Language

	ctor shall include in all contracts and purchase ct language:	agreements for this project the follow	ving American Iron and
are being fund Resources Rei laws that con that requires Requirement' represents an understands t been produce requirement i compliance w	(Subcontractor/Supplier) acknowledges to and lew Hampshire (State) that it understands the good led with monies that are subject to statutory requirement and Development Act of 2014, the Consolidate in the requirement for the use of American Ironall of the iron and steel products used in the project including iron and steel products provided under and warrants to and for the benefit of the Owner and the American Iron and Steel Requirement, (b) all of the American Iron and Steel Requirement, (b) all of the United States in a manner that complies with this paragraph, or information necessary to sufficient the Owner or the State."	Its and service under this contract or purchanirements commonly known as "American ted Appropriations Act of 2014 (Public Lawn and Steel products in State Revolving Furst to be produced in the United States ("Are this contract or Agreement. The Subcontract of the State that (a) the Subcontractor/Supfithe iron and steel products used in the provide any further verified information,	ase agreement (Agreement) Iron and Steel" (the Water 113-76), and subsequent ad construction projects); merican Iron and Steel tractor/Supplier hereby oplier has reviewed and oject will be and/or have ment, unless a waiver of the certification or assurance o



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY WASHINGTON, D.C. 20460

OFFICE OF WATER

DECISION MEMORANDUM

SUBJECT: De Minimis Waiver of Section 436 of P.L. 113-76, Consolidated Appropriations

Act (CAA), 2014

FROM: Nancy K. Stoner

Acting Assistant Administrator

The EPA is hereby granting a nationwide waiver pursuant to the "American Iron and Steel (AIS)" requirements of P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), section 436 under the authority of Section 436(b)(1) (public interest waiver) for de minimis incidental components of eligible water infrastructure projects. This action permits the use of products when they occur in de minimis incidental components of such projects funded by the Act that may otherwise be prohibited under section 436(a). Funds used for such de minimis incidental components cumulatively may comprise no more than a total of 5 percent of the total cost of the materials used in and incorporated into a project; the cost of an individual item may not exceed 1 percent of the total cost of the materials used in and incorporated into a project.

P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), includes an "American Iron and Steel" (AIS) requirement in section 436 that requires Clean Water State Revolving Loan Fund (CWSRF) and Drinking Water State Revolving Loan Fund (DWSRF) assistance recipients to use specific domestic iron and steel products that are produced in the United States if the project is funded through an assistance agreement executed beginning January 17, 2014 (enactment of the Act), through the end of Fiscal Year 2014, unless the agency determines it necessary to waive this requirement based on findings set forth in Section 436(b). The Act states, "[the requirements] shall not apply in any case or category of cases in which the Administrator of the Environmental Protection Agency...finds that—(1) applying subsection (a) would be inconsistent with the public interest" 436(b)(1).

In implementing section 436 of the Act, the EPA must ensure that the section's requirements are applied consistent with congressional intent in adopting this section and in the broader context of the purposes, objectives, and other provisions applicable to projects funded under the SRF. Water infrastructure projects typically contain a relatively small number of high-cost components incorporated into the project. In bid solicitations for a project, these high-cost components are generally described in detail via project specific technical specifications. For these major components, utility owners and their contractors are generally familiar with the conditions of availability, the potential alternatives for each detailed specification, the approximate cost, and the country of manufacture of the available components.

Every water infrastructure project also involves the use of thousands of miscellaneous, generally low-cost components that are essential for, but incidental to, the construction and are incorporated into the physical structure of the project. For many of these incidental components, the country of manufacture and the availability of alternatives is not always readily or reasonably identifiable prior to procurement in the normal course of business; for other incidental components, the country of manufacture may be known but the miscellaneous character in conjunction with the low cost, individually and (in total) as typically procured in bulk, mark them as properly incidental. Examples of incidental components could include small washers, screws, fasteners (i.e., nuts and bolts), miscellaneous wire, corner bead, ancillary tube, etc. Examples of items that are clearly not incidental include significant process fittings (i.e., tees, elbows, flanges, and brackets), distribution system fittings and valves, force main valves, pipes for sewer collection and/or water distribution, treatment and storage tanks, large structural support structures, etc.

The EPA undertook multiple inquiries to identify the approximate scope of de minimis incidental components within water infrastructure projects during the implementation of the American Reinvestment and Recovery Act (ARRA) and its requirements (Buy American provisions, specifically). The inquiries and research conducted in 2009 applies suitably for the case today. In 2009, the EPA consulted informally with many major associations representing equipment manufacturers and suppliers, construction contractors, consulting engineers, and water and wastewater utilities, and performed targeted interviews with several well-established water infrastructure contractors and firms who work in a variety of project sizes, and regional and demographic settings to ask the following questions:

- What percentage of total project costs were consumables or incidental costs?
- What percentage of materials costs were consumables or incidental costs?
- Did these percentages vary by type of project (drinking water vs. wastewater treatment plant vs. pipe)?

The responses were consistent across the variety of settings and project types, and indicated that the percentage of total costs for drinking water or wastewater infrastructure projects represented by these incidental components is generally not in excess of 5 percent of the total cost of the materials used in and incorporated into a project. In drafting this waiver, the EPA has considered the de minimis proportion of project costs generally represented by each individual type of these incidental components within the many types of such components comprising those percentages, the fact that these types of incidental components are obtained by contractors in many different ways from many different sources, and the disproportionate cost and delay that would be imposed on projects if the EPA did not issue this waiver.

Assistance recipients who wish to use this waiver should in consultation with their contractors determine the items to be covered by this waiver and must retain relevant documentation (i.e., invoices) as to those items in their project files.

If you have any questions concerning the contents of this memorandum, please contact Timothy Connor, Chemical Engineer, Municipal Support Division, at connor.timothy@epa.gov or (202) 566-1059 or Kirsten Anderer, Environmental Engineer, Drinking Water Protection Division, at anderer.kirsten@epa.gov or (202) 564-3134.

Issued on:

APR 15 2014

Approved by:

Nancy K. Stoner

Acting Assistant Administrator

NHDES-W-09-048-1



Public Law 113-76 Consolidated Appropriations Act

AMERICAN IRON AND STEEL DE MINIMIS TRACKING REPORT NHDES CLEAN WATER AND DRINKING WATER STATE REVOLVING FUND



De Minimis Waver Section 436

(To be submitted with each application for payment.)

Contractors who wish to use the AIS De Minimis waiver must consult with the owner when determining the items to be covered by this waiver, and shall retain and provide to the owner relevant documentation (i.e., invoices) for those items. The contractor shall

components determined	covered by the wa the total cost of m	aiver for ead aterials use	oes and/or categories ch type or category (i d in and incorporated application for paym	ncluding copies of d into the project.	invoices); and t The contractor	he calculations by shall include a co	which contractor mplete and up-to-
Owner:	Owner: Project Name:						
Contracto	or:			CWSRF/DWSRF F	Project #:		
☐ Yes. Pl	ontractor purcha ease continue to ease simply sign l	the next s	ed AIS materials tha ection.	t will be covered	d under this wa	iver?	
Total cost of materials incorporated into the project.			into the project.	De Minimis 5% Limit De Minimis 1% Lim		Limit	
☐ Yes ☐ No	— , , , , , , , , , , , , , , , , ,					livered for the	
Compon	ent Description	Date Added	County of Origin (if available)	Quantity (if applicable)	Cost Per Unit (if applicable)		How is cost documented ³⁵ ?
Total Cod	t of Do Minimis	Componer	ats				
Total Cos	Total Cost of De Minimis Components						
Contracto				Printed Nar	me:		

applicable tax. Contractor must provide sufficient documentation to support all costs included in this calculation.

NOTE: The De Minimis waiver is only applicable to the cost of materials incorporated into the project. Do not include other project costs (labor, installation costs, etc.) in the "Total Cost of Materials." The cost of a material must include delivery to the site and any

Date:

Title:

³⁵ Documentation must demonstrate confirmation of the components' actual costs (invoice etc.).



AMERICAN IRON AND STEEL PROJECT CERTIFICATION



NHDES CLEAN WATER AND DRINKING WATER STATE REVOLVING FUND

Public Law 113-76 Consolidated Appropriations Act

De Minimis Waver Section 436

This certification must be completed and signed by the authorized representative of the contractor, acknowledged by the authorized representative of the owner, and submitted to the New Hampshire Department of Environmental.

the authorized representative of the owner, and submitted to the New Hampshire Department of Environmental Services upon substantial completion of the project.

Project Name:			Town/ City/ Entity:			
Contractor	name:		CWSRF/DWSRF Project #	!:		
Contractor						
Address:	Street # and Nar	me	City/Town	State	ZIP	
I hereby cer	tify on behalf of	the above named contractor.	(Please check one of the	following and provide		
•	tion as necessary					
	,	•				
☐ That the	e "American Iron	and Steel" provisions of the \	Water Resources Reform a	and Development Act of	2014, the	
		s Act of 2014 (<u>Public Law 113</u> -		•		
		d Steel products in State Revo	•	·		
		en met and that all iron and st	· ·	•		
•	•	er that complies with the Ame		•		
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OR						
☐ That the	"American Iron	and Steel" provisions of the V	Vater Resources Reform a	nd Development Act of	2014. the	
		s Act of 2014 (Public Law 113-		•		
		d Steel products in State Revo	•			
		able to be met. Not all of the i				
•	•	es. Items that do not meet Al				
produced ii	Tino Omicoa otat		o roquii orriorito di o do roi	10 1101		
Attach all d	ocumentation in	cluding EPA-approved waivers	s for all iron and steel that	t do not meet the Iron a	nd Steel	
Requiremen		cidaling Li 7 approved waivers	o for all from and steel that	do not meet the hon a	id Steel	
Signature o						
•	Representitive:		Printed Name:			
Title:	rtopi oddiritivoi		Date:			
Acknowledge	ned by					
Authorized	,		Printed Name:			
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Title:			Date:			
				1		

NH Department of Environmental Services Federal Labor Standards Provisions

29 CFR 5.5(a)

Contract and Subcontract provisions

- (a) The Contractor shall insure that all sub contracts entered into for the actual construction, alteration and/or repair, including painting and decorating, of a treatment work under the CWSRF financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in § 5.1 or -FY 2015 Water Resource Reform and Development Act, contain the following clauses:
- (1) Minimum Wage (i) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in § 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (a)(1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers. Wage determinations may be obtained from the U.S. Department of Labor's website.
- (ii)(A) The Loan recipient, shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The State award official shall approve a request for an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:
- (1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and
 - (2) The classification is utilized in the area by the construction industry; and
- (3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.
- (B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the Loan recipient(s) agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), documentation of the action taken and the request, including the local wage determination shall be sent by the Loan recipient(s) to the State award official. The State award official will transmit the

request, to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210 and to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification request within 30 days of receipt and so advise the State award official or will notify the State award official within the 30-day period that additional time is necessary.

- (C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the Loan Recipient (s) do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the award official shall refer the request and the local wage determination, including the views of all interested parties and the recommendation of the State award official, to the Administrator for determination. The request shall be sent to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt of the request and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.
- (D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii)(B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.
- (iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.
- (iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided, that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside, in a separate account, assets for the meeting of obligations under the plan or program.
- (2) Withholding. The Loan recipient(s), shall upon written request of the Contracting Official or an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the (Agency) may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.
- (3) Payrolls and basic records. (i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain

written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

- (ii)(A) The contractor shall submit weekly, for each week in which any contract work is performed, a copy of all payrolls to the Loan recipient, that is, the entity that receives the sub-grant or Loan from the State capitalization grant recipient. Such documentation shall be available on request of the State recipient or EPA. As to each payroll copy received, the Loan recipient shall provide written confirmation in a form satisfactory to the State indicating whether or not the project is in compliance with the requirements of 29 CFR 5.5(a)(1) based on the most recent payroll copies for the specified week. The payrolls shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on the weekly payrolls. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/esa/whd/forms/wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the Loan recipient(s) for transmission to the State or EPA if requested by EPA, the State, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the Loan recipient(s).
- (B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:
- (1) That the payroll for the payroll period contains the information required to be provided under § 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under § 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;
- (2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;
- (3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.
- (C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.
- (D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.
- (iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the State, EPA or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency or State may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

- (4) Apprentices and trainees--(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.
- (ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.
- (iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

- (5) Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.
- (6) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the EPA determines may by appropriate, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.
- (7) Contract termination; debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.
- (8) Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.
- (9) Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and Loan recipient(s), State, EPA, the U.S. Department of Labor, or the employees or their representatives.
- 10) Certification of eligibility. (i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
- (ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
 - (iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.
- 4. Contract Provision for Contracts in Excess of \$100,000 (a) Contract Work Hours and Safety Standards Act. The Loan recipient shall insert the following clauses set forth in paragraphs (a)(1), (2), (3), and (4) of this section in full in any contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by Item 3, above or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.
- (1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.
- (2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (a)(1) of this section the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (a)(1) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (a)(1) of this section.
- (3) Withholding for unpaid wages and liquidated damages. The Loan recipient, upon written request of the Contracting Official or an authorized representative of the Department of Labor, shall withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be

determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

- (4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (a)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (a)(1) through (4) of this section.
- (b) In addition to the clauses contained in Item 3, above, in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 CFR 5.1, the Prime Contractor shall insert a clause requiring that the subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the Prime Contractor shall insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the subcontractor for inspection, copying, or transcription by authorized representatives of NH DES and the Department of Labor, and the subcontractor will permit such representatives to interview employees during working hours on the job.

See Section 00200 for Davis-Bacon Wage Information

"General Decision Number: NH20240040 01/05/2024

Superseded General Decision Number: NH20230040

State: New Hampshire

Construction Type: Highway

County: Rockingham County in New Hampshire.

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

If the contract is entered linto on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:

- ♠ Executive Order 14026 generally applies to the contract.
- ♠ The contractor must pay all covered workers at least \$17.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2024.

If the contract was awarded on � Executive Order 13658 or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:

- generally applies to the contract.
- The contractor must pay all covered workers at least \$12.90 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours performing on that contract in 2024.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at http://www.dol.gov/whd/govcontracts.

Modification Number

Publication Date 01/05/2024

SUNH2019-009 11/22/2022

CARPENTER (Form Work Only)\$ 24.02	2.82
CARPENTER, Excludes Form Work\$ 26.09	2.51
CEMENT MASON/CONCRETE FINISHER\$ 22.44	0.00
ELECTRICIAN\$ 28.08	2.78
FENCE ERECTOR (Chain Link Fence)\$ 19.59	0.00
HIGHWAY/PARKING LOT STRIPING: Painter\$ 21.63	0.00
INSTALLER - GUARDRAIL\$ 31.12	9.72
IRONWORKER, REINFORCING\$ 22.71	8.19
IRONWORKER, STRUCTURAL\$ 34.45	17.20
LABORER: Asphalt, Includes Raker, Shoveler, Spreader and Distributor	2.75
LABORER: Common or General\$ 19.15	2.60
LABORER: Landscape 18.06	0.00
LABORER: Pipelayer 19.66	5.28
OPERATOR: Auger\$ 26.07	3.42
OPERATOR: Backhoe/Excavator/Trackhoe\$ 26.98	6.50
OPERATOR: Bobcat/Skid Steer/Skid Loader\$ 21.54	7.11
OPERATOR: Broom/Sweeper\$ 25.73	0.00
OPERATOR: Bucket\$ 30.00	0.00
OPERATOR: Bulldozer\$ 25.99	6.75
OPERATOR: Crane\$ 29.56	3.29
OPERATOR: Grader/Blade\$ 27.77	6.79
OPERATOR: Loader\$ 25.69	6.28
OPERATOR: Mechanic\$ 24.53	8.36
OPERATOR: Milling Machine\$ 28.55	6.88
OPERATOR: Paver (Asphalt, Aggregate, and Concrete)\$ 25.32	6.23
OPERATOR: Pounder\$ 36.82	10.41
OPERATOR: Roller\$ 23.35	5.98
PAINTER: Spray\$ 27.29	6.95
TRAFFIC CONTROL: Flagger\$ 13.17 **	1.37

TRUCK DRIVER: Dump Truck......\$ 19.47 3.22

TRUCK DRIVER: Lowboy Truck.....\$ 22.76 5.07

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 (\$17.20) or 13658 (\$12.90). Please see the Note at the top of the wage determination for more information. Please also note that the minimum wage requirements of Executive Order 14026 are not currently being enforced as to any contract or subcontract to which the states of Texas, Louisiana, or Mississippi, including their agencies, are a party.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at

https://www.dol.gov/agencies/whd/government-contracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this

classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

- 1.) Has there been an initial decision in the matter? This can be:
- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- st a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests

for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations Wage and Hour Division U.S. Department of Labor 200 Constitution Avenue, N.W. Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator U.S. Department of Labor 200 Constitution Avenue, N.W. Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board U.S. Department of Labor 200 Constitution Avenue, N.W. Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISION"

SECTION 01010

SUMMARY OF WORK

PART 1 - GENERAL

1.01 SUMMARY:

- A. Section Includes:
 - 1. Project information.
 - 2. Work covered by Contract Documents.
 - 3. Access to site.
 - 4. Coordination with occupants.
 - 5. Work restrictions.
 - 6. Related Work
- B. Related Requirements:
 - 1. Division 1 Section 01500 "Temporary Facilities" for limitations and procedures governing temporary use of Owner's facilities.

1.02 PROJECT INFORMATION:

A. Engineer: AECOM Inc. 250 Apollo Drive, Chelmsford, MA 01824. Project Manager: Erik Meserve. Phone: 978-905-3145. Email: erik.meserve@aecom.com.

1.03 WORK COVERED BY CONTRACT DOCUMENTS:

- A. The Work of Project is defined by the Contract Documents and consists of the following:
 - 1. Elevating and reconstruction of approximately 400' of Peirce Island Road.
 - 2. Replacing the packed gravel former snow dump with grass pavers and vegetation.
- B. Work Sequence
 - 1. All sedimentation and erosion controls must be installed prior to the commencement of any work.
 - 2. Commence construction work.

C. Type of Contract:

1. Project will be constructed under a single prime contract.

1.04 ACCESS TO SITE:

- A. Use of Site: Limit use of Project site to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
 - 1. Driveways, Walkways and Entrances: Keep driveways, loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
 - c. One lane of Peirce Island Road to be open at all times.
- B. Contractor is advised that Peirce Island is a heavily used recreational area, and construction operations need to accommodate this usage.

C. Peirce Island Road Bridge

- 1. Vehicular access to Peirce Island and the City of Portsmouth's Wastewater Treatment Facility (WWTF) is provided exclusively via the Peirce Island Road Bridge.
- 2. There are vehicle loading restrictions on the Bridge that the Contractor shall be aware of and adhere to for the duration of the work. Refer to Section 01500.

1.05 COORDINATION WITH OCCUPANTS:

- A. Full Owner Occupancy: Owner will occupy site and adjacent building(s) during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.
- B. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction.
- C. Notify Owner not less than 72 hours in advance of activities that will affect Owner's operations.

1.06 WORK RESTRICTIONS:

- A. Work Restrictions, General: Comply with restrictions on construction operations.
 - 1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
 - 2. Construction traffic routes as indicated on Contract Drawings.
 - 3. Continue permitted work from March 1 through June 1. Include Punchlist by June 15. Any unfinished work should be finished after September 1 unless prior approval received from the City.
- B. On-Site Work Hours: Limit work to normal business working hours of 7 a.m. to 3:30 p.m., Monday through Friday, unless otherwise indicated. Notify Owner and Engineer 2 weeks in advance if work will extend pask 3:30 pm. Include a description of the planned construction activities in the notification.
 - 1. Weekend Hours: Upon written approval of Portsmouth Director of Public Works or his designee.
 - 2. Early Morning Hours: Upon written approval of the Portsmouth Director of Public Works or his designee.
 - 3. Hours for Utility Shutdowns: Upon written approval of the Portsmouth Director of Public Works or his designee.
- C. Holidays Observed by the Owner: The following holidays are observed by the Owner's staff. Contractor shall not work on these days with prior Owner approval:
 - 1. New Year's Day
 - 2. Dr. Martin Luther King, Jr. Day
 - 3. President's Day
 - 4. Good Friday (Half Day)
 - 5. Memorial Day
 - 6. Independence Day
 - 7. Labor Day
 - 8. Columbus Day
 - 9. Veteran's Day

- 10. Thanksgiving Day and Day After
- 11. Christmas Day
- D. City Events: Several large public events take place on Peirce Island throughout the year. Contractor will not be permitted to work on the following days:
 - 1. Fairy House Tour Friday, Saturday, Sunday in the fall (typically early October) each year. City to notify Contractor 1 month in advance.
- E. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
 - 1. Notify Engineer not less than ten days in advance of proposed utility interruptions.
 - 2. Obtain Engineer's written permission before proceeding with utility interruptions.
- F. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.
 - 1. Notify Engineer not less than ten days in advance of proposed disruptive operations.
 - 2. Obtain Engineer's written permission before proceeding with disruptive operations.
- G. Nonsmoking Building: Smoking is not permitted within the building or within 25 feet (8 m) of entrances, operable windows, or outdoor-air intakes.
- H. Controlled Substances: Use of tobacco products and other controlled substances within existing buildings is not permitted.

1.07 RELATED WORK:

- A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract or other contracts. Coordinate the Work of this Contract with work performed under separate contracts.
 - 1. Peirce Island Pool House Project: The City of Portsmouth is constructing a new pump house, including aquatic systems, the renovation of the pool, the demolition of the existing pump house, associated site work, utilities and miscellaneous work.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

END OF SECTION

SECTION 01046

CONTROL OF WORK

PART 1 - GENERAL

1.01 PLANT:

Furnish plant and equipment which will be efficient, appropriate, and large enough to secure a satisfactory quality of work and a rate of progress which will insure the completion of the work within the Contract Time. If at any time such plant appears to the Engineer to be inefficient, inappropriate, or insufficient for securing the quality of work required or for producing the rate of progress aforesaid, the Engineer may order the Contractor to increase the efficiency, change the character, or increase the plant equipment, and the Contractor shall conform to such order. Failure of the Engineer to give such order shall in no way relieve the Contractor of his obligations to secure the quality of the work and rate of progress required.

1.02 OCCUPYING PRIVATE LAND:

A. The Contractor shall not (except after written consent from the proper parties) enter or occupy with personnel, tools, materials, or equipment any land outside the rights of way or property of the Owner. A copy of the written consent shall be given to the Engineer and Owner.

1.03 DIMENSION OF EXISTING STRUCTURES:

A. The Contractor shall verify the dimensions and locations of existing structures in the field before the fabrication of any material or equipment which is dependent on the correctness of such information.

1.04 OPEN EXCAVATIONS:

- A. All open excavations shall be adequately safeguarded by providing temporary barricades, fencing, caution signs, lights, and other means to prevent accidents to persons and damage to property, and in accordance with applicable occupational health and safety regulations. The Contractor shall, at his own expense, provide suitable and safe bridges and other crossings for accommodating travel by pedestrians and workmen. Bridges provided for access during construction shall be removed when no longer required. The length or size of excavation will be controlled by the particular surrounding conditions, but shall always be confined to the limits prescribed by the Engineer. If the excavation becomes a hazard, or if it excessively restricts traffic at any point, the Engineer may require special construction procedures such as limiting the length of the open trench, prohibiting stacking excavated material in the street, and requiring that the trench shall not remain open overnight.
- B. The Contractor shall take precautions to prevent injury to the public due to open trenches. The Contractor shall comply with all OSHA regulations regarding trench

support. All trenches, excavated material, equipment, or other obstacles which could be dangerous to the public shall be well lighted at night.

1.05 TEST PITS:

A. Test pits for the purpose of locating underground pipeline or structures in advance of the construction shall be excavated and backfilled by the Contractor at the direction of the Engineer. Test pits shall be backfilled immediately after their purpose has been satisfied and the surface restored and maintained in a manner satisfactory to the Engineer. Locations of test pits shall be as directed by the Engineer.

1.06 INTERFERENCE WITH AND PROTECTION OF STREETS:

- A. The Contractor shall not close or obstruct any portion of a street, road, or private way without obtaining permits therefor from the proper authorities. If any street, road or private way shall be rendered unsafe by the Contractor's operations, he shall make such repairs or provide such temporary ways or guards as shall be acceptable to the proper authorities.
- B. Streets, roads, private ways, and walks not closed shall be maintained passable and safe by the Contractor, who shall assume and have full responsibility for the adequacy and safety of provisions made therefor.
- C. The Contractor shall, at least 24 hours in advance, notify the Public Works, Police and Fire Departments in writing, with a copy to the Engineer and Owner, if the closure of a street or road is necessary. The Contractor shall cooperate with the Police Department in the establishment of alternate routes and shall provide adequate detour signs, plainly marked and well lighted, in order to minimize confusion. The Contractor shall follow the City's street closure application process and City's flagging permit process. A flagging permit is required and can be submitted to the City through Viewpoint (https://www.cityofportsmouth.com/inspection/permit-applications).

1.07 TRAFFIC CONTROL:

- A. For control of moderate traffic, the Contractor shall provide an adequate number of flagmen.
- B. One lane to be maintained at all times.
- C. Contractor shall use routes indicated in Traffic Control Plan for all construction related traffic, including workforce, subcontractor's materials and equipment traveling to and from the project site. Additional traffic control requirements are located in Section 01500.
- D. The cost of police details will be paid for under the appropriate item in the Bid. The Contractor shall be responsible for arranging and coordinating the scheduling of police details. Should costs for police details be incurred due to mis-scheduling by the Contractor, the Contractor is responsible for these costs.

E. The employment or presence of traffic flagmen, special officers, or police shall in no way relieve the Contractor of any responsibility or liability which is his under the terms of the contract.

1.08 CARE AND PROTECTION OF PROPERTY:

A. The Contractor shall be responsible for the preservation of all public and private property, and shall use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work on the part of the Contractor, such property shall be restored by the Contractor, at his expense, to a condition similar or equal to that existing before the damage was done, or he shall make good the damage in other manner acceptable to the Engineer.

1.09 INTERFERENCE WITH EXISTING WORKS:

- A. The Contractor shall at all times conduct his operations so as to interfere as little as possible with existing works. One lane of traffic to the Peirce Island WWTF must be maintained at all times.
- B. The Contractor shall have no claim for additional compensation by reason of delay or inconvenience in adapting his operations to the need for continuous flow of sewage and water or for the need for continuous traffic to the WWTF.

1.10 MAINTAINING FLOWS:

- A. It is essential to the operation of the existing sewerage system that there be no interruption in the flow of sewage. To this end, the Contractor shall at his own expense, provide, maintain, and operate all temporary facilities such as dams, pumping equipment, conduits, and all other labor and equipment if it is necessary to intercept the sewage flow before it reaches the points where it would interfere with his work, carry it past his work, and return it to the existing sewer below his work.
- B. The Contractor shall at his own cost, provide all the flow of sewers, drains and water courses interrupted during the progress of the work, and shall immediately cart away and remove all offensive matter. The entire procedure of maintaining existing flow shall be fully discussed with the Engineer well in advance of the interruption of any flow.

1.11 PROTECTION AND RELOCATION OF EXISTING STRUCTURES AND UTILITIES:

A. The Contractor shall assume full responsibility for the protection of all buildings, structures, and utilities, public or private, including poles, signs, services to buildings, utilities in the street, gas pipes, water pipes, hydrants, sewers, drains, and electric and telephone cables, whether or not they are shown on the Drawings. The Contractor shall carefully support and protect all such structures and utilities from injury of any kind. Any damage resulting from the Contractor's operations shall be repaired by him at his expense.

- B. The Contractor shall bear full responsibility for obtaining all locations of underground structures and utilities (including existing water services, drain lines, and sewers). Services to buildings shall be maintained, and all costs or charges resulting from damage thereto shall be paid by the Contractor.
- C. Protection and temporary removal and replacement of existing utilities and structures as described in this Section shall be a part of the work under the Contract and all costs in connection therewith shall be included in the Total Price Bid in the Bid Form.
- D. The Contractor shall notify New Hampshire Dig Safe at least 72 hours prior to start of work.
- E. The Contractor shall coordinate the removal and replacement of traffic loops and signals, if required for the performance of the work, at no additional cost to the Owner.

1.12 INSPECTION OF WORK AWAY FROM THE SITE:

A. If work to be done away from the construction site is to be inspected on behalf of the Owner during its fabrication, manufacture, or testing, or before shipment, the Contractor shall give notice to the Engineer. of the place and time where such fabrication, manufacture, testing, or shipping is to be done. Such notice shall be in writing and delivered to the Engineer in ample time so that the necessary arrangements for the inspection can be made.

1.13 COOPERATION WITHIN THIS CONTRACT:

A. All firms or persons authorized to perform any work under this Contract shall cooperate with General Contractor and his Subcontractors or trades, and shall assist in incorporating the work of other trades where necessary or required.

1.14 CLEANUP AND DISPOSAL OF EXCESS MATERIAL:

- A. During the course of the work, the Contractor shall keep the site of his operations in as clean and as neat a condition as is possible. He shall dispose of all residue resulting from the construction work and, at the conclusion of the work, he shall remove and haul away any surplus excavation, broken pavement, lumber, equipment, temporary structures, and any other refuse remaining from the construction operations, and shall leave the entire site of the work in a neat and orderly condition.
- B. In order to prevent environmental pollution arising from the construction activities related to the performance of this Contract, the Contractor and his subcontractors shall comply with all applicable Federal, State, and local laws, and regulations concerning waste material disposal, as well as the specific requirements stated in this Section and elsewhere in the Specifications.
- C. The Contractor is advised that the disposal of excess excavated material in wetlands, stream corridors, and plains is strictly prohibited even if the permission of the property owner is obtained. Any violation of this restriction by the Contractor or any person

employed by him, will be brought to the immediate attention of the responsible regulatory agencies, with a request that appropriate action be taken against the offending parties. Therefore, the Contractor will be required to remove the fill at his own expense and restore the area impacted.

1.16 STORAGE OF MATERIALS AND EQUIPMENT:

A. All excavated materials and equipment to be incorporated in the Work shall be placed so as not to injure any part of the Work or existing facilities and so that free access can be had at all times to all parts of the Work and to all public utility installations in the vicinity of the Work. Materials and equipment shall be kept neatly piled and compactly stored in such locations as will cause a minimum of inconvenience to public travel and adjoining Owners, tenants and occupants.

1.17 SAFETY:

- A. The Contractor shall take all necessary precautions and provide all necessary safeguards to prevent personal injury and property damage. The Contractor shall provide protection for all persons including but not limited to his employees and employees of other Contractors or subcontractors; members of the public; and employees, agents, and representatives of the Owner, the Engineer, and regulatory agencies that may be on or about the Work. The Contractor shall provide protection for all public and private property including but not limited to structures, pipes, and utilities, above and below ground.
- B. The Contractor shall provide and maintain all necessary safety equipment such as fences, barriers, signs, lights, walkways, guards and fire prevention and fire-fighting equipment and shall take such other action as is required to fulfill his obligations under this subsection.
- C. The Contractor shall comply with all applicable Federal, State and local laws, ordinances, rules and regulations and lawful orders of all authorities having jurisdiction for the safety of persons and protection of property.
- D. The Contractor shall designate a responsible member of his organization at the site whose duty shall be the prevention of accidents. This responsible person shall have the authority to take immediate action to correct unsafe or hazardous conditions and to enforce safety precautions and programs.

1.18 LINES, GRADES AND MEASUREMENTS:

A. The Contractor shall employ a competent land surveyor, registered within the State as a Professional Land Surveyor. The Contractor shall require said land surveyor to establish all lines, elevations, reference marks, batter boards, etc., needed by the Contractor during the progress of the Work, and from time to time to verify such marks by instrument or other appropriate means.

- B. The Engineer shall be permitted at all times to check the lines, elevations, reference marks, batter boards, etc., set by the Contractor, who shall correct any errors in lines, elevations, reference marks, batter boards, etc., disclosed by such check. Such a check shall not be construed to be an approval of the Contractor's work and shall not relieve or diminish in any way the responsibility of the Contractor for the accurate and satisfactory construction and completion of the entire Work.
- C. The Contractor shall make, check, and be responsible for all measurements and dimensions necessary for the proper construction of and the prevention of misfittings in the Work.

1.19 WORK TO CONFORM:

- A. During its progress and on its completion, the Work shall conform truly to the lines, levels, and grades indicated on the Drawings or given by the Engineer and shall be built in a thoroughly substantial and workmanlike manner, in strict accordance with the Drawings, Specifications, and other Contract Documents and the directions given from time to time by the Engineer.
- B. All work done without instructions having been given therefor by the Engineer, without proper lines or levels, or performed during the absence of the Engineer, will not be estimated or paid for except when such work is authorized by the Engineer in writing. Work so done may be ordered uncovered or taken down, removed, and replaced at the Contractor's expense.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

END OF SECTION

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SECTION 01063

MISCELLANEOUS REQUIREMENTS

PART 1 - GENERAL

1.01 SCOPE OF WORK:

A. The Contractor shall conform to all miscellaneous requirements as herein specified.

1.02 TRAFFIC CONTROL:

- A. As indicated on the drawings, the Contractor shall be responsible for providing flagmen (certified by either American Traffic Safety Services Association (ATSSA) and National Safety Council (NSC) flagger training programs) or Police Details (uniformed special officers) to direct traffic and to keep traffic out of the areas affected by his construction operations. Such flagmen and special officers shall be in addition to the watchmen required under other provisions of the contract.
- B. The Contractor shall arrange for and coordinate the scheduling of such flagmen and special officers. Should costs for flagmen and special officers be incurred due to misscheduling by the Contractor, the Contractor will be responsible for these costs.
- C. The employment or presence of traffic flagmen or special officers shall in no way relieve the Contractor of any responsibility or liability which is his under the terms of the contract.

1.03 BURIED UTILITY WARNING AND IDENTIFICATION TAPE:

A. Provide detectable aluminum foil plastic backed tape or detectable magnetic plastic tape manufactured specifically for warning and identification of buried piping. Tape shall be detectable by an electronic detection instrument. Provide tape in rolls, 3 inches minimum width, color coded for the utility involved with warning and identification imprinted in bold black letters continuously and repeatedly over entire tape length. Warning and identification shall be CAUTION BURIED WATER PIPING BELOW or similar. Use permanent code and letter coloring unaffected by moisture and other substances contained in trench backfill material. Bury tape with the printed side up at a depth of 12 inches below the top surface of earth or the top surface of the subgrade under pavements.

1.04 COVERING OPEN EXCAVATIONS:

A. The Contractor shall cover open excavations when he suspends operations at the end of each work day, or in excavating trenches where work is not actually in progress. This cover shall be capable of withstanding AASHTO-H20 loading. This cover shall consist of steel plates or some other satisfactory cover of adequate size and strength suitably held in place to keep all traffic out of the excavations, all as verified in writing by the Contractor. The cover shall be laid over the excavation until it is backfilled.

1.05 WETLAND AND SHORELAND AREAS

- A. The Contractor is hereby informed that a portion of this project is adjacent to jurisdictional wetland and shoreland areas as indicated in the Contract Documents.
- B. NHDES has issued permits listing conditions for construction. Copies of the permits are presented in the Specification Appendices.
- C. The Contractor shall be required to adhere to all requirements of the permits and to comply with applicable regulations of the City and State. The intent of this contract is to limit disturbance of these areas to what is absolutely necessary for construction and to restore these areas as closely as possible to their original state.

1.06 HISTORICAL ARTICLES:

- A. Areas outside the limit of work are areas of archaeological sensitivity. Construction activities and ground disturbance shall not take place outside the limit of work. Temporary construction fencing must be maintained.
- B. In the event that unanticipated archaeological resources are encountered during construction, the Contractor shall:
 - 1. Immediately cease construction activities in the immediate vicinity of the resource and inform the Owner and Engineer.
 - 2. Cover the exposed resource to protect it from the elements, if possible.
 - 3. Install a temporary barrier such as snow fencing to prevent unauthorized or inadvertent access to the resource.
- C. Once notified, the Enginer will contact the project archeologist to inspect and assess the resource within 24 hours. If necessary, the project archeologist will consult with the New Hampshire Department of Historical Resources (NHDHR).
- D. Until such time as guidance is provided by the project archeologist, no construction activities shall take place in the immediate vicinity of the resource.
- E. The project archeologist will prepare and submit a report to NHDHR documenting the unanticipated resource and its resolution.

1.07 PEIRCE ISLAND BRIDGE RESTRICTIONS:

A. Vehicular access to Peirce Island and the City of Portsmouth's Wastewater Treatment Facility (WWTF) is provided exclusively via the Peirce Island Bridge. There are vehicle loading restrictions on the Bridge that the Contractor shall be aware of and adhere to for the duration of the work. Refer to Section 01500.

1.08 PROTECTION OF TREES:

A. The Contractor shall take care not to harm trees in the area where the contract work is to be done except when indicated on the drawings or with the written permission of the Owner and any other Owner of the trees involved. Care shall be taken not to cut tree roots so as not to harm tree growth of trees to remain.

1.09 EMERGENCY VEHICLES AND SCHOOL BUSES:

A. Provision shall be made for safe passage at all times for emergency vehicles and school buses.

END OF SECTION

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SECTION 01080

DEFINITIONS

PART 1 - GENERAL

A. Abbreviations: Where any of the following abbreviations are used in the Contract Documents, they shall have the meaning set forth opposite each. Abbreviations for trade associations and standards organizations are listed in Section 01090 Reference Standards.

AASHTO American Association of State Highway and Transportation Officials

ACI American Concrete Institute

AFBMA Anti-Friction Bearing Manufacturers Association

AGA American Gas Association

AGMA American Gear Manufacturers Association

AISC American Institute of Steel Construction

AMCA Air Moving and Conditioning Association

ANS American National Standard

125-lb. ANS American National Standard for Cast-Iron Pipe

Flanges and Flanged Fittings,

or

250-lb. ANS Designation B16.1-1975, for the appropriate class

ANSI American National Standards Institute

API American Petroleum Institute

ASCE American Society of Civil Engineers

ASHRAE American Society of Heating, Refrigerating and Air Conditioning

Engineers

ASME American Society of Mechanical Engineers

ASTM American Society for Testing and Materials

AWG American or Brown and Sharpe Wire Gage

AWPA American Wood-Preservers' Association

AWWA American Water Works Association

CS Commercial Standard

IBR Institute of Boiler and Radiator Manufacturers

IEEE Institute of Electrical and Electronics Engineers, Inc.

Fed. Spec. Federal Specifications issued by the Federal Supply Service of the General

Services Administration, Washington, D.C.

IBR Institute of Boiler and Radiator Manufacturers

IPS Iron Pipe Size

JIC Joint Industry Conference Standards

NBS National Bureau of Standards

NEC National Electrical Code; latest edition

NEMA National Electrical Manufacturers Association

NFPA National Fire Protection Association

NPT National Pipe Thread

OS&Y Outside screw and yoke

SMACNA Sheet Metal and Air Conditioning Contractors National Association, Inc.

Stl. WG U. S. Steel Wire, Washburn and Moen, American Steel and Wire or

Roebling Gage

UL Underwriters Laboratories, Inc.

USS Gage United States Standard Gage

WOG Water, Oil, Gas

WSP Working steam pressure

1.03 SPECIFICATION AND DRAWING CONVENTIONS:

A. 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. Imperative mood and streamlined language are generally used in the Specifications. 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.
- 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 1 General Requirements: Requirements of Sections in Division 1 apply to the Work of all Sections in the Specifications.

1.04 DEFINITIONS:

- A. General: Basic Contract definitions are included in the General Conditions.
- B. Wherever the words defined in this section or pronouns used in their stead occur in the Contract Documents, they shall have the meanings herein given.

Approved

When used to convey Engineer's action on Contractor's submittals, applications, and requests, "approved" is limited to Engineer's duties and responsibilities as stated in the Conditions of the Contract.

As Directed, as Required, Etc.

Wherever in the Contract Documents, or on the Drawings, the words "as directed," "as ordered," "as requested," "as required," "as permitted," "as authorized," or words of like import are used, it shall be understood that the direction, order, request, requirement, permission, or authorization of the Engineer is intended.

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."

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.

Furnish

Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

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.

Provide

Wherever in the Contract Documents the word "provide" is used, it shall mean to furnish (or supply) and install, complete and ready for the intended use.

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.

Elevation

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

Rock

The word "rock," wherever used as the name of an excavated material or material to be excavated, shall mean only boulders and pieces of concrete or masonry exceeding 1 cu. yd. in volume, or solid ledge rock which, in the opinion of the Engineer, requires, for its removal, drilling and blasting, wedging, sledging, barring, or breaking up with a power-operated tool. No soft or disintegrated rock which can be removed with a hand pick or power-operated excavator or shovel, no loose, shaken, or previously blasted rock or broken stone in rock fillings or elsewhere, and no rock exterior to the maximum limits of measurement allowed, which may fall into the excavation, will be measured or allowed as "rock."

Earth

The word "earth", wherever used as the name of an excavated material or material to be excavated, shall mean all kinds of material other than rock as above defined.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

END OF SECTION

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SECTION 01110

PROTECTION OF ENVIRONMENT

PART 1 - GENERAL

1.01 SUMMARY:

- A. Contractor, in executing Work, shall maintain Work areas on- and off-site free from environmental pollution that would be in violation of federal, state or local regulations as indicated and in compliance with Contract Documents.
- B. The control of environmental pollution requires consideration of air, water, and land, and involves management of noise and solid waste, as well as other pollutants.
- C. Any contamination shall be reported by the Contractor to the Owner, the Engineer and the New Hampshire Department of Environmental Services (NHDES) and cleaned up as per State requirements.
- D. The Contractor shall be responsible for the protection of the natural environment of the Site and surrounding areas, both land and water. Protection of the environment must start with avoidance and prevention, and then control/mitigation, compensation, or enhancement (in order of descending preference).
- E. Schedule and conduct all work in a manner that will minimize the erosion of soils in the area of the work. Provide erosion control measures such as sediment filter logs, seeding, mulching, or other special surface treatments as are required to prevent silting and muddying of streams, rivers, impoundments, lakes, etc. All erosion control measures shall be in place in an area prior to any construction activity in that area. Special requirements for erosion and sedimentation control are specified in Section 01568.
- F. Ensure that construction is achieved with a minimum of disturbance to the existing ecological balance between a water resource and its surroundings. It is the Contractor's responsibility to determine the specific construction techniques and best management practice to meet these guidelines.
- G. Schedule and conduct all work in a manner that will minimize the level of noise escaping the site, especially at night and on weekends.
- H. Submit Stormwater Pollution Prevention Plan (SWPPP) in accordance with Section 01300.

I. Payment:

1. Consider Work specified in this section incidental and include payment as part of appropriate lump sum or unit prices specified in Bid Form.

1.02 REFERENCES:

- A. United States Environmental Protection Agency (USEPA):
 - 1. EPA-72-015: Guidelines for Erosion and Sedimentation Control Planning and Implementation
 - 2. EPA 43019-73-007: Processes, Procedures, and Methods to Control Pollution Resulting from All Construction Activity
- B. New Hampshire Department of Environmental Services (NHDES):
 - 1. New Hampshire Stormwater Manual (2008)
 - 2. Env. Wt 100-900 Wetlands Rules
 - 3. Env. Wg 1400 Shoreland Protection
 - 4. Env. Wq 1500 Alteration of Terrain
- C. Federal Environmental Protection Act and applicable regulations.
- D. Owner's environmental management plans and associated environmental protection plans.

1.03 PROTECTION OF STORM SEWERS:

- A. Prevent construction material, pavement, concrete, earth or other debris from entering existing storm sewer or sewer structure.
- B. The Engineer will notify the Contractor in writing of any non compliance with the foregoing provisions or any environmentally objectionable acts and corrective action to be taken. State or local agencies responsible for verification of certain aspects of the environmental protection requirements shall notify the Contractor in writing, through the Engineer, of any non compliance with state or local requirements. The Contractor shall, after receipt of such notice from the Engineer or from the regulatory agency through the Engineer, immediately take corrective action. Such notice, when delivered to the Contractor or his authorized representative at the site of the work, shall be deemed sufficient for the purpose. If the Contractor fails or refuses to comply promptly, the Owner may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made subject of a claim for extension of time or for excess costs or damages by the Contractor unless it is later determined that the Contractor was in compliance

1.04 PROTECTION OF WATERWAYS:

- A. Observe rules and regulations of State of New Hampshire and Federal agencies of U.S.government prohibiting pollution of lakes, streams, rivers or wetlands by dumping of refuse, rubbish, dredge material or debris.
- B. The Contractor shall not cause or permit action to occur which would cause an overflow to existing waterways. Provide holding ponds or accepted best management practices method which will divert flows, including storm flows and flows created by construction activity, to prevent excessive silting of waterways or flooding damage to property.
- C. Provide holding ponds or accepted method which will divert flows, including storm flows and flows created by construction activity, to prevent excessive silting of waterways or flooding damage to property.
- D. Comply with procedures outlined in U.S. EPA manuals entitled, "Guidelines for Erosion and Sedimentation Control Planning and Implementation", Manual EPA-72-015 and "Processes, Procedures, and Methods to Control Pollution Resulting from All Construction Activity", Manual EPA 43019-73-007, and Env. Wq 1400 Shoreland Protection.
- E. In cases of conflicts, the most stringent requirements will govern this contract.

1.05 STORM WATER DISCHARGE:

- A. Contractor shall comply with the New Hamshire Department of Environmental Services (NHDES) with Construction Activities General Permit and prepare, submit, and comply with all requirements therein. As minimum Contractor is required to prepare, submit, and comply with following.
 - 1. Notice of Intent (NOI).
 - 2. Stormwater Pollution Prevention Plan.
- B. Comply with procedures outlined in U.S. EPA manuals entitled, "Guidelines for Erosion and Sedimentation Control Planning and Implementation", Manual EPA-72-015 and "Processes, Procedures, and Methods to Control Pollution Resulting from All Construction Activity", Manual EPA 43019-73-007, and IEPA "Standards and Specifications for Soil Erosion and Sediment Control". In cases of conflicts, the most stringent requirements will govern this contract.

1.06 PROTECTION OF TREES:

A. No trees are to be cut down unless shown on the Contract Drawings or designated by the Engineer. The Contractor shall take precautions to prevent damage to existing trees and shrubs, protect branches and foliage, protect trunks and stems, and prevent machinery from travelling over roots within the 'drip-line' of the trees by placing and maintaining snow fencing around each tree outside of the 'drip-line'. The Contractor shall not pile

excavated material within the 'drip-line of existing trees. No ropes, cables, or guys shall be fastened to or attached to any existing nearby trees for anchorage unless specifically authorized by Engineer. Where such special emergency use is permitted, first wrap the trunk with a sufficient thickness of burlap or rags over which softwood cleats shall be tied before any rope, cable, or wire is placed. The Contractor shall in any event be responsible for any damage resulting from such use. Where trees may possibly be defaced, bruised, injured, or otherwise damaged by the Contractor's equipment, dumping or other operations, protect such trees by placing boards, planks, or poles around them. Monuments and markers shall be protected similarly before beginning operations near them.

- B. Where damage does occur, it must be reported by the Contractor to the Engineer and repaired or replaced by a qualified person as directed by the Engineer. Any trees or other landscape feature scarred or damaged by the Contractor's equipment or operations shall be restored as nearly as possible to its original condition. The Engineer will decide what method of restoration shall be used and whether damaged trees shall be treated and healed or removed and disposed of.
 - 1. All scars made on trees by equipment, construction operations, or by the removal of limbs larger than 1-in. in diameter shall be coated as soon as possible with an approved tree wound dressing. All trimming or pruning shall be performed in an approved manner by experienced workmen with saws or pruning shears. Tree trimming with axes will not be permitted.
 - 2. Climbing ropes shall be used where necessary for safety. Trees that are to remain, either within or outside established clearing limits, that are subsequently damaged by the Contractor and are beyond saving in the opinion of the Engineer, shall be immediately removed and replaced.
- C. The locations of the Contractor's storage, and other construction building, required temporarily in the performance of the work, shall be cleared portions of the job site or areas to be cleared as shown on the Drawings and shall require written approval of the Engineer and shall not be within wetlands or floodplains. The preservation of the landscape shall be an imperative consideration in the selection of all sites and in the construction of buildings. Drawings showing storage facilities shall be submitted for review by the Engineer.
- D. Remove all signs of temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess of waste materials, or any other vestiges of construction as directed by the Engineer. It is anticipated that excavation, filling, and plowing of roadways will be required to restore the area to near natural conditions which will permit the growth of vegetation thereon. The disturbed areas shall be prepared and seeded as described in Section 01568, or as accepted by the Engineer.
- E. All debris and excess material will be disposed of outside wetland or floodplain areas in an environmentally sound manner.

F. Refer to Section 02200 and the Contract Drawings for further details.

1.07 DISPOSAL OF EXCESS EXCAVATED AND OTHER WASTE MATERIALS:

- A. Excess excavated material not required or not suitable for backfill and other waste material shall be disposed of in accordance with local regulatory requirements.
- B. Provide watertight conveyance for liquid, semi-liquid or saturated solids which tend to bleed during transport. Liquid loss from transported materials is not permitted, whether being delivered to construction site or hauled away for disposal. Fluid materials hauled for disposal must be specifically acceptable at selected disposal site.

1.08 PROTECTION OF AIR QUALITY:

- A. Minimize air pollution by requiring use of properly operating combustion emission control devices on construction vehicles and equipment and encourage shutdown of motorized equipment not in use.
- B. Do not burn trash on or adjacent to construction site.
- C. If temporary heating devices are necessary for protection of Work, they shall not cause air pollution.
- D. The Contractor shall conduct operations of dumping rock and of carrying rock away in trucks in such a way as to minimize dust. Give unpaved streets, roads, detours, or haul roads used in construction area a dust-preventive treatment or periodically water them to prevent dust. Strictly adhere to all applicable environmental regulations for dust prevention.

1.09 USE OF CHEMICALS:

- A. Chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, reactant or of other classification, shall be approved by U.S. EPA or U.S. Department of Agriculture and any other applicable regulatory agency.
- B. Provide secondary containment that is compatible with the chemical being stored and provides adequate protection from rain and snow as to not induce pollution migration.
- C. Use and disposal of chemicals and residues shall comply with manufacturer's instructions.

1.10 NOISE CONTROL:

A. Conduct operations to cause least annoyance to residents in vicinity of Work, and comply with City of Portsmouth, NH Ordinance, Chapter 3, Article 4 contained in Appendix C.

- B. Equip compressors, hoists, and other apparatus with mechanical devices necessary to minimize noise and dust. Equip compressors with silencers on intake lines.
- C. Equip gasoline or oil-operated equipment with silencers or mufflers on intake and exhaust lines.
- D. Line storage bins and hoppers with material that will deaden sounds.
- E. Conduct operation of dumping rock and of carrying rock away in trucks so as to cause minimum of noise and dust.
- F. No excessive idling of motorized equipment is permitted.
- G. Where necessary, the Contractor shall place noise attenuation devices (barriers) around the Contractor's construction equipment.

1.11 MUD AND DUST CONTROL:

- A. Due to close geographic location of Project to other off-site facilities take special care in providing and maintaining temporary site roadways, Owner's existing roads, and public roads used during construction operations in clean, dust free condition.
- B. Comply with local environmental regulations for dust control. If Contractor's dust control measures are considered inadequate by Engineer, Engineer may require Contractor to take additional dust control measures.
- C. The Contractor shall obtain the Engineer's acceptance before chemicals for dust control are used. Sodium chloride is not permitted for dust control.
- D. All trenches and disturbed areas created during the execution of the Work that will produce dust shall be maintained dust free by an application of calcium chloride at the Engineer's direction.
- E. The Contractor shall not use calcium chloride on access roads.
- F. The Contractor shall transport dusty materials in covered haulage vehicles.
- G. The Contractor shall be responsible for a prompt and complete clean up of all dirt and mud deposited on the public and/or private property as a consequence of the execution of the Work. In the event that the Contractor fails to comply with this obligation the Owner may proceed with the necessary clean up and charge all the costs for the cleanup to the Contractor.
- H. The Contractor shall wash mud from construction vehicles before leaving the construction Site.
- I. The Contractor shall wash and clean the following roads at the end of each work day during the Contract:

1. City streets impacted by construction activities.

1.12 CLEANING OF EQUIPMENT

- A. The Contractor shall keep construction equipment clean so that no debris is deposited on the plant roadways or any public roadway. The Contractor shall identify a designated vehicle cleaning area within the working limits of the Contract. The Contractor shall contain all construction debris in this designated area only. The Contractor shall dispose of debris off Site.
- B. The Contractor shall ensure that debris cleaned from equipment cannot gain access to storm sewers and watercourses.

1.13 FUELS AND LUBRICANTS:

- A. Comply with local, state and federal regulations concerning transportation and storage of fuels and lubricants.
- B. The Contractor shall designate an area within the working limits to be used exclusively for fuelling of construction equipment. The Contractor shall carry out all refueling in this area only. Refueling of backhoes or shovels will be allowed at locations other than the accepted refueling areas, but not closer than 30 feet (10 m) from any watercourse.
- C. Fuel storage area and fuel equipment shall be approved by Owner prior to installation. Submit containment provisions to Engineer for approval.
- D. The Contractor shall submit to the Engineer for review prior to starting the Work, procedures for the interception and rapid clean-up and disposal of fuel spillages which may occur. The Contractor shall ensure that the materials required for the clean-up of fuel spillages are readily accessible on Site at all times.
- E. The cleaning of equipment in streams and lakes and the emptying of fuel, lubricants and pesticides into watercourses is prohibited. The Contractor shall contain fuel, lubricants, pesticides and construction debris and dispose of it off Site in approved locations.
- F. Report spills or leaks from fueling equipment or construction equipment to Owner and cleanup as required by local, state or federal regulations.
- G. Owner may require Contractor to remove damaged or leaking equipment from Project site.

1.14 NOTIFICATIONS:

A. The Engineer will notify the Contractor in writing of any non-compliance with the foregoing provisions or of any environmentally objectionable acts and corrective action to be taken. State or local agencies responsible for verification of certain aspects of the environmental protection requirements shall notify the Contractor in writing, through the Engineer, of any non-compliance with State or local requirements. The Contractor shall,

after receipt of such notice from the Engineer or from the regulatory agency through the Engineer, immediately take corrective action. Such notice, when delivered to the Contractor or his authorized representative at the site of the work, shall be deemed sufficient for the purpose. If the Contractor fails or refuses to comply promptly, the Owner may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made the subject of a claim for extension of time or for excess costs or damages by the Contractor unless it is later determined that the Contractor was in compliance.

1.15 IMPLEMENTATION:

- A. Prior to commencement of the work, meet with the Engineer to develop mutual understandings relative to compliance with this provision and administration of the environmental pollution control program.
- B. Remove temporary environmental control features, when accepted by the Engineer, and incorporate permanent control features into the project at the earliest practicable time.
- C. Comply with all conditions of the following permits: NHDES Standard Dredge and Fill Contained in Appendix E.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

END OF SECTION

SECTION 01150

MEAUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 DESCRIPTION:

A. Summary:

1. Section includes

- a. Descriptions of the measurement of and payment for the work to be done under the Items listed in the BID
- b. Administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.02 MEASUREMENT:

A. General:

- 1. In determining the quantities of excavation to which unit prices shall apply, the limits of normal width and depth of excavation shall be as described below, unless other limits are indicated on the Drawings or specified.
- 2. For pipes in trench, the normal width of the trench shall be measured between vertical planes which are a distance apart equal to the sum of 18 inches plus 1-1/3 times the nominal inside diameter of the pipe. If the width so computed is less than 3 feet, a width of 3 feet shall be taken as the normal width for payment. The normal depth shall be measured to a distance of 0.2 feet below the bottom of the pipe in earth and 0.7 feet in rock, unless there shall be a cradle underneath the pipe, in which case the normal depth shall be measured to the underside of the cradle. The width of trench for the cradle shall be assumed to be that specified above for pipes in trench.
- 3. For concrete placed directly against undisturbed earth, the normal width and depth of the excavation for such concrete shall be measured to the neat lines of the concrete as indicated on the Drawings or as ordered.
- 4. For concrete placed against rock surfaces resulting from rock excavation, the normal width and depth of the excavation shall be measured to 4 inches outside the neat lines of the concrete as indicated on the Drawings or as ordered.
- 5. For other structures, except manholes as noted below, the normal width shall be measured between vertical planes 1 foot outside the neat lines of the several parts of the structure, except that the width at any elevation shall be measured as not less

- than the width at a lower elevation. The normal depth shall be measured to the underside of that part of the structure for which the excavation is made.
- 6. No additional width or depth of trenches excavated in earth or rock shall be allowed at standard circular manholes.
- 7. Wherever bell holes are required for jointing pipe, they shall be provided without additional compensation over and above that resulting from measurements as above described.
- B. Each unit or lump-sum price stated in the BID shall constitute full compensation as herein specified for each item of work completed in accordance with the drawings and specifications, including cleaning up.
- C. The prices for those items which involve excavation shall include compensation for backfilling, and disposal of surplus excavated material.
- D. Bid Item 1: Peirce Island Road Resiliency Project:
 - 1. The lump sum price for Item 1 shall constitute full compensation for constructing the Peirce Island Road Resiliency Project, complete, as indicated on the drawings and as specified, except that work included for payment under Items 2 to 3, inclusive.
- E. Bid Item 2: Mass Rock Excavation and Disposal:
 - 1. Where rock is encountered, it shall be excavated and disposed of, or reused on-site, as follows:
 - a. The quantity of rock to be paid for under this item shall be the number of cubic yards of rock within 5 feet of the outside of building foundations and walls, unless rock excavation beyond such limits has been authorized in writing by the Engineer, in which case measurement shall be made to the authorized limits.
 - b. The effort required for the preparation of all permits and complying with all state and local regulations and ordinances to excavate the rock shall be covered under this item. The item shall also include the costs to perform the pre- and post-construction condition surveys and the services to monitor the vibrations generated by any blasting as specified.
 - c. Excavated rock which has not been disposed of or re-used on-site will not be included for payment.
 - d. The unit price for this item shall constitute full compensation for rock excavation and disposal or reuse on-site and for furnishing all additional material needed for backfilling.

e. If material suitable for backfilling is not available in sufficient quantity from other excavations, the Contractor shall, at his own expense, furnish suitable material from outside sources.

F. Bid Item 3: Services of police details

- 1. Under this item, the Contractor will be reimbursed for charges for the services of police details and flaggers rendered in connection with traffic control as specified in Sections 01046 and 01500. The Contractor shall arrange for and coordinate the scheduling of such officers. Should costs for police details be incurred due to misscheduling by the Contractor, the Contractor will be responsible for these costs.
- 2. The allowance for this item as established in the BID is an estimated figure to facilitate comparison of bids. The actual amount to be paid for under this item shall be the amount actually invoiced for the work performed (with no markup). If the total amount for such charges is greater or less than the amount stated in the BID, a debit or credit of the difference in the amount shall be made to the Owner.

G. Extra Work:

1. Extra work, if any, shall be performed and paid for in accordance with Article 17 of the General Conditions. Claims for extra work shall be made in accordance with Article 21 of the General Conditions.

1.03 SCHEDULE OF VALUES:

- A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
 - 1. Coordinate line items in the schedule of values with other required administrative forms and schedules, including the following:
 - a. Application for Payment forms with continuation sheets.
 - b. Submittal schedule.
 - c. Items required to be indicated as separate activities in Contractor's construction schedule.
 - 2. Submit the schedule of values to Engineer at earliest possible date, but no later than seven days before the date scheduled for submittal of initial Applications for Payment.
- B. Format and Content: Use Contract Documents table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.

- 1. Identification: Include the following Project identification on the schedule of values:
 - a. Project name and location.
 - b. Name of Engineer.
 - c. Engineer's project number.
 - d. Contractor's name and address.
 - e. Date of submittal.
- 2. Arrange the schedule of values in tabular form with separate columns to indicate the following for each item listed:
 - a. Related Specification Section or Division.
 - b. Description of the Work.
 - c. Name of subcontractor.
 - d. Name of manufacturer or fabricator.
 - e. Name of supplier.
 - f. Change Orders (numbers) that affect value.
 - g. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent, for previous billing, the invoicing period, the cumulative totals to date, and the total remaining.
 - (1) Labor.
 - (2) Materials.
 - (3) Equipment.
- 3. Provide a separate row in the schedule of values for each Change Order (numbers) that affect value and provide separate columns to indicate each item listed above.
- 4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with Contract Documents table of contents. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum.
- 5. Round amounts to nearest whole dollar; total shall equal the Contract Sum.

- 6. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
 - a. Differentiate between items stored on-site and items stored off-site. If required, include evidence of insurance.
- 7. Provide separate line items in the schedule of values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
- 8. Allowances and Unit Price Items: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost items, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
- 9. Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
 - a. Temporary facilities, erosion control, Stormwater Pollution Prevention Plan (SWPPP), and erosion control inspections shall be shown as separate line items in the schedule of values.
 - b. Other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.
- 10. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.04 APPLICATIONS FOR PAYMENT:

- A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Engineer and paid for by Owner.
 - 1. Initial Application for Payment, Application for Payment at time of Substantial Completion, Monthly Application for Progress Report, and final Application for Payment involve additional requirements.
- B. Payment Application Times: Payments shall be made in accordance with the requirements of the General Conditions. The period of construction work covered by each Application for Payment is the period indicated in the General Conditions.
- C. Application for Payment Forms: Engineer will furnish form for Applications for Payment. Submit completed forms for acceptance with initial submittal of schedule of values.

- 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 for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
 - 3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
 - 4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.
- E. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.
 - 1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment, for stored materials.
 - 2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
 - 3. Provide summary documentation for stored materials indicating the following:
 - a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
 - b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
 - c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.
- F. Transmittal: Submit three signed and notarized original copies of each Application for Payment to Engineer by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.
 - 1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

- G. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
 - 1. List of subcontractors.
 - 2. Schedule of values.
 - 3. Pre-construction surveys and photographs.
 - 4. Health and safety and environmental protection plans.
 - 5. Contractor's construction schedule (preliminary if not final).
 - 6. Products list (preliminary if not final).
 - 7. Schedule of unit prices.
 - 8. Submittal schedule (preliminary if not final).
 - 9. List of Contractor's staff assignments.
 - 10. List of Contractor's principal consultants.
 - 11. Copies of building permits.
 - 12. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 - 13. Initial progress report.
 - 14. Certificates of insurance and insurance policies.
 - 15. Performance and payment bonds.
- H. Application for Monthly Progress Payment: Administrative actions and submittals that must precede or coincide with submittal of monthly Application for Progress Payment include the following:
 - 1. Schedule of values.
 - 2. Schedule of unit prices.
 - 3. Construction photographs.
 - 4. Contractor's updated construction progress schedule and specified reports.
 - 5. Documented proof that it has recorded information on the Contract Drawings to reflect "As Built" information.

- I. Application for Payment at Substantial Completion: After Engineer issues 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. Documentation include, evidence of all the following:
 - a. Each item of mechanical, electrical, instrumentation, piping and HVAC equipment installed or modified under this Contract have been tested to demonstrate compliance with the performance requirements of this Contract, including successful functional testing, water testing, performance testing and facility commissioning.
 - b. All operating, maintenance manuals and as-built drawings have been provided to the Owner.
 - c. All spare parts and materials have been provided to the Owner.
 - d. All warranty certificates and test results have been provided to the Owner.
 - e. The Contractor has provided instructions and training to the Owner's staff to enable the Owner to operate the Works.
 - 2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- J. Final Payment Application: After completing Project closeout requirements, 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. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
 - 3. Updated final statement, accounting for final changes to the Contract Sum.
 - 4. Evidence that claims have been settled.
 - 5. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

END OF SECTION

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SECTION 01200

PROJECT MEETINGS

PART 1 - GENERAL

1.01 SUMMARY:

A. The Contractor shall:

- 1. Make physical arrangements for meetings.
- 2. Schedule and administer progress meetings with their own staff and/or other contractors, construction foremen's meetings, and specially called meetings with these parties throughout progress of Work as needed.

B. The Engineer shall:

- 1. Prepare agenda for meetings
- 2. Distribute notice of specially called meetings a minimum of one working day in advance of the meeting date.
- 3. Preside at meetings.
- 4. Record minutes, including significant proceedings and decisions.
- C. Representatives of Contractor, Subcontractors, and Suppliers attending meetings shall be qualified and authorized to act on behalf of entity each represents.
- D. Owner and Engineer may attend meetings.

1.02 PRECONSTRUCTION CONFERENCE:

- A. The Engineer will schedule and conduct preconstruction conference in accordance with the General Conditions and this section within 20 days after Effective Date of Contract, but before Contractor starts Work at site. The conference will be the Contractor, the Engineer, and the Owner to review the Contractor's proposed methods of complying with the requirements of the Contract Documents.
- B. Location: Portsmouth DPW, 680 Peverly Hill Rd, Portsmouth, NH 03801.
- C. Attendance.
 - 1. Contractor's Project Manager.
 - 2. Contractor's Resident Superintendent.

- 3. Subcontractors' or suppliers' representatives Contractor may desire to invite or Engineer may request.
- 4. Engineer's representatives.
- 5. Owner's representatives.
- 6. Local utility representatives, if applicable.
- 7. New Hampshire Department of Environmental Services Representatives, if applicable.
- D. Suggested format includes, but not be limited to following:
 - 1. Project Safety.
 - 2. Presentation of preliminary progress schedule in accordance with Section 01311 "Construction Progress Schedule" and preliminary schedule of Shop Drawing and sample submissions in accordance with Section 01300 "Submittals" of Contract Documents.
 - 3. Check of required bonds and insurance policies prior to Notice to Proceed.
 - 4. Liquidated damages.
 - 5. Procedures for handling submittals such as substitutions and Shop Drawings.
 - 6. O&M submittal procedures.
 - 7. Training requirements.
 - 8. Direction of correspondence and coordinating responsibility.
 - 9. Weekly and monthly progress meetings.
 - 10. Laboratory and field testing requirements.
 - 11. Schedule of values, application for progress payment, and progress payment procedures.
 - 12. Change Order procedures.
 - 13. Contractor's proposed Environmental Management and Erosion Control Plan.
 - 14. Contractor's proposed Health and Safety Plan.
 - 15. Contractor's proposed Quality Control Plan.
 - 16. Coordination requirements with plant staff and ongoing operations.

17. Construction and stipulated construction and plant operational constraints.

1.03 PROGRESS MEETINGS WITH ENGINEER:

- A. In addition to other regular project meetings for other purposes (as indicated elsewhere in the Contract Documents), hold general progress meetings once each month or more frequently if required by the Engineer with times coordinated with preparation of payment requests. Meeting dates shall be established by the Engineer. Require every entity then involved in the planning, coordination or performance of work to be properly represented at each meeting. Include (when applicable):
 - 1. Consultants
 - 2. Separate contractors (if any)
 - 3. Principal subcontractors
 - 4. Suppliers/manufacturers/fabricators
 - 5. Governing authorities
 - 6. Insurers
 - 7. Special supervisory personnel and others with an interest or expertise in the progress of the work.
 - 8. NHDES
- B. Suggested format includes, but not limited to following:
 - 1. Review each entity's present and future needs including interface requirements
 - 2. Time, sequence
 - 3. Deliveries
 - 4. Access
 - 5. Site utilization
 - 6. Temporary facilities and services
 - 7. Hours of work
 - 8. Safety, hazards and risks
 - 9. Housekeeping
 - 10. Submittals

- 11. Change managements (request for quotation, change directives, change orders)
- 12. Contract administration logs (request for information, etc.)
- 13. Documentation of information for payment requests
- C. Discuss whether each element of current work is ahead of schedule. Determine how behind-time work will be expedited and secure commitments from the entities involved in doing so. Discuss whether schedule revisions are required to ensure that current work and subsequent work will be completed within the Contract Time. Review everything of significance which could affect the progress of the work.
- D. After each progress meeting date, the Engineer will forward copies of the minutes-of-the-meeting, to the Contractor.
- E. Immediately following each progress meeting where revisions to the Progress Schedule/Critical Path Schedule have been made or recognized (regardless of whether agreed to by each entity represented), revise the Schedule. Reissue revised Schedule within 10 working days after meeting.
- F. At intervals matching the preparation of payment requests, revise and reissue the Schedule to show actual progress of the work in relation to the latest revision of the Schedule.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

END OF SECTION

SECTION 01250

SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.01 DESCRIPTION:

A. Section includes administrative and procedural requirements for substitutions.

1.02 DEFINITIONS:

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
 - 1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
 - 2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.03 SUBMITTALS:

- A. Submit the following shop drawings in accordance with Section 01300.
- B. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Substitution Request Form: Use Form 01250-1 to request substitution.
 - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Justification for use of the proposed equivalent item(s), including evidence, as applicable, that Contract specified material, product or equipment is unobtainable or unobtainable within an acceptable time for Contract completion.
 - b. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable. If the Contractor is proposing the substitution because of unavailability of the product, submit a letter from the manufacturer stating the product is unavailable with an explanation of why it is unavailable with the form 01250-1

- c. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
- d. Detailed comparison of qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, electrical characteristics, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated and specified. Indicate deviations, if any, from the Work specified.
- e. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
- f. Samples, where applicable or requested.
- g. Certificates and qualification data, where applicable or requested.
- h. List of similar installations for completed projects with project names and addresses and names, telephone numbers and addresses of engineers and owners.
- i. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
- j. Research reports evidencing compliance with building code in effect for Project, including the International Building Code.
- k. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
- 1. Cost information, including a proposal of change, if any, in the Contract Sum.
- m. A prediction of any effects the proposed change will have on operation and maintenance costs, where applicable.
- n. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is intended for applications indicated.

- o. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
- 3. Engineer's Action: If necessary, Engineer will request additional information or documentation for evaluation within 21 days of receipt of a request for substitution. Engineer will notify Contractor of acceptance or rejection of proposed substitution within 30 days of receipt of request, or 21 days of receipt of additional information or documentation, whichever is later.
 - a. Forms of Acceptance: Change Order, Construction Change Directive, or Engineer's Supplemental Instructions for minor changes in the Work.
 - b. Use product specified if Engineer does not issue a decision on use of a proposed substitution within time allocated.

1.04 ACCEPTABLE EQUIVALENT PRODUCTS, MATERIALS AND EQUIPMENT:

- A. Any other product the contractor wants to substitute must follow the requirements of this Section.
- B. If the Contractor chooses to substitute equipment other than a named manufacturer, any additional costs or time required to accommodate such equipment shall be made without a change in the Contract Price or Contract Time and at no additional cost to the Owner.
- B. The Contractor may choose equipment from a manufacturer of an acceptable equivalent product, however, this will be treated as a substitution and the Contractor must follow the requirements of this Section. Any additional costs or time required to accommodate such equipment shall be made without a change in the Contract Price or Contract Time.

1.05 MATERIAL AND WORKMANSHIP:

- A. Whenever a material, article, system or sub-system is specified or described by using the name and/or model of a proprietary product or trademark or the name of the manufacturer or vendor, the specified item shall establish the type, function, and quality required; it shall be understood that the words "or approved equivalent" are implied whether or not they follow the proprietary enumeration.
- B. The Owner reserves the right to determine when proprietary items have no equivalency, and when uniformity of operations, interchangeability of parts, standard parts inventory, etc., are in Owner's best interest.
- C. Requests for review of equivalency will be considered upon submission of sufficient information as described herein, to allow complete review.
- D. Such requests will not be accepted from anyone other than the Contractor. Such submission must be made prior to purchase, fabrication, manufacture or use of the equivalent items under consideration.

E. The Contractor is responsible for all delays caused by its failure to submit complete and accurate information with any request for approval of any material, article, system or subsystem, as an equivalent.

1. Contractor Risk:

- a. If the Contractor includes in his bid or later proposes any material, product or equipment that he considers equivalent to that specified, the Contractor assumes all risk of any sort associated with acceptance or rejection of proposed equivalent items.
- b. The Contractor shall have no right to make claim based upon his bid that includes a proposed equivalent item(s) of work which resulted in a lower bid amount for said item(s) or lower total bid.

2. Equivalency:

- a. An item will be considered equivalent to the item specified if:
 - (1) It is equal or better in design and strength in all subparts, quality, reliability and durability, operation, maintenance and serviceability, as applicable; and
 - (2) It is equal or better in specified parameters in performance in all respects for the specific function(s) indicated in the contract.

3. Supplemental Requirements:

- a. The time associated with equivalency review will be paid by the Contractor.
- b. Any tests required by the Owner or Engineer to establish quality and performance standards shall be promptly conducted by or through the Contractor at no additional cost to the Owner.
- c. The Contractor shall submit any additional data requested by the Engineer for the equivalency review.
- d. The Contractor shall satisfactorily accomplish all changes, including any engineering associated with use of equivalent items, at no additional cost to the Owner.
- e. The Contractor shall have no right of appeal to any decision rejecting the equivalency of any item.

1.06 QUALITY ASSURANCE:

A. Comply with the requirements specified in Section 01400.

B. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers at no cost to the Engineer or Owner.

1.07 PROCEDURES:

A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

PART 2 - PRODUCTS

2.01 SUBSTITUTIONS:

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 30 days prior to time required for preparation and review of related submittals.
 - 1. Conditions: Engineer will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Engineer will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution is consistent with the Contract Documents and will produce specified and indicated results.
 - b. Requested substitution will not negatively affect Contractor's construction schedule.
 - c. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - d. Requested substitution is compatible with other portions of the Work.
 - e. Requested substitution has been coordinated with other portions of the Work.
 - f. Requested substitution provides specified warranty.
 - g. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- B. Substitutions for Convenience: Engineer will consider requests for substitution if received within 60 days after commencement of the Work. Requests received after that time may be considered or rejected at discretion of Engineer.

- 2. Conditions: Engineer will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Engineer will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution offers Owner an advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Engineer for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 - b. Requested substitution does not require revisions to the Contract Documents.
 - c. Requested substitution is consistent with the Contract Documents and will produce specified and indicated results.
 - d. Substitution request is fully documented and properly submitted.
 - e. Requested substitution will not affect Contractor's construction schedule.
 - f. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - g. Requested substitution is compatible with other portions of the Work.
 - h. Requested substitution has been coordinated with other portions of the Work.
 - i. Requested substitution provides specified warranty.
 - j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 3 - EXECUTION

3.01 CONTRACT CLOSEOUT:

A. Provide in accordance with Section 01700.

Form 01250-1 SUBSTITUTION REQUEST

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to design, including Engineer design, detailing, and construction costs caused by the substitution.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted by:			
Signed by:			
Firm:			
Address:			
Telephone:			
Attachments:			
Engineer REVIEW AND ACTION			
☐ Substitution approved – Make submittals in accordance with Specification Section 01250.			
 ☐ Substitution approved as noted – Make submittals in accordance with Specification Section 01250. ☐ Substitution rejected – Use specified materials. 			
Signed by:	Date:		
Additional Comments: Contractor Subcontractor	Supplier Manufacturer Engineer Other:		
	- 11		

Form 01250-1 (Continued) SUBSTITUTION REQUEST

Project:		Substitution Request Number:	
		From:	
To:		Date:	
		Engineer Project Number:	
		Contract For:	
Specification Title:		Description:	
	Page:		
Proposed Substitution:			
Manufacturer:	Address:	Phone:	
Trade Name:		Model No	
Installer:	Address:	Phone:	
	parative data attached – REQUIRE	ED BY Engineer	
Similar Installation:			
		Engineer/Architect:	
		D . T . II I	
Proposed substitution af	fects other part of Work: No	Yes, explain	
•		_	
Proposed substitution ch	anges Contract Time: No	Yes [Add] [Deduct]	days.
Supporting Data Attache	ed: Drawings Product D	Oata Samples Tests Reports	

END OF SECTION

SECTION 01300

SUBMITTALS

PART 1 - GENERAL

1.01 DESCRIPTION:

- A. This Section specifies the general methods and requirements of submissions applicable to the following work-related submittals as indicated and in compliance with Contract Documents.
 - 1. Shop Drawings, Product Data and Samples.
 - 2. Mock Ups.
 - 3. Construction Photographs.
 - 4. Contractor's Responsibilities.
 - 5. Submission Requirements.
 - 6. Review of Shop Drawings, Product Data, Working Drawings and Samples.
 - 7. Distribution.
 - 8. General Procedures for Submittals.
 - 9. Certificate of Delegated Design Services.
 - 10. Certificates of Compliance.
 - 11. Schedules.
- B. Detailed submittal requirements will be specified in the technical specifications section.

1.02 DEFINITIONS:

- A. Written and graphic information and physical samples that require Engineer's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.
- C. Shop drawings, as defined in the General Conditions, and as specified in individual work Sections include, but are not necessarily limited to: custom-prepared data such as

fabrication and erection/installation (working) drawings of concrete reinforcement, structural details and piping layout, scheduled information, setting diagrams, actual shopwork manufacturing instructions, custom templates, special wiring diagrams, coordination drawings, individual system or equipment inspection and test reports including performance curves and certifications as applicable to the work.

1.03 SUBMITTALS:

- A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Engineer and additional time for handling and reviewing submittals required by those corrections.
 - 1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
 - 2. Initial Submittal: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
 - 3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.
 - a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.
 - 4. Format: Arrange the following information in a tabular format:
 - a. Scheduled date for first submittal.
 - b. Specification Section number and title.
 - c. Submittal category: Action; informational.
 - d. Name of subcontractor.
 - e. Description of the Work covered.
 - f. Scheduled date for Engineer's final release or acceptance.
 - g. Scheduled date of fabrication.

1.04 SUBMITTAL ADMINISTRATIVE REQUIREMENTS:

A. Engineer's Digital Data Files: Electronic digital data files of the Contract Drawings will be provided by Engineer for Contractor's use in preparing submittals.

- 1. Engineer will furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings.
 - a. Engineer makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
 - b. Digital Drawing Software Program: The Contract Drawings are available in AutoCAD 2022. Any AutoCAD version earlier than 2021 cannot open the drawing files.
 - c. Contractor shall execute a data licensing agreement in the form acceptable to Engineer.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on accepted submittal schedule.
 - 3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
 - 4. 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.
 - 5. The Contractor shall revise and resubmit rejected submittals and those requiring corrections or verification of information in a timely manner such that the overall progress of the Work is not impeded.
 - 6. Coordination of Submittal Times: The Contractor shall prepare and transmit each submittal sufficiently in advance of performing the related Work or other applicable activities, or within the time specified in the individual Sections of the Specifications, so that the installation will not be delayed by processing times, including rejection and resubmittal (if required), coordination with other submittals, testing, purchasing, fabrication, delivery, and similar sequenced activities. No extension of Contract Time will be authorized because of the Contractor's failure to transmit submittals sufficiently in advance of the Work.
- C. All shop drawings shall be submitted using the transmittal form furnished by the Engineer and numbered to be sequential based on specification section.

- D. All shop drawings submitted by subcontractors for approval shall be sent directly to the Contractor for checking. The Contractor shall be responsible for their submission at the proper time so as to prevent delays in delivery of materials.
- E. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Engineer's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
 - 1. Initial Review: Allow 21 working days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Engineer will advise Contractor when a submittal being processed must be delayed for coordination.
 - 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 - 3. Resubmittal Review: Allow 21 working days for review of each resubmittal.
- F. Contractor shall submit electronic submittals.
- G. Electronic Submittals: Electronic submittals are required for all shop drawing submittals. Identify and incorporate information in each electronic submittal file as follows:
 - 1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form.
 - 2. Name file with submittal number or other unique identifier, including revision identifier.
 - a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., 01300.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 01300.01.A).
 - 3. Transmittal Form for Electronic Submittals: Use form provided by Engineer.
- H. Options: Identify options requiring selection by Engineer.
- I. Deviations and Additional Information: 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 in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.
- J. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

- 1. Note date and content of previous submittal.
- 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
- 3. Resubmit submittals until they are marked with acceptance notation from Engineer's action stamp.
- K. Distribution: Furnish 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: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with acceptance notation from Engineer's action stamp.

1.05 CONSTRUCTION PHOTOGRAPHS:

A. The Contractor shall provide construction photographs in accordance with requirements specified in Section 01380.

PART 2 - PRODUCTS

2.01 SUBMITTAL PROCEDURES:

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
 - 1. Send electronic submittals as PDF electronic files directly to Engineer via email.
- 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 published 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 catalog cuts.
 - b. Manufacturer's product specifications.
 - c. Standard color charts.

- d. Statement of compliance with specified referenced standards.
- e. Testing by recognized testing agency.
- f. Application of testing agency labels and seals.
- g. Notation of coordination requirements.
- h. Availability and delivery time information.
- 4. Submit Product Data before or concurrent with Samples.
- 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, unless submittal based on Engineer's digital data drawing files is otherwise permitted.
 - 1. Certified shop and erection drawings. Contractor shall submit electronic files of the proposed equipment in the capacity, size, and arrangement as indicated and specified. Electronic files shall conform to the following minimum requirements:
 - a. Drawings shall include plan views, sectional views, title block, Tag Numbers, serial numbers, Parts List (identifying each component), dimensions, connection sizes and types and all details of all related items. In cases where certain information is proprietary and is omitted, provided a statement indicating that the information is proprietary and is being omitted.
 - b. Drawings shall be in conformance with all other requirements as specified in this specification.
 - 2. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Identification of products.
 - b. Schedules.
 - c. Compliance with specified standards.
 - d. Notation of coordination requirements.
 - e. Notation of dimensions established by field measurement.
 - f. Relationship and attachment to adjoining construction clearly indicated.
 - g. Seal and signature of professional engineer if specified.

- 3. 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 42 inches.
- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
 - 1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 - 2. Identification: Attach label on unexposed side of Samples that includes the following:
 - a. Generic description of Sample.
 - b. Product name and name of manufacturer.
 - c. Sample source.
 - d. Number and title of applicable Specification Section.
 - e. Specification paragraph number and generic name of each item.
 - 3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
 - 4. Disposition: Maintain sets of accepted 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 designated as Owner's property, are the property of Contractor.
 - 5. 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. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Engineer will return submittal with options selected.

- E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
 - 1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
 - 2. Manufacturer and product name, and model number if applicable.
 - 3. Number and name of room or space.
 - 4. Location within room or space.
- F. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of Engineers and owners, and other information specified.
- G. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- H. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- I. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- J. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- K. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- L. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- M. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
 - 1. Name of evaluation organization.
 - 2. Date of evaluation.

- 3. Time period when report is in effect.
- 4. Product and manufacturers' names.
- 5. Description of product.
- 6. Test procedures and results.
- 7. Limitations of use.
- N. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

2.02 SUBSTITUTION PROCEDURES

A. When products submitted are not named in the specifications, follow the substitution procedure detailed in Section 01250.

2.03 CALCULATIONS

A. Calculations should not be submitted with any submittal unless expressly requested. Any calculations received will be returned unreviewed.

PART 3 - EXECUTION

3.01 CONTRACTOR'S REVIEW:

- A. Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents prior to submission to the Engineer. Mark with approval stamp before submitting to Engineer.
- B. Contractor review shall verify the following:
 - 1. Field measurements
 - 2. Field construction criteria
 - 3. Catalog numbers and similar data
 - 4. Conformance with the Specifications
- C. If a shop drawing shows any deviation from the requirements of the Contract Documents, the Contractor shall make specific mention of the deviations in the Transmittal Form furnished by the Engineer and provide a description of the deviations in a letter attached to the submittal.

- D. The review and approval of shop drawings, samples or product data by the Engineer shall not relieve the Contractor from his responsibility with regard to the fulfillment of the terms of the Contract. All risks of error and omission are assumed by the Contractor and the Engineer will not have responsibility for any such errors and omissions.
- E. No portion of the work requiring a shop drawing, sample, or product data shall be started nor shall any materials be fabricated or installed prior to the approval or qualified approval of such item by the Engineer. Any fabrication performed, materials purchased or on-site construction accomplished which does not conform to accepted shop drawings and data shall be at the Contractor's own risk. The Owner will not be liable for any expense or delay due to corrections or remedies required to accomplish conformity with the requirements of the Contract.
- F. Project Closeout and Maintenance Material Submittals: See requirements in Division 1 Section "Closeout Procedures."
- G. Approval Stamp: Stamp each submittal with a uniform, approval stamp. 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.

3.02 ENGINEER'S ACTION:

- A. The Engineer's review is for general conformance with the design concept and contract documents. Markings or comments shall not be construed as relieving the Contractor from compliance with the contract plans and specifications or from departures therefrom. The Contractor remains responsible for details and accuracy, for coordinating the work with all other associated work and trades, for selecting fabrication processes, for techniques of assembly, and for performing work in a safe manner.
- B. Submittals will be reviewed for the Contractor's approval stamp. Submittals not stamped by the Contractor will be returned without any action.
- C. The review of shop drawings, data, and samples will be general. They shall not be construed:
 - 1. as permitting any departure from the Contract requirements;
 - 2. as relieving the Contractor of responsibility for any errors or omissions, including details, dimensions, and materials;
 - 3. as approving departures from details furnished by the Engineer, except as otherwise provided herein.
- D. If the shop drawings, data or samples as submitted describe variations and show a departure from the Contract requirements which the Engineer finds to be in the interest of the Owner and to be so minor as not to involve a change in Contract Price or time for

- performance, the Engineer may return the reviewed drawings without noting an exception.
- E. Two (maximum) copies of shop drawings or product data will be returned to the Contractor via Federal Express or UPS. Samples will not be returned.
- F. Submittals will be returned to the Contractor under one of the action codes indicated below and defined on the transmittal form furnished by the Engineer.
 - 1. Marking: No Exception Taken.
 - a. When submittals are marked as "No Exception Taken," Work covered by submittal may proceed provided it complies with Contract Documents. Acceptance of Work depends on that compliance.
 - 2. Marking: Make Corrections Noted.
 - a. When submittals are marked as "Make Corrections Noted," Work covered by submittal may proceed provided it complies with Engineer's notations or corrections on submittal and with Contract Documents. Acceptance of Work depends on that compliance. Resubmittal not required.
 - 3. Marking: Amend and Resubmit.
 - a. When submittals are marked as "Amend and Resubmit," do not proceed with Work covered by submittal. Do not permit Work covered by submittals to be used at Project site or elsewhere where Work is in progress.
 - b. Revise submittal or prepare new submittal in accordance with Engineer's notations in accordance with resubmittal requirements of this section. Resubmit without delay. Repeat if required to obtain different action marking.
 - 4. Marking: Rejected; See Remarks.
 - a. When submittals are marked as "Rejected; See Remarks," do not proceed with Work covered by submittal. Work covered by submittal does not comply with Contract Documents.
 - b. Prepare new submittal for different material or equipment supplier or different product line or material of same supplier complying with Contract Documents.
 - 5. Marking: For Information Only.
 - a. When submittals are marked as "For Information Only," the Engineer will review the submittal but take no action.

- b. It will be recorded as "For Information Only". Work covered by this submittal may proceed provided it complies with the Contract Documents.
- 6. Marking: Not Required for Review.
 - a. When submittals are marked as "Not Required for Review," the Engineer has not reviewed the submittal and it is being returned.
 - b. Work covered by this submittal may proceed provided it complies with the Contract Documents.
- G. Resubmittals will be handled in the same manner as first submittals. On resubmittals the Contractor shall direct specific attention, in writing, on the letter of transmittal and on resubmitted shop drawings by use of revision triangles or other similar methods, to revisions other than the corrections requested by the Engineer on previous submissions. Any such revisions which are not clearly identified shall be made at the risk of the Contractor. The Contractor shall make corrections to any Work done in relation to revisions which are not specifically pointed out to the Engineer which are deemed, by the Engineer, not to be in accordance with the Contract Documents.
- H. Partial submittals may not be reviewed. The Engineer will be the only judge as to the completeness of a submittal. Submittals not complete will be returned to the Contractor, and will be considered "Rejected" until resubmitted. The Engineer may at his option provide a list or mark the submittal directing the Contractor to the areas that are incomplete.
- I. If the Contractor considers any correction indicated on the shop drawings to constitute a change to the Contract Documents, the Contractor shall give written notice thereof to the Engineer at least seven working days prior to release for manufacture. The shop drawing and the Product data sheet reviews do not authorize changes in Contract Price or Contract Time. Changes involving Contract Price or Contract Time are authorized only by a signed Change Order, in accordance with the General Conditions.
- J. When the shop drawings have been completed to the satisfaction of the Engineer, the Contractor shall carry out the construction in accordance therewith and shall make no further changes therein except upon written instructions from the Engineer.
- K. Material and equipment delivered to the Site will not be paid for until the pertinent shop drawings have been reviewed and accepted by the Engineer.

3.03 CERTIFICATES OF COMPLIANCE:

- A. Certificates of Compliance as specified in the specifications shall include and mean certificates, manufacturer's certificates, certifications, certified copies, letters of certification and certificate of materials.
- B. The Contractor shall be responsible for providing Certificates of Compliance as specified in the technical specifications. Certificates are required for demonstrating

proof of compliance with specification requirements and shall be executed in six (6) copies unless otherwise specified. Each certificate shall be signed by an official authorized to certify on behalf of the manufacturing company and shall contain the name and address of the Supplier, the project name and location, and the quantity and date or dates of shipment or delivery to which the certificates apply. Copies of laboratory test reports submitted with certificates shall contain the name and address of the testing laboratory and the date or dates of the tests to which the report applies. Certification shall not be construed as relieving the Supplier from furnishing satisfactory material, if after tests are performed on selected samples, the material is found not to meet the specific requirements.

END OF SECTION

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SECTION 01311

CONSTRUCTION PROGRESS SCHEDULES

PART 1 - GENERAL

1.01 DESCRIPTION:

A. Provide Construction Progress Schedules as indicated and in compliance with Contract Documents.

B. Summary:

- 1. Section includes administrative and procedural requirements for planning, monitoring, and documenting the progress of construction during performance of the Work, including the following:
 - a. Startup construction schedule.
 - b. Contractor's construction schedule.
 - c. Construction schedule updating reports.
- C. The Contractor has the obligation and responsibility at all times to plan and monitor all of its activities, anticipating and scheduling its staff, materials, plant and Work methods in a manner that is likely to ensure completion of the Work in accordance with the terms and conditions of the Contract and at a rate that will allow it to be completed within the Contract Time.

1.02 **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. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
- C. Event: The starting or ending point of an activity.

- D. Float: The measure of leeway in starting and completing an activity.
 - 1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
 - 2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
 - 3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.
 - 4. Use of float suppression techniques such as software constraints, preferential sequencing, special lead/lag logic restraints, extended activity times, or imposed dates, other than as required by the Contract, shall be cause for the rejection of any schedule submitted by the Contractor.

1.03 SUBMITTALS:

- A. Submit the following shop drawings in accordance with Section 01300.
- B. Format for Submittals: Submit required submittals in the following format:
 - 1. PDF electronic file.
- C. Startup construction schedule.
 - 1. Within 15 days after execution of the AGREEMENT, submit 6 copies of a preliminary schedule indicating planned operations during first 90 days. Include cost of activities expected to be completed before submission and acceptance of the complete schedule.
- D. Contractor's Construction Schedule: Within 30 days after execution of the Agreement, submit 6 copies of the project critical path schedule, of size required to display entire schedule for entire construction period. Construction Progress Schedule and Updating Reports: Submit with Applications for Payment.

1.04 QUALITY ASSURANCE:

A. Comply with the requirements specified in Section 01400.

1.05 COORDINATION:

- A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.
- B. 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

2.01 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL:

- A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of 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 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 90 days, unless specifically allowed by Engineer. In calculating activity durations, normal inclement weather shall be considered.
 - 2. Procurement Activities: Include procurement process activities for the 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, acceptance, purchasing, fabrication, and delivery.
 - 3. Submittal Review Time: Include review and resubmittal times indicated in Division 1 Section "Submittal" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
 - 4. Startup and Testing Time Coordinate startup and testing time in Contractor's construction schedule.
- C. Constraints: Include constraints and work restrictions indicated in the Contract Documents, and show how the sequence of the Work is affected.
 - 1. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
 - a. Submittals.
 - b. Purchases.
 - c. Fabrication.
 - d. Deliveries.

- e. Installation.
- f. Testing.
- g. Project closeout, restoration and final cleaning.
- h. Demobilization.
- 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.
- E. 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.
- F. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

2.02 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART):

- A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's construction schedule within 30 days of date established for the Notice to Proceed. Base schedule on the startup construction schedule and additional information received since the start of Project.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

PART 3 - EXECUTION

3.01 CONTRACTOR'S CONSTRUCTION SCHEDULE:

A. Contractor's Construction Schedule Updating: Update schedule monthly to reflect actual construction progress and activities.

END OF SECTION

SECTION 01380

CONSTRUCTION PHOTOGRAPHS

PART 1 - GENERAL

1.01 DESCRIPTION:

- A. Provide construction photographs pertinent to the Contract work during the Contract period as indicated and in compliance with Contract Documents.
 - 1. Section includes administrative and procedural requirements for the following:
 - a. Preconstruction photographs.
 - b. Final completion construction photographs.
 - c. Preconstruction video recordings.

1.02 SUBMITTALS:

- A. Submit the following shop drawings in accordance with Section 01300.
- B. Photographer Qualification Data:
 - 1. Submit different samples of work by proposed photographer on construction photographs of similar nature to the work under this contract.
 - 2. Submit proposed photographer's experience and qualifications in similar work. Include copies of reference and any certifications required.
 - 3. Submit techniques, materials, and equipment to be used.
- C. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.
- D. Digital Photographs: Submit image files within seven days of taking photographs.
 - 1. Digital Camera: Minimum sensor resolution of 12 megapixels.
 - 2. Format: Minimum 4000 by 3000 pixels, in unaltered original files, with same aspect ratio as the sensor, uncropped, date and time stamped, in folder named by date of photograph, accompanied by key plan file.
 - 3. Identification: Provide the following information with each image description in file metadata tag:

- a. Name of Project and Engineer's project number and Owner's project number.
- b. Name and contact information for photographer.
- c. Name of Engineer.
- d. Name of Contractor.
- e. Date photograph was taken.
- f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
- g. Unique sequential identifier keyed to accompanying key plan.
- E. Video Recordings: Submit video recordings within seven days of recording.
 - 1. Submit video recordings in digital video disc format acceptable to Engineer.
 - 2. Identification: With each submittal, provide the following information:
 - a. Name of Project and Engineer's and Owner's project number.
 - b. Name and address of photographer.
 - c. Name of Engineer.
 - d. Name of Contractor.
 - e. Date video recording was recorded.
 - f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
 - g. Weather conditions at time of recording.

1.03 QUALITY ASSURANCE:

- A. Comply with the requirements specified in Section 01400.
- B. Photographer Qualifications: An individual who has been regularly engaged as a professional photographer of construction projects for not less than two years.
- C. Photographer to use techniques, material and equipment capable of producing photographs of high quality and resolution.
- D. Photographer to be available on call on one day notice when requested by Engineer and be prepared to respond on shorter notice in unusual or unexpected conditions.

- E. Dates for photography at site to be coordinated with Engineer and Engineer to be present during photographic periods at site unless approved otherwise by Engineer.
- F. Photographer to make and retain detailed records of all photographs by photographer under this Contract:
 - 1. The records to be in sufficient detail to support any attestation that may be required of photographer.
 - 2. Photographer to retain such records for a period not less than two years from the final acceptance of entire work under this Contract.

1.04 USAGE RIGHTS:

A. Obtain and transfer copyright usage rights from photographer to Owner for unlimited reproduction of photographic documentation.

1.05 DELIVERY STORAGE AND HANDLING:

A. Comply with the requirements specified in Section 01610.

PART 2 - PRODUCTS

2.01 PHOTOGRAPHIC MEDIA:

- A. Digital Images: Provide images in JPG format, produced by a digital camera with minimum sensor size of 12 megapixels, and at an image resolution of not less than 4000 by 3000 pixels.
- B. Digital Video Recordings: Provide high-resolution video in format acceptable to Engineer.

PART 3 - EXECUTION

3.01 CONSTRUCTION PHOTOGRAPHS:

- A. Photographer: Engage a qualified photographer to take construction photographs.
- B. Contractor to notify Engineer at least 5 days in advance of any photographic sessions.
- C. All views to contain a relative dimension reference that is easily recognized to the average person. In views where dimensions are critical, use a recognizable measuring device such as a folding ruler or measuring tape in such a manner that the markings are clear and sharp in the photograph and the device is located in close relationship with the subject of the photograph.

- D. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.
 - 1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- E. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
 - 1. Date and Time: Include date and time in file name for each image.
 - 2. Field Office Images: Maintain one set of images accessible in the field office at Project site, available at all times for reference. Identify images in the same manner as those submitted to Engineer.
- F. Preconstruction Photographs: Before starting construction, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Engineer.
 - 1. Flag excavation areas before taking construction photographs.
 - 2. Take 30 photographs to show existing conditions adjacent to property before starting the Work.
 - 3. Take a minimum of 20 photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.
 - 4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.
- G. Final Completion Construction Photographs: Take color photographs matching locations and vantage points of preconstruction photographs after date of Substantial Completion as project record documents. Engineer will inform photographer of desired vantage points.

3.02 PRECONSTRUCTION VIDEO RECORDINGS:

- A. Recording: Mount camera on tripod before starting recording unless otherwise necessary to show area of construction. Display continuous running time and date. At start of each video recording, record weather conditions from local newspaper or television and the actual temperature reading at Project site.
- B. Narration: Describe scenes on video recording by audio narration by microphone while video recording is recorded. Include description of items being viewed, recent events, and planned activities. At each change in location, describe vantage point, location, direction (by compass point), and elevation or story of construction.

- 1. Confirm date and time at beginning and end of recording.
- 2. Begin each video recording with name of Project, Contractor's name, videographer's name, and Project location.
- C. Preconstruction Video Recording: Before starting work on-site record video recording of Project site and surrounding properties from different vantage points, as directed by Engineer.
 - 1. Flag excavation areas before recording construction video recordings.
 - 2. Show existing conditions adjacent to Project site before starting the Work.
 - 3. Show existing buildings either on or adjoining Project site to accurately record physical conditions at the start of construction.
 - 4. Show protection efforts by Contractor.

END OF SECTION

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SECTION 01390

PRE- AND POST-CONSTRUCTION SURVEYS

PART 1 - GENERAL

1.01 DESCRIPTION:

- A. Provide pre- and post-construction topographic surveys of all areas within the limit of work.
- B. Section includes administrative and procedural requirements for the following:
 - 1. Pre-construction photographs and video recordings.
 - 2. Pre-construction photographs and video recordings.
 - 3. Pre- and post-construction certified topographic field surveys performed by a New Hampshire Registered Land Surveyor to determine road elevations, etc. as specified herein.

1.02 SUBMITTALS:

- A. Submit the following shop drawings in accordance with Section 01300.
- B. Pre-Construction Stamped Topographic Survey Drawings.
- C. Qualification Data: For photographer, refer to Section 01380 1.02 B and 1.03 B.
- D. Field Reports:
 - 1. 4 copies of each draft and final Pre-Construction Survey reports.
 - 2. 4 copies of each draft and final Post-Construction Survey reports.
- E. Key Plan: Refer to Section 01380 1.02 C.
- F. Digital Photographs: Refer to Section 01380 1.02 D. Submit image files within three days of taking photographs.
- G. Video Recordings: Refer to Section 01380 1.02 E. Submit video recordings within seven days of recording.
 - 1. Transcript: Prepared on 8-1/2-by-11-inchpaper, punched and bound in heavy-duty, three-ring, vinyl-covered binders. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as corresponding video recording. Include name of Project and date of video recording on each page.

H. Post-Construction Stamped TopoGraphic Survey Drawings.

1.03 QUALITY ASSURANCE:

- A. Comply with the requirements specified in Section 01400.
- B. Photographer to use techniques, material and equipment capable of producing photographs with a minimum of six megapixels.
- C. Dates for photography at site to be coordinated with the Owner. The Owner must be present during photographic periods at site.
- D. Photographer to make and retain all photographs and digital files.
- E. The topographic survey shall be performed by or under the supervision of and certified by a New Hampshire Register Land Surveyor.

1.04 USAGE RIGHTS:

A. Obtain and transfer copyright usage rights from photographer to Owner for unlimited reproduction of photographic documentation.

1.05 SEQUENCING AND SCHEDULING:

A. Dates for Pre- and Post-Construction Survey at the site shall be coordinated with the Owner and Engineer.

PART 2 - PRODUCTS

2.01 PHOTOGRAPHIC MEDIA:

- A. Digital Images: Provide images in JPG format, produced by a digital camera with minimum sensor size of 8 megapixels, and at an image resolution of not less than 3200 by 2400 pixels.
- B. Digital Video Recordings: Provide high-resolution video in format acceptable to Engineer.

PART 3 - EXECUTION

3.01 TOPOGRAPHIC SURVEYS

- A. Provide elevations of sidewalks, driveways, edge of roadways, retaining walls, fence, garages, shed, etc.
- B. The location of each elevation shall be described in detail in words and located on the plan. The contour interval shall be 1 foot.

- 3.02 CONSTRUCTION PHOTOGRAPHS:
 - A. Construction photographs are specified in Section 01380.
- 3.03 CLOSEOUT ACTIVITIES:
 - A. Provide in accordance with Section 01700.

END OF SECTION

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SECTION 01400

QUALITY ASSURANCE

PART 1 - GENERAL

1.01 DESCRIPTION:

- A. This section covers Quality Assurance and Quality Control requirements for this contract as indicated and in compliance with Contract Documents.
- B. The Contractor is responsible for controlling the quality of work, including work of its subcontractors, and suppliers and for assuring the quality specified in the Technical Specifications is achieved.
- C. Refer to the General Conditions Article 5 Materials, Services, and Workmanship and Article 11 Contractor's Obligations.

1.02 TESTING LABORATORY SERVICES:

- A. All tests which require the services of a laboratory to determine compliance with the Contract Documents, shall be performed by an independent commercial testing laboratory acceptable to the Engineer. The laboratory shall be staffed with experienced technicians, properly equipped, and fully qualified to perform the tests in accordance with the specified standards.
- B. Preliminary Testing Services: The Contractor shall be responsible for all testing laboratory services in connection with concrete materials and mix designs, the design of asphalt mixtures, gradation tests for structural and embankment fills, backfill materials, and all other tests and engineering data required for the Engineer's review of materials and equipment proposed to be used in the Work. The Contractor shall obtain the Engineer's acceptance of the testing laboratory before having services performed, and shall pay all costs for services.
- C. All field and laboratory testing specified in Section 02210 shall be performed by an independent testing laboratory employed by the Contractor. Comply with all testing methods and frequencies specified in Section 02210.
- D. The Contractor shall not retain any testing laboratory against which the Owner or the Engineer have reasonable objection, and if at any time during the construction process the services become unacceptable to the Owner, or the Engineer, either the Owner or the Engineer may direct in writing that such services be terminated. The request must be supported with evidence of improper testing or unreasonable delay. If the Engineer determines that sufficient cause exists, the Contractor shall terminate the services and engage a different testing laboratory.

- E. Transmittal of Test Reports: Written reports of testing and engineering data furnished by the Contractor for the Engineer's review of materials and equipment proposed to be used in the Work shall be submitted as specified for Shop Drawings.
- F. The Contractor's testing laboratory shall furnish four copies of a written report of each test performed by laboratory personnel to the Contractor. Distribution shall be two copies of each test report to the Engineer's Representative, one copy to the Owner, and one copy for the Contractor within three days after each test is completed.

1.03 QUALITY ASSURANCE:

- A. Codes and Standards: Refer to General Conditions Article 3 Contract Documents: Intent, Amending, Reuse, Paragraph 3.02
- B. Copies of applicable referenced standards are not included in the Contract Documents. Where copies of standards are needed by the Contractor for superintendence and quality control of the work, the Contractor shall obtain a copy or copies directly from the publication source and maintain at the jobsite, available to the Contractor's personnel, subcontractors, and Engineer.
- C. Quality of Materials: Unless otherwise specified, all materials and equipment furnished for permanent installation in the Work shall conform to applicable standards and specifications and shall be new, unused, and free from defects and imperfections, when installed or otherwise incorporated in the Work. The Contractor shall not use material and equipment for any purpose other than that intended or specified unless the Engineer authorizes such use.
- D. Where so specified, products or workmanship shall also conform to the additional performance requirements included within the Contract Documents to establish a higher or more stringent standard or quality than that required by the referenced standard.

1.04 OFFSITE INSPECTION:

- A. When the specifications require inspection of materials or equipment during the production, manufacturing, or fabricating process, or before shipment, such services shall be performed by the Owner's independent testing laboratory, or inspection organization acceptable to Engineer in conjunction with or by the Engineer.
- B. The Contractor shall give appropriate written notice to the Engineer not less than 30 days before offsite inspection services are required, and shall provide for the producer, manufacturer, or fabricator to furnish safe access and proper facilities and to cooperate with inspecting personnel in the performance of their duties.

1.05 MATERIALS AND EQUIPMENT:

A. The Contractor shall maintain control over procurement sources to ensure that materials and equipment conform to specified requirements in the Contract Documents.

B. The Contractor shall comply with manufacturer's printed instructions regarding all facets of materials and/or equipment movement, storage, installation, testing, startup, and operation. Should circumstances occur where the contract documents are more stringent than the manufacturer's printed instructions, the Contractor shall comply with the specifications. In cases where the manufacturer's printed instructions are more stringent than the contract documents, the Contractor shall advise the Engineer of the disparity and conform to the manufacturer's printed instructions. In either case, the Contractor is to apply the more stringent specification or recommendation, unless accepted otherwise by the Engineer.

1.06 SHOP AND FIELD TESTING:

- A. The Contractor is responsible for providing advance notice of and access for the shop and field testing specified in the technical specification sections.
- B. The Contractor and its Subcontractor shall permit inspections, tests, and other services as required by the Contract Documents.
- C. Contractor shall provide twenty-one days written notice to the Engineer so that the Engineer may schedule and witness off site and on site tests. The Engineer's witnessing of tests does not relieve the Contractor and/or Subcontractors of their obligation to comply with the requirements of the Contract Documents.

1.07 MANUFACTURER'S FIELD SERVICES:

- A. When specified in the technical specifications sections, the Contractor shall arrange for and provide technical representation from manufacturer's of respective equipment, items or components. The manufacturer's representative shall be a factory trained service engineer/technician with the type and length of experience specified in the technical specifications.
- B. Services Furnished Under This Contract: An experienced, competent, and authorized factory trained service engineer/technician representative of the manufacturer of each item of equipment for which field services are indicated in the specifications shall visit the site of the Work and inspect, operate, test, check, adjust if necessary, and approve the equipment installation. In each case, the manufacturer's service representative shall be present when the equipment is placed in operation. The manufacturer's service representative shall revisit the jobsite as often as necessary until all problems are corrected and the equipment installation and operation are satisfactory to the Engineer.

1.08 CERTIFICATION FORMS AND CERTIFICATES:

A. The Contractor shall be responsible for submitting the certification forms and certificates in conformance with the requirements specified in Section 01300.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

3.01 QUALITY CONTROL:

- A. Quality control is the responsibility of the Contractor, and the Contractor shall maintain control over construction and installation processes to assure compliance with specified requirements.
- B. Certifications for personnel, procedures, and equipment associated with special processes (e.g., welding, cable splicing, instrument calibration, surveying) shall be maintained in the Contractor's field office, available for inspection by the Engineer. Copies shall be made available to the Engineer upon request.
- C. Means and methods of construction and installation processes are the responsibility of the Contractor, and at no time is it the intent of the Engineer to supersede or void that responsibility.

END OF SECTION

SECTION 01500

TEMPORARY FACILITIES

PART 1 - GENERAL

1.01 SCOPE OF WORK:

- A. The Contractor shall provide all temporary facilities for the proper completion of the work as indicated and in compliance with Contract Documents.
 - 1. Section Includes:
 - a. User Charges:
 - (1) Sewer.
 - (2) Water.
 - (3) Electric.
 - (4) Temporary heat.
 - b. Project identification.
 - c. Peirce Island Bridge Restriction
 - d. Traffic and Pedestrian Regulation.
 - e. Temporary Facilities:
 - (1) Field offices and sheds.
 - f. Equipment.
 - g. Operation, termination, and removal.

1.02 REFERENCES:

- A. American National Standards Institute (ANSI):
 - 1. A 117.1: Accessible and Usable Buildings and Facilities.
- B. American Society for Testing and Materials (ASTM):
 - 1. E84: Standard Test Method for Surface Burning Characteristics of Building Materials

- 2. E136: Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 deg. C.
- C. National Fire Protection Association (NFPA):
 - 1. 70: National Electrical Code
 - 2. 241: Standard of Safeguarding Construction, Alteration, and Demolition Operations
 - 3. 701: Standard Methods of Fire Tests for Flame Propagation of Textiles and Films

1.03 USE CHARGES:

- A. General: Costs for installation, removal and use of temporary facilities if necessary shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Engineer, Owner testing agencies, and authorities having jurisdiction.
- B. Sewer Service: Pay sewer-service use charges for sewer usage by all entities for construction operations.
 - 1. The Contractor shall provide adequate sanitary facilities for the use of those employed on the Work. Such facilities shall be made available when the first employees arrive on the site of the Work, shall be properly secluded from public observation, and shall be constructed and maintained during the progress of the Work in suitable numbers and at such points and in such manner as may be required by pertinent health and safety regulations.
 - 2. The Contractor shall maintain the sanitary facilities in a satisfactory and sanitary condition at all times and shall enforce their use. He shall rigorously prohibit the committing of nuisances on the site of the Work, on the lands of the Owner, or on adjacent property.
- C. Water from Existing System if Necessary: Water from Owner's existing water system is available for use with metering and with payment of use charges. Provide connections and extensions of services as required for construction operations.
- D. Electric Power Service: The Contractor shall make all necessary applications and arrangements and pay all fees and charges for electrical energy for power and light necessary for the proper completion of the Work and during its entire progress. The Contractor shall provide and pay for all temporary wiring, switches, connections, and meters.
- E. Notwithstanding the availability of potable water services from the existing system, the Contractor shall be solely responsible for the provision of water for leakage and other testing, for concrete protection and to prevent freezing of equipment, as required by the Contract.

F. Temporary Heat:

1. If temporary heat is required for the protection of the Work, the Contractor shall provide and install suitable heating apparatus, shall provide adequate and proper fuel, and shall maintain heat as required. Costs for temporary heating, cooling, and ventilating required to execute the Work shall be borne by the Contractor.

1.04 PEIRCE ISLAND BRIDGE RESTRICTION

A. Construction Vehicle Restrictions: All construction vehicles that have a weight greater than the limits set forth in New Hampshire RSA 266, and therefore are required to obtain an Overweight Permit from the New Hampshire Department of Transportation (NHDOT), shall be analyzed by the Engineer to evaluate if the vehicle may cross the bridge, or if additional restrictions are necessary. Refer to Section 1.04.B for information regarding the construction vehicle evaluation process.

B. Construction Vehicle Evaluation:

1. Purpose:

a. Should the Contractor require the use of a construction vehicle that exceeds the limits of NH RSA 266 and requires an NHDOT Overweight Permit, review and approval by the Engineer of the vehicle configuration is required.

2. Required Information:

- a. Contractor shall submit the following information about the alternate vehicle to the Engineer, for review:
 - (1) Gross vehicle weight
 - (2) Number of axles and axle spacing
 - (3) Load distribution per axle
 - (4) Gauge distance (lateral spacing between wheel lines)
 - (5) Tire/wheel configuration per axle

3. Vehicle Evaluation Duration

a. Contractor shall submit the information necessary for the vehicle evaluation a minimum of seven working days before the anticipated date of use of the vehicle. Owner shall not be responsible for any work delays or associated costs incurred as a result of the exclusion of any construction vehicle. Additionally, any delay claim submitted by Contractor for schedule impacts related to vehicle evaluation duration will be rejected if the minimum evaluation period is not provided to the Engineer.

4. Cost of Vehicle Evaluations

a. Vehicle configuration evaluations will be charged to the Contractor at the rate of \$2,500 per additional vehicle evaluated. Fees charged to the Contractor shall be credited to the Owner through a Change Order.

C. Implementation and Regulation:

The Contractor shall be solely responsible for adherence to the restrictions outlined
herein, including implementation and regulation of all necessary restrictions to
construction vehicles using the Peirce Island Bridge for the project. Restrictions
shall apply to, but are not limited to, vehicles operated by Contractor, Contractor's
subcontractors, and other vehicles delivering equipment and/or material to the
project.

1.05 TRAFFIC AND PEDESTRIAN REGULATION:

A. General: All traffic regulation and management signs, fencing, signals, etc. called for in the Contract Documents shall be in place and operational when construction activity begins.

B. Signs, Signals, and Devices:

- 1. Traffic cones and drums, fences, flares and lights: As approved by authority having jurisdiction and shown on plans.
- 2. Flagger's equipment: As required by local jurisdiction.
- C. Flaggers: Provide trained and equipped flaggers to regulate traffic as necessary. Contractor shall obtain a flagging permit and submit to the City through Viewpoint (https://www.cityofportsmouth.com/inspection/permit-applications).
- D. Flares and Lights: Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.

E. Haul Routes:

- 1. Drawings indicate haul routes designated by authorities having jurisdictions for use of construction traffic.
- 2. Confine construction traffic to designated haul routes.
 - a. Construction traffic identified as traveling outside the designated haul routes as indicated will be subject to a \$500 penalty per vehicle, per occurrence, to be paid by the Contractor to the City of Portsmouth, NH
- 3. Provide traffic control at critical areas of haul routes to regulate traffic, to minimize interference with public traffic.

- 4. Trucks shall be restricted to normal construction hours unless prior written approval obtained from Engineer or Owner.
- 5. Contractor shall notify City at least 24 hours before any over-sized construction trucks are scheduled. An escort vehicle shall be provided by the Contractor for all over-sized construction vehicles exiting the construction site until the over-sized vehicle is traveling along Hancock Street.

F. Removal:

- 1. Remove equipment and devices when no longer required when approved by Owner and Engineer.
- 2. Repair damage caused by installation.
- 3. Restore affected areas to pre-construction conditions.

G. Parking During Construction:

- 1. Parking in areas outside of the designated staging areas such as the Four Tree Island Parking Lot, State Fish Pier, Peirce Island Pool Parking Lot, and Boat Ramp is prohibited during construction
- 2. The Contractor shall be responsible for securing parking for construction personnel should there not be enough space for Contractor staff parking within the designated staging areas.

1.06 SUBMITTALS:

A. Traffic Control Plan

1.07 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.

1.08 PROJECT CONDITIONS:

- A. During adverse weather and against the possibility thereof, the Contractor shall take all necessary precautions so that the Work may be properly done and satisfactory in all respects. When required, protection shall be provided by use of tarpaulins, wood and building-paper shelters, or other suitable means.
- B. During cold weather, materials shall be preheated, if required, and the materials and adjacent structure into which they are to be incorporated shall be made and kept sufficiently warm so that a proper bond will take place and a proper curing, aging, or

drying will result. Protected spaces shall be artificially heated by suitable means which will result in a moist or a dry atmosphere according to the particular requirements of the work being protected. Ingredients for concrete and mortar shall be sufficiently heated so that the mixture will be warm throughout when used.

PART 2 - PRODUCTS

2.01 TEMPORARY FACILITIES:

A. The Contractor shall maintain a readily accessible copies of all contract documents near the work for his own use during the period of construction.

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL:

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent

3.02 SECURITY AND PROTECTION FACILITIES INSTALLATION:

- A. 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.
- B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
- C. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways. Refer to drawings and Section 01568.
 - 1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant- protection zones.
 - 2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
 - 3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.

- 4. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.
- D. 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.
- E. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

3.03 CLEANING DURING CONSTRUCTION:

- A. Contractor to maintain the grounds within his working limits and around any equipment or storage areas. This includes removal of waste material, cutting of grass, weed whacking around storage racks and material, snow plowing and snow shoveling.
- B. The Contractor shall make arrangements with, and obtain permits from, any authorities having jurisdiction for disposal of waste and debris.
- C. The Contractor shall wet down exterior surfaces prior to sweeping to prevent blowing of dust and debris.
- D. The Contractor shall provide approved containers for collection and disposal of waste materials, debris, and rubbish. At least at weekly intervals, the Contractor shall dispose of such waste materials, debris, and rubbish off Site.
- E. At least weekly, the Contractor shall brush sweep entry drive and roadways, and all other streets and walkways affected by the Work and where adjacent to the Work.

END OF SECTION

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SECTION 01568

EROSION CONTROL, SEDIMENTATION AND CONTAINMENT OF CONSTRUCTION MATERIALS

PART 1 - GENERAL

1.01 DESCRIPTION:

A. Provide all work and take all measures necessary to control soil erosion resulting from construction operations, prevent flow of sediment from construction site, and contain construction materials (including excavation and backfill) within protected working area as to prevent damage to any stream or wetlands and waterbodies

1.02 REFERENCES:

- A. United Stated Environmental Protection Agency (USEPA):
 - 1. Guidelines for Erosion and Sediment Control, Planning and Implementation.
 - 2. Processes, Procedures and Methods to Control Pollution Resulting from all Construction Activity.
 - 3. EPA-833-R-06-004: Developing Your Stormwater Pollution Prevention Plan, A Guide for Construction Sites
- B. New Hampshire Department Services Stormwater Manual (2008)
- C. New Hampshire Department of Environmental Services (NHDES) Wetland Permit
- D. New Hampshire Department of Environmental Services (NHDES) Alteration of Terrain Permit

1.03 SUBMITTALS:

- A. Submit the following shop drawings in accordance with Section 01300:
 - 1. Silt fence, compost filter socks, mats, and netting
 - 2. Temporary erosion control products proposed by Contractor.
- B. Sediment and erosion control plans and details.
- C. Prior to the start of the work, submit to Engineer, for review a Stormater Pollution Prevention Plan (SWPPP) including a plan with detailed sketches showing the proposed methods to be used for controlling erosion during construction. The SWPPP and plan comply with the requirement of the EPA National Pollutant Discharge Elimination System General Permit for Discharges from Construction Activities.

1.04 QUALITY ASSURANCE:

- A. Comply with the requirements specified in Section 01400.
- B. Use acceptable best management practices, including use of water diversion structures, diversion ditches, settling basins, and sediment traps.
- C. If construction materials are washed away during construction, remove materials from fouled areas.
- D. Engineer has authority to limit surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow and fill operations and to direct immediate permanent or temporary pollution control measures to prevent contamination of any stream or wetlands, including construction of temporary berms, dikes, dams, sediment basins, sediment traps, slope drains, and use of temporary mulches, mats, or other control devices or methods to control erosion.

PART 2 - PRODUCTS

2.01 MULCHES

A. Acceptable material as appropriate for the conditions: straw gravel, crushed stone, peat moss, pine straw or needles, wood chips, wood excelsior, or wood fiber cellulose.

2.02 SILT BARRIERS

A. Bales:

- 1. Straw bales or other suitable material acceptable to Engineer.
- 2. All bales to be at least 14"x18"x30" and securely tied with either wire band or string and staked twice per bale.
- 3. Bales shall be free of purple loosestrife and other invasive and noxious species.

B. Compost Filter Socks:

- 1. The filter sock shall be produced from a 5 mil thick continuous HDPE filament, woven int a tubular mesh netting material, with openings in the knitted mesh of 3/8" (10mm). This shall either be filled wth compost to the diameter of the sock. Compost filter socks shall either be made on site or delivered to the jobsite,
- 2. Where greater than a 200-foot long section of ground is to be protected with a compost filter sock, the sock length shall be sleeved. After one sock section (200 feet) is filled and tied off (knotted) or zip tied, the second sock section shall be pulled over the first 18 inches or more and "sleeved" creating a overlap. Once overlapped, the second section is filled with compost starting at the sleeved area to create a seamless appearance. The sock may be stakes at the overlapped area (where the

sleeve is) to keep the sections together. Sleeving at the joints is necessary because it reduces the opportunity for water to penetrate the joints when installed in the field.

2.03 MATS AND NETTING:

- A. Jute, excelsior and wood fiber mats as identified on the Contract Drawings, or Approved equal.
- B. Type and use shall be suitable for the work.

2.04 SYNTHETIC FILTER FABRIC:

A. Synthetic filter fabric to be a pervious sheet of propylene, nylon, polyester or ethylene filaments and shall be certified by the manufacturer or supplier as conforming to the following requirements and the requirements specified in Section 02273:

Physical Property	Requirements
Filtering Efficiency	75% (min.)
	Extra Strength –
Tensile Strength at 20% (max.)	50 lbs./lin. In (min.)
Elongation	Standard Strength
	30 lbs./lin. In (min.)

Flow Rate 0.3 gal./sq. ft./min. (min)

- B. Burlap to be 10 ounce per square yard fabric.
- C. Posts for filter fences either 2 x 3 or 2 x 4 inch studs or 0.5 pounds (minimum) per linear foot or steel with a minimum length of 5 feet. Steel posts to have projections for fastening wire to them.
- D. Stakes for filter barriers to be 2" x 2" hardwood or equivalent metal with a minimum length of 3 feet.
- E. Wire fence reinforcement for silt fences using standard strength filter cloth to be a minimum of 42 inches in height, a minimum of 14 gauge and have a maximum mesh spacing of 6 inches. Use where required per manufacturer's instructions.

2.05 SEDIMENTATION TRAP:

A. Sedimentation traps shall be sized to collect laden water during dewatering from construction site into an enclosed system. The trap shall be sized to accommodate and effectively remove solids from the maximum volume of dewatering effluent anticipated with a resulting effluent stream free of silt and other suspended solids.

PART 3 - EXECUTION

3.01 GENERAL:

- A. Do not discharge chemicals, fuels, lubricants, bitumen, raw sewage and other harmful waste into or alongside any body of water or into natural or man-made channels.
- B. Design erosion and sediment controls to handle peak runoff resulting from storm events.
- C. The Contractor shall be responsible for inspecting and maintaining these control measures to ensure their proper function and adequate sediment storage at all times. The Contractor shall remove sediment once it reaches 50 percent of the capacity of the structure. Sediment collected shall be disposed of offsite at the Contractor's cost.

3.02 INSTALLATION:

- A. Install baled hay or straw erosion checks in all locations as directed, surrounding base of all deposits of stored excavated material outside of disturbed area, and where directed by the Engineer.
- B. Install checks immediately after site is cleared and before trench excavation. Locate checks, surrounding stored material, approximately 6 feet (1.8 m) from material.
- C. Hold bales in place with two 2 inches by 2 inches by 3 feet (50 mm by 50 mm by 0.9 m) stakes so that each bale is butted tightly against adjoining bale thereby precluding shortcircuiting of erosion check.
- D. Stake compost filter socks with 2 inches by 2 inches by 3 feet wood stakes at 10 foot spacing maximum. Provide additional stakes as conditions warrant and as directed by the Engineer.
- E. Construct earth berms or diversions to intercept and divert runoff water from critical areas.
- F. Discharge silt-laden water from excavations onto filter fabric mat and/or baled hay or straw sediment traps to ensure that only sediment-free water is returned to watercourses.
- G. Do not place excavated soil material adjacent to water-course in manner that will cause it to wash away by high water or runoff.
- H. Prevent damage to vegetation by excessive watering or silt accumulation in the discharge area.
- I. Do not dump spoiled material into any streams, wetlands, surface waters, or unspecified locations.
- J. Prevent indiscriminate, arbitrary, or capricious operation of equipment in streams, wetlands or surface waters.

- K. Do not pump silt-laden water from trenches or excavations into surface waters, streams, wetlands, or natural or man-made channels leading thereto.
- L. Prevent damage to vegetation adjacent to or outside of construction area limits.
- M. Do not dispose of trees, brush, debris, paints, chemicals, asphalt products, concrete curing compounds, fuels, lubricants, insecticides, washwater from concrete trucks or hydroseeders, or any other pollutant in streams, wet-lands, surface waters, or natural or man-made channels leading thereto, or unspecified locations.
- N. Do not alter flow line of any stream unless indicated or specified.

3.03 REMOVAL OF TEMPORARY WORKS:

A. After temporary works have served their purpose, the Contractor shall remove them or level and grade them to the extent required to present a sightly appearance and to prevent any obstruction of the flow of water or any other interference with the operation of or access to the permanent works.

END OF SECTION

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SECTION 01600

CONTROL OF MATERIALS

PART 1 - GENERAL

1.01 DESCRIPTION:

- 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 as indicated and in compliance with Contract Documents.
 - 1. Section Includes:
 - a. Definitions.
 - b. Submittals.
 - c. Spare parts.
 - d. Quality assurance.
 - e. Delivery, storage and handling.
 - f. Warranty.
 - g. Products.
 - h. Substitution and "Or Equal" items.
 - i. Reuse of existing material.
 - i. Manufacturer's instructions.
 - k. General material and equipment requirements.
 - 1. Materials and Equipment.

1.02 REFERENCES:

- A. American Society of Mechanical Engineers (ASME):
 - 1. B1.1: Unified Inch Screw Threads (UN and UNR Thread Form)
- B. American Society for Testing and Materials International (ASTM):

- 1. A123/A123M: Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
- 2. A325/A325M: Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength

1.03 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 accepted through submittal process to have the indicated qualities related to type, function, dimension, inservice performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

1.04 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. Comply with the requirements of Section 01250.

1.05 SPARE PARTS:

- A. Provide spare parts for Products as specified in the individual technical specification sections. Comply with the requirements specified in Section 01600.
- B. Pack spare parts to protect them during storage. Tag spare parts and containers to clearly identify them in accordance with Contractor's parts numbering system as reviewed by the Engineer. All parts shall be cross-referenced to their applicable the Specification Section.

1.06 QUALITY ASSURANCE:

A. Comply with the requirements specified in Section 01600.

B. 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.

1.07 DELIVERY STORAGE AND HANDLING:

- A. The Contractor shall arrange deliveries of materials and equipment in accordance with construction Progress Schedule, coordinate to avoid conflict with Work and conditions at site.
- B. Comply with the requirements of Section 01600.
- C. Provide equipment and personnel to handle materials and equipment by methods recommended by manufacturer to prevent soiling or damage to materials or equipment, or their packaging.
- D. 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.
- E. Owner assumes no responsibility for damage or loss due to storage of materials and equipment.

F. Interior Storage:

- 1. Store with seals and labels intact and legible.
- 2. Store materials and equipment subject to damage by elements in weathertight enclosures.
- 3. Maintain temperature and humidity within ranges required by manufacturer's instructions.

G. Exterior Storage:

- 1. Store fabricated materials and equipment above ground, on blocking or skids, to prevent soiling or staining. Cover materials and equipment subject to deterioration with impervious sheet coverings. Provide ventilation to avoid condensation.
- 2. Store loose granular materials in well-drained area on solid surfaces to prevent mixing with foreign matter.

H. Inspection and Maintenance:

- 1. Arrange storage to provide easy access for inspection, maintenance, and inventory.
- 2. Make periodic inspections of stored materials and equipment to ensure materials and equipment maintained under specified conditions are free from damage or

- deterioration, and coverings are in-place and in condition to provide required protection.
- 3. Perform maintenance on stored material and equipment in accordance with manufacturer's written instructions and in presence of Owner or Engineer.
 - a. Notify Engineer 24 hrs before performance of maintenance.
 - b. Submit report of completed maintenance and condition of coverings to Engineer with each Application for Payment.
 - c. Failure to perform maintenance, to notify Engineer of intent to perform maintenance or to submit maintenance report may result in rejection of material or equipment.
- I. The Contractor shall assume responsibility for protection of completed construction and repair and restore damage to completed Work equal to original condition.

1.08 WARRANTY:

- 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. See other Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Section 01700.

1.09 PRODUCTS:

A. Furnish products of qualified manufacturers suitable for intended use. Furnish products of each type by single manufacturer unless specified otherwise.

- B. Do not use materials and equipment removed from existing premises, except as specifically permitted by Contract Documents.
- C. Furnish interchangeable components from same manufacturer for components being replaced.

1.10 SUBSTITUTION AND "OR EQUAL" ITEMS:

A. Follow the procedures in Section 01250.

1.11 ACCEPTANCE OF MATERIALS:

- A. Unless otherwise specified, only new materials and equipment shall be incorporated in the work. All materials and equipment furnished by the Contractor shall be subject to the inspection and acceptance of the Engineer. No material shall be delivered to the work without prior acceptance of the Engineer.
- B. As specified in Section 01300, the Contractor shall submit to the Engineer, data relating to materials and equipment he proposes to furnish for the work. Such data shall be in sufficient detail to enable the Engineer to identify the particular product and to form an opinion as to its conformity to the specifications.
- C. Facilities and labor for handling and inspection of all materials and equipment shall be furnished by the Contractor. If the Engineer requires, either prior to beginning or during the progress of the work, the Contractor shall submit additional samples or materials for such special tests as may be necessary to demonstrate that they conform to the specifications. Such samples shall be furnished, stored, packed, and shipped at the Contractor's expense. Except as otherwise noted, the Owner will make arrangements for and pay for the tests.
- D. Any delay of acceptance resulting from the Contractor's failure to submit samples or data promptly shall not be used as a basis of a claim against the Owner or the Engineer.
- E. In order to demonstrate the proficiency of workmen or to facilitate the choice among several textures, types, finishes, and surfaces, the Contractor shall provide such samples of workmanship or finish as may be required.
- F. The materials and equipment used on the work shall correspond to the accepted samples or other data.

1.12 REUSE OF EXISTING MATERIAL:

- A. Except as specifically indicated or specified, do not use materials and equipment removed from existing structure(s) in new Work.
- B. For material and equipment specifically indicated or specified to be reused in Work:

- 1. Use special care in removal, handling, storage, and reinstallation to ensure proper function in completed Work.
- 2. The Contractor shall arrange and pay for transportation, storage, and handling of products which require off-site storage, restoration or renovation.
- 3. Off-site storage areas and buildings shall conform to requirements of this section.

1.13 MANUFACTURER'S INSTRUCTIONS:

- A. Installation of equipment and materials shall comply with manufacturer's instructions. Obtain and distribute printed copies of such instructions to parties involved in installation, including 2 copies to Engineer.
 - 1. Maintain one set of complete instructions at Site during installation and until completion of Work.
- B. Handle, store, install, connect, clean, condition, and adjust materials and equipment in accordance with manufacturer's written instructions and in conformance with Specifications.
 - 1. If Site conditions or specified requirements conflict with manufacturer's instructions, consult Engineer for further instructions. Do not proceed with Work without written instructions.

1.14 GENERAL MATERIAL AND EQUIPMENT REQUIREMENTS:

A. The requirements of this Paragraph shall constitute the standards for the material and equipment specified herein. Should these requirements conflict with the Supplier's recommendations or in any way be less stringent than the Supplier's requirements, they shall be superseded by the Supplier's requirements.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT:

- A. Material and Equipment Incorporated into Work:
 - 1. Conform to applicable specifications and standards.
 - 2. Comply with size, make, type, and quality specified or as accepted by Submittal.
- B. Manufactured and Fabricated Materials and Equipment:
 - 1. Design, fabricate, and assemble in accordance with engineering and shop practices standard with industry.

- 2. Manufacture like parts of duplicate units to standard sizes and gauges, to be interchangeable.
- 3. Two or more items of same kind shall be identical, by same manufacturer.
- 4. Material and equipment shall be suitable for service conditions.
- 5. Equipment capabilities, sizes, and dimensions shown or specified shall be adhered to, unless variations are specifically accepted, in writing.
- 6. Equipment shall be adapted to best economy in power consumption and maintenance. Parts and components shall be proportioned for stresses occurring during continuous or intermittent operation, and for additional stresses occurring during fabrication or installation.
- 7. Design so working parts are readily accessible for inspection and repair, easily duplicated, and replaced.
- C. Do not use material or equipment for purpose other than for which it is designed or specified.

PART 3 - EXECUTION

3.01 CLOSEOUT ACTIVITIES:

A. Provide in accordance with Section 01700.

SECTION 01610

DELIVERY, STORAGE AND HANDLING

PART 1 - GENERAL

1.01 GENERAL:

A. This Section specifies the general requirements for the delivery handling, storage and protection for all items required in the construction of the work. Specific requirements, if any, are specified with the related item.

1.02 TRANSPORTATION AND DELIVERY:

- A. Transport and handle items in accordance with manufacturer's printed instructions.
- B. Schedule delivery to reduce long term on-site storage prior to installation and/or operation. Under no circumstances shall equipment be delivered to the site more than one month prior to installation without written authorization from the Engineer. Deliveries to the site of any kind shall not be permitted prior to 3/1/2024.
- C. Ship equipment, material and spare parts complete except where partial disassembly is required by transportation regulations or for protection of components.
- D. Pack spare parts in containers bearing labels clearly designating contents and pieces of equipment for which intended. All spare parts shall be cross-referenced to their applicable the Specification Section.
- E. Carefully pack and crate equipment for shipment. Protect polished and machined metal surfaces from corrosion and damage during shipment and installation. Specially pack electrical equipment to prevent damage by moisture. Cover equipment having exposed bearings and glands to exclude foreign matter. Carefully pack machines for shipment and protect electrical equipment from moisture damage. Protect bearings, seals and glands from grit and dirt.
- F. Identify each component with durable identifying labels or tags securely attached to each piece of equipment, crate or container.
- G. Finished surfaces of all exposed flanges shall be protected by fiberboard blank flanges strongly built and securely bolted thereto.
- H. Deliver spare parts at same time as pertaining equipment. Deliver spare parts to owner after completion of work.
- I. Coordinate delivery with installation to ensure minimum holding time for items that are hazardous, flammable, easily damaged or sensitive to deterioration.

- J. Deliver products to the site in manufacturer's original sealed containers or other packing systems, complete with instructions for handling, storing, unpacking, protecting and installing.
- K. Assume responsibility for equipment material and spare parts just before unloading from carrier at site.
- L. All items delivered to the site shall be unloaded and placed in a manner which will not hamper the Contractor's normal construction operation or those of subcontractors and other contractors and will not interfere with the flow of necessary traffic.
- M. Provide equipment and personnel to unload all items delivered to the site.
- N. Promptly inspect shipment to assure that products comply with requirements, quantities are correct, and items are undamaged. For items furnished by others (i.e. Owner, other Contractors), perform inspection in the presence of the Engineer. Notify Engineer verbally, and in writing, of any problems.
- O. Pay all demurrage charges if failed to promptly unload items.

1.03 STORAGE AND PROTECTION:

- A. Store and protect products and equipment in accordance with the manufacturer's instructions, with seals and labels intact and legible. Storage instruction shall be studied by the Contractor and reviewed with the Engineer by him. Instructions shall be carefully followed and a written record of this kept by the Contractor for each product and pieces of equipment.
- B. Arrange storage of products and equipment to permit access for inspection. Periodically inspect to make sure products and equipment are undamaged and are maintained under specified conditions.
- C. Provide protective maintenance during storage consisting of manually exercising equipment, inspecting mechanical surfaces for signs or corrosion or other damage, lubricating, applying any coatings as recommended by the equipment manufacturer necessary for its protection and all other precautions to assure proper protection of all equipment stored and for compliance with manufacturers' requirements related to warranties. Log all protective maintenance for each piece of equipment in the written record noted above.
- D. Store loose granular materials on solid flat surface in a well-drained area. Prevent mixing with foreign matter.
- E. Cement and lime shall be stored under a roof and off the ground and shall be kept completely dry at all times. All structural, miscellaneous and reinforcing steel shall be stored off the ground or otherwise to prevent accumulation of dirt or grease, and in a position to prevent accumulations of standing water and to minimize rusting. Beams shall be stored with the webs vertical. Precast concrete shall be handled and stored in a

manner to prevent accumulations of dirt, standing water, staining, chipping or cracking. Brick, block and similar masonry products shall be handled and stored in manner to reduce breakage, cracking and spalling to a minimum.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

END OF SECTION

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SECTION 01700

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 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.

1.02 SUMMARY:

- A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following as indicated and in compliance with Contract Documents:
 - 1. Substantial Completion procedures.
 - 2. Final completion procedures.
 - 3. Warranties.
 - 4. Final cleaning.
 - 5. Repair of the Work.
 - 6. Specific closeout and special cleaning requirements for the Work in those Sections.

1.03 SUBMITTALS:

- A. Submit the following shop drawings in accordance with Section 01300.
- B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- C. Certified List of Incomplete Items: Final submittal at Final Completion.
- D. Certificates of Release: From authorities having jurisdiction.
- E. Certificate of Insurance: For continuing coverage.
- F. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.04 SUBSTANTIAL COMPLETION PROCEDURES:

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.
- B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
 - Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 - 2. Submit closeout submittals specified in other Division 1 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
 - 3. Submit closeout submittals specified in individual Divisions 2 through 3 Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - 4. Submit maintenance material submittals specified in individual Divisions 2 Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Engineer. Label with manufacturer's name and model number where applicable.
- C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
 - 1. Advise Owner of pending insurance changeover requirements.
 - 2. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
 - 3. Terminate and remove temporary facilities from Project site.
 - 4. Complete final cleaning requirements.
- D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. 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.

1.05 DEMONSTRATION AND INSTRUCTIONS:

- A. Conform to the requirements of sections 01600, Section 3.01.C.
- B. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.
- C. Required instruction time for each item of equipment and system is specified in individual sections.

1.06 PROJECT RECORDS DOCUMENTS

- A. The Contractor shall record any actual revisions to the Work and maintain one set of the following Project Record Documents on Site:
 - 1. Contract Drawings, Specifications, and Addenda.
 - 2. Change Orders, Field Orders, and other written notices.
 - 3. Shop drawings, Product data, and samples.
 - 4. Records of surveying and layout Work.
 - 5. Project Record Drawings.
- B. The Contractor shall record information on the Project Record Documents concurrent with construction progress and store these documents separately from the documents used for construction.
 - 1. The Owner will supply a set of Contract Drawings. The Contractor shall mark thereon all revisions as the Work progresses in order to produce a set of as-bulit drawings.
 - 2. The Contractor shall note any changes made during construction by any of the Contractor's forces or those of any Subcontractors.
 - 3. The Contractor shall dimension the locations of buried or concealed Work, especially piping and conduit, with reference to exposed structures.

- 4. The Contractor shall dimension the installed locations of concealed service lines on the Site or within the structure by reference from the centre line of the service to the structure column lines, or other main finished faces, or other structural points which are easily identified and located in the finished Work.
- 5. Certificates of Substantial Performance and Total Performance shall not be issued until as-built drawings are complete and submitted, and the Contractor has satisfied all requirements for Substantial Performance and Total Performance of the Work.
- C. For Project Record Documents and Record Shop Drawings, the Contractor shall legibly mark each item to record actual construction including:
 - 1. Field changes of dimensions and details.
 - 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 3. Changes in the Work caused by Site conditions, or originated by the Owner, the Engineer, the Contractor, Preselected Equipment Vendors, or Subcontractors and by addenda, supplemental drawings, Site instructions, supplementary instructions, change orders, correspondence, and directions of any regulatory authorities.

1.07 PROTECTING INSTALLED CONSTRUCTION:

- A. Protect installed Work and provide special protection where specified in individual specification sections.
- B. Prohibit traffic from landscaped areas.

1.08 SPARE PARTS AND MAINTENANCE PRODUCTS:

- A. Furnish spare parts, maintenance, and extra products in quantities specified in individual specification sections.
- B. Deliver to location directed by Engineer; obtain receipt prior to final payment.
- C. Coat parts to protect from moisture.
- D. Crate in containers designed for prolonged storage suitable for handling with hoisting equipment containers.
- E. Stencil on containers:
 - 1. Manufacturer/supplier name.
 - 2. Unit name.
 - 3. Spare part name.

- 4. Manufacturer catalogue number.
- 5. Other identifying information.
- 6. Precautionary information.

1.09 FINAL COMPLETION PROCEDURES:

- A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:
 - 1. Submit a final Application for Payment according to Division 1 Section "Payment Procedures."
 - 2. Certified List of Incomplete Items: Submit certified copy of Engineer's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Engineer. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 - 3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
- B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. 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.

1.10 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 list of spaces in sequential order, according to the structural designations from the Contract Drawings.
 - 2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
 - 3. 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.
- 4. Submit list of incomplete items in the following format:
 - a. Six (6) paper copies. Engineer, will return two copies.

1.11 SUBMITTAL OF PROJECT WARRANTIES:

- A. Refer to Section 01740.
- 1.12 AS-BUILT DRAWINGS:
 - A. Comply with the requirements of 01700 and 00800.
 - B. The "as-built" drawings shall consist of all the Contract Drawings.
 - C. The Contractor shall maintain one set of "marked up" as-built drawings throughout the duration of the contract.
 - D. The Contractor shall maintain the drawings and identify all the work completed as the project progresses.
 - E. The as-built drawings shall be stored and maintained in the Contractor's field office apart from other documents used for construction. The as-built drawings shall be maintained in a clean, dry and legible condition and shall not be used for construction purposes.
 - F. The as-built drawings shall be made available at all times for the Engineer and/or Owner's review throughout the duration of the project. All deficiencies noted shall be promptly corrected by the Contractor.
 - G. The Contractor shall record all changes, including the location, size, number, type, horizontal alignment, elevation, etc. of all elements of the project which deviate from those indicated on the Contract Drawings.
 - H. The Contractor shall submit the final as-built drawings for the Engineer's review. Inaccuracies in the as-built drawings shall be corrected.

PART 2 - PRODUCTS

2.01 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

3.01 FINAL CLEANING:

- A. General: Perform final cleaning in accordance with Section 01745.
- B. Pest Control: Comply with pest control requirements in Division 1 Section "Temporary Facilities".
- C. Construction Waste Disposal: Comply with waste disposal requirements in Section 01500.

3.02 REPAIR OF THE WORK:

- A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.
 - 1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
 - 2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.
 - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
 - 3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.

4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

3.03 ADJUSTING:

A. Adjust operating products and equipment to ensure smooth and unhindered operation.

END OF SECTION

SECTION 01740

WARRANTIES AND BONDS

PART 1 - GENERAL

1.01 SCOPE OF WORK:

A. This Section specifies general administrative and procedural requirements for warranties and bonds required by the Contract Documents, including manufacturer's standard warranties on products and special warranties.

1.02 DEFINITIONS:

- A. Standard Product Warranties are pre-printed written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.
- B. Special Warranties are 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.
- C. Standard Product Warranties and Special Warranties shall start on the date established as the date of Substantial Completion.

1.03 RELATED WORK:

- A. Refer to Conditions of Contract for the general requirements relating to warranties and bonds.
- B. General closeout requirements are included in Section .
- C. Specific requirements for warranties for the Work and products and installations that are specified to be warranted, are included in the individual Sections of Division 2 through 3
- D. Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.

1.04 SUBMITTALS:

A. Submit written warranties to the Owner prior to the date fixed by the Engineer for Substantial Completion. If the Certificate of Substantial Completion designates 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 Owner.

- B. 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 Owner within fifteen days of completion of that designated portion of the Work.
- C. 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 Engineer for acceptance prior to final execution.
- D. Refer to individual Sections of Division 2 for specific content requirements, and particular requirements for submittal of special warranties.
- E. At Final Completion, compile two copies of each required warranty and bond properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Contract Documents.
- F. 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-inch by 11-inch paper.
- G. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Contract Documents, with each item identified with the number and title of the specification Section in which specified, and the name of the product or work item.
- H. 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, supplier, and manufacturer.
- I. 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, address, and telephone numbers of the Contractor and equipment supplier.
- J. 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.

1.05 WARRANTY REQUIREMENT:

- 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 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 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.
- E. 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.
- F. 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 that entities required to countersign such commitments are willing to do so.
- G. 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.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

END OF SECTION

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SECTION 01745

CLEANING UP

PART 1 - GENERAL

1.01 SUMMARY:

- A. Execute cleaning during progress of Work and at completion of Work as indicated and in compliance with Contract Documents.
- B. Refer to specification sections for specific cleaning for Products or Work.

1.02 DISPOSAL REQUIREMENTS:

A. Conduct cleaning and disposal operations to comply with local codes, ordinances, regulations, and anti-pollution laws. Do not burn or bury rubbish or waste materials on Project site. Do not dispose of volatile wastes, such as mineral spirits, oil, or paint thinner, in storm or sanitary drains. Do not dispose of wastes into streams or waterways.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Use only those cleaning materials which will not create hazards to property and persons or damage surfaces of material to be cleaned.
- B. Use only cleaning materials recommended by manufacturer of surface to be cleaned.

PART 3 - EXECUTION

3.01 CLEANING DURING CONSTRUCTION:

- A. At all times maintain areas covered by the contract and adjacent properties and public access roads free from accumulations of waste, debris, and rubbish caused by construction operations.
- B. During execution of work, clean site, adjacent properties, and public access roads and dispose of waste materials, debris, and rubbish to assure that buildings, grounds, and public properties are maintained free from accumulations of waste materials and rubbish. Peirce Island Road shall be cleaned by mechanical sweeping weekly during construction period. Unneeded construction equipment shall be removed and all damage repaired so that the public and property owners will be inconvenienced as little as possible.
- C. Wet down dry materials and rubbish to prevent blowing dust.

- D. Cover or wet excavated material leaving and arriving at the site to prevent blowing dust. Clean the public access roads to the site of any material falling from the haul trucks.
- E. Where material or debris has washed or flowed into or been placed in existing watercourses, ditches, gutters, drains, pipes structures, work done under this contract, or elsewhere during the course of the Contractor's operations, such material or debris shall be entirely removed and satisfactorily disposed of during the progress of the work, and the ditches, channels, drains, pipes, structures, and work, etc., shall, upon completion of the work, be left in a clean and neat condition.
- F. On or before the completion of the work, the Contractor shall, unless otherwise especially directed or permitted in writing, tear down and remove all temporary buildings and structures built by him; shall remove all temporary works, tools, and machinery or other construction equipment furnished by him; shall remove, acceptably disinfect, and cover all organic matter and material containing organic matter in, under, and around privies, houses, and other buildings used by him; shall remove all rubbish from any grounds which he has occupied; and shall leave the roads and all parts of the premises and adjacent property affected by his operations in a neat and satisfactory condition.
- G. Provide on-site containers for collection and removal of waste materials, debris, and rubbish in accordance with applicable regulations.

3.02 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: Employ experienced workers or professional cleaners for final cleaning.
 - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated 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 petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.

- C. Construction Waste Disposal: Comply with waste disposal requirements in Division 1 Section "Temporary Facilities".
- D. Prior to substantial completion or Owner occupancy, Contractor with Engineer, shall conduct inspection of sight-exposed interior and exterior surfaces and work areas to verify Work and site is clean.

END OF SECTION

SECTION 02200

EARTHWORK SITE WORK

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Complete the items of work, as shown on the Drawings and specified herein. The work shall include but not necessarily limited to the following:
 - 1. Install and maintain erosion control systems.
 - 2. Clear and grub within the limit of work lines, except trees, shrubs and planting designated on the Drawings to remain.
 - 3. Strip all loam from areas to be paved and regraded, and stockpile in separate piles on site. Do not remove any loam or stripped gravel from the site, except as authorized by Owner.
 - 4. Protect all trees, shrubs and planting designated on the Drawings to remain, for the duration of the Contract.
 - 5. Protect all existing utility lines and utility structures for the duration of the work. Maintain existing services throughout the construction. Provide temporary bypass piping as may be necessary.
 - 6. Perform excavation work in a manner that will prevent undermining and/or instability of existing structures.
 - 7. The contractor is responsible for providing additional necessary excavation shoring to prevent loss of soil under existing foundations and subsequent undermining.
 - 8. Perform all excavating and furnish all material necessary for filling and backfilling as required for the foundations, pavements, utilities, and related work to complete the work of this Contract, including the furnishing and compaction of additional material as needed.
 - 9. Perform all construction dewatering sufficient to allow work to proceed in the dry.
 - 10. Remove from the site only material which has been approved by the Owner's Field Representative for offsite disposal.
 - 11. Establish subgrades as indicated on the Drawings and specified herein.

- 12. Control surface water and groundwater in excavations. Perform all pumping and bailing necessary to maintain excavated areas free from water from any source. Discharge pumped water in accordance with regulatory requirements.
- 13. Perform cutting and removal of existing pavements to the extent indicated on the Drawings and as required for the installation of new Contract work.
- 14. Furnish and install underground utilities and associated appurtenances to the extent indicated on the Drawings.
- 15. Coordinate work with all utility companies performing work at or near the site.

B. Requirements of Regulatory Agencies:

- 1. All work shall be performed and completed in accordance with regulations of local municipality and other county, state, national, or utility company standards as they apply.
- 2. The Contractor shall secure all necessary permits from, and furnish proof of acceptance by, the municipal and state departments having jurisdiction and shall pay for all such permits, except as specifically stated elsewhere in the Contract Documents.
- The Contractor shall provide traffic control, including signage, flaggers, and police
 officers, in accordance with regulations of the local municipality and state. Traffic
 control efforts will be modified as necessary to address the job conditions, flow of
 traffic, and time of day.

C. Benchmarks and Surveying:

- 1. The General Contractor shall:
 - a. Verify all locations, lines, grades, property lines, work lines, and other dimensioned points indicated on the Drawings for the work.
 - b. Protect construction base line and all other pre-established survey control points.
 - c. Perform all necessary survey layout for the project.

D. Grade and Elevations:

The Drawings indicate, in general, the elevations and alignment and invert grades of
underground utilities. The Engineer or Owner's Field Representative, however, may
require the Contractor to make such adjustments in grades and alignment as are
found necessary in order to avoid interference, and adapt the piping to other special
conditions encountered. Grading between indicated final grades shall be smooth

- even surfaces, except as otherwise required. Cover over pipes shall, in any case, conform to requirements of state and municipal agencies or utilities having jurisdiction.
- 2. The Contractor shall establish the lines and grades in conformity with the Drawings and maintain same by means of a laser, placed as directed, specified, or required by the Owner's Field Representative to properly perform the contract installation.

E. Finished Grades:

- 1. The words "finished grades" as used herein, mean the required final grade elevations indicated on the Drawings. Where not otherwise indicated, areas shall be given uniform slopes between points for which finished grades are shown, or between such points and existing grade, except that vertical curves or rounding shall be provided at abrupt changes in slope.
- 2. The Drawings indicate, in general, the alignment and finish grade elevations. The Engineer or Owner's Field Representative, however, may make such adjustment in finish grades and alignment as is found necessary.

1.2 JOB CONDITIONS

A. Disposition of Utilities:

1. Rules and regulations governing the respective utilities shall be observed in executing all work in this Section. Active utilities shall be adequately protected from damage and removed or relocated only as indicated or specified. Inactive and abandoned utilities encountered in excavation and grading operation shall be removed, plugged or capped. Report in writing to the Owner's Field Representative the locations of such abandoned utilities. Extreme care shall be taken when performing work near existing utility lines, utilizing hand excavation in such areas, as far as practicable. If in the progress of excavation any utility should become damaged and result in any damage to public or private property, the Contractor shall restore to the original condition, at no additional cost to the Owner, anything that has been damaged or disturbed.

B. Off-Site Work:

- This work shall conform to the requirements of the municipal, state and federal
 authorities having jurisdiction over the roads and respective utilities, with regard to
 materials and methods. Should there be any conflict between requirements specified
 in this Section, and those of the authorities, the requirements of the respective
 authorities shall govern.
- 2. Notify the appropriate authorities in advance of commencing off-site work and any work in the public ways and obtain permission to perform this work. Perform all work in the public ways in a manner required by the authorities having jurisdiction.

C. Dewatering

1. Pump groundwater and surface runoff from excavations as necessary to allow work to proceed in the dry. Discharge pumped water in a manner which will not cause erosion or discharge sediment and in accordance with local, state, and federal regulatory requirements. Refer to related Sections 02402 Site Dewatering.

D. Shoring and Bracing:

- 1. Furnish, install, and maintain in an effective condition until new work and backfilling has been completed, proper shoring, bracing, and other items required to protect foundations against settlement or movement of any kind due to the work performed hereunder.
- 2. Furnish, install, and maintain until no longer needed, shoring, bracing and other items required to retain the banks of excavations, to protect the work, and to ensure the safety of workmen, property, and the public.

E. Protection of Existing Structure and Foundations:

- 1. Design, furnish, install, and maintain excavation support and protection system capable of supporting excavation sidewalls, resisting soil and hydrostatic pressures, and superimposed and construction loads.
- 2. Design and install excavation support and protection systems without damaging existing building, pavements, or other structures.
- F. Repairing Damage: Repair, or have repaired, all damage to existing utilities, structures, lawns, and other public and private property which results from construction operations, at no additional cost to the Owner, to the complete satisfaction of the Owner, Owner's Field Representative, utility company, and the property owner.
- G. Do not leave any trenches open overnight.
- H. Where Section 02200 is silent, the applicable sections of the NHDOT "Standard Specifications for Road and Bridge Construction," latest edition, shall apply to products and installation.

1.3 REFERENCE STANDARDS

A. Contractor shall obtain from the New Hampshire Department of Transportation a copy of the latest edition of the New Hampshire Department of Transportation "Standard Specifications for Road and Bridge Construction". The specifications of said latest edition shall apply to this project where referenced or where technical specifications contained herein are silent.

1.4 SUBSURFACE CONDITIONS

A. As information to bidders, reference is made to the following report in document.

1.5 SUBMITTALS

- A. Test Reports: Submit the following reports directly to Engineer:
 - 1. Sieve analysis and proctor tests of materials proposed for use
 - 2. Test reports on borrow material
 - 3. Verification of suitability of subgrade material
 - 4. Field reports: in-place soil density tests and pavement density tests
 - 5. Final report of Special Inspections certifying completion of the work in accordance with these specifications.
- B. Plans for temporary shoring.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Right of Property:

- 1. The Contractor shall not have any right of property in any materials taken from any excavation, except that material designated by the Engineer or Owner's Field Representative to be removed from the site shall become the property of the Contractor.
- 2. Do not remove any materials from the construction site without the approval of the Owner's Field Representative.
- 3. This provision shall in no way relieve the Contractor of his obligations to remove and dispose of any material determined by the Owner's Field Representative or Engineer to be unsuitable for backfilling.

B. Unsuitable Material:

- 1. If, in the opinion of the Owner's Field Representative or Engineer, the material encountered at and/or below the indicated grade for excavation, as shown on the Drawings, is unsuitable for the foundation of the structure, remove the material.
- 2. Replace the unsuitable material with thoroughly compacted suitable screened gravel, crushed stone or crushed gravel as determined by the Owner's Field Representative or Engineer.

C. Disposal of Material:

1. All excavated materials designated by the Owner's Field Representative or Engineer as unsuitable, and excavated ledge and rock, shall be disposed off-site by the Contractor at no additional cost to the Owner.

D. Sand:

- 1. **Sand fill** shall meet the following requirements:
 - a. Sand shall be uniformly graded, free from frost, frozen clumps, loam or clay.
 - b. Sand shall meet the following gradation requirements (NHDOT Item No. 304.1):

SIEVE	PERCENT PASSING
2/3 Loose Lift Thickn	ness* 100
No. 4	70 - 100
No. 200	0 – 12**

^{*6-}inch maximum, unless shown otherwise on the drawings

2. Sand blanket for utility trenches shall be as specified on the drawings.

E. Common Borrow:

- 1. Shall be used for fill areas outside building or paving areas such as embankment and lawn areas.
- 2. Shall consist of earth suitable for embankment construction; free from frozen material, perishable rubbish, peat and other objectionable material which may be compressible, or which cannot be compacted properly.
- 3. Shall not contain stones larger than 6 inches in diameter, broken concrete, masonry, rubble, pavement, or other similar materials.
- 4. The moisture content shall be sufficient to provide the required compaction and stable embankment.
- 5. Rock used for common borrow shall be will distributed with interstices filled and shall not be placed within two feet of finish grade.

F. Gravel Borrow:

^{**}In portion passing the No. 4 sieve

- 1. Shall be used as structural backfill under haul roads, under paved areas, against headwalls or retaining walls unless otherwise specified on drawings.
- 2. Shall be free of organic material, loam, wood, trash, snow, ice, frozen soil, and other objectionable material.
- 3. Shall meet the following gradation requirements (NHDOT Item No. 304.2):

<u>SIEVE</u> <u>PERCENT PASSING</u>

2/3 Loose Lift Thickness*	100
No. 4	25 - 70
No. 200	0 - 12**

^{*6-}inch maximum, unless shown otherwise on the drawings

G. Washed Crushed Stone (Fine):

- 1. Crushed stone (fine) shall be well-graded granular material used as a roadway base, as shown on the drawings or as directed by the Owner's Field Representative.
- 2. Material shall be hard and durable, free from frost, organic material, loam, debris, and other unsuitable material.
- 3. Shall be washed to be free of coatings, films and dust.
- 4. Shall meet the following graduation requirements (NHDOT Item No. 304.4(fine))

SIEVE DESIGNATION	% PASSING BY WEIGHT SQUARE OPENING
2 Inch	100
1-1/2 Inch	85-100
3/4 Inch	45-75
No. 4	10- 45
No. 200	0- 5

H. Reclaimed Stabilized Base:

- 1. Subject to approval by Engineer of material, location and intended use, reclaimed pulverized bituminous pavement and gravel base may be used in lieu of crushed gravel based course beneath pavement areas and gravel parking areas.
- 2. Conform to the requirements of NHDOT Section 306.
- I. Crushed Stone:

^{**}In portion passing the No. 4 sieve

- 1. Crushed, hard, durable rock meeting the gradation requirements for ASTM D-448, No. 57 Stone.
- 2. Shall be use for:
 - a. backfill for repair of soft or yielding areas

J. Pea Stone:

- 1. Pea stone shall be hard and durable, free from frost, organic material, loam, debris, and other unsuitable material.
- 2. Shall meet the following graduation requirements.

SIEVE	% PASSING BY WEIGHT
DESIGNATION	SQUARE OPENING
1/4 Inch	100
3/8 Inch	85 - 100
No. 4	10 - 30
No. 8	0 - 10
No. 16	0 - 5

PART 3 - EXECUTION

- 3.1 Preparation
 - A. Flag the limits of clearing and areas where materials are to be placed. Review the limits with the Owner's Field Representative.
- 3.2 Tree protection
 - A. Protect all existing trees, shrubs and planting noted on the Drawings to remain. Install tree protection as indicated on the drawings prior to performing any clearing or excavation at the site. Tree trunks and root zones shall be protected by substantial boxing to prevent accidental damage by vehicle or mechanical equipment. Do not grade within the drip line of the trees designated to remain.
- 3.3 Clearing, Grubbing, and Removal
 - A. Cut, and completely remove from the site, all trees, stumps, and shrubs, within the Limit of Work Lines. All stumps, brush, vegetation, rubbish and other perishable or objectionable matter shall be removed from the site at no additional cost to the Owner.
- 3.4 Cutting and Removal of Existing Pavement

- A. Refer to drawings for extent of cutting and removal required of existing bituminous concrete pavements.
- B. Perform all cutting in a straight and neat manner, using mechanical equipment for such purpose. Completely remove all cut surfacing materials from the site.
- C. In addition to areas specifically designated on the Drawings, perform cutting wherever existing bituminous concrete surfacing will be disturbed by the work of this Contract.
- 3.5 Stripping and Stockpiling Topsoil and Gravel Surface
 - A. Before any excavation is begun, strip all topsoil, gravel surfacing, and unsuitable materials. Below exterior paved areas, and below any other structural elements, remove the strata of topsoil and unsuitable materials for their entire depths. In other areas, remove topsoil and unsuitable materials to the specified subgrade.
 - B. Clean all topsoil free from large stones, roots, debris and large clumps of clay, before stockpiling on site in an approved location. Do not remove any topsoil from the site, except as approved by the Owner's Field Representative. Completely remove material which is determined by the Owner's Field Representative as unsuitable for re-use.
 - C. The suitability of stripped materials for use as loam or topsoil and gravel for backfill, shall be determined by the Owner's Field Representative, and his decision shall be final. Soil which does not meet the project requirements for loam or topsoil, either naturally or by additives supplied by the Contractor shall be considered common borrow.
- 3.6 Shoring and Sheeting
 - A. The Contractor shall provide sheeting and shoring as required to protect the adjacent structures, roadways, utilities, and property during the construction period.
 - B. All sheeting and shoring systems shall be designed and stamped by a Professional Engineer Registered in the State of New Hampshire employed by the Contractor. Said design shall be submitted to the Engineer for his review not less than 10 days prior to commencement of field installation activities. The sheeting and shoring design shall be complete and include drawings indicating the extent of shoring in plan and section, design calculations, material specifications and a complete construction sequence. The Contractor's design shall take into account all soil pressures, hydrostatic pressures, adjacent structure surcharge loads, applicable traffic, construction equipment, stockpiles and any other surcharge loads. All intermediate stages of loading as well as final conditions shall be considered.
- C. Coordinate the location of the shoring such that it will minimize interference with the excavation and minimize obstruction of the subsequent structural concrete work.

- D. Design each component member of the sheeting and shoring system to safely support the maximum load that can occur during construction including surcharge due to cranes, backhoes, concrete trucks, etc.
- E. Install and limit the movement of the excavation lateral support systems to minimize settlement of existing structure adjacent to excavations.
- F. Acceptance of the Contractor's plans, design calculations and methods of construction by the Architect shall not relieve the Contractor of the responsibility for the adequacy of the sheeting and shoring system, preventing damage to structures, utilities, and streets adjacent to excavations, and the safety of persons working within excavated areas and the public at large.

3.7 Trench Excavation

- A. Water, storm drainage, utility structures and piping, manholes, and catch basins will be installed under the work of the respective Sections. The excavation, trenching, and backfilling for these utilities, shall be done under this Section.
- B. Trenches for utility lines, including storm drainage, shall be excavated of all debris, peat, silt, and other materials which the Owner's Field Representative deems not stable, and backfilled with clean fill, compacted to form a stable foundation for laying the utility lines.
- C. Trench widths shall be sufficient to permit proper installation of the work and bottom of trenches shall be evenly graded with bell holes provided to insure uniform bearing for pipes. All piping for conduits shall be bedded in six inches of crushed stone unless specified otherwise.
- D. Obtain from the proper authorities, locations of all utilities within the scope of this work so that there will be no damage done to such utilities. Perform all excavation in vicinity of existing utilities by hand. Neither the Owner nor the Owner's Field Representative will be responsible for any such damage and the Contractor shall restore any structure or utility so damaged without additional compensation.
- E. Excavation of earth and/or rock beyond indicated or authorized limits shall be refilled with crushed gravel compacted to 95 percent of the maximum dry density at the optimum moisture content or concrete, as required by the Owner's Field Representative, at no additional cost to the Owner.
- F. The Contractor shall be responsible for maintaining proper clearances between adjacent pipes and between pipes and equipment as installed under this Contract. If, for practical purposes of maintaining clearance or for providing a more practical method of support, the Contractor proposes to install piping along a route other than indicated on the Drawings, a sketch of the proposed new routing shall be submitted to the Owner's Field Representative for approval.

- 3.8 Excavation for Seeded Areas and Paved Areas
 - A. Excavate, to subgrade elevations, in areas designated on the Drawings to receive site improvements, loaming, seeding, and paving.
- 3.9 Unauthorized Excavation
 - A. Backfill to the specified grade, any excavation beyond the limits stated above and as shown on the Drawings (unless specifically ordered otherwise by the Owner's Field Representative) with compacted crushed gravel, crushed stone, or screened gravel.
 - B. Backfill unauthorized excavation at no additional cost to the Owner.
- 3.10 Placement of Materials
 - A. Placing Fills General:
 - 1. Areas to be filled or backfilled shall be free of construction debris, refuse, compressible and decayable materials and standing water. Do not place fill when temperature is below 32°F and when fill material or layers below it are frozen.
 - 2. Notify the Owner's Field Representative when excavations are ready for observation. Filling and backfilling shall not be started until conditions have been approved by the Owner's Field Representative.
 - 3. When fill is to be dumped from a truck, bucket loader, or similar equipment it shall be placed on the upper level of the lift and spread over the lower level.
 - 4. Additional material necessary to complete the filling shall be furnished by the Contractor.
 - 5. Compact fill under parking areas, pavements, access roads, and sidewalks to 95% of dry maximum density.
 - 6. Compact backfill adjacent to foundation walls to 92 to 95% of dry maximum density per ASTM D-1557 (Modified Proctor).
 - 7. Compact fill under grass and mulch areas to 92% of dry maximum density.
 - 8. Fine grade material to a tolerance of 0.05 feet.
 - B. Erosion Stone and Riprap:
 - 1. Lay Erosion Stone and Riprap from the bottom of slopes upward with the larger stones embedded in the toes of the slopes.
 - 2. Lay stones with close joints roughly perpendicular to the slopes.

- 3. Fill open joints with spalls.
- 4. Place gravel blankets and geotextiles beneath erosion stone and riprap unless otherwise directed by the Owner's Field Representative.

C. Pipe Installations:

- 1. Backfill trenches only after pipe has been inspected, and locations of pipes and appurtenances have been recorded.
- 2. Each pipe section shall be supported on a six-inch minimum bed of crushed stone or as shown in the drawings. Bed shall be shaped by means of hand shovels to give full and continuous support to the lower third of each pipe. Backfill by hand around pipe and for a depth of twelve inches above the pipe; use specified fill and tamp firmly in layers not exceeding twelve inches in thickness, taking care not to disturb the pipe. Compact the remainder of the backfill thoroughly without approved mechanical tamper to achieve the compaction specified below for various fill conditions.
- 3. When piping is laid in filled areas, place the fill before any pipe is installed, and compact as specified to a depth of not less than two feet above the proposed flow line of the pipe. A trench shall then be excavated to the required grade, of sufficient width to permit through tamping of the fill under the bells and around the pipe.

3.11 Compaction and Testing Requirements

A. General:

- 1. All field density testing shall be performed by an independent soils laboratory at the Contractor's own expense.
- 2. Granular fill materials shall be compacted with a moisture content of 0-4% wet of the optimum moisture content.
- B. Test Frequency: The Contractor shall arrange for the independent soils laboratory to perform testing for granular fill materials at the frequencies listed below. The degree of compaction required (95% beneath pavement and structures) is expressed as a percentage of maximum dry density at the optimum moisture content as determined by ASTM D1557, Method C. In-Place Density test shall conform to ASTM D 2922.
 - 1. Sand Borrow, Gravel Borrow and Crushed Gravel

<u>TEST</u>	<u>FREQUENCY</u>	<u>METHOD</u>
Gradation	1/2000 CY	ASTM D 422
Moisture Dens	sity 1/2000 CY	ASTM D1557, Method C

- 2. Locations of In-Place Density tests:
 - a. Average of one test every 200 SY. Test shall be performed 9 12 inches below final pavement elevation.
- 3. Material excavated from trench shall be tested to determine the dry density at the optimum moisture content. The Owner's Field Representative reserves the right to request additional tests if in his opinion the material being used as backfill is significantly different than previous tests have indicated.

3.12 Compaction Equipment

- A. Compaction equipment shall be of suitable type and adequate to obtain the densities specified and shall provide satisfactory breakdown of materials to form a dense fill.
- B. Compaction equipment shall be operated in strict accordance with the manufacturer's instructions and recommendations. Equipment shall be maintained in such condition that it will deliver the manufacturer's rated compactive effort. If inadequate densities are obtained, larger and/or different types of additional equipment shall be provided by the Contractor. Hand-operated equipment shall be capable of achieving the specified densities.

3.13 Moisture Control Equipment

A. Equipment for applying water shall be of a type and quality adequate for the work, shall not leak, and shall be equipped with a distributor bar or other approved device to assure uniform application.

END OF SECTION

SECTION 02271

STONE REVETMENT

PART 1 – GENERAL

1.01 DESCRIPTION:

A. Furnish and place new revetment armor stone as indicated and specified herein.

1.02 RELATED WORK:

- A. Division 1 Specifications
- B. Section 02210: Earth Excavation, Backfill, Fill and Grading
- C. Section 02273: Geotextile Fabric

1.03 QUALITY ASSURANCE:

- A. Provide in accordance with Section 01400 and as specified herein.
- B. Color to match as close as possible stone color of exposed rock adjacent to revetments.
- C. The material used for the revetment shall be rough quarry stone free of cracks, joints, weak seams or other defects. Stone shall be hard, durable, and of such quality that it will not disintegrate on exposure to ice, seawater, wave action or weathering. It shall also be chemically stable, capable of withstanding freezing and thawing, and suitable in all other respects for the intended use. Stone excavated on-site, if suitable size, weight, and color, may be used for revetment construction. Suitability determined by the Engineer. A potential stone supply shall have stone with less than 30% loss in an LA Abrasion Test (ASTM C 535); however the stone source will also be subjected to inspection by the Contractor and the Engineer to confirm the large stone is an acceptable color and also free of weakness and defects. Stones will be subjected to a 10 foot stone on stone drop test with the disputed stone being dropped onto a similar size or larger stone to show minimal damage/spalling, at no additional cost to the Owner.
- D. Prepare a plan outlining the Contractor's proposed methods of excavation, backfill and placement of revetment stone and geotextile fabric to make sure that such activities are done in accordance with all Permit and Regulatory requirements and will minimize disturbance to the existing shoreline and prevent damage to the adjacent salt marsh.

1.04 REFERENCES:

- A. American Society for Testing and Materials (ASTM) Publications:
 - 1. C535: Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
- B. State of NH Department of Transportation "Standard Specifications for Road and Bridge Construction", latest edition.

1.05 SUBMITTALS:

- A. Submit the following in accordance with Section 01300 and as specified herein.
 - 1. Quarry stone source information. Indicate type of stone and include current photographs representative of the intended stone for this project with adequate scale to show the stone sizes. Stone supply shall be subject to inspection and approval by the Engineer as meeting specification prior to utilization.
 - 2. LA Abrasion Test (ASTM C 535) test data.
 - 3. Plan as specified in Paragraph 1.03D prior to the start of any riprap revetment materials procurement.
 - 4. Drop test results (narrative memo and photos), coordinate with Engineer for field observation.
 - 5. Sample of stone for review of color.

1.06 TRAFFIC MANAGEMENT:

- A. Truck access for materials and equipment deliveries to Peirce Island is affected by traffic, narrow streets, pedestrians, and tight intersections. The Contract Documents have detailed construction traffic routes which apply to all construction traffic on this project and the Contractor is required to adhere to. Refer to Section 01500 and the Contract Drawings for a full description of the traffic management requirements.
- B. Tractor-trailers longer than an AASHTO WB-50 may have difficulty turning from State St. onto Marcy St.

PART 2 – PRODUCTS

2.01 MATERIAL:

A. New Riprap Revetment Stone:

- 1. The material used for the revetment shall be rough quarry stone free of cracks, joints, weak seams or other defects. Select color to match rock existing on Peirce Island. Acceptance of rock color is at the discretion of the Owner. Stone shall be hard, durable, and of such quality that it will not disintegrate on exposure to ice, seawater, wave action or weathering. It shall also be chemically stable, capable of withstanding freezing and thawing, and suitable in all other respects for the intended use. A potential stone supply shall have stone with less than 30% loss in an LA Abrasion Test (ASTM C 535); however, the stone source will also be subjected to inspection by the Contractor and the Engineer to confirm the large stone is an acceptable color and is also free of weakness and defects. Stones will be subjected to a 10 foot stone on stone drop test with the disputed stone being dropped onto a similar size or larger stone to show minimal damage/spalling, at no additional cost to the Owner.
- 2. Provide quarried, rough, angular block-like stones. No rounded boulders or flat slabs in which one dimension is less than one-third of any other dimension shall be used. Potentially acceptable stone includes granite, diorite, basalt, quartzite, gneiss, syenite. The following rock is unlikely to be approved; schist, gabbro, pegmatite, shale, slate, sandstone, limestone.
- 3. Blasted and excavated bedrock from this site can be provided if it meets all the requirements of new stone specified in Paragraph 2.01 A and B.
- 4. Provide angular stone with an equal distribution of the most common shapes for elongated angular stone, such as, pyramids, tetrahedrals, etc.
- 5. Provide stone conforming to the size requirements as indicated and specified.

- B. Provide new stones meeting the following gradations:
 - 1. Armor Stones:

Maximum Percent of Total Weight Smaller than Given Size
100
50

2. Toe Stones:

	Maximum Percent of	
	Total Weight	
Size of Stone	Smaller than Given Size	
2 7 TO 119	100	
2.5 TONS	100	
230 Pounds	50	
200 Pounds	0	

3. Bedding Stone:

NHDOT 585.3 Stone Fill, Class C

C. Provide woven geotextile fabric for the Revetment conforming to Section 02273.

PART 3 – EXECUTION

3.01 RIPRAP REVETMENT STONE:

- A. Before commencing stone placement, prepare existing surfaces to receive revetment, including bedrock notching/benching as necessary for specified toe-in and end transitions. Remove sharp edges, debris, including timbers, concrete and other materials that might cut or damage the geotextile. Provide adequate ballast on generally horizontal geotextile and proper fastening on vertical geotextile to secure it in the intended locations until the stonework is complete. Provide stone bedding over geotextile (minimum necessary) if sharp pointed or sharp edge armor or underlayer stone is being placed with a sharp edge/point toward the geotextile.
- B. Stone placement to be performed in the dry. Place stone to the limits indicated. The revetment stone shall be placed by equipment on the surfaces and to the depths and dimensions specified. Begin at the toe and progress up the slope with the construction of revetment.

- C. Control the drop height of stone to prevent puncture or damage to the fabric. Remove and replace at no additional cost to the Owner geotextile fabric which is punctured, torn or damaged during placement of stone.
- D. Place stone individually by equipment appropriate for lifting, manipulating, and placing stone of the size specified. Prevent damaging stone by not dropping stone onto other stone. Placing of stones by dumping will not be permitted.
- E. The stone shall be delivered and placed in such a manner that will insure that the stone work in-place will be a dense and compact mass with the largest armor stones uniformly distributed and firmly in contact with the smaller stones and chinking (quarry spalls) filling the voids between the larger rock. Hand placement of chinking stone shall be completed to insure a final surface which is tight and solid and with no voids greater than six inches (6") across present between rocks.
- F. Each stone shall be carefully set on the stones below following the slope lines and tolerances shown on the contract drawings. Armor stones shall not be set with flat surfaces parallel to the slope lines, and the top surfaces shall be step-like to facilitate walking. Adjacent stones shall be selected for size and shape and laid in contact and fit as close as possible so as to produce a reasonable minimum of voids. Individual stones shall be placed in a manner to provide maximum interlocking. Stones shall not rock or tip and shall have at least three points of bearing on stones below. Stones shall be tested for rocking or tipping prior to placement of the next row of stones. Armor stones must be set in a stable configuration without depending on placing small stones in joints from the top to prevent rocking or tipping (chinking).
- G. The actual mean surface lines of the stone shall coincide with the proposed slope as indicated and shown on the drawings.
- H. During construction, protect the revetment stone from displacement and damage by the sea.
- I. Do not operate bulldozers, cranes or similar heavy equipment on the beach or surface of revetment.
- J. Install woven geotextile fabric in accordance with Section 02273.
- K. Construct riprap revetment in accordance with all permits.

3.02 CONTRACT CLOSEOUT:

A. Provide in accordance with Section 01700.

END OF SECTION

SECTION 02273

GEOTEXTILE FABRIC

PART 1 - GENERAL

1.01 DESCRIPTION:

A. Provide non-woven geotextile fabric for revetment stone separation as indicated or specified.

1.02 RELATED WORK:

- A. Section 01568: Erosion Control, Sedimation and Containment of Contruction Materials
- B. Section 02210: Earth Excavation, Backfill, Fill and Grading
- C. Section 02272: Stone Revetment

1.03 REFERENCES:

- A. American Society for Testing and Materials (ASTM) Publications:
 - 1. D4355: Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon ARC Type Apparatus.
 - 2. D4491: Test Methods for Water Permeability of Geotextile by Permittivity.
 - 3. D4533: Test Method for Trapezoid Tearing Strength of Geotextiles.
 - 4. D4632: Test Method for Grab Breaking Load and Elongation of Geotextiles.
 - 5. D4751: Test Method for Determining Apparent Opening Size of a Geotextile.
 - 6. D4833: Test Method for Index Puncture Resistance of Geotextiles, Geomembranes and Related Products.
 - 7. D6241: Test Method for Static Puncture Strength of Geotextiles and Geotextile-Related Products Using a 50-mm Probe.

1.04 SUBMITTALS:

A. Submit the following in accordance with Section 01300:

- 1. At least two weeks prior to shipment, submit manufacturer's certificate of compliance and physical property data sheet indicating that requirements for materials and manufacture are in conformance as specified.
- 2. For informational purposes only, submit manufacturer's printed installation instructions.

1.05 QUALITY ASSURANCE:

A. Provide in accordance with Section 01400 and as specified.

B. General:

- 1. Producer of geotextile fabric to maintain competent laboratory at point of manufacture to ensure quality control in accordance with ASTM testing procedures. Laboratory to maintain records of quality control results.
- 2. Do not expose geotextile fabric, except the geotextile fabric for silt fence, to ultraviolet radiation (sunlight) for more than 14 days total in period of time following manufacture until geotextile fabric is installed and covered with fill or backfill material.
- 3. Take all precautions to protect geotextile fabric from damage resulting from any cause. Either repair or replace geotextile fabric to Engineer's satisfaction at no additional cost to the Owner.

1.06 DELIVERY, STORAGE AND HANDLING:

- A. Provide in accordance with Section 01610 and as specified.
- B. Provide geotextile fabric in rolls wrapped with protective covering to protect geotextile fabric from mud, dirt, dust, and debris. Label each roll of geotextile fabric with number or symbol to identify production run.
- C. Protect geotextile fabric from sunlight during transportation and storage. Do not leave geotextile fabric exposed to sunlight for more than two weeks during installation operations.

1.07 TRAFFIC MANAGEMENT:

- A. Truck access for materials and equipment deliveries to Peirce Island is affected by traffic, narrow streets, pedestrians, and tight intersections. The Contract Documents have detailed construction traffic routes which apply to all construction traffic on this project and the Contractor is required to adhere to. Refer to Section 01500 and the Contract Drawings for a full description of the traffic management requirements.
- B. Tractor-trailers longer than an AASHTO WB-50 may have difficulty turning from State St. onto Marcy St.

PART 2 - PRODUCTS

2.01 MANUFACTURERS:

- A. Provide the following non-woven geotextile fabric for revetment or riprap installations:
 - 1. US 250NW as manufactured by US Fabrics.
 - 2. Mirafi 1100N as manufactured by TenCate Geosynthetics.
 - 3. GEOTEX 1071 as manufactured by Propex Geosolutions.
 - 4. Or acceptable equivalent product.

2.02 MATERIAL:

- A. Geotextile fabric shall conforms to test requirements for minimum average roll value (weakest principle direction) for strength properties of any individual roll tested from manufacturing lot or lots of particular shipment in excess of minimum average roll value (weakest principle direction) as specified hereafter:
- B. Non-woven geotextile fabric, for revetment or riprap installations, shall be:

Property	ASTM Test Method	Units	Value
1. Grab Strength	D4632	lbs	250 (min.)
2. Grab Elongation	D4632	%	50
3. Trapezoidal Tear Strength	D4533	lbs	100 (min.)
4. Puncture Strength	D6241	lbs	700 (min.)

5. Permittivity	D4491	sec -1	0.8 (min.)
6. Apparent Opening Size	D4751	Sieve Number	100
7. Ultraviolet Stability	D4355	Percent	70 (min.)

PART 3 - EXECUTION:

3.01 INSTALLATION:

- A. Install geotextile fabric in accordance with manufacturer's printed instructions.
- B. Place geotextile fabric on the foundation subgrade prior to placing the screened gravel or crushed stone.
- C. Overlap geotextile fabric 18 inches minimum for unsewn lap joint. Overlap fabric 6 inches at seam for sewn joint.
- D. Do not permit traffic or construction equipment to travel directly on geotextile fabric.
- E. Place geotextile fabric in relatively smooth condition to prevent tearing or puncturing. Lay geotextile fabric loosely but without wrinkles or creases so that placement of the backfill materials will not stretch or tear geotextile fabric. Leave sufficient slack in geotextile fabric around irregularities to allow for readjustments.
- F. Patch all tears in geotextile fabric by placing additional section of geotextile fabric over tear with a minimum of 3 feet overlay.
- G. Extend the geotextile fabric and wrap around the screened gravel or crushed stone along the perimeter of the foundation.
- H. Install silt fence in accordance with the manufacturer's printed instructions and as indicated.

3.02 CONTRACT CLOSEOUT:

A. Provide in accordance with Section 01700.

END OF SECTION

SECTION 02402

SITE DEWATERING

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work Included:

- 1. The Contractor shall provide all materials, equipment, and labor necessary for the removal of surface water and, as required, for the installation and maintenance of silt and erosion control devices.
- 2. The Contractor shall build all drains and perform all ditching, pumping, bailing, and all other work necessary to keep the excavation clear of ground water, sewage, or storm water during the progress of the work and until the finished work is safe from damage.

B. Regulatory Requirements:

- 1. U.S.E.P.A. is the National Pollutant Discharge Elimination System (NPDES) Permitting Authority for the State of New Hampshire under Construction General Permit No. NHR100000. The General Contractor shall be required to prepare and maintain a Stormwater Pollution Prevention Plan (SWPPP) and file a Notice of Intent (N.O.I.) with U.S.E.P.A.
- 2. All work shall be in accordance with all Federal, State and municipal requirements including effluent limitations, standards, and management for construction. Refer to USEPA NPDES 2017 Construction General Permit NHR100000 for discharge requirements. It is available for viewing and printing on-line at the following location: https://www.epa.gov/npdes/2017-construction-general-permit-cgp
- 3. Dewatering activities are required to comply with the provisions of the Dewatering General Permit NHG070000 found at: https://www.epa.gov/npdes-permits/dewatering-general-permit-dgp-massachusetts-new-hampshire

1.2 OUALITY ASSURANCE

A. The Contractor shall use the following reference manual to assure quality where the drawings or technical specifications are silent: "New Hampshire Stormwater Management Manual" prepared by the New Hampshire Department of Environmental Services, dated December 2008, as amended.

1.3 SUBMITTALS

- A. The Contractor shall furnish to the Engineer, in writing, their plan for diverting surface water and any excavation dewatering before beginning the construction work for which the diversion is required. Acceptance of this plan will not relieve the Contractor of responsibility for completing the work as specified.
- B. Sedimentation basin plans or commercial filtering products.

1.4 TRAFFIC MANAGEMENT:

- A. Truck access for materials and equipment deliveries to Peirce Island is affected by traffic, narrow streets, pedestrians, and tight intersections. The Contract Documents have detailed construction traffic routes which apply to all construction traffic on this project and the Contractor is required to adhere to. Refer to Section 01500 and the Contract Drawings for a full description of the traffic management requirements.
- B. Tractor-trailers longer than an AASHTO WB-50 may have difficulty turning from State St. onto Marcy St.

PART 2 – PRODUCTS

2.1 ACCEPTABLE MATERIALS

- A. Pumped Sediment Removal Filter: Dirtbag® manufactured by "The BMP Store" (www.thebmpstore.com/dirtbag.htm) or approved equal.
- B. Appropriately sized and sufficient number of modular weir tanks.
- C. Use of flocculants shall only be allowed if specifically approved for this project in writing by the New Hampshire Department of Environmental Services.

PART 3 – EXECUTION

3.1 REMOVAL OF WATER

- A. Provide all means necessary for discharge water to meet USEPA, New Hampshire Department of Environmental Services (NHDES), and the City of Portsmouth water quality standards.
- B. Water pumped from excavations shall be piped to points discharging into sedimentation basins or filter devices in a manner which will not cause downstream siltation or damage to adjacent properties or vegetation.

3.2 DIVERTING SURFACE WATER

A. The Contractor shall build, maintain, and operate all cofferdams, channels, flumes, sumps, and other temporary diversion and protection works needed to divert surface water through or around the construction site and away from the construction work while

- construction is in progress. Storm runoff from disturbed areas must discharge into a filtering device prior to discharge into a natural drainage way or storm sewer.
- B. Follow manufacturer's recommendations for installation, maintenance, and removal of siltation and stormwater practice.

3.3 EROSION CONTROL PROVISIONS

- A. The discharge from pumping operations during dewatering operations shall be contained by a device so constructed as to prevent silt from spreading off-site.
- B. Prior to removal of all sediment control devices, all retained silt or other materials shall be removed at no additional cost to the Owner.

3.4 REMOVAL OF TEMPORARY WORKS

A. After the temporary works have served their purpose, the Contractor shall remove them or level and grade them to the extent required to present a sightly appearance and to prevent any obstruction of the flow of water or any other interference with the operation of or access to the permanent works.

3.5 ENVIRONMENTAL PERMITS

- A. All work under this section shall be done in accordance with all federal, state, and local regulations, laws, and rules which may apply and any individual permits that have been obtained for the project.
- B. The Contractor shall obtain and file all notifications required by state and federal law and as identified on the Drawings.
- C. Any permits requiring the Contractor's signature shall be signed and an original copy provided to the Owner.
- D. The Contractor shall post and maintain any permit requiring posting at the project site.

END OF SECTION

SECTION 02520

CONCRETE GRID PAVEMENT

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Concrete grid units.
 - 2. Bedding sand.
 - 3. Edge restraints.
 - 4. Geotextiles.
 - 5. Topsoil and grass for the grid openings.
 - 6. Open-graded aggregate bedding course.
- B. Related Sections:
 - 1. Section 2200: Earthwork

1.02 REFERENCES

- A. American Society of Testing Materials (ASTM)
 - 1. C33 Specification for Concrete Aggregates.
 - 2. C136 Method for Sieve Analysis for Fine and Coarse Aggregate.
 - 3. C140 Standard Test Methods of Sampling and Testing Concrete Masonry Units.
 - 4. C979 Standard Specification for Pigments for Integrally Colored Concrete.
 - 5. C1319 Standard Specification for Concrete Grid Paving Units.
 - 6. D698 Standard Test Method for Laboratory Compaction Characteristics of Soil
 - 7. Using Standard Effort (12,000 ft-lbf/ft3 (600 kN-m/m3)).
- B. Interlocking Concrete Pavement Institute (ICPI) Technical Bulletins
 - 1. Tech Spec 8 Concrete Grid Pavements

1.03 SUBMITTALS

- A. In accordance with Conditions of the Contract and Division 1 Submittal Procedures Section.
- B. Manufacturer's drawings and details: Indicate perimeter conditions, relationship to adjoining materials and assemblies, expansion, and control joints, paving layout, patterns, installation and setting details.
- C. Sieve analysis per ASTM C136 for grading of bedding and base materials.
- D. Concrete grid units:
 - 1. Color selected by Owner.
 - 2. Four representative full-size samples of each grid type, thickness, color, finish that indicate the extremes of color variation and texture expected in the finished installation.
 - 3. Accepted samples become the standard of acceptance for the work.
 - 4. Test results from an independent testing laboratory for compliance of grid paving unit requirements to ASTM C1319.
 - 5. Manufacturer's catalog literature, installation instructions, and material safety data sheets for the safe handling of the specified materials and products.
 - 6. Current certificates from the Interlocking Concrete Pavement Institute Concrete Paver Installer Certification program for job foremen on the project.

1.04 QUALITY ASSURANCE

- A. Paving Subcontractor Qualifications:
 - 1. Engage an experienced installer who has successfully completed grid pavement installations similar in design, material, and extent indicated for this Project.
 - 2. Utilize an installer holding a current certificate from the Interlocking Concrete Pavement Institute Concrete Paver Installer Certification program.
- B. Single-source Responsibility: Obtain each color, type, and variety of grids, joint materials and setting materials from single sources with resources to provide products and materials of consistent quality, appearance, and physical properties without delaying progress of the Work.
- C. Mock-up

- 1. Locate where directed by the Engineer.
- 2. Notify Engineer in advance of dates when mock-ups will be erected.
- 3. Install minimum 10 sf of concrete grid units.
- 4. Use this area to determine the quality of workmanship in to be produced in the final unit of work including surcharge of the bedding sand layer, joint sizes, lines, pavement laying pattern(s), color(s), and texture.
- 5. This area shall be used as the standard by which the work is judged.
- 6. Subject to acceptance by the owner, mock-up may be retained as part of the finished work.
- 7. If mock-up is not retained, remove, and properly dispose of.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. General: Comply with Division 1 Product Requirement Section
- B. Deliver concrete grid units to the site in steel banded, plastic banded, or plastic wrapped packaging capable of transfer by forklift or clamp lift. Unload grids at job site in such a manner that no damage occurs to the product or existing construction.
- C. Cover sand with waterproof covering to prevent exposure to rainfall or removal by wind. Secure the covering in place.
- D. Coordinate delivery and paving schedule to minimize interference with normal use of buildings adjacent to paving.

1.06 ENVIRONMENTAL CONDITIONS

- A. Do not install bedding materials or grid units during heavy rain or snowfall.
- B. Do not install bedding materials and grid units over frozen base materials.
- C. Do not install frozen bedding materials.

PART 2 PRODUCTS

2.01 CONCRETE GRID UNITS

- A. Manufacturer: Ideal Concrete Block Company.
- B. Concrete grid units, including the following:
 - 1. Grid unit type: Turfstone concrete grid paving lattice blocks.

- a. Comply with ASTM C 1319.
- b. Color Pigment Material Standard: Comply with ASTM C 979.
- c. Size: 23 5/8 inches x 15 3/4 inches x 4 15/16 inches thick.

2.03 PRODUCT SUBSTITUTIONS

A. Substitutions: No substitutions permitted.

2.03 BEDDING MATERIALS

- A. Sieved per ASTM C136.
- B. Bedding Sand. See Section 2200

2.04 FILL MATERIALS FOR GRID OPENINGS

A. Pea stone per Section 02200.

2.05 EDGE RESTRAINTS

- A. Provide edge restraints installed around the perimeter of all concrete grid paving unit areas as follows:
 - 1. Concrete curbing.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Acceptance of site verification conditions:
 - 1. Contractor shall inspect, accept, and verify in writing to the grid installation subcontractor that site conditions meet specifications for the following items prior to installation of bedding materials and concrete grid units:
 - a. Verify that drainage and subgrade preparation, compacted density, and elevations conform to specified requirements.
 - b. Verify that geotextiles, if applicable, have been placed according to drawing and specifications.
 - c. Verify that base materials, thickness, compacted density, surface tolerances and elevations conform to specified requirements.

- d. Provide written density test results for the soil subgrade, base materials to the Owner, Contractor, and grid installation subcontractor.
- 2. Do not proceed with installation of bedding materials and concrete grids until [subgrade soil and] base conditions are corrected by the Contractor or designated subcontractor.

3.02 PREPARATION

A. Verify that base is dry, certified by Contractor as meeting material, installation and grade specifications are ready to support sand, edge restraints, grids, and imposed loads.

B. Edge Restraints:

- 1. Install edge restraints per the drawings, manufacturer's recommendations and at the indicated elevations.
- 2. The length between the outside edge of the mounted restraint and the end the base shall be no less than the base thickness.

3.03 INSTALLATION

- A. Spread the bedding sand evenly over the compacted, dense-graded base course and screed to a uniform thickness of 1.5 inches. Place sufficient sand to stay ahead of the laid grids.
- B. Ensure the grid units are free from foreign materials before installation.
- C. Lay the grid units on the bedding sand in the pattern(s) shown on the drawings. Maintain straight joint lines.
- D. Joints between the grids shall be consistent, between 1/8 and 1/4 inch.
- E. Fill gaps at the edges of the paved area with cut grids or edge units.
- F. Cut grids to be placed along the edge with a double-bladed splitter or masonry saw.
- G. Sweep topsoil into the joints and openings until full.
- H. Sweep the grid surface clean prior to compacting.
- I. Compact and seat the grids into the screeded bedding sand using a low-amplitude, 75-90 Hz plate compactor capable of at least 22 kN centrifugal compaction force. Use rollers, a rubber or neoprene pad between the compactor and grids to prevent cracking or chipping. Do not compact within 2 m of the unrestrained edges of the grid units.

- J. All work more than 2 m of the laying face must be left fully compacted at the completion of each day.
- K. Avoid traffic for a minimum of 30-days.

3.04 FIELD QUALITY CONTROL

- A. The final surface tolerance from grade elevations shall not deviate more than $\pm 3/8$ inch over a 10-foot straightedge.
- B. The surface elevation of grid units shall be 1/8 to 1/4 in. above adjacent drainage inlets, concrete collars or channels.
- C. Lippage: No greater than 1/8 in. difference in height between adjacent grid units.

3.05 PROTECTION

A. After work in the section is complete, the Contractor shall be responsible for protecting work from damage due to subsequent construction activity on the site.

END OF SECTION

SECTION 02550

BITUMINOUS PAVEMENT

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work Included:

1. Furnish and install subgrade and bituminous concrete pavement base courses and surface courses within the area(s) shown on the Drawings and as directed by the Engineer.

B. Work Not Included

1. Removal and replacement of paving for the convenience of the Contractor shall be at no additional cost to the Owner.

1.2 QUALITY ASSURANCE

- A. Materials: Use only materials furnished by a bulk bituminous concrete producer regularly engaged in the production of hot mixed, hot laid bituminous concrete.
- B. Equipment: Provide, maintain, and operate pavers, dump trucks, tandem, 3-wheel, and pneumatic tired rollers well suited to the mixtures being placed. Provide, maintain, and operate hand equipment as required. When applicable, provide, maintain, and operate trimming equipment and materials.

C. Requirements of Regulatory Agencies:

- 1. New Hampshire Department of Transportation Standard Specifications, latest edition ("NHDOT Standard Specifications").
- 2. NHDOT Standard Specifications, "Measurement" and "Payment" paragraphs shall apply.

D. Joint Make-Up:

- 1. Exercise extreme care in the removal of pavement so that pavement will not be unnecessarily disturbed or destroyed.
- 2. Mechanically saw cut pavement to be removed to a straight line, without damage to adjacent pavement to remain unless otherwise directed by the Engineer.
- 3. Treat joint edges with tackifier prior to paving as indicated on the drawings

1.3 SUBMITTALS TO THE ENGINEER

- A. Submit literature, test reports, and certificates for proposed materials in accordance with the standard General Conditions of the construction contract.
- B. Infiltration media under section of porous pavement east

1.4 TRAFFIC MANAGEMENT:

- A. Truck access for materials and equipment deliveries to Peirce Island is affected by traffic, narrow streets, pedestrians, and tight intersections. The Contract Documents have detailed construction traffic routes which apply to all construction traffic on this project and the Contractor is required to adhere to. Refer to Section 01500 and the Contract Drawings for a full description of the traffic management requirements.
- B. Tractor-trailers longer than an AASHTO WB-50 may have difficulty turning from State St. onto Marcy St.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Subgrade courses shall be in accordance with Division 300 Bases; Section 30 Sand, Gravel and Crushed Gravel Base Courses of the NHDOT Standard Specifications.
- B. Materials shall conform to Division 700 Material Details; Section 703 Aggregates of the NHDOT Standard Specifications.
- C. Base course of bituminous pavement shall be as shown on the Drawings and shall conform to Division 400, Section 401 Plant Mix Pavements-General of the NHDOT Standard Specifications.
- D. Wearing course of bituminous pavement shall be as shown on the Drawings and shall conform to Division 400, Section 401 Plant Mix Pavements General of the NHDOT Standard Specifications.
- E. Pavement striping shall be in accordance with latest NHDOT Standard Specifications.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Methods of construction shall be in accordance with Division 400, Pavements; Section 403 - Hot Bituminous Pavement, and Section 417 - Cold Planing of Bituminous Surfaces of the NHDOT Standard Specifications.

- B. Place the permanent pavement only when the underlying surface is dry, when the atmospheric temperature in the shade is above 40 degrees F, and when the weather is not foggy or rainy, provided, however, that the Engineer may permit in case of sudden rain, the placing of the mixture then in transit from the plant, if laid at the proper temperature and if the roadbed is free from pools of water.
- C. Such permission shall in no way relax the requirements for quality of the pavement and smoothness of surface.
- D. Do not lay material upon a frozen base course or when wind conditions are such that rapid cooling will prevent satisfactory compaction.
- E. Pavement repairs and matching existing pavement:
 - 1. The pavement shall be mechanically cut to the limits shown on the Drawings and the existing pavement removed. A tackifier shall be liberally applied to the exposed cut edge. Install hot mix bituminous pavement as shown on the Drawings to meet the cut edge exactly.
 - 2. Striping shall be installed and match existing striping, unless directed otherwise. Striping shall be required following installation of both the base and wearing course, unless otherwise approved by the Owner. All striping materials, applications and procedures shall be in accordance with the NHDOT Standard Specifications.
- F. Maintaining Permanently Placed Surfaces:
 - 1. Maintain permanently placed surfaces under this Contract until expiration of the guarantee period.
 - 2. Should an area that the Contractor has paved settle prior to completion of the project, the Contractor shall at no additional expense to the Owner:
 - a. Mechanically saw cut and remove the entire pavement in the area.
 - b. Add the necessary subgrade material as specified and shown on the Drawings to the depth of the applicable pavement course.
 - c. Replace the base course as specified.
 - d. Replace the surface course as specified.
 - e. Do not feather edges, except where shown on the Drawings.

3.2 FIELD QUALITY CONTROL

A. General: Test in-place asphalt concrete courses for compliance with requirements for thickness and surface smoothness. Check surface at intervals as required or directed by

Engineer. Repair or remove and replace unacceptable paving as directed by Engineer. Ponded surfaces will not be accepted.

- B. Thickness: In-place compacted thickness will not be acceptable if exceeding following allowable variation from required thickness:
 - 1. Base course: $\pm 1/2$ ".
 - 2. Surface course: $\pm 1/4$ ".
 - 3. Average thickness for project shall not be less than specified thickness.
- C. Surface Smoothness: Test finished surface of each asphalt concrete course for smoothness, using 10' straightedge applied parallel with, and at right angles to centerline of paved area. Surfaces will not be acceptable if exceeding the following tolerances for smoothness:
 - 1. Base course surface: 1/4".
 - 2. Wearing course surface: 3/16".
 - 3. Crowned surfaces: test with crowned template centered and at right angle to crown. Maximum allowable variance from template 1/4".

END OF SECTION

SECTION 02900

PLANTING

PART 1 - GENERAL

1.01 DESCRIPTION:

- A. Include GENERAL CONDITIONS and applicable parts of Division 1 as part of this Section.
- B. Examine all other Sections of the specifications for requirements which affect Work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting, or affected by Work of this Section. Cooperate with such trades to assure the steady progress of all Work under the Contract.

1.02 SUMMARY:

- A. This Section specifies requirements for the following types of Work and related items, but is not limited to:
 - 1. Providing and installing specified planting soil using imported soil materials where indicated on the Drawings;
 - 2. Amending existing soil;
 - 3. Fine grading of planting areas;
 - 4. Supplying and installing trees, shrubs, and perennials;
 - 5. Guying trees;
 - 6. Providing and installing mulch;
 - 7. Seeding, including seeding of all disturbed areas at Engineer's direction and according to the Drawings;
 - 8. Providing and installing erosion control matting;
 - 9. Fertilizing plantings and turf;
 - 10. Maintaining plantings through 1-year guarantee period;
 - 11. Maintaining and protecting turf areas through the time of acceptance.

1.03 RELATED SECTIONS:

NA

1.04 REFERENCES AND STANDARDS:

- A. Where references are made in these Specifications to standard specifications, codes, etc., of the U.S. Government, State or local authorities, or professional and industrial societies and associations, the applicable portions thereof shall govern as fully as if they were recited at length herein, and shall include all revisions thereto issued as of the date of the Notice to Contractors pertaining hereto.
 - 1. AAN: American Association of Nurserymen "American Standard for Nursery Stock," ANSI Z60.1, latest edition.
 - 2. AJCHN: American Joint Committee on Horticultural Nomenclature. "Standardized Plant Names," latest edition.
 - 3. AOAC: Association of Official Agricultural Chemists.
 - 4. TCIA: Tree Care Industry Association (formerly National Arborist Association), Pruning Standards "Standards for Pruning Shade Trees," and Pesticide Application "Standards for Pesticide Application Operations," latest editions, 3 Perimeter Road, Unit 1, Manchester, NH 03103.
 - 5. USDA: United States Department of Agriculture, Agricultural Research Service, "USDA Plant Hardiness Zone Map," Miscellaneous Publication No. 1475, latest edition.
 - 6. NHDOT: State of New Hampshire Department of Transportation "Standard Specifications for Highways and Bridges," latest edition and all supplements.
 - 7. ASTM: American Society of Testing Materials.
 - 8. AASHTO: American Association of State Highway and Transportation Officials.
 - 9. ANSI/NFPA: American National Standards Institute, National Fire Protection Act.
 - 11. DES: Department of Environmental Services, State of New Hampshire
 - 12. USEPA: United States Environmental Protection Agency
 - 13. New Hampshire Administrative General Rule 3800
 - 14. ANSI A300 (Part 6) 2012

1.05 QUALITY ASSURANCE:

- A. Contractor shall have at least five years of experience in Landscape Work similar in materials, design, and extent to that indicated for this project and with a record of successful landscape establishment. Installer shall maintain an experienced supervisor on the project site during all times that landscape construction is in progress. Provide written qualification data for firms and persons to be responsible for Work, to demonstrate their capabilities and experience. Include lists of completed projects, with project names, addresses, phone numbers, and names and address of designers and owners.
- B. Contractor shall attend a pre-landscape construction conference at Project Site, and as directed by the Engineer, to review landscape construction procedures, site conditions, and submittal requirements required in the Work of this Section, especially the requirements for Planting Soil and requirements for underdrainage testing, before any products are submitted for review and approval, or landscape construction commences.
- C. To extent possible, provide each plant material species or variety from single source.
- D. Select compatible products where options are provided, provide each material from a single source and only with review and approval of the Engineer.

1.06 SUBMITTALS:

- A. Refer to Section 01300 SUBMITTALS for procedures and general requirements for submittals. Submit the number of copies of each document required as directed by the Engineer per General Requirements of the Contract for submittals.
- B. Do not order or deliver materials until required samples, certifications, manufacturers' literature and test results have been reviewed by the Engineer. Delivered materials shall closely match the samples, as judged by the Engineer. If any deviations from specified materials are proposed, submit written request explaining differences and reasons for request.
- C. Soil Additives and amendments: Product or testing certificates signed by manufacturers certifying that their products comply with specified requirements:
 - 1. Manufacturers' certified analysis for all products specified.
 - 2. Analysis for other amendments, such as organic compost, by a University of New Hampshire Agricultural Extension Service made according to methods established by the AOAC, where applicable, and as required in this Specification.
 - 3. Sieve and soluble salt analysis of sand proposed as a planting soil amendment or component.

- D. Chemicals and Pesticides: Manufacturers' literature.
- E. Plant Materials: Labels and nursery certificates substantiating that trees, shrubs, vines, ground covers, and perennials comply with specified requirements and were grown within USDA hardiness zones specified.
- F. Tagging and planting schedule: Proposed dates for tagging plants at nurseries, and for planting each type of planting, with consideration for fall-hazard species, work coordination, etc.
- G. Seed Mix: Manufacturer's Certificate of Compliance with the specifications for each type of seed. These certificates shall include seed producer's statement of composition, the guaranteed percentage of purity; weed content and germination percentages of the seed, the net weight and date of shipment, pounds per acre sowing rate, and germination of each variety and production location. No seed may be sown until the Contractor has submitted the certificates.
- H. Soil tests: Contractor shall have existing soils and proposed planting soils and soil components tested. Tests indicating and interpreting test results for existing topsoil and complete planting soil and soil components, including all amendments and additives required to meet Specifications herein, shall be performed by the University of New Hampshire Cooperative Extension Service, in accordance with current standards of Association of Official Agricultural Chemists or other testing laboratory as approved by the Engineer. All samples of soil shall be collected, prepared and shipped according to UNH procedures. "Crop Code" shall be listed as 4 (New Lawn) and 9 (Deciduous Shrubs, Trees and Vines). Submit reports at least one month before any delivery of materials. Contractor shall deliver test samples to laboratory, and have test results sent directly to the Engineer. All costs shall be paid by Contractor. Testing reports shall include the following for the finished planting soil:
 - 1. Mechanical gradation (sieve analysis) and USDA soil classification;
 - 2. Percent organic matter, determined by loss on ignition of samples oven-dried to constant weight at 230 degrees F, plus or minus 9 degrees;
 - 3. Chemical analyses for elements specified herein;
 - 4. Chemical analysis for soluble salts;
 - 5. Chemical analysis for carbon-nitrogen ratio;
 - 6. Chemical analysis for acidity (pH);
 - 7. Recommendations for soil additives to correct soils deficiencies as necessary to accomplish particular planting operations of Project;

- 8. Chemical analysis for toxic elements in planting soil as specified herein;
- 9. Testing for heavy metals as required by the USEPA.

Refer to Article 2.02, Planting Soil Testing Program, for additional requirements.

I. Organic Material: Submit a letter certifying source and composition of organic material proposed for use as a soil amendment which shall give description of product and recommendations for use as a planting soil component or amendment in proportion required to meet minimum percent organics for loam.

J. Samples:

- 1. Planting Soil, complete with any necessary amendments and additives: Following initial testing and certification by the Contractor, provide two ten-pound representative samples from each proposed source for testing and analysis. Provide a two-pound sample for the Engineer's inspection, to be retained by the Engineer for comparison with delivered soil. The Engineer may examine each planting soil delivery to the site, and may request further testing be performed at the Contractor's expense. No planting soil shall be delivered until the review of samples and test results by the Engineer and approval by the USEPA for the use on the project, but such review shall not constitute final acceptance. The Engineer reserves the right to reject on or after delivery any material which does not meet specifications or match approved samples. Use of unapproved planting soil will result in rejection by the Engineer and removal by the Contractor at no additional cost to the Engineer.
- 2. Provide at least 10 samples of existing soil from throughout the planting areas. Samples are to be taken at the direction of and given directly to the Engineer for the Project.
- 3. Fertilizer: One sample packet of planting fertilizer; One-pound sample of slow-release pelletized fertilizer; certificate showing composition and analysis; purchasing receipt showing the total quantity purchased for the Project.
- 4. Organic Material: Two-pound sample and source.
- 5. Shredded, Aged Hemlock or Pine Mulch: Two-pound sample and source.
- K. Seed fertilizer will not be applied within wetland buffer designated on the Drawings.
- L. Chemicals and Insecticides (lawn and tree herbicides, fungicides, pesticides): While these should not be used, if it is determined that specific needs require them, obtain a written statement from the Engineer and then submit manufacturer's literature and analyses for products intended for use.

- M. Manufacturer's literature for temporary silt fence materials or shop drawings for typical hay bale installation.
- N. Maintenance by Contractor: Provide watering and fertilizing schedule to Engineer for approval.
- O. Maintenance Instructions for Turf: Submit recommended turf maintenance procedures to be approved by the Engineer for routine year-round maintenance of turf for use by the Owner beyond the acceptance period.
- P. Maintenance Instructions for Plantings: Submit recommended planting maintenance procedures to be approved by the Engineer for routine year-round maintenance of plantings for use by the Owner beyond the Contractor's maintenance period. Submit instructions as a condition for Substantial Completion of the Project by the Engineer.
- Q. If spraying seed, submit the type of spray machine and number of pounds of seed, fertilizer, and limestone per 100 gallons of water.

1.07 EXAMINATION OF EXISTING CONDITIONS:

- A. Inspect all areas to be planted before starting Work and report any defects, such as drainage problems and existing plant locations to remain, to the Engineer prior to beginning Work. Commencement of Work shall indicate acceptance of filled subgrade areas to be planted, and Contractor shall assume responsibility for Work. Inspect areas to be fine graded and seeded before starting work. Report any defects such as incorrect grading, etc. to the Engineer prior to beginning work. The commencement of work by the Contractor shall indicate acceptance of the areas to be fine graded, planted, and seeded, and he shall assume full responsibility for the Work of this Section.
- B. The Contractor shall be solely responsible for judging the full extent of Work requirements involved, including but not limited to the potential need for storing and maintaining plants temporarily and rehandling plants prior to final installation.
- C. Determine location of above-grade and underground utilities and perform Work in a manner which will avoid damage. Review the locations of utilities with Engineer before proceeding. Contact all relevant utility companies, public or private, prior to beginning work; contact DIG SAFE 1-888-344-7233 (serves five N. E. states). Report any conflicts to the Engineer in writing before excavating. Hand excavate as required. Maintain grade stakes until removal is approved by the Engineer.
- D. Coordinate installation of planting materials to assure installation during normal planting seasons for each type of plant material required and as specified in planting schedule.
- E. Coordinate planting Work with other Work of this contract being performed on site, or work being performed by others.

F. Coordinate maintenance of landscape areas installed at different times. Protect completed Work as sequence of planting proceeds.

1.08 TRAFFIC MANAGEMENT:

- A. Truck access for materials and equipment deliveries to Peirce Island is affected by traffic, narrow streets, pedestrians, and tight intersections. The Contract Documents have detailed construction traffic routes which apply to all construction traffic on this project and the Contractor is required to adhere to. Refer to Section 01500 and the Contract Drawings for a full description of the traffic management requirements.
- B. Tractor-trailers longer than an AASHTO WB-50 may have difficulty turning from State St. onto Marcy St.

PART 2 - PRODUCTS

2.01 PLANTING SOIL:

A. Planting Soil Source:

- 1. Contractor shall be responsible for providing, screening, and mixing (if required) planting soil and loam amendments to create suitable planting soil that meets specification in quantities and locations shown in the Drawings at their expense. If necessary, Contractor shall also provide additional and alternative sources of planting soil components such as organic compost and amendments as required and requested by the Engineer, based on soil tests performed on an on-going basis throughout the construction period in order to meet specifications. Contractor shall screen topsoil with a 1/2-inch screen prior to reuse or blending to create planting soil as specified herein.
- 2. Planting soil delivered and installed shall be consistent throughout the project. If source or component changes at any time during construction, Contractor shall obtain new mechanical sieve, heavy metals, chemical, and nutrient tests of new source samples, remix components and resubmit test results of new planting soil mixture to the Engineer for review and approval.

B. Planting Soil:

1. Planting soil shall be stripped natural topsoil from sites scheduled for construction, but not from USDA-classified prime farmland. Planting soil may also be manufactured soil, produced by a commercial processing facility specializing in production of loam, sands, gavels, and stone. Stripped topsoil shall be free from subsoil. Natural topsoil shall be from well-drained sites where topsoil occurs at

- least 6" deep; do not use topsoil or organic matter obtained from bogs or marshes. It shall conform to the following:
- 2. Planting soil shall be a "sandy loam" as determined by mechanical analysis (ASTM D-422) and based on the USDA Classification system, conforming to the following grain size distribution:

U.S. Sieve No.	Percent Passing	By Weight
	Maximum	Minimum
4	100	97
10	95	90
40	85	60
100	60	38
200	35	22
0.002 mm	5	0

- 3. Maximum grain size of any soil material shall be 1" in the largest dimension. Test shall be by combined hydrometer and wet sieving in compliance with ASTM D422 after destruction of organic matter by ignition.
- 4. Planting soil as amended and proposed for use shall contain between 4% and 6% organic matter by weight as determined by the loss on ignition of samples which have been oven-dried to a constant weight at a temperature of 105 degrees C. Compost for use as organic matter shall conform to the specifications of UMTC, and shall be mature compost.
- 5. The acidity range of planting soil shall be 5.5 to 6.5 pH.
- 6. Planting soil shall be screened and free of plants and roots, clay lumps, stones or debris one inch or larger in any dimension.
- 7. Soluble salt content shall be less than 75 ppm.
- 8. Carbon-nitrogen ratio shall be between 10 and 14 to 1.
- 9. Nutrient content of prepared planting soil and levels of toxic elements and compounds in complete planting soil shall be within the following ranges, measured in ppm:

Substance	Acceptable Range	Unacceptable Level
	<u>ppm (=mg/kg)</u>	ppm (=mg/kg)
Aluminum	40 - 400	>400
Ammonium	6 - 24	>24
Arsenic	<1	30+
Boron	< 0.3	1.0+
Cadmium	< 0.2	5.0+

Calcium	300 - 1600	>1600
Chromium		50+
Cobalt		50+
Copper	0.3	6.0 +
Iron	3 - 20	>20
Lead	33-110	>110
Magnesium	20 - 150	15
Manganese	3 - 15	>15
Mercury		2+
Molybdenum	0 - 15	40+
Nickel		100+
Nitrate	30 - 235	235+
Phosphorus	3 - 18	18+
Potassium	25 - 110	110 +
Selenium		36+
Zinc	3 - 70	500+
PCBs	0	1+

- 10. Planting soil shall be free of viable parts of prohibited invasive plants listed in Table 3800.1 of New Hampshire Administrative General Rule 3800.
- 11. Planting soil (loam) in areas of existing known invasive species populations shall not be reused as planting soil. Planting soil (loam) from these areas shall be buried under a minimum of six inches of invasive-free planting soil or legally disposed of off-site in accordance with all local, state and federal requirements.

2.02 PLANTING SOIL TESTING PROGRAM:

- A. Contractor shall be responsible for mixing and obtaining planting soil samples and submitting for testing samples to ensure that proposed and installed planting soil materials and any stockpiled topsoil, conform to the specifications as stated herein. All costs for testing will be paid for by the Contractor. Submit prototype planting soil mixes to Laboratory at least 60 days before intended use on site, to allow for reformulation and retesting if test results are rejected.
- B. All planting soil and planting soil products brought to or bulk mixed on site, even if previously approved by test results, shall be submitted for testing conformance and as required in the on-site planting soil sampling program. Tests shall be combined hydrometer and wet sieving in compliance with ASTM C422 after destruction of organic matter by ignition and according to additional requirements of this Section. Samples for tests shall be taken from stockpiles and source within one day of delivery to the site in the presence of the Engineer.
- C. Prior to delivery or spreading, Contractor shall submit a minimum of two approved sample test results of planting soil from each proposed location or source.

- D. Contractor shall deliver samples to Engineer and testing laboratory, have testing report sent directly to the Engineer, and shall pay all costs. Contractor shall furnish additional amendments of fertilizer, lime and organic matter at his/her own expense that may be required by test results and required by specifications.
- E. Sieve, heavy metals, and chemical analyses shall be performed by the University of New Hampshire, in accordance with the current standards of the "Association of Official Agricultural Chemists" and as required to meet requirements for chemical compositions as specified. Incomplete testing or test results will result in rejection and requirement for retesting by the Contractor at his/her expense.
- F. Soil samples of mixed and fully amended planting soil shall be tested for Nitrate, Nitrogen, Ammonium Nitrogen, Phosphorus, Potassium, Calcium Aluminum, Soluble Salts and show the acidity of the soil and other values for compounds as indicated in Article 2.01 paragraph B. Tests of all sands and organic matter proposed for use as soil amendments shall also be tested for the requirements specified for those items and submitted for review and approval.
- G. Based on the initial and delivered and/or on-site mixed planting soil test results, the planting soil shall be identified as acceptable, acceptable with certain fertilizer and limestone amendments, or unacceptable and requiring resubmission. If sand, organic compost, or other major planting soil components are required to be added to meet specification, additional samples with new formulations shall be required to be submitted for testing, review, and approval. If the planting soil is found unacceptable or can not be amended to meet specifications, the Contractor shall be responsible for identifying another source of planting soil and soil ingredients, and/or remix and reblend as many planting soil component mixtures required to produce a planting soil approved by the Engineer that meets specifications. Contractor shall incur all expenses associated with testing and mixing additional samples required for approval.
- H. All planting soil installed shall match the samples approved by the Engineer. The Engineer may require Contractor to furnish additional testing of planting soil delivered to the site if it does not appear to be consistent with previously tested samples.

A.03 SOIL ADDITIVES FOR PLANTING SOIL:

- A. Aluminum sulfate for adjustment of planting soil pH shall be commercial sulfur, unadulterated, delivered in containers with the name of the manufacturer, material analysis and net weight appearing on each container.
- B. Pelletized limestone for agricultural purposes may be used for adjustment of planting soil pH shall be agricultural grade ground dolomite limestone containing at least 85% calcium carbonate equivalent, with 50% passing the 100 mesh and 95% passing the 20 mesh sieve.

C. Fertilizer (10-10-10) at the rate of 5 pounds per 1,000 square feet, or more, as recommended by U. Mass Extension Service from the soil test results. Fertilizer may be applied hydraulically in one operation with hydroseeding and fiber mulching.

D. Organic Compost:

- 1. Organic compost shall be natural mature, composted organic material. Reed peat, sedge peat, composted leaves or brewers waste may be proposed for this use. Compost manufactured from sewer sludge or manure will not be permitted.
- 2. Organic compost shall be material originating from mature leaf compost, or other aged, composted vegetable materials such as brewer's waste, composted with wood products, safe for plants, humans and soil organisms (Class A or Type I). Raw (uncomposted or unprocessed) or incompletely composted organic matter shall be rejected.
- 3. Organic compost shall contain no uncomposted bulking agents, such as uncomposted wood chips, and shall be free from hard lumps and free water when handled (at least 60% dry solids). It may be shredded or granular in form. No plastic shall be present. It shall be free from excessive amounts of zinc or unpleasant odor. 100% of material shall pass a 1/2" sieve.
- 4. Each and every source of organic material proposed for use as a soil amendment or component of planting soil must be tested on the criteria specified herein and results submitted for review and approval by the Engineer before construction. Each delivery of organic material must match samples tested by Contractor and approved by the Engineer or delivered material will be rejected. Each delivery of compost shall require testing and approval, per specifications, to insure compliance with previously approved test submittals. Contractor shall provide sufficient quantities of composted organic material to meet requirements of the planting soil specified and detailed in the Drawings after mixing, spreading, and compaction, and may obtain this material from various sources, if material and test results have been reviewed and approved by the Engineer.
- 5. Other requirements and test results for specific characteristics of the organic matter and results issued for the following criteria shall be:
 - a. According to the methods of testing of A.O.A.C., latest edition, the acidity range shall be approximately 5.5 pH minimum to 8.0 pH maximum.
 - b. The organic matter shall not be less than 40% as determined by loss on ignition and may be higher for other compost types.
 - c. The water absorbing ability shall be 200% minimum by weight on an oven dry basis for organic compost other than peat moss.

- d. The carbon/nitrogen ratio shall be between 10/1 to maximum 25/1 without the addition of nitrogen.
- e. The degree of maturity should be between Grades IV and V, 'curing compost' and 'very stable compost' as measured in a colorimetric-based maturity test. The stability shall be, on the 02 evolution test, < 7 mg C02 C/g BVS (biodegradable volatile solids) day or deWar self-heating test < 15 degrees C above room temperature.
- f. There should be no unpleasant or detectable odor of ammonia or hydrogen sulfide which would indicate immature compost.
- g. Total salinity should be less than 4.0 mmhos/cm (Ds/m) or less than 2560 ppm salt (NaCl)
- h. The material shall contain some nitrogen, phosphorus, copper, boron, manganese, and molybdenum in horticulturally and agriculturally appropriate proportions to prevent ion antagonisms.
- Concentrations of arsenic, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, and selenium must be below EPA (EPA CFR Part 503 Regulations, Table 3, p. 93392, Vol. 58 No.32, 1993) and the State of New Hampshire standards for application to soils with human activity. No pesticide residues or chlorinated hydrocarbons of any kind should be present.
- j. Peat moss shall be composed of partly decomposed stems and leaves of any or several species of sphagnum moss. It shall be free from wood, decomposed colloidal residue and other foreign matter. It shall have an acidity range of 3.5 pH to 5.5 pH as determined in accordance with the methods of testing by A.O.A.C., latest edition. Its water absorbing ability shall be a minimum of 1,000% by weight on an oven dry basis.
- k. Maturity and age of composted organic material, other than peat, intended for use on this project shall be verified in writing by supplier as part of test results.
- D. Sand for use as planting soil additive or component:
 - 1. Sand for use as ingredient or amendment in planting soil shall be a medium sand with angular (not round) sand particles (beach sand is not acceptable). Sand shall be clean, inert, hard, durable grains of quartz or other hard durable rock, free from loam or clay, surface coatings and deleterious materials. The allowable amount of material passing a No. 200 sieve as determined by AASHTO T11 shall not exceed 10% by weight. Sand may be used if the material is not self-compacting or overly gravelly, according to the Engineer.

2. Sand sources and requirements of sand as a planting soil component or amendment may require adjustment at the request of the Engineer, depending on the characteristics and proportions of the other planting soil components (stripped topsoil, borrow, organic component) used to mix the approved planting soil.

2.04 SEED:

- A. Contractor shall furnish the Engineer with the dealer's certificate of the mixture composition for review and approval before seeding operations begin. Seed mixture shall be fresh, clean, new crop seed of the previous year's crop, mixed off site by the seed dealer. Weed seed content shall not exceed 1% by weight. The seed shall be furnished and delivered in the proportion specified below in new, clean, sealed and properly labeled containers. All seed shall comply with State and Federal seed laws; seed which has become wet, moldy or otherwise damaged will be rejected.
- B. Seed Mix for Grassed Pavers and Reinforced Turf parking area shall be (amended): 'Coastal Salt Tolerant Grass Mix', from New England Wetland Plants, 413-548-8000; info@newp.com. www.newp.com. Install as per supplier's direction. Apply 35 lbs./acre: 1250 sq ft/lb.

Botanical Name	Common Name	Proportion by Weight
Elymus canadensis	Canada Wild Rye	25.50%
Festuca rubra	Red Fescue	23.00%
Andropogon gerardii	Big Bluestem	19.00%
Sorghastrum nutans	Indian Grass	16.00%
Panicum virgatum	Switch Grass	13.00%
Juncus tenuis	Path Rush	3.50%

C. Seed Mix for restoration planted area shall be (amended): 'Coastal Salt Tolerant Grass Mix with Forbs', amended with forbs, from New England Wetland Plants, 413-548-8000; info@newp.com. www.newp.com. Install as per supplier's direction. Apply 35 lbs./acre: 1250 sq ft/lb.

Botanical Name	Common Name	Proportion by Weight
Elymus canadensis	Canada Wild Rye	25.50%
Festuca rubra	Red Fescue	17.00%
Andropogon gerardii	Big Bluestem	16.00%
Sorghastrum nutans	Indian Grass	15.00%
Panicum virgatum	Switch Grass	10.00%
Juncus tenuis	Path Rush	3.50%
Rudbeckia hirta	Black-Eyed Susan	4.0%
Lespedeza capitata	Bush Clover	3.0%
Symphyotrichum laeve	Smooth Aster	3.0%
Euthamia caroliniana	Smooth Goldenrod	3.0%

2.05 SEED FOR OVERSEEDING:

A. Submit seed mix to the Engineer for approval if the Owner or Engineer determines that overseeding is necessary for any reason.

2.06 CHEMICALS AND INSECTICIDES:

A. Chemicals and insecticides shall not be used except with written permission from the Engineer.

2.07 WATER:

A. Contractor shall provide all labor and materials required to furnish water to seeded areas, trees and shrubs until Final Acceptance at Contractor's expense. Contractor shall supply soaker hoses, hose connections, and any other appurtenances necessary to connect and draw from existing or proposed water lines, water trucks, or irrigation system. Contractor shall not cause damage to turf lawns or any vegetation during the watering operation. Water shall potable, free of salt and other impurities injurious to vegetation.

2.08 PLANT MATERIALS:

- A. Provide quality, size, genus, species, and variety of trees indicated on the Drawing complying with applicable requirements of AJCHN and AAN. No substitutions will be permitted without prior written approval from the Engineer. All plants shall be nursery grown, not collected from natural vegetated areas.
- B. The Engineer, accompanied by the Contractor, will tag plants at their place of growth, after pre-tagging by Contractor, prior to preparation for transplanting. At least one month prior to the expected planting date, request, in writing, that the Engineer schedule tagging trip(s). The Engineer's time spent to locate plant material shall be paid for by Contractor only if the Engineer is sent to nursery where satisfactory plant materials are not located. If plant material is tagged by the Engineer, only these plants shall be delivered to the Project site with these tags.
- C. The Engineer's selection shall not impair the right of inspection and rejection upon delivery at the site or during the progress of the Work. Contractor shall pay cost of replacement of materials rejected by the Engineer at the site.
- D. Each tree shall be labeled with securely attached, waterproof tag bearing legible designation of botanical and common name according to AJCHN.
- E. Only plant stock obtained from and grown between latitudes 40-49 degrees north and USDA hardiness Zones 1 through 5, will be accepted.

- F. Plants shall be in accordance with AAN as a minimum requirement for acceptance. Plants shall be typical of their species or variety, have a normal habit of growth, and meet the size and form requirements indicated by the Engineer. The trunk of each tree shall be a single trunk growing from a single intact crown of roots. Trees not indicated as "multistemmed" in the Plant List will not be accepted with double leaders or twin heads without the written approval of the Engineer.
- G. Measure trees according to AAN with branches and trunks or canes in their normal position. Take caliper measurements 6 inches above ground for trees up to 4-inch caliper size, and 12 inches above ground for larger sizes.
- H. The height of trees (measured from the crown of the roots to the tip of the top branch) shall be not less than the minimum size directed by the Engineer or as required by AAN based upon caliper size designated. Lateral branching of deciduous trees is to begin at no less than 7 feet height.
- I. Trees of a larger size may be used if acceptable to the Engineer with a proportionate increase in size of roots or balls. Do not cut root balls to size of smaller plants to fit limited planting area. Do not prune to obtain required sizes.
- J. Trunks shall be free from sunscald, frost cracks, or wounds resulting from abrasions, fire, or other causes. No tree shall have evidence of ever having had basal suckers. The plants must be in a moist vigorous condition, free from dead wood, bruises or other root, bark or branch injuries.
- K. Trees shall not be pruned in preparation for transplanting. No wounds from previous pruning shall be present having a diameter exceeding two inches; such wounds shall show vigorous scar tissue on all edges.
- L. All plant parts shall be moist and show active cambium when cut. Plants shall be sound, healthy, and vigorous, well-branched and densely foliated when in leaf. They shall be certified by the grower as free of disease, insect pests, eggs or larvae.
- M. Balled and burlapped plants shall be moved with root systems as solid units with balls of earth firmly wrapped with untreated natural eight-ounce burlap, firmly held in place by a stout cord or wire. Plants prepared with plastic or other non-biodegradable wrappings will not be accepted except when directed by the Engineer to be container grown. All plastic products must be removed before planting is accepted. Diameter and depth of the balls of earth on balled and burlapped plants must be sufficient to encompass the fibrous root feeding system necessary for healthy development of plant, according to AAN standards. Top of root ball shall be actual finish grade of tree as grown in nursery; excess soil shall be removed from top of ball prior to delivery. No plant will be accepted when ball of earth surrounding its roots has been cracked or broken prior to or during process of planting or after burlap, staves, ropes, container, or platform required in connection with its transplanting have been removed.

N. Trees delivered by truck and plants requiring storage on site shall be properly wrapped and covered to prevent drying of branches, leaves, or buds. Plant root balls shall be firmly bound, unbroken, and reasonably moist to indicate watering prior to delivery and during storage, and tree trunks shall be free from fresh scars and damage in handling.

2.09 FERTILIZER PACKETS:

A. Trees and shrubs installed by the Contractor shall be provided with fertilizer through the use of slow-release fertilizer packets which are designed and certified by the manufacturer to provide controlled release of nutrients over a minimum three-year period. Packets shall remain sealed at delivery to site and until installation. Each packet shall consist of four ounces of water-soluble fertilizer with a minimum guaranteed analysis of available elements by weight as follows:

Nutrient	Deciduous Plants
Nitrogen	16%
Phosphoric Acid	8%
Potash	16%

2.10 FERTILIZER PELLETS:

A. Perennials and ground covers installed by the Contractor shall be provided with fertilizer through the use of slow-release 10-10-10 pellets designed to release nutrients over a 3-4 month period.

2.11 BARK MULCH:

A. Bark mulch shall be shredded, pine or hemlock aged at least six months and not longer than two years. The mulch shall be dark brown in color, free of chunks and pieces of wood thicker than one-quarter inch. Mulch shall be free of stringy material over four inches in length, and free of chunks over three inches in width. It shall not contain, in the judgment of the Engineer, an excess of fine particles, overly composted or soggy compost material. Hemlock mulch shall not have an unpleasant odor nor have any evidence of fungus growth.

2.12 GUYING AND ANCHORING MATERIALS:

A. Use guying tape, such as "Arbortape" or equal approved by the Engineer, to tie trees to stakes, driven at angle flush with finished grade, using expanding knots as indicated in manufacturer's instructions. Do not use cable encased in hose.

2.13 TREE WRAP:

A. Do not use tree wrap of any type after trees are planted.

PART 3 - EXECUTION

3.01 SITE PREPARATION PRIOR TO COMMENCING PLANTING AND SEEDING:

- A. Before starting, locate existing underground utilities; call DIG SAFE and other sources of information as necessary. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, notify the Engineer. Cooperate with the Engineer and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility owners. Do not interrupt existing utilities serving facilities occupied or used by the Engineer and others, during occupied hours, except when permitted in writing by the Engineer and then only after acceptable temporary utility services have been provided. Provide minimum of 48-hour notice to the Engineer and obtain written notice to proceed before interrupting any utility.
- B. During planting operations, protect all existing structures, trees and plants to remain, utilities, pavements, lawns, planting and other site improvements from damage due to grading Work.
- C. Submit to the Engineer any requests for adjustments in grades and alignments found necessary to avoid interference with special conditions encountered. Existing grades shall be maintained at end of construction as closely as possible to former existing grades.
- D. If considered to be necessary by the Engineer, remove existing soil to depths indicated in Engineer's report at seeded areas and existing soil at plant pits per Drawings and remove legally offsite. Scarify all subgrade surfaces. Replace with approved planting soil per specifications.
- E. Protect subgrade areas scheduled for planting from traffic and erosion. Keep free of trash and debris. Repair and re-establish grades in settled, eroded and rutted areas to specified tolerances. Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, reshape and compact to required density prior to further construction.

3.02 PLANTING SOIL PREPARATION, PLACEMENT, AND FINE GRADING:

A. Testing Requirements:

- Components and additives for planting soil shall be tested as specified before
 delivery to site, amended if required at rates indicated by testing, delivered and
 utilized for planting soil when testing indicates conformity to specifications herein.
 Mix all approved soil components and additives to make a complete planting soil
 prior to planting.
- B. Planting Soil Placement and Finished Grading:

- 1. Subgrade, Proposed Grades, and Finished Grade Inspections: Contractor shall request inspections by the Engineer of the finished subgrade, proposed finished grades as indicated by grade stakes, and finished grade planting soil for approval.
- 2. Tolerances: Compacted, finished grades in planting and seeded areas shall deviate no more than 1" from indicated finish grade. Slopes shall be evenly graded with smooth lines and grades, to maintain finished grade to match existing grades as closely as possible.

3. Placement:

- a. Planting soil shall be screened with 1/2" inch screen before spreading. After planting soil has been spread, it shall be carefully prepared by scarifying or harrowing and hand raking. The whole surface shall then be raked to a smooth, uniform surface to lines and grade as shown on the Drawings to existing grade.
- b. Finished grading work shall not be done during wet, inclement, or freezing weather.
- c. All depressions caused by settlement shall be filled with additional planting soil that matches approved planting soil and the surface shall be regraded and raked until a smooth and even finished grade is created.
- d. Unless otherwise approved by the Engineer, approved planting soil shall be placed to minimum depths after compaction and to rates as specified herein and as shown in the Drawings.
- e. Spread the first 6" inch lift or layer of planting soil on prepared subgrade as described in Section 641 and disk or harrow the subsoil and planting soil layers a minimum of 4 inches into the subgrade and lightly roll. Spread the remaining planting soil in 6-inch lifts in plant pits or beds, with care not to allow for overcompaction after rolling of soil lifts.
- f. Planting soil structure shall not be destroyed through excessive and unnecessary handling or compaction or deterioration of soil structure will result in rejection of planting soil for use. Compaction of planting soil shall be between 80 85% maximum dry density as verified by soil compaction tests as required by the Engineer. Compaction shall be obtained by light rolling, dragging or other method approved by the Engineer. The compaction of the soil shall be adjusted by soil type within the required maximums, with less compaction preferred in finer soils.

C. Soil Additive Installation:

- 1. Soil additives shall be spread and thoroughly incorporated into the planting soil by harrowing or other methods approved by the Engineer. The following soil additives shall be incorporated:
 - a. Pelletized limestone is required by soil analysis to achieve a ph of 6.0 to 6.5, but the maximum amount applied shall be 1 pound per square yard. Limestone may not be mixed with fertilizer for application and shall be applied a minimum of two weeks prior to fertilizer application.
 - b. Fertilizer (10-10-10) at the rate of 5 pounds per 1,000 square feet, or more, as recommended by the soil analysis. Fertilizer may be applied hydraulically in one operation with hydroseeding and fiber mulching.
 - c. Superphosphate at the rate of 20 pounds per 1,000 square feet, as required by soil tests.
 - d. Slow-release Pelletized Fertilizer for ground cover and perennial beds shall be incorporated to the full depth of the planting soil at rate of 2.5 lbs. per cubic yard.
- 2. Lime and fertilizer shall be spread mechanically rather than in one operation with hydroseeding:
 - a. After the planting soil is placed and before it is raked to true lines and rolled, limestone shall be spread evenly over planting soil surface and thoroughly incorporated with planting soil by heavy raking to a least on-half depth of planting soil.
 - b. Fertilizer shall be uniformly spread and immediately mixed with the upper 2-in of topsoil.
 - 2. Organic material and other bulk amendments (such as sand and organic compost) required to be added to topsoil or mixed to make manufactured planting soil shall be thoroughly mixed in soil stockpile locations as specified in Article 3.04 or in a commercial facility, according to proportions determined by soil testing and approved mixing and test results, and not on grade after spreading.

3.03 SCHEDULING OF PLANTING:

- A. Locate plant material sources and ensure that plants are shipped in timely fashion for installation. All trees shall be planted during the same planting season they are dug. Balled and burlapped and potted plant materials from cold storage shall be rejected.
- B. Planting limited to seasons for Planting in New Hampshire, Zone 5 and 6

Spring: Deciduous and evergreen materials - April 1 through June 15.

Ground Covers – March 15 through June 1

Fall: Deciduous materials - Aug. 15 through October 31.

Evergreen materials - Sept. 1 through Nov. 1.

3.04 PLANT MATERIAL DELIVERY, STORAGE AND HANDLING:

- A. Deliver and plant only freshly dug trees. Do not use plants "heeled-in" from previous season. Balled and burlapped plant materials from cold storage shall be rejected. Do not prune before delivery, except as approved by the Engineer. Protect bark, branches, and root systems from sunscald, drying, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy natural shape. Provide protective covering during delivery.
- B. Contractor shall be present at time of delivery of all plants to the site. Remove all tree wrapping at delivery and inspect tree trunks for damage. Report damaged plants immediately to the Engineer. Wrap shall not be replaced except as specified herein.
- C. Handle balled and burlapped stock by root ball, not by trunk or branches.
- D. Deliver trees after preparations for planting have been completed and install immediately. If planting is delayed more than six hours after delivery, set plants vertically in their natural growing orientation in shade, protect from weather, dust and mechanical damage, and keep roots moist. Set balled stock on ground or heeled into ground, and cover ball with soil, mulch, or as approved by the Engineer. Storage for more than 2 weeks shall not be allowed without permission from the Engineer. Plant damage due to Contractor's planting delay shall be the responsibility of the Contractor.
- E. Water root systems of trees stored on site with a fine-mist spray. Water as often as necessary to keep root systems moist during storage and planting.
- F. Deliver packaged materials in containers showing weight, analysis, and name of manufacturer. Protect materials from damage during delivery and while stored at site.
- G. Bulbs shall be kept in open, aerated, containers in a cool, dry location until brought to the site for planting. Do not leave unplanted bulbs in the sun, rain, or in freezing temperatures but return all unplanted bulbs to storage location until next available scheduled planting time.

3.05 TREE AND SHRUB PLANTING:

A. Stake locations for all plants for review by the Engineer before any plant pits or beds are dug, and before plant delivery to site. Stake locations with stakes or flagging, outline planting areas for massed planting, and obtain the Engineer's review and acceptance before the start of planting work. The Engineer reserves the right to determine the exact

- location of every tree and to change the location of any plant to an area of similar conditions.
- B. Excavate planting pits and beds with sloped sides according to the Drawings. Notify the Engineer if unexpected rock, utilities or obstructions are encountered in excavations for trees or if ground water is present in bottom of pits. Where mounded soil is to be used for plantings, scarify existing soil, add new planting soil, compact to 90% prior to excavating for plantings.
- C. Take care not to disturb any adjacent site improvements. If, in the opinion of the Engineer, any damage to adjacent materials occurs as a result of planting operations, repair the damaged materials at no cost to the Engineer.
- D. Keep plant roots and earth balls moist and protect from sun and wind during entire planting operation.
- E. Set balled and burlapped stock or root ball plumb in staked location. If top of rootball needs to be raised to conform to proposed finished grade, use leveling bed of crushed stone (not planting soil or organic material) to set ball. Set top of root ball for trees slightly higher than surrounding grade, judging planting height to allow for settling, to meet grade after settling as plant grew in nursery; refer to detail drawing. Scarify soils on sides of pit to facilitate integration of backfill with existing soil for better root penetration as plants grow. Roll back top 12" of burlap and remove wire baskets from tops and sides of ball but do not remove materials from under balls. Planting stock with root balls cracked or broken before or during planting operation will be cause for rejection. Remove all non-biodegradable wrapping or binding material at time of planting.
- F. Place planting soil around ball in six-inch layers, tamping to settle backfill and eliminate air pockets. When pit is approximately half backfilled, water thoroughly until no more is absorbed. Water again after placing and tamping final layer of backfill. Compact planting soil and planting soil mix to approximately 85% maximum dry density. Do not overcompact planting areas; the Engineer reserves the right to reject overcompacted soil installation and request removal and replacement of soil and plants.
- G. Fertilizer packets: For trees, install one-half of the fertilizer packets at a depth of six to eight inches equally spaced around the plant 12 inches from the tree ball, as planting soil is placed. Place the other half of the packets approximately six inches away from tree ball. Packets shall not be cut, ripped or damaged. If it becomes necessary to remove and replace dead or unhealthy plants, used packets shall be replaced with new packets. The application rates for fertilizer packets shall be as follows:

Type of Plant	Rate
Deciduous Shade Tree	One packet for each inch of caliper or four packets, minimum for 3 1/2-4" cal.
	tree.

Shrub One packet

- H. Within one day of planting, place mulch as indicated on detail drawings, over saucer areas of individual trees and over area of planting beds to a depth of 3 inches after settlement. No mulch shall be spread within 4-inch diameter from tree trunk.
- I. All plants shall be watered immediately following planting as necessary to thoroughly moisten rootball and planting soil and thereafter shall be inspected frequently for watering needs and watered, as required, to provide adequate moisture in the planting pit. Inspect tree pits 24 hours after initial watering to confirm that they are draining properly. If surface water or excessively saturated plant pit soils exist, immediately notify the Engineer.

3.06 TREE PRUNING:

- A. Pruning shall be done only to ameliorate minor damage to branches incurred during shipping and planting; any plants with major damage shall be replaced as directed by the Engineer. Remove only dead wood, damaged branches, crossed branches, and suckering shoots, in accordance with TCIA standards, minimizing amount of live growth removed. Shape trees only if additional direction is given by the Engineer, maintaining natural form. Tree pruning shall be consistent to full height of tree to avoid uneven appearance and structural imbalance. Do not apply tree wound dressing. Prune in accordance with TCIA Standards for Class I, "Fine Pruning," to preserve natural character of the plant.
- B. Never cut tree leader, unless permitted by the Engineer.

3.07 TREE WRAPPING:

A. Trees shall not be kept wrapped after planting, unless specifically requested by the Engineer, to avoid accumulation of moisture on bark which increases vulnerability to hidden insect infestation, fungus and mold.

3.08 **GUYING**:

A. Install arbortape guys according to manufacturer's instructions, with ties that allow for tree growth (specified manufacturer's knots) and to allow for some movement.

3.09 PERENNIAL AND GROUND COVER PLANTING:

A. Excavate planting beds to depth indicated on the Drawings, scarifying the base material. Install specified planting soil, mixing in fertilizer pellets at the rate of 2.5 lbs. per cubic yard of planting soil. Compact to 85% max., dig holes for perennials or ground cover plants and firm soil around plants. When containers are removed, if there are any densely matted roots, scarify outer root ball surface before planting. Under no circumstances shall any type of container be planted with a perennial or ground cover. Tamp and rake soil in entire planting bed and apply mulch as indicated on the Drawings. Shake any

mulch from leaves or stems of plants.

3.10 TREE PRUNING:

A. Pruning shall be done only to ameliorate minor damage to branches incurred during shipping and planting; any plants with major damage shall be replaced as directed by the Engineer or Owner. Remove only dead wood, damaged branches, crossed branches, and suckering shoots, in accordance with NAA standards, minimizing amount of live growth removed. Shape trees only if additional direction is given by the Engineer or Owner, maintaining natural form. Tree pruning shall be consistent to full height of tree to avoid uneven appearance and structural imbalance. Do not apply tree wound dressing. Prune in accordance with NAA Standards for Class I, "Fine Pruning," to preserve natural character of the plant.

3.11 SEEDING:

- A. Limits of seeding shall be designated on plans as all non-paved disturbed areas and as directed by the Engineer. All areas disturbed outside of the limit of tree and shrub planting shall also be seeded. Stake limits of areas before seeding, for review by the Engineer, to insure that proper seed mix is being installed to appropriate limits.
- B. The planting of seed shall be done only during periods within the season which is normal for such work as determined by weather conditions without additional compensation, but subject to the Engineer's approval of time and methods.
 - 1. Seeding dates shall be approximately April 1 June 1 or August 15 September 30. Best results are obtained with a spring seeding. Late fall and winter dormant seeding requires an increase in the seeding rate.
 - 2. Seeding outside of season shall occur only with permission of the Engineer, and may result in the requirement for re-preparing of seed bed and reseeding the following season until specifications requirements are met. Acceptance will not be given to seed outside of season until all the requirements of the specifications have been fulfilled and the lawns or meadow have met all grow-in requirements. Out-of-season seeding during hot weather will require shade mulching with netted hay-type erosion control fabric as specified in article 2.0 of this Section.
- C. Seed only when the bed is in friable condition, not muddy, dried, or frozen, and not in windy weather or in weather where temperatures are expected to be less than 45 or higher than 75 degrees F. during and for two weeks after seeding. After seeding, the seed bed shall be thoroughly and evenly watered with a fine spray to penetrate the soil to a depth of at least 6", and the seed bed kept evenly moist until germination and acceptance.
- D. Seed for new lawns and meadows may be applied by hydrospray with hydromulch (meadows hydromulch must be sprayed separately after hand or mechanical seeding of meadow seed) or by drill or Brillion seeders, augmented with hand broadcasting.

Meadow seed shall be augmented with clean, slightly moist salt free sand used as a bulking agent in Drill or Brillion seeders to reduce flyaway of light seed and for a more consistent application.

E. Newly seeded bed shall be protected with flagging and protective barriers and seeded lawn areas that do not have hydromulch shall be lightly covered with weed free straw mulch, applied by hand or sprayed by machine.

F. Seeding by spray machine:

- 1. A hydraulic spray machine, approved by the Engineer and designed specifically for lawn seed dissemination, may be utilized. The application of seed, fertilizer, limestone, fiber mulch, and tackifier may be accomplished in one operation. The materials shall be mixed with water in the machine and kept in an agitated state in order that the materials may be uniformly suspended in the water. The spraying equipment shall be so designed that when the solution is sprayed over an area, the resulting deposits of seed, fertilizer, limestone, fiber mulch, and tackifier shall be equal to quantities specified.
- 2. A certified statement shall be furnished, prior to start of Work, to the Engineer by the Contractor as to the number of pounds of seed, fertilizer, and limestone per 100 gallons of water. This statement should also specify the number of square yards of seeding that can be covered with the solution specified above.
- 3. If the results of the spray operation are unsatisfactory, the Contractor will be required to abandon this method and to apply the seed, fertilizer, limestone, fiber mulch, and tackifier by other means.
- 4. All seeded lawn slopes steeper than four-to-one must be seeded by spray machine. Slopes gentler than four-to-one may also be seeded with lawn seed by spray machine or other methods specified.

3.12 OVERSEEDING:

- A. Until the time of acceptance, any seeded area within the project shall be overseeded with an approved seed mix if grass fails to grow in any new or existing turf areas for whatever reason. Engineer shall determine limits of overseeding.
- B. Contractor shall scarify affected areas and reseed according to "Brillion" drill seeding procedures specified herein.

3.13 TURF AREA PROTECTION AND MAINTENANCE:

A. Completed seeded turf areas shall be protected by a 3' high barrier constructed of 2" x 2" wood stakes set 18 inches in the ground at 8 foot spacing supporting plastic snow fencing. Barriers must be raised immediately after seeding and shall be maintained until

acceptance. Barriers must be removed at the request of the Engineer and not later than two weeks after acceptance. If grass within fencing is damaged for any reason and fencing has not been kept taut and secure by the Contractor, Contractor shall replace grass within two weeks, if during the growing season for that grass, within first two weeks of next growing season.

B. Maintenance:

- 1. Maintain and water turf areas at least 60 days or until Final Acceptance, whichever occurs later. Grass maintenance, reseeding and repair to turf areas shall be required during the one-year guarantee period for planting.
- 2. Watering: Apply no less than 2 inches of water per week within a given area, reduced by amount of natural rainfall at installation and between the months of April through October. Provide for daily watering of all grass areas to maintain moist soil to depth of at least 6". Apply one complete coverage in an 8-hour period. Water shall not be applied within three hours of dusk unless specifically approved by the Engineer. Prevent erosion due to excessive watering. Prevent damage to seeded areas by watering equipment. All Work injured or damaged due to over- or under-watering shall be Contractor's responsibility to correct and at Contractor's expense.
- 3. Fertilizing: No additional fertilizing shall be required other than that recommended by soil tests.
- 4. Acceptance/ Reseeding/ Weeding: After growth begins, areas with fail to show uniform stand of grass shall be reseeded with specified grass mix at specified rates until all areas are satisfactory. Acceptance will not occur until at least 60 days after initial acceptance of seed turf and after weeding and not until seedbed displays dense growth of specified species. Mown at least four times at 6"-8" height to maintain a 6-8" height typical. Seeded areas shall be mechanically or hand weeded once (no herbicides) as condition of Final Acceptance with review of Engineer.
- 5. Reseeding: After growth begins, areas which fail to show uniform stand of grass shall be re-seeded with specified grass mix at specified rates until all areas are satisfactory.
- 6. Disease and insect control: Application of all preventative and reactive insecticides or fungicides shall be performed by a turf specialist certified by the State of New Hampshire and only after submittal and approval by the Engineer of materials, methods, application rates and schedule. The use of granular materials is preferred over spray applications.
- 7. Mowing: At the time of the first cutting, mow meadow grass not less than 6" inches high. Grass shall be maintained between 6" inches and 8" inches high between April and October 30. Do not remove more than 1/3 of the grass blade at

- any one time. The last mowing of the season, typically in late October, shall be shorter, typically 6" inches high. Mowing shall include removal of clippings from pavement surfaces immediately after mowing.
- 8. Maintenance Instructions: Furnish complete written instructions for maintenance of meadow areas to the City at least 10 days prior to the end of the contractual maintenance period to familiarize the Engineer with the recommended maintenance requirements for proper care and development of the lawn.

3.14 EROSION CONTROL FOR SEEDED AREAS

- A. The seeded turf areas indicated for erosion control outside of grassed pavers and reinforced turf paving on the drawings shall be covered with erosion control matting after seeding. Matting shall be applied only following written permission by the Engineer stating that fine grading and seeding is acceptable.
- B. Matting shall be installed perpendicular to slopes (laid up and down) and shall extend at least three feet above slope crest. Fibers shall be placed in contact with the soil for the entire length of the mat. Provide check slope at top of slope and anchor slot at bottom of slope.
- C. Roll out matting from top to bottom of the slope after seeding without stretching fabric. Lay matting parallel to the slope in drainage swales, centering fabric along flow line. Install matting in a check slot at top and bottom of slope and at edges of area to be covered. Check slots shall be six inches deep and six inches wide. Fabric shall extend down one wall of check slot and across full width of base. Overlap edges of matting rolls four inches minimum and overlap ends 18 inches minimum.
- D. Install staples in check slots, edges, center and ends of rolls by driving specified staples two feet on center over the entire area to be covered, except at check slots and ends of rolls, where staples shall be placed six inches on center.
- E. Fill check slots with planting soil and tamp firmly.
- F. Following matting installation, roll the entire area with a smooth drum roller weighing between 50 and 75 pounds per linear foot of roller. The finished installation of matting shall be firmly in contact with the soil and provide a smooth, finished appearance free from lumps or depressions.

3.15 CLEANUP AND PROTECTION:

A. Protect work from damage due to landscape operations, operations by other contractors and trades, and trespassers. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged Work as directed by the Engineer.

- B. Remove excess planting soil, waste material, and excess subsoil, unsuitable soil, trash, and debris, and legally dispose of material off site.
- C. Repair damage to site or structures to restore them to their original condition at no cost to the Owner.

3.16 MAINTENANCE REQUIREMENTS FOR PLANTINGS:

- A. Begin maintenance immediately after each area is planted and continue until the end of the guarantee period after Final Acceptance.
- B. Maintenance shall consist of keeping plants in healthy growing condition and shall include but not be limited to watering, weeding saucers, grass areas and planting beds, mowing, cultivating, re-mulching, tightening and repairing of guys, removal of trash, injured and dead material, resetting plants to proper grades or upright position, and maintaining mulched planting saucer.
 - 1. Inspect plants for watering needs at least twice each week and water as required to promote plant growth and vitality.
 - 2. Keep planting and grass areas free of weeds and maintain mulched saucers at required depths and size.
 - 3. Remove and replace immediately plants that die during the maintenance period and repair or reseed as required through the one-year guarantee period.
 - 4. Tighten guy tapes as required.
 - 5. Chemicals, pesticides, fungicides, insecticides or herbicides within planted areas shall be applied by personnel licensed to do so in the State of New Hampshire and only after obtaining written permission from the Engineer or Engineer, indicating the materials and dispensing methods allowed, the dates, time and weather conditions under which procedures will occur, and traffic control, resident and pedestrian protection plan proposed. Spraying for insects, pests and diseases shall conform to the NAA Standards under the section entitled "Standards for Pesticide Application Operations", as currently adopted.
 - 6. Remove trash from all planted areas weekly or as directed by the Engineer.
- C. During the maintenance period, any decline in the condition of plantings shall require the Contractor to take immediate action to identify potential problems and undertake corrective measures. If required, the Contractor shall engage professional arborists and horticulturists to inspect plant materials and to identify problems and recommend corrective procedures. The Engineer shall be immediately advised of such actions. Inspection and recommendation reports shall be submitted to the Engineer.

3.17 ACCEPTANCE INSPECTION PROCEDURES AND PLANT GUARANTEE:

- A. Requirements of Division I shall apply to this Section.
- B. The Engineer shall inspect work upon written request of Contractor, which shall be received by the Engineer at least ten days before the anticipated dates of inspection. Request inspection for acceptance of the plantings only after all aspects of planting operations are completed and maintained according to Specifications, all pertaining test results are acceptable, all irrigation and underdrainage systems are operating properly, and all extraneous equipment, materials and debris are removed from the project site. Do not request inspections for partially completed work.
- C. The Engineer shall inspect work with Contractor present. At time of inspection if, in the Engineer's opinion, a substantial amount of planting, materials or workmanship is deficient, Contractor's responsibility for maintenance of all work shall be extended until plant replacements are made or other deficiencies are corrected.
- D. A written report, or "punch list," issued by the Engineer shall indicate to Contractor remedial items to be corrected before Final Acceptance is given.
- E. Acceptance: Acceptable plants are those that are to size and species as shown on the Drawings or accepted by the Engineer, which show at least 85% live growth, actively growing or possessing live buds, with no indication of injury, disease, insect infestation, or decline due to environmental or other factors, which are be plumb, mulched, guyed (if just planted) and balls moist.
- F. All unsatisfactory plants shall be removed promptly. Replacement plants shall conform in all respects to Specifications for the originals and shall be planted and maintained in same manner until initial acceptance is made.
- G. Inspection request and procedure shall be repeated when remedial items are completed. Date of final acceptance of completed remedial work shall establish end of installation and initial maintenance period and commencement of guarantee period.
- H. Submit typed maintenance instructions for all plantings for the Owner's use.

3.18 GUARANTEE PERIOD:

- A. Guarantee specified herein shall not deprive the Engineer of other rights it may have under other provisions of Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of Contract Documents.
- B. The Contractor shall guarantee the plantings for one year after substantial completion. During the guarantee period, inspect plant material once every 3 months during April through November to document condition of plants. Continue maintenance as specified

herein. Submit inspection reports to the Engineer. Dead plants and plants with less than 85% live wood noted in inspections shall be replaced with new plants of same size and species within one month or in first month of next growing season, whichever comes first, as permitted by specifications. Replacement plants in rows shall match current size of row if growth has occurred since planting. Replacement plants shall be installed according to the Specifications. Replacement plants shall be replaced by Contractor until they have lived through one years from the time of installation.

- C. Notify the Engineer at least 10 days in advance of requested date of inspection at end of guarantee period. Submit to the Engineer, before inspection, a list of plants replaced during guarantee period with species, location, and replacement dates.
- D. All replacements shall be plants of the same kind specified in the Plant List, and the size to which replaced plant would have grown by time of replacement. The cost of plants and replanting due to disease, insects, or any natural causes shall be borne by the Contractor, except for possible replacements due to external damage beyond the control of the Contractor.
- E. At end of the guarantee period, all guying material shall be removed from plants, all saucers flattened, mulch areas re-mulched and weeded, dead wood pruned and removed and all replacements completed and dead or unsatisfactory grass areas repaired and reseeded as a condition of completion of all Work at final inspection.

END OF SECTION

APPENDIX A CITY OF PORTSMOUTH BLASTING ORDINANCE



CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS (DPW) BLASTING RULES AND PROCEDURES

1.0 General:

All blasting work shall comply with the following regulations:

- City Ordinance, Chapter 5, Article VII: Section 5:701 Blasting Permit Required;
- State of New Hampshire Department of Transportation Standard Specifications for Road and Bridge Construction dated 2016;
- Storage and Transportation of explosives shall be in accordance with State of New Hampshire Code of Administrative Rules: Chapter/Part Saf-C 1600.
 In case of conflict, the more stringent regulation shall govern.

2.0 Insurance:

- 2.1 The blasting contractor shall procure and maintain \$5,000,000 of personal injury and property damage liability insurance covering the permitted blasting operations, or such an amount as may be determined necessary by extraordinary circumstances.
- 2.2 The Certificate shall name the City as an additional insured.

3.0 Blasting Permit Process:

- 3.1 The blasting contractor shall apply for a permit online through the City's permitting center at: https://portsmouthnh.viewpointcloud.com before commencing the pre-blast survey procedure.
- 3.2 At the time of application, the blasting contractor shall provide the following items:
 - a) Plan showing location, extent and purpose of proposed blasting operations.
 - b) Project narrative describing scope of work, proposed dates of work, office phone number and twenty-four (24) hour cell phone number for the project manager on company letterhead.
 - c) Copy of valid New Hampshire License to Use, Purchase and Transport Explosives for the blasting company.
 - d) Copy of valid New Hampshire Certificate of Competency For Blasting Operations for each operator.
 - e) Copy of valid Insurance Certificate as required by Article VII, Section 5:701 and defined in Section 2.0.
 - f) Additional documentation required as noted below in Section 4.0.

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4.0 **Pre-Blast Condition Surveys:**

- 4.1 Pre-blast surveys shall be performed as required in City Ordinance. Chapter 5, Article VII, Section 5:701, and the following procedures will apply.
- 4.2 The pre-blast condition survey shall consist of a written description of the interior and exterior condition of each of the structures examined. Descriptions shall locate any existing cracks, damage or other defects and shall include such information so as to make it possible to determine the effect, if any, of the construction operations on the defect. Where significant cracks or damage exist, or for defects too complicated to describe in words, photographs shall be taken. A video survey with appropriate audio description of locations, and conditions, and defects can be used.
- 4.3 The contractor shall send a pre-blast survey letter by certified mail to all abutters within a 500-foot radius of the blasting site. A copy shall be sent to the following City Departments:

Director of Public Works 680 Peverly Hill Road

Portsmouth, NH 03801

City Hall 1 Junkins Avenue Portsmouth, NH 03801

City Manager

Fire Chief 170 Court Street

Portsmouth, NH 03801

Zoning Officer City Hall, Legal Dept. 1 Junkins Avenue Portsmouth, NH 03801

Environmental Planner City Hall, Planning Dept. 1 Junkins Avenue

Portsmouth, NH 03801

Chief of Police 3 Junkins Avenue Portsmouth, NH 03801

Chief Building Inspector City Hall 1 Junkins Avenue Portsmouth, NH 03801

- 4.4 The pre-blast survey company shall make at least three (3) attempts over a minimum 1-week period to contact a property owner before that property is listed as nonrespondent.
- 4.5 Copies of the pre-blast condition survey shall be made available to the Department of Public Works and/or the property owner upon request. The blasting company shall maintain copies of all pre-blast survey records for a period of no less than one year from the completion of the blasting operations.
- 4.6 Before the issuance of a Blasting Permit, the blasting contractor shall submit to the Department of Public Works a list of all properties within the 500-foot radius of the blasting. The list shall include names and addresses, with tax map and lot numbers, of all abutters within the 500-foot radius and the status of the survey (completed, refused or non-respondent).

Page 2 of 3 Amended: 12/2020

5.0 Blasting Permit:

- 5.1 The blasting contractor shall upload all documents described in Sections 2, 3 and 4 of these procedures online through the City's permitting center at: https://portsmouthnh.viewpointcloud.com
- 5.2 The review process by City staff may take at least two (2) weeks.
- 5.3 A copy of the blasting notification letter indicating when blasting is scheduled to begin shall be submitted prior to permit issuance. A copy must be sent to the City Manager, Director of Public Works, Chief of Police, Fire Chief, Zoning Officer, Chief Building Inspector and Environmental Planner.
- 5.4 The permit will be approved through the City's permitting center.
- 5.5 The permit fee is \$100.00 (effective July 1, 2017).

6.0 Blasting Operations:

- 6.1 All blasting operations shall be conducted in accordance with State of New Hampshire Department of Transportation Standard Specifications dated 2016.
- 6.2 All blasting operations shall require vibration measuring equipment meeting the following minimum requirements:
 - a) Measure, display, and provide a permanent record on a strip chart of particle velocity components.
 - b) Measure three mutually perpendicular components of particle velocity in directions vertical, radial, and perpendicular to the vibration source.
 - c) Have a velocity frequency response of 2 Hz to 150 Hz and be capable of measuring Peak Particle Velocity (PPV) of up to 250 mm/s (10 in/s).
 - d) All seismographs used shall display the date of the most recent calibration.
 - e) Calibration must have been performed within the last 12 months and must be performed to a standard traceable to the National Institute of Standards and Technology.
- 6.3 The blasting contractor shall maintain daily logs of all blasting activities. Those records, including seismic monitoring records shall be made available to the City of Portsmouth for a period of five (5) years.

Please contact the following City staff member for questions:

Amy Chastain
Department of Public Works
amchastain@cityofportsmouth.com
Office phone: (603) 610-4344

Amended: 12/2020 Page 3 of 3

APPENDIX B GEOTECHNICAL DATA REPORT



GEOTECHNICAL DATA REPORT

Subsurface Investigation Results for the Peirce Island Force Main and Water Main Replacement Portsmouth, NH

I. INTRODUCTION

This Geotechnical Data Report (GDR) is prepared in support of the construction and design of the Peirce Island Force Main and Water Main Replacement project located in Portsmouth, NH. New England Boring Contractors Inc. of Derry, NH performed the vacuum explorations on January 30, 2020. The vacuum explorations were observed by an AECOM representative. The locations of the vacuum explorations are shown on the attached Exploration Location Plan.

II. CURRENT EXPLORATION PROGRAM

A total of six (6) vacuum explorations were performed along the proposed alignment of the replacement water main. Three (3) of the vacuum explorations (VB-01, VB-02, and VB-04) encountered bedrock at depths varying between 2.1 and 5 feet below the ground surface. No bedrock was encountered in the remaining explorations. The vacuum explorations depths ranged between 2.1 and 7 feet below the ground surface.

Groundwater was encountered in explorations VB-03 and VB-05 at depths of 5.1 feet and 5 feet, respectively. No groundwater was encountered in the remaining explorations. It should be noted that groundwater levels may fluctuate with the tidal cycles, storm surges, precipitation, season, construction activities, run-off controls, and other factors. As a result, water levels encountered during construction may vary from those observed during the subsurface exploration.

III. HISTORIC SUBSURFACE INFORMATION

A total of seventeen (17) test borings were drilled at the site for various site improvements between September 2013 and September 2016. Six (6) of the borings (borings PB-1 through PB-6) were vacuum cleared from 5.3 to 7.0 feet below the ground surface. The test boring depths ranged from 6.5 to 26.5 feet below the ground surface. Standard split spoon samples were collected as indicated on the boring logs. A minimum of five (5) feet of rock core was collected in eleven (11) of the borings (borings B13-1 through B13-11). Where encountered, depth to groundwater table was estimated during drilling and noted on the boring logs.

In addition, twelve (12) borings (B-1 through B-12) were also performed at the site by New England Boring Contractors of Connecticut, Inc. in July 1985. All borehole logs from the various historic exploration programs are provided in Attachment 1. Rock core photographs are presented in Attachment 2.

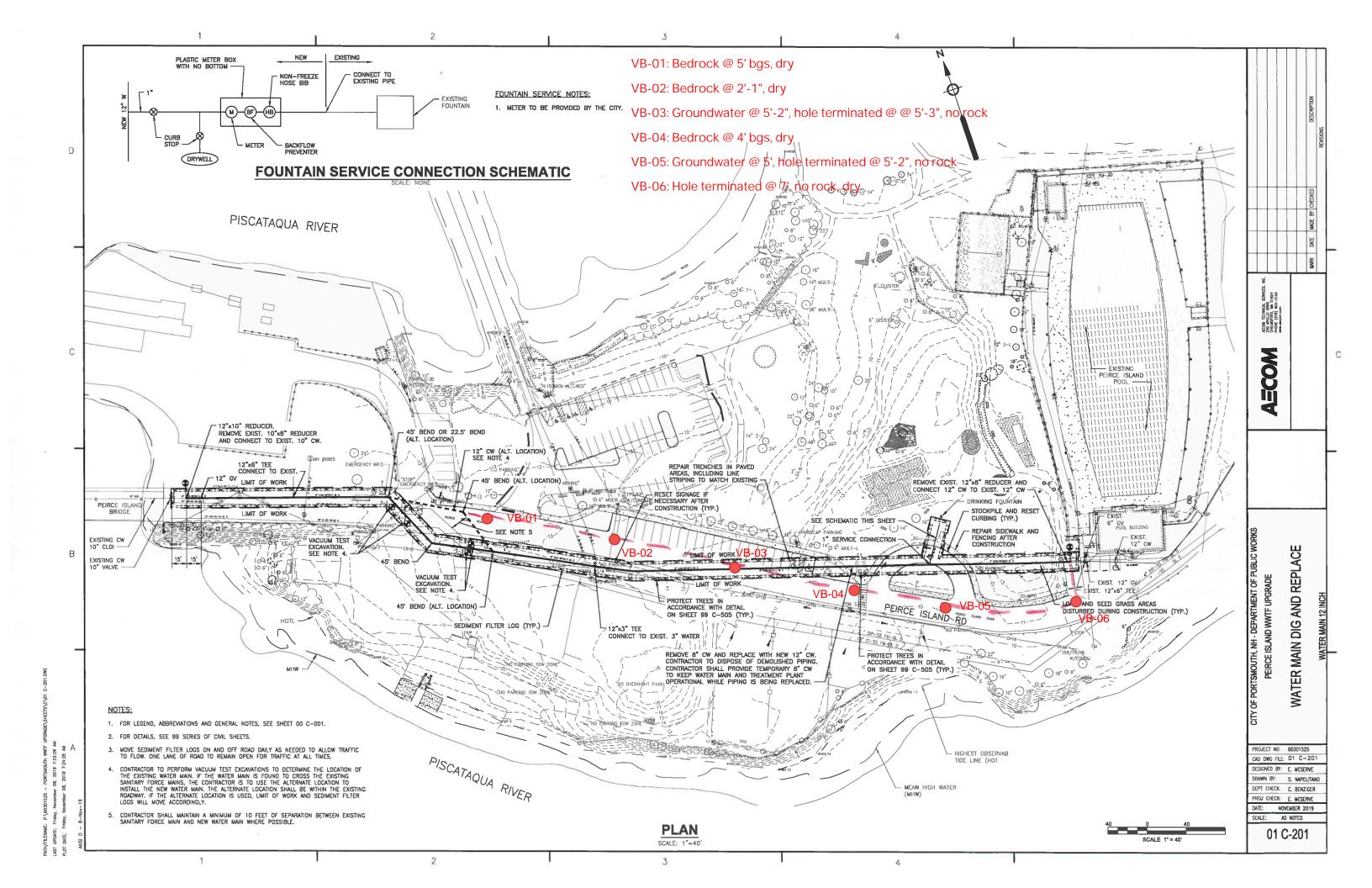
Laboratory testing consisting of Grain Size Analyses, Unconfined Compression Tests of rock, Moisture Content, and Atterberg Limit Tests were performed by GeoTesting Express, Inc. of Acton,



MA. The laboratory testing reports are provided in Attachment 3.

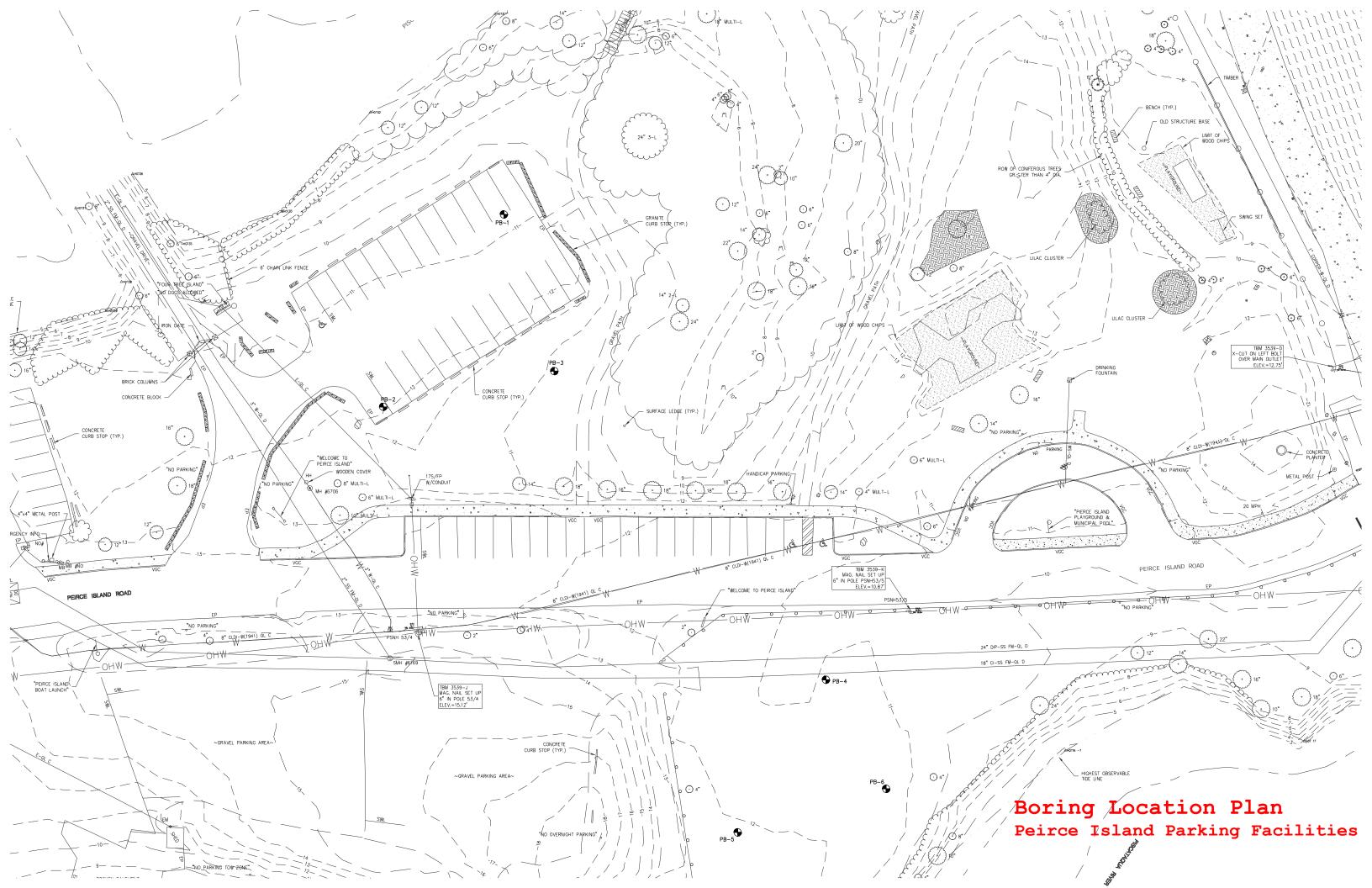
A total of forty (40) probes were also completed at the site in July 2014. The probe location plan and log are provided in Attachment 4.

(Date: June 2021)





ATTACHMENT 1 HISTORIC BORING LOGS





IPROJE	CT: P	eirce Is	land WWT	F, Parking	g L	ot, Portsmouth NH			SHE	ΕI	BORING NO.			
SITE L	OCATION	:			JC	DB NO.: 60301525		8	1	of 1	PB- 1			
	_	EE 01/-	TOU		LC	OCATION:			Elevation	on:	Total Depth:			
	S	EE SKE	:TCH			N: 210912 E:	122999	3	10.	7	14.0'			
DRILL	CONTRA	CTOR:	NE Boring	Contr.	ΕN	NG/GEO : William Checchi			BEGUN	I :	9/13/2016			
DRILL	– .		cmaster 4000		DF	RILLER: Vacmaster: B.Walsh			FINISH	ED:	9/19/2016			
Hole Siz			oile B50 bom Weather :	<u>bardier</u> 9/13/16	<u>ا</u>	Drill: M.Soucy		Ground Wa	ter (Dat	te/Den	oth):			
	5" ID, 6" (cloudy, 71 F					9/13/16 = 5.3'				
	Method:		cmaster to			illing Fluid :		Top of Roc						
Diming				5.5				TOP OF TOO	` '		untered			
	Holle	ow Ster	n Auger Blow Count	Sample		none			1	enco	untered			
Depth	Sample	N	(per 6 in.)	Recovery		SAMPLE			pocket penetro		STRATIGRAPHIC			
(ft)	Type/No.	ļ.	or Drilling	or REC &		DESCRIPTION			meter		DESCRIPTION			
			Rate(min/ft)	RQD	L				(tsf)	(0	dashed where inferred)			
						~2.5" bituminous concrete pavem		D		-	parking area			
					1	Dense, Orange-brown, silty, sandy 1.5'	GRAVE	., Dry						
					ļ				1 1					
	GRAB 1					Very dense, Tan, silty, sandy, GRAV occasional red brick pieces, Dry	EL,				FILL			
					1									
					\vdash	4' Very dense, Gray, silty,sandy, GR	AVEL.							
5_					V	occasional Cobble, Dry	,							
5.3			3 - 4		y	(9/13/16 = vacuum_depth)								
	\$S-2	8			-	Loose,Gray,gravelly,sandy, SILT,	Wet							
7			4-4	4										
	GRAB 3				l	Loose, Gray, fine sandy, SILT, We	et							
					1									
l ⊢			1		ł									
10											SILT and CLAY			
			woh/12"			Very soft, Gray, fine sandy, silty Cl	LAY, We	t						
	SS-4	2	WOII/12											
12			2 - 2	22	-									
	00.5	_	2 - 2			Loose, Gray, fine sandy, clayey SIL	T, Wet							
1.4	SS-5	7	Į.	20	\vdash	Med.Dense, Gray, fine SAND and	SILT W	<u> </u>	\vdash		SAND + SILT			
14		<u> </u>	5 - 14	20	-	bottom of borehole					OARD + GILI			
15														
-	-				1									
-				<u> </u>	-									
-				_	1									
				l	L									
Sample T			i) to 5%	L	SPT Resista					Approve/Date			
	lit Spoon			to 10%		Cohesionless Density:	Cohes	ive Consister	icy:					
1	elby Tube			i to 25%		5-9 Loose, 10-29 Med. Dense 0-4 Very Loose, 30-49 Dense		ry Soft, 3-4 d. Stiff, 9-15						
20000000	ock Core		1) to 45%		50+ Very Dense		ery Stiff, 31+						
⊯‱‱ La	b Sample		mostly	>50%	Ĭ.				- 1	ı				



PRO	ECT: F	eirce Is	land WWT	F, Parkin	g Lot, Portsmouth NH	SHE	ET BORING NO.			
SITE	LOCATION	1:			JOB NO.: 60301525	1 1	of 1 PB- 2			
					LOCATION:	Elevation	on: Total Depth:			
		SEE SKE	:TCH		N: 210860 E: 1229894	12.0	00 12.0			
DRIL	CONTRA	CTOR:	NE Boring	Contr.	ENG/GEO: William Checchi	BEGUN	9/13/2016			
DRIL			master 4000		DRILLER: Vacmaster: B.Walsh	FINISH	ED: 9/19/2016			
Hole	9/1 Size :	9/16-MOI	vile B50 bom Weather :		Drill: M.Soucy Ground	<u> </u>	iter (Date/Depth) :			
	25" ID, 6"	OD			cloudy 71 F	,	9/19/16 est 7' [sample]			
	g Method :		l /acmaster t			ock (Depth				
	_		n Auger		none		encountered			
	1		Blow Count	Sample		pocket				
Dept	h Sample	N	(per 6 in.)	Recovery	SAMPLE	penetro	STRATIGRAPHIC			
(ft)	Type/No	Value	or Drilling	or REC &	DESCRIPTION	meter (tsf)	DESCRIPTION			
		ļ	Rate(min/ft)	RQD		((31)	(dashed where inferred)			
	3				-2" bituminous concrete pavement	-	parking area			
					Very dense,Red-brown,silty, sandy GRAVEL,					
		<u> </u>		-	1 1					
					Very dense,Brown,silty, sandy GRAVEL, occasiona	i				
	GRAB 1				cobble					
							FILL			
5_	ij E	<u> </u>			bituminous concrete pieces					
	į.									
7	0				(9/13/16 vacuum depth)					
'				 	Med.stiff,Olive brown,fine sandy,CLAY, moist	pp	Sandy CLAY			
	SS-2	27	2 - 4			1.75 pp	Salidy SEAT			
9			23 - 14	14	Very stiff,Olive brown,CLAY, moist to wet	2.5				
10							CLAY			
			- 0		1					
	SS-3	12	5 - 8		Stiff,Olive brown,silty,CLAY, Wet	1.0				
12			4 - 5	12		+				
					bottom of borehole 12'					
	1				1					
					1					
15_					1 1					
					1					
		-		-	1					
			L]]					
]					
	+	 			1					
		<u> </u>			ODT Desirit	1	Anna-10-4-			
	Types:		l) to 5%	SPT Resistance		Approve/Date			
ı	Split Spoon			to 10%	Cohesionless Density: Cohesive Consis	· I				
1	Shelby Tube Rock Core			5 to 25%) to 45%	5-9 Loose, 10-29 Med. Dense					
20000000	Lab Sample		l	>50%	50+ Very Dense 16-30 Very Stiff, 3					



SITE LOCATION: JOB NO.: 60301525	
N: 210832 E: 1229976 10.5 14.0'	
N: 210832 E: 1229976 10.5 14.0'	
DRILL RIG: 9/13/16-Vacmaster 4000 9/19/16-Mobile B50 bombardier Hole Size: Vacmaster: B.Walsh Drill: M.Soucy FINISHED: 9/19/2016 9/19/2016 Ground Water (Date/Depth): 9/13/16 = 6' Drilling Method: Vacmaster to 7' Drilling Fluid: Hollow Stem Auger NE Boffing Contr. Vacmaster: B.Walsh Drill: M.Soucy Ground Water (Date/Depth): 9/13/16 = 6' Top of Rock (Depth/Elev.): not encountered	
DRILL RIG : 9/13/16-Vacmaster 4000 9/19/16-Mobile B50 bombardier DRILLER : Vacmaster: B.Walsh Drill: M.Soucy FINISHED : 9/19/2016 Hole Size : Weather : 9/13/16 clear 79 F Ground Water (Date/Depth) : 9/13/16 = 6' 2.25" ID, 6" OD 9/19/16 cloudy 71 F 9/13/16 = 6' Top of Rock (Depth/Elev.) : Drilling Method : Vacmaster to 7' Drilling Fluid : Top of Rock (Depth/Elev.) : Hollow Stem Auger none not encountered	
Hole Size: 2.25" ID, 6" OD 9/13/16 clear 79 F 9/13/16 cloudy 71 F Drilling Method: Vacmaster to 7' Hollow Stem Auger Oround Water (Date/Depth): 9/13/16 = 6' Top of Rock (Depth/Elev.): not encountered	
2.25" ID, 6" OD 9/19/16 cloudy 71 F 9/13/16 = 6' Drilling Method : Vacmaster to 7' Drilling Fluid : Top of Rock (Depth/Elev.) : Hollow Stem Auger none not encountered	
Drilling Method: Vacmaster to 7' Drilling Fluid: Top of Rock (Depth/Elev.): Hollow Stem Auger none not encountered	
Blow Count Sample pocket	
Depth Sample N (per 6 in.) Recovery SAMPLE penetro STRATIGRAPHIC	'
(ft) Type/No. Value or Drilling or REC & DESCRIPTION meter (tsf) (dashed where inferred)	
Rate(min/ft) RQD (dashed where inferre	
Light brown, slity, fine SAND	
bituminous concrete pieces Very dense, Orange-brown,silty, sandy,GRAVEL,	
concrete and red brick pieces,	
occasional cobble,Dry	
GRAB 1 FILL	
Very dense, Olive gray, gravelly, silty, CLAY, moist red brick pieces, occasional cobble	
red brick pieces, occasional cobble	
6 1	
7 (9/13/16 - vacuum depth)	
pp pp 0.5 2 - 2 Med.stiff,Olive gray, mottled CLAY 0.5	
SS-2 5	
9 3-4 22 CLAY	
Soft,Olive gray,silty,CLAY, Wet 0.1	
55-3 4	
12 2 - 2 24 Med.Dense,Olive gray, silty,fine SAND, Wet	
Silty SAND	
Dense, Olive brown, silty, fine SAND, Wet	
bottom of borehole 14'	
Sample Types: trace 0 to 5% SPT Resistance Approve/Date	
Sample Types: trace 0 to 5% SPT Resistance Approve/Date SS Split Spoon few 5 to 10% Cohesionless Density: Cohesive Consistency:	
ST Shelby Tube little 15 to 25% 5-9 Loose, 10-29 Med. Dense 0-2 Very Soft, 3-4 Soft	
R Rock Core some 30 to 45% 0-4 Very Loose, 30-49 Dense 5-8 Med. Stiff, 9-15 Stiff	
Lab Sample mostly >50% 50+ Very Dense 16-30 Very Stiff, 31+ Hard	



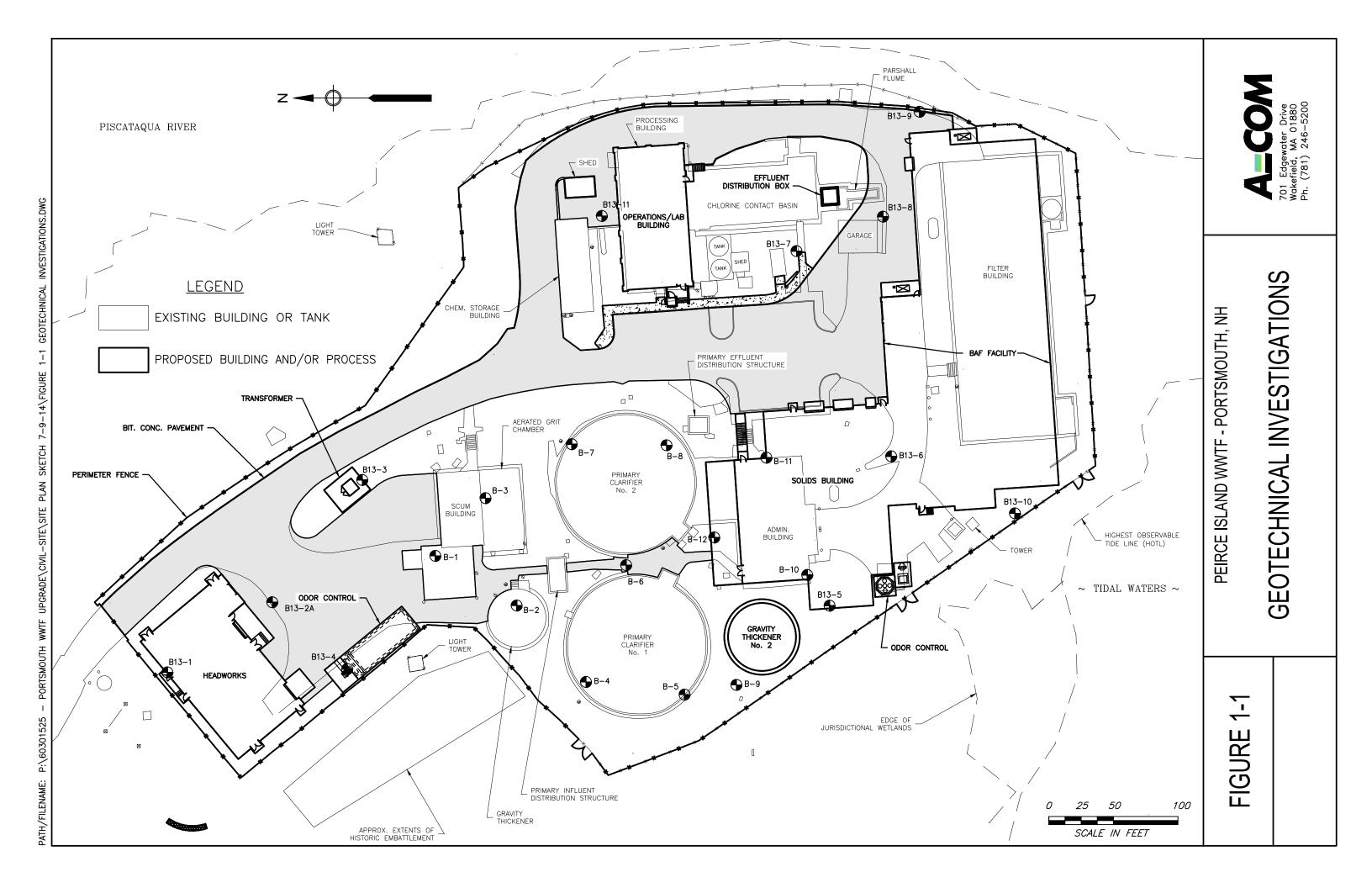
PRO	JE	CT: Pei	rce isla	nd WWTF,	Parking I	Lot	, Portsmouth NH	-	SHE	ET	BORING NO.		
-	_	OCATION				_	B NO.: 60301525		1	of 1	PB- 4		
			FF 01/F			LC	CATION:		Elevation	on:	Total Depth:		
		8	EE SKE	:TCH			N: 210633 E: 12300	14	11.	.0	12.0'		
DRIL	L	CONTRAC	CTOR:	NE Boring	Contr.	EN	IG/GEO: William Checchi		BEGUN	N :	9/14/2016		
DRIL	L			master 4000						FINISHED: 9/19/2016			
Hole	Siz			oile B50 bom Weather:		cle	Drill: M.Soucy	Ground Wa	I ater (Dat	ter (Date/Depth) :			
	2.2	5" ID, 6" (מכ							9/19/16 est. 8' [sample]			
	Orilling Method : Vacmaster to 7'						lling Fluid :	Top of Roc			<u> </u>		
		Holle	ow Ster	n Auger			none		no	t encou	ıntered		
				Blow Count	Sample				pocket				
Dep		Sample	N	(per 6 in.)	Recovery		SAMPLE		penetro	S	TRATIGRAPHIC		
(ft))	Type/No.	Value	or Drilling	or REC &		DESCRIPTION		meter (tsf)	(4	DESCRIPTION		
\vdash	Т			Rate(min/ft)	RQD	\vdash	~8" Grass and root mat, light brown, silty fine	SAND		{a	ashed where inferred) Grass + Topsoll		
1 1.5	\vdash	auger 1				Г	Very dense,Light brown,silty, clayey, gra	rolly SAMD					
2	-					ļ				G	ravellly SAND FILL		
2.5_		_auger2_			<u> </u>		Very dense,Red-brown,silty,clayey,grave	-		V.			
							Dense,Olive brown,clayey,sandy,SILT, ro moist	ots, trace					
											SILT		
5_	-					ļ	[5'				***************************************		
	П												
7	,	GRAB 3			<u> </u>		Med.dense,Olive, silty,clayey,fine SAND,				Claver SAND		
				4 - 9		V			nn		Clayey SAND		
		SS-4	24			*	Med.dense,Olive brown, silty,clayey, SAI	ND, Wet	pp 0.75		\$10, \$10, \$10, \$20, \$20, \$20, \$20, \$20, \$20, \$20, \$2		
9	H			15 - 21	17	H	9'				1802		
10	L												
		SS-5	34	8 - 17	İ		Dense,Olive brown,silty,fine SAND, wet				Silty SAND		
12		33-3	34	17 - 17	17								
	П				<u>'</u>		bottom of borehole 12'			u	100-10		
	Н												
	Н												
15_													
	Н	-											
	Н												
	Н												
	П												
Sample Types: trace 0 to 5%				SPT Resistance			w	Approve/Date					
SS Split Spoon few 5 to 10% Cohesionless Density: Cohesive Consis				sive Consisten	су:		•						
ST		elby Tube			i to 25%		· · · · · · · · · · · · · · · · · · ·	ery Soft, 3-4		ev.			
R		ck Core			to 45%			d. Stiff, 9-15 ery Stiff, 31+					
	La	b Sample		mostly	>50%	L_							



PROJ	ECT: P	eirce Is	land WWTI	F, Parking	g L	ot, Portsmouth NH			SHE	ET	BORING NO.
SITE	LOCATION	:			JC	OB NO.: 60301525		-	1	of 1	PB- 5
		EE OKE	-TO!!		LC	CATION:			Elevation	on:	Total Depth:
	S	EE SKE	:TCH			N: 210590 E	122993	7	12.	.0	6.5'
DRILL	CONTRAC	CTOR:	NE Boring	Contr.	EN	IG/GEO: William Checchi	-		BEGUN	N :	9/14/2016
DRILL			master 4000		DF	RILLER: Vacmaster: B.Walsh			FINISHED: 9/19/2016		
Hole S		9/16-Mot	oile B50 bom Weather:	9/14/16	cle	Drill: M.Soucy	Т	Ground Wa	ter (Da	te/Dep	th):
	25" ID, 6" (OD		9/19/16					•	•	untered
	Method:		cmaster to			illing Fluid :		Top of Roc			
			n Auger	0.0		none	}				ger Refusal 6.5'
	T	l otter	Blow Count	Sample	┝	Horic		• • • • • • • • • • • • • • • • • • • •		iu Auş	jei reiusai vio
Depth	Sample	N	(per 6 in.)	Recovery		SAMPLE			pocket pewnetr	;	STRATIGRAPHIC
(ft)	Type/No.	Value	or Drilling	or REC &		DESCRIPTION	l		ometer		DESCRIPTION
			Rate(min/ft)	RQD	L				(tsf)	(0	dashed where inferred)
1						~6" Grass and root ma		AND /			Grass + Topsoil
1,5	auger 1					Loose Light brown gravelly, s Very dense, Orange-brown, grave	elly,silty,c	ayey,			
2.5	-				-	SAND					
3	auger 2				1						
						 Very dense,Orange-brown,silty,c	lavov ear	ndv			FILL
▎▕					1	GRAVEL, occasional cobble, Dry		iuy,			
5						_					
5.5	_auger_3_				1				11		
6 <u>.5</u>					_	9/14/16 - vacuum depth, 9/19/		Refusal			
H					1	bottom off boreho	le 6.5'				
L											
										,	
10	 				-						
L											
H	+				ł						
<u> </u>					1						
15		-			-						
					1						
	-				-						
Sample	Types:	L	trace 0	to 5%	\vdash	SPT Resista	ance				Approve/Date
	iplit Spoon			to 10%		Cohesionless Density:		ive Consisten	cy:		11
	helby Tube		little 15	i to 25%		5-9 Loose, 10-29 Med. Dense		y Soft, 3-4			
R F	Rock Core	1557	some 30) to 45%	0-4 Very Loose, 30-49 Dense 5-8 Med. Stiff, 9-15			Stiff			
L	Lab Sample mostly >50%				50+ Very Dense 16-30 Very Stiff, 31			ry Stiff, 31+	Hard		



LKOJE	•		land WWT	F, Parking	g L	ot, Portsmouth NH		SHE	ET	BORING NO.
SITE L	OCATION	:			JC	DB NO.: 60301525		1	of 1	PB- 6
		EE OK	TOU		LC	OCATION:		Elevation	on:	Total Depth:
	8	SEE SKE	ETCH			N: 210571 E: 12300 ⁴	12	11.	4	12.0'
DRILL	CONTRAC	CTOR:	NE Boring	g Contr.	Εľ	NG/GEO: William Checchi		BEGUN	V :	9/14/2016
DRILL			cmaster 400	0	DI	RILLER: Vacmaster: B.Walsh		FINISH	ED:	9/19/2016
Hole Si		9/16-IVIOI	bile B50 bom Weather:	9/14/16	cle	Drill: M.Soucy	Ground W	L ater (Dat	te/Dep	th) :
2.2	25" ID, 6" (OD				udy 71 F		•	•	8' [sample]
	Method :		ı /acmaster t			illing Fluid :	Top of Roo			
	Holl		n Auger			none	'			untered
			Blow Count	Sample	┢		1127	pocket		
Depth	Sample	N	(per 6 in.)	Recovery		SAMPLE		penetro		STRATIGRAPHIC
(ft)	Type/No.	Value	or Drilling	or REC &		DESCRIPTION		meter (tsf)		DESCRIPTION
			Rate(min/ft)	RQD	L	~6" Grass and root mat, light brown, sifty SA	NE	((31)	(0	dashed where inferred)
1					┢	~6" Grass and root mat, light brown, sifty SA	מאט			Grass + Topsoil
1.5	auger 1					Dense,Orange-brown,silty, sandy,GRAVE	L			
2.0 2.5	auger 2					Dense,Brown,silty,sandy,GRAVEL,occasi	onal			
				-		cobble,small boulder, Dry				FILL
5		}			⊢	4.5' Med.dense,Gray,sandy,SILT,with,roots, D	rv 6'	\vdash		100 700
					1					
6.5	auger 3					Med.dense,Olive brown,clayey,sandy,SIL' (9/14/16 - vacuum depth)	Γ, Dry	pp		SILT
7					L			3.0		
	SS-4	25	5 - 9		V	Med.dense,Olive brown,silty,clayey,fine S	AND, Wet	pp _0.5		
9	004		16 - 26	18						
					1					Silty SAND
10						<u></u>		1 1		
	SS-5	28	9 - 15	,		Med.dense,Yellow-brown,silty,fine SAND,	Wet			
12			13 - 13	14						
					П	bottom of borehole 12'				
\vdash				-						
15										
						<u> </u>				
			-							
L										
Sample T	ypes:		trace 0) to 5%		SPT Resistance				Approve/Date
	lit Spoon		few 5	to 10%		Cohesionless Density: Cohes	sive Consisten	cy:		
	elby Tube			i to 25%			ry Soft, 3-4			
88888888	ock Core			to 45%			d. Stiff, 9-15 ery Stiff, 31+			
La	b Sample		mostly	>50%						





PROJ	IECT: Dia	ree lele	~ d \W\\A/TD	Dartamari	41. NILI				SHE	ET	BORING NO.
	LOCATION:		nd WWTP - I	Portsmou	JOB NO.:	C0204505 4 04 0					
					LOCATION:	60301525.1.01.2			Elevation	of 1	B13-1 Total Depth:
	e Island WW	TP			N:	E:					·
	mouth, NH CONTRAC	TOD .							34 (6		10'-3"
		TOR:	NE	В	ENG/GEO:	W. Son	g		BEGUN		Sept. 24, 2013
	RIG:		Mobile B-53		DRILLER:	Trent Ro			FINISH		Sept. 24, 2013
Hole S	Size :		Weather:				G	Fround Wa	iter (Dep	oth):	
	~4"				Sunny, bri	ght, ~50s			No	t Enco	untered
Drillin	g Method :				Drilling Fluid	:	Т	op of Roc	k (Depth):	
	S	SA/NW	Cased			Potable Water				5'-3)"
			Blow Count	Sample			-				
Dept	h Sample	N	(per 6 in.)	Recovery		SAMPLE				,	STRATIGRAPHIC
(ft)	Type/No.	Value	or Drilling	or REC &		DESCRIPTION			ASTM		DESCRIPTION
			Rate(min/ft)	RQD	Reddish k	prown fine to medium SAND, f	ew fine to	coarse	Class.		
	SS-1	39	7-13-26-50	14"		le to some fines, trace grass r		coarse			
	0'-2'										
					1						
											F-M SAND
5_										5'3"	
	SS-2		50/0"	0	No Recov	ery.					
	5'										
						rzite, highly fractured, highly to	o slightly				
	RC-1		4	Rec=67%	weathered	d, hard.					BEDROCK
	5'3"-10'3"		4	RQD=30%							
40			4		1						
10_			4							10'3"	
			7								_
			9								EOB @ 10'3"
					1						
15]						
15_					1						
					1						
				1							
SAME	<u> </u>	trac	e 0 to 5%	 	<u> </u>	SPT Resistance	CB				Approve/Date
	' SPLIT SPO					OF I VESISIAII	U U				Approve/Date
	PLIT SPOO			Cohesionless	Density:	0-4 Very Loose	Cohesive 0	Consistency:	0-2 Very	Soft	Sept. 30, 13
	HELBY TUE			5-9 Lo		0-29 Med. Dense		oft, 5-8 M/Sti	-		ws
R=RC	OCK CORE	mo	stly >50%	30-49 I		0+ Very Dense		V-Stiff, 31			
RQD	= Rock Qual	ity Desig	nation			<u> </u>					



DD C :-	O.T.								<u> </u>		DODING NG
PROJE	Pie		nd WWTP - I	Portsmou					SHE	:Eli	BORING NO.
SITE L	OCATION:				JO	B NO.: 60301525.1.01.2			1	of 1	B13-2A
Pierce I	sland WW	TP			LO	CATION:			Elevation		otal Depth:
		••			N:	E:			22 5 /	oct \	11'
	outh, NH CONTRAC	TOR:	N.E.		ΕN	G/GEO: W. Sono			33.5 (BEGUN		
DRILL			NE	В		W. Song			FINISH		Sept. 23, 2013
			Mobile B-53		DI.	Trent Ro		N 1347			Sept. 23, 2013
Hole Si	ze:		Weather:				(Fround Wa	ater (Dep	itn):	
	~4"					Sunny, bright, ~60s				t Encou	ntered
Drilling	Method:				Dri	lling Fluid :	T	op of Roc	k (Depth):	
	SS	SA/NW	Cased			Potable Water				6'	
			Blow Count	Sample		. ctable trate.					
Depth	Sample	N	(per 6 in.)	Recovery		SAMPLE				S	TRATIGRAPHIC
(ft)	Type/No.	Value	or Drilling	or REC &		DESCRIPTION			ASTM		DESCRIPTION
			Rate(min/ft)	RQD					Class.		
	SS-1	24	16-13-11-15	12"		3" Asphalt Concrete Pavement.					
	0.5'-2.5'		10 10 11 10	12		Yellowish to reddish brown GRAVELLY	SAND, f	ine to			
						coarse sand, little to some fine to coarse	e gravel,	trace			
											GRAVELLY SAND
											0.0.0222.07.00
5											
						Yellowish brown GRAVELLY SAND, fine	e to coar	se sand,			
	SS-2	>50	20-50/3"	8"		little fine to coarse gravel, little fines, mo	ist.			6'	
	5'-5'9"										
						Gray QUARTZITE, highly fractured to br	oken wit	h clay			
_	RC-1		4	Rec=100%		seams, moderately weathered to fresh, I	hard.				
	6'-11'		6	RQD=58%							BEDROCK
			_								
10			7								
			6							11'	
			-								50D @ 441
-			7								EOB @ 11'
15											
 				 							
				1							
				1							
SAMPI	<u>l</u> E TYPES:	trac	e 0 to 5%	-	<u> </u>	SPT Resistanc	:e				Approve/Date
	SPLIT SPO					Oi i itolistano					, ipp1010/Dato
	LIT SPOO			Cohesionless	Den	sity: 0-4 Very Loose	Cohesive	Consistency:	0-2 Very	Soft	Sept. 30, 13
	ELBY TUB			5-9 Lo		10-29 Med. Dense		oft, 5-8 M/Sti	- '		ws
	K CORE	mo		30-49 I				V-Stiff, 31			



PROJE	ECT: Pier	re Islaı	nd WWTP - I	Portsmou	th NH		SHE	ET	BORING NO.	
SITE I	OCATION:	JU 10101		3.1311104	JOB NO.: 60301525.1.01.2		1	of 1	B13-3	
Diores		гр			LOCATION:		Elevation		otal Depth:	
	Island WW7	· F			N: E:				·	
	outh, NH CONTRAC	TOR :		5	ENC/CEO:		33 (e		14'-10"	
	RIG:		NE	R	DDILLED :		FINISH		Sept. 24, 2013	
Hole S		ı	Mobile B-53 Weather:		Trent Roe	Ground Wa			Sept. 24, 2013	
i iole 3	ize .		vveatrier.			Ground wa	itei (Det	oui) .		
Daillia	~4"				Sunny, bright, ~60s Drilling Fluid:	Tan of David		ot Encour	ntered	
חוווחם	Method :				Drilling Fluid :	Top of Rocl	к (рертп	1) :		
	SS	SA/NW (T	Potable Water		1	6'-6"		
D	0		Blow Count	Sample	OAMBI E			0.7	ED ATIOD ADI IIO	
Depth (ft)	Sample Type/No.	N Value	(per 6 in.) or Drilling	Recovery or REC &	SAMPLE DESCRIPTION		ASTM		TRATIGRAPHIC DESCRIPTION	
(11)	i ype/ivo.	value	Rate(min/ft)	RQD	DESCRIPTION		Class.		SESSIVII TION	
	00.				Brown GRAVELLY fine to medium SAND, coa	arse gravel,				
-	SS-1 0-2'	33	2-9-24-22	8"	few fines, moist.					
	0-2									
									SAND	
-									OAND	
-										
5										
	00.0	50	E 4 E 0 /0 !!	0.11						
_	SS-2 5'-5'8"	>50	54-50/2"	8"	Top 6": Brown SILTY fine SAND.			6'6"		
	3-30				Bottom 2": Broken, highly weathered rock frag					
	RC-1		6	Rec=53%	Gray QUARTZITE, highly to moderately weat broken, hard.	hered,				
-										
-	6'6"-9'4"		6	RQD=12%						
10			10							
	RC-2		4	Rec=100%	Gray QUARTZITE, highly weathered, highly fi	ractured			BEDROCK	
-	IXO-2			Nec=10076	Gray QUARTETTE, highly weathered, highly h	actureu.			BEDROCK	
	9'4"-10'10"		5/6"	RQD=50%						
	RC-3		5	Rec=100%	Gray QUARTZITE, slightly weathered to fresh, ha	ard.				
	10/10/1 11/10		4	BOD 0504						
-	10'10"-14'10"		4	RQD=65%				14'10"		
15			4					14 10		
			5						EOB @ 14'10"	
F										
-				-						
-				1						
		<u> </u>							Τ	
	LE TYPES:	trac			SPT Resistance				Approve/Date	
	SPLIT SPOO PLIT SPOOM			Cohogiant	Dansity 0.4 Varu Loos	ivo Consister	0.237	· Coft	Sept. 30, 13	
				Cohesionless 5-9 Lo	14/4			WS		
								, 31+ Hard		



PROJE	CT: Pie	rce Isla	nd WWTP - I	Portsmou	th, NH			SHE	ET	BORING NO.
SITE L	OCATION:				JOB NO	·· 60301525.1.01.2		1	of 1	B13-4
Diarca I	sland WW	ГD			LOCATIO			Elevation		otal Depth:
		11			N:	E:		20.7		451.01
	outh, NH CONTRAC	TOR ·		_	ENG/GE	0		33 (e BEGUN		15'-3"
DRILL			NE	В	DRILLER	vv. 30rig		FINISH		Sept. 23, 2013
			Mobile B-53		DKILLER	Trent Roe				Sept. 24, 2013
Hole Si	ze:		Weather:				Ground Wa	ater (Dep	oth):	
	~4"				Sunny,	bright, ~60s		No	t Encoun	tered
Drilling	Method:		•		Drilling F	luid :	Top of Roc	k (Depth	ı) :	
	SS	SA/NW	Cased			Potable Water			6'-9"	
			Blow Count	Sample						
Depth	Sample	N	(per 6 in.)	Recovery		SAMPLE			ST	RATIGRAPHIC
(ft)	Type/No.	Value	or Drilling	or REC &		DESCRIPTION		ASTM	С	ESCRIPTION
			Rate(min/ft)	RQD	In. I	OIL TV CAND LIVE	1.6	Class.		
	SS-1	13	2-6-7-9	10"		prown SILTY SAND, little coarse gra m sand, trace grass roots, moist.	ivei, fine to			
	0-2'				1	, ,				
-										
										SAND
					Crindi	ng at 4 ft donth, possible cabbles				
-					Gilliai	ng at 4 ft depth, possible cobbles.				
5										
	SS-2	39	6-5-34-50/2"	20"	Top 16	6": yellowish brown fine to medium \$	SAND, possible			
	5'-7'	- 55	0 0 0 1 00/2						6'9"	
_						n 4": broken rock fragments. QUARTZITE, highly to moderately w	roothorod highly			
	RC-1		5	Rec=33%		red to broken, hard.	realliered, flighly			
	01011 4 01011		_	505.0	1					
-	6'9"-10'3"		6	RQD=0	.					
10			10							
			6							BEDROCK
										BEBROOK
	RC-2		8	Rec=100%	Gray Q	UARTZITE, moderately weathered, ha	rd.			
	10'3"-15'3"		8	RQD=50%						
					1					
-			7							
15			9						15'3"	
			9							EOB @ 15'3"
			3							LOD @ 100
_										
-										
			<u> </u>							
SAMPL	E TYPES:	trac	e 0 to 5%			SPT Resistance				Approve/Date
	SPLIT SPO		5 to 10%							
	LIT SPOOI		e 15 to 25%	Cohesionless	Density:	0-4 Very Loose	Cohesive Consistency:	0-2 Very	Soft	Sept. 30, 13
	ELBY TUB			5-9 Lo	ose	10-29 Med. Dense	3-4 Soft, 5-8 M/Sti		ff	WS
IR=ROC	CK CORF	mo	stlv >50%	30-49 I	Dense	50+ Very Dense	16-30 V-Stiff 31	+ Hard		1



PROJE	CT: Pie	ce Islai	nd WWTP - I	Portsmou	th NH		SHE	ET	BORING NO.		
SITE I	OCATION:	JU 10101		3.1011100	JOB NO.: 60301525.1.01.2		1	of 1	B13-5		
Pierco	Island WW7	ГР			LOCATION:		Elevation		otal Depth:		
					N: E:		155/	oct)	19'-6"		
	outh, NH CONTRAC	TOR :	NE		ENG/GEO: W. Song		15.5 (BEGUN				
DRILL				В	W. Sorig	FINISH		Sept. 26, 2013			
Hole S			Mobile B-53 Weather:		Trent Roe	Ground Wa	Sept. 26, 2013 ater (Depth) :				
5.5 5			oatrior .			Olouna vva					
Drilling	~4" Method :				Sunny, bright, ~60s Drilling Fluid:	Top of Roc	k (Donth	8'-2"			
Dilliling	welliou.				רוווות Fluid .	Top of Roc	к (Бериі).			
	SS	SA/NW		Г	Potable Water			14'-6"			
Donath	Comple	N.I.	Blow Count	Sample	CAMPLE						
Depth (ft)	Sample Type/No.	N Value	(per 6 in.) or Drilling	Recovery or REC &	SAMPLE DESCRIPTION		ASTM		RATIGRAPHIC DESCRIPTION		
(11)	1 900/140.	value	Rate(min/ft)	RQD	DEGORII HON		Class.		JESSICI TION		
	00.	0-			Dark brown SILTY SAND with broken grav	el, fine to					
-	SS-1 0-2'	27	5-7-20-18	10"	medium sand, some fines, moist.						
	0-2										
-											
_											
5											
_	SS-2 5'-7'	21	5-11-10-14	20"	Brown to reddish brown fine SAND, little fir	nes, moist.					
	5-7								SAND		
_											
10											
					Brown fine to medium SAND, trace fine gra	avel, few to little					
_	SS-3 10'-12'	11	3-5-6-17	22"	fines, wet.						
	10-12										
-											
								1 11 4 11			
15	RC-1		5	Rec=90%	Gray QUARTZITE, moderately to slightly wea	thered, hard.		14'6"			
+											
-	14.5'-19.5'		5	RQD=33%					BEDROCK		
			6								
-			9					19'6"			
			9								
									EOB @ 19'6"		
SAMPI	_E TYPES:	trac	e 0 to 5%		SPT Resistance		<u> </u>		Approve/Date		
	SPLIT SPO								11 22 22 22		
SS=SF	LIT SPOOI	N little	e 15 to 25%	Cohesionless	ess Density: 0-4 Very Loose Cohesive Consistency:			scy: 0-2 Very Soft Se			
ST=SH	IELBY TUB	E som	ne 30 to 45%	5-9 Lo				M/Stiff, 9-15 Stiff WS			
R=RO			30-49 I	Dense 50+ Very Dense	31+ Hard						



PR∩ IE	CT ·							QHE	FT	BORING NO.	
PROJECT : Pierce Island WWTP - Portsmouth, NH							SHEET		DOMING NO.		
SITE LOCATION:					JOB NO.: 60301525.1.01.2			1 of 1		B13-6	
Pierce Island WWTP					LOCATION:			Elevatio	n: T	otal Depth:	
Portsmouth, NH					N:	E:			est.)	12'-6"	
DRILL CONTRACTOR: NEB					ENG/GEO: W. Song					Sept. 26, 2013	
DRILL RIG: Mobile B-53					DRILLER: Trent Roe		FINISHED: Sept. 26, 2013		Sept. 26, 2013		
Hole Si	ze :		Weather:				Ground Wa	ater (Dep	th):		
~4"					Sunny, bright, ~60s			Not Encountered			
Drilling Method :					Drilling Fluid : Top of Roc			ck (Depth):			
SSA/NW Cased					Potable Water		2'-6"				
	Blow Co			Sample	. Stable Haller		Į.				
Depth	Sample	N	(per 6 in.)	Recovery					S	STRATIGRAPHIC	
(ft)	Type/No.	Value	or Drilling	or REC &			ASTM	DESCRIPTION			
			Rate(min/ft)	RQD	l lour #	CAND 11		Class.			
	SS-1	34	2-11-23-27	10"	Brown fine to medium SAND with coarse gravel, broken rock fragments, trace grass roots, few fines, TOPSOIL.						
	0-2']						
-									2'6"	SAND	
					_				-		
	RC-1		5	Rec=70%	Gray QUARTZITE, moderately to slightly weathered, fractured to broken, hard.						
					1						
5	2.5'-7.5'		4	RQD=33%	1						
			10+								
			6							BEDROCK	
					1						
	1		4		Gray QUARTZ	Gray QUARTZITE, fractured to broken, qua		artz vein			
	RC-2		10+	Rec=95%		invasion observed, moderately to slightly weathered, hard.					
10	7.5'-12.5'		10+	RQD=45%							
			10+								
			7								
			6						12'6"		
										EOB @ 12'6"	
_											
15											
]						
				1							
SAMPLE TYPES: trace 0 to 5%					SPT Resistance					Approve/Date	
S3=3" SPLIT SPOON few 5 to 10%				S Resistance							
SS=SPLIT SPOON litt				Cohesionless Density: 0-4 Very Loose Cohesive Consistenc			Cohesive Consistency:	0-2 Very	Soft		
ST=SHELBY TUBE se			ne 30 to 45%	5-9 Lo			3-4 Soft, 5-8 M/Sti	4 Soft, 5-8 M/Stiff, 9-15 Stiff		WS	
R=ROCK CORE			stly >50%	30-49 1	Dense 50+ Very Dense 16-		16-30 V-Stiff, 31+ Hard				



PROJE	-CT:								SHE	FT	BORING NO.	
	OCATION:	rce Isla	nd WWTP - I	Portsmou		NO.: 60004505 4 04 0			0112		DOTAILO 110.	
SIIE L	LOCATION:					60301525.1.01.2				of 2	B13-7	
Pierce	Island WW7	ГР				ATION:			Elevation	on:	Гotal Depth:	
Portsm	outh, NH				N:	E:			22 (6		26'-6"	
DRILL	CONTRAC	TOR :	NE	В	ENG	/GEO: W. Song	ı		BEGUN	1 :	Sept. 24, 2013	
DRILL	RIG:		Mobile B-53		DRIL	LER: Trent Roe			FINISH	ED:	Sept. 25, 2013	
Hole S	ize :		Weather:					Ground Wa	ater (Depth) :			
	4"				C	and bright COs			Not Encountered			
Drilling	~4" Method :		<u> </u>			nny, bright, ~60s ng Fluid :	k (Depth		nterea			
 	weiled.				Di iiiii	ig i idid .	к (Бори	٠, ٠				
	SSA/NW Cased					Potable Water		1	6'-6'	1		
	Blow Count Sample					0.1151.5					TD 4 TIOD 4 DI IIO	
Depth		N	(per 6 in.)	Recovery		SAMPLE DESCRIPTION			A CITA I	8	TRATIGRAPHIC	
(11)	(ft) Type/No. Value or Drilling or REC Rate(min/ft) RQD			or REC &		DESCRIPTION		ASTM Class.		DESCRIPTION		
$\overline{}$					Ye	ellowish brown fine to medium SAND, li	ittle fine	e to coarse	CIMOS.			
<u> </u>	SS-1	6	4-3-3-12	12"	gr	avel, trace fines, moist.						
	0'-2'			1								
F												
-											SAND	
					G	rinding at 3 to 4 ft depth, possible cobb	les.					
_ [
5												
	SS-2	>50	53-50/4"	8"	То	op 2": brown SILTY fine SAND.				6'6"		
	5'-5'10"				В	ottom 6": highly weathered, broken roc	ck fragn	nents.		0.0		
-					G	ray Quarzite, highly fractured to broken	n, hiahly	v to slightly				
	RC-1		3	Rec=33%		eathered, hard.	.,g,	,g,				
	6'6"-11'6"		7	RQD=8%								
-	00-110		,	NQD=070								
10			7									
			5									
			6	1								
	RC-2		4	Rec=100%	G	ray QUARTZITE, slightly weathered to	fresh, l	hard.				
	11'6" 16'6"		5	POD-720/							BEDBOOK	
F	11'6"-16'6"		3	RQD=72%							BEDROCK	
15			12									
			4									
F												
			4			ray QUARTZITE, slightly weathered to	froch !	broken et				
	RC-3		5	Rec=100%		ottom 12", hard.	116911, 1	DIONEII AL				
-	16'6"-21'6" 5 RQD=639		KQD=63%									
			6	<u> </u>								
SAMPI	E TYPES:	trac	e 0 to 5%			SPT Resistance	е				Approve/Date	
S3=3"	SPLIT SPO	ON few	5 to 10%		o				-	-		
	LIT SPOOI		e 15 to 25%	Cohesionless	ss Density: 0-4 Very Loose Cohesive Consistency			e Consistency:	0-2 Very	Soft	Sept. 30, 13	
	IELBY TUB	E son	ne 30 to 45%	5-9 Lo				M/Stiff, 9-15 Stiff WS		ws		
					Dense 50+ Very Dense 16-30 V-Stiff, 3					31+ Hard		



PROJE	CT: Pie	rce Islai	nd WWTP - I	Portsmout	h.	NH		SHE	ET	BORING NO.
SITE L	OCATION:					B NO.: 60301525.1.01.2		2	of 2	B13-7
Pierce I	sland WW1	ГР			LO	CATION:		Elevation		tal Depth:
	outh, NH				N:	E:		22 (e	et)	26'-6"
· Ortorn			Blow Count	Sample					,0,	20 0
Depth	Sample	N	(per 6 in.)	Recovery		SAMPLE			ST	RATIGRAPHIC
(ft)	Type/No.	Value		-		DESCRIPTION		ASTM		ESCRIPTION
(11)	туре/140.	value	or Drilling	or REC &		DESCRIPTION			L	ESCRIPTION
			Rate(min/ft)	RQD				Class.		
			6							
			8							
	RC-4		5	Rec=100%		Gray QUARTZITE, slightly weathered to fresh, h	hard.			
	21'6"-26'6"		4	RQD=45%						BEDROCK
25			5							
			5							
			10						ı	EOB @ 26'6"
_									'	200 © 200
30										
35										
_										
40										
04117	F T/0=2	1	_			007.5				, , , , , , , , , , , , , , , , , , ,
SAMPLE TYPES: trace 0 to 5% S3=3" SPLIT SPOON few 5 to 10%						SPT Resistance			Approve/Date	
	LIT SPOO			Calari I	D	sites 0.4 Versil and	- Ci-	0.237	C-6	Sept. 30, 13
	ELBY TUB			Cohesionless			e Consistency:			WS
	K CORE	E som		5-9 Loc 30-49 D			Soft, 5-8 M/Stiff 30 V-Stiff, 31+		11	
	55.11	- 11103	, /20/0	50-47 D	~110	. 50. 10. 50. 10-5	, 2011, 217			<u> </u>



PROJE	:CT: Pie	rce Islai	nd WWTP - I	Portsmout	h NH		SHE	ET	BORING NO.	
SITE L	OCATION:	JU 13101		0.1311100	JOB NO.: 60301525.1.01.2		1	of 1	B13-8	
Dieroc	Island WW	гр			LOCATION:		Elevation		Total Depth:	
		17			N: E:				·	
	outh, NH CONTRAC	TOR :	NE	D	ENG/GEO : W. Song		21 (e BEGUN		17' Sept. 26, 2013	
DRILL	RIG:			ь	DDILLED :		FINISHED:			
Hole Si			Mobile B-53 Weather:		Trent Roe	Ground Wa			Sept. 26, 2013	
1					Common beinha CO					
Drillina	~4" Method :				Sunny, bright, ~60s Drilling Fluid:	Top of Roc	Not Encountered			
Ü		20/8110/	OI		-	` '	,			
	58	SA/NW (Blow Count	Sample	Potable Water			2'		
Depth	Sample	N	(per 6 in.)	Recovery	SAMPLE			S	STRATIGRAPHIC	
(ft)	Type/No.	Value	or Drilling	or REC &	DESCRIPTION		ASTM		DESCRIPTION	
	1		Rate(min/ft)	RQD			Class.		_	
	SS-1	21	2-8-13-22	8"	Brown SILTY fine SAND, bottom 2": rock frag	gments, moist.			SAND	
	0-2'						2'			
	RC-1 4 Rec=8							_		
-			Rec=88%	Gray QUARTZITE, fractured to broken, hard						
	2'-7' 6 RQD=1			RQD=10%						
5			6							
-			5							
_			6		Croy OLIA DIZITE highly fractured moderate	aluta aliabthi				
	RC-2		6	Rec=95%	Gray QUARTZITE, highly fractured, moderat weathered, hard.	ely to slightly				
	7'-12'		10+	RQD=33%					BEDROCK	
	1			11QB-0070					BEBROOK	
10			5							
			6							
			10							
	RC-3		6	Rec=95%	Gray QUARTZITE, highly fractured, moderat weathered, hard.	ely to slightly				
-					weathered, flaid.					
-	12'-17'		3	RQD=70%						
15	<u> </u>		3							
			4							
	1							17'		
-	1		6	-					EOB @ 17'	
	1			ļ						
	<u> </u>									
SAMPL	<u> </u>	trac	e 0 to 5%		SPT Resistance		1	<u> </u>	Approve/Date	
	SPLIT SPO									
	=SPLIT SPOON little 15 to 25% Cohesionle				less Density: 0-4 Very Loose Cohesive Consistency:					
	ELBY TUB			5-9 Lo		M/Stiff, 9-15 Stiff WS		ws		
K=RO	OCK CORE mostly >50% 30-49				Dense 50+ Very Dense	16-30 V-Stiff, 31	31+ Hard			



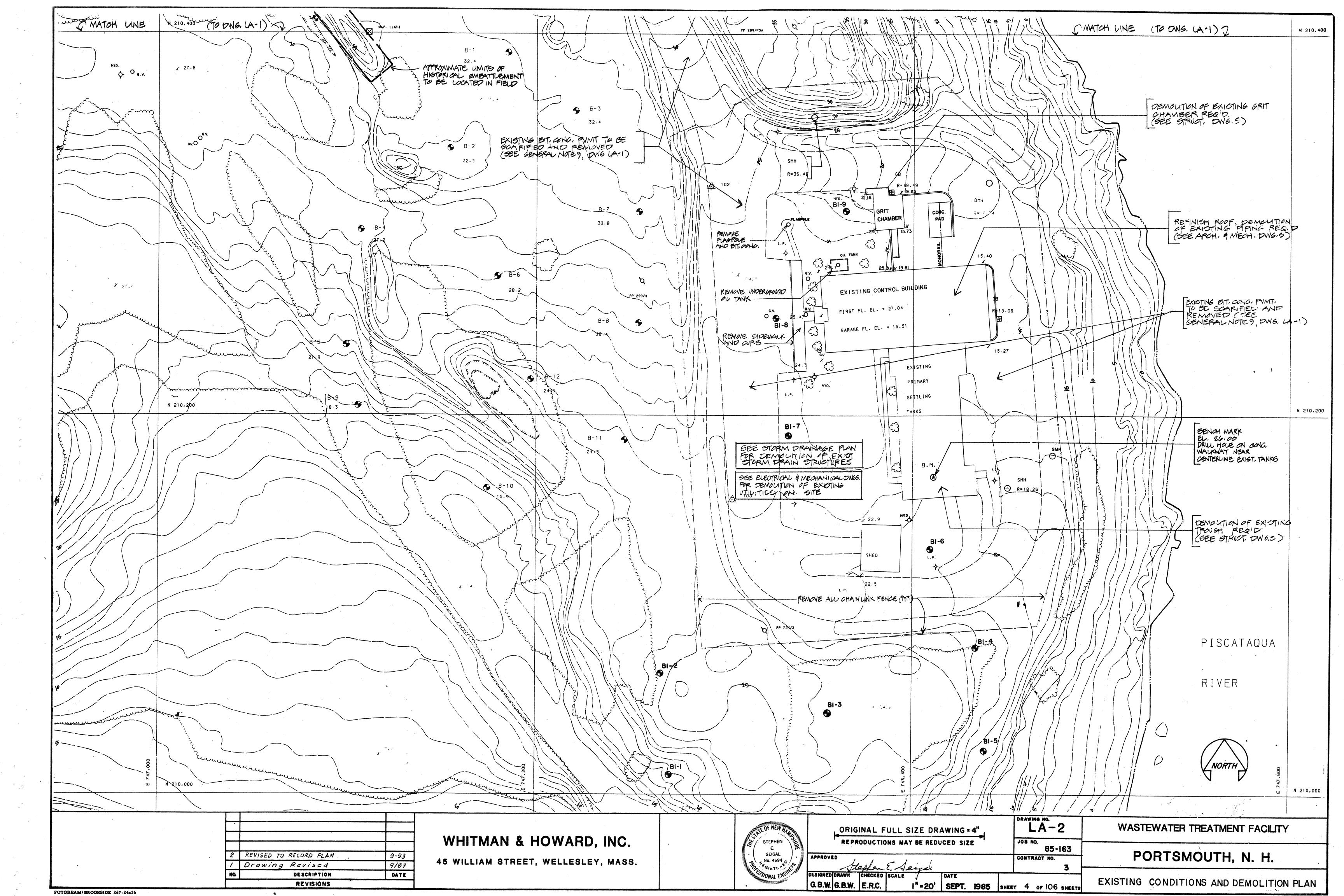
PROJE	·CT·							SHE	FT	BORING NO.		
	Pie		nd WWTP -	Portsmou				J	- '	DOMING NO.		
SIIE L	.OCATION:				JOB NO	00301323.1.01.2			of 1	B13-9		
Pierce	Island WW	TP			LOCATIO	DN:		Elevation	on: T	otal Depth:		
	outh, NH				N:	E:		20 (6		10'-9"		
DRILL	CONTRAC	TOR :	NE	В	ENG/GE	O: W. Song		BEGUN	l :	Sept. 27, 2013		
DRILL	RIG:	N	Mobile B-53		DRILLER	: Trent Roe	1	FINISH	ED:	Sept. 27, 2013		
Hole Si	ze:		Weather:				Ground Wa	ater (Dep	oth) :	'		
	~4"				Sunny	bright, ~50s		Not Encountered				
Drilling	Method :				Drilling F		Top of Roc			nicioa		
		O A /NIVA/ C	Dana - I			Datable Water						
	S;	SA/NW (Blow Count	Sample		Potable Water	ļ		5'-9"			
Depth	Sample	N	(per 6 in.)	Recovery		SAMPLE			S	TRATIGRAPHIC		
(ft)	Type/No.	Value	or Drilling	or REC &		DESCRIPTION		ASTM		DESCRIPTION		
(11)	Турслію.	value	Rate(min/ft)	RQD		DEGORII TIOIV		Class.		DECORAL FIGH		
						to dark brown fine to medium SAN	ID, little fine to					
-	SS-1 0'-2'	7	2-3-4-4	14"	coarse	e gravel, little to some fines, moist.						
	0-2											
										F-M SAND		
5					Vallou	vish brown fine SAND, little coarse o	graval and rook		5'9"			
	SS-2		50/3"	3"		ents, dry.	graver and rock		3 9			
	5'-5'3"					•						
-					Gray	Quarzite, fractured to broken, mode	rately weathered					
	RC-1		5	Rec=90%		h, hard.	rately weathered			BEDROCK		
	5'9"-10'9"		3	RQD=52%								
10			3									
			7						10'9"			
			7							FOD @ 4010#		
-	1		7							EOB @ 10'9"		
15												
SAMPL	E TYPES:	trace	e 0 to 5%		L	SPT Resistance)	1	<u> </u>	Approve/Date		
S3=3"	SPLIT SPO		5 to 10%									
SS=SP	LIT SPOO	N little	15 to 25%	Cohesionless	Density:	0-4 Very Loose	Cohesive Consistency:	0-2 Very	Soft	Oct. 1, 13		
ST=SH	ELBY TUB	BE som	e 30 to 45%	5-9 Lo	ose	10-29 Med. Dense	3-4 Soft, 5-8 M/Sti	ff, 9-15 Sti	ff	ws		
R=RO	CK CORE	mos	tly >50%	30-49 I	Dense	50+ Very Dense	16-30 V-Stiff, 31	+ Hard				



PROJE	CT: Pie	rce Islar	nd WWTP - I	Portsmout	h, NH			SHE	ET	BORING NO.
SITE L	OCATION:				JOB NO.: 603	01525.1.01.2		1	of 1	B13-10
Pierce I	sland WW	ΤР			LOCATION:			Elevation	on: T	otal Depth:
	outh, NH				N:	E:		15 (e	aet)	11'-3"
	CONTRAC	TOR:	NE	D	ENG/GEO :	W. Song		BEGUN		
DRILL	RIG :				DRILLER :			FINISH	ED:	Sept. 26, 2013
Hole Si	7e ·		Mobile B-53 Weather:			Trent Roe	e Ground Wa	ter (Der	oth) ·	Sept. 26, 2013
							0.04.14			
Drilling	~4" Method :				Sunny, bright, ~(Drilling Fluid:	60s	Top of Roc		ot Encour	ntered
Dilliling	welliou.				Drilling Fluid .		Top of Roci	к (Бериі	ı) .	
	S	SA/NW (Po	otable Water			3'-9"	
D	0		Blow Count	Sample		CAMPLE			0	FD 4 TI 0 D 4 DI 110
Depth (ft)	Sample Type/No.	N Value	(per 6 in.) or Drilling	Recovery or REC &		SAMPLE DESCRIPTION		ASTM		FRATIGRAPHIC DESCRIPTION
(11)	турелчо.	value	Rate(min/ft)	RQD		DESCRIPTION		Class.	'	DESCRIPTION
					Dark brown SIL	TY SAND, fine to mediun	n sand, little fine to			
	SS-1 0-2'	17	2-8-9-8	8"	coarse gravel, s	ome fines, moist.				
	0-2									SILTY SAND
<u> </u>					Gray QUARTZI	ΓΕ, fractured to broken, h	nighly to slightly		3'9"	
	RC-1		4	Rec=86%	weathered, hard		3 , 4 - 3 - 7		3 /	
5	3'9"-8'9"		7	RQD=10%						
-			4							
			6							
			7							BEDROCK
						TE, fractured to intact, mo	oderately to slightly			BEBROOK
-	RC-2		6	Rec=57%	weathered, hard	d.				
10	8'9"-11'3"		6	RQD=18%						
			9/6"						11'3"	
 			5/0		_					
										EOB @ 11'-3"
-										
15										
-										
										T
	E TYPES:	trace				SPT Resistance	e			Approve/Date
	SPLIT SPO		5 to 10%	a		. 1		0.7	a c	Oct. 1, 13
	LIT SPOO ELBY TUB			Cohesionless		ŀ	Cohesive Consistency:	-		WS
	ELBT TOB CK CORE		e 30 to 45% tly >50%	5-9 Loc 30-49 D			3-4 Soft, 5-8 M/Stift 16-30 V-Stiff, 31		11	



DD 0 1=	O.T.										DODING NO		
PROJE	rie		nd WWTP - I	Portsmou					SHE	EI	BORING NO.		
SITE L	OCATION:				JOE	B NO.: 60301525.1.01.2			1	of 1	B13-11		
Pierce I	sland WW	TP			LO	CATION:			Elevation	n: T	otal Depth:		
	outh, NH				N:		E:		16.5 (est)	7'-6"		
	CONTRAC	TOR:	NE		ENG	G/GEO:	Con		BEGUN				
DRILL				D		VV.	Song		FINISH		Sept. 27, 2013		
Hole Siz			Mobile B-53 Weather :		-111	Trer	t Roe	Ground Wa			Sept. 27, 2013		
ITUIE SIZ	∠⊌ .		weather:					Ground Wa	пет (рер	ui).			
	~4"					unny, bright, ~60s			Not Encountered				
Drilling	Method :				Drill	ling Fluid :		Top of Roc	k (Depth):			
	SSA/NW Cased Blow Count Samp					Potable Water			2'-6"				
			1	Sample				<u> </u>					
Depth	Sample	N	(per 6 in.)	Recovery		SAMPLE					TRATIGRAPHIC		
(ft)	Type/No.	Value	or Drilling	or REC &		DESCRIPTIO	N		ASTM	I	DESCRIPTION		
			Rate(min/ft)	RQD	.				Class.				
	SS-1	27	4-7-20-50/3"	14"		6" bituminous concrete pavement							
	3"-2'3"					Top 10": brown fine to coarse SAN					SAND		
-						fines, moist; bottom 4": broken rock	tragm	nents with sand.		2'6"			
	RC-1		4	Rec=77%									
	2.5'-7.5'		5	RQD=13%		Gray QUARTZITE, fractured to bro weathered, hard.	ken, hi	ighly to slightly					
-	2.5-7.5		3	NQD=13/0		weathered, flatu.							
5			10+								BEDROCK		
			7										
			5							7'6"			
											EOB @ 7'6"		
-													
10													
-													
15													
-													
-													
SAMPL	I E TYPES:	trac	e 0 to 5%		<u> </u>	SPT Resis	stance	<u> </u>	<u>i </u>		Approve/Date		
	3=3" SPLIT SPOON few 5 to 10%				o. i Noditano					7,000000000			
SS=SP	LIT SPOO	N little	e 15 to 25%	Cohesionless	Dens	ity: 0-4 Very Loose	C	Cohesive Consistency:	0-2 Very	Soft	Oct. 1, 13		
ST=SH	ELBY TUB	SE som	ne 30 to 45%	5-9 Lo	ose	10-29 Med. Dense		3-4 Soft, 5-8 M/Sti	ff, 9-15 Stif	ff	WS		
R-ROC	K CORE	mos	stlv >50%	30-49 I	Jones	50+ Very Dense		16-30 V-Stiff 31	+ Hard		1		



1		SOR BORI	NG CO	VTRA6	CTOR	5	CLIENT		Geotechn	ical Engineers Inc.	BORING NUMBER
建	EV.	ENGLAND BORI OF CONT	INC.	c. 11 3 <i>4</i>	4 01102	ŀ	PROJECT	NAME -	Portsmou	th Treatment Plant	B-1
		FF. CT 06033	Springs 413-733	field, M. 3-1232	A ULIUS	i	LOCATIO	.,,	Portsmou	th, NH	SHEET
G	المورد المورد	H0		7	ITECT	1	LUCATIO	214			No
				ENGI						FILE NO.	of
	. eA	T. Roe	-		•	Ċ	sing	Sampler	Core Sarrel		5
		C. Conlon		TYPE		NW		SS	NXD4	SURFACE ELEV. 32.4	It*
÷	ECTOP			SIZE		3"		1-3/	3' <u>2-1/8''</u>	LINE & STATION	
	. STAF	ır <u>7/23/85</u>		HAMM	IER WT.	300		140		EME & OTATION	
		н 7/23/85		HAMN	ER FAL	<u>24'</u>		30"		OFFSET	
al	E FINIS	#	SAMPLE				COL.	STRATA		•	•
	-	DANGE		OWS PE		REC	1 .	CHANG		ASSIFICATION AND REMA	ARKS
	NO.	DEPTH RANGE		6-12	12-18	<u> </u>	<u> </u>		•		
Ľ	 SI	0-1.5	17	16_	10	4"		+			
		2007-000			 	 	-	†		. Fine Sand, Some S	
	18/1/27]	1	edCrs. Sand, Grav	el, Few
l.	52	5.0	100/			0"		_ ا	Copoles,	Pieces of Concrete	
-	RI	6.5-8.5	Core	d	<u> </u>	15'	3	6.0	Roller B	it Through Rock	
		8.5-11.5	Core	d	 	45'			Refusal	@ 6.O	
l	R2	0. J-11.0					9	8.5	Run #1	6.5-8.5 _{Quartzite*} Gray Phyllite* Fe 8.5-11.5 Quartzite* Gray Phyllite Ver	~
lo.						<u> </u>	7 ½	-	Rec. 15"	Grav Phyllite Fe	w Fractur
Γ			- 		 		-	11.5	Rec. 45"	Gray Phyllice Ver	y Fractui
l					 	\vdash		1			
l]	1	. :	
þ'	96166					<u> </u>	<u> </u>	-		5 D	
Γ				<u> </u>		 		-	Bottom o	f Boring 11.5	
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1	EUPLE	DENTIFICATION		ENETE	ATION	RESIS	TANCE	1-	POSCETIONS !!	CED CEMARYS.	
	2872	T COO	140 lb	. Wt. fal	ling 30"	on 2"	O.D. Samp esive Cons	oler	ROPORTIONS US trace 0 to 10	i	
	T UN	MALL TUBE	Cohesian 0-4	Very L	.0050	0	-2 Very	Soft	little 10 to 20		
	WA.	HOU	5-9 10-29	Mèd. C		5	-4 Soft -8 M/SI -15 Stiff	tiff	some 20 to 35	Cortes 7	Man / 1724
	`` Aij	SH SAMPLE GER SAMPLE	30-49 50 +	Very C)ense)ense		-30 V-St	irr	and 35 to 50	COL.A Coring	.ime/rt.
		38 M - 7 - 7 - 1				31	020T				

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SID BORING CO	NTRACTORS	•	CLIENT		Geotechn	ical Engineers Inc.	BORING NUMBER
NEW ENGLAND BORING CO. OF CONN. INC. Spring	field, MA 01103		PROJECT	NAME	Portsmou	th Treatment Plant	B→2
Spring 413-73	3-1232		LOCATIO)NN	Portsmou	th, NH	SHEET
SEC1-450	ARCHITECT	1	200,41,0	···			No1_
	ENGINEER					FILE NO.	of
ILER T. ROE		С	asing	Sampler	Core Barrel	22 3	f+*
ECTOR C. Conlon	TYPE	NW		SS	NXD4	SURFACE ELEV. 32.3	<u> </u>
124/85	SIZE I.D.	3"			$\frac{\pi}{2-1/8^{11}}$	LINE & STATION	
ESTART 7/24/85	HAMMER WT.	30		30"			
7/24/85	HAMMER FALL				1	OFFSET	
BL BL	OWS PER 6"	F	COL.			ASSIFICATION AND REMA	RKS
NO DEPTH HANGE OF	6-12 12-18	REC	c. ^	CHANGE			
5 2 01 6	9 19	12	11		Br. Fine	Sand, Some Silt, M	edCrs.
				2.5	L .	ne Gravel, Occasion	
R1 2.5-6.0 Core	ed	42	5 4		Run #1	2.5-6.0	<i>Ouartzit</i>
			51			Very Fractured Gr	
R2 6.0-9.5 Core	d	42		6.0			
		_	10	100		6.0-9.5 Qua	
			10	9.5	Rec. 42"	Fractured Gray Ph	yiiite
Ne vs.			_				·
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		ļ			Bottom o	f Boring 9.5	
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LE IDENTIFICATION	PENETRATION I			PR	OPORTIONS US	ED REMARKS:	
THIN WALL	niess Density	Con	esive Consi	stency	trace 0 to 109		
DEN END BOOK	Very Loose Loose Med. Dense	3	0-2 Very 3-4 Soft 5-8 M/St	1	little 10 to 20% some 20 to 35%	<u>.</u>	
MSH SAMO ROD 10-29	Med. Dense Very Dense	9	9-15 Stiff 3-30 V-Sti		and 35 to 50%	Coring T	ime/Ft.
NIGER SAMPLE 50+			02011				

FENCLAND BORIN	. INC.	a'					e e	cal Engineers Inc. th Treatment Plant	NUMBER
CT 06033 —	Spring 413-73	tield, M	fA 01103	- 1			Portsmout		B-3
SW		ARC	HITECT		LOCATIC	<u> </u>	TOTESMOGE		No. 1
			NEER			•	a.	FILE NO.	of1
r. Roe					ei e	Sampler	Core Barrel		
c. conlon	·	TYPE	:	HW	ung	SS	NXD4	SURFACE ELEV. 32-4 1	ft*
-102/85		SIZE		3"		1-3/8"	2-1/8"	LINE & STATION	
C. Conlon 7/23/85		HAM	MER WT.	300		140		LINE & STATION	
7/23/85 S/		HAM	MER FAL	24"		30"		OFFSET	
SZ	AMPLE					<u> </u>		<u> </u>	
DEPTH HANGE		OWS PE		REC.	COL.	CHANGE	FIELD CLA	SSIFICATION AND REMA	RKS
10. DEFIN	0-6	6-12					•		
0-1.5	6	8	6	4"				•	
	+			 		•		Sand, Some Silt, Li	ittle Me
4						j	Crs. Sand	, Fine Gravel	
5.0-6.5	15	32	39	14"					
	-		 			7.0			
7.5-12.5	Core	1	 	60"	8	7.0 7.5	Roller Ri	t Through Fracture	Pack
<u> </u>	10010			,	51	`	Run #1	7.5-12.5	RUCK
					31/2			Gray Phyllite Very	z Fracti
	1				42	1	7.5-8.5	Quartzite*	, IIGGE.
	-			-	74	12.5			
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			ļ		-		Bottom of	Boring 12.5	
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DENTIFICATION	<u></u>	ENETP	ATION F	FSIST	ANCE				
1 CD00-	140 lb.	Wt. fail	ling 30" a	n 2" O		er	PORTIONS USE	,,,	
MALL TUBE "	Cohesioni 0-4	Vary L	.0056	0-2	Very		little 10 to 20%		
FIGHED PISTON	5-9 0-29	Med. D		3-4 5-8	M/Sti		some 20 to 35%		
# AMPI # 13	0-49 0 +	Very 0	ense ense		.\$ Stiff 0 V-Stif	re i	and 35 to 50%	COL. A Coring Tir	ne/Ft.

EW ENGLAND BOR OF CON	ING COL	NTRACTOR	s	CLIENT	•	Geotechni	cal Engineers Inc.	BORIN
EW ENGLAND BUT	N. INC.						h Treatment Plant	NUMBE
tembuty, CT 06003	Springs	field, MA 01103 1-1232	i					B-4
(C-1640)		ARCHITECT		LUCATIO	NC		2 6164	No.
T. Roe		ENGINEER			· · · · · · · · · · · · · · · · · · ·		FILE NO.	of
TORC. Conlon	: <u>* </u>	TYPE	NW.	sing _	Sampler SS	WADA	SURFACE ELEV. 27.2	ft*
-100/95	e de la composición dela composición de la composición de la composición de la composición dela composición dela composición dela composición de la composición de la composición dela composición de la composición dela c	SIZE I.O.	3"			2-1/8"	LINE & STATION	
START 7/29/85		HAMMER WT.	300		140 30"			
7/29/85		HAMMER FAL	L <u>44</u>				OFFSET	
10 Str. (2010) (2010) (2010)	BLC	WS PER 6"	T		STRATA	FIELD CLA	SSIFICATION AND REMA	BKG
NO. DEPTH RANG	E ON 0.6	6-12 12-18	REC.		CHANGE		SOUTH AND ACMA	
si .5-2.0	6	10 8	11"			Br. Fine-	Crs. Sand, Some Si	Lt, Li
"	Core	d ,	60"	4	2.5		Sand, Fine Gravel	
R1 2.5-9.0	COTE		-00	3 }		Run #1 2		
	20 12		<u> </u>	4		Rec. 60"	Cored Boulder @ 2	
			-	6 <u>3</u>	<u> </u>	Top of Ro Gray Phyl	ck @ 4.0 Very Frac	tured
							tzite*	
	ing and the second		 	1	9.0`			···
Spirits and the spirits and th			ļ				:	
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Marketine and the second						••	•	
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LE IDENTIFICATION						·		
25511525no		NETRATION P Wt. falling 30" o	n 2" O.	D. Sampl	er	PORTIONS USE	REMARKS:	
UNDISTRICT TUBE	Cohesionic 0-4	Very Loose	Conesi 0-2	ve Consis	tency	trace 0 to 10% ittle 10 to 20%		
Mark TO NULL	5-9 10-29	Loose Med. Dense	3-4 5-8	Soft M/Stii	,,	ome 20 to 35%		
AUGER SAMPLE	30-49 50 +	Dense Very Dense	9-1 16()	5 SIII	ء ا ي	and 35 to 50%	COL. A Coring Ti	me/Ft.

		OF CON	ING COI N. INC. Spring 413-73	INCICAL IVII	CTORS			NAME PO		Engineers Inc. Treatment Plant	BORING NUMBER B-5 SHEET
7	340			ARCH ENGIN		<u></u>				FILE NO.	No of
Jest Lat	ector Estar	T. Roe C. Conlon 7/25/85 1/25/85		TYPE SIZE I HAMM HÄMM		Cassi NW 3 ¹¹ 300 24 ¹¹	ng	Sampler SS 1-3/8 ¹ 140 30 ¹¹	Core Sarrel NX 2-1/8"	SURFACE ELEV. 21.9 ft	
	i (""" T		SAMPLE BLO	OWS PER	1 6" I		COL.	STRATA	בידו פ פו א	COLORES ON AND DOLL	
1	NO.	DEPTH RANGE	0.6	SAMPL 6-12	ER 12-18	REC.	Α .	CHANGE	FIELD CEA	SSIFICATION AND REMA	MKS
ō		0-2.0	11	16		· · · · · · · · · · · · · · · · · · ·				· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·
	<u> </u>			24	33	12"			Light Br. Gravel, S	Fine Med Crs. Sa	and and
1	E.	4.5-9.5	Core	d		45"		4.5		- Wanted Water Market M	
b _								4.3	Run #1 4	.5-9.5 Rec. 45"	
1	 - -	all W							Gray Shal		
1							 	- 	-	ibolite(?)*	
lo.	\vdash	Allegania de la Calendaria						9.5			
ľ				7							
1										· :	
								·	Bottom of	Boring 9.5	
]-					-						
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	2000					• • •		•			
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1		**							*Log modi	fied by GEI.	
1	0.69	Special Communication of the C									
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]_		\$6.4								•	
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1		Apr.									
ħ		The same of the sa	 								<u></u> ·
1=	THIN UND OPEA	DENTIFICATION SPOON WALL TUBE STURBED PISTON END ROD	140 lb. Conesions 0-4 5-9	Wt. falliness Dens Very Lo		2" 0.0	O. Sample re Consist Very S Soft	tency Soft	PORTIONS USE trace 0 to 10% little 10 to 20%	D REMARKS:	
	WAR	SAMPLE	10-29 30-49 50 +	Med. De	ins a		M/Stiff Stiff		some 20 to 35% and 35 to 50%	COL. A	

2017	2 CON	ITRAC	TORS	;	CLIENT	G	eotechnical	Engineers Inc.	BORING
NEW ENGLAND BORING OF CONN.	INC.							reatment Plant	NUMBER
PIEW OF CUNIA.	Springfi	ield, M/ -1232	01103						B-6 SHEET
Chatcabary, 20 673-4640	410-100				LOCATIO	NP	ortsmouth.	NH	No
	.	ENGIN			•			FILE NO.	of
nillen T. Roe		****		Cas	ina	Sampler	Core Barrel		
C. Conlon		TYPE		NW		SS	NXD4	SURFACE ELEV. 28.2 f	t* .
7/25/85		SIZE I		<u> 3" -</u>			<u>' 2-1/8"</u>	LINE & STATION	
ATE START			ER WT.	_	,	140			
7/25/85 SAN		HAMM	ER FALL			30"_	<u> </u>	OFFSET	
SAN	IPLE BLO	WS PER	6"		COL.	STRATA	EIELD CLA	CCIEICATION AND DEMA	DVC
NO. DEPTH RANGE	0N 0-6	SAMPL 6-12	ER 12-18	REC.	^	CHANGE	PIELD CLA	SSIFICATION AND REMA	HKS
I 1 = 2 0	8	15	90	11"	4		Br. Fine	Sand, Some Silt Med	lCrs
SI 1.9-6.5	Core	i		56"	5 ½	1.9		Sand, Some Silt Med e Gravel, Occasiona	il Cobble
					63/4		<u>Run #1</u>	1.9-6.9 Rec. 56"	
					5 ½		Fractured	Gray Phyllite	
R2 6.9-11.9	Core			60"	4½	6.9		Quartzite*	-
					8	~.	P. # 0	6 0 11 0 0 0 00"	
					91			6.9-11.9 Rec. 60"	
h to the second				4 - 11	7	11.9		lite Few Seams zite*	
R3 11.9-16.9	Cored			60"	10 10+				
					10+	:	Kun #3	11.9-16.9 Rec. 60"	
				·	10+		Fractured	Gray Phyllite	
R4 16.9-20.3	Cored			42 ^H	10+ 7}			Quartzite*	
					7	16.9		·	
		·			7		Run #4	16.9-20.3 Rec. 42"	
January Communication of the C						20.3	Fractured	Gray Phyllita Few Ouartzite*	Seams
A STATE OF THE STA		•		. ,		· ·			<u> </u>
							,		•
84.							Patr	D	
		7						Boring 20.3	
								ell Set @ 20.0	
								$10.0' - 1\frac{1}{2}$ PVC	
								10.0' - 1½" PVC	Riser
								1 - Bag #10 10 lbs- Bentonit	
				·				l - Screw Ca	
						1			
						į	•		
		.					*Log modif	ied by GEI.	
MIPLE IDENTIFICATION		NETRA				PRO	PORTIONS USE	REMARKS:	
SPOON	140 lb. V hesionie				D. Sampli ve Consist	Dr i	trace 0 to 10%		
Deg TONE PISTON)		OS#	0-2 3-4	Soft	1	little 10 to 20%	Development Time	- 15 mi
MASH SAMPLE 30-4	9	Med. Dei Dei Very Dei	nse		M/Stiff 5 Stiff 5 V-Stif	1	some 20 to 35% and 35 to 50%	COL. A Coring Ti	me/Ft.

NEW ENCLAND BORIN OF CONN.	G CON' INC. Springfie 413-733-1	RI, MIA VELUS	S	PROJEC	T NAME P	•	1 Engineers Inc. Treatment Plant	BORING NUMBER B-7 SHEET
	,	ARCHITECT ENGINEER					FILE NO.	No1
T. Roe C. Conlon		TYPE	Ca	ssing	Sampler	Core Barrel NXD4	SURFACE ELEV. 30.8	ft*
115TART 1/24/85		SIZE I.D.				2-1/8"	LINE & STATION	
7/25/85		HAMMER WT. HAMMER FAL			· · · · · · · · · · · · · · · · · · ·		OFFSET	
NO. DEPTH RANGE	ONS	S PER 6" AMPLER 5-12 12-18	REC	COL	STRATA CHANGE	FIELD CLA	SSIFICATION AND REMA	ARKS
S1 GRAB SAMPLE				3	.8	Br. Fine	Sand, Some Silt, M	edCrs.
R1 .8-5.8	Cored		60"	3 1 5		Run #1	Gravel, Occasional 8-5.8 Rec. 60"	Cobbles
				4 ½ 5 ½	5.8	Very Frac	tured Gray Phyllit Quartzii	
						Bottom of	Boring 5.8	
						,	:	
	*					*Log modif	fied by GEI.	
			•		`			
						,		,
								,
L DENTIFICATION	PENE	TRATION RE	SISTA	NCE	Page	ORTIONS USED	· · · · · · · · · · · · · · · · · · ·	
NOON 1	esionless C Very Med	falling 30" on bensity y Loose Loose Dense		Very S Soft M/Stiff	ency tra	oce 0 to 10% tie 10 to 20% me 20 to 35%	COL. A Coring Ti	

indrabur 1431-161	CL Dem	Spring 413-733	ARCH	HTECT				ortsmouth	NH	SHEET
 	T. Roe		ENGI	NEER			· · · · · · · · · · · · · · · · · · ·		FILE NO.	o!
erion.	C. Conlon	,	TYPE		NW			Core Barret NXD4	SURFACE ELEV. 28.	4 ft*
e start	· <u>7/24/85</u>		HAM				140	"_2-1/8"	LINE & STATION	·
E FINISH	7/24/85	AMPLE	HAMA	MER FALI	L <u>24"</u>		<u> 30''</u>		OFFSET	
Fi	DEPTH RANGE	BLO	WS PE	ER	REC.	COL.	STRATA CHANGE		SSIFICATION AND REA	MARKS
NO.	5-2.0	0-6 4	6-12 5	12-18	7"	<u> </u>	<u> </u>	Rr Fine	Cond Come Cilt	
造									Sand, Some Silt, Le Gravel, Occasio	
H			•	Ť		4	4.5	,		
RL	4.5-9.0	Core	₫		43"	8		<u>Run #1</u> 4	.5-9.0 Rec. 43"	
Ħ						10 10+	~		tured Gray Phylli Quartzi	
12	9.0-11.0	Core	d	<u> </u>	17"	10+	9.0			
							11.0	Very Frac	.0-11.0 Rec 17" tured Gray Phylli artz Vein @ 10.5	te* £e Few
\vdash										
								Bottom of	Boring 11.0	
								<u>;</u>	· ·	
	V.								-	-
								*Log modi:	fied by GEI.	
	46									
4					•					
\exists										
H										
		-								
世										
L L	ENTIFICATION			-						
THIN.	PROON		Wt. falli		n 2" O.L	D. Sampi ra Consis	er tency	PORTIONS USE	D REMARKS:	

NEW Controls	ENGLAND BOR OF CON	ING CO N. INC. Spring 413-73	,,			CLIENT PROJECT	T NAME	Por		1 Engineers Inc. Treatment Plant NH	BORING NUMBER B-9 SHEET No. 1
	G. Wishart	<u> </u>	ENGIN		Cas	ing	Sampler		Core Barrel	FILE NO	of
MESSECTOR	C. Conton T 7/29/85		F	D. ER WT. ER FALL			SS 1-3, 140 30"	/8"_	NX 2-1/8"	LINE & STATION	
DATE FINIS	H 7/29/85	1 -			REC.	COL.	STRAT		FIELD CLA	ASSIFICATION AND REMA	RKS
ᆛᄞ	10.200.000.000	4	9		14!' 23''		2.0			. Fine-Crs. Sand an	
	2.0-6.5 6.5-9.5	Core			23" 24"					2.0-6.5 Rec. 23" and Boulders	
122	0.3-3.5						6.5	-	Run #2	6.5-9.5 Rec. 24"	
-	(Marie Communication Communica						9.5		Gray Sha	le Quartzite*	
										f Boring 9.5	
E SPEA	DENTIFICATION I SPOON WALL TUBE STURBED PISTON END ROD I SAMPLE ER SAMPLE	140 lb.	ENETRA Wt. fallin less Densi Very Loc Med. Der Very Der	g 30" on ty G ose ose ose ose	2" O. Conesi 0-2 3-4 5-8 9-1	D. Samplive Consis Very Soft M/Sti	stency Soft	tra lit	ORTIONS USE ice 0 to 10% tie 10 to 20% me 20 to 35% d 35 to 50%		

سد	SNGLAND BOR OF CON Ny, CT 08033 -	ING CO N. INC. Spring 413-73		CTOR:	- 1	ROJECT	T NAME P	•	l Engineers Inc. Treatment Plant	BORING NUMBER B-10 SHEET
	m Roe		ENGI	NEER		- '			FILE NO.	No of
W.EH	C. Conlon		TYPE		Cass NW	ngi	Sampler SS	Core Barrel	SURFACE ELEV. 15.9	ft*
e stant	7/25/85	*	SIZE	1.0. KER WT.	3"		<u>1-3/</u> 8' <u>140</u>		LINE & STATION	
TE FINISI	7/26/85	SAMPLE	НАЙА	IER FALI		<u> </u>	30" I	r ·	OFFSET	
T	DEPTH RANGE	BLO	OWS PEI		REC.	COL.	STRATA CHANGE	FIELD CLA	ASSIFICATION AND REM	ARKS
ച	0-2.0	5	9	11	12"			-		
Ħ			-					Light Br.	Fine MedCrs. Sa	and and
	6.0-8.0	6	6 14	18	14"			Gravel, S	Some Silt	
H			~				,	- - - -		
11	11.0-14.2	Core	d		38"		11.0	Prop #1	11.0-14.1 Rec. 3	ngli
32	14.2-16.0	Core	d		22"		·	Gray Shal		
							16.0		æ Amphibolite(?)*	
							,			
								Monitor W	Boring 16.0 Well Set @ 14.5	12
								Materials	7.5' - 1½" Ris 10.0' - 1½" Scr	een
H				,					l Bag- Ottawa 12 lbs- Bentoni	te Pellet
E										••
Ħ								•		
H							-	*Log modif	fied by GEI.	
B				•				·		. ,
H							·			
· · · · · · · · · · · · · · · · · · ·	SPOON WALL TUBE STURBED PISTON END ROD SAMPLE		Wt. falli less Dens Very Lo Lo Med. De	005 0	0-2 Conesiv 0-2 3-4 5-8		tency Soft	DPORTIONS USE trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50%	D REMARKS:	

NEW ENGLAND BORI OF CONN	NG CO I. INC. Spring 413-733	3-1232				T NAME P		1 Engineers Inc. Treatment Plant NH	BORING NUMBER B-11 SHEET
T. Roe		ARCHIT						FILE NO.	of 1
C. Conlon		TYPE	_	NW	sing	Sampler SS	Core Barrel	SURFACE ELEV. 24.5	ft*
ESTART 7/24/85	<u> </u>	SIZE I.D.	IWT,	3" 300		140	2-1/8"	LINE & STATION	·
1/24/85	AMPLE	HAMMER	I FALL	24		30"	<u> </u>	OFFSET	
NO. DEPTH RANGE	BLC	WS PER 6 SAMPLEF	_	REC.	COL.	STRATA CHANGE	FIELD CLA	ASSIFICATION AND REMA	ARKS
5 .5-2.0	7	8 (10"					
2.5-5.0	Core	d		5"	3		Br. Fine MedCrs	Sand, Some Silt, L. Sand, Fine Gravel	ittle
\$2 5.0-6.5	8	54 5	0 1	2"	10		Occasiona (Cored Co	al Cobbles obbles and Boulders	
R2 6.5-11.5	Core	i	- 3	32"	5½	6.5		.0' Rec. 5") 6.5-11.5 Rec. 32	1
					8			ctured Gray Phyllitic	a Many
11.5-13.0	Core		2	1"	6 21	11.5	D #2	- www.	
						13.0	·	11.5-13.0 Rec. 21' 1 Gray Phyllite Ous	
							<u> </u>	VIII AAAAAAA VOO	
									•
							Bottom of	Boring 13.0	
									•
							1		
								•	
							*Log modi.	fied by GEI.	
									· • .
									•
SUTSPOON	140 lb. Y	NETRATIO	10" on 2	" O.E). Sample	er i	PORTIONS USE	D REMARKS:	
PER END ROD	0-4 \ 5-9	ss Density Very Loose Loose Had. Dense Dense		0-2 3-4 5-8	Very S Soft M/Stif Stiff	oft ii	ittle 10 to 20% ome 20 to 35%	col & Coring Ti	, ma/195

CY ENGLAND BOO OF CO		33-1232			PROJEC	T NAME P		l Engineers Inc. Freatment Plant	BORING NUMBER B-12 SHEET
T. Roe			HITECT			•		FILE NO.	No1
C. Conlor 7/26/85	1	. 1	E I.D. MÉR WT.	3"		Sampler SS 1-3/8	Core Barrel NXD4	SURFACE ELEV. 24.1 f	
7/26/85		НАМ	MER FAL	24"		30"	·	OFFSET	
DEPTH RANG		OWS PE	LER	REC	COL.	STRATA CHANGE	FIELD CLA	SSIFICATION AND REMA	RKS
5-2.0	5	6	6	12"			Br. Fine	Sand, Some Silt, Li	ttle.
4.3-9.3	Cor	ed		27"		4.3	MedGrs. Occasiona	Sand, Fine Gravel, 1 Cobbles	
9.3-14.3	Core	d		12"		9.3	Boulders Gray Phyl	4.3-9.3 Rec. 27" lite @ 8.3 tzite*	of
								9.3-14.3 Rec. 12"	
						14.3	Very Frac	tured Gray Phyllite Quartzite	
							Bottom of	Boring 14.3	
						THE STATE OF THE S	*Log modif	ied by GEI.	
							·		
						,			-
						· · · · · · · · · · · · · · · · · · ·			
SENTIFICATION 1.000N MALL TUBE MURBED PISTON BUD ROD MUPLE 3.154MPLE		Wt, falliness Dens Very Lo Lo Med. De	OSB OSB OSB OSB	0-2 0-2 3-4 5-8 9-15	Very S Soft M/Stiff	ency tr oft lin	**CORTIONS USED ace 0 to 10% title 10 to 20% cme 20 to 35% add 35 to 50%	REMARKS:	

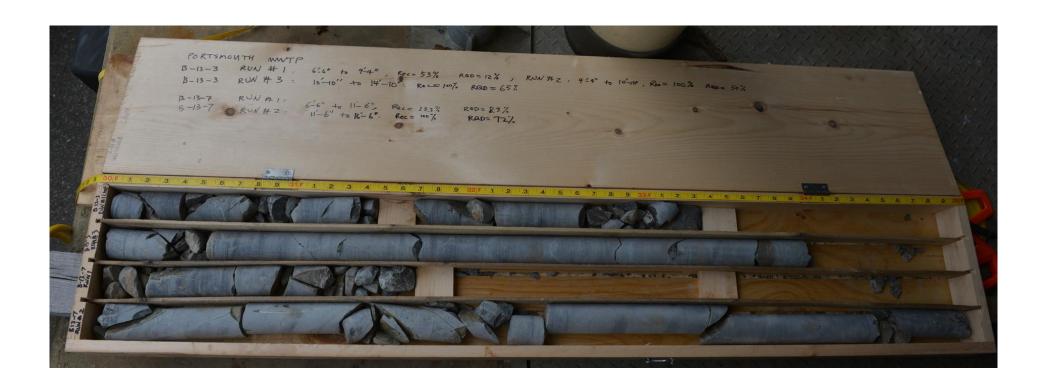


ATTACHMENT 2 ROCK CORE PHOTOS













ATTACHMENT 3 LABORATORY TESTING RESULTS



Project: Peirce Island Parking Lot

Location: Portsmouth, NH Project No: GTX-305372

Boring ID: --- Sample Type: --- Tested By: GA
Sample ID: --- Test Date: 10/04/16 Checked By: emm

Depth: --- Test Id: 392883

USCS Classification - ASTM D2487

Boring ID	Sample ID	Depth	Group Name	Group Symbol	Gravel, %	Sand, %	Fines, %
PB-1	S4	10-12 ft	Silty clay	CL-ML	0.0	9.9	90.1
PB-2	S3	10-12 ft	Lean clay	CL	0.0	2.0	98.0
PB-3	S2	7-9 ft	Lean clay	CL	0.0	0.5	99.5
PB-3	S4	12-14 ft	Silty sand	SM	0.0	73.6	26.4
PB-4	auger 1+2	1-2.5 ft	Silty, clayey sand with gravel	SC-SM	27.3	44.4	28.3
PB-4	S4	7-9 ft	Clayey sand	SC	0.0	59.2	40.8
PB-4	S5	10-12 ft	Silty sand	SM	0.0	86.3	13.7
PB-5	auger 1-3	1-5.5 ft	Silty, clayey sand with gravel	SC-SM	21.1	48.1	30.8
PB-6	auger 1-2	1-2.5 ft	Silty sand with gravel	SM	24.9	54.4	20.7

Remarks: Grain Size analysis performed by ASTM D422 results enclosed

Atterberg Limits performed by ASTM D4318, results enclosed



Project: Peirce Island Parking Lot

Location: Portsmouth, NH Project No: GTX-305372

Boring ID: --- Sample Type: --- Tested By: GA
Sample ID: --- Test Date: 09/30/16 Checked By: emm

Depth: --- Test Id: 392871

Moisture Content of Soil and Rock - ASTM D2216

Boring ID	Sample ID	Depth	Description	Moisture Content,%
PB-1	S4	10-12 ft	Moist, dark gray silty clay	29.7
PB-2	S3	10-12 ft	Moist, olive brown clay	28.5
PB-3	S2	7-9 ft	Moist, dark olive gray clay	35.6
PB-3	S4	12-14 ft	Moist, olive brown silty sand	21.7
PB-4	auger 1+2	1-2.5 ft	Moist, olive brown silty, clayey sand with gravel	8.4
PB-4	S4	7-9 ft	Moist, olive brown clayey sand	22.5
PB-4	S 5	10-12 ft	Moist, olive brown silty sand	20.6
PB-5	auger 1- 3	1-5.5 ft	Moist, olive brown silty, clayey sand with gravel	10.5

Notes: Temperature of Drying : 110° Celsius



Project: Peirce Island Parking Lot

Location: Portsmouth, NH Project No: GTX-305372

Boring ID: --- Sample Type: --- Tested By: GA
Sample ID: --- Test Date: 10/04/16 Checked By: emm

Depth: --- Test Id: 392874

Moisture Content of Soil and Rock - ASTM D2216

Boring ID	Sample ID	Depth	Description	Moisture Content,%
PB-6	auger 1- 2	1-2.5 ft	Moist, dark olive brown silty sand with gravel	7.5
PB-6	S4	7-9 ft	Moist, olive brown silty sand	22.6
PB-6	S5	10-12 ft	Moist, yellowish brown silty sand	19.9

Notes: Temperature of Drying : 110° Celsius



Project: Peirce Island Parking Lot

Location: Portsmouth, NH Project No: GTX-305372

Boring ID: PB-1 Sample Type: jar Tested By: GA 10/04/16 Sample ID: S4 Test Date: Checked By: emm

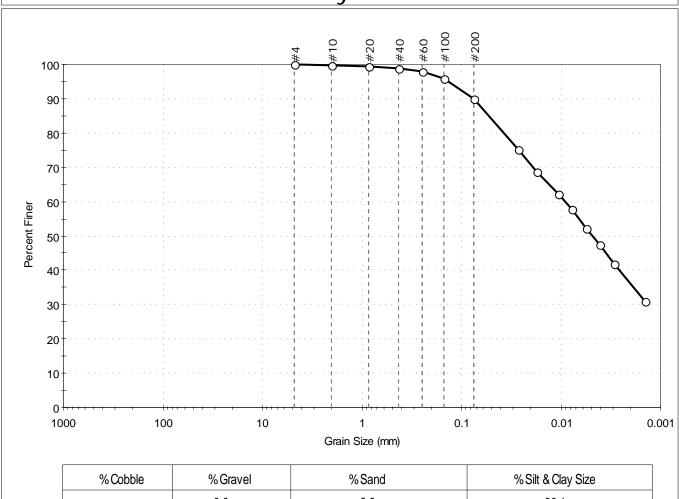
10-12 ft Depth: Test Id: 392888

Test Comment:

Visual Description: Moist, dark gray silty clay

Sample Comment:

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
	0.0	9.9	90.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	99		
#40	0.42	99		
#60	0.25	98		
#100	0.15	96		
#200	0.075	90		
	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0269	75		
	0.0176	69		
	0.0105	62		
	0.0078	58		
	0.0056	52		
	0.0041	48		
	0.0029	42		
	0.0014	31		

Coeffic	<u>cients</u>
D ₈₅ = 0.0527 mm	$D_{30} = N/A$
D ₆₀ = 0.0090 mm	$D_{15} = N/A$
D ₅₀ = 0.0048 mm	$D_{10} = N/A$
C _u =N/A	$C_C = N/A$

Classification Silty clay (CL-ML) <u>ASTM</u>

AASHTO Silty Soils (A-4 (3))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period: 1 minute Specific Gravity: 2.65



Project: Peirce Island Parking Lot

Location: Portsmouth, NH Project No:

Boring ID: PB-2 Sample Type: jar Tested By: GA 10/04/16 Sample ID: S3 Test Date: Checked By: emm

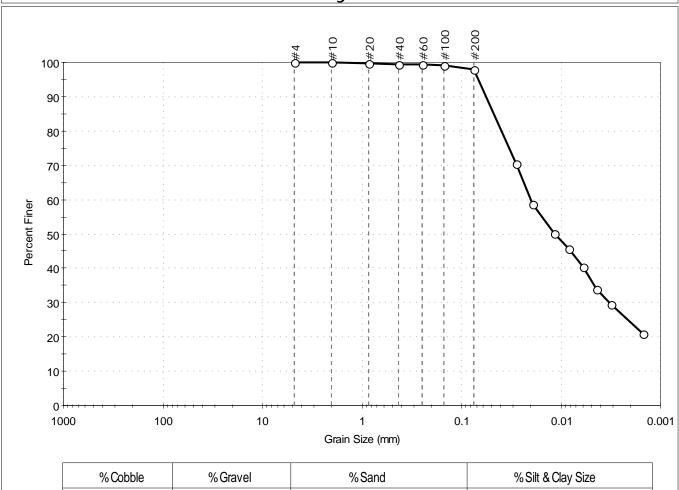
10-12 ft Test Id: 392889 Depth:

Test Comment:

Visual Description: Moist, olive brown clay

Sample Comment:

Particle Size Analysis - ASTM D422



2.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	99		
#60	0.25	99		
#100	0.15	99		
#200	0.075	98		
	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0280	71		
	0.0191	59		
	0.0116	50		
	0.0084	46		
	0.0060	40		
	0.0044	34		
	0.0031	30		
	0.0015	21		

0.0

<u>Coefficients</u>					
$D_{85} = 0.0471 \text{ mm}$	$D_{30} = 0.0032 \text{ mm}$				
$D_{60} = 0.0199 \text{ mm}$	$D_{15} = N/A$				
$D_{50} = 0.0115 \text{ mm}$	$D_{10} = N/A$				
$C_u = N/A$	$C_c = N/A$				

98.0

GTX-305372

<u>Classification</u> Lean clay (CL) <u>ASTM</u>

AASHTO Clayey Soils (A-6 (16))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period: 1 minute Specific Gravity: 2.65



Project: Peirce Island Parking Lot

Location: Portsmouth, NH

Boring ID: PB-3 Sample Type: jar Tested By: GA 10/04/16 Sample ID: S2 Test Date: Checked By: emm

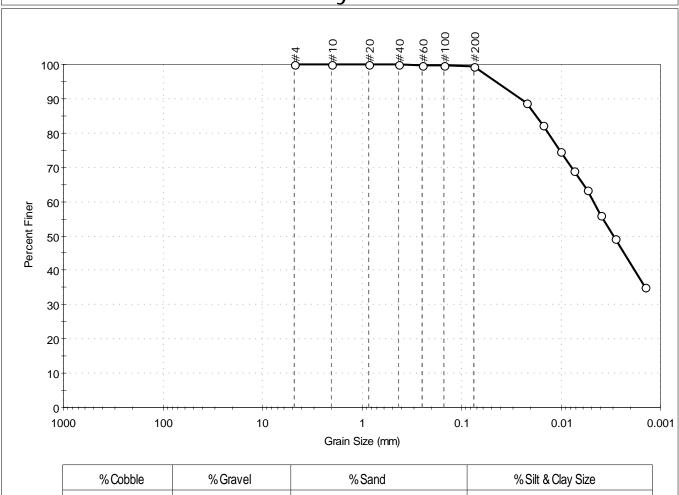
Depth: 7-9 ft Test Id: 392890

Test Comment:

Visual Description: Moist, dark olive gray clay

Sample Comment:

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
	0.0	0.5	99.5

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	100		
#60	0.25	100		
#100	0.15	100		
#200	0.075	99		
	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0222	89		
	0.0152	82		
	0.0101	75		
	0.0074	69		
	0.0054	63		
	0.0039	56		
	0.0029	49		
	0.0014	35		

<u>Coefficients</u>					
D ₈₅ = 0.0177 mm	$D_{30} = N/A$				
D ₆₀ = 0.0047 mm	$D_{15} = N/A$				
D ₅₀ = 0.0030 mm	$D_{10} = N/A$				
C _u =N/A	$C_C = N/A$				

Project No:

GTX-305372

<u>Classification</u> Lean clay (CL) <u>ASTM</u>

AASHTO Clayey Soils (A-6 (15))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period: 1 minute Specific Gravity: 2.65



Project: Peirce Island Parking Lot

Location: Portsmouth, NH

Boring ID: PB-3 Sample Type: jar Tested By: GA Sample ID: S4 Test Date: 10/04/16 Checked By: emm

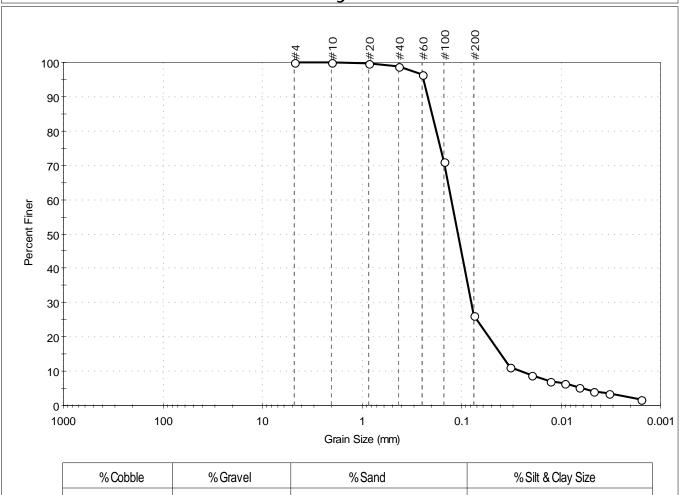
Depth: 12-14 ft Test Id: 392891

Test Comment:

Visual Description: Moist, olive brown silty sand

Sample Comment:

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
	0.0	73.6	26.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	99		
#60	0.25	96		
#100	0.15	71		
#200	0.075	26		
	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0325	11		
	0.0200	9		
	0.0129	7		
	0.0092	6		
	0.0066	5		
	0.0047	4		
	0.0033	4		
	0.0016	2		

<u>Coefficients</u>						
$D_{85} = 0.1987 \text{ mm}$	$D_{30} = 0.0793 \text{ mm}$					
$D_{60} = 0.1264 \text{ mm}$	$D_{15} = 0.0402 \text{ mm}$					
$D_{50} = 0.1082 \text{ mm}$	$D_{10} = 0.0258 \text{ mm}$					
$C_u = 4.899$	$C_c = 1.928$					

Project No:

GTX-305372

<u>Classification</u> Silty sand (SM)

AASHTO Silty Gravel and Sand (A-2-4 (0))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

<u>ASTM</u>

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period: 1 minute Specific Gravity: 2.65



Test Comment:

Project: Peirce Island Parking Lot

Location: Portsmouth, NH Project No:

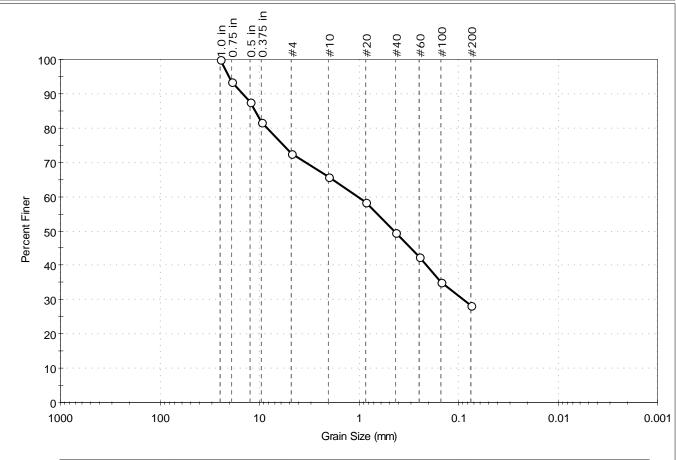
Boring ID: PB-4 Sample Type: jar Tested By: GA Sample ID: auger 1+2 Test Date: 09/30/16 Checked By: emm

Depth: 1-2.5 ft Test Id: 392896

Visual Description: Moist, olive brown silty, clayey sand with gravel

Sample Comment: ---

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
	27.3	44.4	28.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.0 in	25.00	100		
0.75 in	19.00	93		
0.5 in	12.50	88		
0.375 in	9.50	82		
#4	4.75	73		
#10	2.00	66		
#20	0.85	58		
#40	0.42	50		
#60	0.25	43		
#100	0.15	35		
#200	0.075	28		

<u>Coefficients</u>					
D ₈₅ = 11.1071 mm	$D_{30} = 0.0895 \text{ mm}$				
$D_{60} = 1.0195 \text{ mm}$	$D_{15} = N/A$				
$D_{50} = 0.4379 \text{ mm}$	$D_{10} = N/A$				
$C_{u} = N/A$	$C_c = N/A$				

GTX-305372

<u>Classification</u>
<u>ASTM</u> Silty, clayey sand with gravel (SC-SM)

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description
Sand/Gravel Particle Shape: ANGULAR

Sand/Gravel Hardness : HARD



Project: Peirce Island Parking Lot

Location: Portsmouth, NH

Boring ID: PB-4 Sample Type: jar Tested By: GA 10/04/16 Sample ID: S4 Test Date: Checked By: emm

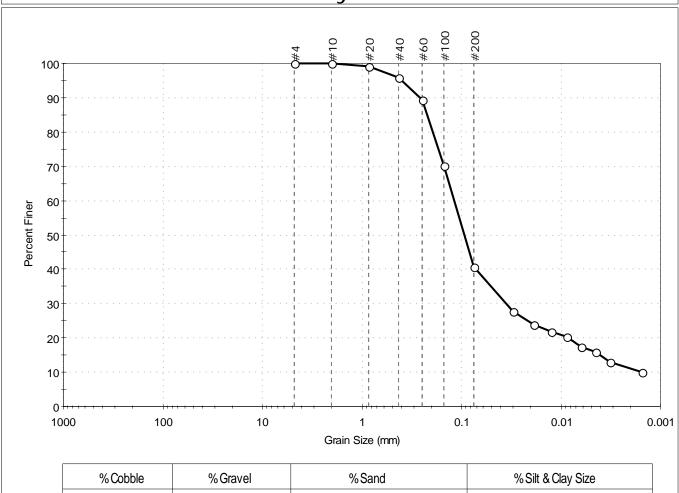
Depth: 7-9 ft Test Id: 392892

Test Comment:

Visual Description: Moist, olive brown clayey sand

Sample Comment:

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	%Sand	% Silt & Clay Size	
	0.0	59.2	40.8	

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	99		
#40	0.42	96		
#60	0.25	89		
#100	0.15	70		
#200	0.075	41		
	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0307	28		
	0.0187	24		
	0.0124	22		
	0.0088	20		
	0.0063	17		
	0.0045	16		
	0.0032	13		
	0.0015	10		

<u>Coefficients</u>		
D ₈₅ =0.2230 mm	$D_{30} = 0.0359 \text{ mm}$	
D ₆₀ = 0.1182 mm	$D_{15} = 0.0041 \text{ mm}$	
D ₅₀ = 0.0933 mm	$D_{10} = 0.0016 \text{ mm}$	
C _u =73.875	$C_{c} = 6.815$	

Project No:

GTX-305372

<u>Classification</u> Clayey sand (SC) <u>ASTM</u>

AASHTO Silty Soils (A-4 (1))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period: 1 minute Specific Gravity: 2.65



Project: Peirce Island Parking Lot

Location: Portsmouth, NH

Boring ID: PB-4 Sample Type: jar Tested By: GA Sample ID: S5 Test Date: 10/04/16 Checked By: emm

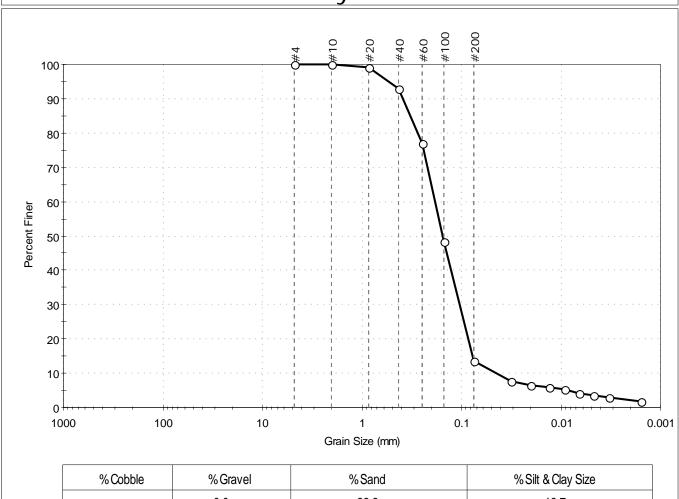
Depth: 10-12 ft Test Id: 392893

Test Comment:

Visual Description: Moist, olive brown silty sand

Sample Comment:

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
	0.0	86.3	13.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	99		
#40	0.42	93		
#60	0.25	77		
#100	0.15	48		
#200	0.075	14		
	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0314	8		
	0.0203	7		
	0.0130	6		
	0.0093	5		
	0.0066	4		
	0.0047	4		
	0.0033	3		
	0.0016	2		

<u>Coefficients</u>	
D ₈₅ = 0.3271 mm	$D_{30} = 0.1039 \text{ mm}$
D ₆₀ = 0.1847 mm	$D_{15} = 0.0770 \text{ mm}$
D ₅₀ = 0.1544 mm	$D_{10} = 0.0441 \text{ mm}$
$C_u = 4.188$	$C_c = 1.325$

Project No:

GTX-305372

<u>Classification</u> Silty sand (SM) <u>ASTM</u>

AASHTO Silty Gravel and Sand (A-2-4 (0))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period: 1 minute Specific Gravity: 2.65



Project: Peirce Island Parking Lot

Location: Portsmouth, NH Project No: GTX-305372

Boring ID: PB-5 Sample Type: jar Tested By: GA Sample ID: auger 1-3 Test Date: 09/30/16 Checked By: emm

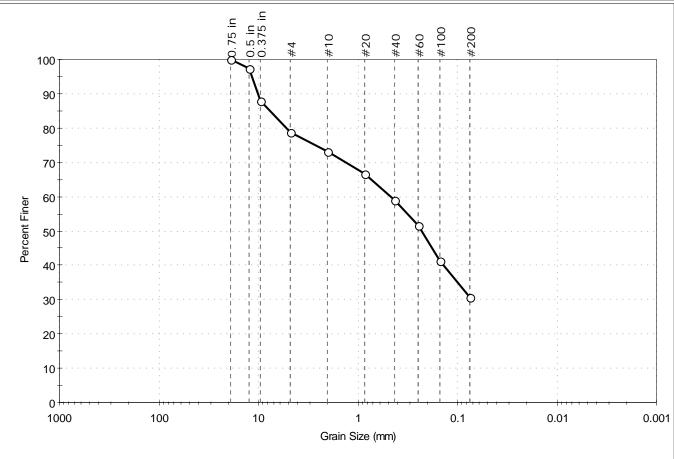
Depth: 1-5.5 ft Test Id: 392897

Test Comment: ---

Visual Description: Moist, olive brown silty, clayey sand with gravel

Sample Comment: ---

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
	21.1	48.1	30.8

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0.5 in	12.50	97		
0.375 in	9.50	88		
#4	4.75	79		
#10	2.00	73		
#20	0.85	67		
#40	0.42	59		
#60	0.25	52		
#100	0.15	41		
#200	0.075	31		

<u> </u>	<u>Coefficients</u>	
$D_{85} = 7.5517 \text{ mm}$	$D_{30} = N/A$	
D ₆₀ = 0.4648 mm	$D_{15} = N/A$	
D ₅₀ = 0.2299 mm	$D_{10} = N/A$	
$C_u = N/A$	$C_c = N/A$	

<u>Classification</u>

ASTM Silty, clayey sand with gravel (SC-SM)

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description
Sand/Gravel Particle Shape: ANGULAR

Sand/Gravel Hardness: HARD



Project: Peirce Island Parking Lot

Location: Portsmouth, NH Project No:

Boring ID: PB-6 Sample Type: jar Tested By: GA Sample ID: auger 1-2 Test Date: 09/30/16 Checked By: emm

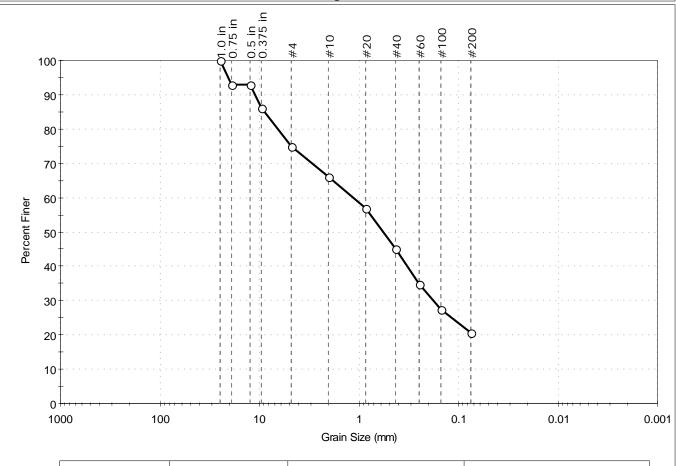
Depth: 1-2.5 ft Test Id: 392898

Test Comment: ---

Visual Description: Moist, dark olive brown silty sand with gravel

Sample Comment: ---

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
	24.9	54.4	20.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.0 in	25.00	100		
0.75 in	19.00	93		
0.5 in	12.50	93		
0.375 in	9.50	86		
#4	4.75	75		
#10	2.00	66		
#20	0.85	57		
#40	0.42	45		
#60	0.25	35		
#100	0.15	27		
#200	0.075	21		

<u>Coefficients</u>			
D ₈₅ = 8.8207 mm	$D_{30} = 0.1788 \text{ mm}$		
$D_{60} = 1.1334 \text{ mm}$	$D_{15} = N/A$		
D ₅₀ = 0.5670 mm	$D_{10} = N/A$		
Cu =N/A	$C_C = N/A$		

GTX-305372

ASTM Silty sand with gravel (SM)

AASHTO Stone Fragments, Gravel and Sand (A-1-b (0))

Sample/Test Description
Sand/Gravel Particle Shape: ANGULAR

Sand/Gravel Hardness: HARD



Project: Peirce Island Parking Lot

Location: Portsmouth, NH Project No: GTX-305372

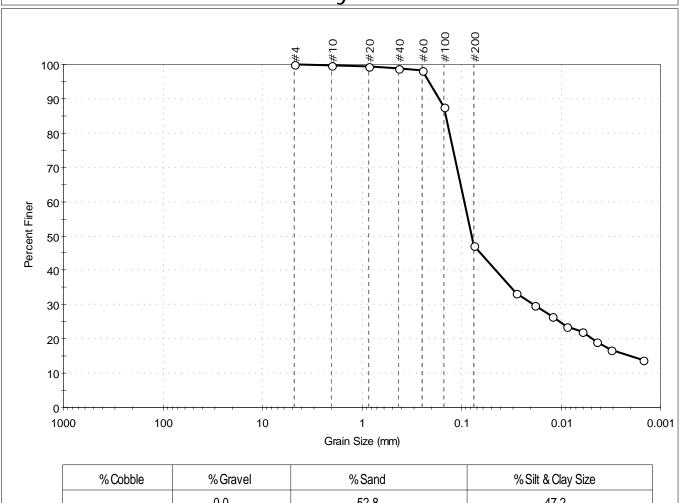
Boring ID: PB-6 Sample Type: jar Tested By: GA 10/04/16 Sample ID: S4 Test Date: Checked By: emm

Depth: 7-9 ft Test Id: 392894

Test Comment: Visual Description: Moist, olive brown silty sand

Sample Comment:

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
	0.0	52.8	47.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	99		
#40	0.42	99		
#60	0.25	98		
#100	0.15	88		
#200	0.075	47		
	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0285	33		
	0.0185	30		
	0.0121	27		
	0.0087	24		
	0.0062	22		
	0.0044	19		
	0.0032	17		
	0.0015	14		

Coeffic	<u>cients</u>
$D_{85} = 0.1432 \text{ mm}$	$D_{30} = 0.0192 \text{ mm}$
$D_{60} = 0.0933 \text{ mm}$	$D_{15} = 0.0020 \text{ mm}$
$D_{50} = 0.0786 \text{ mm}$	$D_{10} = N/A$
$C_u = N/A$	$C_{c} = N/A$

<u>Classification</u> Silty sand (SM) <u>ASTM</u> AASHTO Silty Soils (A-4 (0))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period: 1 minute Specific Gravity: 2.65

Separation of Sample: #200 Sieve



Project: Peirce Island Parking Lot

Location: Portsmouth, NH

Boring ID: PB-6 Sample Type: jar Tested By: GA Sample ID: S5 Test Date: 10/04/16 Checked By: emm

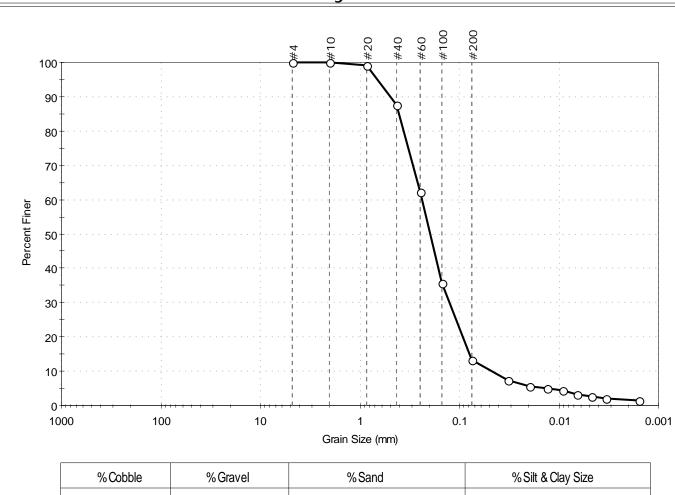
10-12 ft Test Id: Depth: 392895

Test Comment:

Visual Description: Moist, yellowish brown silty sand

Sample Comment:

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
	0.0	86.8	13.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	99		
#40	0.42	88		
#60	0.25	62		
#100	0.15	36		
#200	0.075	13		
	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
	0.0324	7		
	0.0197	6		
	0.0131	5		
	0.0093	4		
	0.0066	3		
	0.0047	3		
	0.0033	2		
	0.0016	1		

<u>Coefficients</u>					
$D_{85} = 0.4023 \text{ mm}$	$D_{30} = 0.1257 \text{ mm}$				
$D_{60} = 0.2393 \text{ mm}$	$D_{15} = 0.0793 \text{ mm}$				
$D_{50} = 0.1974 \text{ mm}$	$D_{10} = 0.0476 \text{ mm}$				
$C_u = 5.027$	$C_c = 1.387$				

Project No:

GTX-305372

<u>Classification</u> Silty sand (SM) <u>ASTM</u>

AASHTO Silty Gravel and Sand (A-2-4 (0))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period: 1 minute Specific Gravity: 2.65

Separation of Sample: #200 Sieve



Project: Peirce Island Parking Lot

Location: Portsmouth, NH Project No:

Boring ID: PB-1 Sample Type: jar Tested By: GA Sample ID: S4 Test Date: 09/30/16 Checked By: emm

GTX-305372

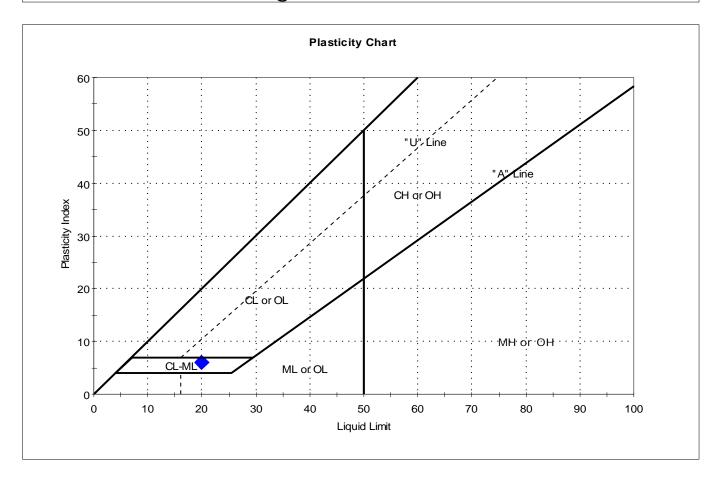
Depth: 10-12 ft Test Id: 392853

Test Comment: ---

Visual Description: Moist, dark gray silty clay

Sample Comment: ---

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	S4	PB-1	10-12 ft	30	20	14	6	2.6	Silty clay (CL-ML)

Sample Prepared using the WET method

1% Retained on #40 Sieve Dry Strength: VERY HIGH

Dilatancy: SLOW
Toughness: MEDIUM



Project: Peirce Island Parking Lot

Location: Portsmouth, NH Project No:

Boring ID: PB-2 Sample Type: jar Tested By: GA

GTX-305372

emm

 Sample ID: S3
 Test Date:
 09/30/16
 Checked By:

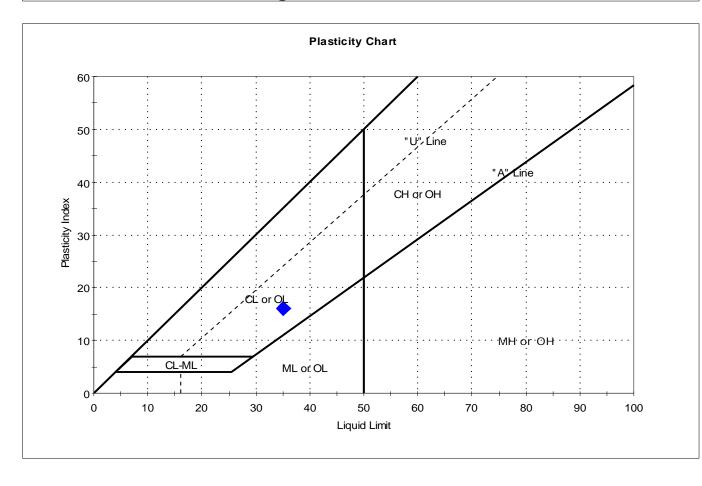
 Depth:
 10-12 ft
 Test Id:
 392854

Test Comment: ---

Visual Description: Moist, olive brown clay

Sample Comment: ---

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	S3	PB-2	10-12 ft	28	35	19	16	0.6	Lean clay (CL)

Sample Prepared using the WET method

1% Retained on #40 Sieve Dry Strength: VERY HIGH

Dilatancy: NONE
Toughness: MEDIUM



Project: Peirce Island Parking Lot

Location: Portsmouth, NH

Boring ID: PB-3 Sample Type: jar Tested By: GA Sample ID: S2 Test Date: 09/30/16 Checked By: emm

GTX-305372

Project No:

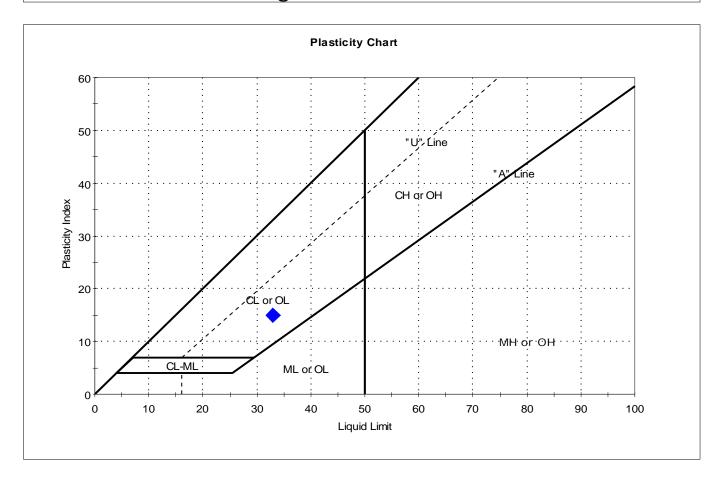
Depth: 7-9 ft Test Id: 392855

Test Comment: ---

Visual Description: Moist, dark olive gray clay

Sample Comment: ---

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	S2	PB-3	7-9 ft	36	33	18	15	1.2	Lean clay (CL)

Sample Prepared using the WET method

0% Retained on #40 Sieve Dry Strength: VERY HIGH

Dilatancy: SLOW
Toughness: MEDIUM



Project: Peirce Island Parking Lot

Location: Portsmouth, NH Project No:

Boring ID: PB-3 Sample Type: jar Tested By: GA
Sample ID: S4 Test Date: 09/29/16 Checked By: emm

GTX-305372

Depth: 12-14 ft Test Id: 392856

Test Comment: ---

Visual Description: Moist, olive brown silty sand

Sample Comment: ---

Atterberg Limits - ASTM D4318

Sample Determined to be non-plastic

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	S4	PB-3	12-14 ft	22	n/a	n/a	n/a	n/a	Silty sand (SM)

1% Retained on #40 Sieve

Dry Strength: NONE Dilatancy: RAPID Toughness: n/a

The sample was determined to be Non-Plastic



Project: Peirce Island Parking Lot

Location: Portsmouth, NH

Boring ID: PB-4 Sample Type: jar Tested By: GA
Sample ID: auger 1+2 Test Date: 09/30/16 Checked By: emm

GTX-305372

Project No:

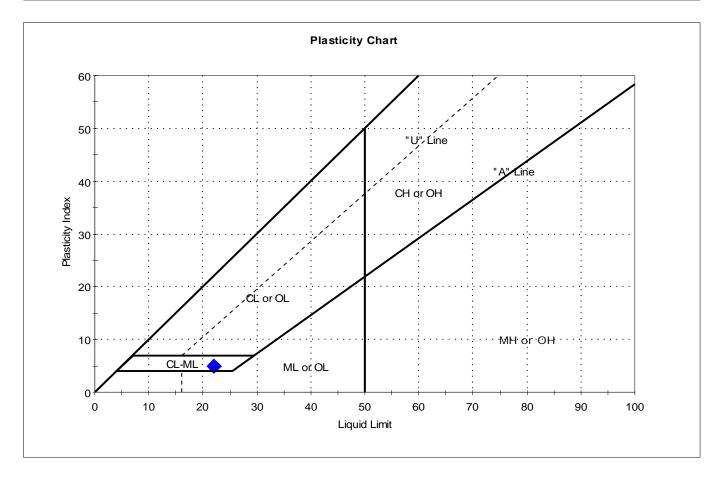
Depth: 1-2.5 ft Test Id: 392857

Test Comment: ---

Visual Description: Moist, olive brown silty, clayey sand with gravel

Sample Comment: ---

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	auger 1+2	PB-4	1-2.5 ft	8	22	17	5	-1.7	Silty, clayey sand with gravel (SC-SM)

Sample Prepared using the WET method

50% Retained on #40 Sieve Dry Strength: VERY HIGH

Dilatancy: SLOW
Toughness: MEDIUM



Project: Peirce Island Parking Lot

Location: Portsmouth, NH Project No:

Boring ID: PB-4 Sample Type: jar Tested By: GA Sample ID: S4 Test Date: 09/30/16 Checked By: emm

GTX-305372

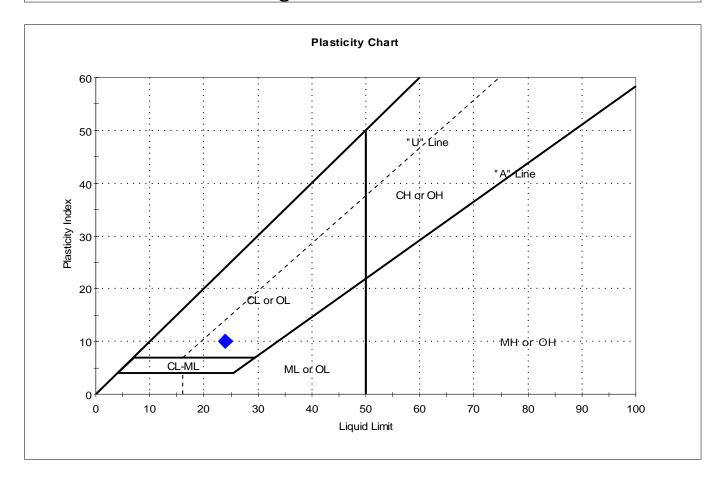
Depth: 7-9 ft Test Id: 392858

Test Comment: ---

Visual Description: Moist, olive brown clayey sand

Sample Comment: ---

Atterberg Limits - ASTM D4318



Symbo	I Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	S4	PB-4	7-9 ft	22	24	14	10	0.8	Clayey sand (SC)

Sample Prepared using the WET method

4% Retained on #40 Sieve Dry Strength: VERY HIGH

Dilatancy: NONE
Toughness: MEDIUM



Project: Peirce Island Parking Lot

Location: Portsmouth, NH Project No: GTX-305372

392859

Boring ID: PB-4 Sample Type: jar Tested By: GA Test Date: 09/29/16 Checked By: emm Sample ID: S5 Test Id:

Depth: 10-12 ft Test Comment:

Visual Description: Moist, olive brown silty sand

Sample Comment:

Atterberg Limits - ASTM D4318

Sample Determined to be non-plastic

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	S5	PB-4	10-12 ft	21	n/a	n/a	n/a	n/a	Silty sand (SM)

7% Retained on #40 Sieve

Dry Strength: NONE Dilatancy: RAPID Toughness: n/a

The sample was determined to be Non-Plastic



Project: Peirce Island Parking Lot

Location: Portsmouth, NH Project No:

Roring ID: PR-5 Sample Type: jar Tested Ry: 0

Boring ID: PB-5 Sample Type: jar Tested By: GA
Sample ID: auger 1-3 Test Date: 09/30/16 Checked By: emm

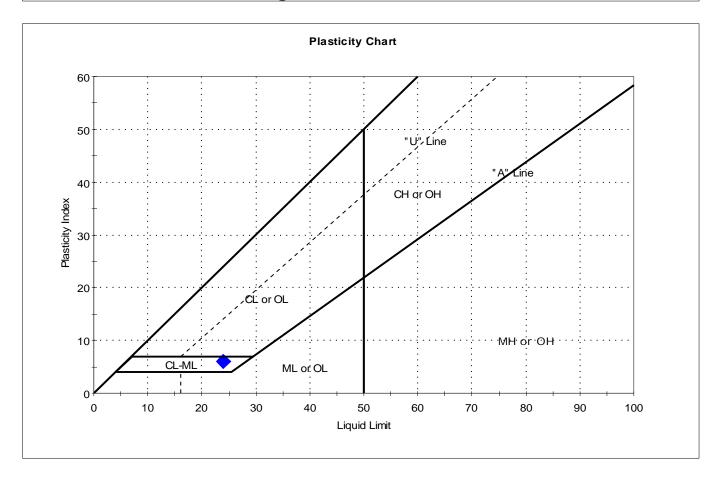
GTX-305372

Depth: 1-5.5 ft Test Id: 392860
Test Comment: ---

Visual Description: Moist, olive brown silty, clayey sand with gravel

Sample Comment: ---

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	auger 1-3	PB-5	1-5.5 ft	10	24	18	6	-1.3	Silty, clayey sand with gravel (SC-SM)

Sample Prepared using the WET method

41% Retained on #40 Sieve Dry Strength: MEDIUM Dilatancy: SLOW

Toughness: MEDIUM



Project: Peirce Island Parking Lot

Location:Portsmouth, NHProject No:GTX-305372Boring ID:PB-6Sample Type: jarTested By:GA

Boring ID: PB-6 Sample Type: jar Tested By: GA Sample ID: auger 1-2 Test Date: 09/30/16 Checked By: emm

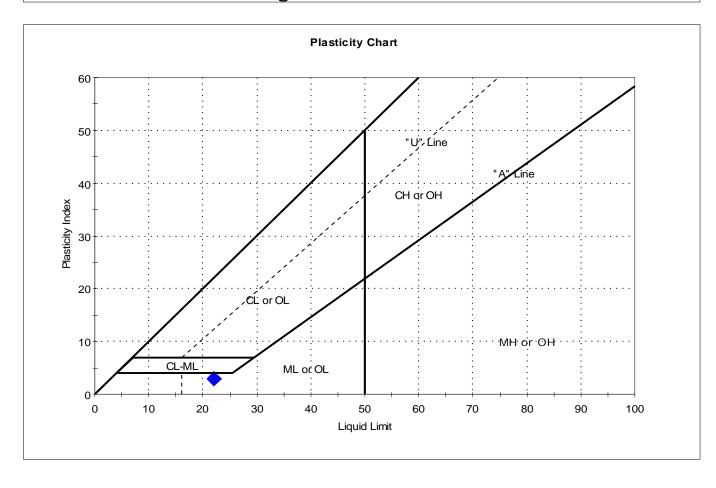
Depth: 1-2.5 ft Test Id: 392861

Test Comment: ---

Visual Description: Moist, dark olive brown silty sand with gravel

Sample Comment: ---

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	auger 1-2	PB-6	1-2.5 ft	8	22	19	3	-3.8	Silty sand with gravel (SM)

Sample Prepared using the WET method

55% Retained on #40 Sieve

Dry Strength: HIGH Dilatancy: SLOW Toughness: MEDIUM



Project: Peirce Island Parking Lot

Location: Portsmouth, NH Project No: GTX-305372

Boring ID: PB-6 Sample Type: jar Tested By: GA Sample ID: S4 Test Date: 09/30/16 Checked By: emm

Depth: 7-9 ft Test Id: 392862

Test Comment: ---

Visual Description: Moist, olive brown silty sand

Sample Comment: ---

Atterberg Limits - ASTM D4318

Sample Determined to be non-plastic

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	S4	PB-6	7-9 ft	23	n/a	n/a	n/a	n/a	Silty sand (SM)

1% Retained on #40 Sieve

Dry Strength: NONE Dilatancy: RAPID Toughness: n/a

The sample was determined to be Non-Plastic



Project: Peirce Island Parking Lot

Location: Portsmouth, NH Project No: GTX-305372

Boring ID: PB-6 Sample Type: jar Tested By: GA Sample ID: S5 Test Date: 09/29/16 Checked By: emm

Depth: 10-12 ft Test Id: 392863

Test Comment: ---

Visual Description: Moist, yellowish brown silty sand

Sample Comment: ---

Atterberg Limits - ASTM D4318

Sample Determined to be non-plastic

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
•	S5	PB-6	10-12 ft	20	n/a	n/a	n/a	n/a	Silty sand (SM)

12% Retained on #40 Sieve

Dry Strength: NONE Dilatancy: RAPID Toughness: n/a

The sample was determined to be Non-Plastic



Project: Portsmouth, NH WWTP Upgrades

Location: Pierce Island, NH Boring ID: B13-5

Sample Type: jar 10/30/13 Test Date:

Project No: Tested By: jbr Checked By: jdt

GTX-301103

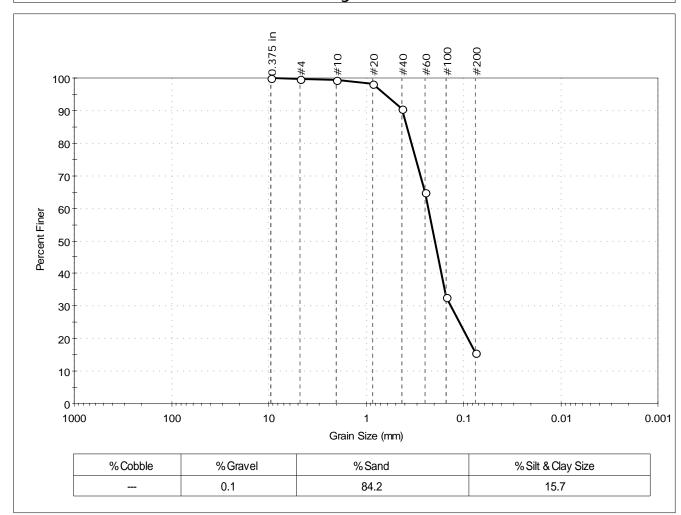
Sample ID: SS-2 Depth: 5-7 ft Test Id: 280024

Test Comment:

Sample Description: Moist, light grayish brown silty sand

Sample Comment:

Particle Size Analysis - ASTM D422



Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	100		
#10	2.00	99		
#20	0.85	98		
#40	0.42	91		
#60	0.25	65		
#100	0.15	33		
#200	0.075	16		

<u>Coefficients</u>											
$D_{85} = 0.3783 \text{ mm}$	$D_{30} = 0.1348 \text{ mm}$										
$D_{60} = 0.2312 \text{ mm}$	$D_{15} = N/A$										
$D_{50} = 0.1974 \text{ mm}$	$D_{10} = N/A$										
$C_u = N/A$	$C_C = N/A$										

Classification **ASTM** N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness: ---

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Project: Portsmouth, NH WWTP Upgrades

Location: Pierce Island, NH

Project No: Boring ID: B13-5 Sample Type: jar Tested By: 10/30/13 Sample ID: SS-3 Test Date: Checked By:

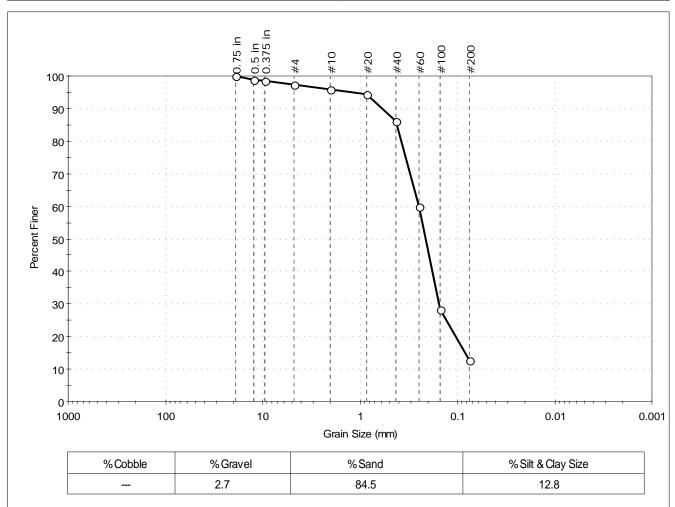
10-12 ft Test Id: 280025 Depth:

Test Comment:

Sample Description: Moist, grayish brown silty sand

Sample Comment:

Particle Size Analysis - ASTM D422



Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0.5 in	12.50	99		
0.375 in	9.50	99		
#4	4.75	97		
#10	2.00	96		
#20	0.85	94		
#40	0.42	86		
#60	0.25	60		
#100	0.15	28		
#200	0.075	13		

<u>Coefficients</u>										
$D_{85} = 0.4163 \text{ mm}$	$D_{30} = 0.1539 \text{ mm}$									
$D_{60} = 0.2507 \text{ mm}$	$D_{15} = 0.0827 \text{ mm}$									
$D_{50} = 0.2130 \text{ mm}$	$D_{10} = 0.0663 \text{ mm}$									
$C_u = 3.781$	$C_c = 1.425$									

GTX-301103

jbr

jdt

Classification <u>ASTM</u> N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description
Sand/Gravel Particle Shape: ---

Sand/Gravel Hardness: ---

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Project Name: Portsmouth, NH WWTP Upgrades

Project Location: Pierce Island, NH

GTX #: 301103

Test Date: 10/29/13

Tested By: daa

Checked By: mpd

Bulk Density and Compressive Strength of Rock Core Specimens by ASTM D 7012 Method C

Boring ID	Sample ID	Depth, ft	Bulk Density, lb/ft ³	Compressive Strength, psi	Failure Type	In conformance with ASTM D 4543
B13-2A	RC-1	8.45-8.82	170	38,372	1	YES
B13-3	RC-3	12.79-13.16	170	10,281	2	YES
B13-7	RC-2	13.96-14.33	169	44,370	1	YES
B13-7	RC-4	23.70-24.07	170	4,269	2	YES
B13-8	RC-3	13.26-13.63	172	8,684	1 & 2	YES

Notes:

Density determined on core samples by measuring dimensions and weight and then calculating.

All specimens tested at the approximate as-received moisture content and at standard laboratory temperature.

Failure Type: 1 = Intact Material Failure; 2 = Discontinuity Failure (See attached photographs)

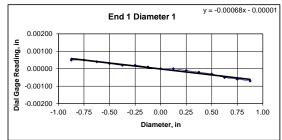


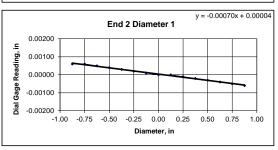
Client:	AECOM	Test Date: 10/28/2013
Project Name:	Portsmouth, NH WWTP Upgrades	Tested By: daa
Project Location:	Pierce Island, NH	Checked By: mpd
GTX #:	301103	
Boring ID:	B13-2A	
Sample ID:	RC-1	
Depth:	8.45-8.82 ft	
Visual Description:	See photographs	

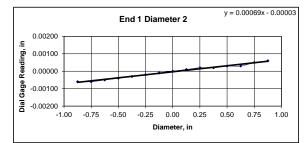
UNIT WEIGHT DETERMINATION AND DIMENSIONAL AND SHAPE TOLERANCES OF ROCK CORE SPECIMENS BY ASTM D 4543

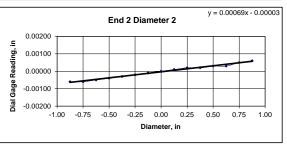
				DEVIATION FROM STRAIGHTNESS (Procedure S1)
1	2	Average		
4.33	4.33	4.33		Maximum gap between side of core and reference surface plate:
1.98	1.98	1.98		Is the maximum gap ≤ 0.02 in.? YES
597.56				
170	Minimum Diameter Tolerence	Met?	YES	Maximum difference must be < 0.020 in.
2.2	Length to Diameter Ratio Tole	rance Met?	YES	Straightness Tolerance Met? YES
	1.98 597.56	1.98 1.98 597.56 170 Minimum Diameter Tolerence	1.98 1.98 1.98 597.56	4.33 4.33 4.33 1.98 1.98 1.98 597.56 170 Minimum Diameter Tolerence Met? YES

END FLATNESS AND PARALL	ELISM (Proced	lure FP1)													
END 1	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	0.00050	0.00050	0.00040	0.00030	0.00020	0.00020	0.00010	0.00000	0.00000	-0.00010	-0.00020	-0.00030	-0.00050	-0.00060	-0.00070
Diameter 2, in (rotated 90°)	-0.00060	-0.00060	-0.00050	-0.00040	-0.00030	-0.00020	-0.00010	0.00000	0.00010	0.00020	0.00020	0.00030	0.00030	0.00050	0.00060
				Difference between max and min readings, in:											
											O° =	0.00120	90° =	0.00120	
END 2	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	0.00060	0.00060	0.00050	0.00040	0.00030	0.00020	0.00010	0.00000	0.00000	-0.00010	-0.00020	-0.00030	-0.00040	-0.00050	-0.00060
Diameter 2, in (rotated 90°)	-0.00060	-0.00060	-0.00050	-0.00040	-0.00030	-0.00020	-0.00010	0.00000	0.00010	0.00020	0.00020	0.00030	0.00030	0.00050	0.00060
											Difference between	en max and m	in readings, in:		
											0° =	0.0012	90° =	0.0012	
											Maximum differe	ence must be <	0.0020 in.	Difference = +	0.00060







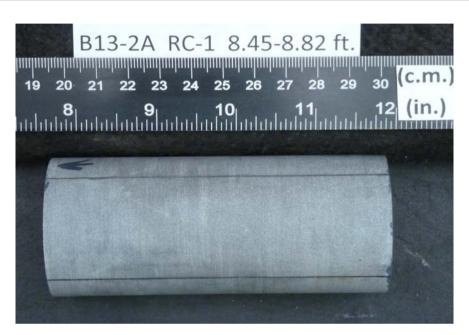


Flatness Tolerance Met	2 VFS
	: 123
DIAMETER 1	
DIAWETER	
End 1:	
Slope of Best Fit Line	-0.00068
Angle of Best Fit Line:	-0.03896
End 2:	
Slope of Best Fit Line	
Angle of Best Fit Line:	-0.04011
Maximum Angular Difference:	0.00115
Parallelism Tolerance Met	? YES
Spherically Seated	
DIAMETER 2	
DIAMETER 2 End 1: Slope of Best Fit Line	0.00069
End 1:	0.00069 0.03953
End 1: Slope of Best Fit Line Angle of Best Fit Line:	
End 1: Slope of Best Fit Line	
End 1: Slope of Best Fit Line Angle of Best Fit Line: End 2:	0.03953
End 1: Slope of Best Fit Line Angle of Best Fit Line: End 2: Slope of Best Fit Line Angle of Best Fit Line:	0.03953 0.00069 0.03953
End 1: Slope of Best Fit Line Angle of Best Fit Line: End 2: Slope of Best Fit Line Angle of Best Fit Line:	0.03953
End 1: Slope of Best Fit Line Angle of Best Fit Line: End 2: Slope of Best Fit Line	0.03953 0.00069 0.03953 0.00000

PERPENDICULARITY (Procedure P1) (Calculated from End Flatness and Parallelism measurements above)											
END 1	Difference, Maximum and Minimum (in.)	Diameter (in.)	Slope	Angle°	Perpendicularity Tolerance Met?	Maximum angle of departure must be $\leq 0.25^{\circ}$					
Diameter 1, in	0.00120	1.980	0.00061	0.035	YES						
Diameter 2, in (rotated 90°) 0.00120		1.980	0.00061	0.035	YES	Perpendicularity Tolerance Met? YES					
END 2											
Diameter 1, in	0.00120	1.980	0.00061	0.035	YES						
Diameter 2, in (rotated 90°)	0.00120	1.980	0.00061	0.035	YES						
i .											



Client: AECOM Project Name: Portsmouth, NH WWTP Upgrades Project Location: Pierce Island, NH GTX #: 301103 Test Date: 10/29/2013 Tested By: daa Checked By: mpd Boring ID: B13-2A Sample ID: RC-1 Depth, ft: 8.45-8.82



After cutting and grinding



After break

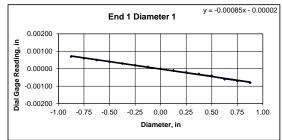


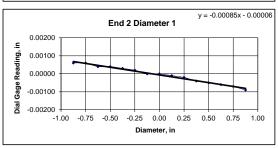
Client:	AECOM	Test Date: 10/28/2013
Project Name:	Portsmouth, NH WWTP Upgrades	Tested By: daa
Project Location:	Pierce Island, NH	Checked By: mpd
GTX #:	301103	
Boring ID:	B13-3	
Sample ID:	RC-3	
Depth:	12.79-13.16 ft	
Visual Description:	See photographs	

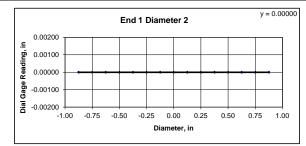
UNIT WEIGHT DETERMINATION AND DIMENSIONAL AND SHAPE TOLERANCES OF ROCK CORE SPECIMENS BY ASTM D 4543

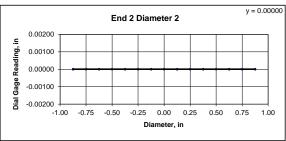
BULK DENSITY				DEVIATION FROM STRAIGHTNESS (Procedure S1)
	1	2	Average	
Specimen Length, in:	4.34	4.34	4.34	Maximum gap between side of core and reference surface plate:
Specimen Diameter, in:	1.98	1.98	1.98	Is the maximum gap ≤ 0.02 in.? YES
Specimen Mass, g:	596.51			
Bulk Density, lb/ft3	170	Minimum Diameter Tolerence Met	t? YES	Maximum difference must be < 0.020 in.
Length to Diameter Ratio:	2.2	Length to Diameter Ratio Tolerand	ce Met? YES	Straightness Tolerance Met? YES

END FLATNESS AND PARALL	ELISM (Proced	dure FP1)													
END 1	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	0.00070	0.00060	0.00050	0.00040	0.00030	0.00020	0.00010	0.00000	-0.00010	-0.00020	-0.00030	-0.00040	-0.00060	-0.00070	-0.00080
Diameter 2, in (rotated 90°)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
											Difference between	een max and m	in readings, in:		
											0° =	0.00150	90° =	0.00000	
END 2	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	0.00060	0.00060	0.00040	0.00040	0.00030	0.00020	0.00000	0.00000	-0.00010	-0.00020	-0.00040	-0.00050	-0.00060	-0.00070	-0.00090
Diameter 2, in (rotated 90°)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
											Difference between	een max and m	in readings, in:		
											0° =	0.0015	90° =	0	
											Maximum differ	ence must be <	0.0020 in.	Difference = \pm	0.00075









DIAMETER 1			
End 1:			
	Slope of Best Fit Line	-0.00085	
	Angle of Best Fit Line:	-0.04870	
End 2			
	Slope of Best Fit Line	-0.00085	
	Angle of Best Fit Line:	-0.04870	
Maximum Ang	ular Difference:	0.00000	
	Parallelism Tolerance Met? Spherically Seated	YES	
DIAMETER 2		YES	
DIAMETER 2	Spherically Seated	YES	
	Spherically Seated	0.00000	
	Spherically Seated		
	Spherically Seated Slope of Best Fit Line Angle of Best Fit Line:	0.00000	
End 1	Spherically Seated Slope of Best Fit Line Angle of Best Fit Line: Slope of Best Fit Line	0.00000 0.00000 0.00000	
End 1	Spherically Seated Slope of Best Fit Line Angle of Best Fit Line:	0.00000	
End 1	Spherically Seated Slope of Best Fit Line Angle of Best Fit Line: Slope of Best Fit Line	0.00000 0.00000 0.00000	

Flatness Tolerance Met?

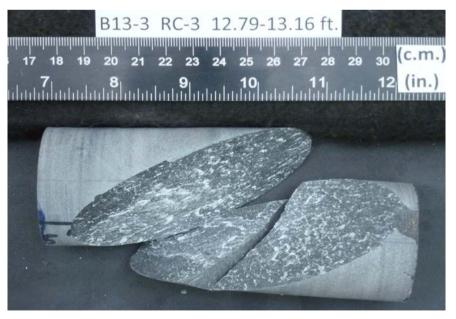
PERPENDICULARITY (Procedure	e P1) (Calculated from End Flatness	and Parallelism m	easurements a	ibove)		
END 1	Difference, Maximum and Minimum (in.)	Diameter (in.)	Slope	Angle°	Perpendicularity Tolerance Met?	Maximum angle of departure must be $\leq 0.25^{\circ}$
Diameter 1, in	0.00150	1.980	0.00076	0.043	YES	
Diameter 2, in (rotated 90°)	0.00000	1.980	0.00000	0.000	YES	Perpendicularity Tolerance Met? YES
END 2						
Diameter 1, in	0.00150	1.980	0.00076	0.043	YES	
Diameter 2, in (rotated 90°)	0.0000	1.980	0.00000	0.000	YES	



Client: AECOM Project Name: Portsmouth, NH WWTP Upgrades Project Location: Pierce Island, NH GTX #: 301103 Test Date: 10/29/2013 Tested By: daa Checked By: mpd Boring ID: B13-3 Sample ID: RC-3 Depth, ft: 12.79-13.16



After cutting and grinding



After break

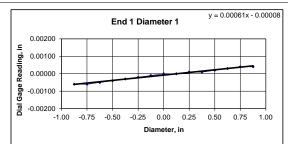


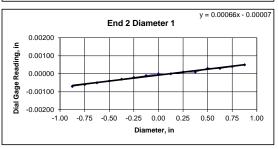
Client:	AECOM	Test Date: 10/28/2013
Project Name:	Portsmouth, NH WWTP Upgrades	Tested By: daa
Project Location:	Pierce Island, NH	Checked By: mpd
GTX #:	301103	
Boring ID:	B13-7	
Sample ID:	RC-2	
Depth:	13.96-14.33 ft	
Visual Description:	See photographs	

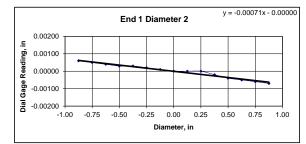
UNIT WEIGHT DETERMINATION AND DIMENSIONAL AND SHAPE TOLERANCES OF ROCK CORE SPECIMENS BY ASTM D 4543

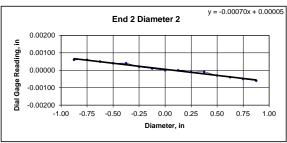
				DEVIATION FROM STRAIGHTNESS (Procedure S1)
1	2	Average		
4.33	4.33	4.33		Maximum gap between side of core and reference surface plate:
1.98	1.98	1.98		Is the maximum gap ≤ 0.02 in.? YES
592.3				
169	Minimum Diameter Tolerence Met	t?	YES	Maximum difference must be < 0.020 in.
2.2	Length to Diameter Ratio Tolerand	ice Met?	YES	Straightness Tolerance Met? YES
	1.98 592.3	1.98 1.98 592.3 Minimum Diameter Tolerence Me	4.33 4.33 4.33 1.98 1.98 1.98 592.3	4.33 4.33 4.33 1.98 1.98 1.98 592.3 169 Minimum Diameter Tolerence Met? YES

END FLATNESS AND PARALL	ELISM (Proced	dure FP1)													
END 1	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	-0.00060	-0.00060	-0.00050	-0.00040	-0.00030	-0.00020	-0.00010	0.00000	0.00000	0.00010	0.00010	0.00020	0.00030	0.00040	0.00040
Diameter 2, in (rotated 90°)	0.00060	0.00050	0.00040	0.00030	0.00030	0.00020	0.00010	0.00000	0.00000	0.00000	-0.00020	-0.00040	-0.00050	-0.00060	-0.00070
											Difference between	en max and m	in readings, in:		
											0° =	0.00100	90° =	0.00130	
END 2	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	-0.00070	-0.00060	-0.00050	-0.00040	-0.00030	-0.00020	-0.00010	0.00000	0.00000	0.00010	0.00010	0.00030	0.00030	0.00040	0.00050
Diameter 2, in (rotated 90°)	0.00060	0.00060	0.00050	0.00040	0.00040	0.00020	0.00010	0.00000	0.00000	-0.00010	-0.00010	-0.00030	-0.00040	-0.00050	-0.00060
											Difference between	en max and m	in readings, in:		
											0° =	0.0012	90° =	0.0012	
											Maximum differe	ence must be <	0.0020 in.	Difference = +	0.00065









DIAMETER 1			
End 1			
	Slope of Best Fit Line Angle of Best Fit Line:	0.00061 0.03495	
	-	0.00170	
End 2	Slope of Best Fit Line	0.00066	
		0.03782	
Maximum Ang	ular Difference:	0.00286	
	Parallelism Tolerance Met? Spherically Seated	YES	
DIAMETER 2		YES	
	Spherically Seated	YES	
DIAMETER 2 End 1	Spherically Seated	-0.00071	
	Spherically Seated		
	Spherically Seated Slope of Best Fit Line Angle of Best Fit Line:	-0.00071 -0.04068	
End 1	Spherically Seated Slope of Best Fit Line Angle of Best Fit Line: Slope of Best Fit Line	-0.00071 -0.04068 -0.00070	
End 1	Spherically Seated Slope of Best Fit Line Angle of Best Fit Line:	-0.00071 -0.04068	
End 1	Spherically Seated Slope of Best Fit Line Angle of Best Fit Line: Slope of Best Fit Line	-0.00071 -0.04068 -0.00070	

Flatness Tolerance Met?

YES

PERPENDICULARITY (Procedure	P1) (Calculated from End Flatness	and Parallelism m	easurements a	nbove)		
END 1	Difference, Maximum and Minimum (in.)	Diameter (in.)	Slope	Angle°	Perpendicularity Tolerance Met?	Maximum angle of departure must be $\leq 0.25^{\circ}$
Diameter 1, in	0.00100	1.980	0.00051	0.029	YES	
Diameter 2, in (rotated 90°)	0.00130	1.980	0.00066	0.038	YES	Perpendicularity Tolerance Met? YES
END 2						
Diameter 1, in	0.00120	1.980	0.00061	0.035	YES	
Diameter 2, in (rotated 90°)	0.00120	1.980	0.00061	0.035	YES	



Client: AECOM Project Name: Portsmouth, NH WWTP Upgrades Project Location: Pierce Island, NH GTX #: 301103 Test Date: 10/29/2013 Tested By: daa Checked By: mpd Boring ID: B13-7 Sample ID: RC-2 Depth, ft: 13.96-14.33



After cutting and grinding



After break

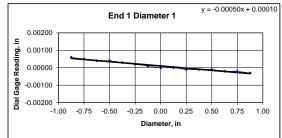


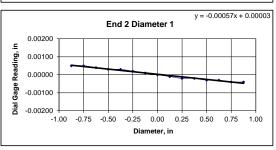
Client:	AECOM	Test Date: 10/28/2013	
Project Name:	Portsmouth, NH WWTP Upgrades	Tested By: daa	
Project Location:	Pierce Island, NH	Checked By: mpd	
GTX #:	301103		
Boring ID:	B13-7		
Sample ID:	RC-4		
Depth:	23.70-24.07 ft		
Visual Description:	See photographs		

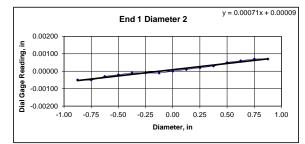
UNIT WEIGHT DETERMINATION AND DIMENSIONAL AND SHAPE TOLERANCES OF ROCK CORE SPECIMENS BY ASTM D 4543

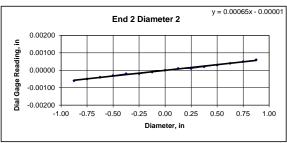
				DEVIATION FROM STRAIGHTNESS (Procedure S1)
1	2	Average		
4.32	4.32	4.32		Maximum gap between side of core and reference surface plate:
1.98	1.98	1.98		Is the maximum gap ≤ 0.02 in.? YES
595.76				
170	Minimum Diameter Tolerence Me	et?	YES	Maximum difference must be < 0.020 in.
2.2	Length to Diameter Ratio Tolerar	nce Met?	YES	Straightness Tolerance Met? YES
	1.98 595.76	1.98 1.98 595.76 170 Minimum Diameter Tolerence M e	4.32 4.32 4.32 1.98 1.98 1.98 595.76	4.32 4.32 4.32 1.98 1.98 1.98 595.76 170 Minimum Diameter Tolerence Met? YES

END FLATNESS AND PARALL	ELISM (Proced	lure FP1)													
END 1	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	0.00060	0.00050	0.00040	0.00040	0.00030	0.00020	0.00010	0.00000	0.00000	-0.00010	-0.00010	-0.00010	-0.00020	-0.00020	-0.00030
Diameter 2, in (rotated 90°)	-0.00050	-0.00050	-0.00030	-0.00020	-0.00010	-0.00010	-0.00010	0.00000	0.00010	0.00020	0.00030	0.00050	0.00060	0.00070	0.00070
											Difference between	en max and m	in readings, in:		
											0° =	0.00090	90° =	0.00120	
END 2	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	0.00050	0.00050	0.00040	0.00030	0.00030	0.00020	0.00010	0.00000	-0.00010	-0.00020	-0.00020	-0.00030	-0.00030	-0.00040	-0.00040
Diameter 2, in (rotated 90°)	-0.00060	-0.00050	-0.00040	-0.00030	-0.00020	-0.00020	-0.00010	0.00000	0.00010	0.00010	0.00020	0.00030	0.00040	0.00050	0.00060
											Difference between	en max and m	in readings, in:		
											0° =	0.0009	90° =	0.0012	
											Maximum differe	ence must be <	0.0020 in.	Difference = +	0.00060









End 1:		0.00050	
		-0.00050 -0.02865	
End 2:			
	Slope of Best Fit Line Angle of Best Fit Line:	-0.00057 -0.03266	
Maximum Ang	ular Difference:	0.00401	
	Parallelism Tolerance Met?	YES	
	Spherically Seated		
DIAMETER 2	Spherically Seated		
DIAMETER 2 End 1:			
		0.00071 0.04068	
	Slope of Best Fit Line Angle of Best Fit Line:		
End 1:	Slope of Best Fit Line Angle of Best Fit Line:		
End 1: End 2:	Slope of Best Fit Line Angle of Best Fit Line: Slope of Best Fit Line	0.04068	

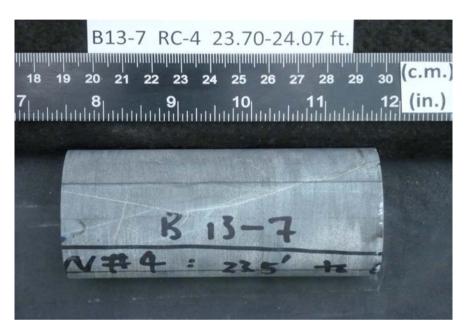
Flatness Tolerance Met?

YES

PERPENDICULARITY (Procedure	P1) (Calculated from End Flatness	and Parallelism m	easurements a	bove)		
END 1	Difference, Maximum and Minimum (in.)	Diameter (in.)	Slope	Angle°	Perpendicularity Tolerance Met?	Maximum angle of departure must be $\leq 0.25^{\circ}$
Diameter 1, in	0.00090	1.980	0.00045	0.026	YES	
Diameter 2, in (rotated 90°)	0.00120	1.980	0.00061	0.035	YES	Perpendicularity Tolerance Met? YES
END 2						
Diameter 1, in	0.00090	1.980	0.00045	0.026	YES	
Diameter 2, in (rotated 90°)	0.00120	1.980	0.00061	0.035	YES	



Client: AECOM Project Name: Portsmouth, NH WWTP Upgrades Project Location: Pierce Island, NH GTX #: 301103 Test Date: 10/29/2013 Tested By: daa Checked By: mpd Boring ID: B13-7 Sample ID: RC-4 23.70-24.07 Depth, ft:



After cutting and grinding



After break

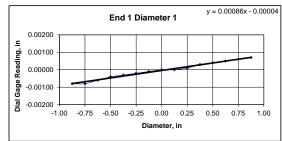


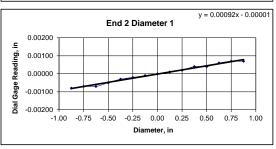
Client:	AECOM	Test Date: 10/28/2013
Project Name:	Portsmouth, NH WWTP Upgrades	Tested By: daa
Project Location:	Pierce Island, NH	Checked By: mpd
GTX #:	301103	
Boring ID:	B13-8	
Sample ID:	RC-3	
Depth:	13.26-13.63 ft	
Visual Description:	See photographs	

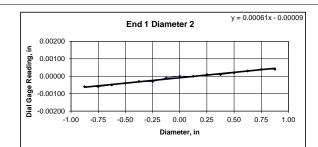
UNIT WEIGHT DETERMINATION AND DIMENSIONAL AND SHAPE TOLERANCES OF ROCK CORE SPECIMENS BY ASTM D 4543

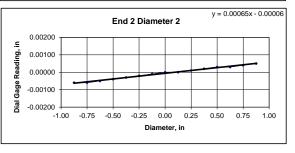
				DEVIATION FROM STRAIGHTNESS (Procedure S1)
1	2	Average		
4.33	4.34	4.34		Maximum gap between side of core and reference surface plate:
1.98	1.98	1.98		Is the maximum gap ≤ 0.02 in.? YES
604.01				
172	Minimum Diameter Tolerence	Met?	YES	Maximum difference must be < 0.020 in.
2.2	Length to Diameter Ratio Tole	erance Met?	YES	Straightness Tolerance Met? YES
	1.98 604.01	1.98 1.98 604.01 172 Minimum Diameter Tolerence	4.33 4.34 4.34 1.98 1.98 1.98 604.01	1.98 1.98 1.98 604.01 172 Minimum Diameter Tolerence Met? YES

END FLATNESS AND PARALL	ELISM (Proced	dure FP1)													
END 1	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	-0.00080	-0.00080	-0.00060	-0.00040	-0.00030	-0.00020	-0.00010	0.00000	0.00000	0.00010	0.00030	0.00040	0.00050	0.00060	0.00070
Diameter 2, in (rotated 90°)	-0.00060	-0.00060	-0.00050	-0.00040	-0.00030	-0.00030	-0.00010	0.00000	0.00000	0.00010	0.00010	0.00020	0.00030	0.00040	0.00040
											Difference between	een max and m	in readings, in:		
											0° =	0.00150	90° =	0.00100	
END 2	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	-0.00080	-0.00070	-0.00070	-0.00050	-0.00030	-0.00020	-0.00010	0.00000	0.00010	0.00020	0.00040	0.00040	0.00060	0.00070	0.00070
Diameter 2, in (rotated 90°)	-0.00060	-0.00060	-0.00050	-0.00040	-0.00030	-0.00020	-0.00010	0.00000	0.00000	0.00010	0.00020	0.00030	0.00030	0.00040	0.00050
											Difference between	een max and m	in readings, in:		
											0° =	0.0015	90° =	0.0011	
											Maximum differe	ence must be <	0.0020 in.	Difference = \pm	0.00075







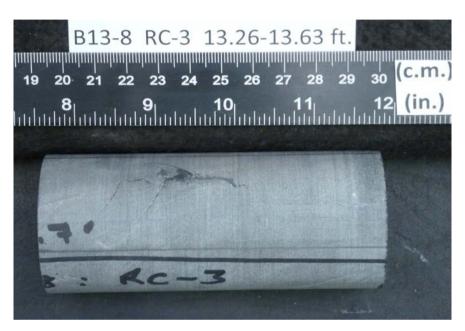


Fit Line	0.00086	
	0.04927	
Fit Line	0.00092	
	0.00344	
	YES	
eated		
Fit Line:	0.03495	
Fit Line:	0.03724	
	0.00229	
Toloranco Mot2	VES	
	1123	
	YES	
	Fit Line: Tolerance Met? eated Fit Line Fit Line Fit Line: Fit Line: Fit Line:	Fit Line: 0.004927 Fit Line: 0.00092 Fit Line: 0.05271 0.00344 Tolerance Met? YES Fit Line: 0.00061 Fit Line: 0.03495 Fit Line: 0.00065 Fit Line: 0.03724 0.00229 Tolerance Met? YES

PERPENDICULARITY (Proced END 1	Jure P1) (Calculated from End Flatness Difference, Maximum and Minimum (in.)		easurements at Slope	Angle°	Perpendicularity Tolerance Met?	Maximum angle of departure must be < 0.25°
END I	Difference, Maximum and Minimum (in.)	Diameter (in.)	Stope	Angle -	Perpendicularity Tolerance Met?	waximum angle of departure must be < 0.25
Diameter 1, in	0.00150	1.980	0.00076	0.043	YES	
Diameter 2, in (rotated 90°)	0.00100	1.980	0.00051	0.029	YES	Perpendicularity Tolerance Met? YES
END 2						
Diameter 1, in	0.00150	1.980	0.00076	0.043	YES	
Diameter 2, in (rotated 90°)	0.00110	1.980	0.00056	0.032	YES	



Client: AECOM Project Name: Portsmouth, NH WWTP Upgrades Project Location: Pierce Island, NH GTX #: 301103 Test Date: 10/29/2013 Tested By: daa Checked By: mpd Boring ID: B13-8 Sample ID: RC-3 13.26-13.63 Depth, ft:



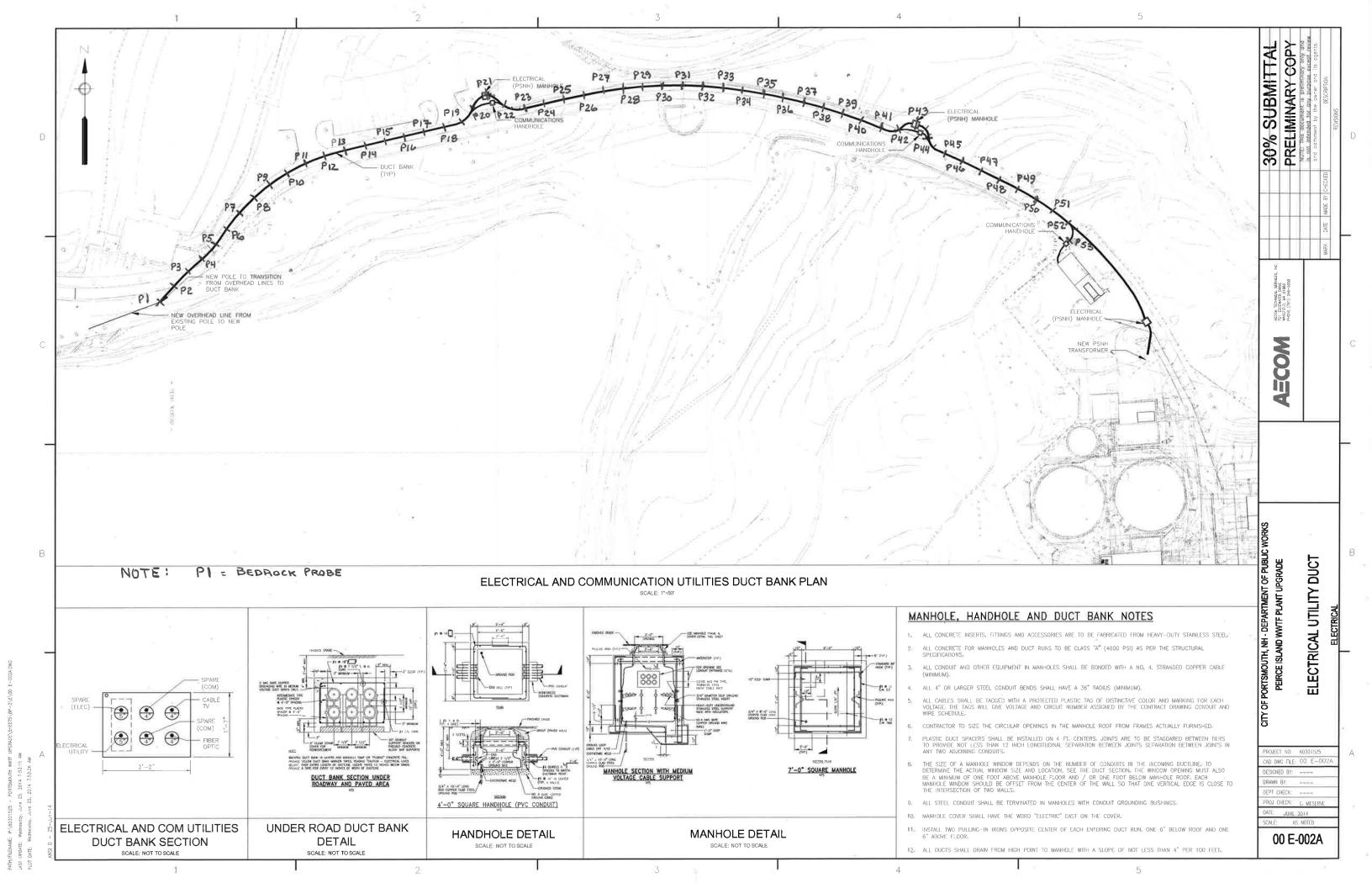
After cutting and grinding



After break



ATTACHMENT 4 PROBE INVESTIGATION



City of Portsmouth Peirce Island WWTF Plant Upgrade Summary of Bedrock Probes 07/16/14 and 07/17/14

	Est.	I				
Probe	Layout	Estimated	Refusal	Bottom	Remark	LAYOUT
Number	Station	Elevation	Depth (ft)	Depth (ft)		
P1	0+0				Not Done	scale off Plan : Exist.U.Pole + Pool Bldg.
P2	0+25				Not Done	-
Р3	0+50				Not Done	
P4	0+75				Not Done	
P5	1+0				Not Done	3' off northerly road edge
Р6	1+25	8.8	3.8		asphalt	4' off northerly road edge
P7	1+50	9.0	6.5		asphalt	5' off northerly road edge
P8	1+75	9.3	4.5		asphalt	6' off northerly road edge
P9	2+0	9.6	3.6		asphalt	7' off northerly road edge
P10	2+25	9.8	3.8		asphalt	8' off northerly road edge
P11	2+50	9.9	9.1		asphalt	8' off northerly road edge
P12	2+75	10.0	-	10.0	asphalt	8' off northerly road edge
P13	3+0	10.2	-	10.0	asphalt	
P14	3+25	10.6	6.9		asphalt	from D12 (0' off) to D17 (5' off)
P15	3+50	11.2	4.3		asphalt	from P12 (8' off) to P17 (5' off)
P16	3+75	12.3	2.7		asphalt	
P17	4+0	13.7	2.5		asphalt	5' off northerly road edge
P18	4+25	15.1	1.7		asphalt	5' off northerly road edge
P19	4+50	16.0	3.2		asphalt	5' off northerly road edge
P20	4+75	16.1	1.4		grass	9.5' north of northerly road edge
P21	5+0	16.0	2.8		EMH	22' north of northerly road edge
P22	5+30	16.1	2.8		grass	6' north of northerly road edge
P23	5+50	15.6	1.6		asphalt	5' off northerly road edge
P24	5+75	14.4	3.6		asphalt	5' off northerly road edge
P25	6+0	12.9	3.5		asphalt	5' off northerly road edge
P26	6+25	11.4	3.5		asphalt	5' off northerly road edge
P27	6+50	10.1	-	10.0	asphalt	5' off northerly road edge
P28	6+75	9.0	-	10.0	asphalt	5' off northerly road edge
P29	7+0	8.1	-	10.0	asphalt	5' off northerly road edge
P30	7+25	7.8			Not Done	
P31	7+50	7.7			Not Done	Water Main Crossing (2' east of P31)
P32	7+75	8.0			Not Done	
P33	8+0	8.2	-	10.0	asphalt	5' off northerly road edge
P34	8+25	8.5	10.0		asphalt	5' off northerly road edge
P35	8+50	8.8			Not Done	
P36	8+75	9.0			Not Done	Water Main Crossing (5' east of P36)
P37	9+0	9.4			Not Done	
P38	9+25	10.0	3.8		asphalt	5' off northerly road edge
P39	9+50	11.0	7.5		asphalt	5' off northerly road edge
P40	9+75	12.0	-	10.0	asphalt	5' off northerly road edge
P41	10+0	13.1	-	10.0	asphalt	5' off northerly road edge
P42	10+25	14.0	-	10.0	asphalt	5' off northerly road edge
P43	10+64	14.7	11.7		EMH	15' north of northerly road edge
P44	11+03	18.6	4.4		asphalt	5' off northerly road edge
P45	11+28	21.0	2.2		asphalt	5' off northerly road edge
P46	11+53	24.0	0.7		asphalt	5' off northerly road edge
P47	11+78	27.2	2.8		asphalt	5' off northerly road edge
P48	12+03	30.7	3.1		asphalt	5' off northerly road edge
P49	12+28	33.7	5.8		asphalt	5' off northerly road edge
P50	12+53	34.4	4.2		asphalt	5' off northerly road edge
P51	12+78	34.0	5.8		asphalt	5' off northerly road edge

APPENDIX C CITY OF PORTMOUTH NOISE ORDIANCE

ARTICLE IV: NOISE CONTROL

Section 3.401:

It is found and declared that:

- A. The making and creation of excessive, unnecessary loud noises within the limits of the City of Portsmouth is a condition which has existed for some time and the extent and volume of such noises is increasing;
- B. The making, creation or maintenance of such excessive unnecessary, unnatural or unusually loud noises which are prolonged, unusual and unnatural in their time, place and use, affect and are a detriment to public health, comfort, convenience, safety, welfare and prosperity of the residents of the City of Portsmouth and;
- C. The necessity in the public interest for the provisions and prohibitions hereinafter contained and enacted, is declared as a matter of legislative determination and public policy, and it is further declared that the provisions and prohibitions hereinafter contained and enacted are in pursuance of and for the purpose of securing and promoting the public health, comfort, convenience, safety, welfare and prosperity and the peace and quiet of Portsmouth and its inhabitants.

Section 3.402:

It shall be unlawful for any person to make, continue or cause to be made or continued any excessive, unnecessary or unusually loud noise or any noise which either annoys, disturbs, injures, or endangers the comfort, repose, health, peace or safety of others, within the limits of the City.

Section 3.403: NOISES PROHIBITED - UNNECESSARY NOISE STANDARD

The following acts, among others, are declared to be loud disturbing and unnecessary noises in violation of this Ordinance, but said enumeration shall not be deemed to be exclusive, namely:

- A. Horns, Signaling Devices, Etc.: The sounding of any horn or signaling device on any automobile, motorcycle, street car or other vehicle on any street or public place of the City, except as a danger warning; the creation by means of any such signaling device of any unreasonable loud or harsh sound; and the sounding of any device for an unnecessary and unreasonable period of time. The use of any signaling device except one operated by hand or electricity; the use of any horn, whistle or other device operated by engine exhaust; and the use of any such signaling device when traffic is for any reason being held up.
- B. Radios, Phonographs, Etc.: The using, operating, or permitting to be played, used or operated any radio receiving set, musical instrument, phonograph, or other machine or device for the producing or reproducing of sound in such manner as to disturb the peace, quiet and comfort of the neighboring inhabitants or any time with louder volume than is necessary for convenient hearing for the person or persons who are in the room, vehicle or chamber in which such machines or device is operated and who are voluntary listeners thereto. The operation of any such set, instrument, phonograph, machine or device between the hours of ll:00 p.m. and 7:00 a.m. in such a manner as to be plainly audible at

- a distance of 50 feet from the building, structure or vehicle in which it is located shall be prima facie evidence of a violation of this section.
- C. Loud Speakers, Amplifiers for Advertising: The using, operating or permitting to be played, used or operated of any radio receiving set, musical instrument, phonograph, loud speaker, sound amplifier, or other machine or device for the producing or reproducing of sound which is case upon the public streets for the purpose of commercial advertising or attracting the attention of the public to any building or structure.
- D. Yelling, Shouting, Etc.: Yelling, shouting, hooting, whistling, or singing on the public street, particularly between the hours of ll:00 p.m. and 7:00 a.m., or at any time or place so as to annoy or disturb the quiet, comfort, or repose of persons in any office, or in any dwelling, hotel, or other type of residence, or of any persons in the vicinity.
- E. Animals, Birds, Etc.: The keeping of any animal or bird which by causing frequent or long continued noise shall disturb the comfort or repose of any persons in the vicinity.
- F. Steam Whistles: The blowing of any locomotive steam whistle or steam whistle attached to any stationary boiler except to give notice of the time to begin or stop work or as a warning of fire or danger, or upon request of proper City authorities.
- G. Exhausts: The discharge into the open air of the exhaust of any steam engine, stationary internal combustion engine, motor boats, or motor vehicle except through a muffler or other device which will effectively prevent loud or explosive noises therefrom.
- H. Defect in Vehicle or Load: The use of any automobile, motorcycle or vehicle so out of repair, so loaded or in such a manner as to create loud and unnecessary grating, grinding, rattling or other noise.
- I. Loading, Unloading, Opening Boxes: The creation of a loud and excessive noise in connection with loading or unloading any vehicle or ship or the opening and destruction of bales, boxes, crates and containers. The loading or unloading of any sanitation vehicles in any district between the hours of midnight and 7:00 a.m. in such a manner as to be plainly audible in a residential district at a distance of 50 feet from such loading or unloading shall be prima facie evidence of a violation of this Section.
- J. Construction or Repairing of Buildings: The erection (including excavation), demolition, alteration or repair of any building other than between the hours of 7:00 a.m. and 6:00 p.m. on weekdays, except in case of urgent necessity in the interest of public health and safety, and then only with a permit from the Building Inspector, which permit may be granted for a period not to exceed three days or less while the emergency continues and which permit may be renewed for periods of three days or less while the emergency continues. If the Building Inspector should determine that the public health and safety will not be impaired by the erection, demolition, alteration or repair of any building or the excavation of streets and highways within the hours of 6:00 p.m. and 7:00 a.m., and if he shall further determine that loss or inconvenience would result to any party in interest, he may grant permission for such work to be done within the hours of 6:00 p.m. and 7:00 a.m. upon application being made at the time the permit for the work is awarded or during the progress of the work.
- K. Schools, Courts, Churches, Hospitals: The creation of any excessive noise on streets adjacent to any school, institution of learning, church or court while the same are in use, or adjacent to any hospital which disturbs or unduly annoys patients in the hospital, provided conspicuous signs are displayed in such streets indicating that the same is a school, hospital or court street.
- L. Hawkers and Peddlers: The shouting and crying of peddlers, hawkers and vendors which disturbs the peace and quiet of the neighborhood.
- M. Drums: The use of any drum or other instrument or device for the purpose of attracting attention by creation of noise to any performance, show or sale.

- N. Metal Rails, Pillars and Columns, Transportation Thereof: The transportation of rails, pillars, columns of iron, steel or other material over and along streets and other public places upon cars, trays, cars, trucks or in any other manner to loaded as to cause loud noises or as to disturb the peace and quiet of such streets or other public places.
- O. Street Railway Cars, Operation Thereof: The causing, permitting or continuing any excessive, unnecessary and avoidable noise in the operation of a street railway car.
- P. Pile Drivers, Hammers, Etc.: The operation between the hours of 10:00 p.m. and 7:00 a.m. of any pile driver, steam shovel, pneumatic hammer, derrick, steam or electric hoist or other appliance, the use of which is attended by loud or unusual noise.
- Q. Blowers: The operation of any noise creating blower or power fan or any internal combustion engine, the operation of which causes noise due to the explosion of operating gases or fluids, unless the noise from such blower or fan is muffled and such engine is equipped with a muffler device sufficient to deaden such noise.
- R. Engine Compression Brakes: It shall be unlawful for the driver of any vehicle other than police or fire emergency vehicles to use, operate or cause to be used or operated, within the City of Portsmouth, any mechanical exhaust device designed to aid in the stopping or braking of said vehicle, in a manner so as to create excessive, loud, unusual or explosive noise from the vehicle. (Adopted 5/15/2006).

Section 3.404: VIOLATION - MISDEMEANOR

Any person violating any of the provisions of this Ordinance shall be fined in an amount not exceeding One Thousand (\$1000) Dollars (Amended 1-7-85). Each day such violation is committed or permitted to continue shall constitute a separate offense and shall be punishable as such hereunder.

Section 3.405: MANNER OF ENFORCEMENT

Violations of this Ordinance shall be prosecuted in the same manner as other violations of the Ordinances of the City of Portsmouth. Complaints may be brought by the Portsmouth Police or the Building Inspector of the City of Portsmouth or his agent.

Section 3.406: ADDITIONAL REMEDY - INJUNCTION

As an additional remedy, the operation or maintenance of any device, instrument, vehicle or machinery in violation of any provision hereof and which causes discomfort or annoyance to the reasonable persons of normal sensitiveness or which endangers the comfort, repose, health or peace of residents in the area shall be deemed, and is declared to be a public nuisance and may be subject to abatement summarily by a restraining order or injunction issued by a court of competent jurisdiction.

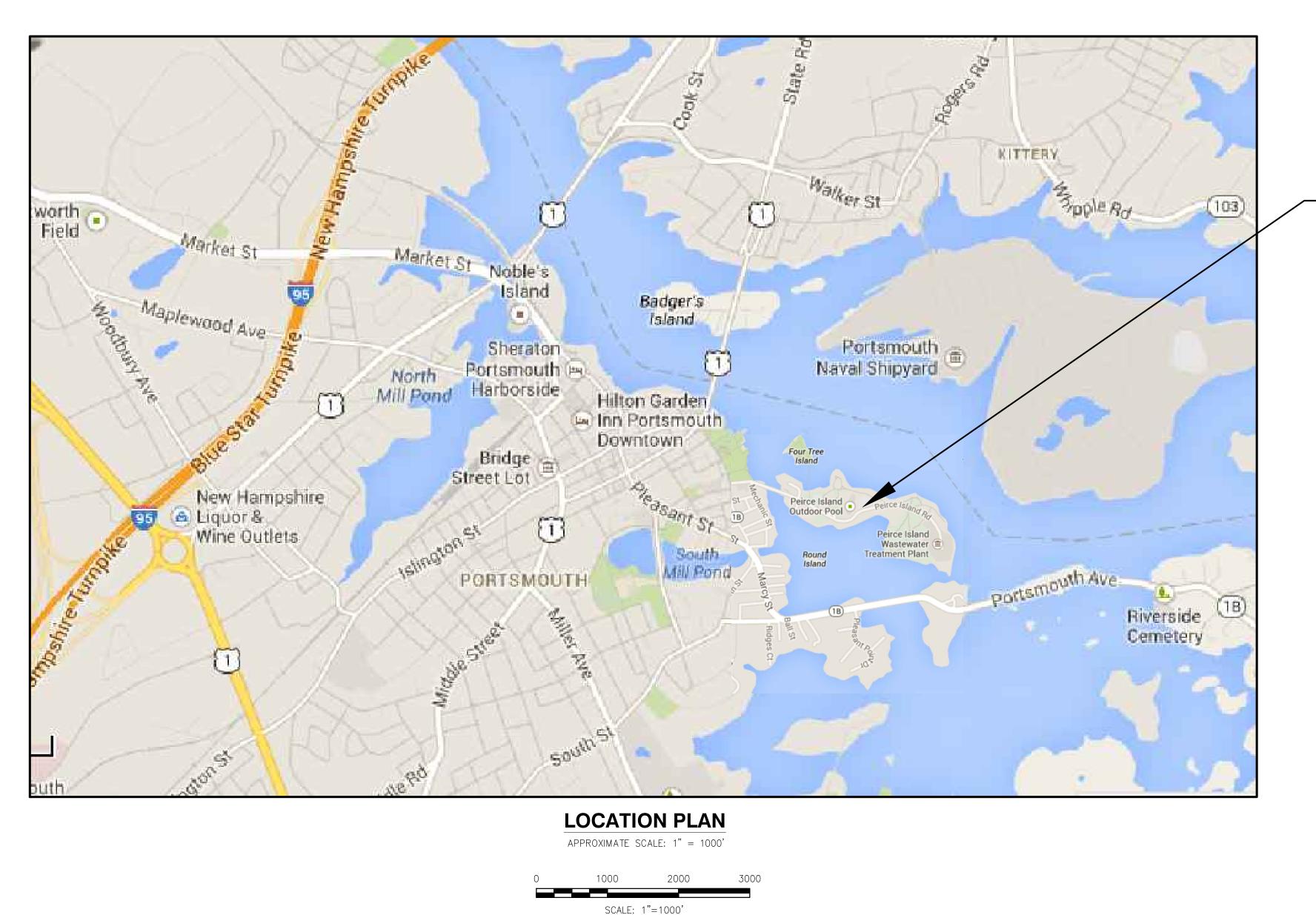
Section 3.407: SEPARABILITY

It is the intention of the City Council that each separate provision of this Ordinance shall be deemed independent of all other provisions herein and it is further the intention of the City Council that if any provision of this Ordinance be declared to be invalid, all other provisions thereof shall remain valid and enforceable.

APPENDIX D RECORD PLANS

CITY OF PORTSMOUTH, NEW HAMPSHIRE

PEIRCE ISLAND FORCE MAIN AND WATER MAIN REPLACEMENT AUGUST 2021 BID NUMBER #35-21



INDEX OF DRAWINGS

SHEET NO. TITLE

GENERAL

COVER SHEET, LOCATION PLAN AND INDEX OF DRAWINGS OVERALL SITE AND KEY PLAN

CIVIL

00 C-001 LEGEND, ABBREVIATIONS AND GENERAL NOTES EXISTING CONDITIONS, EROSION CONTROL AND DEMOLITION PLAN I EXISTING CONDITIONS, EROSION CONTROL AND DEMOLITION PLAN II 00 C-103 EXISTING CONDITIONS, EROSION CONTROL AND DEMOLITION PLAN III 00 C-104 CONTRACTOR ACCESS AND STAGING AREA AND SITE RESTORATION PLAN PIPING PLAN AND PROFILE I 00 C-105

PIPING PLAN AND PROFILE II 00 C-106 PIPING PLAN AND PROFILE III ENLARGED PLANS I

ENLARGED PLANS II 00 C-110

DETAILS I

PIPING PLAN AND PROFILE PEIRCE ISLAND BRIDGE SLIPLINING 99 C-501

99 C-502 DETAILS II 99 C-503 DETAILS III 99 C-504 DETAILS IV DETAILS V 99 C-505

TRAFFIC MANAGEMENT

TRAFFIC MANAGEMENT PLAN TRAFFIC MANAGEMENT PLAN II TRAFFIC MANAGEMENT PLAN III

RECORD DRAWING

NOTE: This Record Drawing has been prepared based on information provided by others. AECOM has not verified the accuracy and/or completeness of this information and shall not be responsible for errors or omissions which may be incorporated as a result.

AECOM

PEIRCE ISLAND FORCE MAIN AND WATER MAIN REPLACEMENT Peirce Island, Portsmouth NH

CITY OF PORTSMOUTH **NEW HAMPSHIRE**

680 Peverly Hill Road Portsmouth, NH 03801

ENGINEER

AECOM TECHNICAL SERVICES, INC. 250 APOLLO DRIVE CHELMSFORD, MA 01824 PHONE: (978) 905-2100 www.aecom.com

REGISTRATION



ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	10-27-22	REV. FOR RECORD DRAWIN

PROJECT NUMBER

60649477

Designed By:	S. HE
Drawn By:	M. THIBODEAU
Dept Check:	C. BENZIGER
Proj Check:	E. MESERVE
Date:	AUGUST 2021
Scale:	AS NOTED

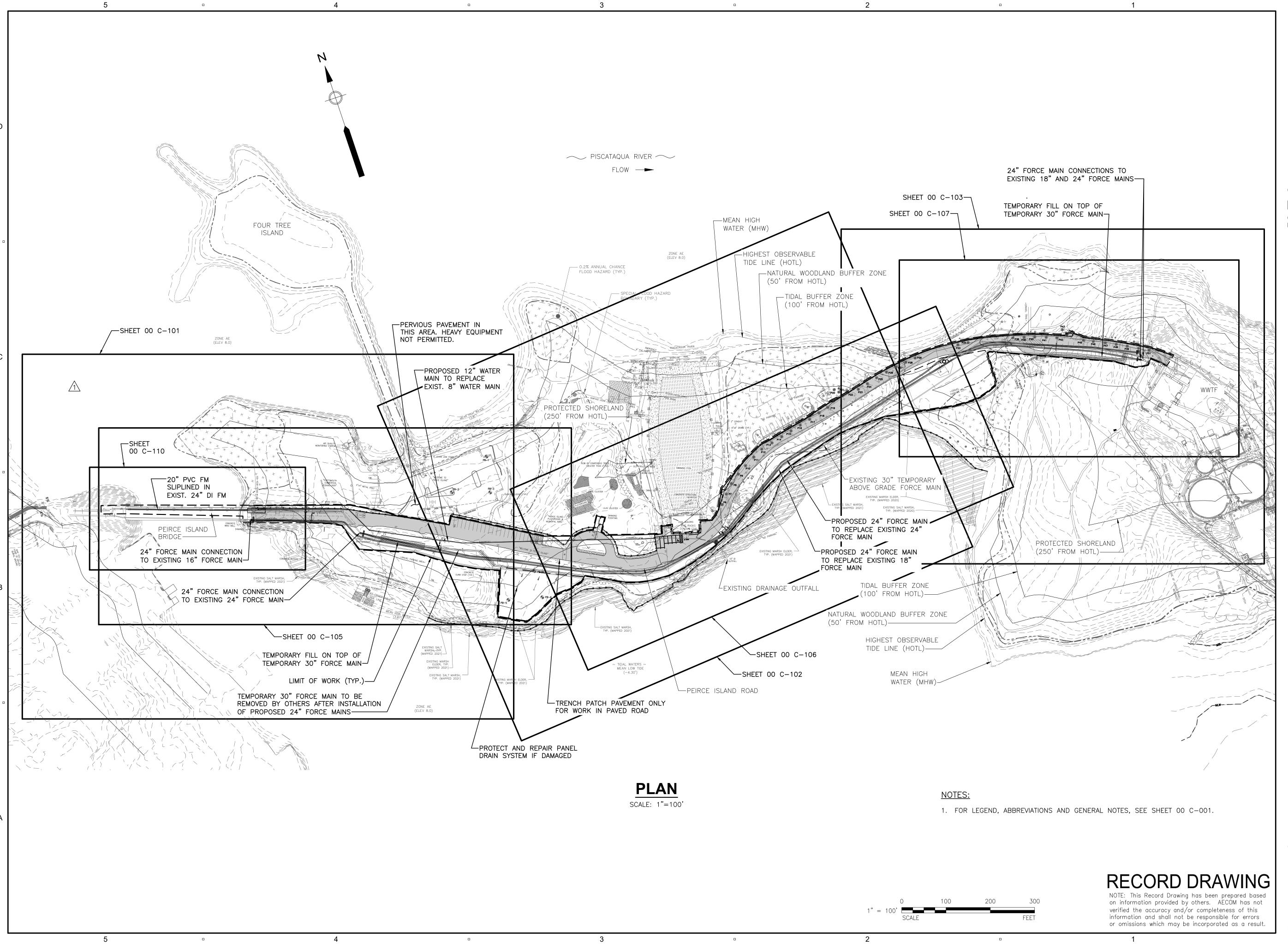
DISCIPLINE

CIVIL SHEET TITLE

COVER SHEET, LOCATION PLAN AND INDEX OF DRAWINGS

00 G-001

SHEET NUMBER



PROJECT

PEIRCE ISLAND
FORCE MAIN AND
WATER MAIN
REPLACEMENT
Peirce Island, Portsmouth NH

OWNER

CITY OF PORTSMOUTH NEW HAMPSHIRE

680 Peverly Hill Road Portsmouth, NH 03801

ENGINEER

AECOM TECHNICAL SERVICES, INC. 250 APOLLO DRIVE CHELMSFORD, MA 01824 PHONE: (978) 905-2100 www.aecom.com

REGISTRATION



ISSUE/REVISION

	2	10-27-22	REV. FOR RECORD DRAWII
	1	9-22-21	ADDENDUM NO. 2
	I/R	DATE	DESCRIPTION
-			

PROJECT NUMBER

60649477

Designed By:	S. HE
Drawn By:	M. THIBODEAU
Dept Check:	C. BENZIGER
Proj Check:	E. MESERVE
Date:	AUGUST 2021
Scale:	AS NOTED

DISCIPLINE

CIVIL SHEET TITLE

OVERALL SITE AND KEY PLAN

SHEET NUMBER

00 G-002

- 2. HORIZONTAL LOCATIONS SHOWN ARE REFERENCED TO THE NH STATE PLANE COORDINATE SYSTEM, NAD83.
- 3. VERTICAL DATUM IS NAVD 88 AND IS BASED ON NATIONAL GEODETIC SURVEY FIRST ORDER CLASS I BENCHMARKS "V31 USGS" (PID:OCO289) HAVING A PUBLISHED ELEVATION OF 29.19' AND "W31" (PID:OCO413) HAVING A PUBLISHED ELEVATION OF 20.54'. REFER ALSO TO VERTICAL DATUM CONVERSION NOTE BELOW.
- 4. TOPOGRAPHIC INFORMATION SHOWN IS THE RESULT OF A SURVEY MADE IN JULY 2013, AUGUST 2020 AND JANUARY 2021 BY DOUCET SURVEY, INC., 102 KENT PLACE, NEWMARKET, NH 03857. WETLAND BOUNDARIES, HIGHEST OBSERVABLE TIDE LINE (HOTL) AND EXISTING TREE SURVEY WERE DELINEATED BY NORMANDEAU ASSOCIATES, INC. ON JANUARY 14, 2021.
- 5. THE LOCATION OF ANY UNDERGROUND UTILITY INFORMATION SHOWN ON THIS PLAN IS BASED ON RECORD DRAWINGS AND IS APPROXIMATE. THE OWNER DOES NOT GUARANTEE THE ACCURACY OR COMPLETENESS OF UNDERGROUND UTILITIES SHOWN. PRIOR TO ANY EXCAVATION ON SITE THE CONTRACTOR SHALL CONTACT DIG SAFE AT 1-888-344-7233.
- 6. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL EXISTING CONDITIONS AT THE SITE.
- 7. THE CONTRACTOR SHALL ERECT EROSION CONTROL MEASURES PRIOR TO COMMENCING ANY CLEARING, EXCAVATION OR STORAGE OF BACKFILL MATERIAL ON-SITE. REFER TO SPECIFICATION SECTION 01568 AND DETAILS.
- 8. THE ENGINEER MAY DIRECT THE CONTRACTOR TO VARY THE PROPOSED WORK DURING CONSTRUCTION TO MEET EXISTING CONDITIONS.
- 9. THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES AND SHALL PROVIDE ALL NECESSARY CONTINUOUS BARRIERS OF SUFFICIENT TYPE, SIZE AND STRENGTH TO PREVENT ACCESS TO ALL OPEN EXCAVATIONS AT THE
- 10. INTERRUPTION TO WATER AND OTHER EXISTING UTILITIES SHALL BE REQUESTED IN WRITING BY THE CONTRACTOR 3 DAYS IN ADVANCE OF THE WORK AND REVIEWED BY THE ENGINEER.

COMPLETION OF EACH DAYS WORK. REFER TO SPECIFICATION SECTION 01046 FOR ADDITIONAL REQUIREMENTS

- 11. CONTRACTOR SHALL MAINTAIN FLOW OF SEWAGE IN ACCORDANCE WITH SECTION 01063.
- 12. EXISTING UTILITIES INTERFERING WITH THE WORK SHALL BE RELOCATED AS DIRECTED BY THE ENGINEER AT NO ADDITIONAL COST TO THE OWNER.
- 13. PIPE SHALL BE AS INDICATED IN THE PIPING SCHEDULE AND SPECIFICATIONS. PROVIDE RESTRAINED MECHANICAL JOINT FITTINGS FOR CONNECTIONS TO EXISTING PIPING AS SPECIFIED
- 14. PIPING WHICH IS EXPOSED DURING EXCAVATION, INCLUDING TEE'S, VALVES, AND FITTINGS, AND IS NOT TO BE DEMOLISHED, SHALL BE SUPPORTED, BRACED OR OTHERWISE PROTECTED DURING CONSTRUCTION ACTIVITIES.
- 15. ALL PIPING SHALL BE CONSTRUCTED WITH A MINIMUM OF 5 FEET OF COVER.
- 16. ALL PIPES SHALL SLOPE UNIFORMLY BETWEEN ELEVATIONS SHOWN UNLESS OTHERWISE INDICATED ON THE DRAWINGS OR DIRECTED BY THE ENGINEER. NO SAGS OR CRESTS IN PIPING WILL BE PERMITTED.
- 17. WHERE NEW PIPING IS TO BE CONNECTED TO EXISTING PIPING, THE CONTRACTOR SHALL FURNISH AND INSTALL ALL ADAPTERS, FITTINGS, AND ADDITIONAL PIPE WHICH MAY NOT BE SHOWN IN DETAILS (REQUIRED AS A RESULT OF CUTTING THE EXISTING PIPE BACK) IN ORDER TO COMPLETE THE CONNECTION AS REQUIRED.
- 18. ALL SIGNAGE, HEADWALLS, GUARD RAILS, GUARD POSTS, FENCES, CURBS, ROADWAYS, SIDEWALKS AND ANY OTHER OBJECTS DISTURBED BY CONTRACTOR ACTIVITIES SHALL BE RETURNED TO PRE-CONSTRUCTION CONDITION OR BETTER AS DIRECTED BY THE ENGINEER AT NO ADDITIONAL COST TO THE OWNER.
- 19. ALL AREAS OF EXCAVATION, BACKFILL, FILL AND GRADING SHALL BE RETURNED TO THE ORIGINAL GRADE
- 20. ALL UTILITY BOXES, FRAMES, GRATES, ETC. DISTURBED BY CONTRACTOR AND NOT TO BE ABANDONED SHALL BE RESET TO THE PROPER GRADE AT NO ADDITIONAL COST TO THE OWNER.
- 21. UNPAVED AREAS DISTURBED BY THE CONTRACTOR SHALL BE CLEARED AND GRUBBED IF REQUIRED, AND RESTORED WITH LOAM AND SEED. SEEDED AREAS SHALL BE PROTECTED BY SNOW FENCING UNTIL APPROVED TO
- 22. ALL EXISTING PIPES TO BE ABANDONED SHALL BE PLUGGED AT OPEN ENDS. SEE PIPE PLUGGING DETAIL ON SHEET 99 C-502.
- 23. RECORD DRAWINGS FOR EXISTING FACILITIES CAN BE FOUND IN THE SPECIFICATIONS.
- 24. PROVIDE AND MAINTAIN ORANGE CONSTRUCTION FENCING ABOVE SALT MARSH AND MARSH ELDER AS NEEDED.

VERTICAL DATUM CONVERSION NOTE:

UNLESS SHOWN ON THE DRAWINGS.

SURVEY BY DOUCET ASSOCIATES IS BASED ON NAVD 88 DATUM. EXISTING PLANT AND FORCE MAIN RECORD DRAWINGS ARE BASED ON NGVD 29 DATUM. TO CONVERT NAVD 88 ELEVATIONS TO NGVD 29. ADD 0.77 FEET, TO CONVERT NGVD ELEVATIONS TO NAVD 88 SUBTRACT 0.77 FEET.

CONCRETE NOTES:

- 1. CONCRETE WORK SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR STRUCTURAL CONCRETE (ACI 301) AND THE CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES (ACI 350) AND SECTION 03300.
- 2. USE NORMAL WEIGHT CAST-IN-PLACE CONCRETE WITH ASTM C 150, TYPE II CEMENT FOR ALL CONCRETE WORK.
- 3. PROVIDE CONCRETE HAVING A 28-DAY COMPRESSIVE STRENGTH OF 4,000 PSI AND A MAXIMUM WATER-CEMENT RATIO OF 0.45 UNLESS OTHERWISE INDICATED OR SPECIFIED.
- 4. AIR-ENTRAIN ALL CONCRETE.
- 5. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 1064. PROVIDE WELDED WIRE FABRIC IN FLAT SHEETS. STAGGER SPLICES AND LAP AT LEAST TWO FULL MESHES.
- 6. WAIT A MINIMUM OF 72 HOURS BEFORE PLACING ADJACENT CONCRETE SECTIONS.
- 7. PROVIDE CONSTRUCTION AND EXPANSION JOINTS WHERE INDICATED. DO NOT OMIT OR ADD JOINTS.
- 8. PROVIDE 3/4-INCH CHAMFER ON ALL EXPOSED CORNERS OF CONCRETE ELEMENTS.
- 9. BROOM FINISH EXTERIOR CONCRETE SLABS UNLESS OTHERWISE INDICATED OR AS SPECIFIED.

GEOTECHNICAL NOTES

- 1. FOR EARTH EXCAVATION, BACKFILL, FILL AND GRADING SEE SPECIFICATION 02210.
- 2. FOR DEWATERING SEE SPECIFICATION 02140.
- 3. FOR EXCAVATION SUPPORT SYSTEM SEE SPECIFICATION 02160.
- 4. BORING LOCATIONS ARE SHOWN ON THE PLANS AND BORING LOGS ARE BOUND IN THE SPECIFICATIONS.
- 5. BORINGS WERE TAKEN FOR PURPOSES OF DESIGN AND INDICATE SUBSURFACE CONDITIONS AT BORING LOCATION ONLY. SUBSURFACE CONDITIONS MAY VARY FROM THOSE SHOWN IN THE LOG.
- 6. IN ALL AREAS WHERE DEWATERING IS NECESSARY. MEASURES SHALL BE TAKEN TO ENSURE THE PRESERVATION OF WATERCOURSES AND COMPLIANCE WITH ALL REGULATIONS AND LAWS, ALL DEWATERING MUST BE DISCHARGED INTO SEDIMENT TRAPS AS INDICATED IN THE DETAILS AND AS SPECIFIED IN SPECIFICATION SECTION 01568.
- 7. FOR ROCK EXCAVATION AND DISPOSAL, SEE SPECIFICATION SECTION 02211.

	ABBREVIATION	٧S
APPROX.	APPROXIMATE	SYL
B&B	BALL AND BURLAP	ТВМ
BLDG.	BUILDING	TP
СВ	CATCH BASIN	TS&V
CONC.	CONCRETE	TYP.
C.I.	CAST IRON	UE
CLF	CHAIN LINK FENCE	V
C.O. OR CO	CLEANOUT	VERT.
CW	CITY WATER OR CROSS WALK	VGC
D	DRAIN	WSO
DI	DUCTILE IRON	WV
DIA.	DIAMETER	
DIM.	DIMENSION	
DMH	DRAIN MANHOLE	
DWGS	DRAWINGS	
DYL OR DYCL	DOUBLE YELLOW CENTER LINE	
E	ELECTRICAL	
ECC.	ECCENTRIC	
EL. OR ELEV.	ELEVATION	
EMERG.	EMERGENCY	
EOP	EDGE OF PAVEMENT	
EXIST.	EXISTING	
FES	FLARED END SECTION	
FF OR F.F.E.	FINISHED FLOOR ELEVATION	
F.O.T.	FLAT ON TOP	
FM	FORCE MAIN	
FPVC	FUSIBLE PVC	
GAL.	GALLON	
GL	GLASS LINED	
GP	GUARD POST	
GRAN.	GRANITE	
GV	GATE VALVE	
HOTL	HIGHEST OBSERVABLE TIDE LINE	
INV.	INVERT	
LF	LINEAR FOOT	
L.O.W.	LIMIT OF WORK	
месн.	MECHANICAL	
MH	MANHOLE	
MHW	MEAN HIGH WATER	
MLW	MEAN LOW WATER	
MJ	MECHANICAL JOINT	
MSL	MEAN SEA LEVEL	
N.C.	NORMALLY CLOSED	
PBS	PRINTED BOTH SIDES	
PSNH	PUBLIC SERVICE OF NEW HAMPSHIRE	
PVC	POLYVINYL CHLORIDE	
RCP	REINFORCED CONCRETE PIPE	
RED.	REDUCER	
RET.	RETAIN OR RETAINING	
SAN	SANITARY DRAIN	
SD	STORM DRAIN	
SL	SLUDGE OR STOP LINE	

SEWER MANHOLE

SINGLE WHITE LINE

SWL

SINGLE YELLOW LINE TEMPORARY BENCHMARK TEST PIT TAPPING SLEEVE AND VALVE TYPICAL UNDERGROUND ELECTRIC VENT VERTICAL VERTICAL GRANITE CURB WATER SHUT OFF WATER VALVE

WATER GATE VALVE VENT PIPE WATER SHUTOFF VALVE CLEANOUT TRAFFIC DIRECTION ARROW ELECTRIC BOX CATCH BASIN (ROUND) CATCH BASIN DRAIN MANHOLE ELECTRIC MANHOLE CHEMICAL MANHOLE WATER MANHOLE SEWER MANHOLE UNIDENTIFIED MANHOLE JURISDICTIONAL WETLAND SYMBOL FLAG POLE CONIFEROUS TREE DECIDUOUS TREE SHRUB CONCRETE BOULDER ROW OF BOULDERS LANDSCAPED AREA GRAVEL LEDGE OUTCROP BOLLARD DRAINAGE FLOW DIRECTION ARROW CHAINLINK FENCE OVERHEAD WIRES DRAIN LINE

LEGEND

PROPOSED

LIMIT OF WORK

PIPE PLUG OR CAP

STRUCTURE

DEMOLITION

TREE REMOVAL

TEE

REDUCER

GATE VALVE

MANHOLE

CLEANOUT

 $PIPE - \leq 6$ " DIAM.

PIPE - > 6" DIAM.

DIRECTION OF FLOW

GUARD POST OR BOLLARD

CHAIN LINK FENCE

TEMPORARY FENCE

SILT FENCE AND

EROSION CONTROL

SPOT ELEVATION

TOP OF SLOPE

CONCRETE

CURB

CRUSHED STONE MOWING STRIP

EXISTING PAVEMENT AREA TO BE REPAVED

(RECLAIMED BASE)

NEW PAVEMENT AREA (RECLAIMED BASE)

JERSEY BARRIER WITH PILED SAND

PILED SAND

× 23.50

STRAW BALE

CONTOUR

BEND

———— OHW ———— TREE LINE SHRUB LINE EDGE OF JURISDICTIONAL WETLAND BORING MONITORING WELL

MEAN HIGH WATER — — — — HIGHEST OBSERVABLE TIDE LINE — — — SPECIAL FLOOD HAZARD BOUNDARY

EXISTING

SIGN

YARD HYDRANT

WOODEN POST

FIRE HYDRANT

WATER METER

UTILITY POLE & GUY WIRE

UTILITY POLE W/ LIGHT

SALT MARSH AREA

.2% ANNUAL CHANCE OF FLOOD HAZARD AREA

PROJECT

PEIRCE ISLAND FORCE MAIN AND WATER MAIN REPLACEMENT Peirce Island, Portsmouth NH

OWNER

CITY OF PORTSMOUTH **NEW HAMPSHIRE**

680 Peverly Hill Road Portsmouth, NH 03801

ENGINEER

AECOM TECHNICAL SERVICES, INC. 250 APOLLO DRIVE CHELMSFORD, MA 01824 PHONE: (978) 905-2100 www.aecom.com

REGISTRATION



ISSUE/REVISION

 $1 \mid 10-27-22 \mid REV.$ FOR RECORD DRAWING I/R DATE DESCRIPTION

PROJECT NUMBER

60649477

Designed By: S. HE M. THIBODEAU C. BENZIGER Dept Check: E. MESERVE Proj Check: **AUGUST 2021** AS NOTED

DISCIPLINE CIVIL

SHEET TITLE

LEGEND, ABBREVIATIONS AND GENERAL NOTES

SHEET NUMBER

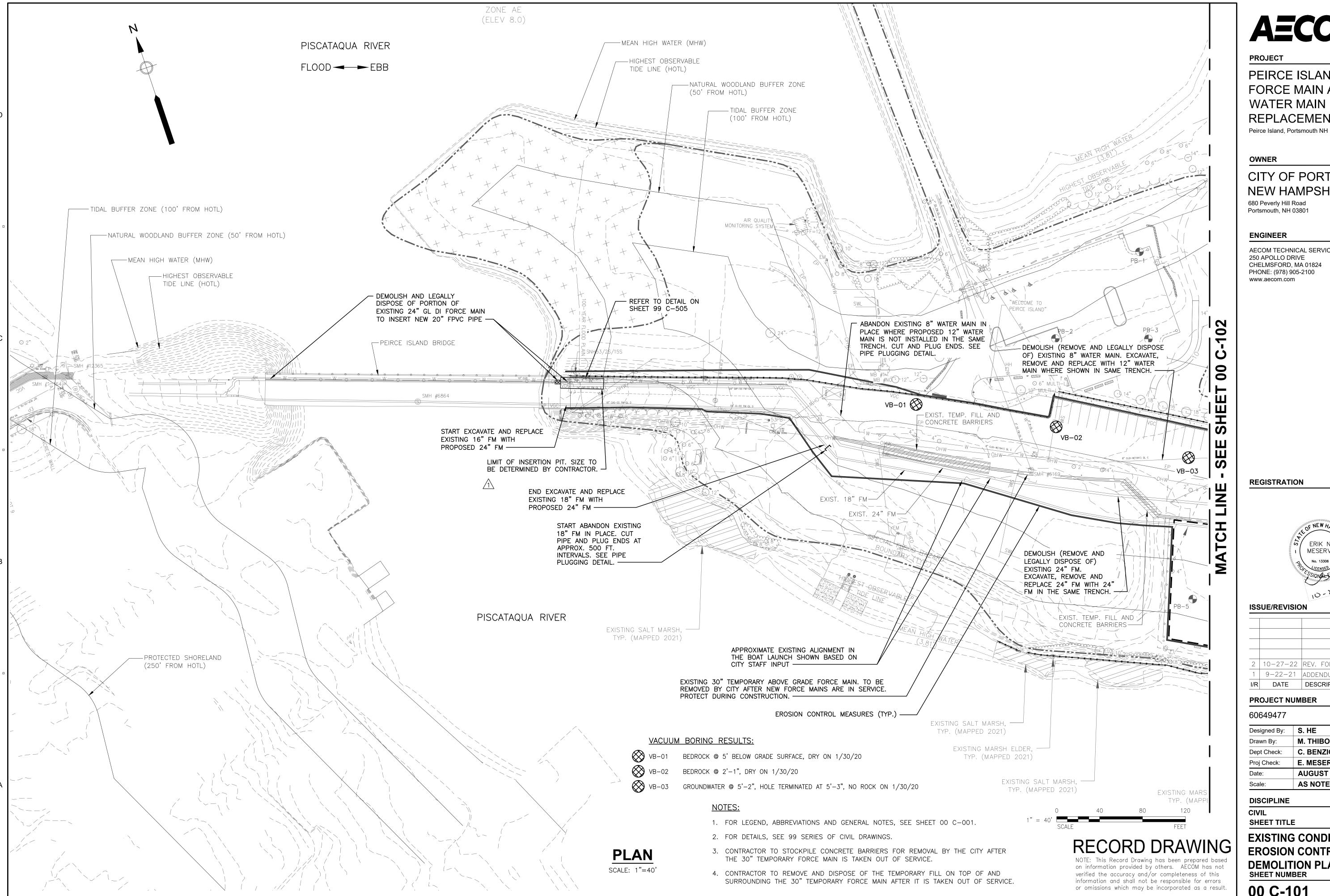
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RECORD DRAWING

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OWNER

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REGISTRATION



ISSUE/REVISION

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2	10-27-22	REV. FOR RECORD DRAWIN

PROJECT NUMBER

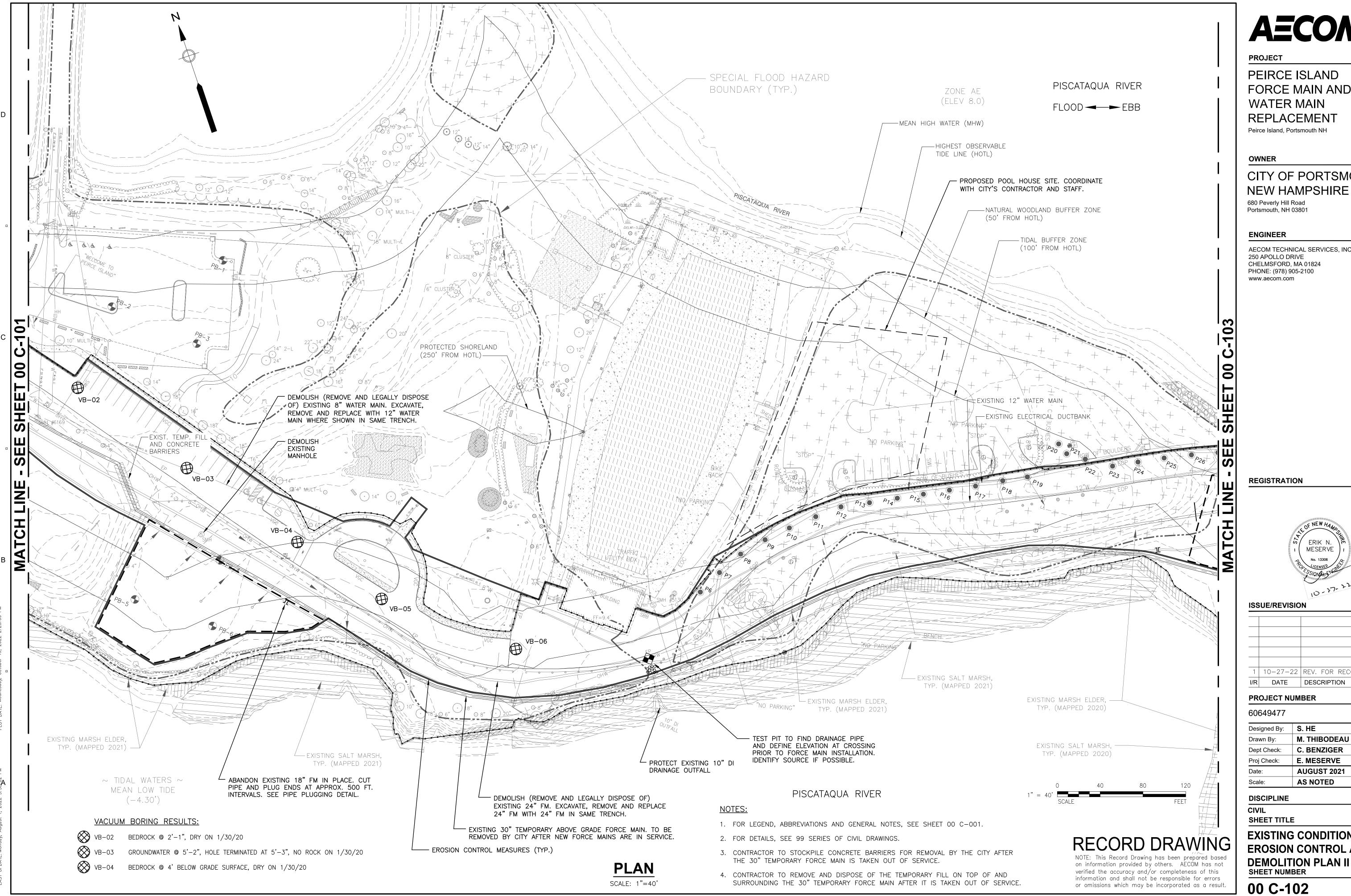
60649477

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Drawn By:	M. THIBODEAU
Dept Check:	C. BENZIGER
Proj Check:	E. MESERVE
Date:	AUGUST 2021
Scale:	AS NOTED

DISCIPLINE

SHEET TITLE

EXISTING CONDITIONS, EROSION CONTROL AND DEMOLITION PLAN I SHEET NUMBER



PEIRCE ISLAND FORCE MAIN AND REPLACEMENT

CITY OF PORTSMOUTH

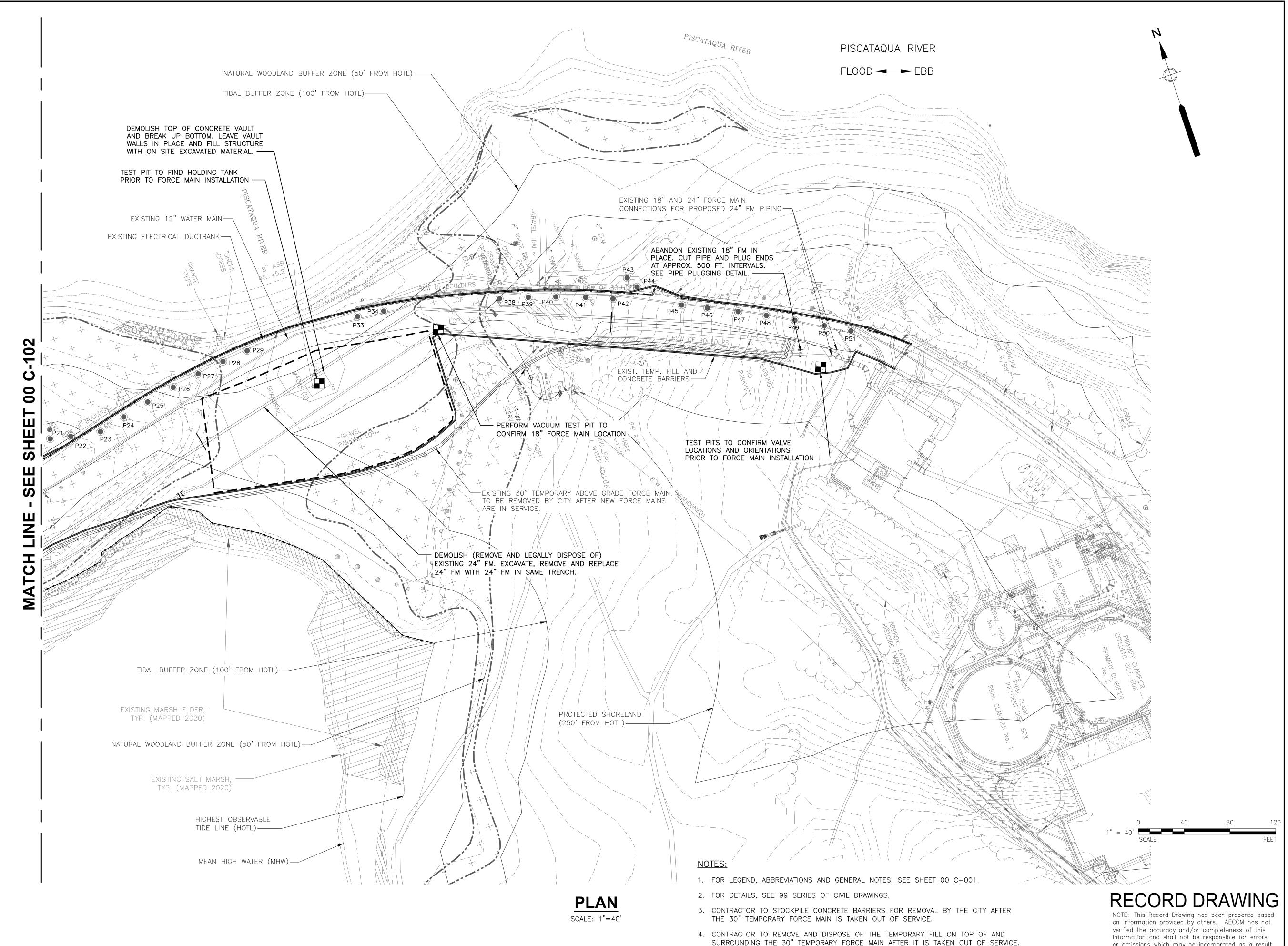
AECOM TECHNICAL SERVICES, INC.



	I/R	DATE	DESCRIPTION
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Proj Check:	E. MESERVE
Date:	AUGUST 2021
Scale:	AS NOTED

EXISTING CONDITIONS, EROSION CONTROL AND DEMOLITION PLAN II



PROJECT

PEIRCE ISLAND FORCE MAIN AND WATER MAIN REPLACEMENT Peirce Island, Portsmouth NH

OWNER

CITY OF PORTSMOUTH **NEW HAMPSHIRE**

680 Peverly Hill Road Portsmouth, NH 03801

ENGINEER

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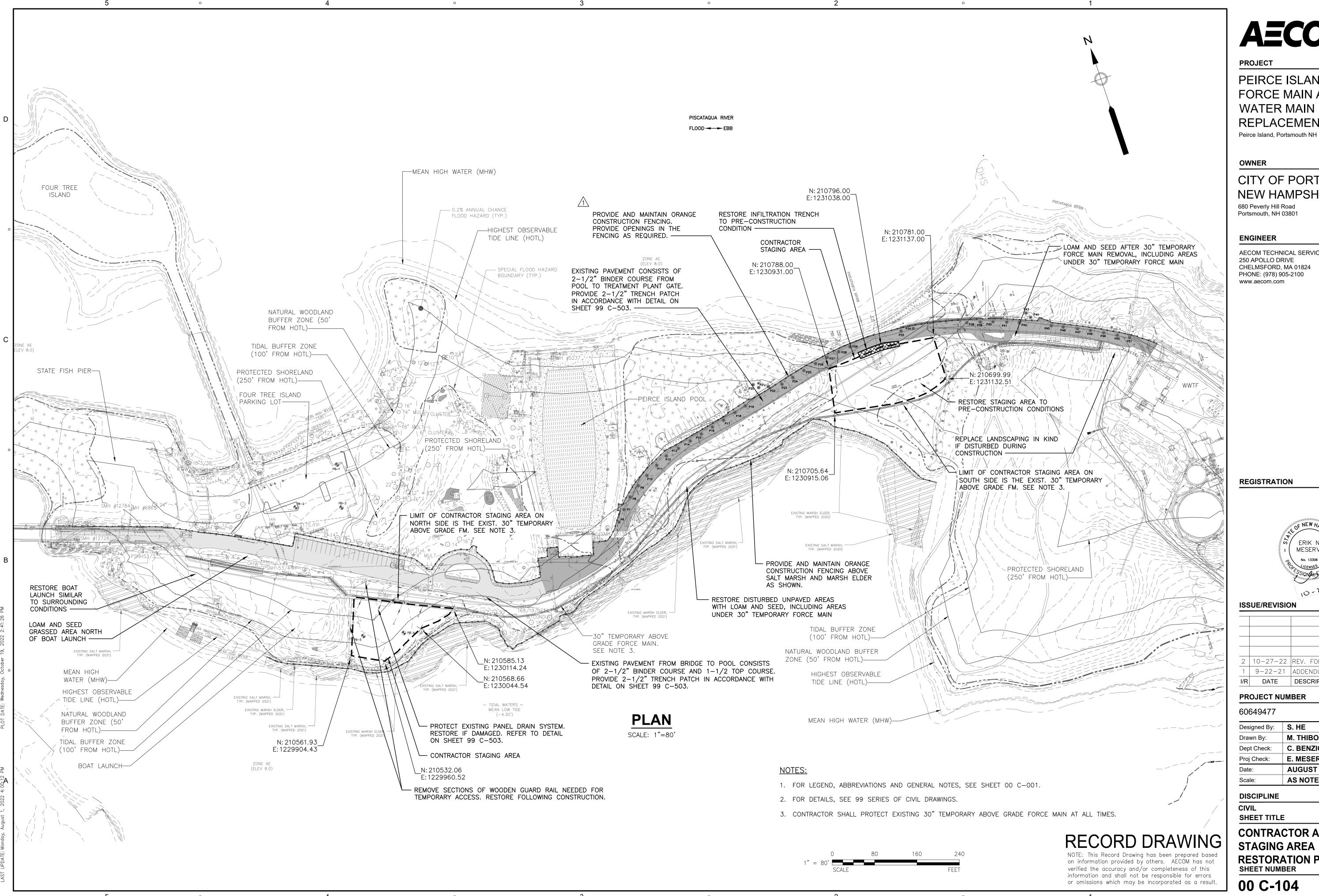
DISCIPLINE

CIVIL SHEET TITLE

EXISTING CONDITIONS, EROSION CONTROL AND DEMOLITION PLAN III SHEET NUMBER

00 C-103

or omissions which may be incorporated as a result.



PEIRCE ISLAND FORCE MAIN AND WATER MAIN REPLACEMENT

CITY OF PORTSMOUTH **NEW HAMPSHIRE**

680 Peverly Hill Road Portsmouth, NH 03801

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REGISTRATION



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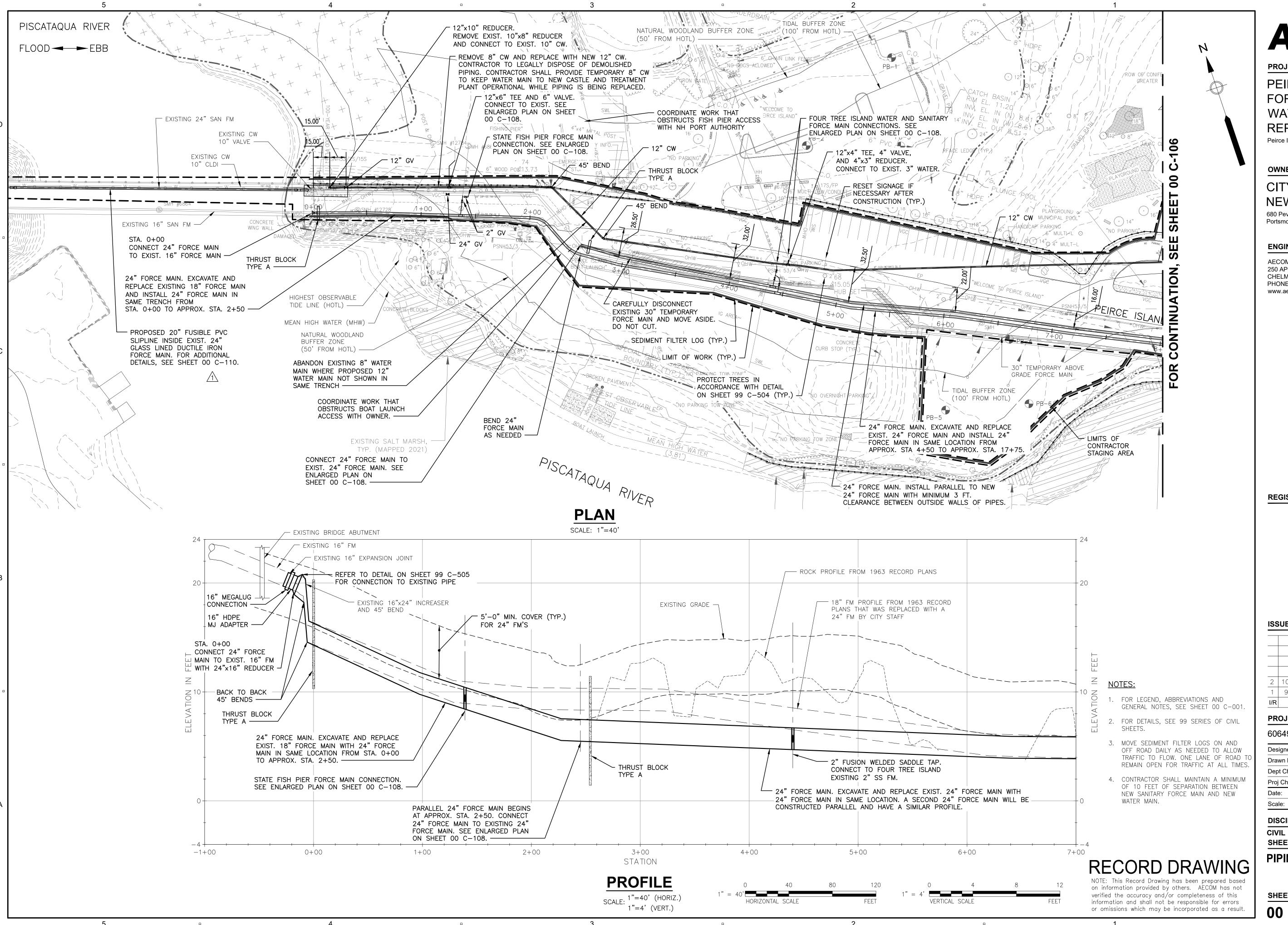
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DISCIPLINE

SHEET TITLE

CONTRACTOR ACCESS AND STAGING AREA AND SITE **RESTORATION PLAN**



PROJECT

PEIRCE ISLAND FORCE MAIN AND **WATER MAIN** REPLACEMENT Peirce Island, Portsmouth NH

OWNER

CITY OF PORTSMOUTH **NEW HAMPSHIRE**

680 Peverly Hill Road Portsmouth, NH 03801

ENGINEER

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REGISTRATION



ISSUE/REVISION

I/R	DATE	ADDENDUM NO. 2 DESCRIPTION
1	0 00 01	ADDENDUM NO O
2	10-27-22	REV. FOR RECORD DRAW

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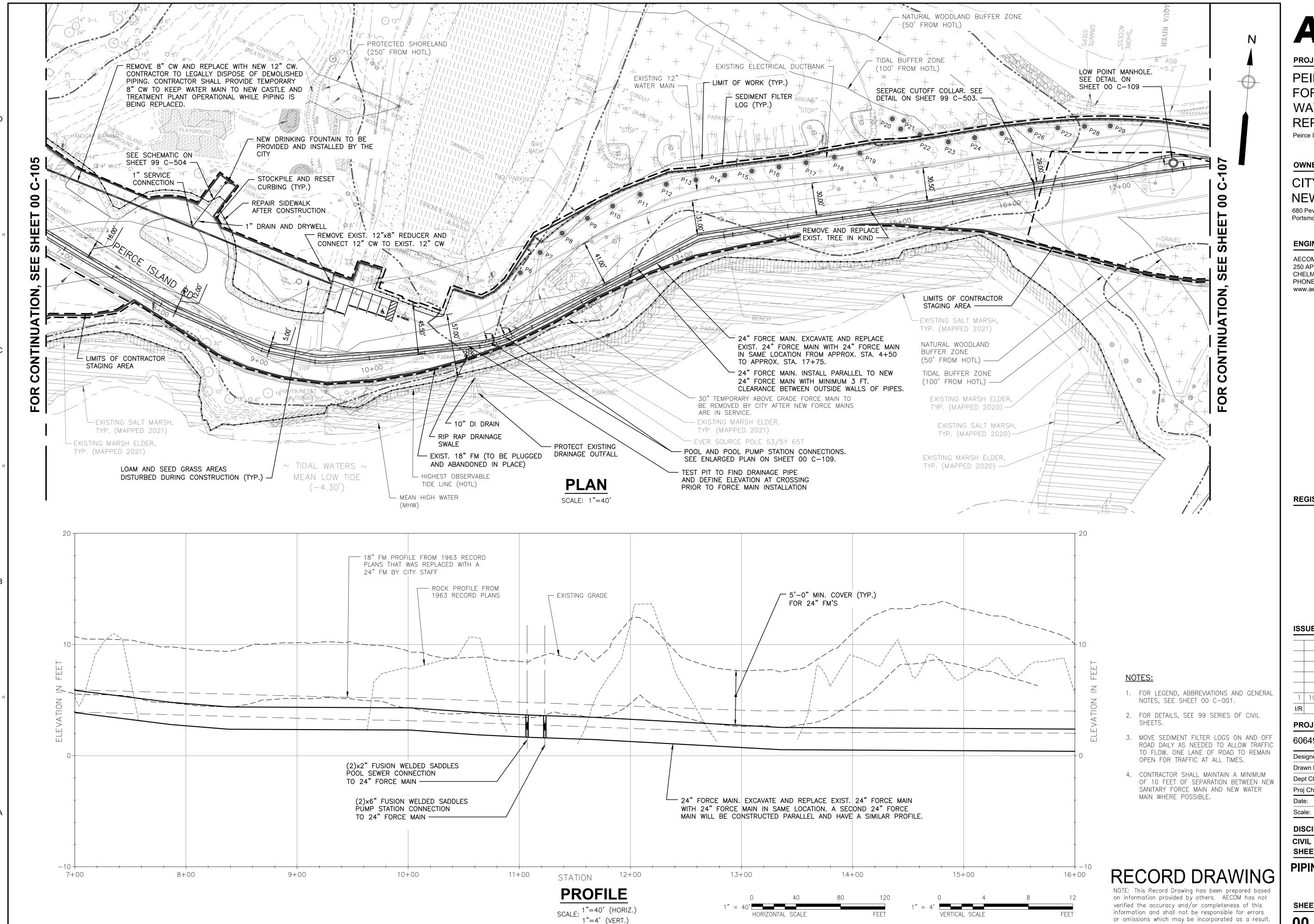
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DISCIPLINE

SHEET TITLE

PIPING PLAN AND PROFILE I

SHEET NUMBER



PROJECT

PEIRCE ISLAND FORCE MAIN AND **WATER MAIN** REPLACEMENT Peirce Island, Portsmouth NH

OWNER

CITY OF PORTSMOUTH **NEW HAMPSHIRE**

680 Peverly Hill Road Portsmouth, NH 03801

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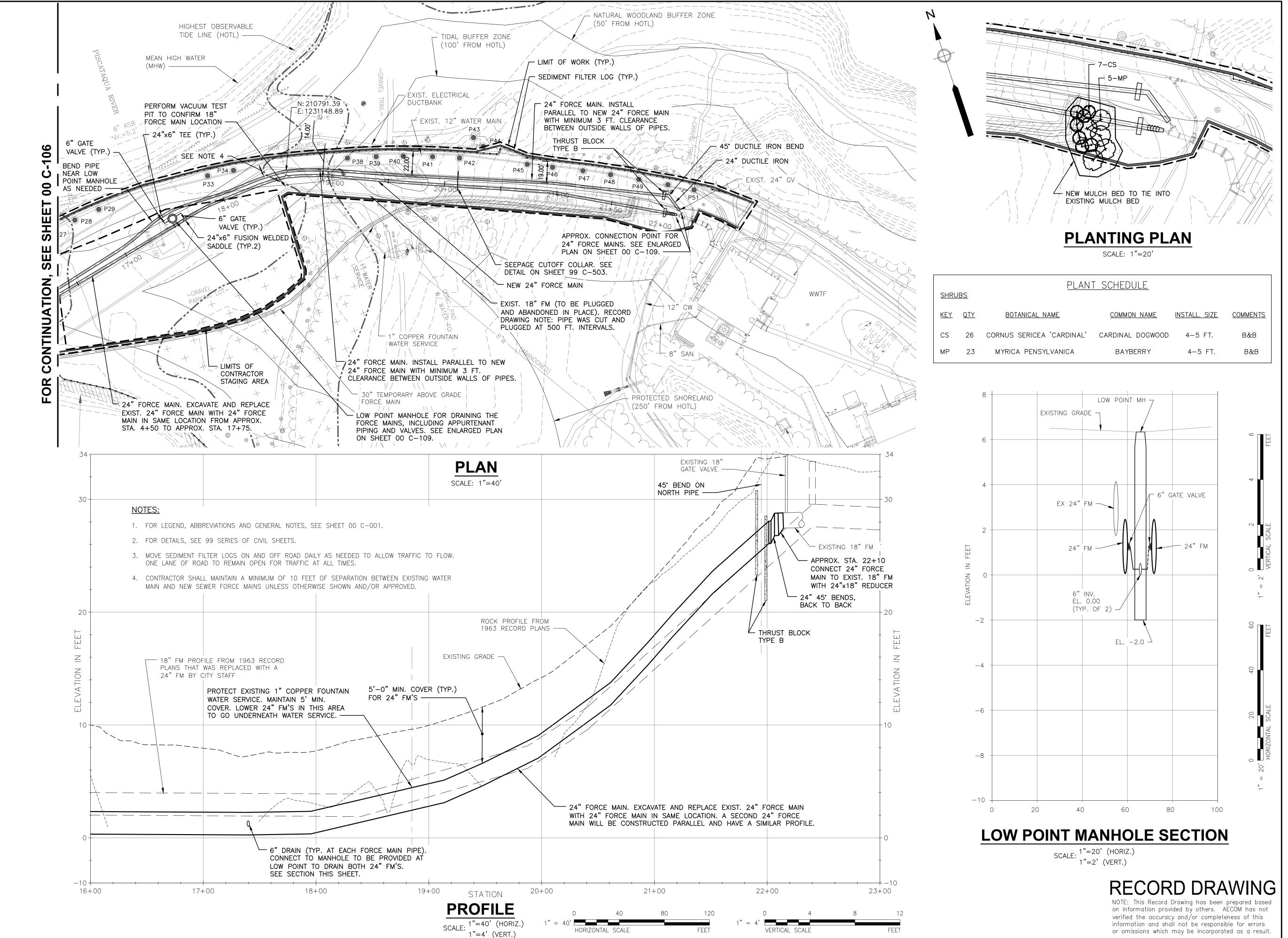
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DISCIPLINE

SHEET TITLE

PIPING PLAN AND PROFILE II

SHEET NUMBER



PROJECT

PEIRCE ISLAND
FORCE MAIN AND
WATER MAIN
REPLACEMENT
Peirce Island, Portsmouth NH

OWNER

CITY OF PORTSMOUTH NEW HAMPSHIRE

680 Peverly Hill Road Portsmouth, NH 03801

ENGINEER

AECOM TECHNICAL SERVICES, INC. 250 APOLLO DRIVE CHELMSFORD, MA 01824 PHONE: (978) 905-2100 www.aecom.com

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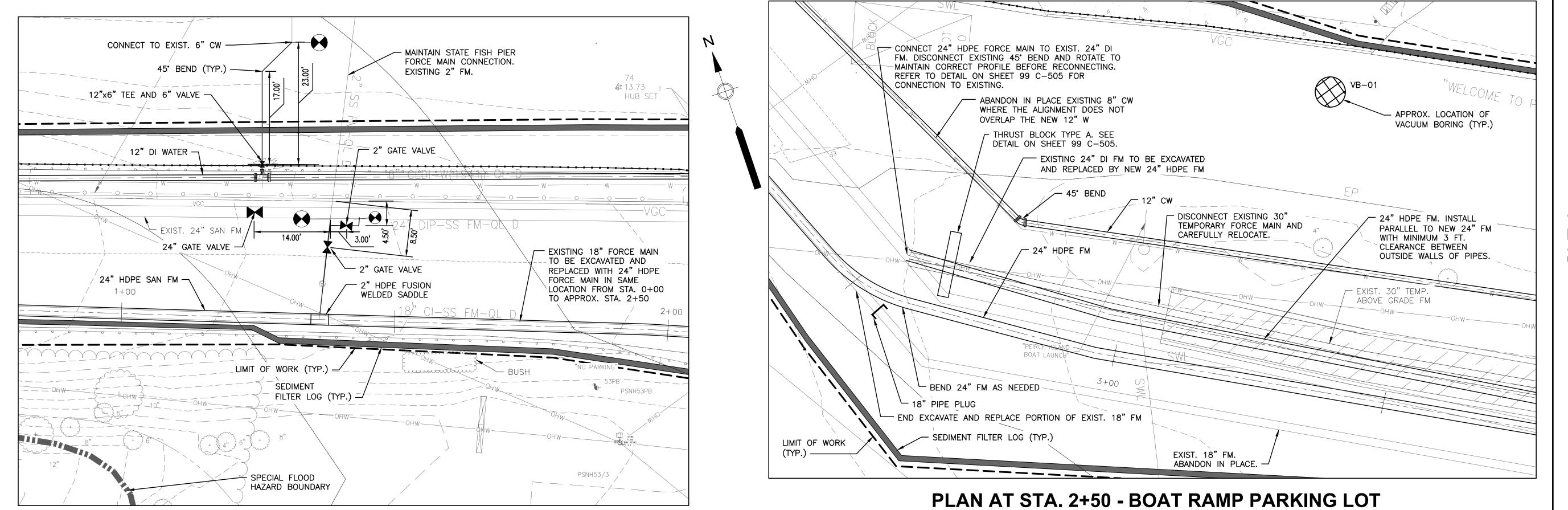
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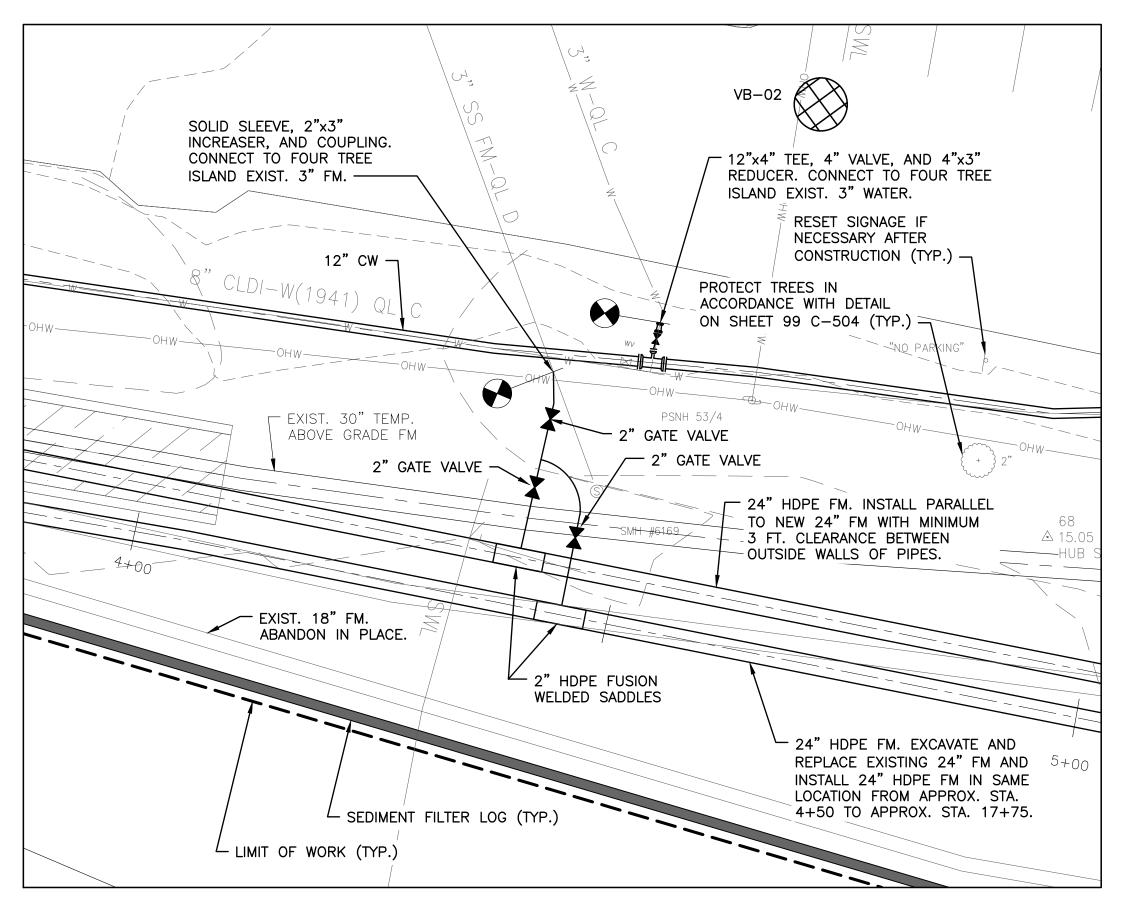
CIVIL SHEET TITLE

PIPING PLAN AND PROFILE III

SHEET NUMBER



SCALE: 1"=10'

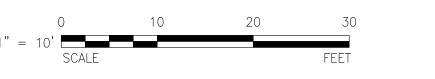


PLAN AT STA. 1+50 - STATE FISH PIER

SCALE: 1"=10'

PLAN AT STA. 4+20 - FOUR TREE ISLAND

SCALE: 1"=10'



NOTES:

- 1. FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES, SEE SHEET 00 C-001.
- 2. FOR DETAILS, SEE 99 SERIES OF CIVIL SHEETS.
- 3. MOVE SEDIMENT FILTER LOGS ON AND OFF ROAD DAILY AS NEEDED TO ALLOW TRAFFIC TO FLOW. ONE LANE OF ROAD TO REMAIN OPEN FOR TRAFFIC AT ALL TIMES.

RECORD DRAWING

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AECOM

PROJE

PEIRCE ISLAND
FORCE MAIN AND
WATER MAIN
REPLACEMENT
Peirce Island, Portsmouth NH

OWNER

CITY OF PORTSMOUTH NEW HAMPSHIRE

680 Peverly Hill Road Portsmouth, NH 03801

ENGINEER

AECOM TECHNICAL SERVICES, INC. 250 APOLLO DRIVE CHELMSFORD, MA 01824 PHONE: (978) 905-2100 www.aecom.com

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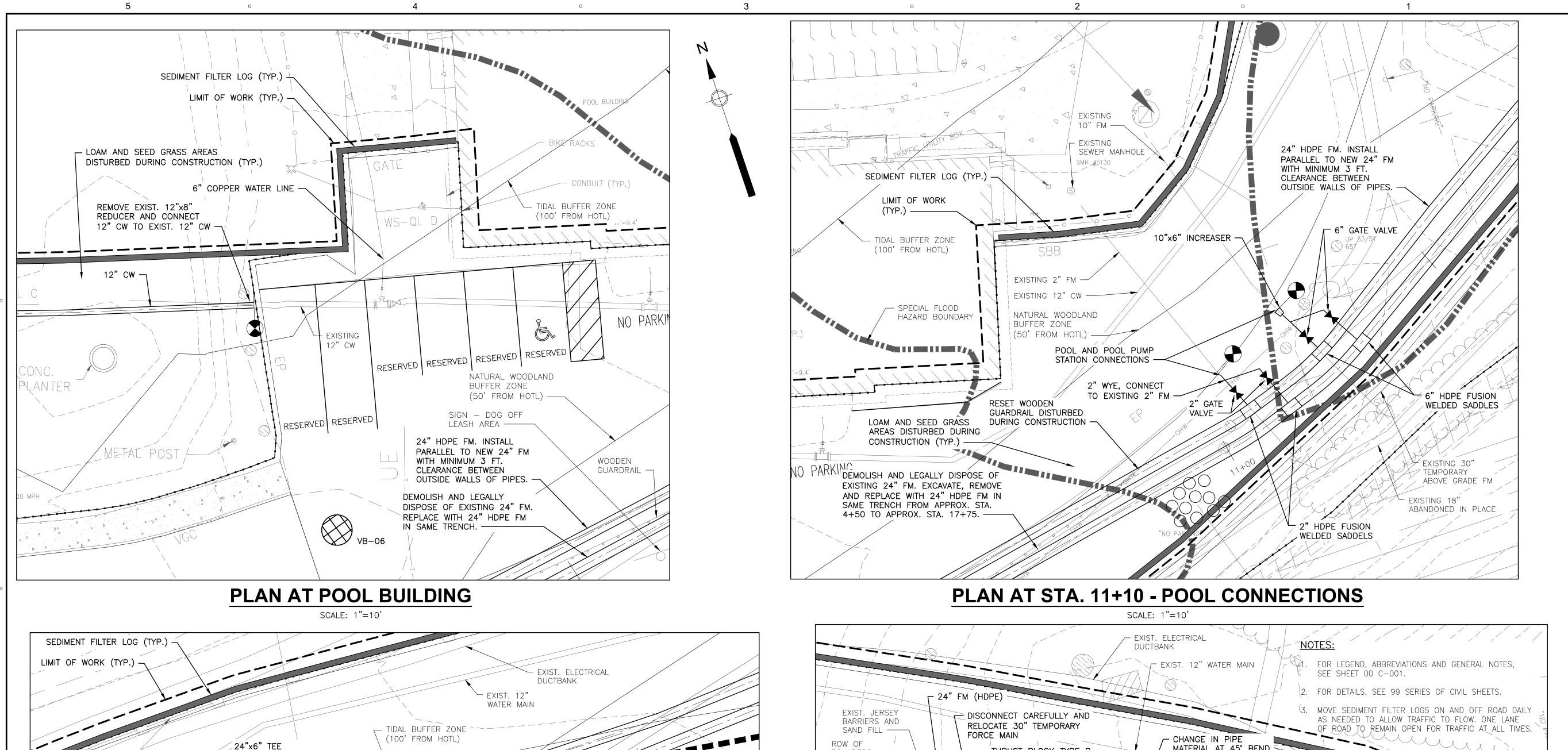
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DISCIPLINE

CIVIL SHEET TITLE

ENLARGED PLANS I

SHEET NUMBER



6" GATE VALVE, TYP.

(TO BE PLUGGED AND

ABANDONED IN PLACE)

NATURAL WOODLAND

1" = 10'

BUFFER ZONE

(50' FROM HOTL)

EXISTING 18" FM

TERMINATE BOTH 6" PIPES WITH CAMLOCK FITTINGS INSIDE MH

LOW POINT MANHOLE FOR DRAINING

APPURTENANT PIPING AND VALVES.

THE FORCE MAINS, INCLUDING

SEE DETAIL SHEET 99 C-502.

DEMOLISH TOP OF CONCRETE VAULT

WITH ON SITE EXCAVATED MATERIAL.

AND BREAK UP BOTTOM. LEAVE VAULT

WALLS IN PLACE AND FILL STRUCTURES

ROW OF MATERIAL AT 45° BEND THRUST BLOCK TYPE B. BOULDERS 7 SEE DETAIL ON SHEET 99 C-505. -- 45° BEND 🥏 ∠ 24" FM (DI) (DI) - APPROX. CONNECTION POINT FOR 24" FORCE MAINS. REFER TO CONNECTION DETAIL ON SHEET 99 C-505 FOR CONNECTION TO EXISTING. - EXIST. 24" GV (DI) 21+50 22+00 24" FM (HDPE) ---- - 30" TEMPORARY ABOVE CHANGE IN PIPE GRADE FORCE MAIN MATERIAL AT GV └ SEDIMENT FILTER - 24x18" REDUCER - 24" FM. EXCAVATE AND REPLACE LOG (TYP.) EXISTING 24" FM WITH NEW FM BACK TO BACK 24" 45° IN SAME LOCATION. BENDS. SEE PROFILE ON LIMIT OF WORK (TYP.) SHT. 00 C-107. EXISTING 18" FM (TO BE PLUGGED AND RECORD DRAWING ABANDONED IN PLACE)

PLAN AT STA. 21+97 - WWTP CONNECTION

SCALE: 1"=10'

AECOM

PROJECT

PEIRCE ISLAND FORCE MAIN AND **WATER MAIN** REPLACEMENT Peirce Island, Portsmouth NH

OWNER

CITY OF PORTSMOUTH **NEW HAMPSHIRE**

680 Peverly Hill Road Portsmouth, NH 03801

ENGINEER

AECOM TECHNICAL SERVICES, INC. 250 APOLLO DRIVE CHELMSFORD, MA 01824 PHONE: (978) 905-2100 www.aecom.com

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ENLARGED PLANS II

SHEET NUMBER

00 C-109

(ROTATE AT 45

- 24" HDPE FM. EXCAVATE

FM IN SAME LOCATION

AND REPLACE EXISTING 24"

FM AND INSTALL 24" HDPE

FROM APPROX. STA. 4+50 TO APPROX. STA. 17+75.

PLAN AT STA. 17+40 - BLOWOFF MANHOLE

SCALE: 1"=10'

⁶" GATE VALVE, TYP. —

LIMIT OF CONTRACTOR

STAGING AREA

6" HDPE (TYP.)

BEND 24" HDPE FM

AS NEEDED -

24" HDPE FM. INSTALL

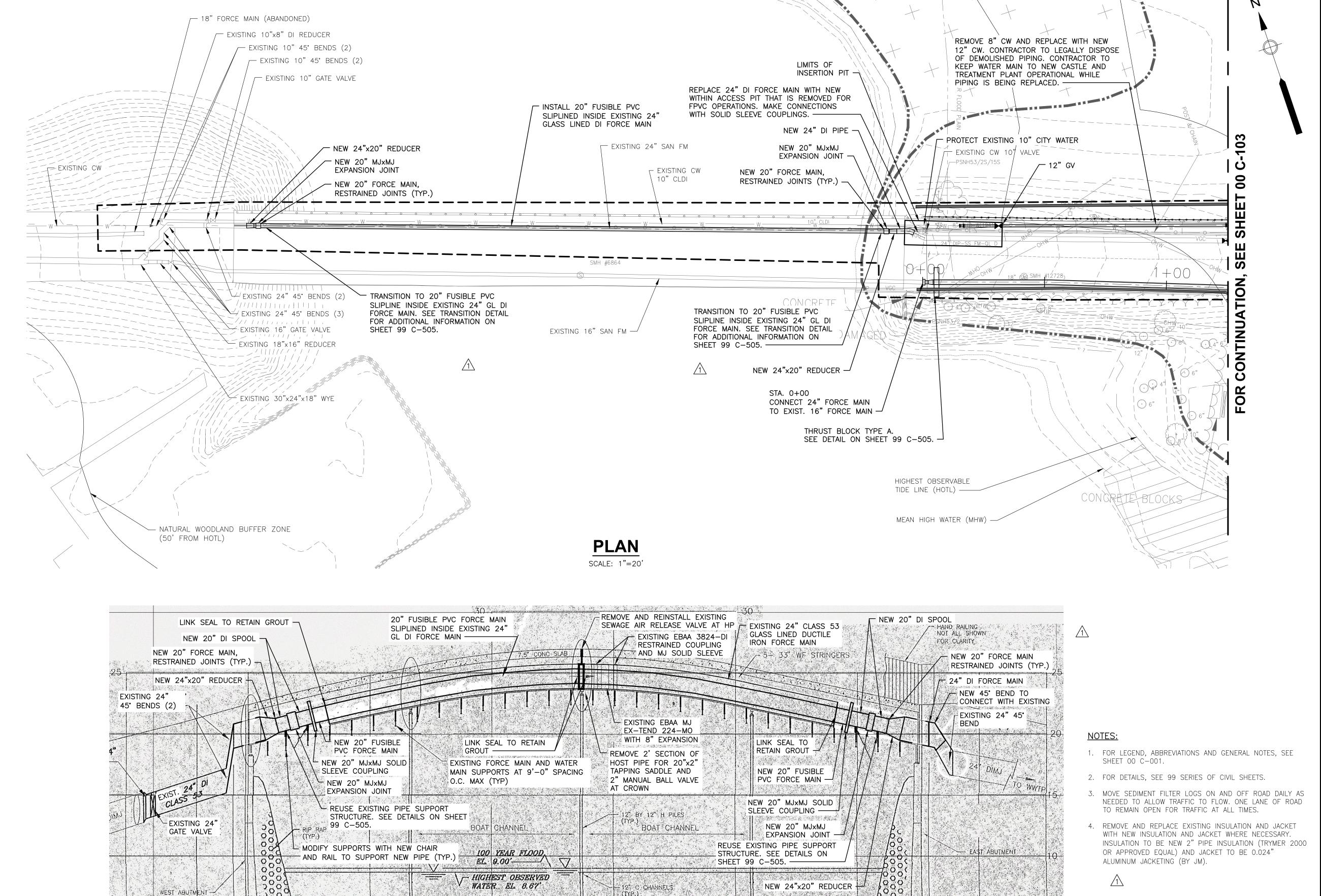
WITH MINIMUM 3 FT.

'CLEARANCE BETWEEN

PARALLEL TO NEW 24" FM

OUTSIDE WALLS OF PIPES.

DEG. DOWN) (TYP.) —



PROFILE

SCALE: 1"=20' (HORIZ.)

1"=4' (VERT.)

HORIZONTAL SCALE

VERTICAL SCALE

AECOM

PROJECT

PEIRCE ISLAND
FORCE MAIN AND
WATER MAIN
REPLACEMENT
Peirce Island, Portsmouth NH

OWNER

CITY OF PORTSMOUTH NEW HAMPSHIRE

680 Peverly Hill Road Portsmouth, NH 03801

ENGINEER

AECOM TECHNICAL SERVICES, INC. 250 APOLLO DRIVE CHELMSFORD, MA 01824 PHONE: (978) 905-2100 www.aecom.com

REGISTRATION



ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	9-22-21	ADDENDUM NO. 2
2	10-27-22	REV. FOR RECORD DRAW

PROJECT NUMBER

60649477

Designed By:	S. HE
Drawn By:	M. THIBODEAU
Dept Check:	C. BENZIGER
Proj Check:	E. MESERVE
Date:	AUGUST 2021
Scale:	AS NOTED

DISCIPLINE

CIVIL SHEET TITLE

RECORD DRAWING

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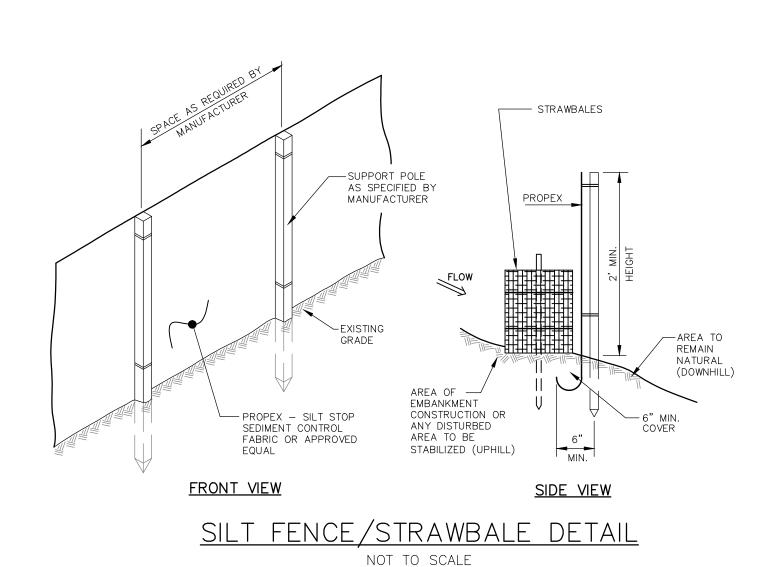
information and shall not be responsible for errors

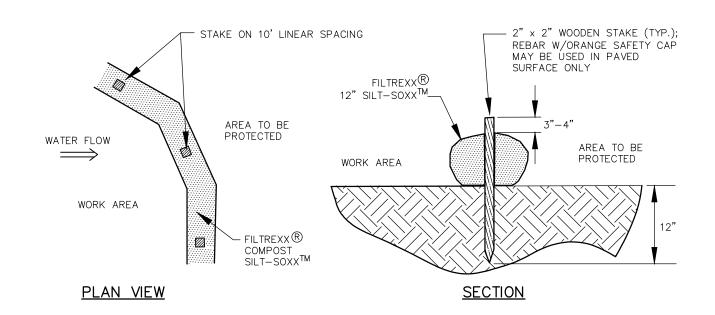
or omissions which may be incorporated as a result.

PIPING PLAN AND PROFILE PEIRCE ISLAND BRIDGE SLIPLINING SHEET NUMBER

STRAW BALE EROSION CONTROL

NTS 2-1.60.4 (REV. 09-29-95)

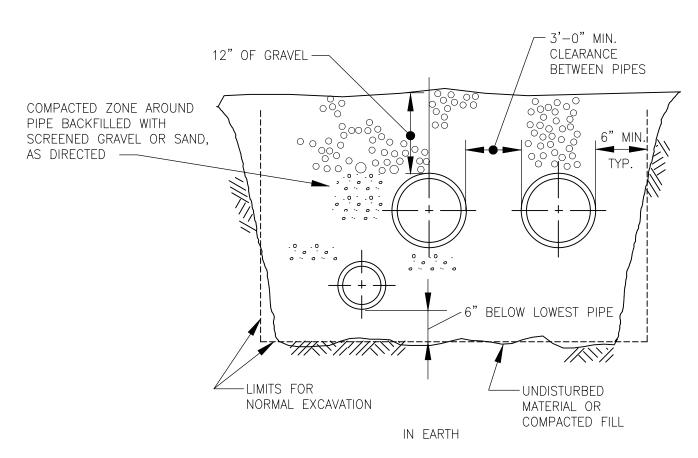




NOTES:

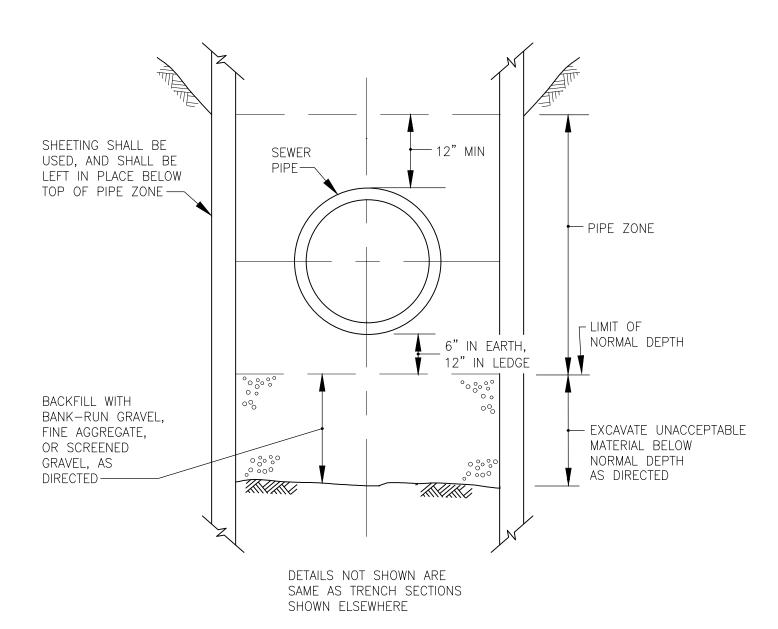
- 1. SILTSOXX MAY BY USED IN PLACE OF SILT FENCE OR OTHER SEDIMENT BARRIERS FOR AREAS OF REVETMENT CONSTRUCTION.
- 2. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
- 3. SILTSOXX COMPOST/SOIL/ROCK/SEED FILL MATERIAL SHALL BE ADJUSTED AS NECESSARY TO MEET THE REQUIREMENTS OF THE SPECIFIC APPLICATION.
- 4. ALL SEDIMENT TRAPPED BY SILTSOXX SHALL BE DISPOSED OF PROPERLY.

SEDIMENT FILTER LOG STAKING DETAIL NOT TO SCALE



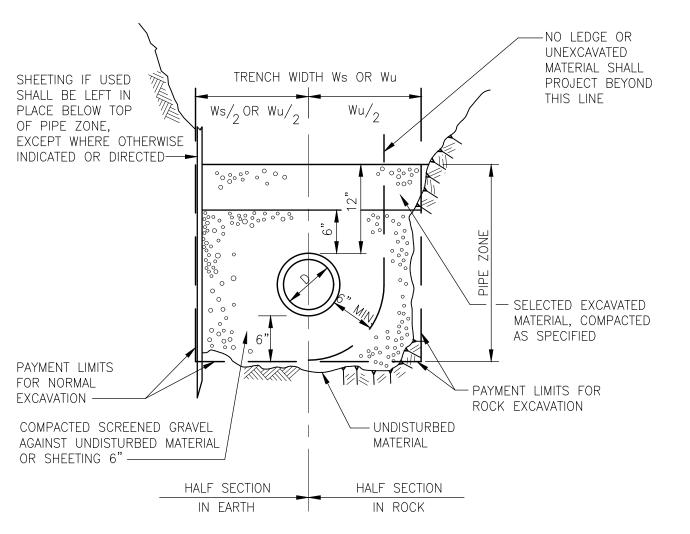
MULTIPLE PIPE TRENCH SECTION

NOT TO SCALE

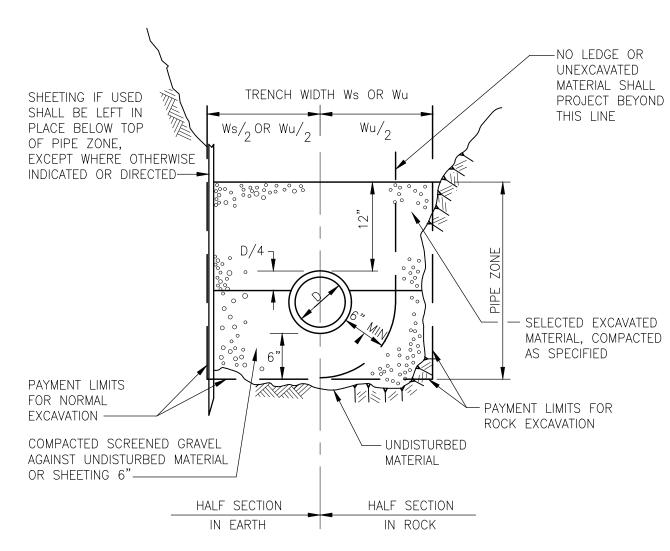


TRENCH SECTION IN UNACCEPTABLE MATERIAL

NOT TO SCALE 2-1.1.21 (REV. 03-15-95)



TRENCH SECTION FOR PIPE 18 INCH DIAMETER AND SMALLER NOT TO SCALE



TRENCH SECTION FOR DI OR PVC PIPE 20 INCH DIAMETER AND LARGER

NOT TO SCALE 2-1.1.2 (REV. 03-15-95)

TRENCH WII	DTH W:	s OR V	Vu
NOMINAL PIPE DIAMETER		H OF PIPE IN GROUND SU	
D	0 TO 12'	12' TO 20'	>20'
24" AND SMALLER	5'-0"	7'-0"	9'-0"
OVER 24"	D + 3' - 0"	D + 5'-0"	D + 7-0"
TWO 24"	2D + 6'-0"	2D + 8'-0"	2D + 10-0

- 1. PIPE TRENCHES MAY BE EXCAVATED WIDER THAN TRENCH WIDTH WS (SHEETED) OR Wu (UNSHEETED) ABOVE THE TOP OF PIPE ZONE.
- 2. TRENCHES SHALL NOT BE EXCAVATED BEYOND THE TRENCH WIDTH WU BELOW THE TOP OF PIPE ZONE.
- 3. SHEETING MUST BE USED IF EXCAVATION AND BACKFILL, BELOW NORMAL DEPTH, IS REQUIRED. SHEETING SHALL BE LEFT IN PLACE BELOW A LINE 1'-0" ABOVE THE TOP OF PIPE.

GENERAL NOTES FOR PIPE TRENCHES

NOT TO SCALE 2-1.1.11 (REV. 10-23-95)

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AECOM

PROJECT

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REPLACEMENT
Peirce Island, Portsmouth NH

OWNER

CITY OF PORTSMOUTH NEW HAMPSHIRE

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ENGINEER

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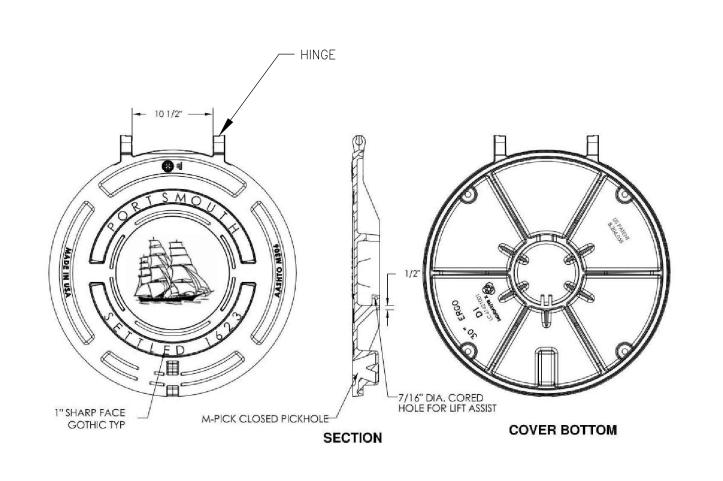
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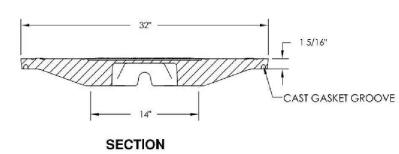
DISCIPLINE

CIVIL SHEET TITLE

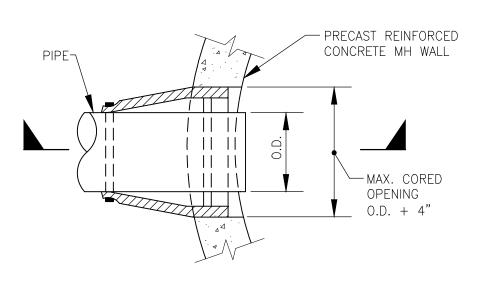
DETAILS I

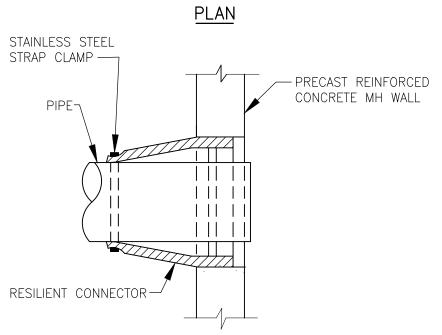
SHEET NUMBER





NOTES:





SECTION

WATERTIGHT RESILIENT CONNECTOR FOR CONNECTING PIPES TO PRECAST CONCRETE MANHOLES NOT TO SCALE

-4-3/4" DIA. TYPE 316

- STAINLESS STEEL

— MORTAR

BEVELED WASHER

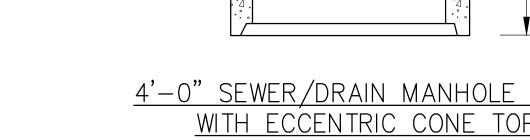
STAINLESS STEEL STUD

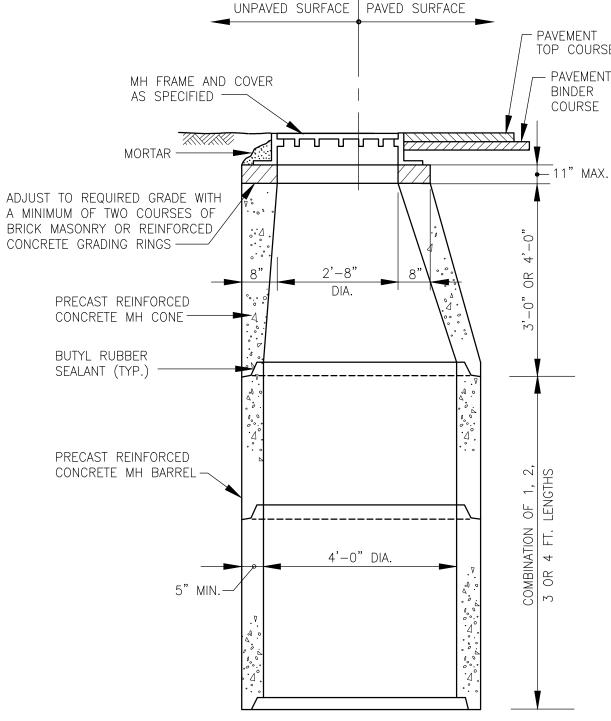
TYPE CONCRETE ANCHORS

- PRECAST REINFORCED

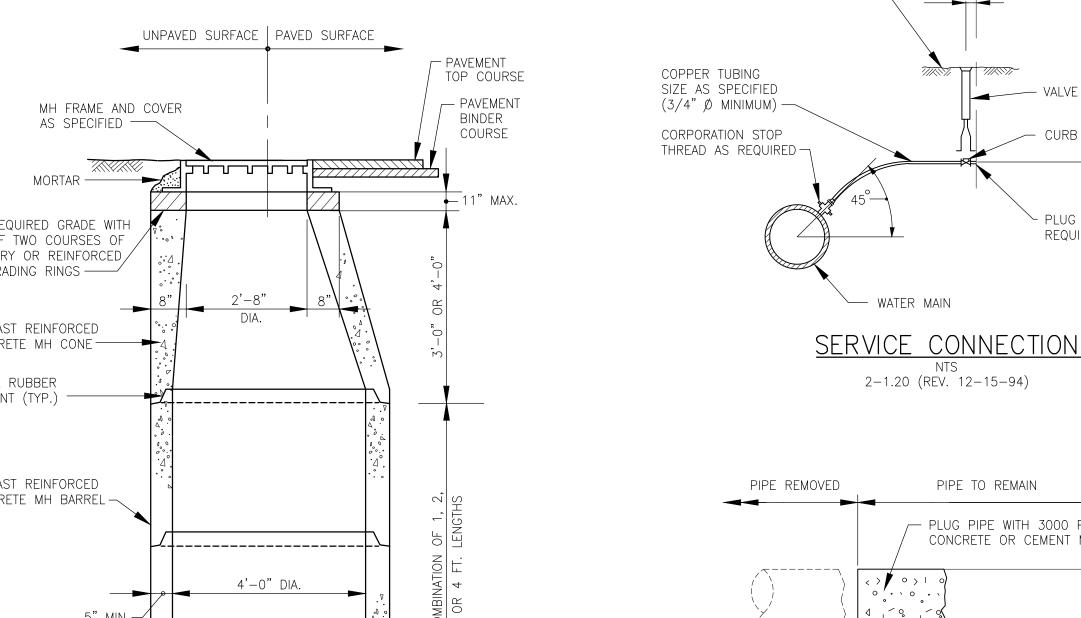
CONCRETE MH CONE

2-1.5.62.1 (REV. 4-5-96)





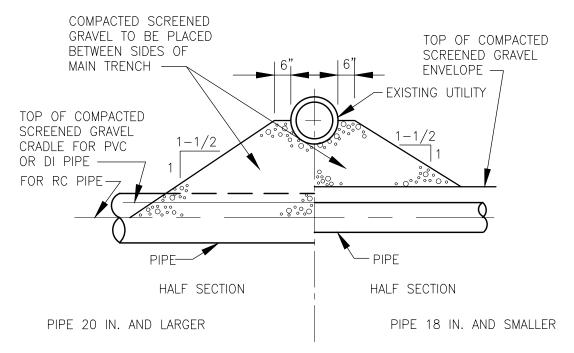
4'-0" SEWER/DRAIN MANHOLE RISER WITH ECCENTRIC CONE TOP NOT TO SCALE



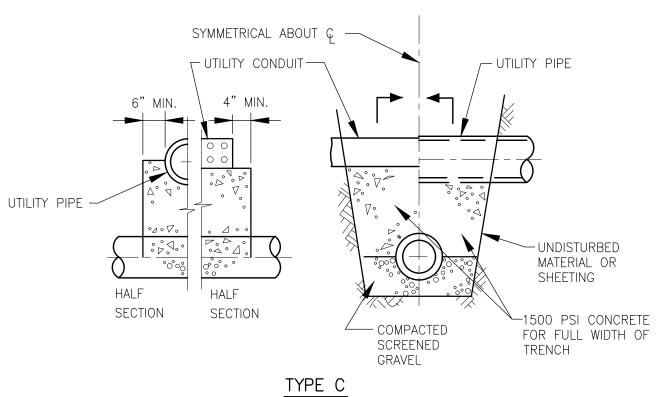
2. DEPTH OF PLUG (D) SHALL BE EQUAL TO DIAMETER OF PIPE (12" MIN.). TYPICAL PIPE PLUGGING DETAIL

NOTES:

FINISH GRADE -



TYPE A COMPACTED SCREENED



1. PLUG ALL ABANDONED PIPES AT THEIR TERMINATIONS.

NTS

-TRENCH BACKFILL TO BE GRAVEL CONTAINED BY PLACED AND COMPACTED SHEETING AND SIDES CONCURRENTLY TO SAME ELEVATION ON EACH SIDE OF TRENCH ---EXISTING UTILITY — SUITABLE SHEETING AND BRACING TO BE PLACED PROVIDE 1" MINIMUM ACROSS MAIN TRENCH CLEARANCE BETWEEN EXCAVATION AND CUT OFF SHEETING AND TOP AND LEFT IN PLACE OF PIPE -TOP OF COMPACTED SCREENED GRAVEL TOP OF COMPACTED CRADLE FOR PVC OR SCREENED GRAVEL DI PIPE — ENVELOPE HALF SECTION HALF SECTION RC PIPE PVC OR DI PIPE 18 IN. AND SMALLER PVC PIPE 21 IN. AND LARGER DI PIPE 20 IN. AND LARGER

TYPICAL SUPPORTS FOR UTILITIES

TYPE B

NOT TO SCALE

RECORD DRAWING

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AECOM

PROJECT

- PROPERTY LINE

- VALVE BOX

CURB STOP

PLUG AS

PIPE TO REMAIN

PLUG PIPE WITH 3000 PSI

CONCRETE OR CEMENT MORTAR

REQUIRED

PEIRCE ISLAND FORCE MAIN AND WATER MAIN REPLACEMENT Peirce Island, Portsmouth NH

OWNER

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ENGINEER

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Dept Check:	C. BENZIGER
Proj Check:	E. MESERVE
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Scale:	AS NOTED

DISCIPLINE

CIVIL SHEET TITLE

DETAILS II

SHEET NUMBER

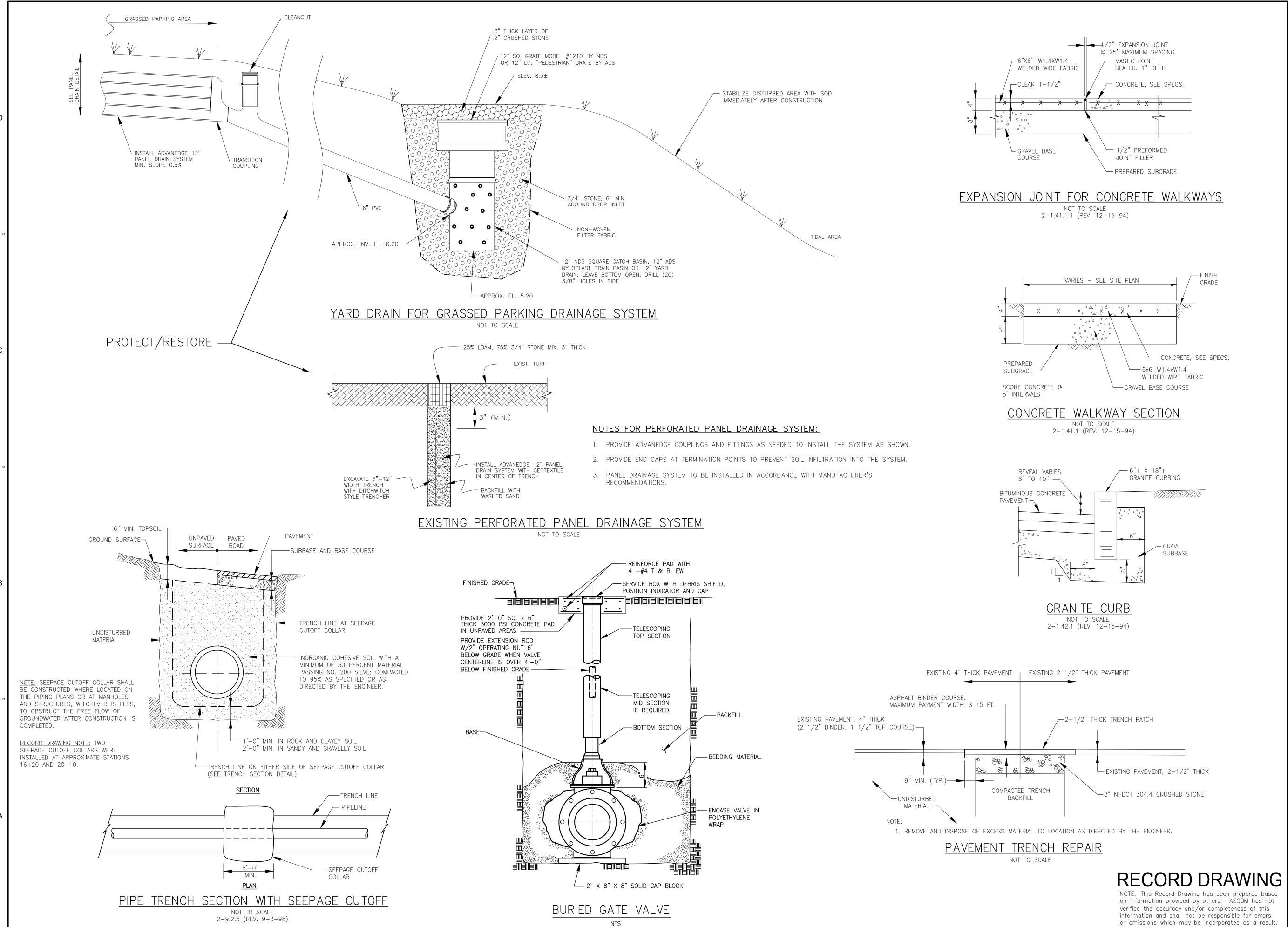
99 C-502



-4-3/4" DIA. TYPE 316 STAINLESS STEEL STUD TYPE CONCRETE ANCHORS - STAINLESS STEEL BEVELED WASHER - PRECAST REINFORCED CONCRETE MH FLAT SLAB TOP

ANCHOR BOLT DETAILS FOR FRAMES FOR MANHOLE TOPS NOT TO SCALE

2-1.8 (REV. 03-15-95)



PROJECT

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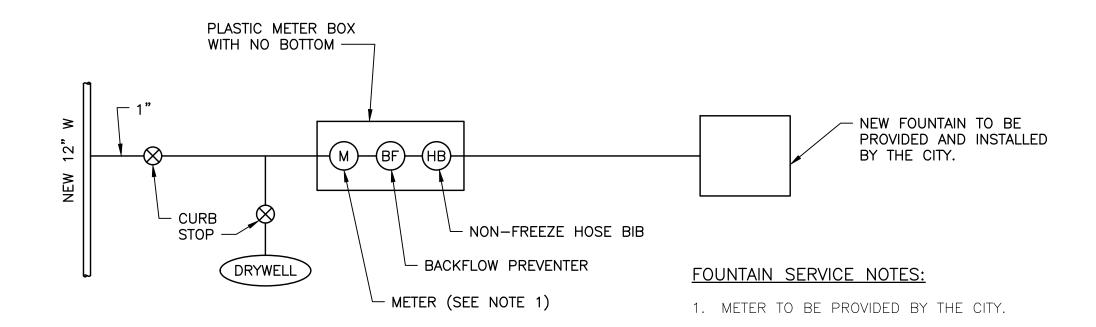
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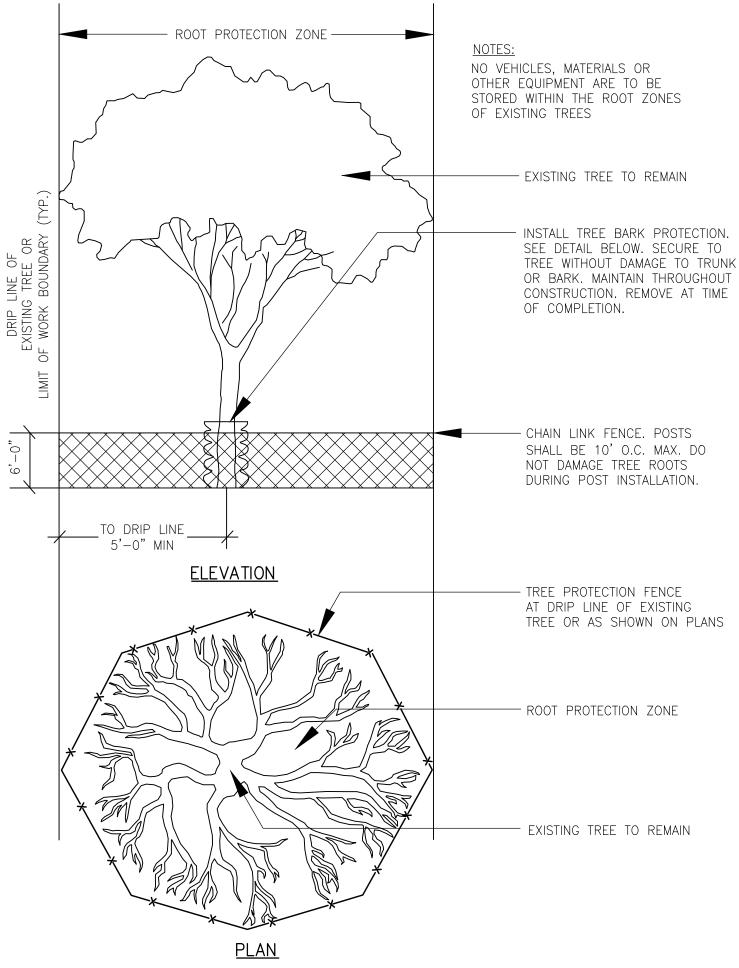
DETAILS III

SHEET NUMBER



FOUNTAIN SERVICE CONNECTION SCHEMATIC

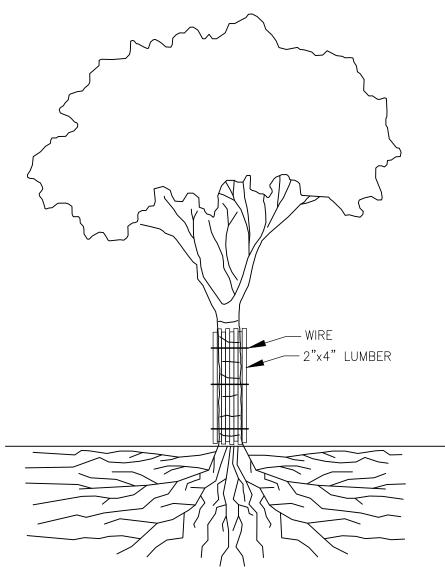
SCALE: NONE



NOTES:

- 1. THIS DETAIL APPLIES FOR THE PROTECTION OF ALL TREES WITHIN LIMIT OF WORK.
- 2. NO VEHICLES, MATERIALS OR OTHER EQUIPMENT ARE TO BE STORED WITHIN THE ROOT ZONES OF EXISTING TREES.

TREE PROTECTION



OTES:

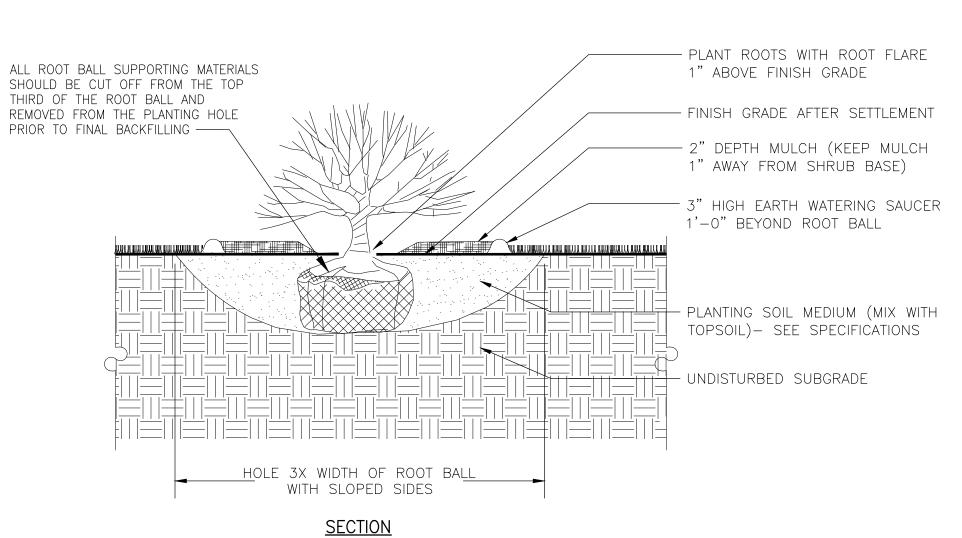
- 1. THIS DETAIL APPLIES FOR THE PROTECTION OF ALL TREES WITHIN LIMIT OF WORK.
- 2. IN SITUATIONS WHERE A PROTECTED TREE REMAINS IN THE IMMEDIATE AREA OF INTENDED CONSTRUCTION AND THE TREE MAY BE IN DANGER OF BEING DAMAGED BY CONSTRUCTION EQUIPMENT OR OTHER ACTIVITY, THE CONTRACTOR OR SUBCONTRACTOR SHALL PROTECT THE TREE WITH 2"x4" LUMBER ENCIRCLED WITH WIRE OR OTHER MEANS THAT DO NOT DAMAGE THE TREE. THE INTENT IS TO PROTECT THE TRUNK OF THE TREE AGAINST INCIDENTAL CONTACT BY LARGE CONSTRUCTION EQUIPMENT.

TREE BARK PROTECTION

NTS

LANDSCAPING NOTES:

- 1. THE CONTRACTOR SHALL LOCATE AND VERIFY ALL UTILITIES PRIOR TO STARTING WORK. CONTRACTOR TO VERIFY THAT ADEQUATE DRAINAGE EXISTS PRIOR TO PLANTING.
- 2. ALL MATERIAL SHALL CONFORM TO THE GUIDELINES ESTABLISHED BY THE "AMERICAN STANDARD FOR NURSERY STOCK", PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
- 3. ALL PLANT MATERIALS ARE SUBJECT TO THE APPROVAL OF THE ENGINEER AT THE NURSERY AND AT THE SITE. ALL TREES SHALL HAVE A SINGLE LEADER UNLESS SPECIFIED OTHERWISE. NO UN-APPROVED SUBSTITUTIONS WILL BE ACCEPTED. PLANT SPECIES AND CULTIVAR, SIZE AND QUANTITY SHALL NOT CHANGE WITHOUT APPROVAL OF LANDSCAPE ARCHITECT.
- 4. LOCATION OF ALL TREES AND SHRUBS SHALL BE MARKED FOR THE APPROVAL OF THE PROJECT ENGINEER. MARKING SHALL BE COMPLETED THE DAY PRIOR TO COMMENCEMENT OF PLANTING.
- 5. ALL PLANTS SHALL BEAR THE SAME RELATIONSHIP TO FINISHED GRADE AS ORIGINAL GRADE BEFORE DIGGING. PLANT TO BE TRANSPLANTED SHALL BE DUG CAREFULLY, WITH ADEQUATE ROOT—BALLS AND PRUNED ACCORDING TO ANA STANDARD PRACTICE. TREES WITH ROOT FLARE COVERED BY MORE THAN 1.5" OF SOIL WILL BE REJECTED PRIOR TO INSTALLATION. SET PLANTS
- 6. ALL TREES AND SHRUBS SHALL BE BALLED IN BURLAP OR CONTAINERIZED, UNLESS SPECIFIED OTHERWISE. NO ROOT—BOUND CONTAINER GROWN STOCK WILL BE ACCEPTED. ALL PLASTIC ROOT WRAPPING AND METAL WIRE BASKETS SHALL BE CAREFULLY REMOVED AT THE TIME OF PLANTINGS, EXCEPT WIRE THAT IS DIRECTLY UNDER THE ROOT—BALLS.
- 7. AFTER CONDUCTING SOIL TESTS WITHIN PLANTING AREAS, THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING PLANTING TOPSOIL AND/OR AMENDMENTS FOR BACKFILLING AT ALL PLANTS, AS NECESSARY. SUBMIT WRITTEN CONTENT ANALYSIS TO OWNER/REP. FOR APPROVAL. ADD 'PHC HEALTHY START 3-4-3' AND 'MYCOR TREE OR PLANT SAVER 4-7-4', OR EQUAL. FOLLOW MANUFACTURER'S GUIDELINES. THE PLANTING TOPSOIL IS TO BE SANDY LOAM MODIFIED WITH ORGANIC COMPONENT TO HAVE AT LEAST 4% ORGANIC MATTER BUT NOT MORE THAN 8% ORGANIC MATTER, DRY WEIGHT BASIS, A COMPACTED MINIMUM INFILTRATION RATE OF 2.5 CM/HR, PH RANGE OF 5.5 TO 6.5, AND NO COARSE FRAGMENTS OVER 2.5 CM IN SIZE.
- 8. CONTRACTOR SHALL PLACE 2" TO 3" OF FINE SHREDDED, AGED 2 YEARS, DARK BROWN PINE BARK MULCH THROUGHOUT THE BED AREAS. DO NOT PLACE MULCH IN CONTACT WITH TREE TRUNK. SUBMIT SAMPLE OF MULCH FOR APPROVAL.
- 9. ALL EVERGREEN PLANTS SHALL BE SPRAYED WITH AN ANTI-DESICCANT THE FIRST WEEK OF NOVEMBER, THE FIRST WINTER FOLLOWING PLANTING.
- 10. FLOOD PLANTS THOROUGHLY ONCE IMMEDIATELY AFTER PLANTING AND TWICE DURING THE FIRST TWENTY-FOUR HOUR PERIOD AFTER PLANTING.
- 11. EXTREME CARE SHALL BE TAKEN NOT TO DISTURB EXISTING PLANT MATERIALS. ANY PLANT INJURED OR DESTROYED SHALL BE REPLACED WITH A PLANT OF EQUAL OR GREATER SIZE AND SPECIES AT THE CONTRACTORS EXPENSE.
- 12. IF NECESSARY, NEW PLANTING SHOULD BE PLACED OUTSIDE OF THE CRITICAL ROOT ZONE (CRZ) OF EXISTING TREES. CRZ RADIUS EQUALS ONE—FOOT TIMES THE DBH (DIAMETER—AT—BREAST—HEIGHT) OF THE TREES, MEASURED FROM THE TREE TRUNK. TREE FENCING IS NECESSARY TO PROTECT EXISTING VEGETATION TO BE PRESERVED FROM BOTH FOOT AND VEHICULAR TRAFFIC. TREE FENCING TO BE LOCATED AT THE EDGE OF THE CRZ.
- 13. DO NOT WRAP TRUNK OF TREE.
- 14. THE CONTRACTOR SHALL MAINTAIN THE PLANTS FOR A MINIMUM OF 90 DAYS FOLLOWING INSTALLATION, OR LONGER IF CONTRACTED BY THE OWNER. BEFORE THE END OF THE 90—DAY PERIOD, THE CONTRACTOR SHALL PROVIDE A WRITTEN MAINTENANCE OUTLINES TO THE OWNERS AND THE CONTRACTOR SHALL BE AVAILABLE TO ANSWER QUESTIONS OR CONCERNS AT THAT TIME.
- 15. THE CONTRACTOR SHALL GUARANTEE ALL PLANTS FOR A MINIMUM OF ONE YEAR FROM FINAL ACCEPTANCE BY OWNER/REP. THE CONTRACTOR SHALL REPLACE ANY DEAD MATERIALS AT HIS/HER OWN EXPENSE.



NOTES:

- 1. SCARIFY SOILS CONTINUOUSLY TO A DEPTH OF 4" AT INTERFACE BETWEEN SOIL TYPES AND LIFTS TO PROMOTE BLENDING OF SOILS.
- 2. SEE SHEET 00 C-107 FOR PLANT LIST AND PLAN FOR SPACING.
- 3. ALL PLANTING TO BE DONE AS PER ANSI A300 (PART 6) 2012.

SHRUB PLANTING

NOT TO SCALE

RECORD DRAWING

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AECOM

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Peirce Island, Portsmouth NH

OWNER

CITY OF PORTSMOUTH NEW HAMPSHIRE

680 Peverly Hill Road Portsmouth, NH 03801

ENGINEER

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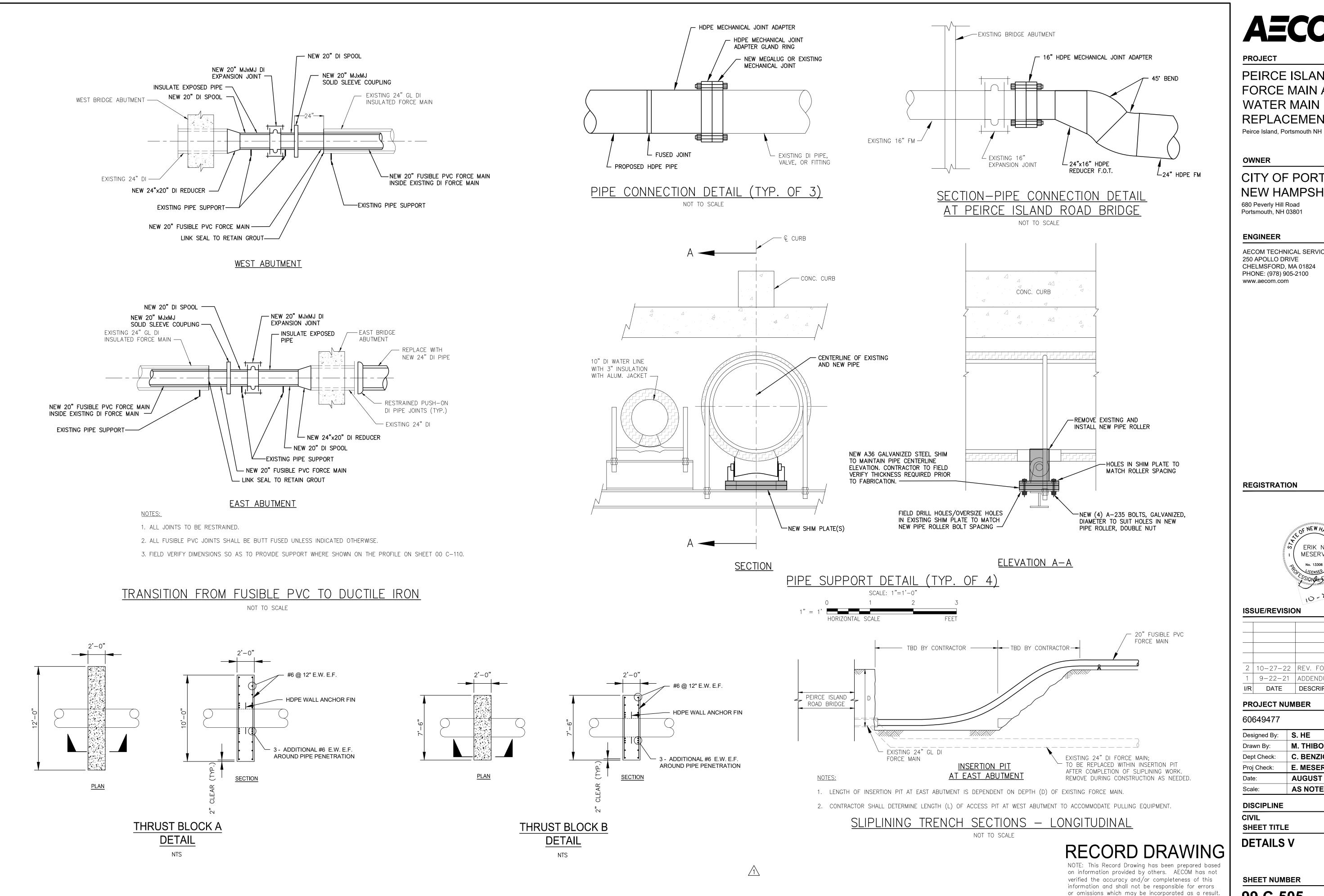
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DISCIPLINE

CIVIL SHEET TITLE

DETAILS IV

SHEET NUMBER



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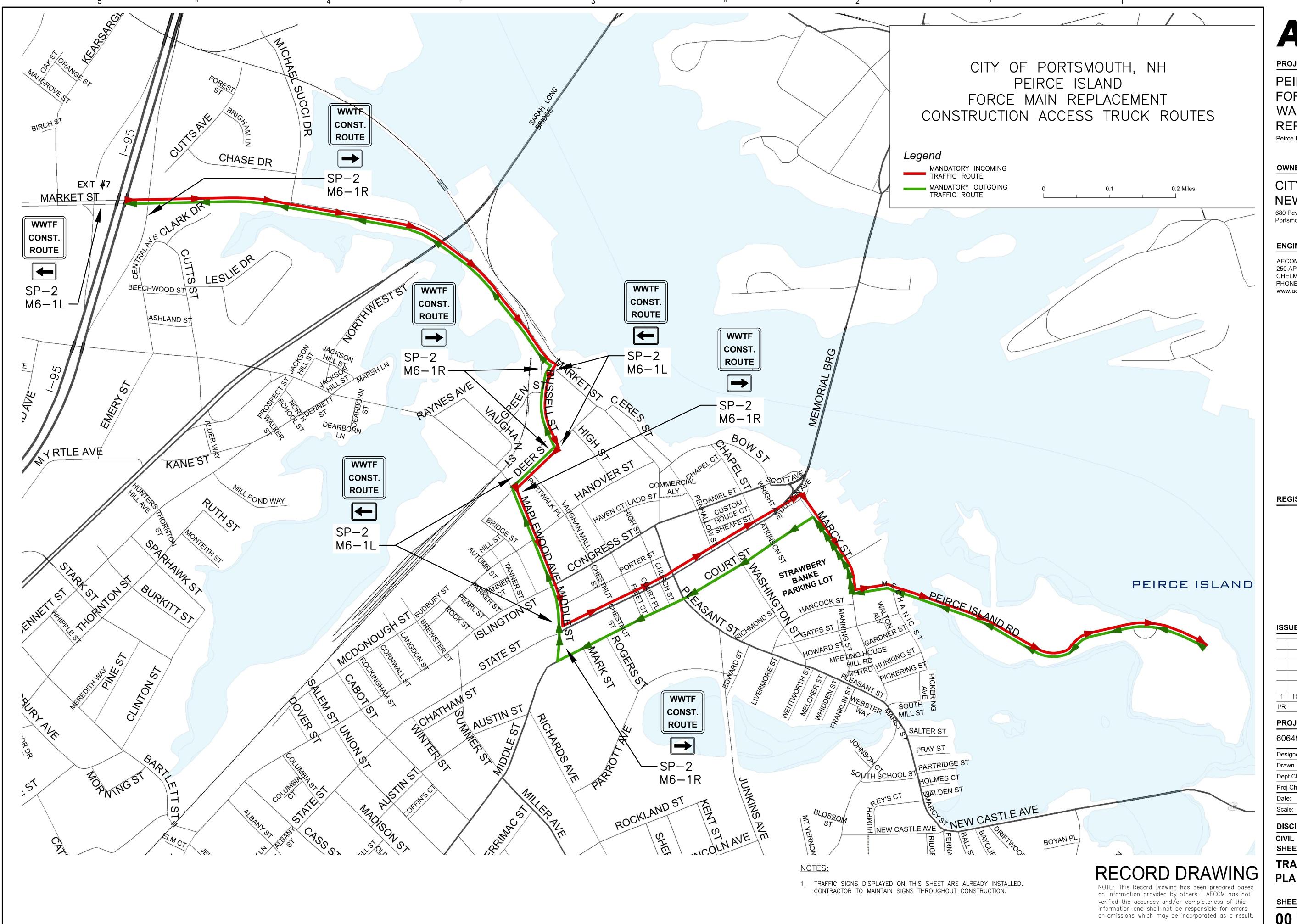
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CIVIL SHEET TITLE

DETAILS V

SHEET NUMBER



PROJECT

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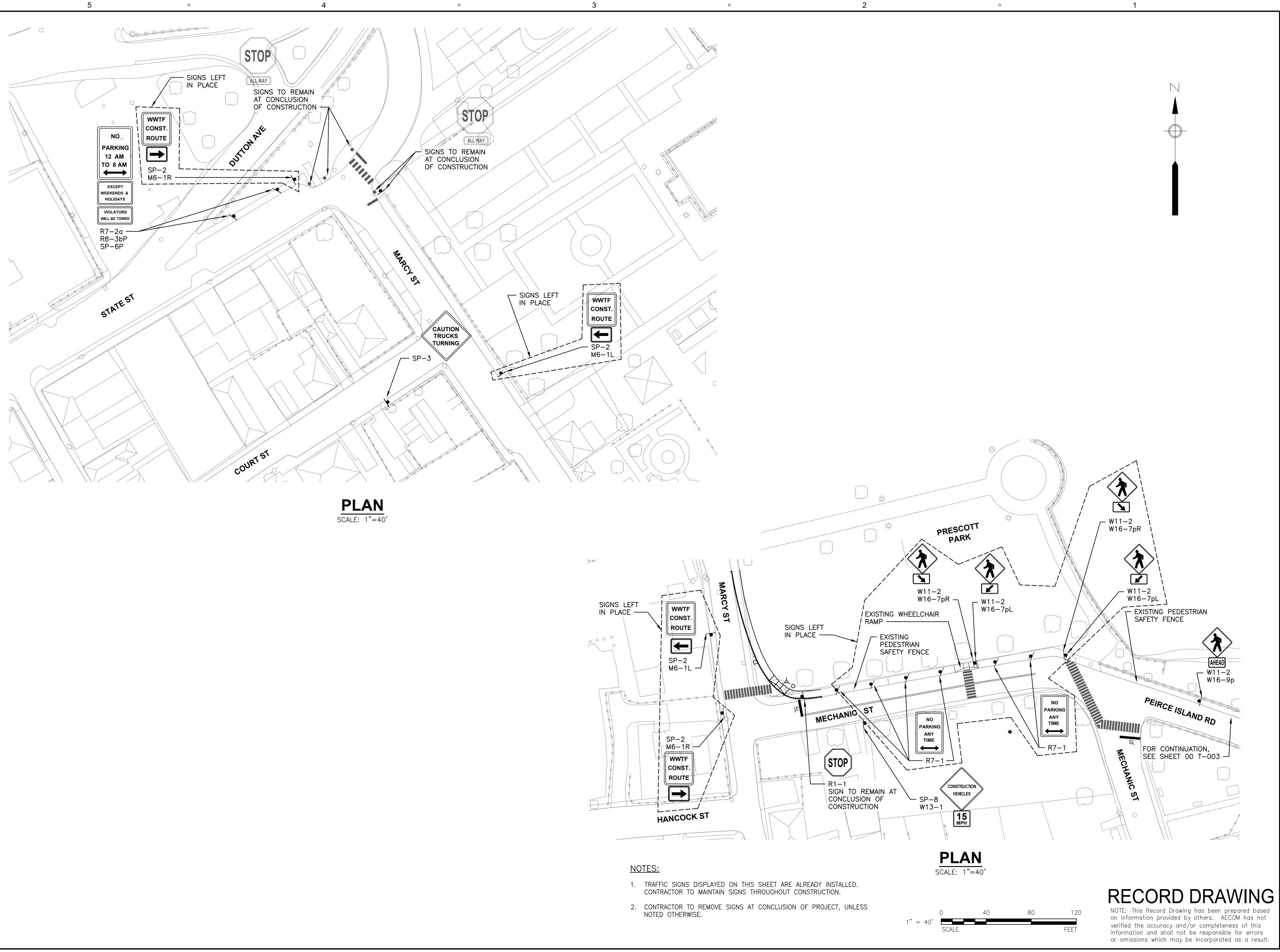
DISCIPLINE

SHEET TITLE

TRAFFIC MANAGEMENT **PLAN I**

SHEET NUMBER

00 T-001



PROJECT

PEIRCE ISLAND FORCE MAIN AND WATER MAIN REPLACEMENT

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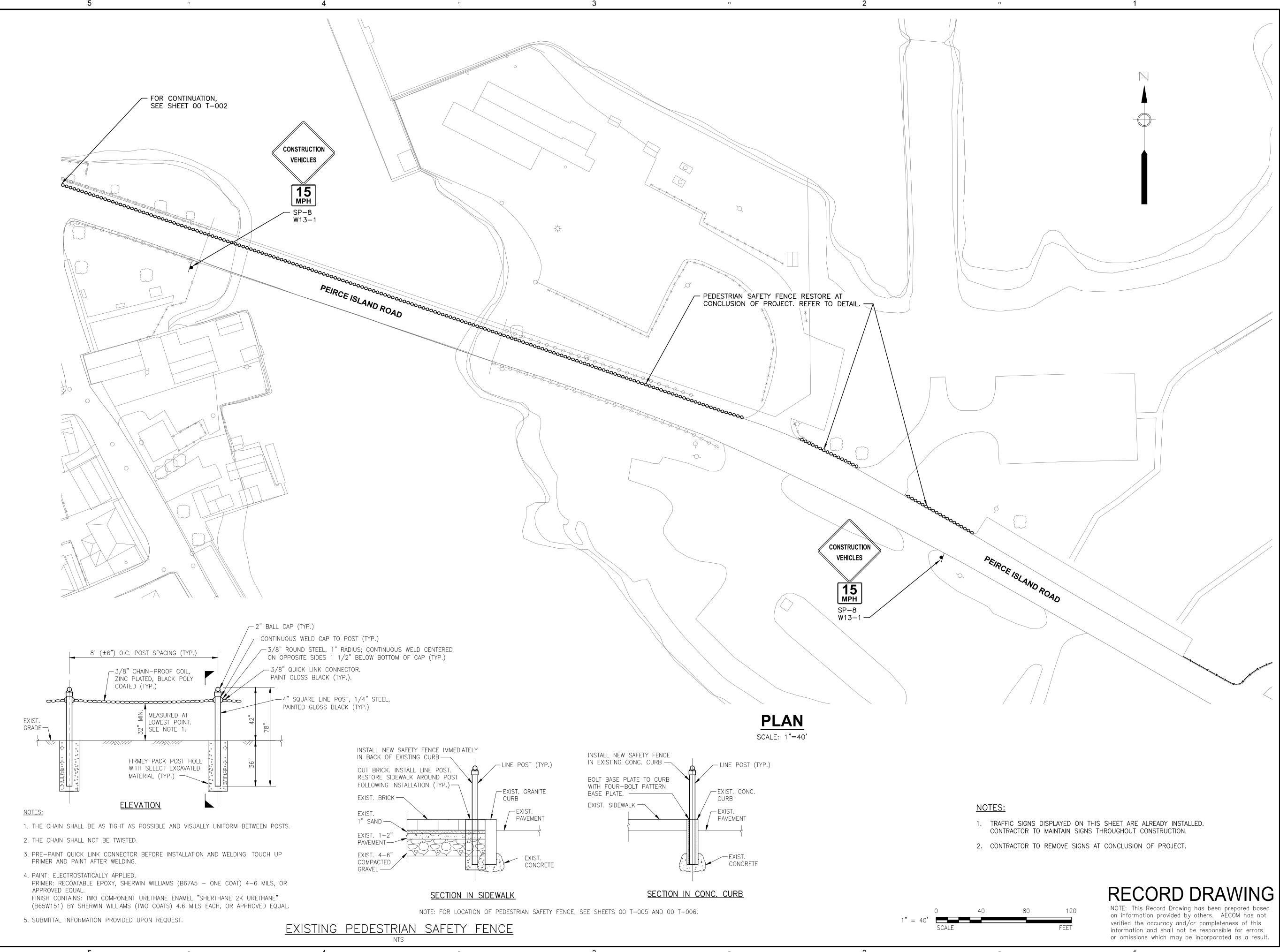
DISCIPLINE

CIVIL SHEET TITLE

TRAFFIC MANAGEMENT PLAN II

SHEET NUMBER

00 T-002



PROJECT

PEIRCE ISLAND FORCE MAIN AND WATER MAIN REPLACEMENT

Peirce Island, Portsmouth NH

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CITY OF PORTSMOUTH NEW HAMPSHIRE

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CIVIL SHEET TITLE

TRAFFIC MANAGEMENT PLAN III

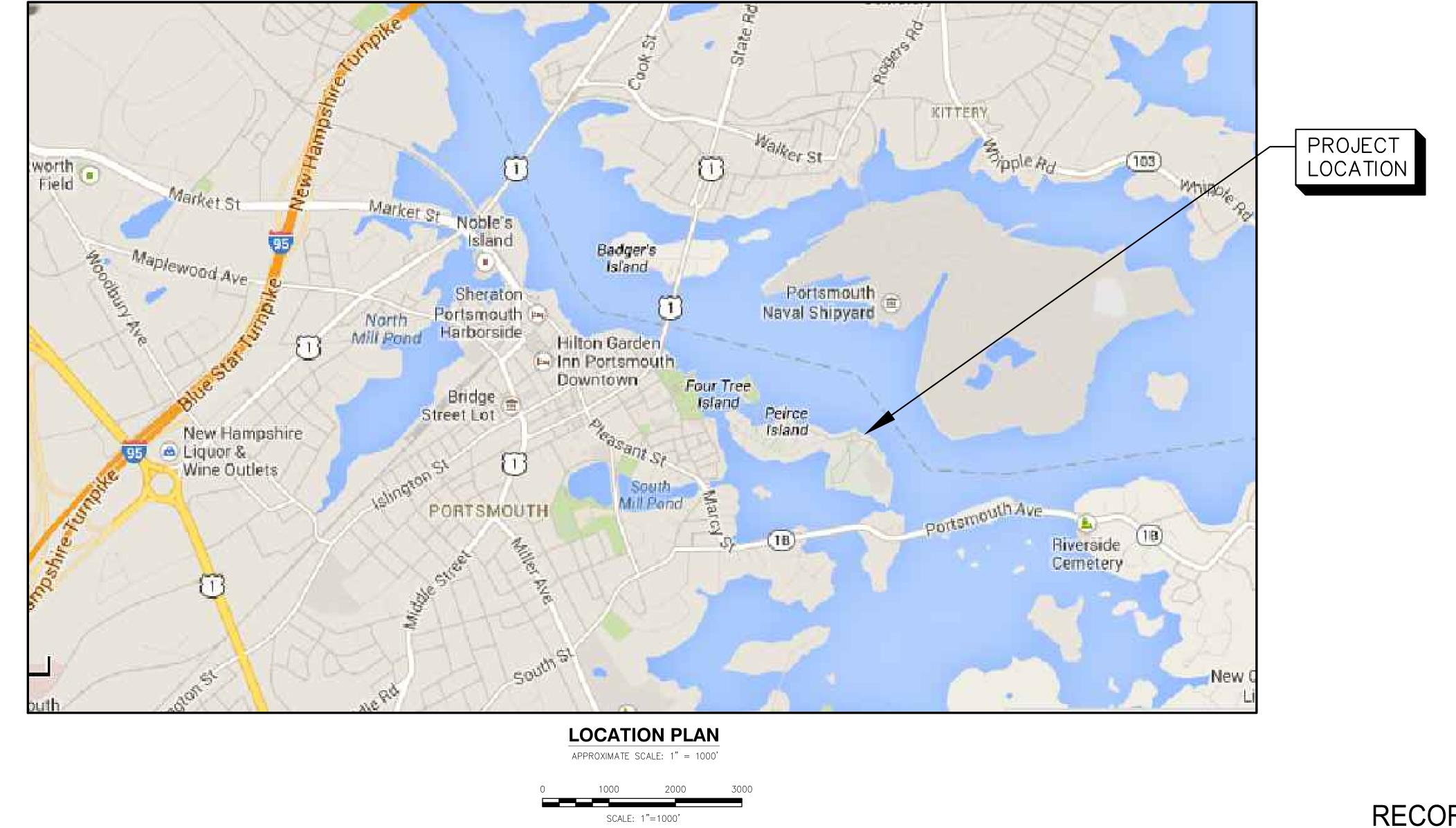
SHEET NUMBER

00 T-003

CITY OF PORTSMOUTH, NEW HAMPSHIRE

PEIRCE ISLAND WASTEWATER TREATMENT FACILITY UPGRADE FEBRUARY 2016 CWSRF CS-330106-16

VOLUME I OF II



RECORD DRAWING

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CHELMSFORD, MA 01824
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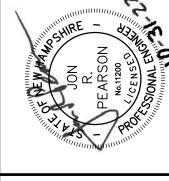
2 10/2022 ENM JRP REVISED FOR BID

1 2/2016 ENM JRP REVISED FOR BID

MARK DATE MADE BY CHECKED

REVISIONS

REVISIONS



PEIRCE ISLAND WWTF UPGRADE
COVER SHEET AND LOCUS PLAN

PROJECT NO: 60301525

CAD DWG FILE: 00 G-001

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DEPT CHECK: C. BENZIGER

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RECORD DRAWING

on information provided by others. AECOM has not verified the accuracy and/or completeness of this information and shall not be responsible for errors or omissions which may be incorporated as a result.

DEPT CHECK: C. BENZIGER PROJ CHECK: E. MESERVE MARCH 2022

PROJECT NO: **60301525**

DESIGNED BY: **H. FRANZ**

DRAWN BY: **N. YEE**

CAD DWG FILE: 00 G-002

00 G-002

AS NOTED

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EXISTING GRIT BUILDING EXISTING PRIMARY CLARIFIERS AND PRIMARY CLARIFIER

INFLUENT DISTRIBUTION BOX

EXISTING PRIMARY CLARIFIER EFFLUENT DISTRIBUTION BOX

50 SOLIDS BUILDING

GRAVITY THICKENER No. 2 53

55 EXISTING GRAVITY THICKENER No. 1

60 BAF BUILDING

EXISTING CHLORINE CONTACT TANK

OPERATIONS/LAB BUILDING

ELECTRICAL BUILDING

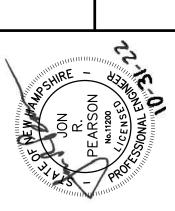
STANDARD DETAILS

SHEET DESIGNATION LEGEND - STRUCTURE NUMBER — DISCIPLINE

RECORD DRAWING

on information provided by others. AECOM has not verified the accuracy and/or completeness of this information and shall not be responsible for errors or omissions which may be incorporated as a result.

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PROJECT NO: **60301525** CAD DWG FILE: 00 G-003 DESIGNED BY: H. FRANZ

DRAWN BY: N. YEE DEPT CHECK: C. BENZIGER PROJ CHECK: E. MESERVE MARCH 2022

00 G-003

AS NOTED

SHEET NO. TITLE

INSTRUMENTATION

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LEGEND AND GENERAL NOTES
            COMMUNICATIONS FIBER OPTIC LOOP DIAGRAM
            CONTROL SYSTEM DATA NETWORK 1
00 DI-603
            CONTROL SYSTEM DATA NETWORK 2
            CONTROL SYSTEM DATA NETWORK 3
10 DI-601
            HEADWORKS SCREENING
            HEADWORKS ODOR CONTROL OC-1
10 DI-602
10 DI-603
            HEADWORKS MISC SIGNALS
20 DI-601
            GRIT CHAMBER
            GRIT CLASSIFIER AND FEED PUMPS
            THICKENED SLUDGE PUMPS AND AERATED SLUDGE TANKS 3 & 4
            GRIT BLOWERS
20 DI-604
            FERRIC CHLORIDE BULK TANKS & TRANSFER PUMPS
            FERRIC CHLORIDE METERING PUMPS
            SETTLING POLYMER SYSTEM
            GRIT BUILDING MISC SIGNALS
20 DI-608
35 DI-601
            PRIMARY CLARIFIERS
            PRIMARY CLARIFIER EFFLUENT DISTRIBUTION BOX
50 DI-601
            SECONDARY INFLUENT WET WELL & INFLUENT PUMPS
            PRIMARY GRINDERS & SLUDGE PUMPS
            THICKENED SLUDGE PUMPS 1 & 2
             SCREW PRESS FEED PUMPS AND SLUDGE TANKS 1 & 2
            SCREW PRESS
50 DI-605
50 DI-606
            CAKE CONVEYOR
             SAMPLE SYSTEM PRIMARY CLARIFIER
            SLUDGE BLOWERS
50 DI-609
            SANITARY PUMP STATION 1
            ODOR CONTROL SYSTEM 2
            CAUSTIC SODA METERING PUMPS
50 DI-611
            POTASSIUM PERMANGANATE SYSTEM
            SOLIDS HANDLING POLYMER SYSTEM
            SOLIDS BUILDING MISC SIGNALS
50 DI-614
             GRAVITY THICKENER 2
            TEMPORARY PRIMARY SLUDGE PUMP P&ID
53 DIT-001
            GRAVITY THICKENER
            FLASH MIXING PUMPS
            MICRO C METERING PUMPS
60 DI-602
             BAF BUILDING MISC SIGNALS
            CHLORINE CONTACT TANK AND ASSOCIATED DISTRIBUTION BOXES
            CCT ANALYZER SHED
80 DI-602
            GRAVITY THICKENER DILUTION WATER PUMPS
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SANITARY PUMP STATION 2

SODIUM HYPOCHLORITE METERING PUMPS

OPERATIONS/LAB BUILDING MISC ALARMS

SODIUM BISULFITE METERING PUMPS

80 DI-603

80 DI-604

OLICET NO TITLE

	SHEET NO.	<u>TITLE</u>
	ELECTRIC	<u>CAL</u>
	00 E-001	SYMBOLS, LEGEND AND GENERAL NOTES
\wedge	00 ED-001	ELECTRICAL SITE PLAN DEMOLITION
2	00 ED-002	FILTER & CONTROL BUILDING DEMOLITION SINGLE LINE DIAGRAM
	00 ED-003	FILTER BUILDING DEMOLITION SINGLE LINE DIAGRAM
	00 E-002	ELECTRICAL SITE PLAN I
	00 E-003	ELECTRICAL SITE PLAN II
	00 E-004	GROUNDING AND LIGHTNING PROTECTION SITE PLAN
	00 E-005	LIGHTING SITE PLAN
	00 E-006	OVERALL SINGLE LINE DIAGRAM
	00 E-601	CONDUIT AND WIRE SCHEDULE
	00 E-602	AREA CLASSIFICATION SCHEDULE
	00 E-603	LIGHTING AND SYSTEMS SCHEDULES
	00 E-604	OVERALL COMMUNICATIONS RISER DIAGRAM
	00 E-605	OVERALL FIRE ALARM SYSTEM RISER DIAGRAM
	00 E-606	DUCT BANK SECTIONS I
	00 E-607	DUCT BANK SECTIONS II
	10 E-001	HEADWORKS BUILDING SINGLE LINE
	10 E-101	HEADWORKS BUILDING UPPER LEVEL POWER PLAN
	10 E-102	HEADWORKS BUILDING ROOF POWER PLAN
	10 E-103	HEADWORKS BUILDING UPPER LEVEL SYSTEMS PLAN
	10 E-104	HEADWORKS BUILDING ROOF SYSTEMS PLAN
	10 E-601	HEADWORKS BUILDING PANELBOARD SCHEDULES
	10 E-602	HEADWORKS BUILDING RISER DIAGRAMS
	10 E-603	HEADWORKS BUILDING WIRING DIAGRAMS

20 ED-001 GRIT BUILDING DEMOLITION SINGLE LINE DIAGRAM GRIT BUILDING FOUNDATION DEMOLITION PLAN GRIT BUILDING GRADE DEMOLITION PLAN GRIT BUILDING NEW SINGLE LINE DIAGRAM GRIT BUILDING LOWER POWER PLAN

20 E-101 20 E-102 GRIT BUILDING UPPER POWER PLAN 20 E-103 GRIT BUILDING ROOF POWER PLAN GRIT BUILDING LOWER SYSTEMS PLAN GRIT BUILDING UPPER SYSTEMS PLAN GRIT BUILDING ROOF SYSTEMS PLAN GRIT BUILDING PANELBOARD SCHEDULES 20 E-601

20 E-602 GRIT BUILDING RISER DIAGRAMS 20 E-603 GRIT BUILDING RISER DIAGRAMS II 20 E-604 GRIT BUILDING WIRING DIAGRAMS 20 E-605 GRIT BUILDING WIRING DIAGRAMS I

PRIMARY CLARIFIERS POWER AND SYSTEMS PLAN PRIMARY CLARIFIERS RISER DIAGRAM PRIMARY CLARIFIER EFFLUENT DISTRIBUTION BOX POWER PLAN

50 ED-001 CONTROL BUILDING DEMOLITION SINGLE LINE DIAGRAM 50 E-001 SOLIDS BUILDING NEW SINGLE LINE DIAGRAM SOLIDS BUILDING POWER PLAN LOWER LEVEL I 50 E-101 50 E-102

SOLIDS BUILDING POWER PLAN LOWER LEVEL II 50 E-103 SOLIDS BUILDING POWER PLAN UPPER LEVEL I 50 E-104 SOLIDS BUILDING POWER PLAN UPPER LEVEL II 50 E-105 SOLIDS BUILDING POWER PLAN SLUDGE TRUCK BAY LEVEL SOLIDS BUILDING POWER PLAN ROOF LEVEL I 50 E-106

50 E-107 SOLIDS BUILDING POWER PLAN ROOF LEVEL II 50 E-108 SOLIDS BUILDING SYSTEMS PLAN LOWER LEVEL I 50 E-109 SOLIDS BUILDING SYSTEMS PLAN LOWER LEVEL II SOLIDS BUILDING SYSTEMS PLAN UPPER LEVEL I 50 E-110 50 E-111 SOLIDS BUILDING SYSTEMS PLAN UPPER LEVEL II

SOLIDS BUILDING SYSTEMS PLAN SLUDGE TRUCK BAY LEVEL

SOLIDS BUILDING SYSTEMS PLAN ROOF LEVEL I 50 E-114 SOLIDS BUILDING SYSTEMS PLAN ROOF LEVEL II 50 E-601 SOLIDS BUILDING PANELBOARD SCHEDULES I 50 E-602 SOLIDS BUILDING PANELBOARD SCHEDULES II

50 E-603 SOLIDS BUILDING PANELBOARD SCHEDULES III 50 E-604 SOLIDS BUILDING RISER DIAGRAMS I 50 E-605 SOLIDS BUILDING RISER DIAGRAMS II

50 E-606 SOLIDS BUILDING RISER DIAGRAMS III 50 E-607 SOLIDS BUILDING WIRING DIAGRAMS 50 E-608 SOLIDS BUILDING WIRING DIAGRAMS II 50 E-609 SOLIDS BUILDING WIRING DIAGRAMS III

50 E-610 SOLIDS BUILDING WIRING DIAGRAMS IV GRAVITY THICKENER No. 2 POWER AND SYSTEMS PLAN

SHEET NO. TITLE

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ELECTRICAL
             GRAVITY THICKENER No. 1 POWER PLAN
             BAF BUILDING SINGLE LINE
             BAF BUILDING POWER PLAN I AT EL. 13.25
             BAF BUILDING POWER PLAN II AT EL. 13.25
             BAF BUILDING POWER PLAN III AT EL. 13.25
             BAF BUILDING POWER PLAN I AT EL. 27.92
             BAF BUILDING POWER PLAN II AT EL. 27.92
             BAF BUILDING POWER PLAN III AT EL. 27.92
             BAF BUILDING UPPER POWER PLAN
             BAF BUILDING UPPER POWER PLAN I
             BAF BUILDING UPPER POWER PLAN III
             BAF BUILDING ROOF POWER PLAN I
             BAF BUILDING ROOF POWER PLAN II
             BAF BUILDING ROOF POWER PLAN III
             BAF BUILDING SYSTEMS PLAN I AT EL. 13.25
             BAF BUILDING SYSTEMS PLAN II AT EL. 13.25
             BAF BUILDING SYSTEMS PLAN III AT EL. 13.25
             BAF BUILDING SYSTEMS PLAN I AT EL. 27.92
             BAF BUILDING SYSTEMS PLAN II AT EL. 27.92
             BAF BUILDING SYSTEMS PLAN III AT EL. 27.92
             BAF BUILDING UPPER SYSTEMS PLAN
             BAF BUILDING UPPER SYSTEMS PLAN II
             BAF BUILDING UPPER SYSTEMS PLAN III
             BAF BUILDING ROOF SYSTEMS PLAN
             BAF BUILDING ROOF SYSTEMS PLAN I
             BAF BUILDING ROOF SYSTEMS PLAN III
             BAF BUILDING PANELBOARD SCHEDULES
             BAF BUILDING PANELBOARD SCHEDULES II
             BAF BUILDING RISER DIAGRAMS
             BAF BUILDING RISER DIAGRAMS II
             BAF BUILDING WIRING DIAGRAMS
70 E-101
70 E-601
             SLUDGE PROCESSING BUILDING DEMOLITION SINGLE LINE
             OPERATIONS/LAB BUILDING SINGLE LINE DIAGRAM
80 E-101
             OPERATIONS/LAB BUILDING LOWER LEVEL POWER PLAN
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PRIMARY CLARIFIER EFFLUENT METER VAULT POWER & SYSTEMS PLANS

PRIMARY CLARIFIER EFFLUENT METER VAULT RISER DIAGRAM

OPERATIONS/LAB BUILDING UPPER LEVEL POWER PLAN

OPERATIONS/LAB BUILDING ROOF LEVEL POWER PLAN 80 E-103 OPERATIONS/LAB BUILDING LOWER LEVEL SYSTEMS PLAN

OPERATIONS/LAB BUILDING UPPER LEVEL SYSTEMS PLAN OPERATIONS/LAB BUILDING ROOF LEVEL SYSTEMS PLAN CHEMICAL STORAGE TANK POWER PLAN

80 E-107 80 E-601 OPERATIONS/LAB BUILDING PANELBOARD SCHEDULES 80 E-602 OPERATIONS/LAB BUILDING PANELBOARD SCHEDULES II

80 E-603 OPERATIONS/LAB BUILDING RISER DIAGRAMS OPERATIONS/LAB BUILDING RISER DIAGRAMS II

80 E-605 OPERATIONS/LAB BUILDING WIRING DIAGRAMS 85 E-101 ELECTRIC BUILDING POWER AND SYSTEMS PLANS 85 E-601 ELECTRIC BUILDING SCHEDULES AND RISER DIAGRAMS

99 E-501 ELECTRICAL DETAILS I ELECTRICAL DETAILS II 99 E-502 ELECTRICAL DETAILS III 99 E-503

STRUCTURE NUMBER LEGEND

GENERAL, LEGENDS, NOTES, SITE WIDE DRAWINGS 10 HEADWORKS

20 EXISTING GRIT BUILDING EXISTING PRIMARY CLARIFIERS AND PRIMARY CLARIFIER

INFLUENT DISTRIBUTION BOX EXISTING PRIMARY CLARIFIER EFFLUENT DISTRIBUTION BOX

50 SOLIDS BUILDING

53 GRAVITY THICKENER No. 2

55 EXISTING GRAVITY THICKENER No. 1 60 BAF BUILDING

EXISTING CHLORINE CONTACT TANK

80 OPERATIONS/LAB BUILDING 85 ELECTRICAL BUILDING

STANDARD DETAILS

SHEET DESIGNATION LEGEND - STRUCTURE NUMBER — DISCIPLINE

--- SHEET NUMBER

RECORD DRAWING

on information provided by others. AECOM has not verified the accuracy and/or completeness of this information and shall not be responsible for errors or omissions which may be incorporated as a result.

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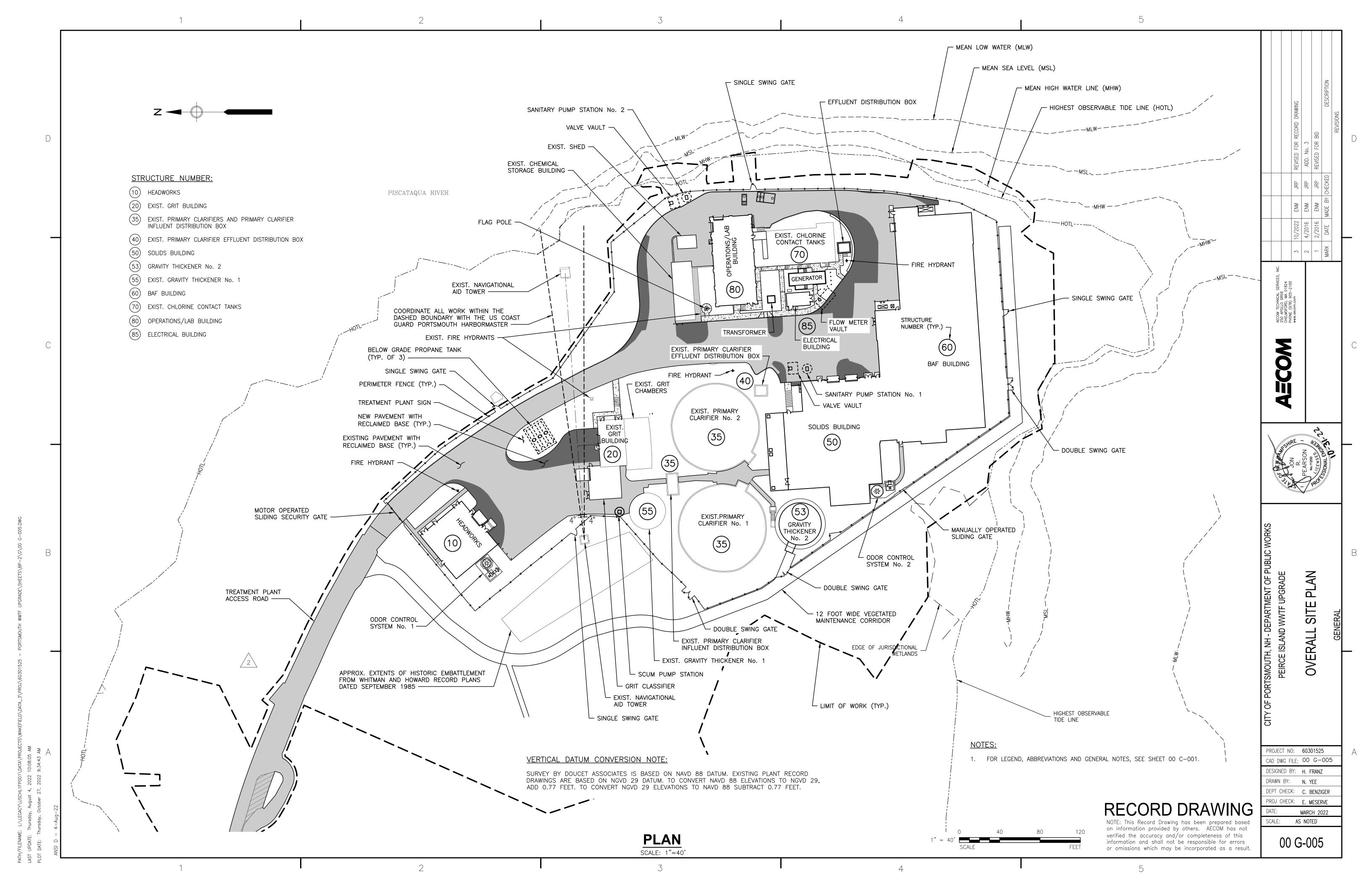
PROJECT NO: **60301525** CAD DWG FILE: 00 G-004 DESIGNED BY: H. FRANZ

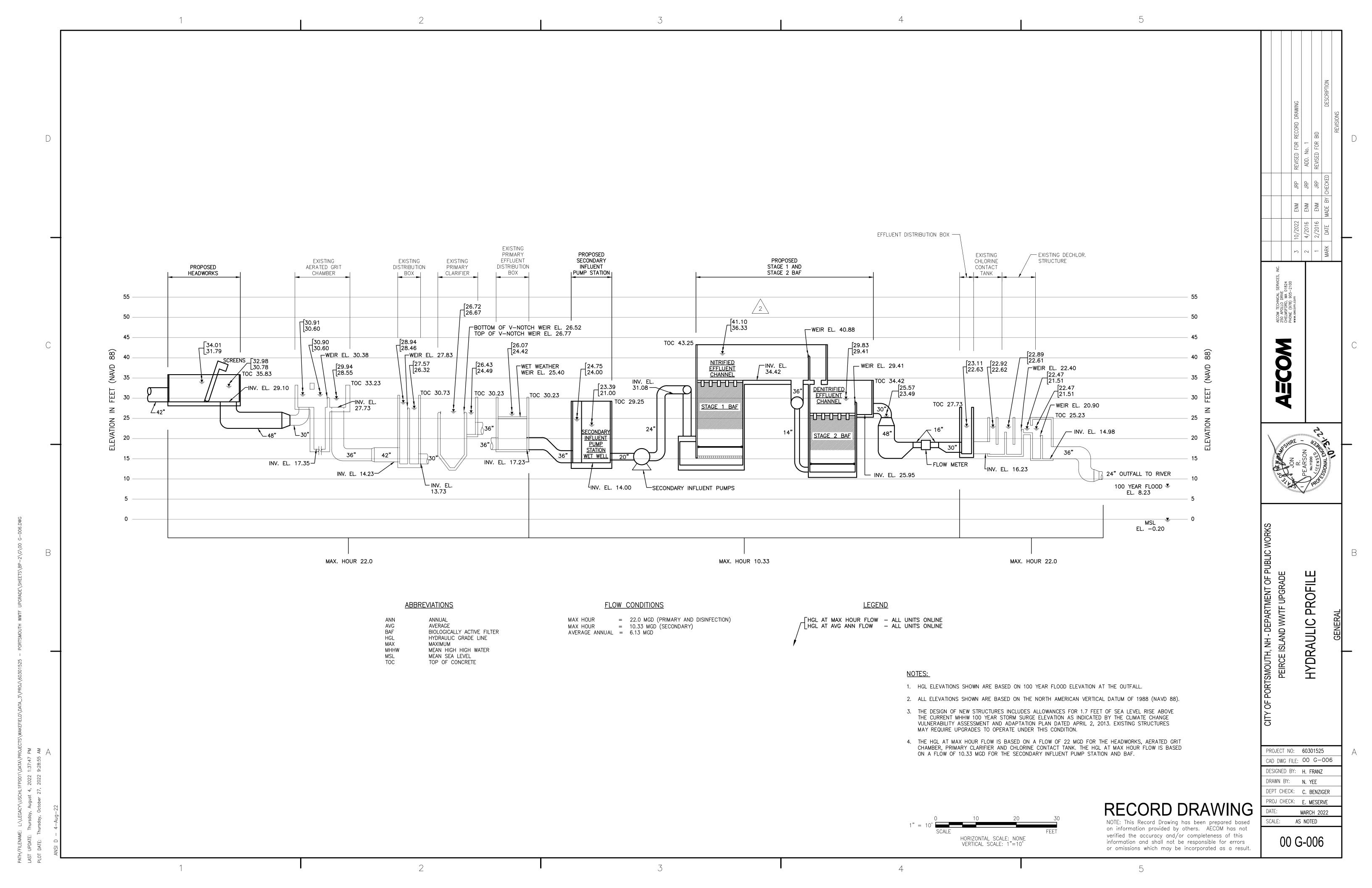
DRAWN BY: C. BENZIGER DEPT CHECK: C. BENZIGER PROJ CHECK: E. MESERVE

MARCH 2022 AS NOTED

00 G-004

50 E-112





DESIGN CRITERIA

DESIGN CRITERIA		
DESCRIPTION	UNITS	VALUE
DESIGN CAPACITY		10.10
MAX DAY	MGD	19.40
MAX HOUR	MGD	22.00
DESIGN CAPACITY - SECONDARY TREATMENT		
MIN DAY	MGD	3.12
MIN MONTH	MGD	4.01
ANNUAL AVERAGE DAY	MGD	6.13
MAX MONTH	MGD	8.86
MAX DAY	MGD	9.06
MAX HOUR	MGD	10.33
PRELIMINARY TREATMENT		
MECHANICALLY CLEANED BAR SCREENS		
NO. OF UNITS	NO.	2
CAPACITY/SCREEN	MGD	11
SCREEN OPENING WIDTH	mm	6
MANUALLY CLEANED BAR SCREEN		
NO. OF UNITS	NO.	1
SCREEN OPENING WIDTH	mm	6
AERATED GRIT CHAMBERS		
NO. OF UNITS	NO.	2
VOLUME/CHAMBER	CF	3,039
DETENTION TIME/CHAMBER AT MAX DAY	MIN	7.01
DIFFUSER TYPE	-	COARSE BUBBLE
NO. OF DIFFUSER/CHAMBER	NO.	10
CYCLONE DEGRITTERS		
NO. OF UNITS	NO.	2
CAPACITY/UNIT	GPM	250
DESIGN HEAD	PSI	7.5
SIZE	IN	4
GRIT CLASSIFIER		
NO. OF UNITS	NO.	1
ГҮРЕ	-	FULL FLARE
SIZE	IN	18
PRIMARY TREATMENT NO. OF CLARIFERS	NO.	2
TYPE OF CLARIFIER	_	CIRCULAR
/OLUME/CLARIFIER	CF	54,410
OVERFLOW RATE/CLARIFIER - ANNUAL AVERAGE DAY	GPD/SF	931
OVERFLOW RATE/CLARIFIER - MAX HOUR	GPD/SF	2,634
SECONDARY TREATMENT AND TN REMOVAL		
STAGE 1 BAF		
NO. OF FILTER CELLS	NO.	6
NO. OF FILTER CELLS NORMALLY OPERATING	NO.	5
AREA/CELL	SF	1,267
MEDIA VOLUME/CELL	CF	14,545
MEDIA TYPE	-	POLYSTYRENE
HLR/CELL - AVERAGE DAY - 5 CELLS	GPM/SF	0.91
HLR/CELL - MAX DAY - 5 CELLS	GPM/SF	1.23
TOTAL REQUIRED AIR FLOW - AVERAGE - NON-CEPT	SCFM	4,378
TOTAL REQUIRED AIR FLOW - MAX - NON-CEPT	SCFM	5,600
TOTAL REQUIRED AIR FLOW - AVERAGE - CEPT	SCFM	4,181
	SCFM	5,341
ГОТAL REQUIRED AIR FLOW - MAX - CEPT		
·	MGD	4.36
TOTAL REQUIRED AIR FLOW - MAX - CEPT PEAK BACKWASH FLOW BACKWASH VOLUME/CELL		4.36 272,300

DESIGN CRITERIA

DESCRIPTION	UNITS	VALUE
SECONDARY TREATMENT AND TN REMOVAL (CON'T)		
STAGE 2 BAF		
NO. OF FILTER CELLS	NO.	6
NO. OF FILTER CELLS NORMALLY OPERATING	NO.	5
AREA/CELL	SF	304
MEDIA VOLUME/CELL	CF	2,500
MEDIA TYPE	GF.	POLYSTYRENI
	- CDM/CE	
HLR/CELL - AVERAGE DAY - 5 CELLS	GPM/SF	3.06
HLR/CELL - MAX DAY - 5 CELLS	GPM/SF	4.37
PEAK BACKWASH FLOW	MGD	1.05
BACKWASH VOLUME/CELL	GAL	65,400
BACKWASH AIR FLOW RATE/CELL	SCFM	264
BACKWASH INTERVAL	HR	24
MUDWELL VOLUME	GAL	172,500
DISINFECTION		
CHLORINE CONTACT TANK		_
NO. OF UNITS	NO.	2
NO. OF PASSES/TANK	NO.	4
CONTACT TIME PER TANK AT MAX DAY FLOW	MIN	19.5
DECHLORINATION STRUCTURE		
NO. OF UNITS	NO.	1
VOLUME/TANK	CF	186
SLUDGE THICKENING		
GRAVITY THICKENER NO. 1		
NO. OF UNITS	NO.	1
AREA	SF	707
SOLIDS LOADING RATE - AVERAGE DAY	LB/SF/D	7
SOLIDS LOADING RATE - MAX DAY	LB/SF/D	12
HLR - AVERAGE DAY (AVG, NO DILUTION)	GAL/SF/D	56
HLR - MAX DAY (AVG, NO DILUTION)	GAL/SF/D	93
THICKENED SLUDGE	%	7
GRAVITY THICKENER NO. 2		
NO. OF UNITS	NO.	1
AREA	SF	1,257
SOLIDS LOADING RATE - AVERAGE DAY	LB/SF/D	7
SOLIDS LOADING RATE - MAX DAY	LB/SF/D	12
HLR - AVERAGE DAY (AVG, NO DILUTION)	GAL/SF/D	56
HLR - MAX DAY (AVG, NO DILUTION)	GAL/SF/D	93
THICKENED SLUDGE	%	7
THICKENED SLUDGE	70	/
THICKENED SLUDGE STORAGE		
SLUDGE STORAGE TANK NO. 1 & 2		
NO. UNITS	NO.	2
VOLUME/TANK	GAL	47,352
DIFFUSER TYPE	J/ (L	COARSE BUBBI
NO. OF DIFFUSER/TANK	NO.	12
EXISTING SLUDGE STORAGE TANK NO. 3 & 4	INO.	12
	NO	
NO. UNITS	NO.	6.037
VOLUME/TANK	GAL	6,037
DIFFUSER TYPE	-	COARSE BUBBI
NO. OF DIFFUSER/TANK	NO.	2
SI LIDGE DEWATERING		
SLUDGE DEWATERING SCREW BRESSES		
SCREW PRESSES	110	
NO OF UNITO	NO.	3
NO. OF UNITS		
NO. OF UNITS CAPACITY/PRESS	LB/HR	600

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DESIGN CRITERIA

PROJECT NO: 60301525 CAD DWG FILE: 00 G-007 DESIGNED BY: H. FRANZ DRAWN BY: N. YEE DEPT CHECK: C. BENZIGER

PROJ CHECK: E. MESERVE MARCH 2022 SCALE: AS NOTED

00 G-007

RECORD DRAWING DATE:

NOTE: This Record Drawing has been prepared based on information provided by others. AECOM has not verified the accuracy and/or completeness of this information and shall not be responsible for errors or omissions which may be incorporated as a result.

- 1. IT IS THE INTENT OF THE CONTRACT DOCUMENTS TO PRESCRIBE A COMPLETE WORK OR IMPROVEMENT. THE CONTRACT DOCUMENTS ARE COMPLEMENTARY, AND ANY REQUIREMENTS INDICATED IN ONE OF THE DOCUMENTS IS AS BINDING AS HAVING BEEN INDICATED IN ALL.
- 2. HORIZONTAL LOCATIONS SHOWN ARE REFERENCED TO THE NH STATE PLANE COORDINATE SYSTEM, NAD83.
- 3. VERTICAL DATUM IS NAVD 88 AND IS BASED ON NATIONAL GEODETIC SURVEY FIRST ORDER CLASS I BENCHMARKS "V31 USGS" (PID:OCO289) HAVING A PUBLISHED ELEVATION OF 29.19' AND "W31" (PID:OCO413) HAVING A PUBLISHED ELEVATION OF 20.54'. REFER ALSO TO VERTICAL DATUM CONVERSION NOTE BELOW.
- 4. TOPOGRAPHIC INFORMATION SHOWN IS THE RESULT OF A SURVEY MADE IN JULY 2013 BY DOUCET SURVEY, INC., 102 KENT PLACE, NEWMARKET, NH 03857. WETLAND BOUNDARIES AND HIGHEST OBSERVABLE TIDE LINE (HOTL) WERE DELINEATED BY NORMANDEAU ASSOCIATES, INC. ON JULY 3, 2013. EXISTING TREE SURVEY WAS MADE ON NOVEMBER 18, 2013 BY DOUCET SURVEY, INC.
- 5. THE LOCATION OF ANY UNDERGROUND UTILITY INFORMATION SHOWN ON THIS PLAN IS BASED ON RECORD DRAWINGS AND IS APPROXIMATE. THE OWNER DOES NOT GUARANTEE THE ACCURACY OR COMPLETENESS OF UNDERGROUND UTILITIES SHOWN. PRIOR TO ANY EXCAVATION ON SITE THE CONTRACTOR SHALL CONTACT DIG SAFE AT 1-888-344-7233.
- 6. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL EXISTING CONDITIONS AT THE SITE.
- 7. THE CONTRACTOR SHALL ERECT EROSION CONTROL MEASURES PRIOR TO COMMENCING ANY CLEARING, EXCAVATION OR STORAGE OF BACKFILL MATERIAL ON-SITE. REFER TO SPECIFICATION SECTION 01568 AND
- 8. THE ENGINEER MAY DIRECT THE CONTRACTOR TO VARY THE PROPOSED WORK DURING CONSTRUCTION TO MEET EXISTING CONDITIONS.
- 9. THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES AND SHALL PROVIDE ALL NECESSARY CONTINUOUS BARRIERS OF SUFFICIENT TYPE, SIZE AND STRENGTH TO PREVENT ACCESS TO ALL OPEN EXCAVATIONS AT THE COMPLETION OF EACH DAYS WORK. REFER TO SPECIFICATION SECTION 01046 FOR ADDITIONAL REQUIREMENTS
- 10. INTERRUPTION TO WATER AND OTHER EXISTING UTILITIES SHALL BE REQUESTED IN WRITING BY THE CONTRACTOR 3 DAYS IN ADVANCE OF THE WORK AND REVIEWED BY THE ENGINEER.
- 11. CONTRACTOR SHALL MAINTAIN FLOW OF SEWAGE IN ACCORDANCE WITH SECTION 01063 AND 02602.
- 12. DISTURBANCE TO SHORELAND AREAS SHALL BE LIMITED AND RESTORED AS INDICATED IN SPECIFICATION 01063.
- 13. EXISTING UTILITIES INTERFERING WITH THE WORK SHALL BE RELOCATED AS DIRECTED BY THE ENGINEER AT NO ADDITIONAL COST TO THE OWNER.
- 14. PIPE SHALL BE AS INDICATED IN THE PIPING SCHEDULE AND SPECIFICATIONS. PROVIDE RESTRAINED MECHANICAL JOINT FITTINGS FOR ALL PRESSURE PIPE BENDS.
- 15. PIPING WHICH IS EXPOSED DURING EXCAVATION, INCLUDING TEE'S, VALVES, AND FITTINGS, AND IS NOT TO BE DEMOLISHED, SHALL BE SUPPORTED, BRACED OR OTHERWISE PROTECTED DURING CONSTRUCTION ACTIVITIES.
- 16. ALL PIPING, EXCEPT FORCE MAINS, SHALL BE CONSTRUCTED WITH A MINIMUM OF 5 FEET OF COVER. FORCE MAINS SHALL BE CONSTRUCTED WITH A MINIMUM OF 5 FEET COVER IN CROSS—COUNTRY AREAS, 6 FEET COVER IN PAVED AREAS.
- 17. ALL PIPES SHALL SLOPE UNIFORMLY BETWEEN ELEVATIONS SHOWN UNLESS OTHERWISE INDICATED ON THE DRAWINGS OR DIRECTED BY THE ENGINEER. NO SAGS OR CRESTS IN PIPING WILL BE PERMITTED.
- 18. WHERE NEW PIPING IS TO BE CONNECTED TO EXISTING PIPING, THE CONTRACTOR SHALL FURNISH AND INSTALL ALL ADAPTERS, FITTINGS, AND ADDITIONAL PIPE WHICH MAY NOT BE SHOWN IN DETAILS (REQUIRED AS A RESULT OF CUTTING THE EXISTING PIPE BACK) IN ORDER TO COMPLETE THE CONNECTION AS REQUIRED.
- 19. ALL WALL AND SLAB PENETRATIONS SHALL BE SEALED WATERTIGHT.
- 20. ALL WALL CASTINGS SHALL HAVE WATER STOPS.
- 21. JOINTS SHALL BE PROVIDED AT THE WALL OF STRUCTURES ON ALL PIPELINES, EXCEPT WHERE SLEEVES ARE INDICATED. THIS SHALL BE ACCOMPLISHED BY CASTING A BELL WALL FITTING, BELL END STUB, OR WALL CASTING INTO THE STRUCTURE.
- 22. ALL LAYOUT DIMENSIONS REFER TO OUTSIDE EDGE OF WALL AT GRADE LINE, UNLESS OTHERWISE INDICATED.
- 23. LOCATION COORDINATES TO PROPOSED STRUCTURES ARE TO EXTERIOR WALLS AND CENTER OF TANKS.
- 24. ALL SIGNAGE, HEADWALLS, GUARD RAILS, GUARD POSTS, FENCES, CURBS, ROADWAYS, SIDEWALKS AND ANY OTHER OBJECTS DISTURBED BY CONTRACTOR ACTIVITIES SHALL BE RETURNED TO PRE-CONSTRUCTION CONDITION OR BETTER AS DIRECTED BY THE ENGINEER AT NO ADDITIONAL COST TO THE OWNER.
- 25. ALL AREAS OF EXCAVATION, BACKFILL, FILL AND GRADING SHALL BE RETURNED TO THE ORIGINAL GRADE UNLESS SHOWN ON THE DRAWINGS.
- 26. ALL UTILITY BOXES, FRAMES, GRATES, ETC. DISTURBED BY CONTRACTOR AND NOT TO BE ABANDONED SHALL BE RESET TO THE PROPER GRADE AT NO ADDITIONAL COST TO THE OWNER.
- 27. UNPAVED AREAS DISTURBED BY THE CONTRACTOR SHALL BE CLEARED AND GRUBBED IF REQUIRED, AND RESTORED WITH LOAM AND SEED.
- 28. FOR BURIED PIPE MATERIALS, SEE PIPING SCHEDULE ON SHEET 00 C-002.
- 29. ALL EXISTING PIPES TO BE ABANDONED SHALL BE PLUGGED AT OPEN ENDS. SEE PIPE PLUGGING DETAIL ON SHEET 99 C-501.
- 30. RECORD DRAWINGS FOR EXISTING FACILITIES CAN BE FOUND IN APPENDIX J OF THE SPECIFICATIONS.

VERTICAL DATUM CONVERSION NOTE:

SURVEY BY DOUCET ASSOCIATES IS BASED ON NAVD 88 DATUM. EXISTING PLANT RECORD DRAWINGS ARE BASED ON NGVD 29 DATUM. TO CONVERT NAVD 88 ELEVATIONS TO NGVD 29, ADD 0.77 FEET. TO CONVERT NGVD ELEVATIONS TO NAVD 88 SUBTRACT 0.77 FEET.

STORMWATER MAINTENANCE SCHEDULE:

- 1. CONTRACTOR SHALL CONDUCT INSPECTION AND MAINTENANCE OF ALL STORMWATER FACILITIES THROUGHOUT THE CONSTRUCTION PERIOD. REFER TO SEDIMENT AND EROSION CONTROL NOTES, STORMWATER POLLUTION PREVENTION PLAN, AND LONG TERM INSPECTION AND MAINTENANCE SCH3EDULE ON SHEET 99 C-507.
- 2. UPON COMPLETION OF CONSTRUCTION, THE OWNER WILL ASSUME RESPONSIBILITY FOR ACTIVITIES LISTED IN THE LONG TERM INSPECTION AND MAINTENANCE SCHEDULE, STORMWATER POLLUTION PREVENTION PLAN, AND APPLICABLE REQUIREMENTS OF USEPA-NPDES MULTI-SECTOR GENERAL PERMIT (MSGP) FOR STORMWATER DISCHARGES WITH INDUSTRIAL ACTIVITY.

GEOTECHNICAL NOTES

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- 1. FOR EARTH EXCAVATION, BACKFILL, FILL AND GRADING SEE SPECIFICATION 02210.
- 2. FOR DEWATERING SEE SPECIFICATION 02140.
- 3. FOR EXCAVATION SUPPORT SYSTEM SEE SPECIFICATION 02160.
- 4. BORING LOCATIONS ARE SHOWN ON THE PLANS AND BORING LOGS ARE BOUND IN THE SPECIFICATIONS.
- 5. BORINGS WERE TAKEN FOR PURPOSES OF DESIGN AND INDICATE SUBSURFACE CONDITIONS AT BORING LOCATION ONLY. SUBSURFACE CONDITIONS MAY VARY FROM THOSE SHOWN IN THE LOG.
- 6. IN ALL AREAS WHERE DEWATERING IS NECESSARY, MEASURES SHALL BE TAKEN TO ENSURE THE PRESERVATION OF WATERCOURSES AND COMPLIANCE WITH ALL REGULATIONS AND LAWS. ALL DEWATERING MUST BE DISCHARGED INTO SEDIMENT TRAPS AS INDICATED IN THE DETAILS AND AS SPECIFIED IN SPECIFICATION SECTION 01568.
- 7. FOR ROCK EXCAVATION AND DISPOSAL, SEE SPECIFICATION SECTION 02211.

AIR CONDITIONER UNIT

ABBREVIATIONS

MEAN HIGH WATER

YARD HYDRANT

ACU	AIR CONDITIONER UNIT	MHW	MEAN HIGH WATER
ALP	AIR LOW PRESSURE	MLW	MEAN LOW WATER
APPROX.	APPROXIMATE	MJ	MECHANICAL JOINT
B&B	BALL AND BURLAP	MSL	MEAN SEA LEVEL
BAF	BIOLOGICAL AERATED FILTER	N.C.	NORMALLY CLOSED
B.H.	BUILDING HEIGHT	NE	NITRIFIED EFFLUENT
BLDG.	BUILDING	PCW	PROTECTED CITY WATER
BPF	BELT PRESS FEED	OC	ODOR CONTROL
BW	BACKWASH OR BARBED WIRE	OV	OVERFLOW
CA	COMPRESSED AIR	PBS	PRINTED BOTH SIDES
СВ	CATCH BASIN	PCE	PRIMARY CLARIFIER EFFLUENT
CD	CHEMICAL DRAIN	PCI	PRIMARY CLARIFIER INFLUENT
CONC.	CONCRETE	PCW	PROTECTED CITY WATER
C.I.	CAST IRON	PD	PLANT DRAIN
CLF	CHAIN LINK FENCE	POL	POLYMER
C.O. OR CO	CLEANOUT	PP	POTASSIUM PERMANGANATE
COV	CHEMICAL OVERFLOW	PR	PRESSATE
CS	CAUSTIC SODA	PSL	PRIMARY SLUDGE
CV	CHEMICAL VENT	PSNH	PUBLIC SERVICE OF NEW HAMPSHIR
CW	CITY WATER OR CROSS WALK	PVC	POLYVINYL CHLORIDE
D	DRAIN	PW	PLANT WATER
DI	DUCTILE IRON	RCP	REINFORCED CONCRETE PIPE
DIA.	DIAMETER	RED.	REDUCER
DIM.	DIMENSION	RET.	RETAIN OR RETAINING
DNE	DENITRIFIED EFFLUENT	RU.	ROLLUP (DOOR)
DMH	DRAIN MANHOLE	RWW	, ,
DWGS	DRAWINGS		RAW WASTE WATER
DYL OR DYCL	DOUBLE YELLOW CENTER LINE	SAM	SAMPLE
		SAN	SANITARY DRAIN
E ECC.	ELECTRICAL ECCENTRIC	SB	SODIUM BISULFITE
		SC	SCUM
EL. OR ELEV.	ELEVATION	SD	STORM DRAIN
EMERG.	EMERGENCY EDGE OF BAYENENT	SH	SODIUM HYPOCHLORITE
EOP	EDGE OF PAVEMENT	SL	SLUDGE OR STOP LINE
EXIST.	EXISTING	SMH	SEWER MANHOLE
FCL	FERRIC CHLORIDE	SPD	SUMP PUMP DISCHARGE
FE	FINAL EFFLUENT	SWL	SINGLE WHITE LINE
FES	FLARED END SECTION	SYL	SINGLE YELLOW LINE
FF OR F.F.E.	FINISHED FLOOR ELEVATION	TBM	TEMPORARY BENCHMARK
FM	FORCE MAIN	TDW	THICKENER DILUTION WATER
GAL.	GALLON	TP	TEST PIT
GP	GUARD POST	TSD	THICKENED DIGESTED SLUDGE
GRAN.	GRANITE	TSL	THICKENED SLUDGE
GR	GRIT	TS&V	TAPPING SLEEVE AND VALVE
GTO	GRAVITY THICKENER OVERFLOW	TRANS	TRANSFORMER
GV	GATE VALVE	TYP.	TYPICAL
HOTL	HIGHEST OBSERVABLE TIDE LINE	U	PERF. UNDERDRAIN
HWS/R	HOT WATER SUPPLY/RETURN	UE	UNDERGROUND ELECTRIC
INV.	INVERT	V	VENT
LF	LINEAR FOOT	VERT.	VERTICAL
L.O.W.	LIMIT OF WORK	VGC	VERTICAL GRANITE CURB
LPG	LIQUEFIED PETROLEUM GAS (PROPANE)	WSO	WATER SHUT OFF
MC	MICRO-C	WQI	WATER QUALITY INLET
MECH.	MECHANICAL	WV	WATER VALVE

LEGEND

EXIST	<u>ING</u>	<u>PROPOSED</u>	
—	UTILITY POLE & GUY WIRE	LIMIT OF WORK	
€ □	UTILITY POLE W/ LIGHT		
	SIGN	STRUCTURE	
8	YARD HYDRANT	PIPE PLUG OR CAP	
Ø	UNIDENTIFIED PIPE	.~~xx~xx	
	WOODEN POST	DEMOLITION	
WM	FIRE HYDRANT		
wv	WATER METER	ABANDON IN PLACE	
₩	WATER GATE VALVE	///////	
₩\$	VENT PIPE WATER SHUTOFF VALVE	TDEE DEMOVAL	
co 	CLEANOUT	TREE REMOVAL	
	CLLANOOT		
	TRAFFIC DIRECTION ARROW	TEE V	
E	ELECTRIC BOX	REDUCER	
\circ	CATCH BASIN (ROUND)	BEND	
	CATCH BASIN	<u></u>	
0	DRAIN MANHOLE	GATE VALVE	
©	ELECTRIC MANHOLE CHEMICAL MANHOLE	2" 2000	
(W)	WATER MANHOLE	PIPE - ≤ 6" DIAM.	
<u> </u>	SEWER MANHOLE	PIPE - > 6" DIAM.	
(M)	UNIDENTIFIED MANHOLE	TILL - > 0 DIAM.	
7/11/	JURISDICTIONAL WETLAND SYMBOL	DIRECTION OF FLOW	
~ ⊚	FLAG POLE	MANHOLE	
	CONIFEROUS TREE	MANTOLE	
	DECIDUOUS TREE SHRUB	CLEANOUT C.O.	
· · · · · · · ·	CONCRETE	GUARD POST OR BOLLARD •	
	BOULDER		
	ROW OF BOULDERS	CHAIN LINK FENCE - X X	_
	LANDSCAPED AREA	TEMPORARY FENCE	
	GRAVEL	TEINI ONAINI TEINOE	
	LEDGE OUTCROP	SILT FENCE AND	
0	BOLLARD	STRAW BALE EROSION CONTROL	
\Rightarrow	DRAINAGE FLOW DIRECTION ARROW		
XX	CHAINLINK FENCE OVERHEAD WIRES	CONTOUR — 23 —	
D	DRAIN LINE	SPOT ELEVATION × 23.50	
	TREE LINE	TOP OF SLOPE	
	SHRUB LINE	TOP OF SLOPE	
——————————————————————————————————————	GUARDRAIL CONTOUR LINE	CRUSHED STONE MOWING STRIP	
	EDGE OF JURISDICTIONAL WETLAND	· · · · · · · · · · · · · · · · · · ·	П
P48	ROCK PROBE	CONCRETE	
⊕ B13−1	BORING	CURB	=
- → -MW-1	MONITORING WELL	EVICTING DAVENENT	_
TP#2	TEST PIT	EXISTING PAVEMENT AREA TO BE REPAVED (RECLAIMED BASE)	
		NEW PAVEMENT AREA (RECLAIMED BASE)	
		POINT OF CONNECTION, NEW WORK TO EXIST.	
		DISCIPLINE INTERFACE	

APPROVALS (SEE SPECIFICATIONS):

- CITY OF PORTSMOUTH SITE PLAN APPROVAL, DATED (TBD)
- NHDES WETLANDS PERMITS 2015-01866 AND 2015-01878, DATED OCT. 9, 2015.
- NHDES ALTERATION OF TERRAIN PERMIT: AoT—(TBD), DATED (TBD)

RECORD DRAWING

on information provided by others. AECOM has not verified the accuracy and/or completeness of this information and shall not be responsible for errors or omissions which may be incorporated as a result.

00 C-001

AS NOTED

MARCH 2022

PROJECT NO: 60301525

DESIGNED BY: H. FRANZ DRAWN BY: N. YEE

CAD DWG FILE: 00 C-001

DEPT CHECK: C. BENZIGER PROJ CHECK: E. MESERVE

SCALE:

ABBREVIATIONS NERAL NOTES

 \triangleleft

GEND, AND GI

O

MANHOLE

YARD PIPING SCHEDULE			
LEGEND	SYSTEM	MATERIAL	REMARKS
BW	BACKWASH	DUCTILE IRON	
CS	CAUSTIC SODA	SCHED. 80 PVC	
CW	POTABLE WATER	4" AND LARGER: DUCTILE IRON 3" AND SMALLER: PVC —	
D	DRAIN	SAME AS SYSTEM	
DNE	DENITRIFIED EFFLUENT	DUCTILE IRON PVC C905 (BURIED)	USE LONG RADIUS BENDS
FC	FERRIC CHLORIDE	SCHED. 80 PVC	
FP	FIRE PROTECTION	DUCTILE IRON	
GTO	GRAVITY THICKENER OVERFLOW	DUCTILE IRON PVC C905 (BURIED)	
HWS/HWR	HOT WATER SUPPLY/RETURN	PRE-INSULATED. PEX	
PCE	PRIMARY CLARIFIER EFFLUENT	DUCTILE IRON PVC C905 (BURIED)	
PD	PLANT DRAIN	DUCTILE IRON	
POL	POLYMER	SCHED. 80 PVC	
PR	PRESSATE	DUCTILE IRON	
PROPANE	PROPANE	POLYETHYLENE	
PSL	PRIMARY SLUDGE	DUCTILE IRON	USE LONG RADIUS BENDS SEE NOTE 11
PW	PLANT WATER	4" AND LARGER: DUCTILE IRON 3" AND SMALLER: SCHED. 80 PVC	SEE NOTES
OC	ODOR CONTROL	FRP (ABOVE GRADE)/ IPS HDPE (BELOW GRADE)	SEE NOTES
RWW	RAW WASTEWATER	DUCTILE IRON PVC C905 (BURIED)	
SAM	SAMPLE	TYPE 316L STAINLESS STEEL	
SAN	SANITARY	DUCTILE IRON	
SAN FM	SANITARY FORCE MAIN	DUCTILE IRON	
SB	SODIUM BISULFITE	SCHED. 80 PVC	
SC	SCUM	DUCTILE IRON	USE LONG RADIUS BENDS SEE NOTE 11
SD	STORM DRAIN	CORRUGATED POLYETHYLENE DUCTILE IRON RCP SCHED. 40 PVC	REFER TO DRAWINGS FOR PIPE MATERIAL
SEC	SECONDARY INFLUENT	DUCTILE IRON	
SH	SODIUM HYPOCHLORITE	SCHED. 80 PVC	TITANIUM FASTENERS
TDW	THICKENER DILUTION WATER	DUCTILE IRON	
TSL	THICKENED SLUDGE	DUCTILE IRON	SEE NOTE 11
U	UNDERDRAIN	6" ADS — PERFORATED, WITH FILTER SOCK	SEE NOTE 13
V	VENT	SAME AS SYSTEM	

ON 12" CW OUTSIDE THE PLANT PERIMETER, ENCASE PIPE WITH POLYETHYLENE WRAP.
PIPING OUTSIDE THE PERIMETER TO HAVE TRACER WIRE ATTACHED TO THE PIPE WITH LEADS BROUGHT UP IN EACH GATE BOX.

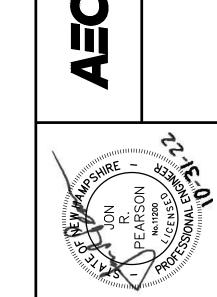
ALLOW USE OF ADS POLYFLEX TUBING IN LIEU OF PVC FOR CW AT HEADWORKS.



YARD PIPING NOTES:

1. REFER TO MECHANICAL PROCESS PIPING SCHEDULE AND SPECIFICATIONS FOR INFORMATION RELATED TO SCHEDULE/CLASS OF PIPE, LINING/COATING, JOINT TYPE, INSULATION AND TEST REQUIREMENTS.

- 2. TEST VENTS AND DRAINS TO SAME PRESSURE AS SYSTEM.
- 3. FOR OPEN VENTS, FILL VENT WITH WATER AND TEST FOR LEAKS.
- 4. USE TYPE 316L S.S. PIPE FOR DRAINS FROM DUCTILE IRON SERVICE FOR DRAINS 3" AND SMALLER.
- 5. PROVIDE FLANGES AT EQUIPMENT, VALVES AND AS INDICATED ON THE DRAWINGS.
- 6. ALL PIPING THAT IS NOT BURIED SHALL BE CONSIDERED EXPOSED.
- 7. HEAT TRACE AND INSULATE ALL EXTERIOR EXPOSED PIPING CONTAINING LIQUIDS, TO 4 FEET BELOW GRADE AS INDICATED AND SPECIFIED IN SECTION 15370.
- 8. FOR BURIED DUCTILE IRON PROVIDE MECHANICAL JOINT OR PUSH-ON JOINTS AS SPECIFIED IN SECTION 02615. ALL JOINTS IN PRESSURE PIPES TO BE RESTRAINED.
- 9. PROVIDE 3/4" 316 STAINLESS STEEL MESH ON ALL ODOR CONTROL PICKUPS. SANDWICH MESH BETWEEN TWO FLANGES W/316 STAINLESS STEEL FASTENERS.
- 10. PROVIDE 316 STAINLESS STEEL INSECT SCREEN ON ALL GOOSENECK VENTS.
- 11. CLEANOUTS SHALL BE INSTALLED ON ALL 45° AND 90° BENDS FOR GRIT, SCUM AND SLUDGE LINES AND WHERE INDICATED ON THE DRAWINGS.
- 12. MINIMUM COVER OVER CW (CITY WATER) PIPING IS 5 FEET.
- 13. PROVIDE ALL UNDERDRAIN PIPING AS 6" ADS PERFORATED PIPE WITH FILTER SOCK AROUND FOUNDATIONS, AND SCHEDULE 80 UNPERFORATED PVC PIPE BETWEEN DRAIN COLLECTION POINTS, AT CLEANOUTS AND AT OUTFALLS.



CHEDULI S

PIPING

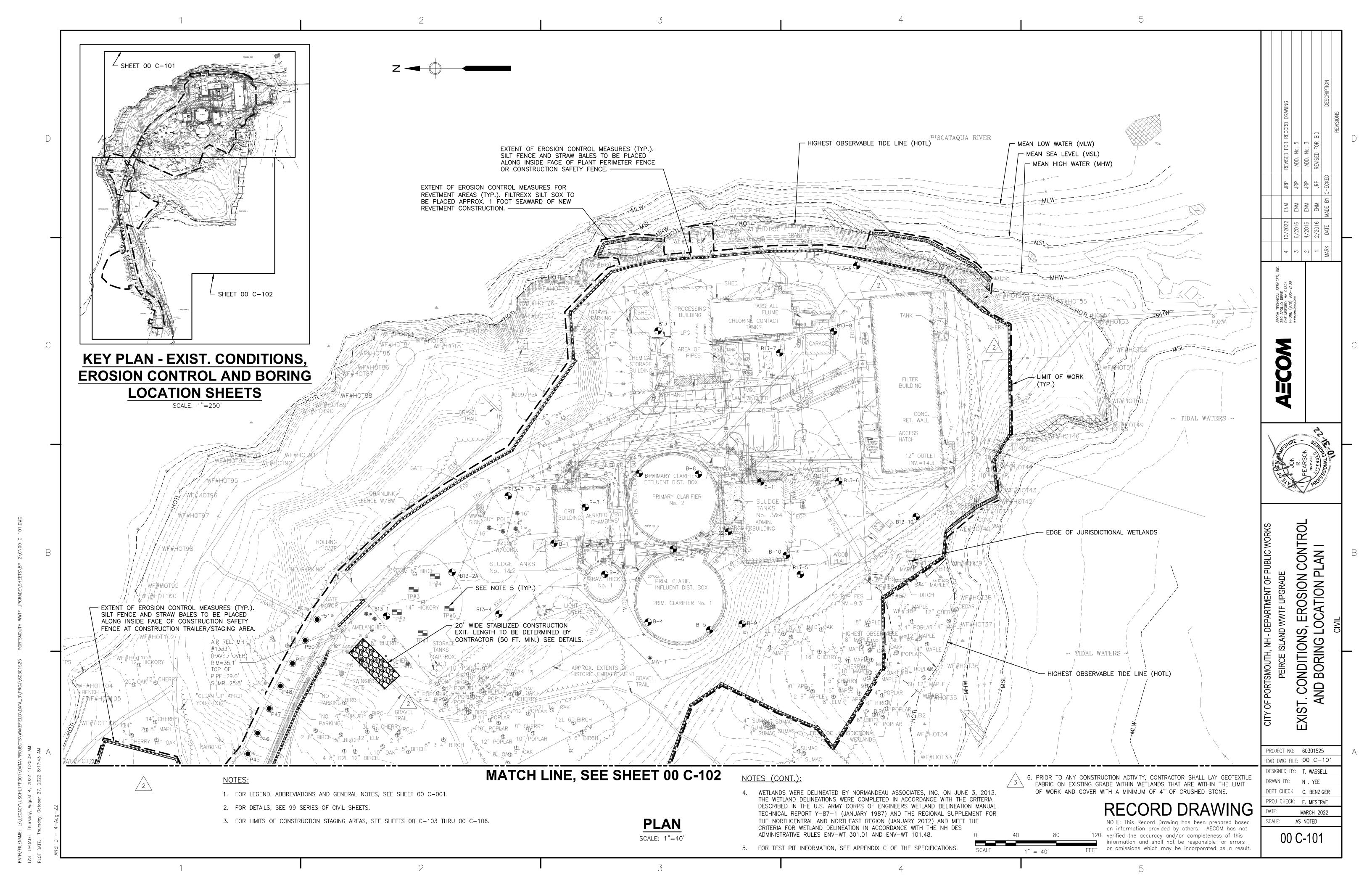
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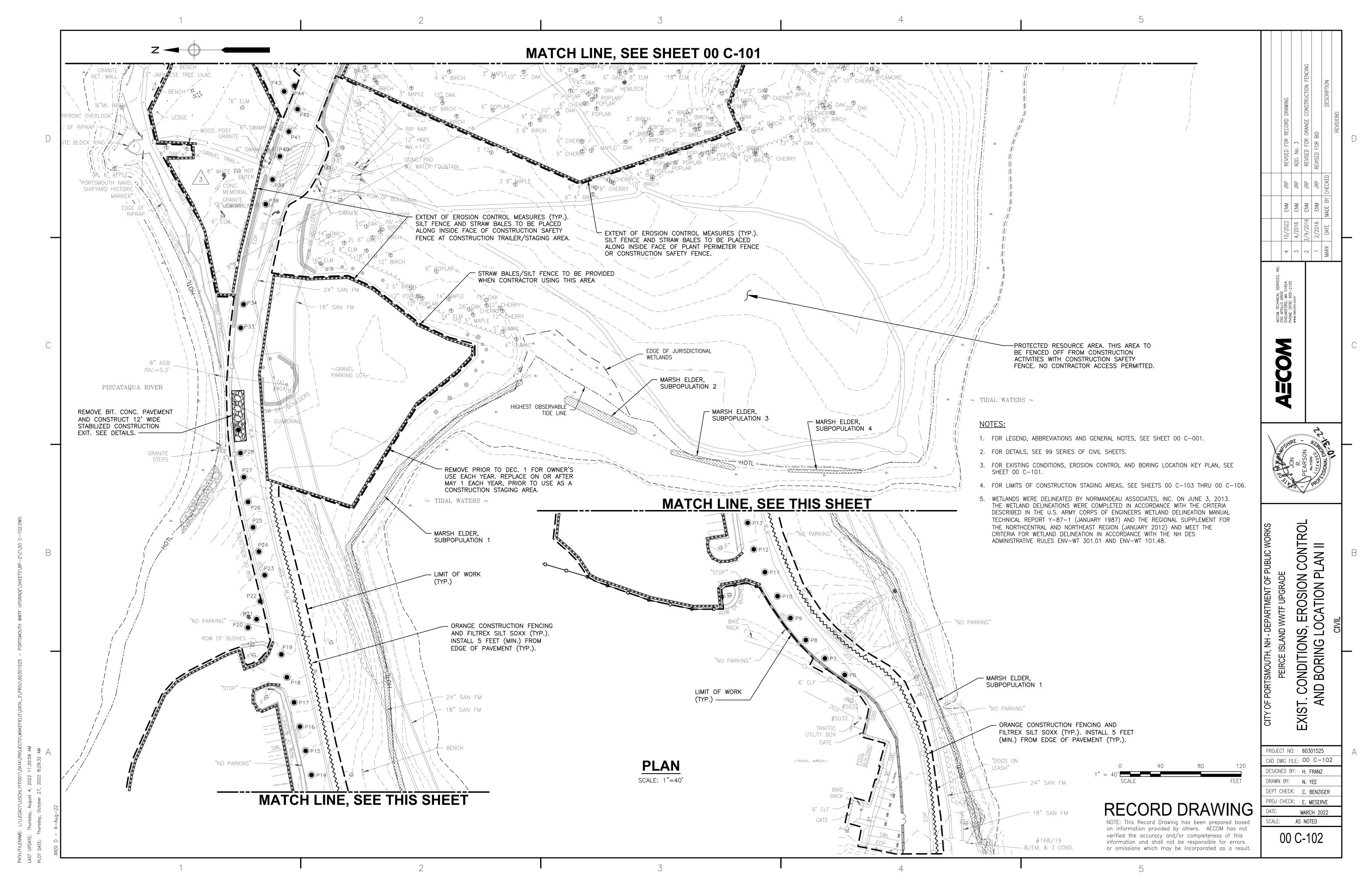
PROJ CHECK: E. MESERVE MARCH 2022 SCALE: AS NOTED

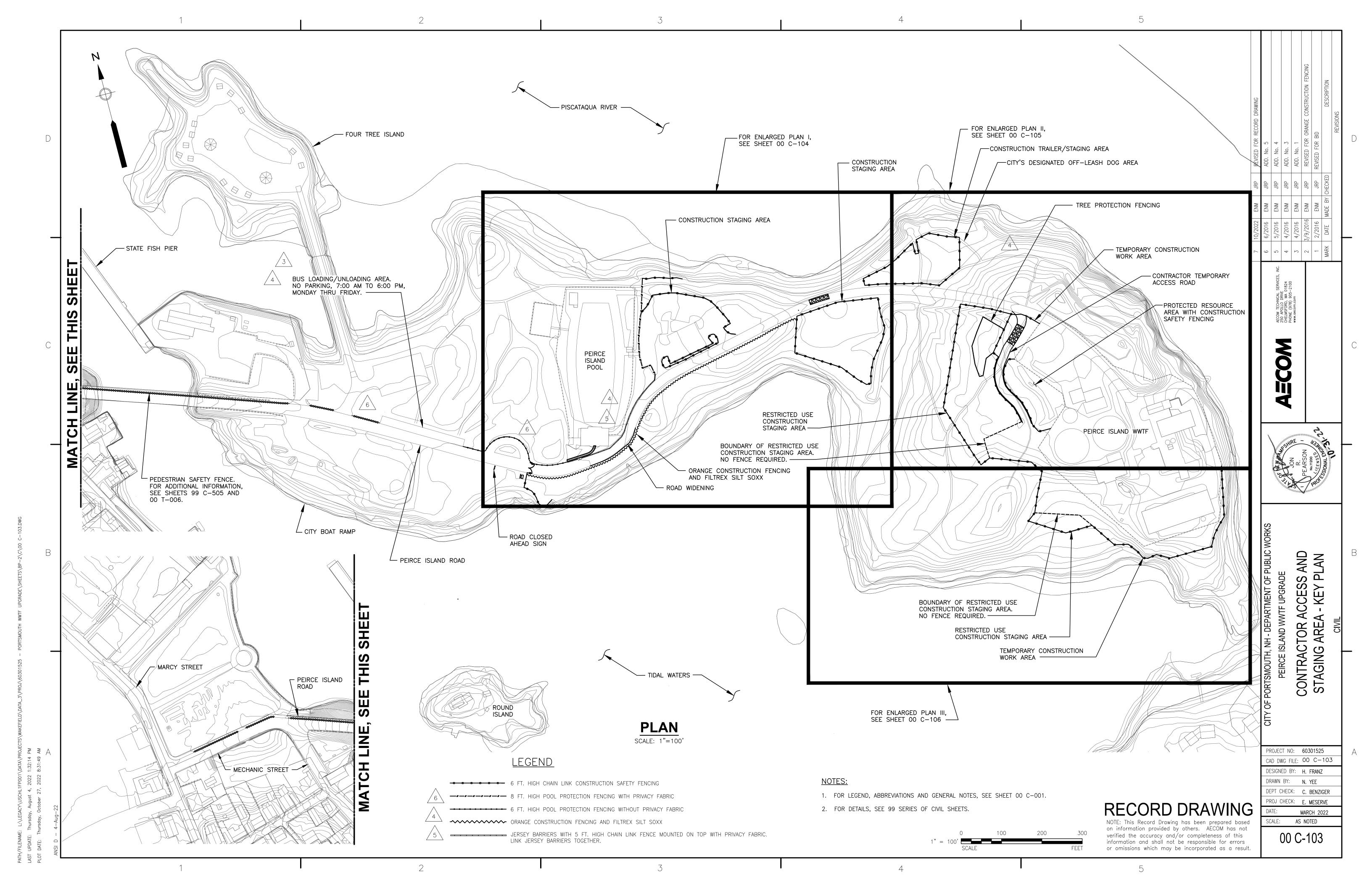
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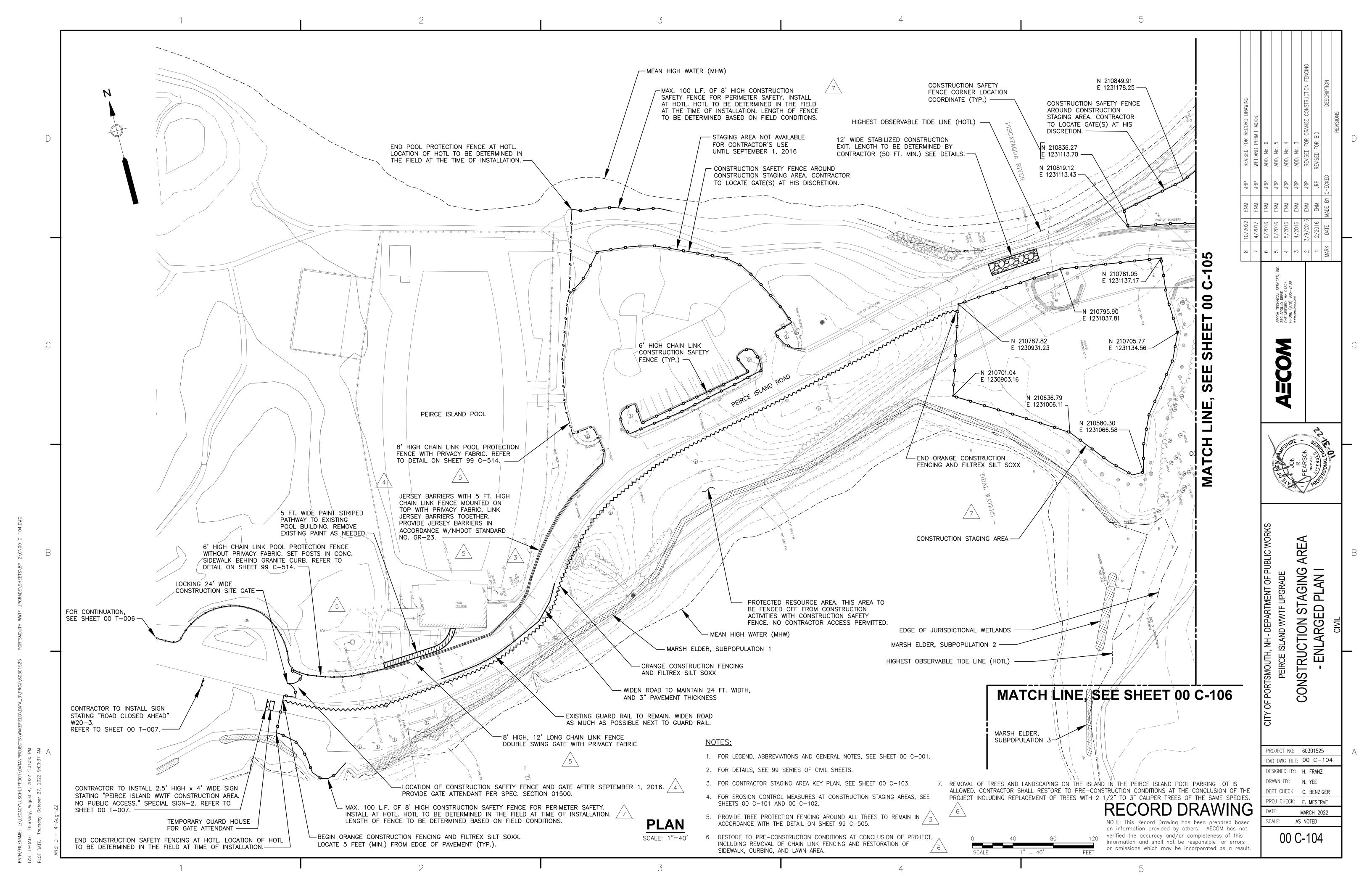
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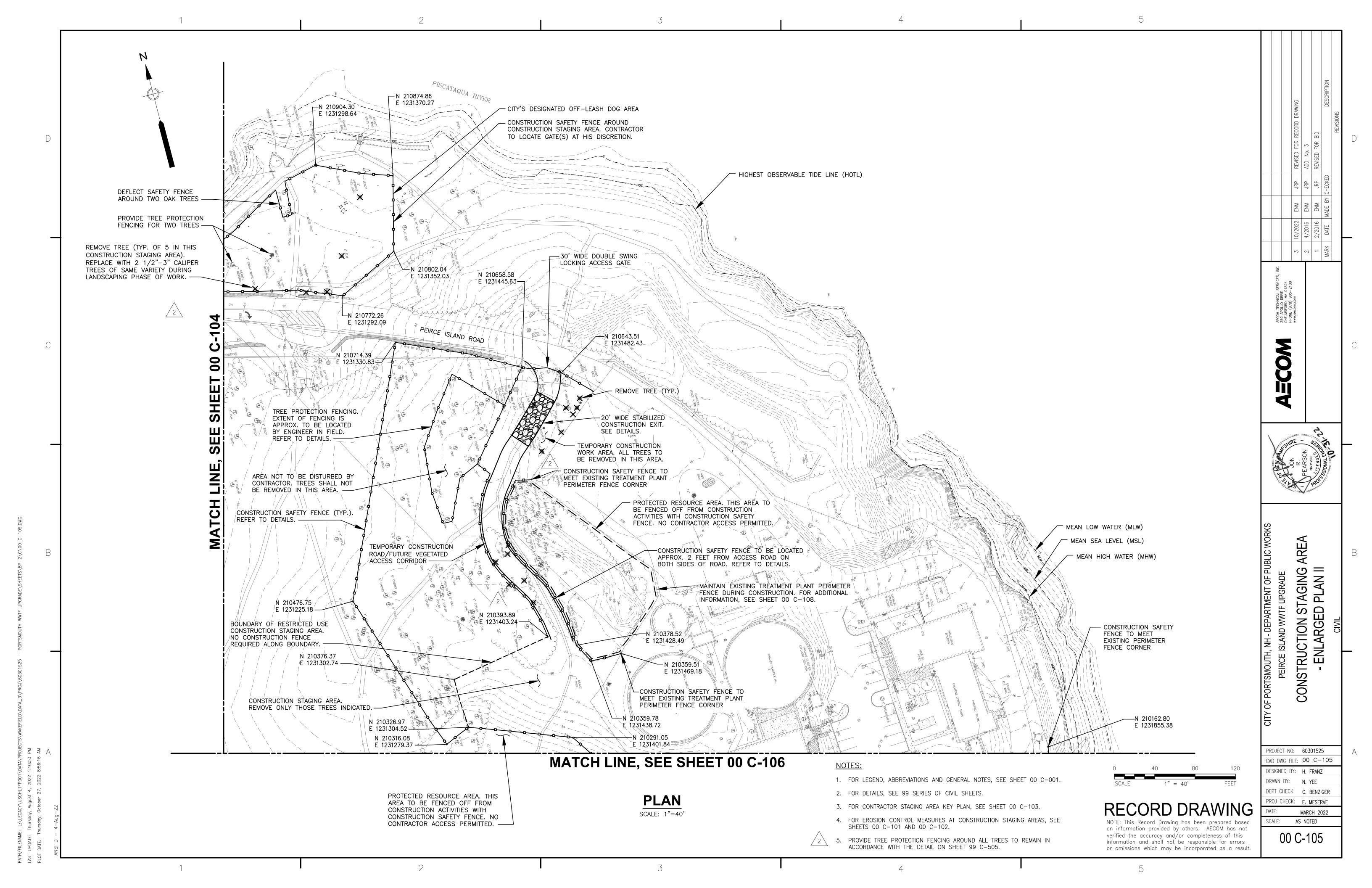
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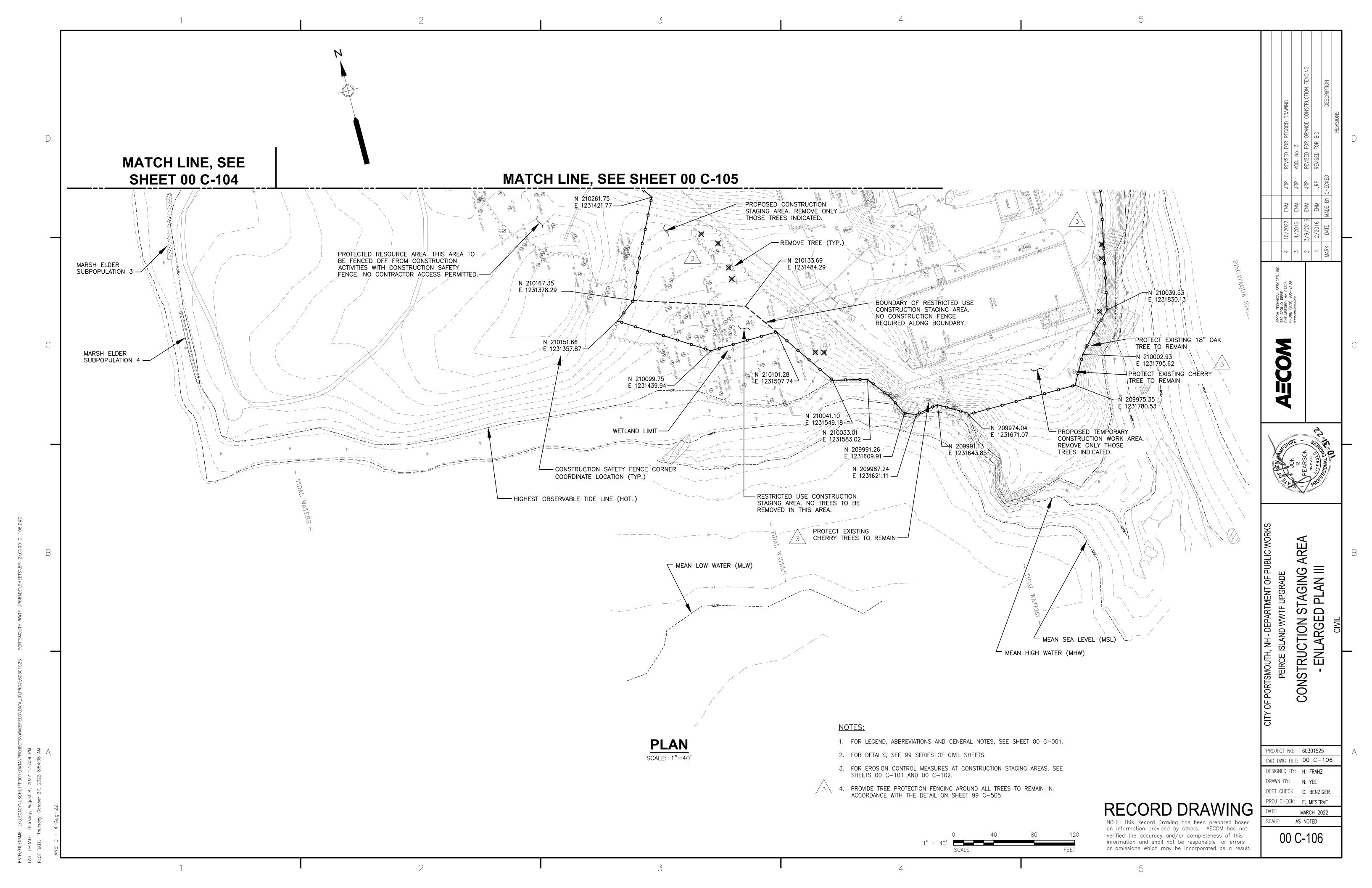


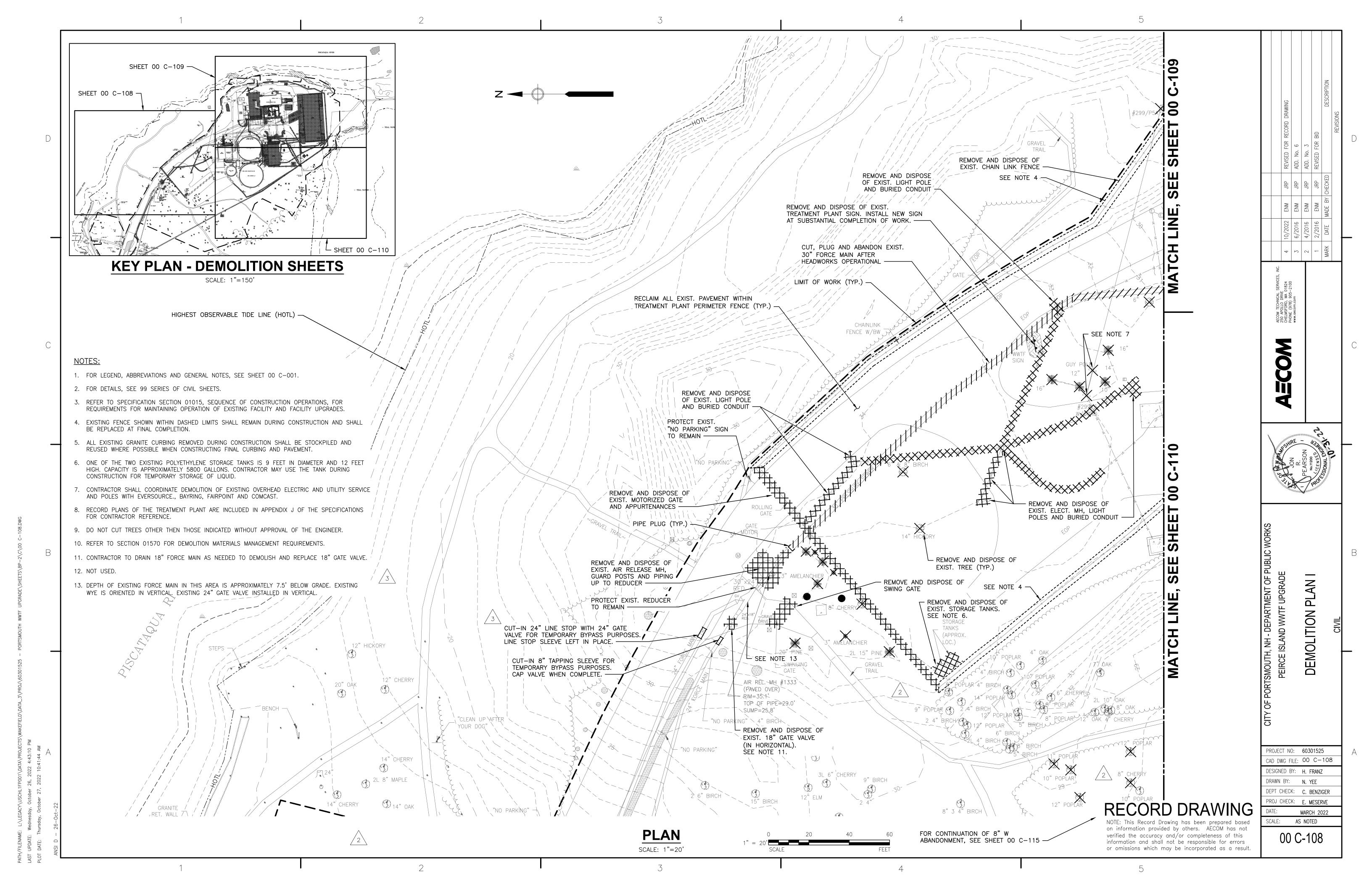


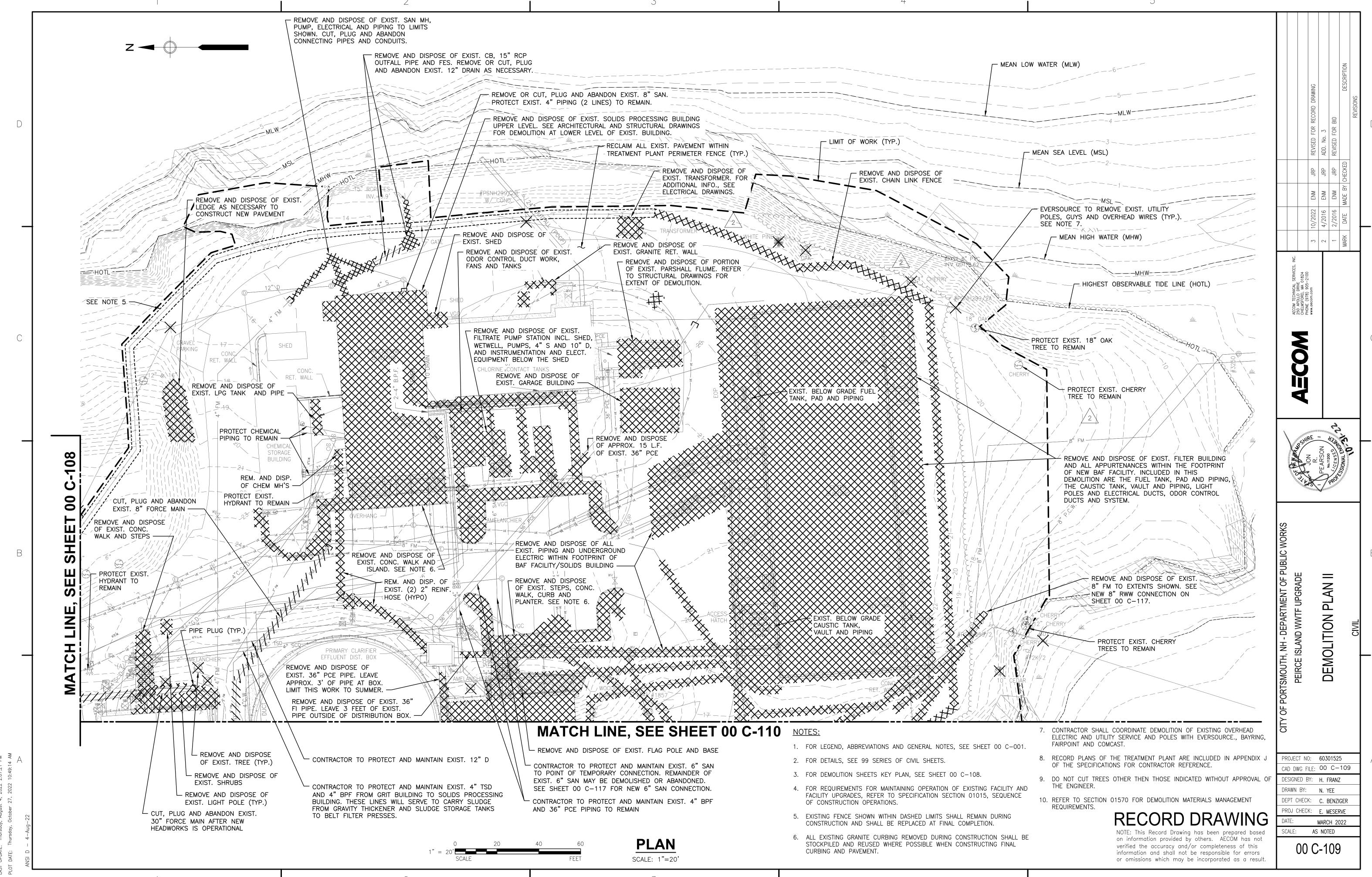


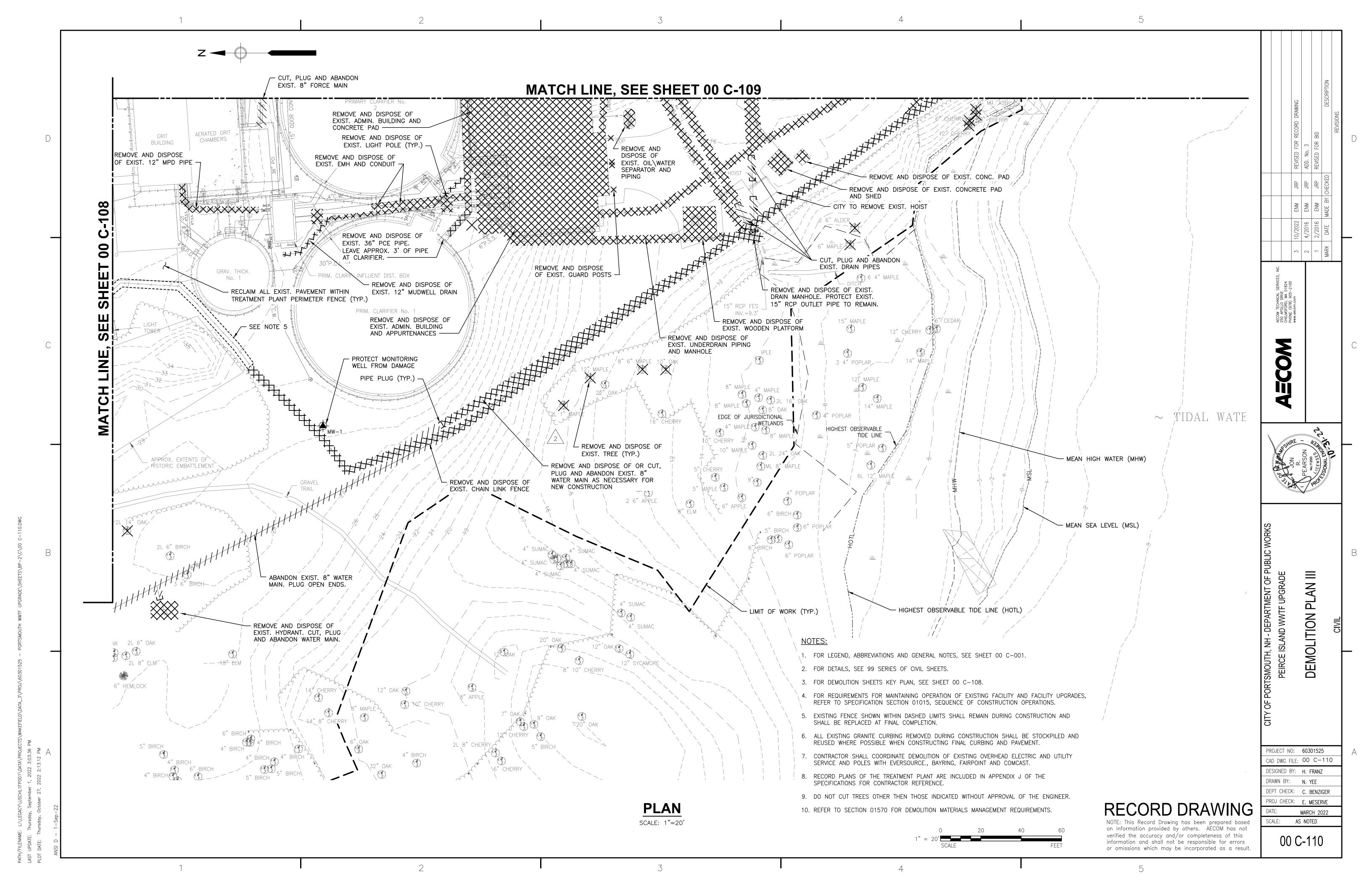


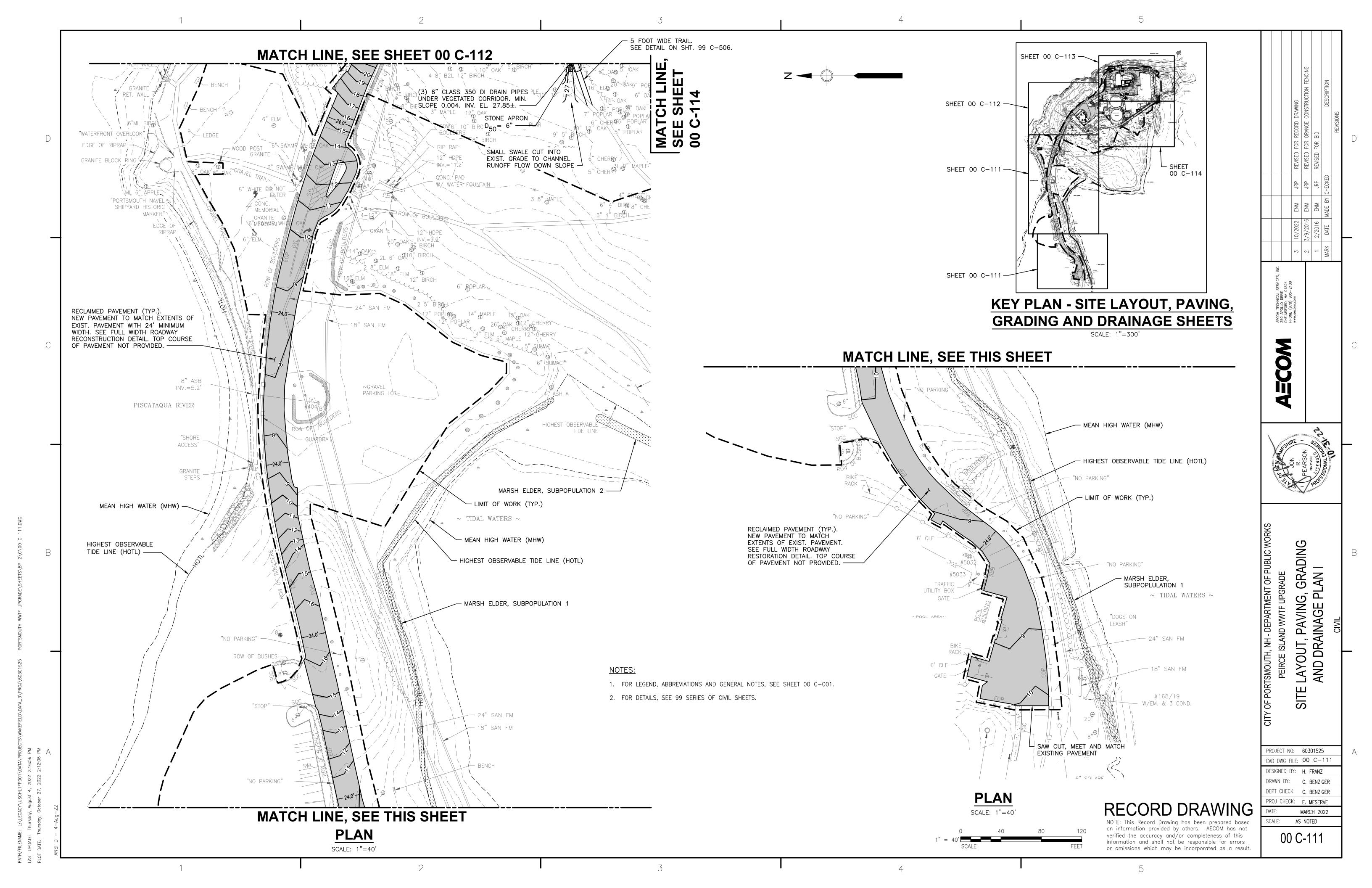


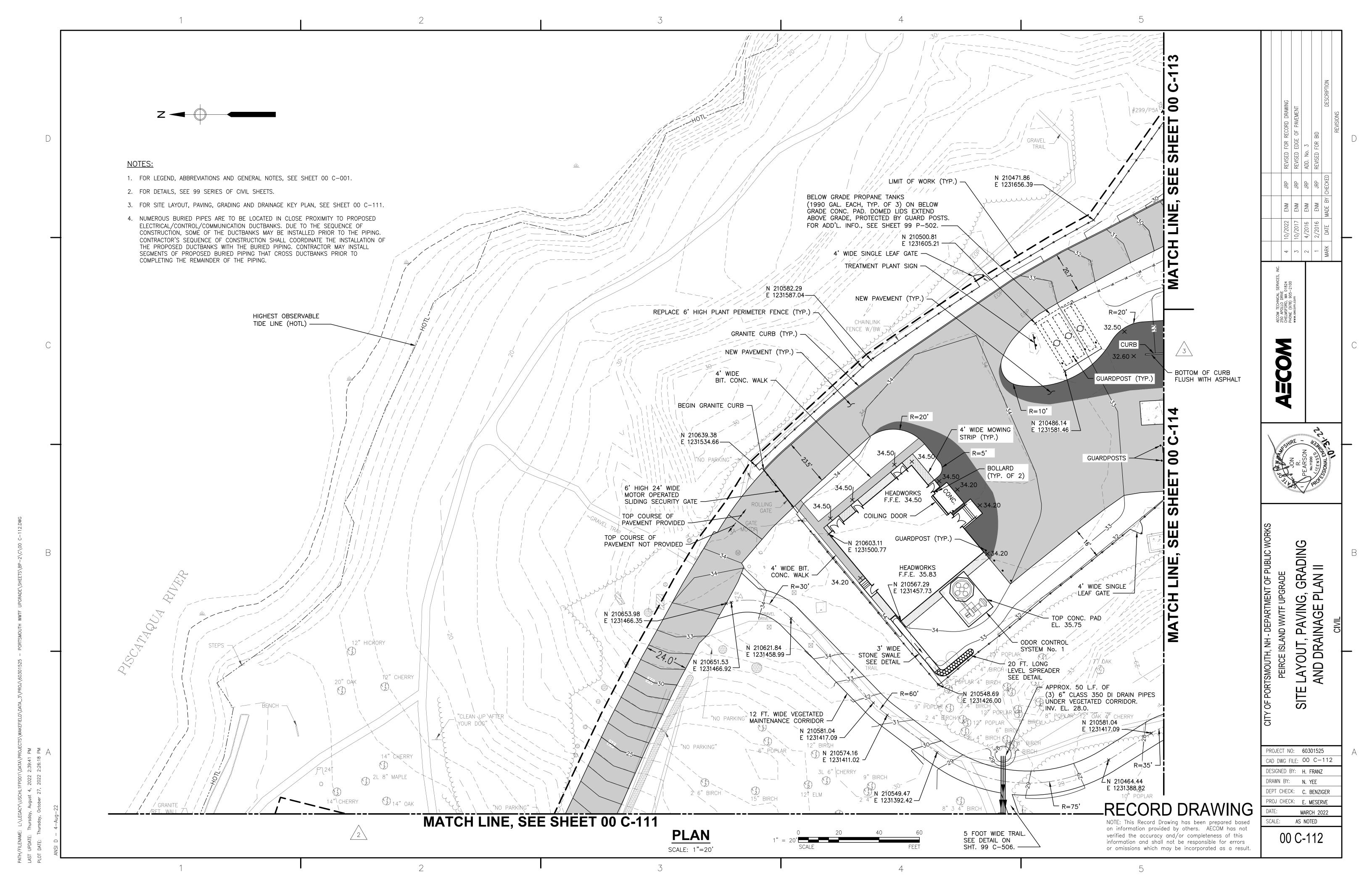


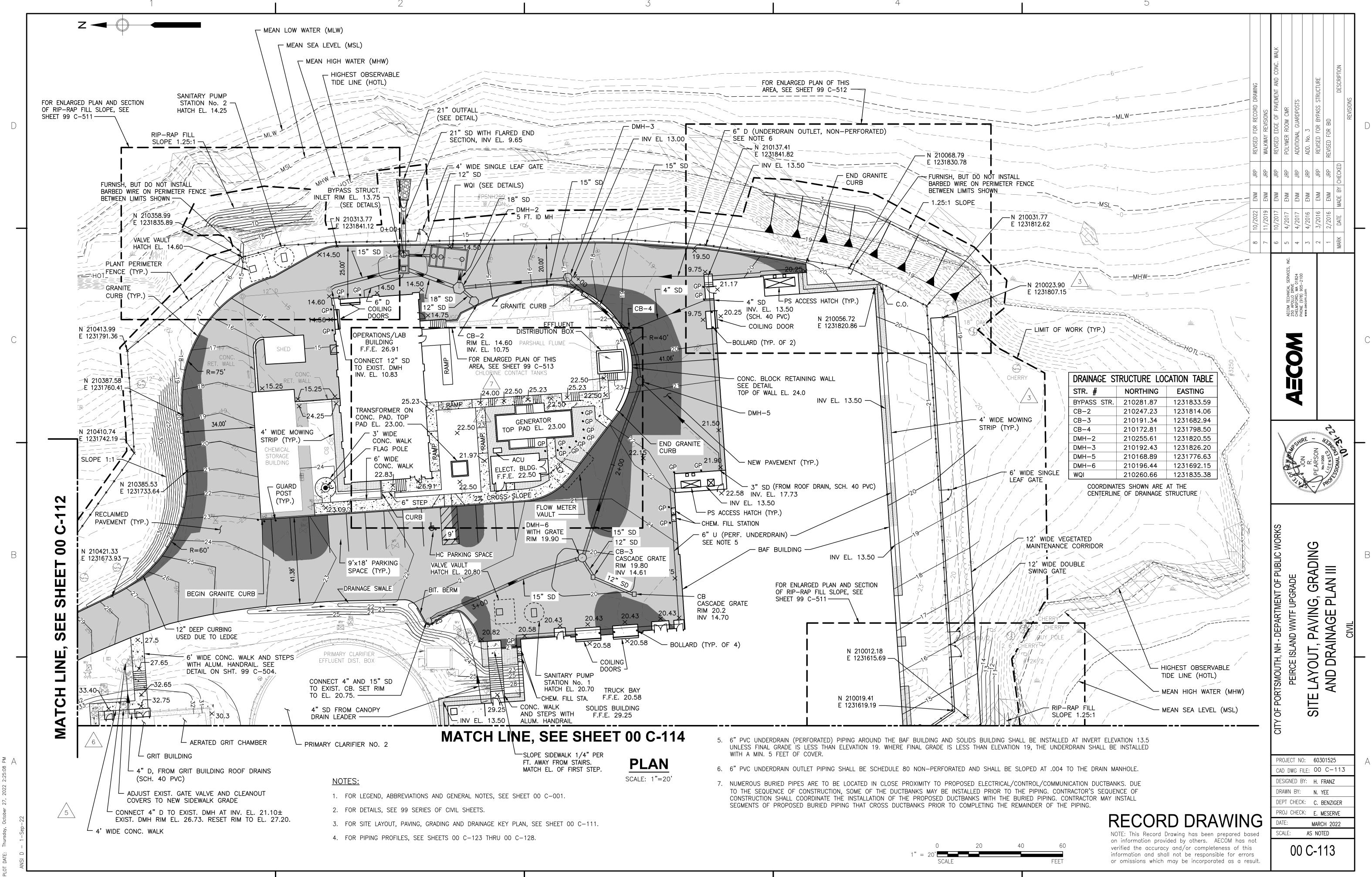








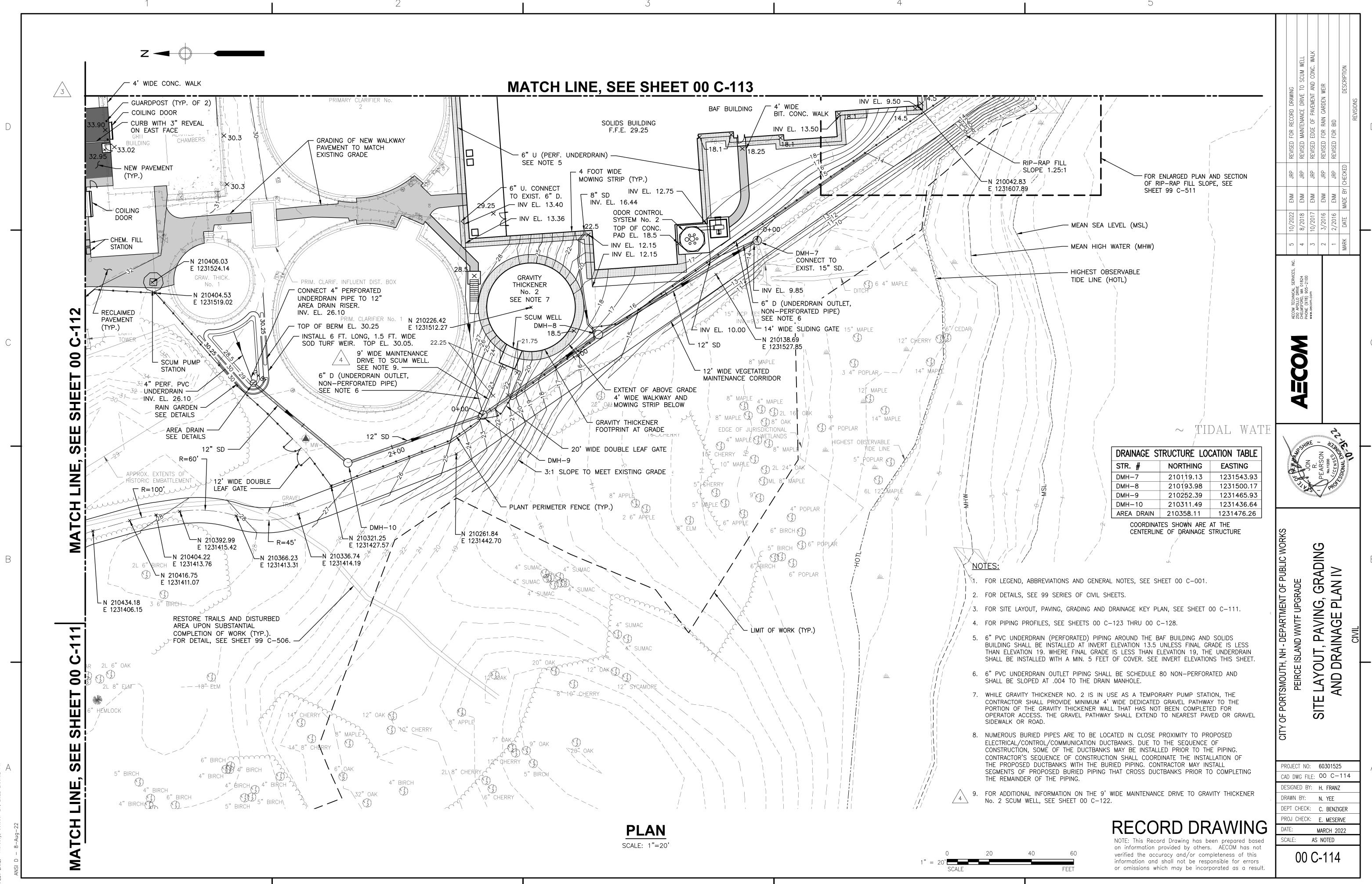


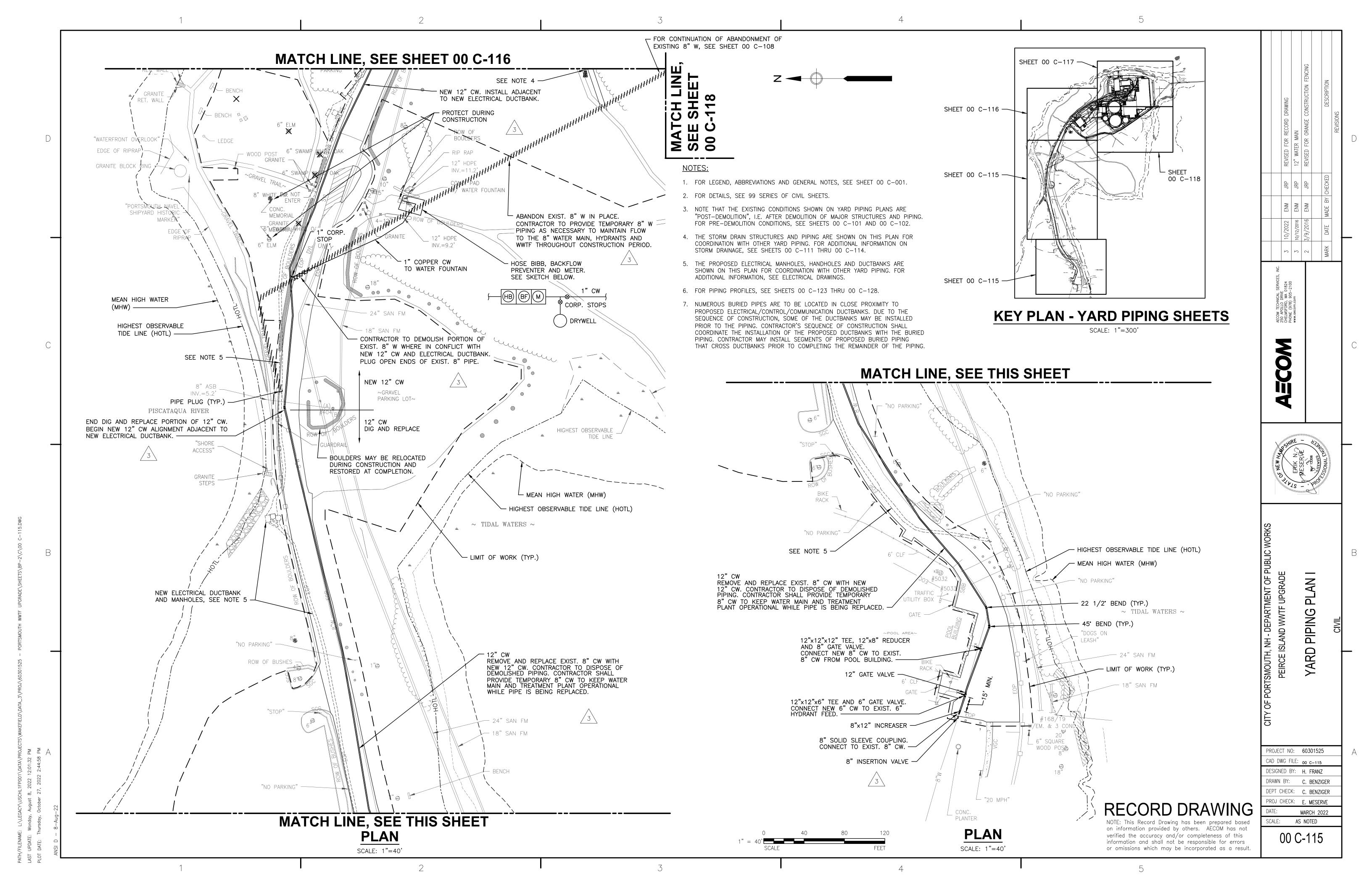


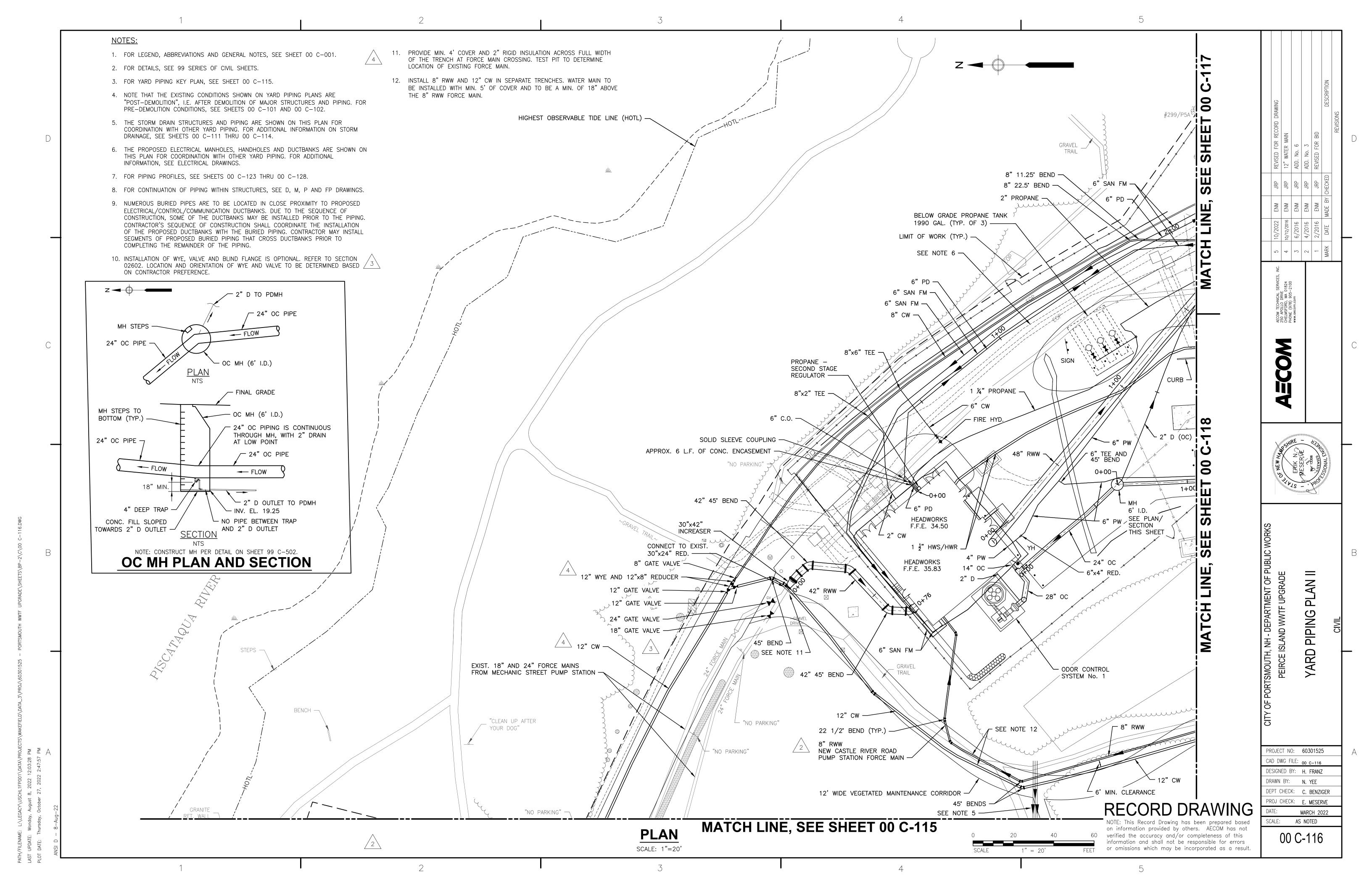
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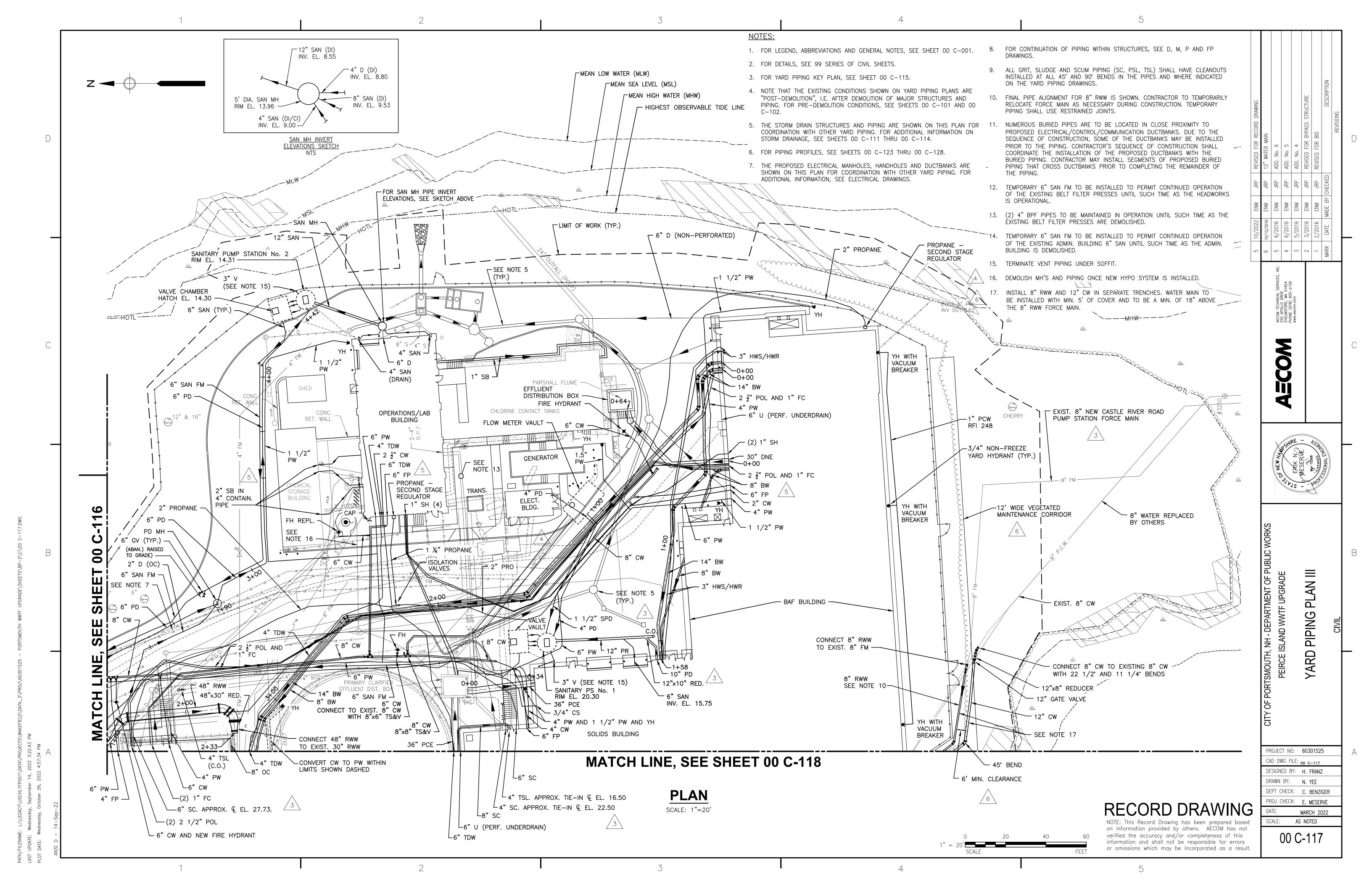
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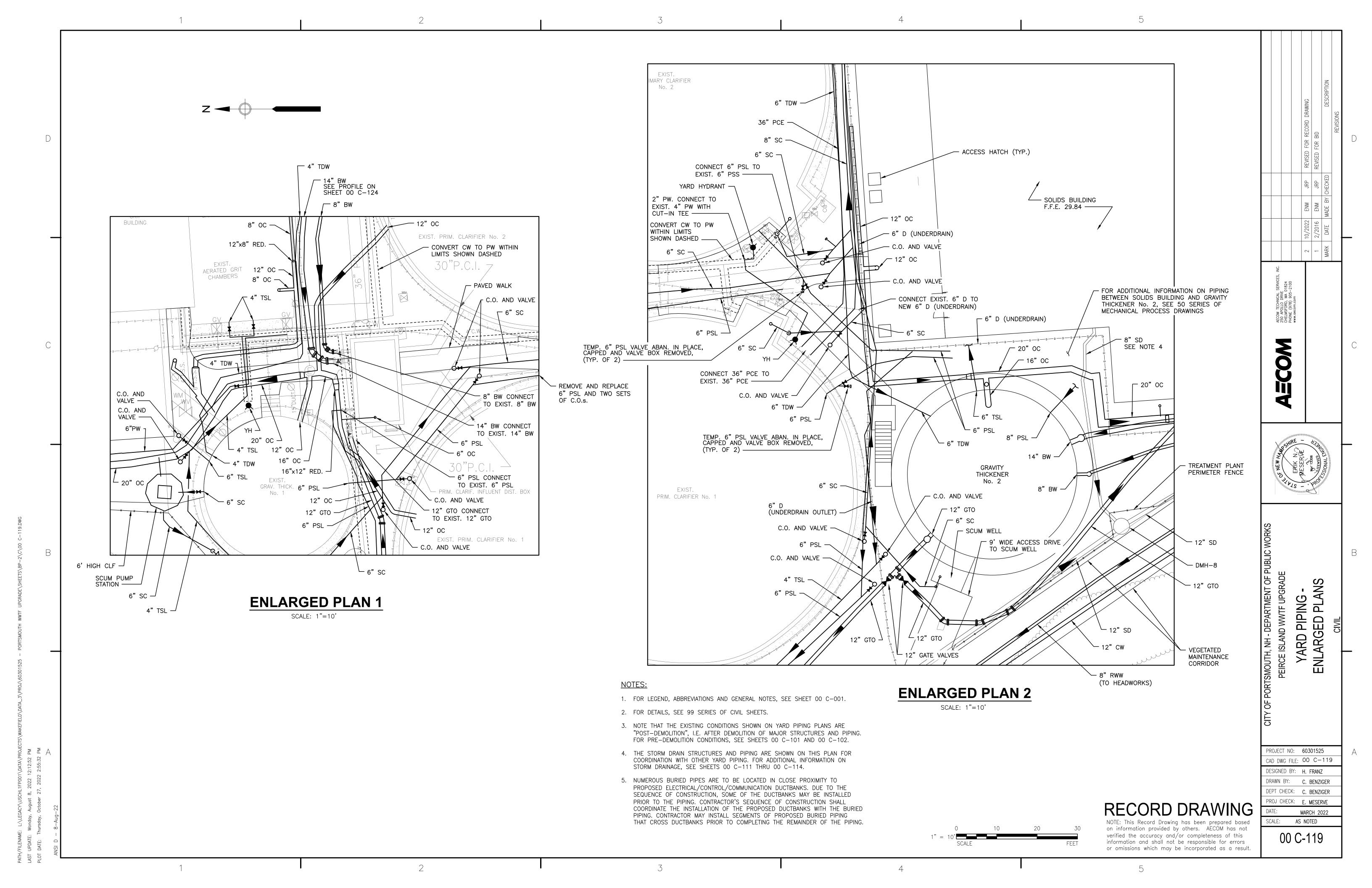


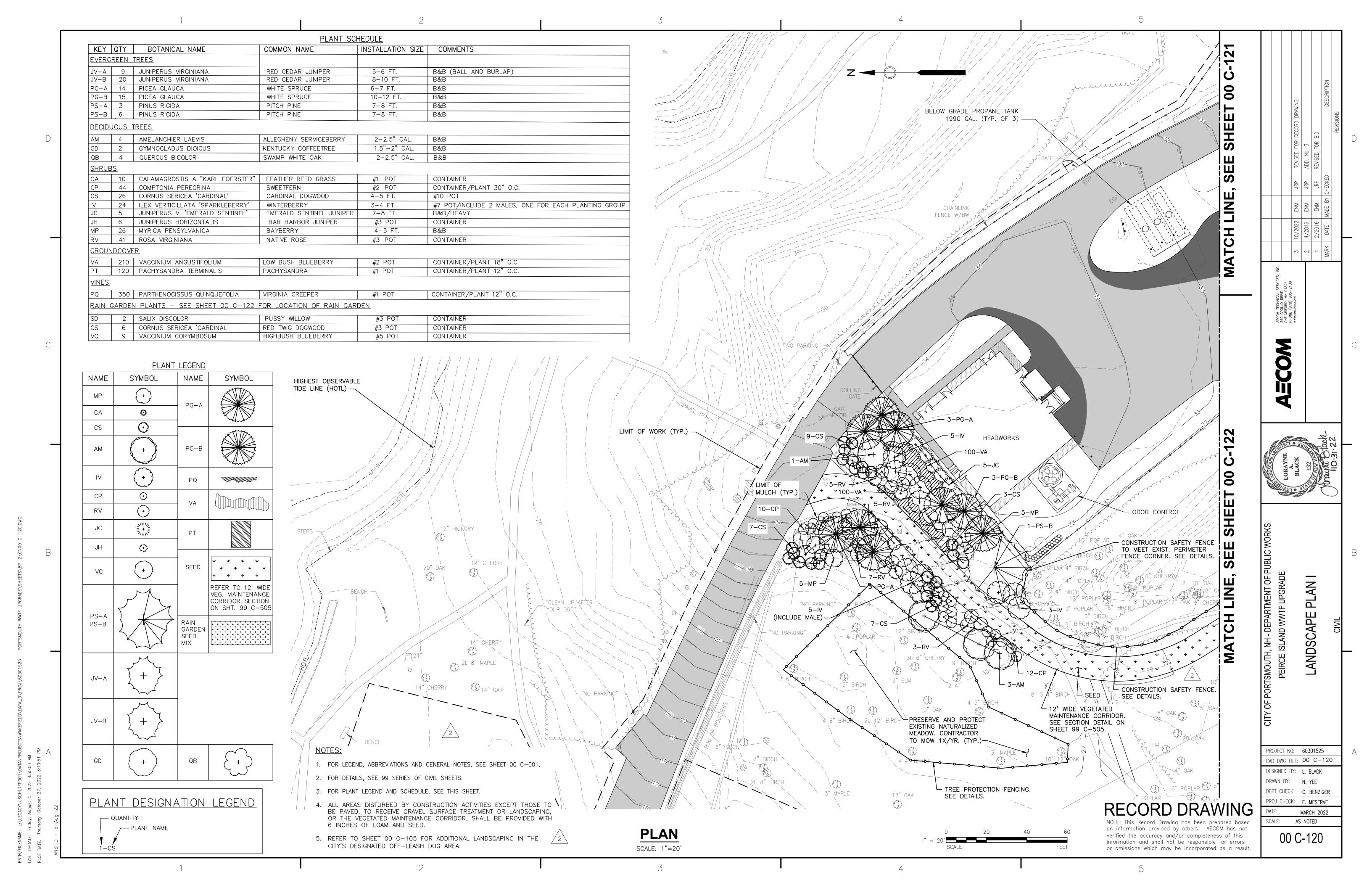


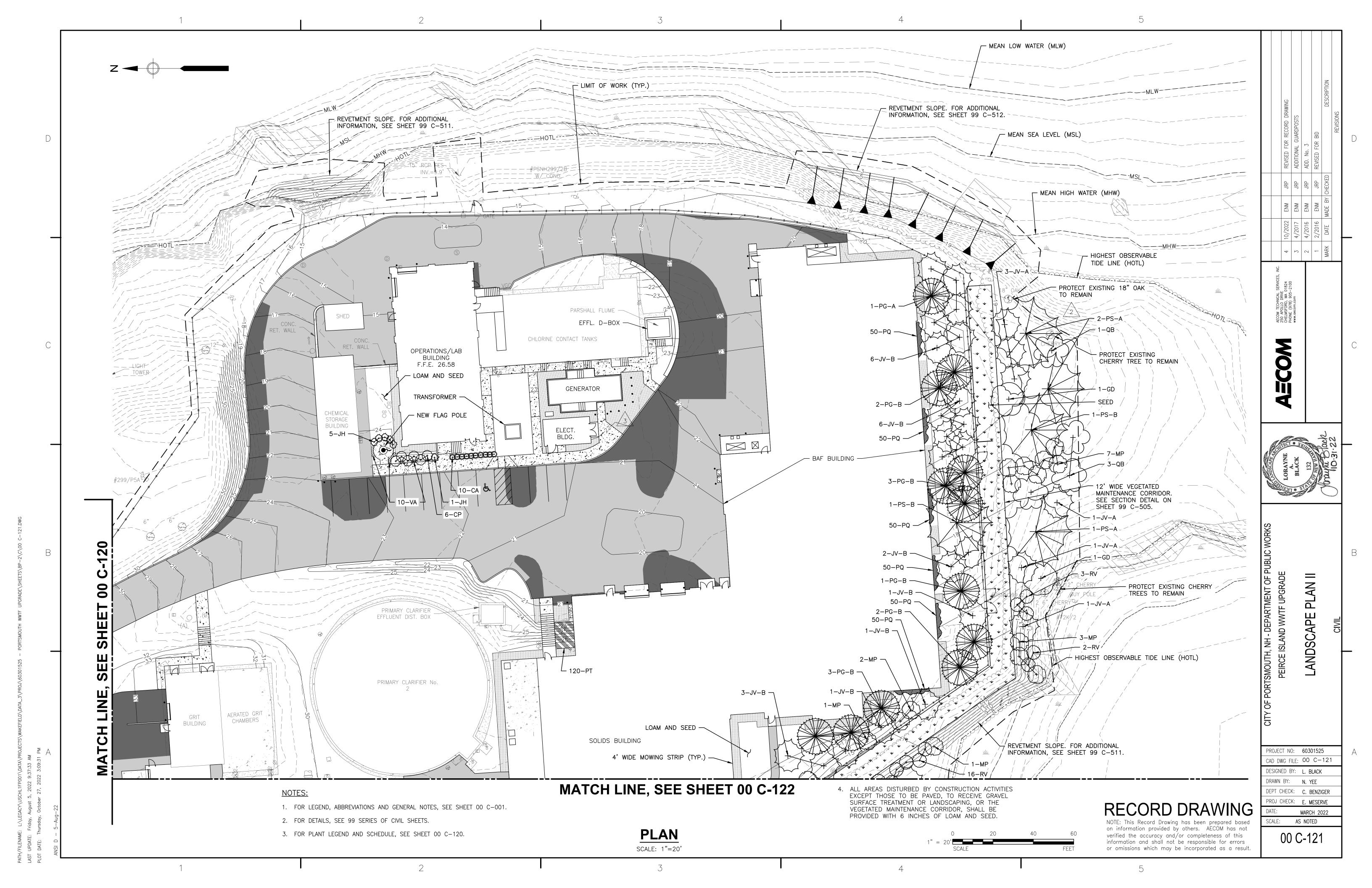


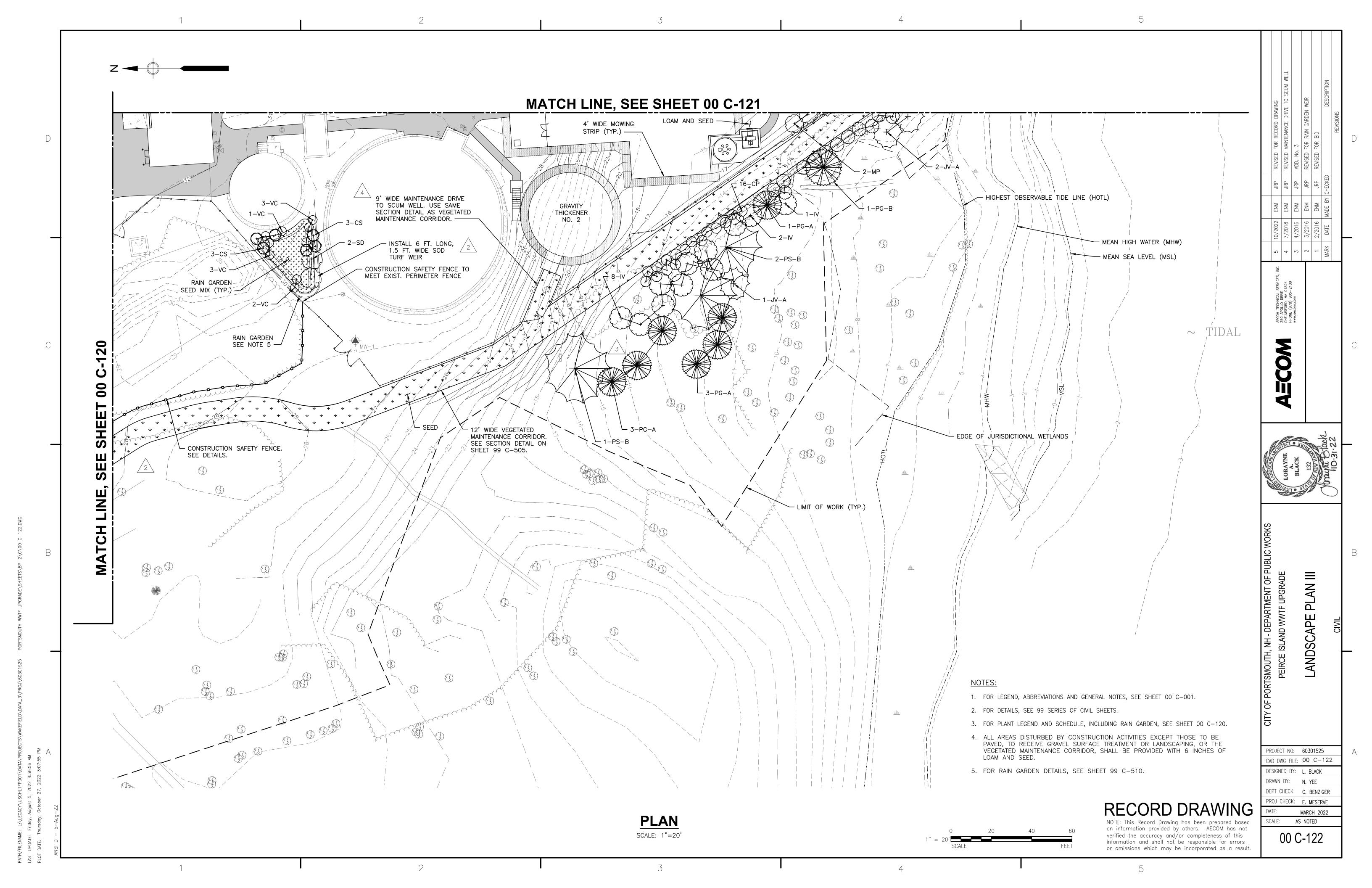


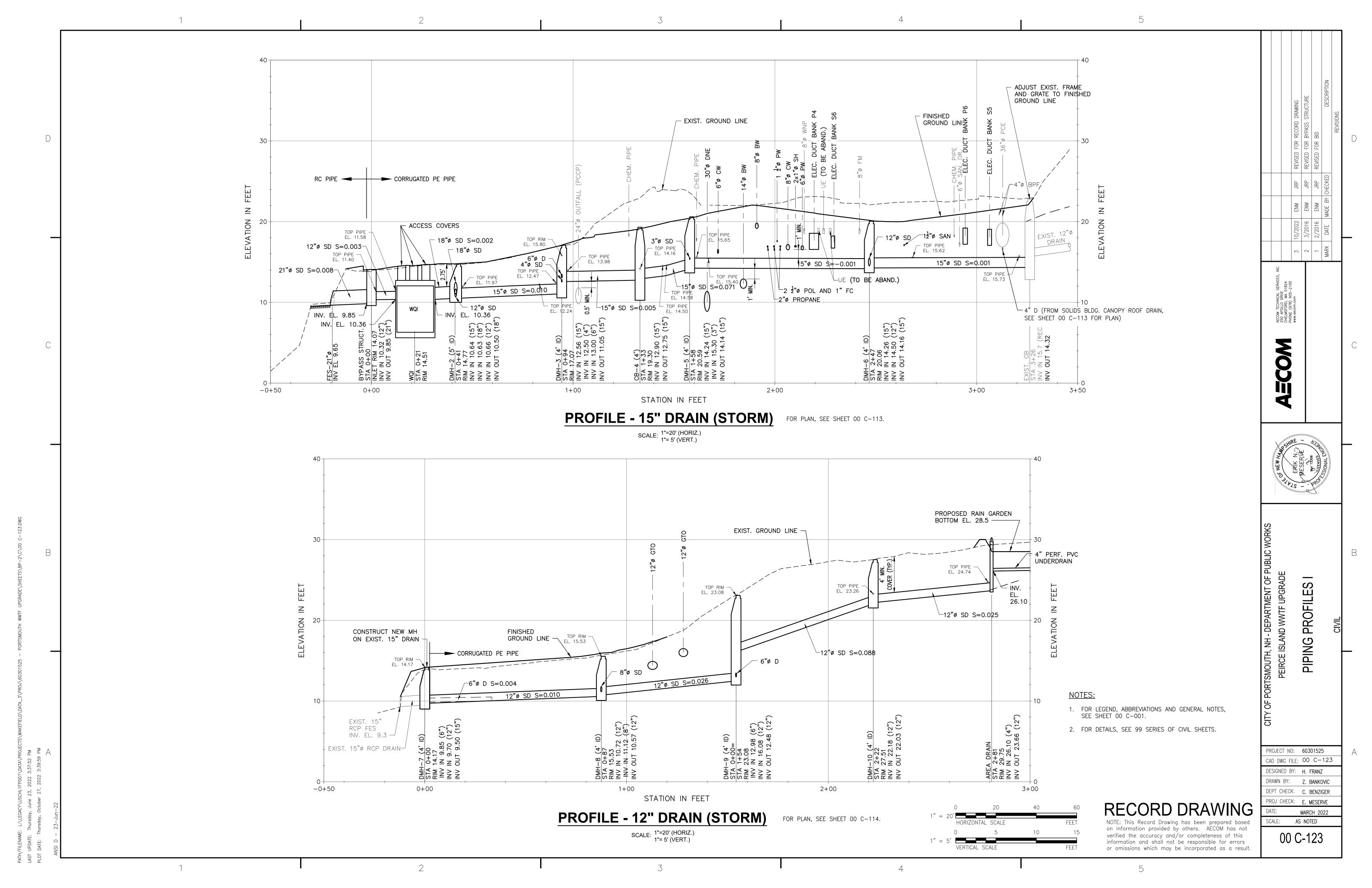
MATCH LINE, SEE SHEET 00 C-117 BAF BUILDING – 6" U (PERF. UNDERDRAIN) SEE NOTE CONVERT CW TO PW SOLIDS BUILDING WITHIN LIMITS SHOWN DASHED 2" PW CONNECT TO SEE NOTE 11 EXIST. 4" PW WITH CUT—IN TEE -38"PBW €ONNECT TO C905 PVC DOVER RIVER ROAD PUMP STATION FORCE MAIN SEE NOTE 6 45° BEND (TYP. DIAM. VARIES. ┌ 16" OC DUCT SEE 50 D DWGS. - 22 1/2° BEND (TYP.) PRESSATE MH, 4' I.D. <u>⊬</u> RIM EL. 18.20 14" BW CONNECT INV. EL. 12.00 (2" OC D) INV. EL. 9.50 (10" PR IN) TO EXIST. 14" BW INV. EL. 9.45 (10" PR OUT) TO EXIST. 6" PSL 8" RWW TO BE INSTALLED GRAVITY - 12" GTO CONNECT UNDER THE EXISTING 15" THICKENER TO EXIST. 12" GTO 15" RCP FES _ INV.=9.3' RCP DRAIN PIPE **┌**0+00 14" BW **≡COM** - HIGHEST, OBSERVABLE TIDE LINE (HOTL) CONVERT CW TO MEAN HIGH WATER (MHW) PW WITHIN LIMITS SHOWN DASHED THICKENER -MEAN SEA LEVEL (MSL) SCUM PS HATCH EL. 31.0 -HEAT TRACE AND INSULATE ABOVE GRADE PIPING ----SEE ENLARGED PLAN 1 SHEET 00 C-119 - \sim TIDAL EDGE OF JURISDICTIONAL WETLANDS RAIN GARDEN -HIGHEST OBSERVABLE 12' WIDE VEGETATED TIDE LINE 12" GATE VALVE MAINTENANCE CORRIDOR (TYP. OF 2) APPROX. EXTENTS OF SEE ENLARGED PLAN 2 HISTORIC EMBATTLEMENT 3' MIN. CLEARANCE SHEET 00 C-119 1. FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES, SEE SHEET 00 C-001. 8" PCW WAS DEMOLISHED/ABANDONED 2. FOR DETAILS, SEE 99 SERIES OF CIVIL SHEETS. AFTER NEW 8" CW FROM PEIRCE ISLAND 3. FOR YARD PIPING KEY PLAN, SEE SHEET 00 C-115. / POOL TO WWTF SITE WAS INSTALLED 4. NOTE THAT THE EXISTING CONDITIONS SHOWN ON YARD PIPING PLANS ARE "POST-DEMOLITION", I.E. AFTER DEMOLITION OF MAJOR STRUCTURES AND PIPING. FOR - SEE NOTE 5 PRE-DEMOLITION CONDITIONS, SEE SHEETS 00 C-101 AND 00 C-102. DOVER RIVER ROAD PUMP 5. THE STORM DRAIN STRUCTURES AND PIPING ARE SHOWN ON THIS PLAN FOR STATION FORCE MAIN COORDINATION WITH OTHER YARD PIPING. FOR ADDITIONAL INFORMATION ON STORM DRAINAGE, SEE SHEETS 00 C-111 THRU 00 C-114. - 12" CW 6. THE PROPOSED ELECTRICAL MANHOLES, HANDHOLES AND DUCTBANKS ARE SHOWN ON - 22 1/2° BEND (TYP.) THIS PLAN FOR COORDINATION WITH OTHER YARD PIPING. FOR ADDITIONAL INFORMATION, SEE ELECTRICAL DRAWINGS. - LIMIT OF WORK (TYP.) 7. FOR PIPING BETWEEN SOLIDS BUILDING AND GRAVITY THICKENER No. 2, SEE 1/4° BEND (TYP.) OR MECHANICAL SHEETS. DEFLÉCT AT PIPÈ JOÍNT 8. FOR PIPING PROFILES, SEE SHEETS 00 C-123 THRU 00 C-128. 9. FOR CONTINUATION OF PIPING WITHIN STRUCTURES, SEE D, M, P AND FP DRAWINGS. ARD 10. ALL GRIT, SLUDGE AND SCUM PIPING (SC, PSL, TSL) SHALL HAVE CLEANOUTS INSTALLED AT ALL 45° AND 90° BENDS IN THE PIPES AND WHERE INDICATED ON THE YARD PIPING DRAWINGS. 11. REPLACE ALL YARD HYDRANTS ASSOCIATED WITH THIS SYSTEM. SEE NON-FREEZE YARD HYDRANT DETAIL. 12. NUMEROUS BURIED PIPES ARE TO BE LOCATED IN CLOSE PROXIMITY TO PROPOSED ELECTRICAL/CONTROL/COMMUNICATION DUCTBANKS. DUE TO THE SEQUENCE OF CONSTRUCTION, SOME OF THE DUCTBANKS MAY BE INSTALLED PRIOR TO THE PIPING. CONTRACTOR'S SEQUENCE OF CONSTRUCTION SHALL COORDINATE THE INSTALLATION OF THE PROPOSED DUCTBANKS WITH THE BURIED PIPING. CONTRACTOR MAY INSTALL SEGMENTS OF PROPOSED BURIED PIPING THAT CROSS DUCTBANKS PRIOR TO PROJECT NO: 60301525 COMPLETING THE REMAINDER OF THE PIPING. CAD DWG FILE: 00 C-118 /13. INSTALL 8" RWW AND 12" CW IN SEPARATE TRENCHES. WATER MAIN TO BE DESIGNED BY: H. FRANZ INSTALLED WITH MIN. 5' OF COVER AND TO BE A MIN. OF 18" ABOVE THE 8" RWW FORCE MAIN. DRAWN BY: N. YEE DEPT CHECK: C. BENZIGER PROJ CHECK: E. MESERVE RECORD DRAWING MARCH 2022 **PLAN** AS NOTED on information provided by others. AECOM has not SCALE: 1"=20' 00 C-118 verified the accuracy and/or completeness of this information and shall not be responsible for errors or omissions which may be incorporated as a result.

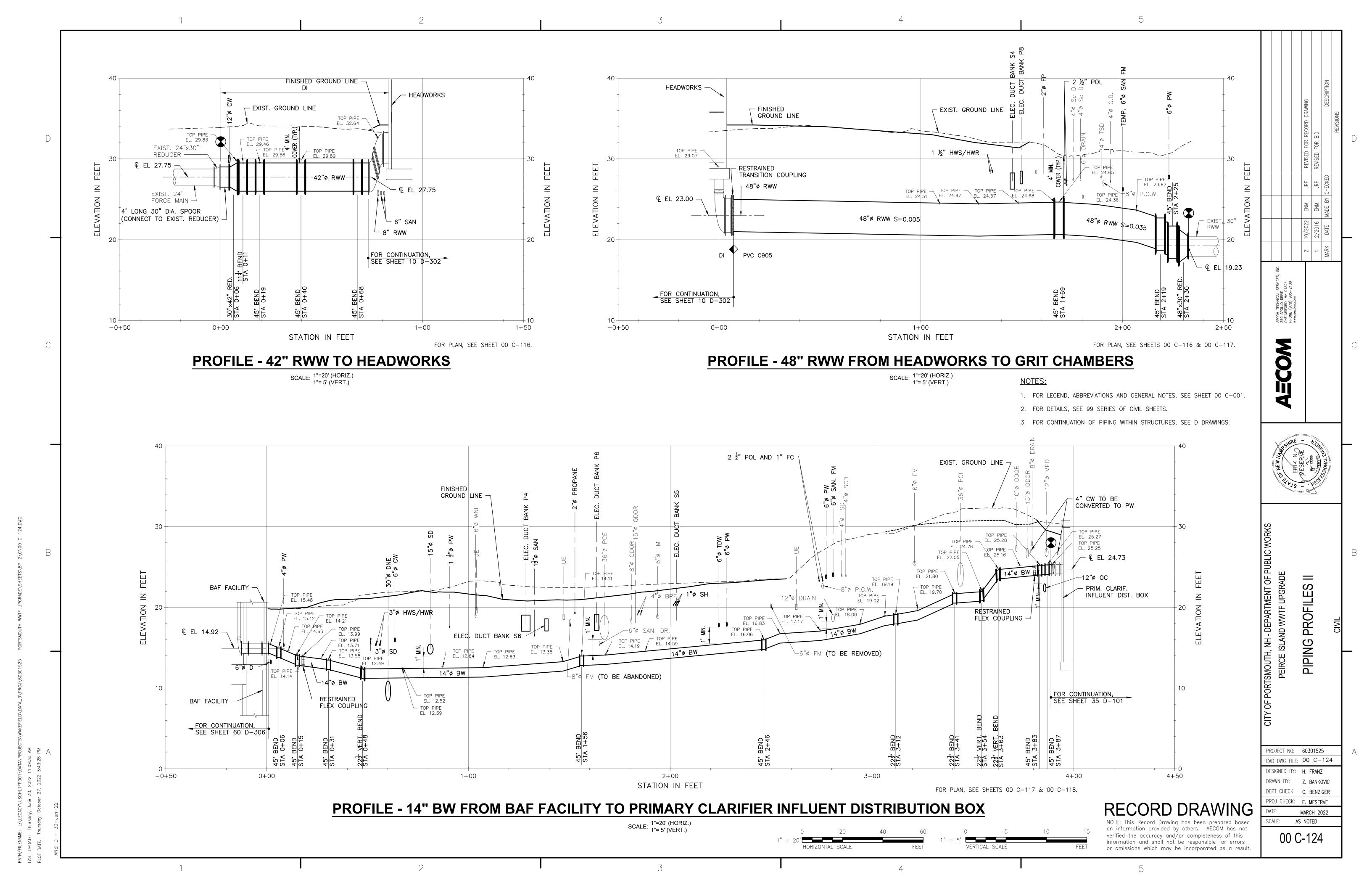


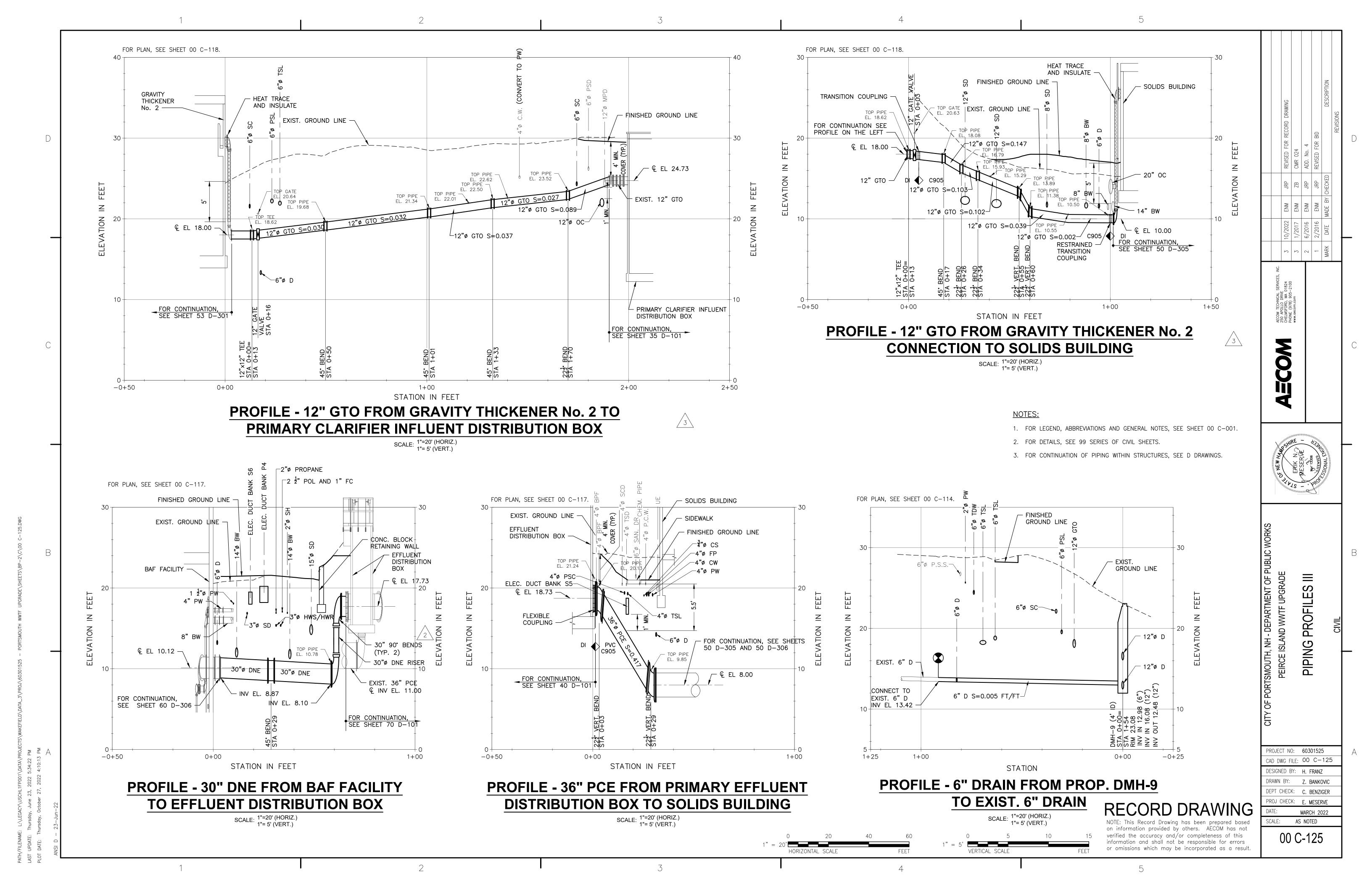


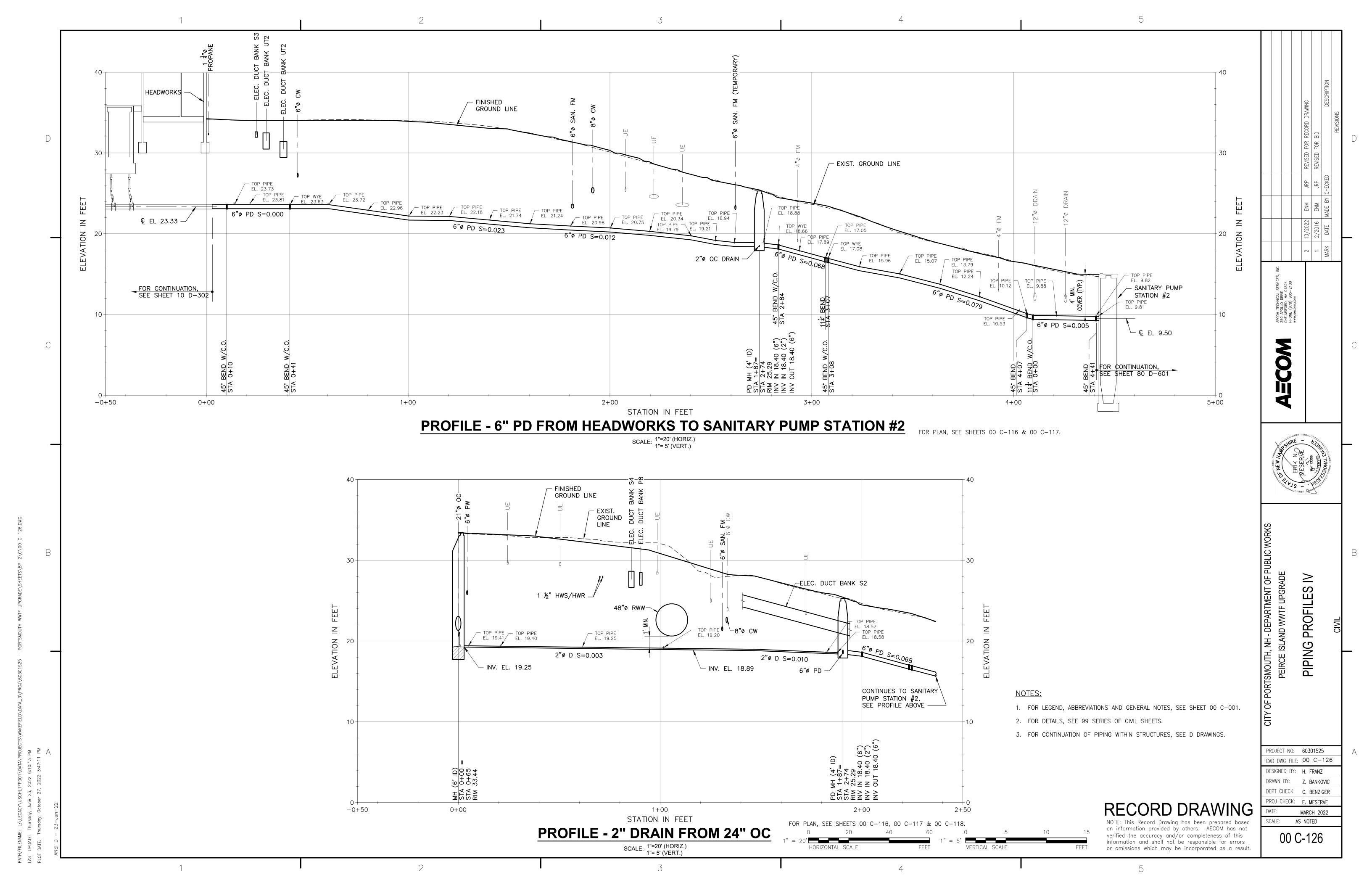


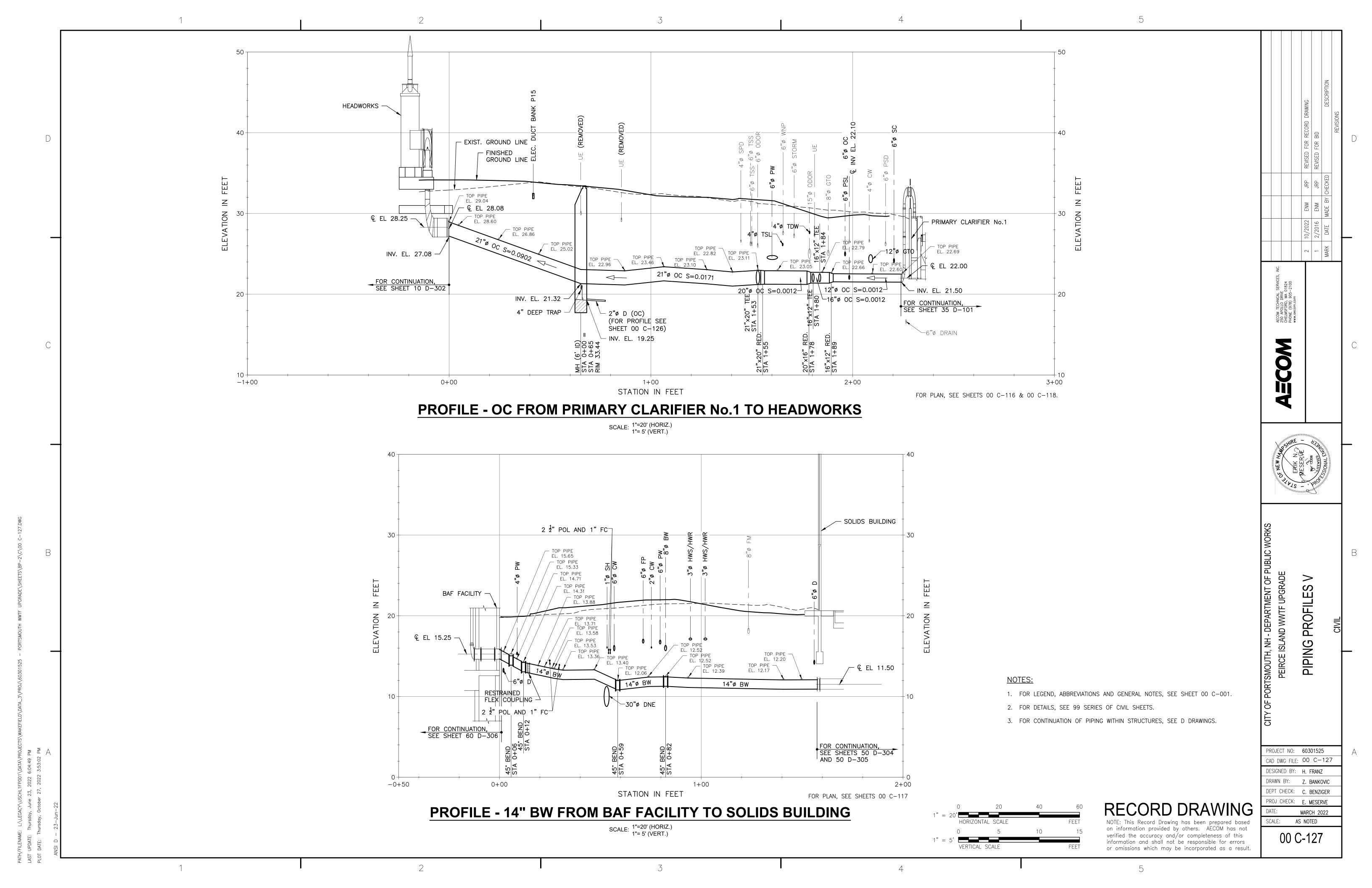


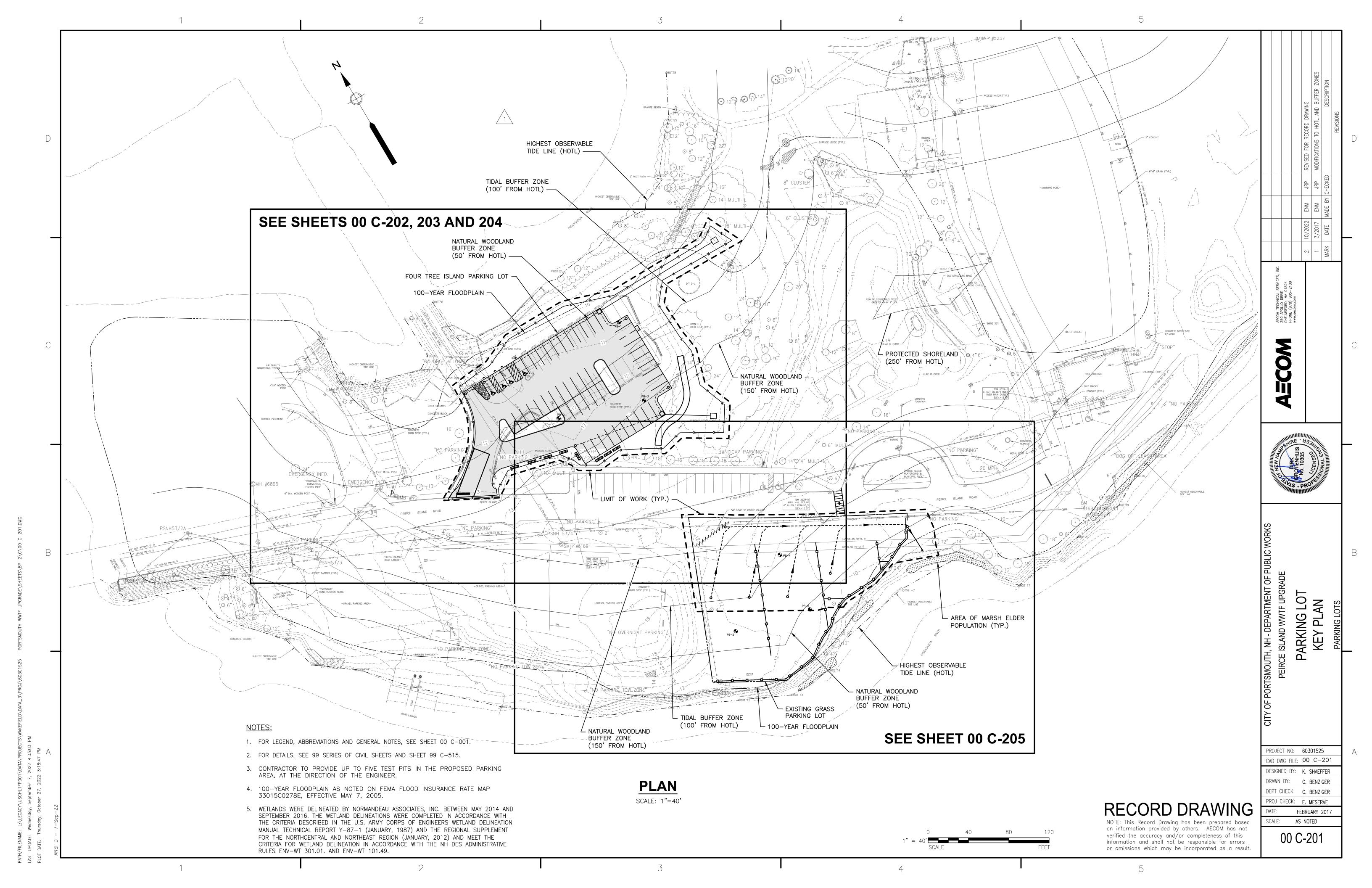


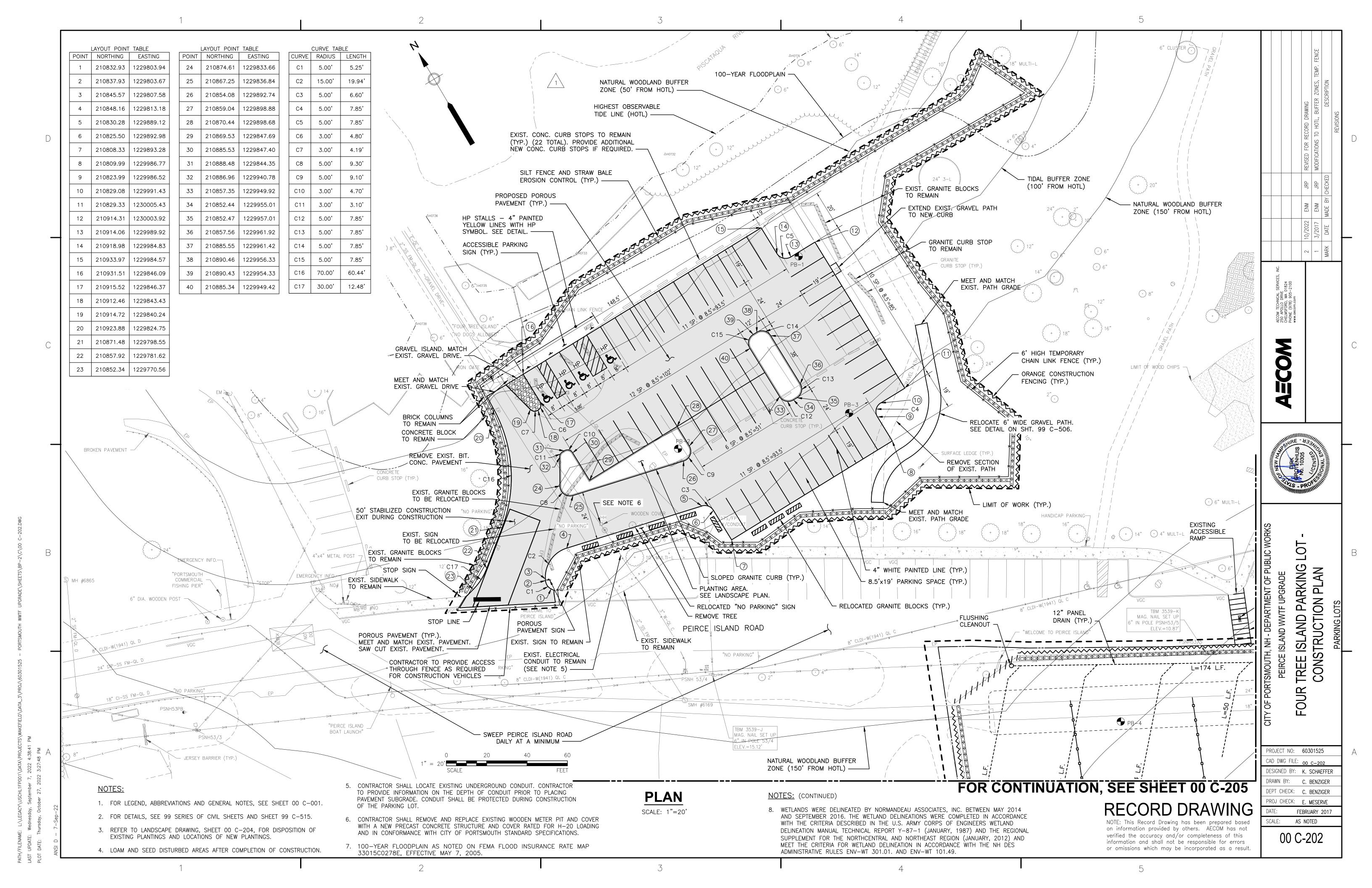


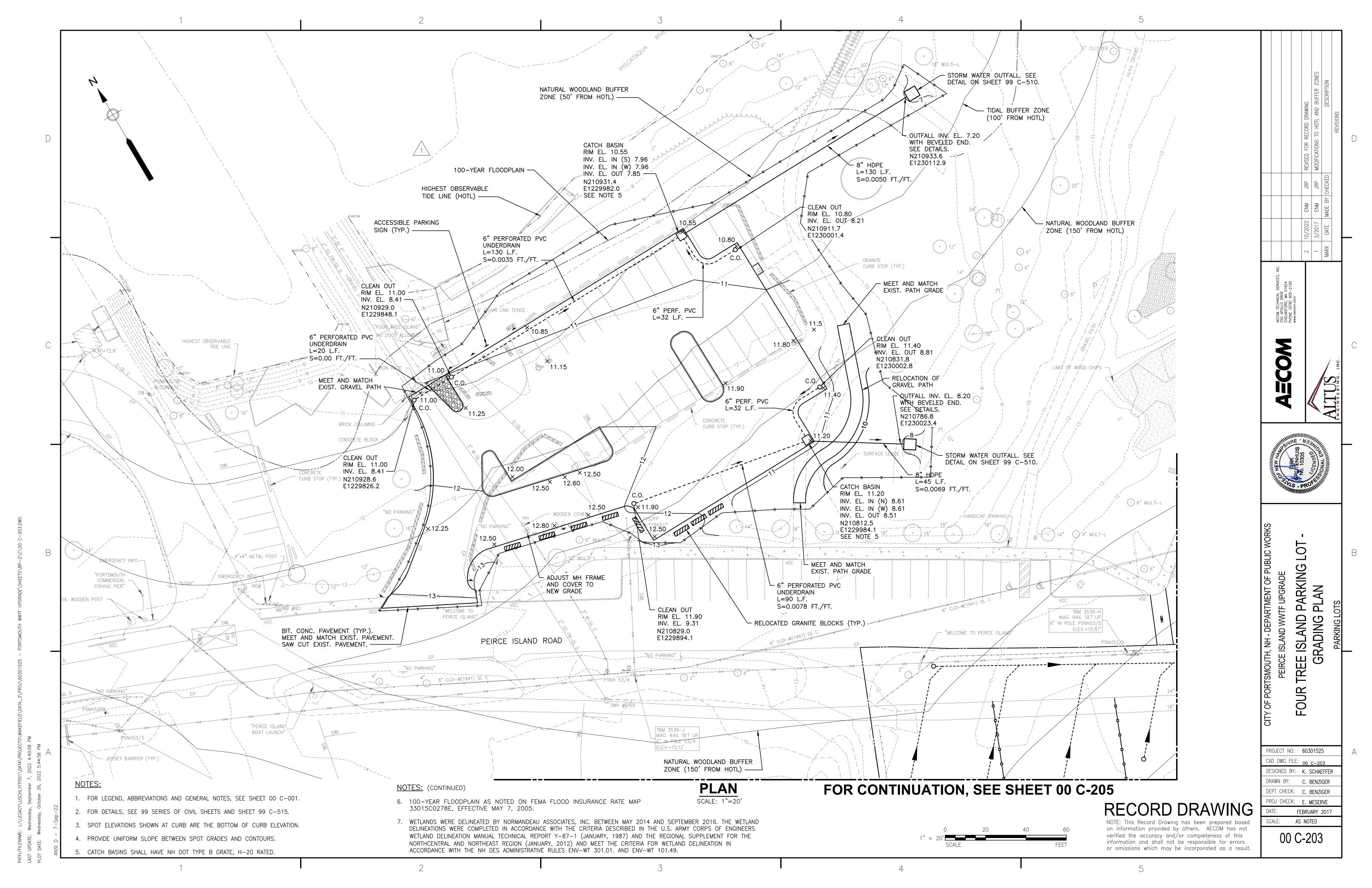


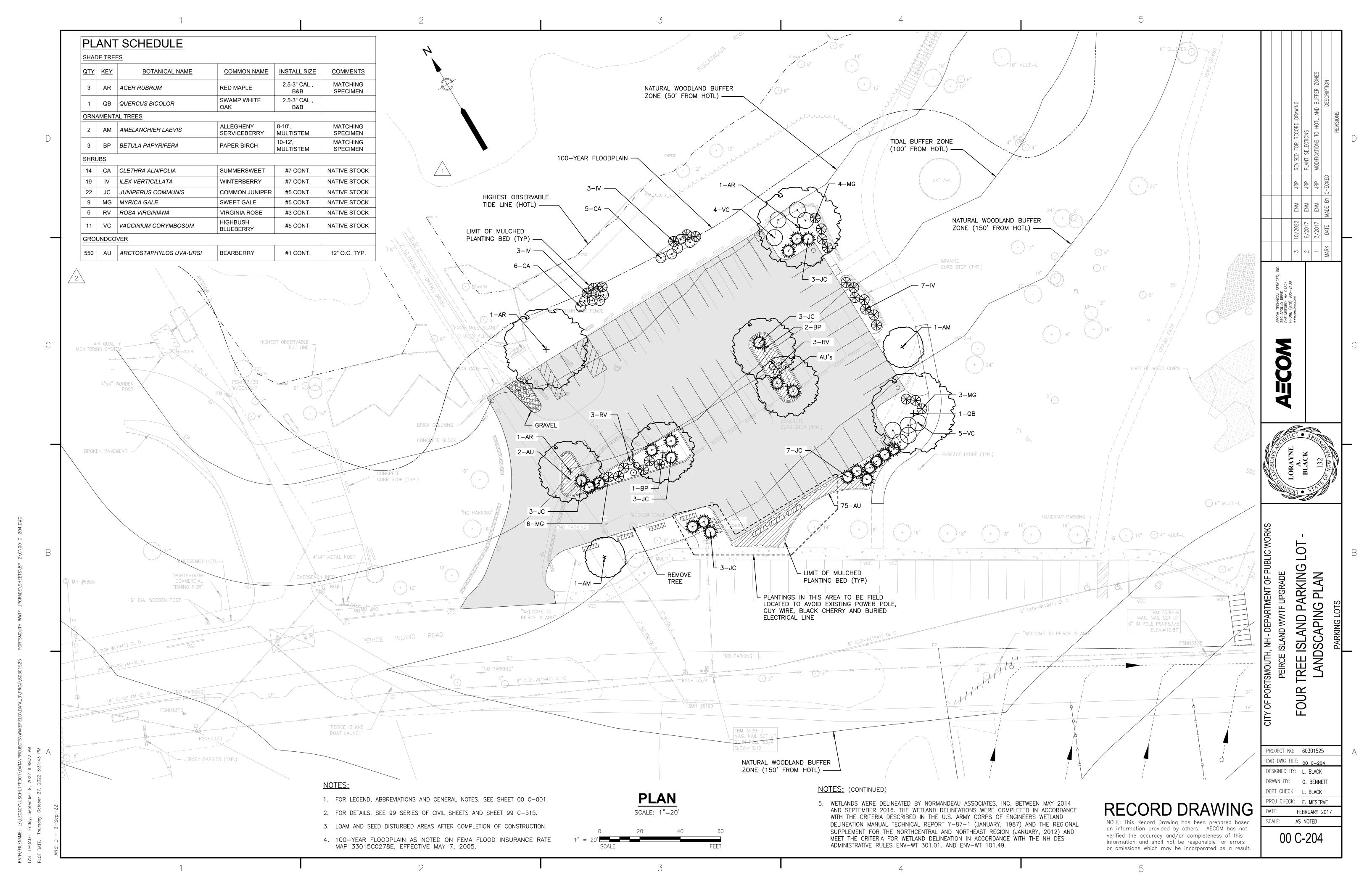


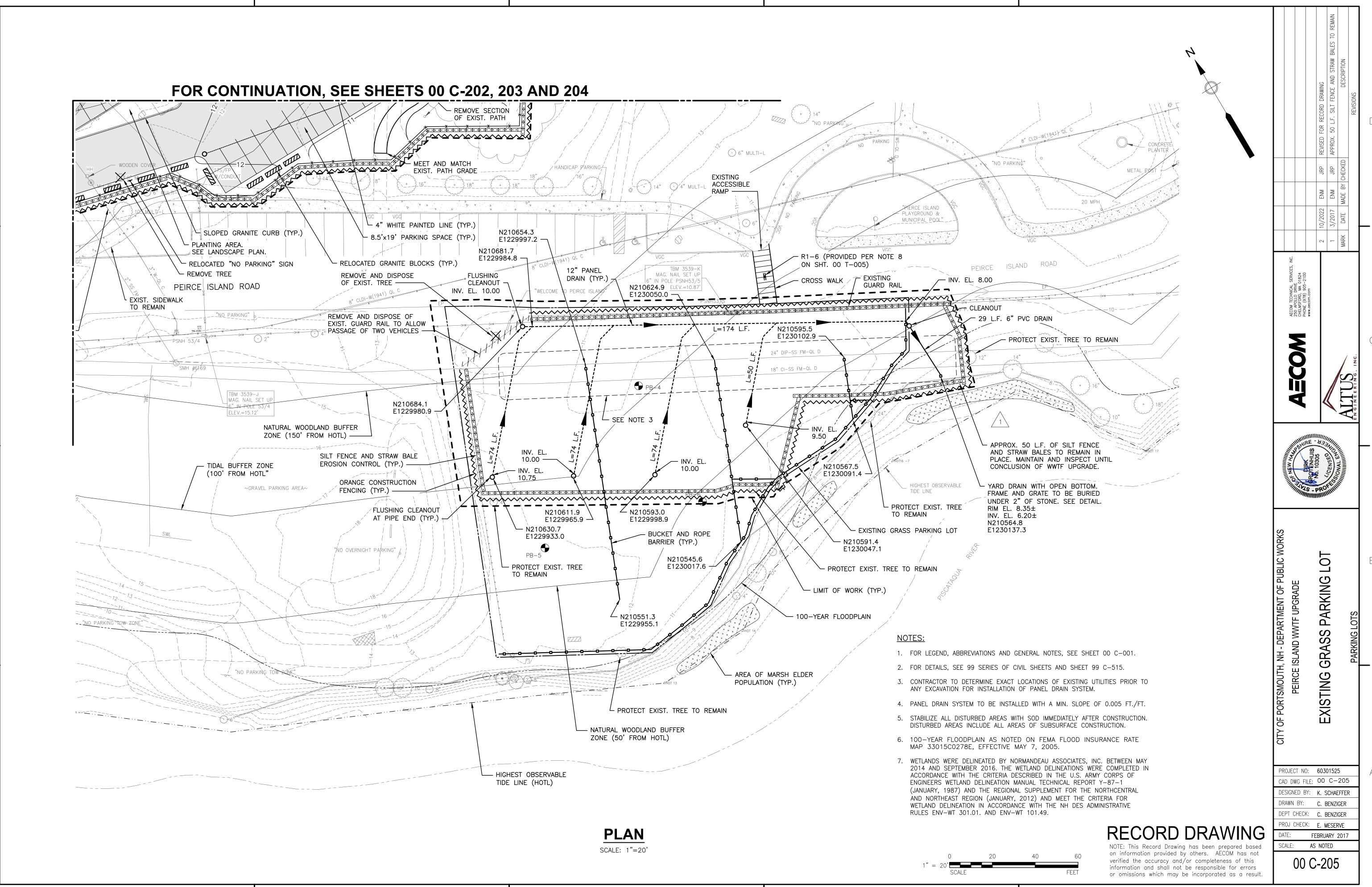


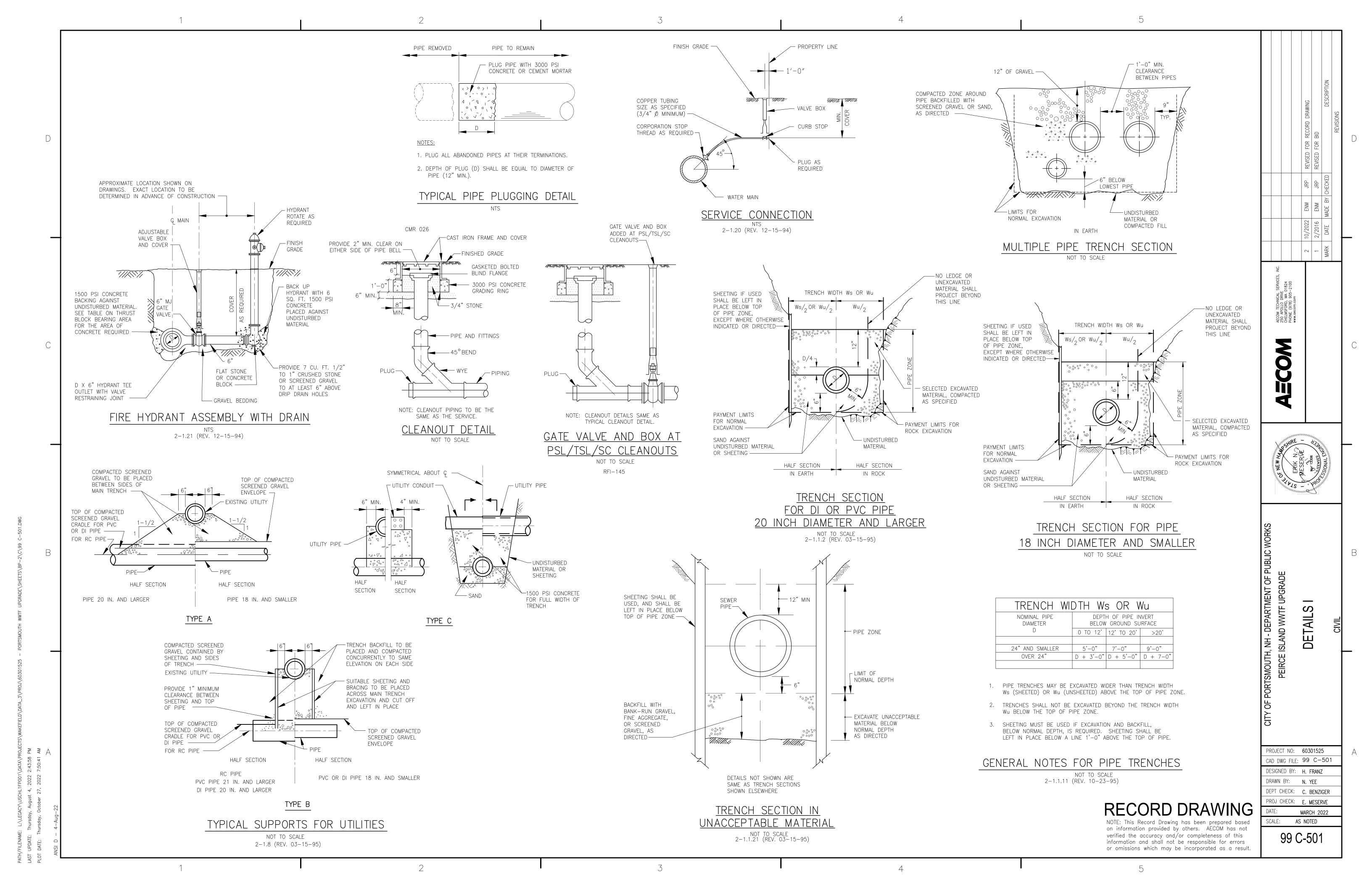


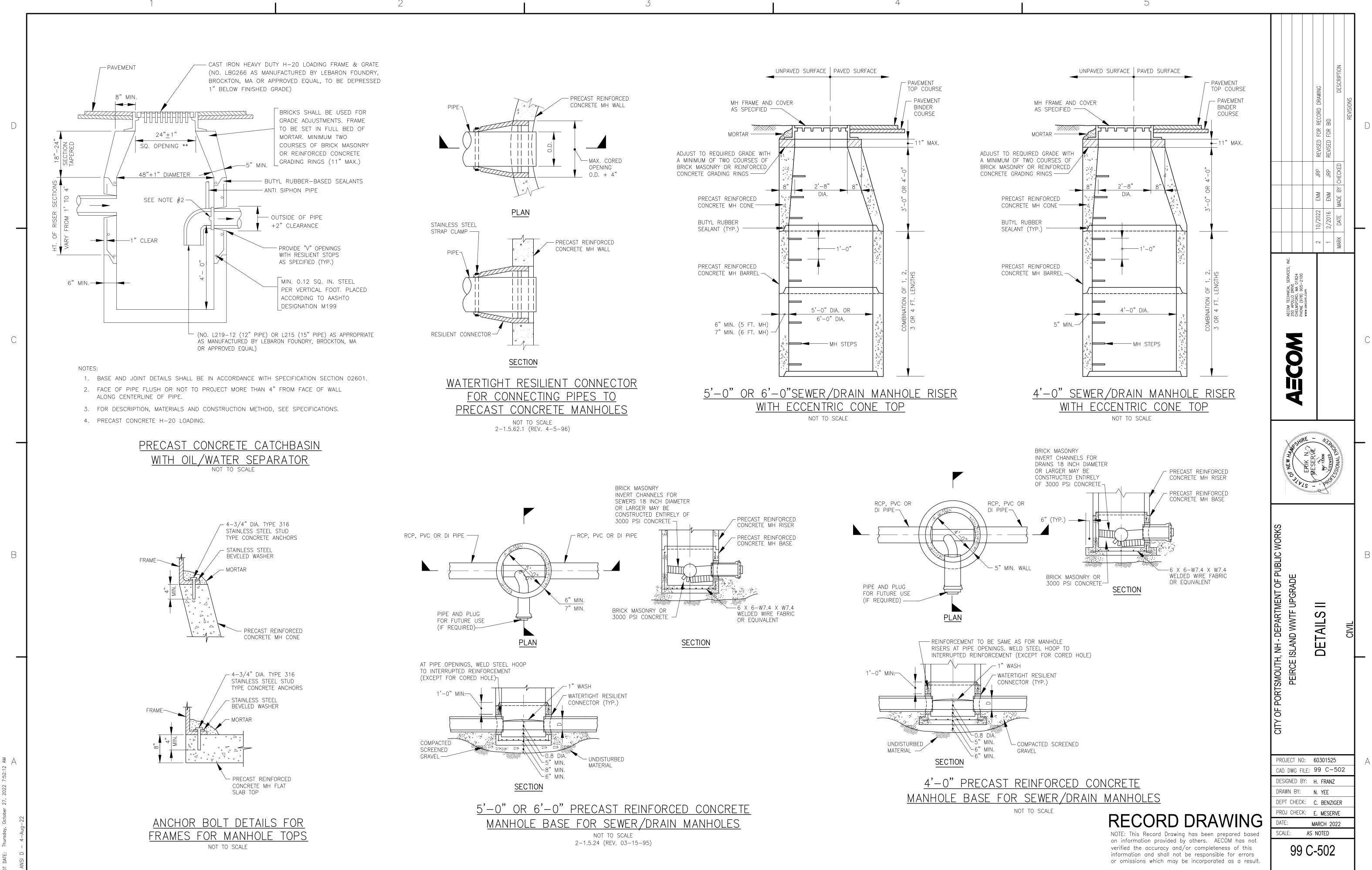


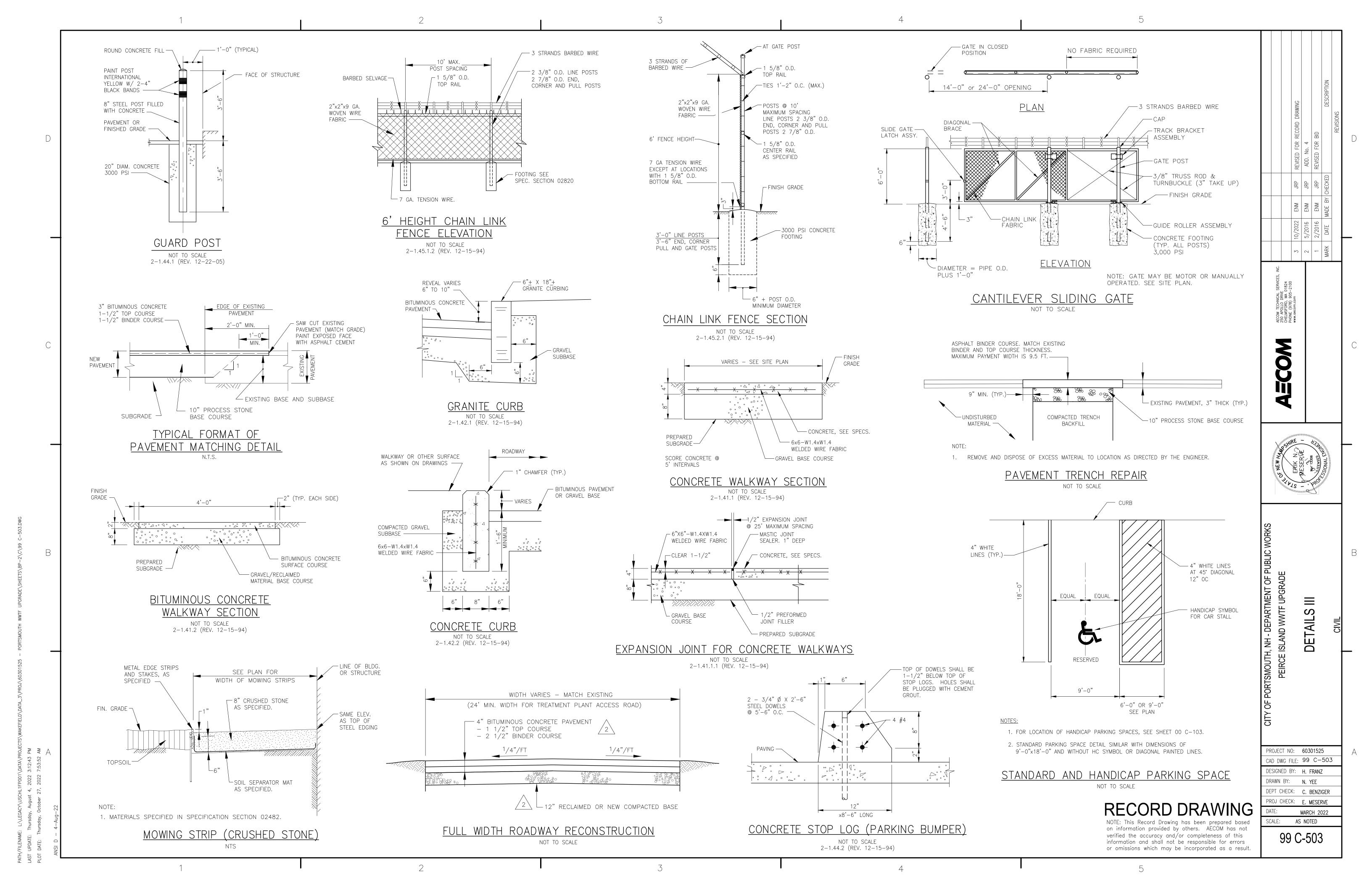


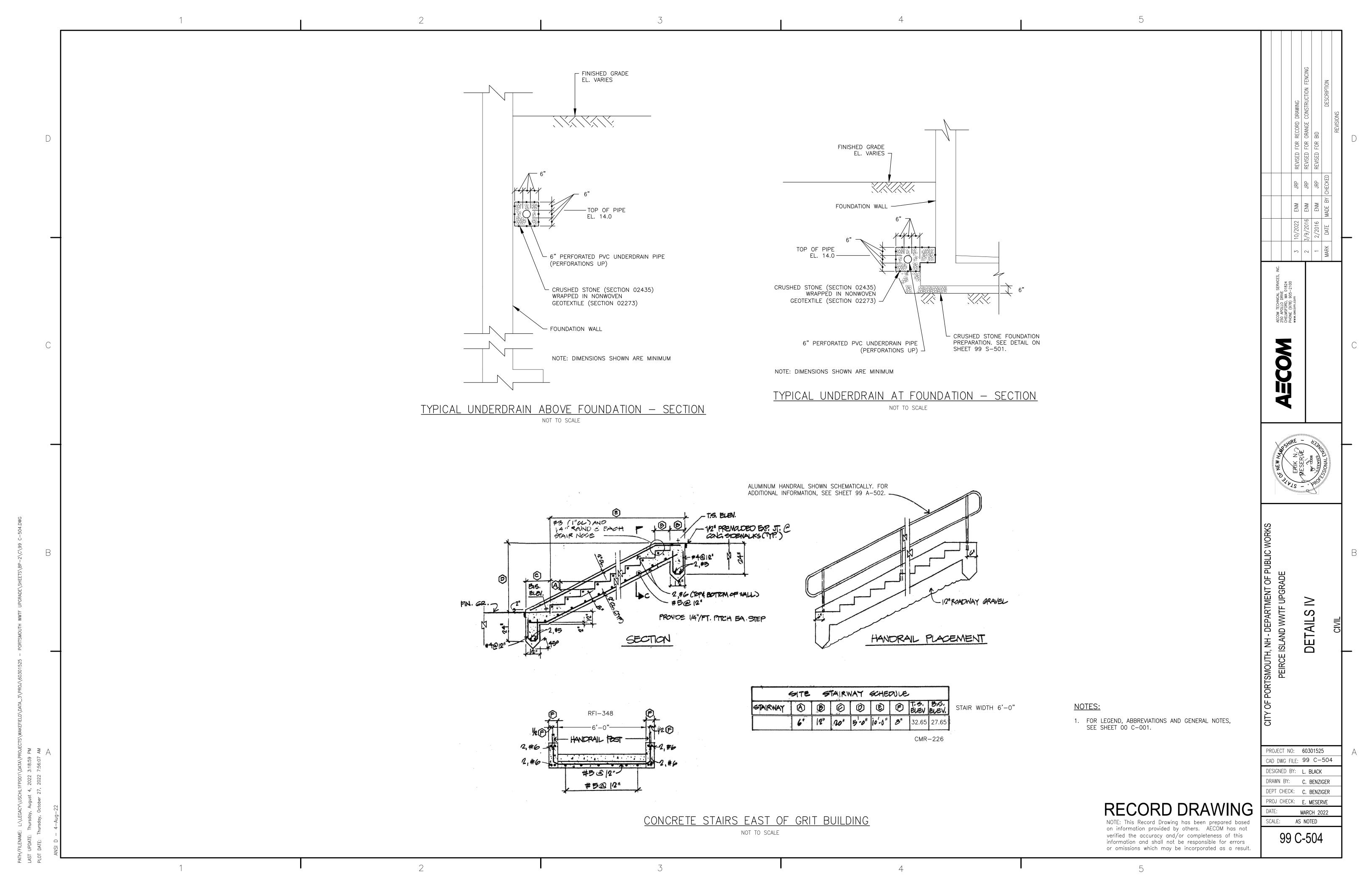


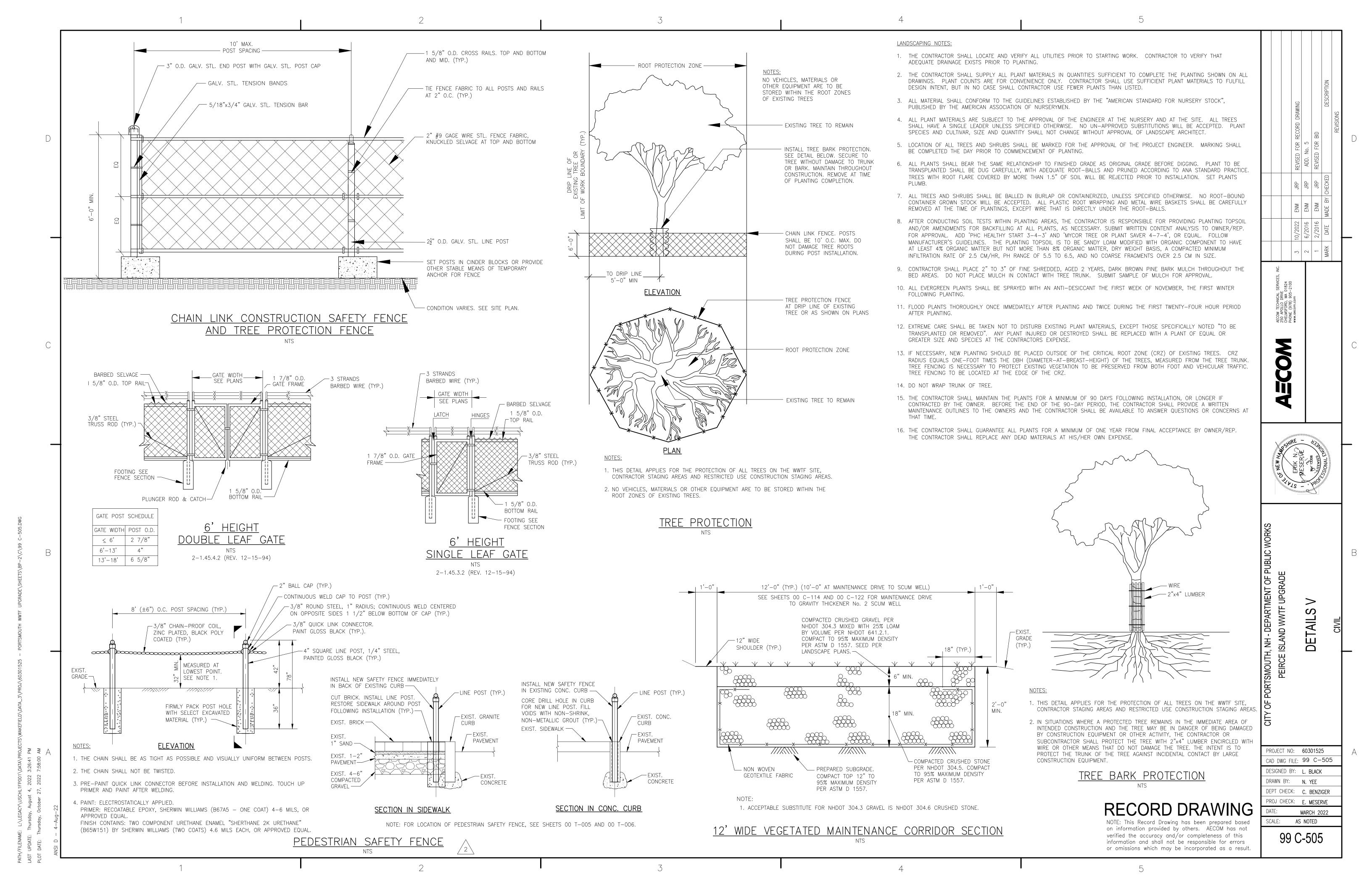


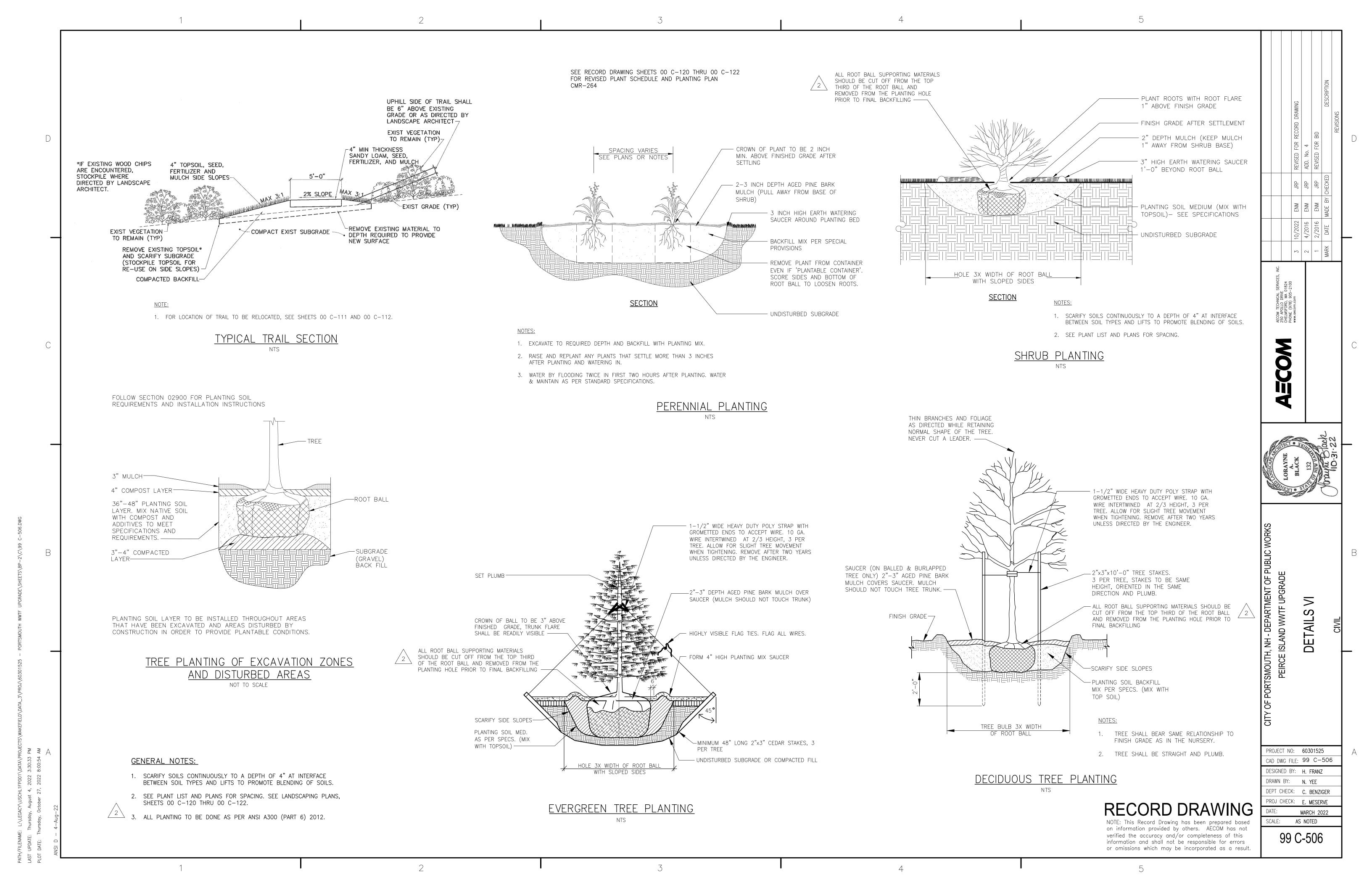












LATITUDE: 043° 04' 25" N LONGITUDE: 070° 44' 31" W

PORTSMOUTH, NEW HAMPSHIRE

APPLICANT: CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS 680 PEVERLY HILL ROAD PORTSMOUTH, NEW HAMPSHIRE

DESCRIPTION

The project consists of improvements and upgrades to the Portsmouth Peirce Island Wastewater Treatment Facility.

DISTURBED AREA

The total area to be disturbed for the development improvements is approximately 352,162 SF (8.085 acres).

PROJECT PHASING

The proposed project will be completed in one phase.

NAME OF RECEIVING WATER

The site drains directly to the Piscatagua River (tidal).

NPDES CONSTRUCTION GENERAL PERMIT

Contractor shall prepare a Stormwater Pollution Prevention Plan (SWPPP) is accordance with federal storm water permit requirements. Refer to specification section 01568 for additional information. The SWPPP must be prepared in a format acceptable to the Owner and three (3) copies provided to the City at least fourteen (14) days prior to initiating construction. Contractor is responsible for all cost associated with preparation and implementation of SWPPP including any temporary erosion control measures (whether indicated or not on these drawings) as required for the contractor's sequence of activities.

The Contractor and Owner shall each file a Notice of Intent (NOI) with the U.S.E.P.A. under the NPDES Construction General Permit. (U.S.E.P.A., 1200 Pennsylvania Avenue NW, Washington, DC 20460) All work shall be in accordance with NPDES General Permit: NHR120000, including NOI requirements, effluent limitations, standards and management for construction. The Contractor shall be responsible for obtaining a USEPA Construction Dewatering Permit, if required.

SEQUENCE OF MAJOR ACTIVITIES

- Prepare SWPPP and file NPDES Notice of Intent, prior to any construction activities.
- The Contractor and Owner shall each file a Notice of Intent (N.O.I.) to U.S.E.P.A. Install temporary erosion control measures including silt fences, stabilized construction entrance and inlet sediment filters as noted on the plan. All temporary erosion control measures shall be maintained in good working condition for the duration of the project.
- Upon completion of Items 1 through 2, clear and grub wooded areas (some stumps may require grinding). Dispose of stumps in an approved offsite location.
- Strip and stockpile loam. Stockpiles shall be temporarily stabilized with straw bales, mulch and surrounded by a straw bale or silt fence barrier until material is removed
- and final grading is complete. Reclaim/remove existing paved surfaces.
- Perform all required demolition activities.
- Initiate facility construction.
- Construct ditches, swales and wet pond early in construction sequence; stabilize them prior to directing flow to them.
- Ditches and swales shall have sides and bottom reinforced with excelsior matting, Permanent turf reinforcement shall be installed at swale sloped greater than 5%.
- Rough grade site including placement of borrow materials. Construct drainage structures, parking area & road base materials. All roadways and
- parking lots shall be stabilized within 72 hours of achieving finished grade Install base course paving, pavers & curbing.
- Install top course paving.
- Loam (6" min) and seed all disturbed areas not paved or otherwise stabilized within 72 hours of achieving finished grade.
- When all construction activity is complete and site is stabilized, remove all straw bales, storm check dams, silt fences and sediment that has been trapped by these
- 23. File a Notice of Termination (N.O.T.) with U.S.E.P.A.

TEMPORARY EROSION & SEDIMENT CONTROL AND STABILIZATION PRACTICES

All work shall be in accordance with state and local permits. Work shall conform to the practices described in the "New Hampshire Stormwater Manual, Volumes 1 - 3", issued December 2008, as amended. As indicated in the sequence of Major Activities, the silt fences shall be installed prior to commencing any clearing or grading of the site. Structural controls shall be installed concurrently with the applicable activity. Once construction activity ceases permanently in an area, silt fences and any earth/dikes will be removed once permanent measures are established.

During construction, runoff will be diverted around the site with stabilized channels where possible. Sheet runoff from the site shall be filtered through straw bale barriers, stone check dams, and silt fences. All storm drain inlets shall be provided with straw bale filters or stone check dams. Stone rip rap shall be provided at the outlets of drain pipes and culverts where shown on the drawings.

Stabilize all ditches, swales, stormwater ponds, level spreaders and their contributing areas prior to

Temporary and permanent vegetation and mulching is an integral component of the erosion and sedimentation control plan. All areas shall be inspected and maintained until vegetative cover is established. These control measures are essential to erosion prevention and also reduce costly rework of graded and shaped areas.

Temporary vegetation shall be maintained in these areas until permanent seeding is applied. Additionally, erosion and sediment control measures shall be maintained until permanent vegetation is

INSTALLATION, MAINTENANCE AND INSPECTION PROCEDURES FOR FEMPORARY EROSION AND SEDIMENT CONTROL MEASURES

A. GENERAL

These are general inspection and maintenance practices that shall be used to implement the

The contractor shall limit the area of unstabilized soil to less than five (5) acres to the extent possible by stabilizing areas that have been disturbed during the course of construction. If during the construction period it becomes necessary to have more than five (5) acres unstabilized to maintain the construction schedule, the contractor will submit for review and approval by NHDES a construction sequence plan identifying the areas of disturbance and a

schedule for stabilizing the sufficient area to reduce the unstabilized area to less than five (5) acres within a reasonable time. The contractor shall be responsible for all additional erosion and sediment control practices necessary for compliance with any NHDES conditions of approval. All control measures shall be inspected by the Contractor's Qualified inspector at least once

each week and following any storm event of 0.25 inches or greater. All measures shall be maintained in good working order; if a repair is necessary, it will be initiated within 24 hours.

INSTALLATION, MAINTENANCE AND INSPECTION PROCEDURES FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES (CON'T)

- Built-up sediment shall be removed from silt fence or other barriers when it has reached
- one—third the height of the fence or bale, or when "bulges" occur. All diversion dikes shall be inspected and any breaches promptly repaired.
- Temporary seeding and planting shall be inspected for bare spots, washouts, and unhealthy The owner's authorized engineer shall inspect the site on a periodic basis to review compliance
- All roadways and parking lots shall be stabilized within 72 hours of achieving finished grade. All cut and fill slopes shall be seeded/loamed within 72 hours of achieving finished grade.
- An area shall be considered stable if one of the following has occurred: a. Base coarse gravels have been installed in areas to be paved:
- b. A minimum of 85% vegetated growth as been established; c. A minimum of 3 inches of non-erosive material such as stone of riprap has been
- d. Erosion control blankets have been properly installed.
- 11. In areas not under active construction, the length of time of exposed soil disturbed during construction is limited to 14 calendar days. For specific stabilization requirements, refer to Section 2.2 stabilization requirements of the 2012 Construction General Permit (CGP) contained in the Project Manual.

Mulch shall be used on highly erodible soils, on critically eroding areas, on areas where conservation of moisture will facilitate plant establishment, and where shown on the plans.

Timing - In order for mulch to be effective, it must be in place prior to major storm events. There are two (2) types of standards which shall be used to assure this: a. Apply mulch prior to any storm event. This is applicable when working within 100 feet of wetlands. It will be necessary to closely monitor weather predictions, usually by contacting the National Weather Service in Concord, to have adequate warning of

significant storms. b. Required Mulching within a specified time period. The time period can range from 21 to 28 days of inactivity on a area, the length of time varying with site conditions. Professional judgment shall be used to evaluate the interaction of site conditions (soil erodibility, season of year, extent of disturbance, proximity to sensitive resources, etc.) and the potential impact of erosion on adjacent areas to choose an appropriate time restriction.

Guidelines for Winter Mulch Application —

<u>Type</u> Straw	Rate per 1,000 s.f. 70 to 90 lbs.	Use and Comments Must be dry and free from mold. May be used with plantings.
Wood Chips or Bark Mulch	460 to 920 lbs.	Used mostly with trees and shrub plantings.
Jute and Fibrous Matting (Erosion Blanket	As per manufacturer Specifications	Used in slope areas, water courses and other Control areas.
Crushed Stone 1/4" to 1-1/2" dia.	Spread more than 1/2" thick	Effective in controlling wind and water erosion.
Erosion Control Mix	2" thick (min)	* The organic matter content is between 80 and 100%, dry weight basis. * Particle size by weight is 100% passing a 6"screen and a minimum of 70 %, maximum of 85%, passing a 0.75" screen. * The organic portion needs to be fibrous

are not acceptable in the mix. * Soluble salts content is less than 4.0 mmhos/cm. * The pH should fall between 5.0 and 8.0.

Maintenance — All mulches must be inspected periodically, in particular after rainstorms, to check for rill erosion. If less than 90% of the soil surface is covered by mulch, additional mulch shall be immediately applied.

C. TEMPORARY GRASS COVER

Seedbed Preparation -

Apply fertilizer at the rate of 600 pounds per acre of 10-10-10. Apply limestone (equivalent to 50 percent calcium plus magnesium oxide) at a rate of three (3) tons per acre.

and elongated.

* Large portions of silts, clays or fine sands

2. Seeding -

a. Utilize annual rye grass at a rate of 40 lbs/acre.

b. Where the soil has been compacted by construction operations, loosen soil to a depth of

two (2) inches before applying fertilizer, lime and seed.

c. Apply seed uniformly by hand, cyclone seeder, or hydroseeder (slurry including seed and fertilizer). Hydroseedings, which include mulch, may be left on soil surface. Seeding rates must be increased 10% when hydroseeding.

Maintenance -

Temporary seedings shall be periodically inspected. At a minimum, 95% of the soil surface should be covered by vegetation. If any evidence of erosion or sedimentation is apparent, repairs shall be made and other temporary measures used in the interim (mulch, filter barriers, check dams, etc.).

D. FILTERS

Physical Property

a. Synthetic filter fabric shall be a pervious sheet of propylene, nylon, polyester or ethylene yarn and shall be certified by the manufacturer or supplier as conforming to the following requirements:

Requirements

Filtering Efficiency	VTM-51	75% minimum
Tensile Strength at 20% Maximum Elongation*	VTM-52	Extra Strength 50 lb/lin in (min) Standard Strength 30 lb/lin in (min)
Flow Rate	VTM-51	0.3 gal/sf/min (min)

* Requirements reduced by 50 percent after six (6) months of installation.

Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizer to provide a minimum of six (6) months of expected usable construction life at a temperature range of 0 degrees F to 120° F.

- b. Posts shall be spaced a maximum of ten (10) feet apart at the barrier location or as recommended by the manufacturer and driven securely into the ground (minimum of 16 inches).
- c. A trench shall be excavated approximately six (6) inches wide and eight (8) inches deep

along the line of posts and upslope from the barrier.

- d. When standard strength filter fabric is used, a wire mesh support fence shall be fastened securely to the upslope side of the posts using heavy duty wire staples at least one (1) inch long, tie wires or hog rings. The wire shall extend no more than 36 inches above the original ground surfaces.
- e. The "standard strength" filter fabric shall be stapled or wired to the fence, and eight (8) inches of the fabric shall be extended into the trench. The fabric shall not extend more than 36 inches above the original ground surface. Filter fabric shall not be stapled to existing trees.

INSTALLATION, MAINTENANCE AND INSPECTION PROCEDURES FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES (CON'T)

- f. When extra strength filter fabric and closer post spacing are used, the wire mesh support fence may be eliminated. In such a case, the filter fabric is stapled or wired directly to the posts with all other provisions of item (g) applying.
- g. The trench shall be backfilled and the soil compacted over the filter fabric.
- h. Silt fences shall be removed when they have served their useful purpose but not before the upslope areas has been permanently stabilized.
- Sequence of Installation -Sediment barriers shall be installed prior to any soil disturbance of the contributing upslope drainage area.

Maintenance

- a. Silt fence barriers shall be inspected immediately after each rainfall and at least daily during prolonged rainfall. They shall be repaired if there are any signs of erosion or sedimentation below them. Any required repairs shall be made immediately. If there are signs of undercutting at the center or the edges, or impounding of large volumes of water, the sediment barriers shall be replaced with a temporary stone check dam.
- b. Should the fabric on a silt fence or filter barrier decompose or become ineffective prior to the end of the expected usable life and the barrier still is necessary, the fabric shall be
- c. Sediment deposits must be removed when deposits reach approximately one—third (1/3) the height of the barrier.
- d. Any sediment deposits remaining in place after the silt fence or other barrier is no longer required shall be removed. The area shall be prepared and seeded.
- e. Additional stone may have to be added to the construction entrance, rock barrier and riprap lined swales, etc., periodically to maintain proper function of the erosion control

Alternative Method

Filtrexx Siltsoxx or approved equal - install per manufacturer specifications.

PERMANENT SEEDING -

Bedding — stones larger than $1\frac{1}{2}$ ", trash, roots, and other debris that will interfere with seeding and future maintenance of the area should be removed. Where feasible, the soil should be tilled to a depth of 5" to prepare a seedbed and mix fertilizer into the soil.

Fertilizer - lime and fertilizer should be applied evenly over the area prior to or at the time of seeding and incorporated into the soil. Kinds and amounts of lime and fertilizer should be based on an evaluation of soil tests. When a soil test is not available, the following minimum amounts should be applied:

> Agricultural Limestone @ 100 lbs. per 1,000 s.f. 10-20-20 fertilizer @ 12 lbs. per 1,000 s.f.

Seed Mixture (recommended):

SEE LANDSCAPE PLANS

Sodding — sodding is done where it is desirable to rapidly establish cover on a disturbed area. Sodding an area may be substituted for permanent seeding procedures anywhere on site. Bed preparation, fertilizing, and placement of sod shall be performed according to the S.C.S. Handbook. Sodding is recommended for steep sloped areas, areas immediately adjacent to sensitive water courses, easily erodible soils (fine sand/silt), etc.

WINTER CONSTRUCTION NOTES

- All proposed vegetated areas which do not exhibit a minimum of 85% vegetative growth by October 15th, or which are disturbed after October 15th, shall be stabilized by seeding and installing erosion control blankets on slopes greater than 3:1, and elsewhere seeding and placing 3 to 4 tons of mulch per acre, secured with anchored netting. The installation of erosion control blankets or mulch and netting shall not occur over accumulated snow or on frozen ground and shall be completed in advance of thaw or spring melt events;
- All ditches or swales which do not exhibit a minimum of 85% vegetative growth by October 15th, or which are disturbed after October 15th, shall be stabilized temporarily with stone or erosion control blankets appropriate for the design flow conditions; and
- After November 15th, incomplete road or parking surfaces where work has stopped for the winter season shall be protected with a minimum of 3 inches of crushed gravel per NHDOT

BEST MANAGEMENT PRACTICES FOR BLASTING

All activities related to blasting shall follow Best Management Practices (BMPs) to prevent contamination of groundwater including preparing, reviewing and following an approved blasting plan; proper drilling, explosive handling and loading procedures; observing the entire blasting procedures; evaluating blasting performance; and handling and storage of blasting rock.

- 1) LOADING PRACTICES. The following blasthole loading practices to minimize environmental effects a) Drillings logs shall be maintained by the driller and communicated directly to the blaster.
- The logs shall indicate depths and lengths of voids, cavities, and fault zones or other weak zones encountered as well as groundwater conditions. b) Explosive products shall be managed on—site so that they are either used in the borehole, returned to the delivery vehicle, or placed in secure containers for off-site disposal.
- c) Spillage around the borehole shall either be placed in the borehole or cleaned up and returned to an appropriate vehicle for handling or placement in secured containers for off-site disposal. d) Loaded explosives shall be detonated as soon as possible and shall not be left in the
- blastholes overnight, unless weather or other safety concerns reasonably dictate that detonation should be postponed. e) Loading equipment shall be cleaned in an area where wastewater can be properly contained and handled in a manner that prevents release of contaminants to the environment.

f) Explosives shall be loaded to maintain good continuity in the column load to promote

- complete detonation. Industry accepted loading practices for priming, stemming, decking and column rise need to be attended to. 2) EXPLOSIVE SELECTION. The following BMPs shall be followed to reduce the potential for
- a) Explosive products shall be selected that are appropriate for site conditions and safe blast b) Explosive products shall be selected that have the appropriate water resistance for the site conditions present to minimize the potential for hazardous effect of the product upon the

- 3) PREVENTION OF MISFIRES. Appropriate practices shall be developed and implemented to prevent
- 4) MUCK PILE MANAGEMENT. Muck piles (the blasted pieces of rock) and rock piles shall be manages in a manner to reduce the potential for contamination by implementing the following
- a) Remove the muck piles from the blast area as soon as reasonably possible. b) Manage the interaction of blasted rock piles and stormwater to prevent contamination of water supply wells or surface water.

BEST MANAGEMENT PRACTICES FOR BLASTING (CONT.)

- 5) SPILL PREVENTION MEASURES AND SPILL MITIGATION. Spill prevention and spill mitigation measures shall be implemented to prevent the release of fuel and other related substances to the environment. The measures shall be included at a minimum:
- a) The storage requirements shall include:
- Storage of regulated substances on an impervious surface. ii. Secure storage areas against unauthorized entry.
- iii. Label regulated containers clearly and visibly. iv. Inspect stage areas weekly.
- v. Cover regulated containers in outside storage areas.
- vi. Whenever possible, keep regulated containers that are stored outside more than 50 feet from surface water and storm drains, 75 feet from private wells, and 400 feet from
- vii. Secondary containment is required for containers containing regulated substances stored outside, except for on premise use fuel tanks or aboveground or underground storage tanks otherwise regulated.
- b) The fuel handling requirements shall include:
- i. Except when in use, keep containers containing regulated substances closed and sealed. ii. Place drip pans under spigots, valves, and pumps.
- iii. Have spill control and containment equipment readily available in all work areas. iv. Use funnel and drip pans when transferring regulated substances. v. Perform transfers of regulated substances over an impervious surface.
- c) The training of on-site employees and on-site posting of release response information describing what to do in the event of regulated substances. d) Fueling and maintenance of excavation, earthmoving and other construction related equipment will comply with regulation of New Hampshire Department of Environmental
- Excavation and Earthmoving Equipment. http://des.nh.gov/organization/ommissioner/pip/factsheets/dwgb/documents/dwgb-22-6.pdf

Services (see WD-DWGB-22-6 Best management Practices for Fueling and Maintenance of

	Spring	Fall or Yearly	After Major Storm
Vegetated Areas			
Inspect all slopes and embankments	X		X
Replant bare areas or areas with sparse growth	X		X
Armor areas with rill erosion with an appropriate lining or divert the erosive flows to on-site areas able to withstand concentrated flows.	Х		X
Stormwater Channels			
Inspect ditches, swales and other open stormwater channels	X	X	X
Remove any obstructions and accumulated sediments or debris	X	X	
Control vegetated growth and woody vegetation		X	
Repair any erosion of the ditch lining		X	
Mow vegetated ditches		X	
Remove woody vegetation growing through riprap		X	
Repair any slumping side slopes		X	
Replace riprap where underlying filter fabric or underdrain gravel is exposed or where stones have been dislodged		x	
Culverts			
Remove accumulated sediments and debris at inlet, outlet and within the conduit	X	X	X
Repair any erosion damage at the culvert's inlet and outlet	X	X	X
Remove woody vegetation growing through riprap		X	
Catch Basins and Water Quality Inlet		_	
Remove accumulated floatable, sediments and debris		X	
Inspect internal pipes and screens		X	
Roadways and Parking Surfaces			
Remove accumulated winter sand along roadways	X		
Sweep pavement to remove sediment	X		
Grade road shoulders and remove excess sand either manually or by a front-end loader	Х		
Grade gravel roads and gravel shoulders	X		
Clean out sediment contained in water bars or open-top culverts	Х		
Ensure that stormwater is not impeded by accumulations of material or false ditches in the roadway shoulder	Х		
Rain Garden			
"Harvesting" - Removal of dead vegetation and	x		

LONG TERM INSPECTION & MAINTENANCE NOTE:

ALL FACILITIES SHOULD BE INSPECTED ON AN ANNUAL BASIS AT A MINIMUM. IN ADDITION, ALL FACILITIES SHOULD BE INSPECTED AFTER A SIGNIFICANT PRECIPITATION EVENT TO ENSURE THE FACILITY IS DRAINING APPROPRIATELY AND TO IDENTIFY ANY DAMAGE THAT OCCURRED AS A RESULT OF THE INCREASED RUNOFF. FOR THE PURPOSE OF THIS STORMWATER MANAGEMENT PROGRAM, A SIGNIFICANT RAINFALL EVENT IS CONSIDERED AN EVENT OF THREE (3) INCHES IN A 24-HOUR PERIOD OR 0.5 INCHES IN A ONE-HOUR PERIOD. IT IS ANTICIPATED THAT A SHORT, INTENSE EVENT IS LIKELY TO HAVE A HIGHER POTENTIAL OF EROSION FOR THIS SITE THAN A LONGER, HIGH VOLUME EVENT.

RECORD DRAWING

on information provided by others. AECOM has not verified the accuracy and/or completeness of this information and shall not be responsible for errors or omissions which may be incorporated as a result.

NW NW DE NW 324 100 CAL MA 905 50

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PROJECT NO: 60301525 CAD DWG FILE: 99 C-507 DESIGNED BY: R. BEAL DRAWN BY: R. BEAL DEPT CHECK: J. CLIFFORD

PROJ CHECK: E. MESERVE MARCH 2022 SCALE: AS NOTED

99 C-507

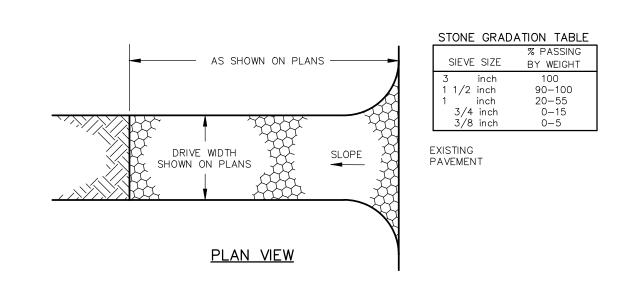
groundwater contamination when explosives are used:

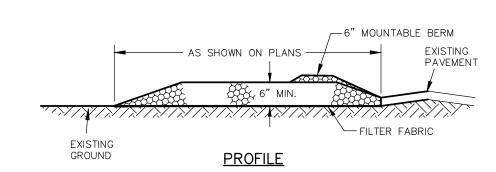
NOTES:

- 1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
- 2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" DEEP BY 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE BLANKET.
- 3. ROLL THE BLANKETS (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING OPTIONAL DOT SYSTEMTM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
- 4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2"-5" OVERLAP DEPENDING ON BLANKET TYPE. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH ON THE PREVIOUSLY
- 5. CONSECUTIVE BLANKETS SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE BLANKET WIDTH. NOTE: IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE BLANKETS.

EROSION CONTROL BLANKET SLOPE INSTALLATION

NOT TO SCALE

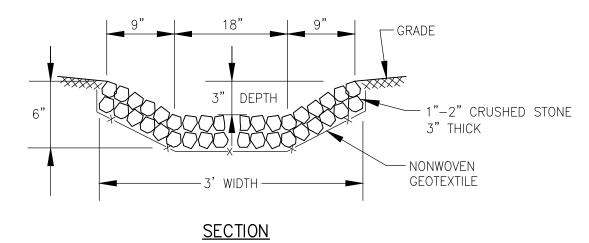




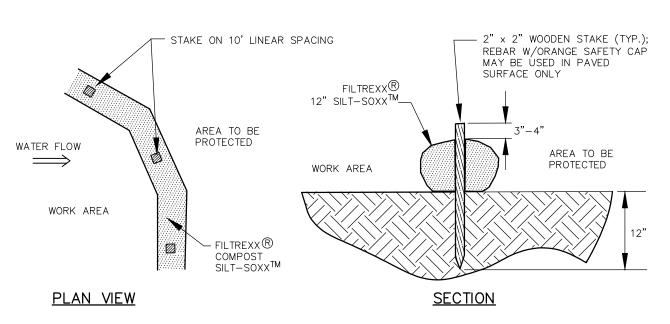
CONSTRUCTION SPECIFICATIONS

- 1. <u>STONE SIZE</u> NHDOT STANDARD STONE SIZE #4 SECTION 703 OF NHDOT STANDARD.
- <u>LENGTH</u> DETAILED ON PLANS (50 FOOT MINIMUM).
- THICKNESS SIX (6) INCHES (MINIMUM).
- WIDTH FULL DRIVE WIDTH UNLESS OTHERWISE SPECIFIED.
- FILTER FABRIC MIRAFI 600X OR EQUAL APPROVED BY ENGINEER.
- SURFACE WATER CONTROL ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION ENTRANCE SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A BERM WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
- MAINTENANCE THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS WILL REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR ADDITIONAL LENGTH AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
- WHEELS SHALL BE CLEANED TO REMOVE MUD PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
- STABILIZED CONSTRUCTION EXITS SHALL BE INSTALLED AT ALL ENTRANCES TO PUBLIC RIGHTS-OF-WAY, AT LOCATIONS SHOWN ON THE PLANS, AND/OR WHERE AS DIRECTED BY THE ENGINEER.

STABILIZED CONSTRUCTION EXIT NOT TO SCALE



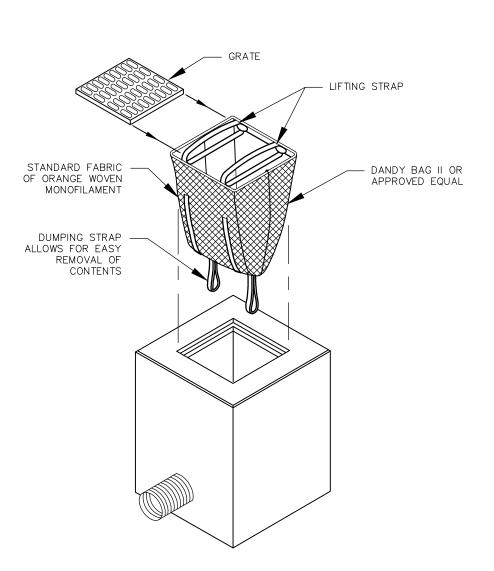
NOTE: FOR LOCATION OF SWALE, SEE SHEET 00 C-112.



NOTES:

- 1. SILTSOXX MAY BY USED IN PLACE OF SILT FENCE OR OTHER SEDIMENT BARRIERS FOR AREAS OF REVETMENT CONSTRUCTION.
- 2. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
- 3. SILTSOXX COMPOST/SOIL/ROCK/SEED FILL MATERIAL SHALL BE ADJUSTED AS NECESSARY TO MEET THE REQUIREMENTS OF THE SPECIFIC APPLICATION.
- 4. ALL SEDIMENT TRAPPED BY SILTSOXX SHALL BE DISPOSED OF PROPERLY.

FILTREXX STAKING DETAIL



INSTALLATION AND MAINTENANCE:

INSTALLATION: REMOVE THE GRATE FROM CATCH BASIN. IF USING OPTIONAL OIL ABSORBENTS; PLACE ABSORBENT PILLOW IN UNIT. STAND GRATE ON END. MOVE THE TOP LIFTING STRAPS OUT OF THE WAY AND PLACE THE GRATE INTO CATCH BASIN INSERT SO THE GRATE IN BELOW THE TOP STRAPS AND ABOVE THE LOWER STRAPS. HOLDING THE LIFTING DEVICES, INSERT THE GRATE INTO THE INLET.

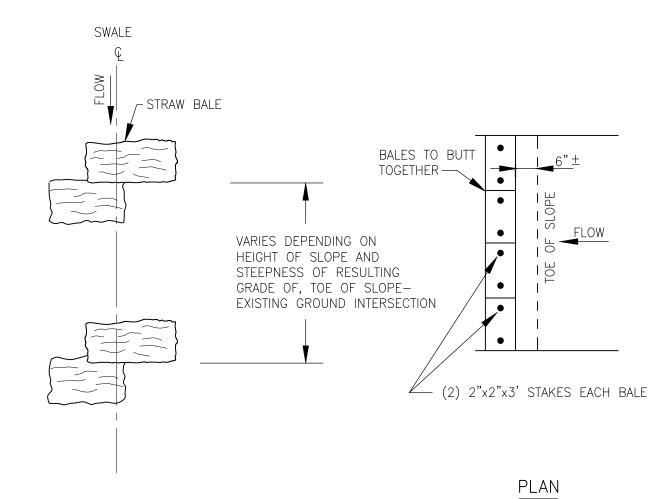
MAINTENANCE: REMOVE ALL ACCUMULATED SEDIMENT AND DEBRIS FROM VICINITY OF THE UNIT AFTER EACH STORM EVENT. AFTER EACH STORM EVENT AND AT REGULAR INTERVALS, LOOK INTO THE CATCH BASIN INSERT. IF THE CONTAINMENT AREA IS MORE THAN 1/3 FULL OF SEDIMENT, THE UNIT MUST BE EMPTIED. TO EMPTY THE UNIT, LIFT THE UNIT OUT OF THE INLET USING THE LIFTING STRAPS AND REMOVE THE GRATE. IF USING OPTIONAL ABSORBENTS; REPLACE ABSORBENT WHEN NEAR SATURATION.

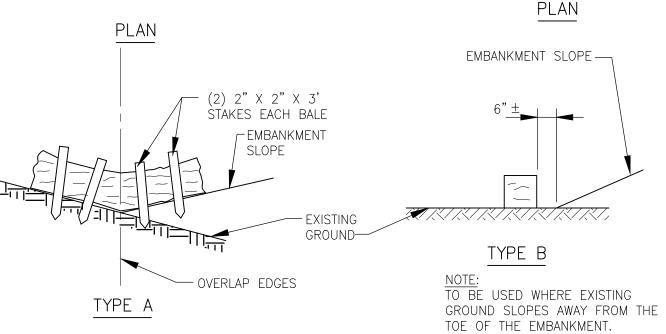
UNACCEPTABLE INLET PROTECTION METHOD:

A SIMPLE SHEET OF GEOTEXTILE UNDER THE GRATE IS NOT ACCEPTABLE.

STORM DRAIN INLET PROTECTION

NOT TO SCALE

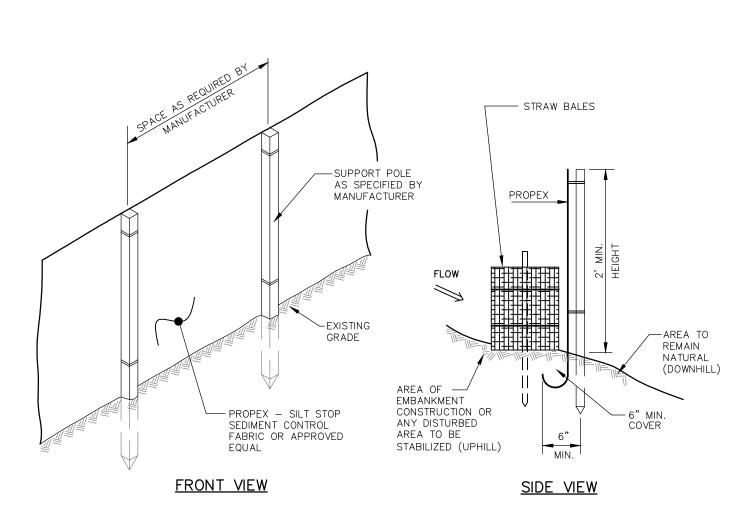




TO BE USED IN LOCATION WHERE THE EXISTING GROUND SLOPES IN TOWARD THE TOE OF THE EMBANKMENT.

STRAW BALE EROSION CONTROL

2-1.60.4 (REV. 09-29-95)



SILT FENCE/STRAW BALE DETAIL NOT TO SCALE

RECORD DRAWING

on information provided by others. AECOM has not verified the accuracy and/or completeness of this information and shall not be responsible for errors or omissions which may be incorporated as a result. **₩**00

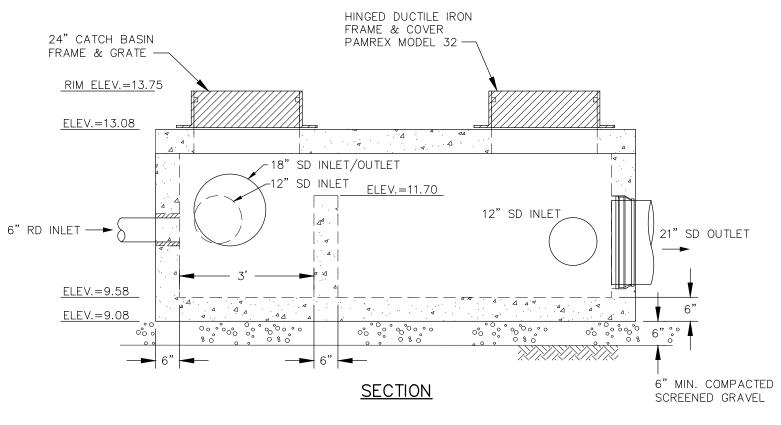
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PROJECT NO: 60301525 CAD DWG FILE: 99 C-508 DESIGNED BY: R. BEAL DRAWN BY: R. BEAL DEPT CHECK: J. CLIFFORD PROJ CHECK: E. MESERVE MARCH 2022

99 C-508

AS NOTED

<u>PLAN</u>

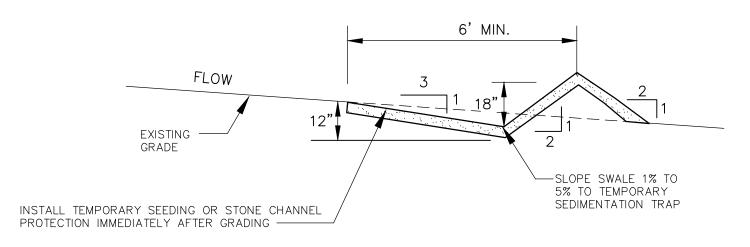


BYPASS STRUCTURE NOTES:

1. FOR BYPASS STRUCTURE LOCATION, SEE SHEET 00 C-113.

BYPASS STRUCTURE DETAIL

NOT TO SCALE



SWALE SHALL BE FREE OF IRREGULARITIES WHICH MAY CAUSE PONDING. COMPACT FILLS AS NECESSARY TO STABILIZE MATERIAL

<u>MAINTENANCE</u>

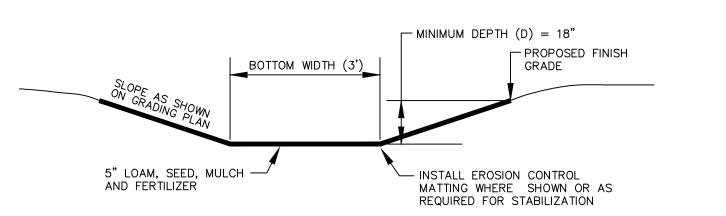
DIVERSIONS SHALL BE INSPECTED AFTER MAJOR RAINFALL. SEDIMENT AND DEBRIS SHALL BE REMOVED FROM THE CHANNEL AND REPAIRS MADE AS NECESSARY. VEGETATION THAT HAS DAMAGED SHALL BE RESEEDED AS NECESSARY.

CONSTRUCTION SPECIFICATIONS

VEGETATION AND MULCHING.

- 1. THE FOUNDATION AREA OF THE DIVERSION SHALL BE CLEARED AND GRUBBED OF ALL TREES,
- BRUSH, STUMPS, AND OTHER OBJECTIONABLE MATERIALS. 2. MATERIALS REMOVED FROM THE FOUNDATION AREA SHALL BE DISPOSED OF SO THEY WILL NOT INTERFERE WITH THE CONSTRUCTION OF OR THE PROPER FUNCTIONING OF THE DIVERSION.
- 3. THE DIVERSION SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE AND CROSS-SECTION AS REQUIRED TO MEET THE DESIGN CRITERIA. THE DIVERSION SHALL BE FREE OF IRREGULARITIES
- WHICH MAY CAUSE PONDING OR IMPEDE NORMAL FLOW. 4. ALL FILLS SHALL BE COMPACTED AS NECESSARY TO PREVENT UNEQUAL SETTLEMENT IN THE
- DIVERSION.
- 5. ALL EARTH EXCAVATED AND NOT USED FOR THE CONSTRUCTION OF THE DIVERSION SHALL BE
- SPREAD OR DISPOSED OF SO THAT IT WILL NOT INTERFERE WITH THE FUNCTIONING OF THE 6. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER AS TO MINIMIZE
- EROSION AND AIR AND WATER POLLUTION. ALL APPROPRIATE STATE AND LOCAL LAWS AND
- REGULATIONS SHALL BE COMPLIED WITH DURING CONSTRUCTION. 7. ALL DISTURBED AREAS SHALL BE STABILIZED ACCORDING TO APPROPRIATE BMPS FOR

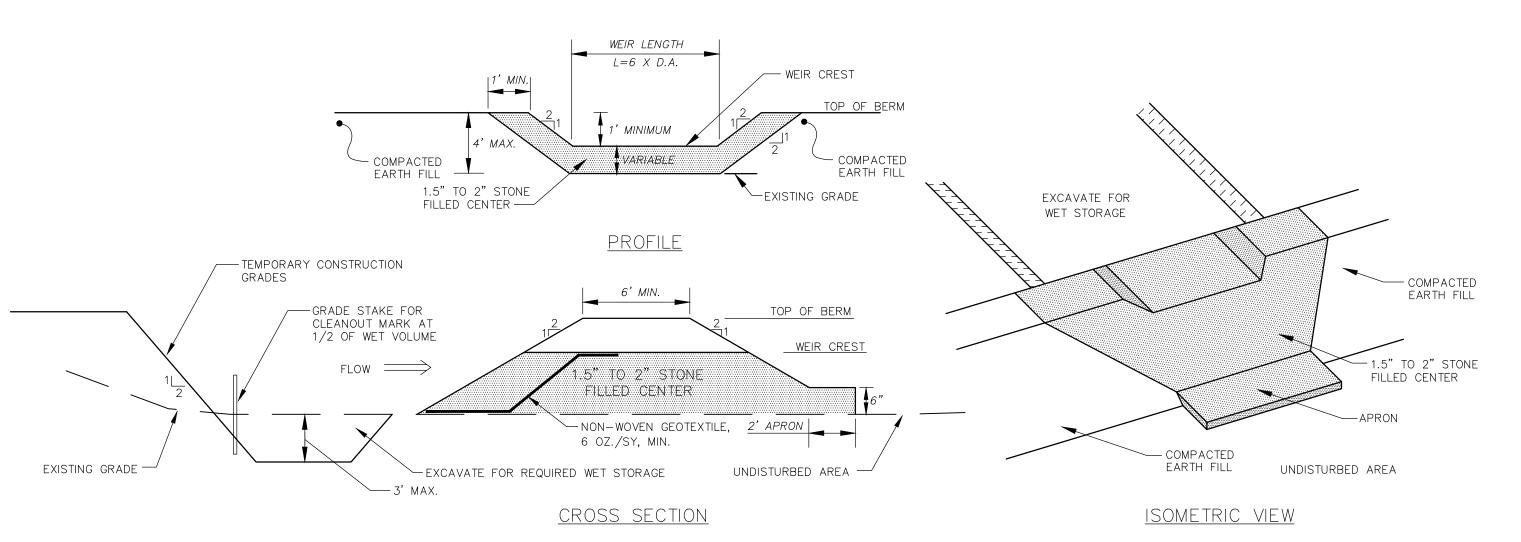
TEMPORARY DIVERSION SWALE



NOTES:

1. THE FOUNDATION AREA OF THE WATERWAY SHALL BE CLEARED AND GRUBBED OF ALL TREES, BRUSH, STUMPS, AND OTHER OBJECTIONABLE MATERIAL. MATERIALS REMOVED SHALL BE DISPOSED OF SO THEY WILL NOT INTERFERE WITH THE CONSTRUCTION OR PROPER FUNCTIONING

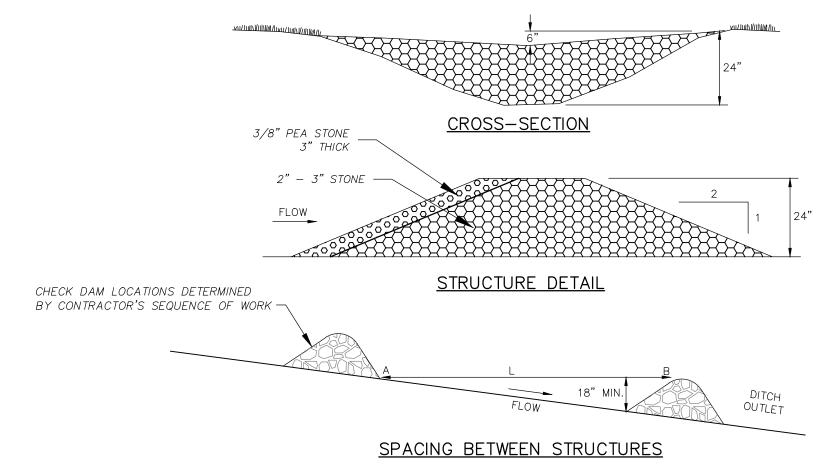
- 2. THE WATERWAY SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE AND CROSS SECTION AS REQUIRED TO MEET THE DESIGN CRITERIA. THE WATERWAY SHALL BE FREE OF IRREGULARITIES
- WHICH WILL IMPEDE NORMAL FLOW. 3. EARTH FILLS REQUIRED TO MEET SUBGRADE REQUIREMENTS BECAUSE OF OVER EXCAVATION OR TOPOGRAPHY SHALL BE COMPACTED TO THE SAME DENSITY AS THE SURROUNDING SOIL TO PREVENT UNEQUAL SETTLEMENT THAT COULD CAUSE DAMAGE TO THE COMPLETED WATERWAY. FARTH REMOVED AND NOT NEEDED IN CONSTRUCTION SHALL BE SPREAD OR DISPOSED OF SO IT
- WILL NOT INTERFERE WITH THE FUNCTIONING OF THE WATERWAY. 4. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER AS TO MINIMIZE EROSION AND AIR AND WATER POLLUTION. ALL APPROPRIATE STATE AND LOCAL LAWS AND
- REGULATIONS SHALL BE COMPLIED WITH FOR INSTALLATION. 5. VEGETATION SHALL BE ESTABLISHED IN THE SWALE OR AN EROSION CONTROL MATTING
- INSTALLED PRIOR TO ALLOWING STORMWATER RUNOFF TO FLOW THROUGH THE SWALE.
- 6. MAINTENANCE OF THE VEGETATION IN THE GRASSED WATERWAY IS EXTREMELY IMPORTANT IN ORDER TO PREVENT RILLING, EROSION, AND FAILURE OF THE WATERWAY. MOWING SHALL BE DONE FREQUENTLY ENOUGH TO CONTROL ENCROACHMENT OF WEEDS AND WOODY VEGETATION
- AND TO KEEP THE GRASSES IN A VIGOROUS CONDITION. THE VEGETATION SHALL NOT BE MOWED TOO CLOSELY SO AS TO REDUCE THE EROSION RESISTANCE IN THE WATERWAY. 7. THE WATERWAY SHALL BE INSPECTED PERIODICALLY AND AFTER ANY STORM GREATER THAN 0.5" OF RAINFALL IN 24 HOURS TO DETERMINE THE CONDITION OF THE WATERWAY. RILLS AND DAMAGED AREAS SHALL BE PROMPTLY REPAIRED AND REVEGETATED AS NECESSARY TO
- PREVENT FURTHER DETERIORATION. 8. ONLY LOW PHOSPHATE AND LOW RELEASE NITROGEN FERTILIZER MAY USED TO PROMOTE



MAINTENANCE NOTES:

- 1. SEDIMENT SHALL BE REMOVED AND THE TRAP SHALL BE RESTORED TO ITS ORIGINAL CAPACITY WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN WET STORAGE VOLUME. SEDIMENT REMOVED SHALL BE DISPOSED OF SO THAT IT DOES NOT CAUSE A SEDIMENT PROBLEM AT ANOTHER LOCATION.
- 2. THE STRUCTURE SHALL BE CHECKED BI-WEEKLY AND AFTER EVERY MAJOR STORM TO INSURE THAT IT IS WORKING PROPERLY AND IS NOT DAMAGED. DAMAGE TO THE STRUCTURE SHALL BE REPAIRED IMMEDIATELY.
- 3. GEOTEXTILE FABRIC SHALL BE CHECKED DURING INSPECTION AND REPLACED WHEN THE OPENINGS IN THE FABRIC OR THE STONE HAVE BECOME CLOGGED.
- 4. WHEN THE DRAINAGE AREA FLOWING INTO THE BASIN HAS BEEN FULLY STABILIZED, THE SEDIMENT TRAP SHALL BE REMOVED AND THE AREA VEGETATED USING LOAM AND SEED WITH MULCH (OR SOD IF NECESSARY) WITHIN 72 HOURS OF THE REMOVAL OF THE BASIN.

TEMPORARY SEDIMENT TRAP (TST) OUTLET



1. L = DISTANCE SUCH THAT POINTS A AND B ARE OF EQUAL ELEVATION

2. CHECK DAM SHALL BE CONSTRUCTED OF 2" TO 3" STONE WITH COMPLETE COVERAGE OF DITCH OR SWALE TO INSURE THAT THE CENTER OF THE STRUCTURE IS LOWER THAN THE EDGES.

MAINTENANCE

TEMPORARY GRADE STABILIZATION STRUCTURES SHOULD BE CHECKED AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED STORMS. ANY NECESSARY REPAIRS SHOULD BE MADE IMMEDIATELY. PARTICULAR ATTENTION SHOULD BE GIVEN TO END RUN AND EROSION AT THE DOWNSTREAM TOE OF THE STRUCTURE. WHEN THE STRUCTURES ARE REMOVED, THE DISTURBED PORTION SHOULD BE BROUGHT TO THE EXISTING CHANNEL GRADE AND THE AREAS PREPARED, SEEDED, AND MULCHED. WHILE THIS PRACTICE IS NOT INTENDED TO BE USED PRIMARILY FOR SEDIMENT TRAPPING, SOME SEDIMENT WILL ACCUMULATE BEHIND THE STRUCTURES, SEDIMENT SHALL BE REMOVED FROM BEHIND THE STRUCTURES WHEN IT HAS ACCUMULATED TO ONE HALF OF THE

CONSTRUCTION SPECIFICATIONS

ORIGINAL HEIGHT OF THE STRUCTURE.

- 1. STRUCTURES SHALL BE INSTALLED ACCORDING TO THE DIMENSIONS SHOWN ON THE PLANS AT THE
- APPROPRIATE SPACING. 2. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER SO THAT EROSION AND
- AIR AND WATER POLLUTION WILL BE MINIMIZED. 3. SEEDING, FERTILIZING, AND MULCHING SHALL CONFORM TO THE RECOMMENDATIONS IN THE
- APPROPRIATE VEGETATIVE BMP. 4. STRUCTURES SHALL BE REMOVED FROM THE CHANNEL WHEN THEIR USEFUL LIFE HAS BEEN

COMPLETED. <u>STONE CHECK DAM DETAIL</u>

RECORD DRAWING

on information provided by others. AECOM has not verified the accuracy and/or completeness of this information and shall not be responsible for errors or omissions which may be incorporated as a result. **≡COM** S ш

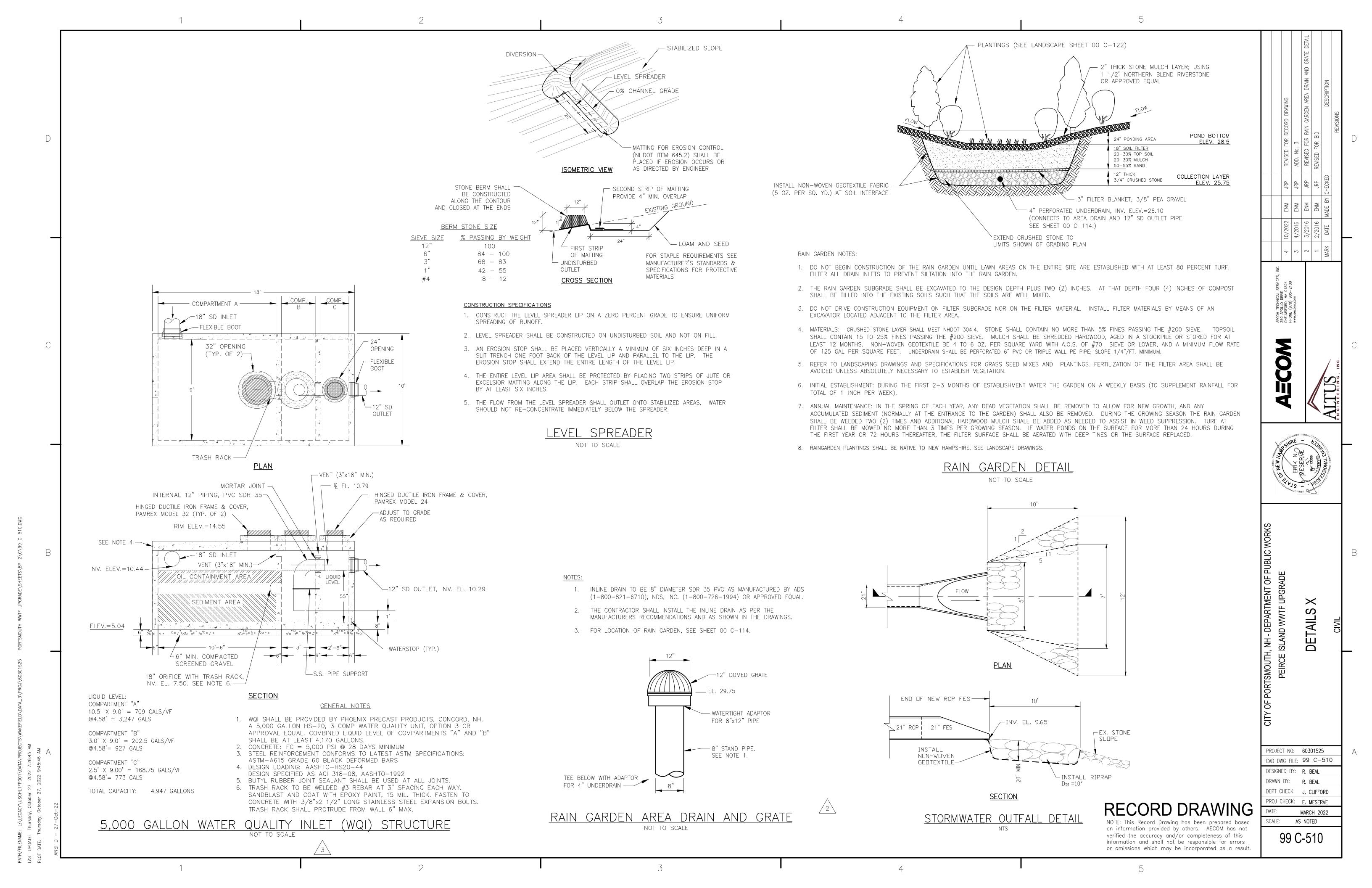
PROJECT NO: **60301525** CAD DWG FILE: 99 C-509 DESIGNED BY: R. BEAL

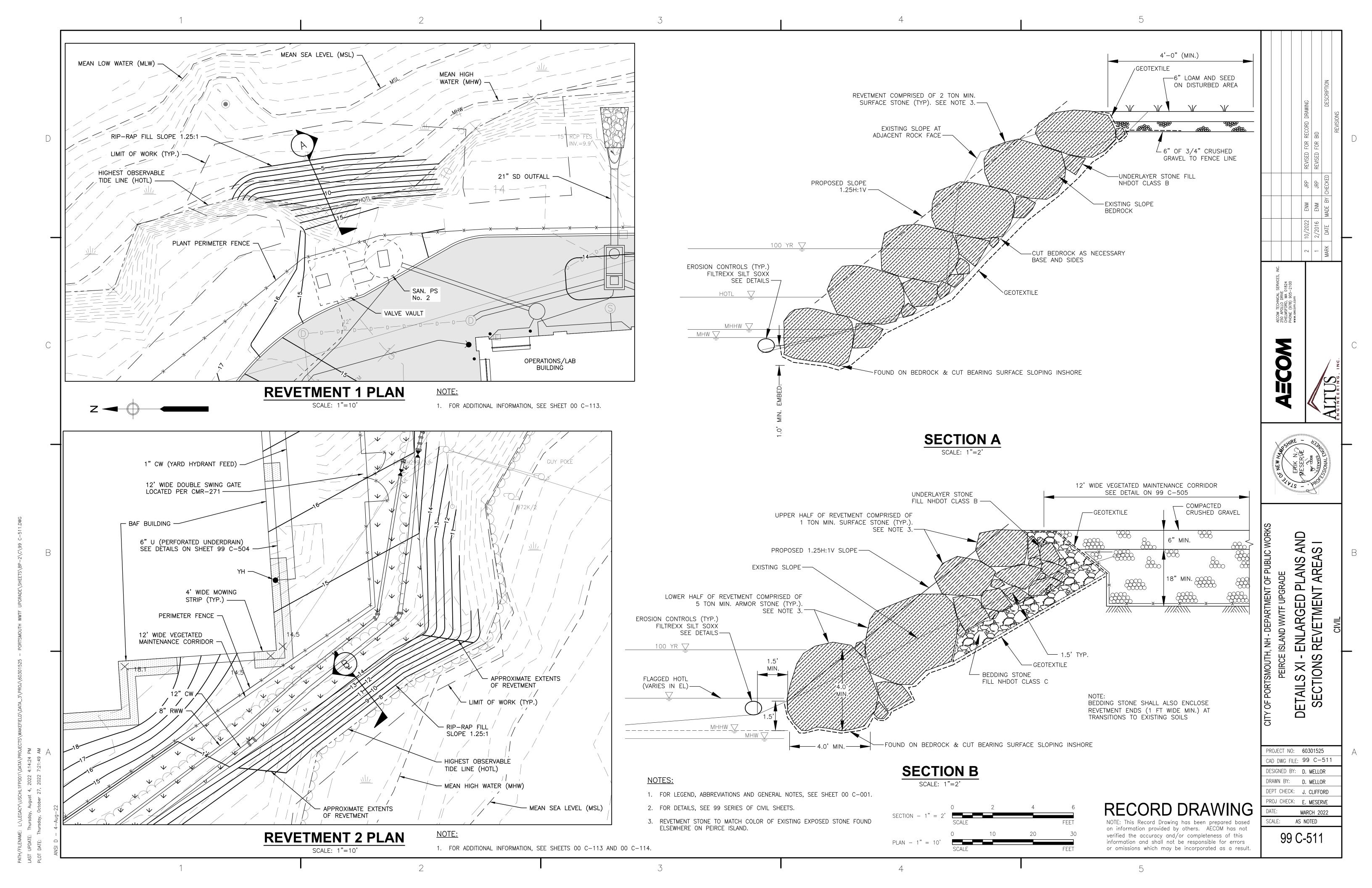
DRAWN BY: R. BEAL DEPT CHECK: J. CLIFFORD PROJ CHECK: E. MESERVE MARCH 2022

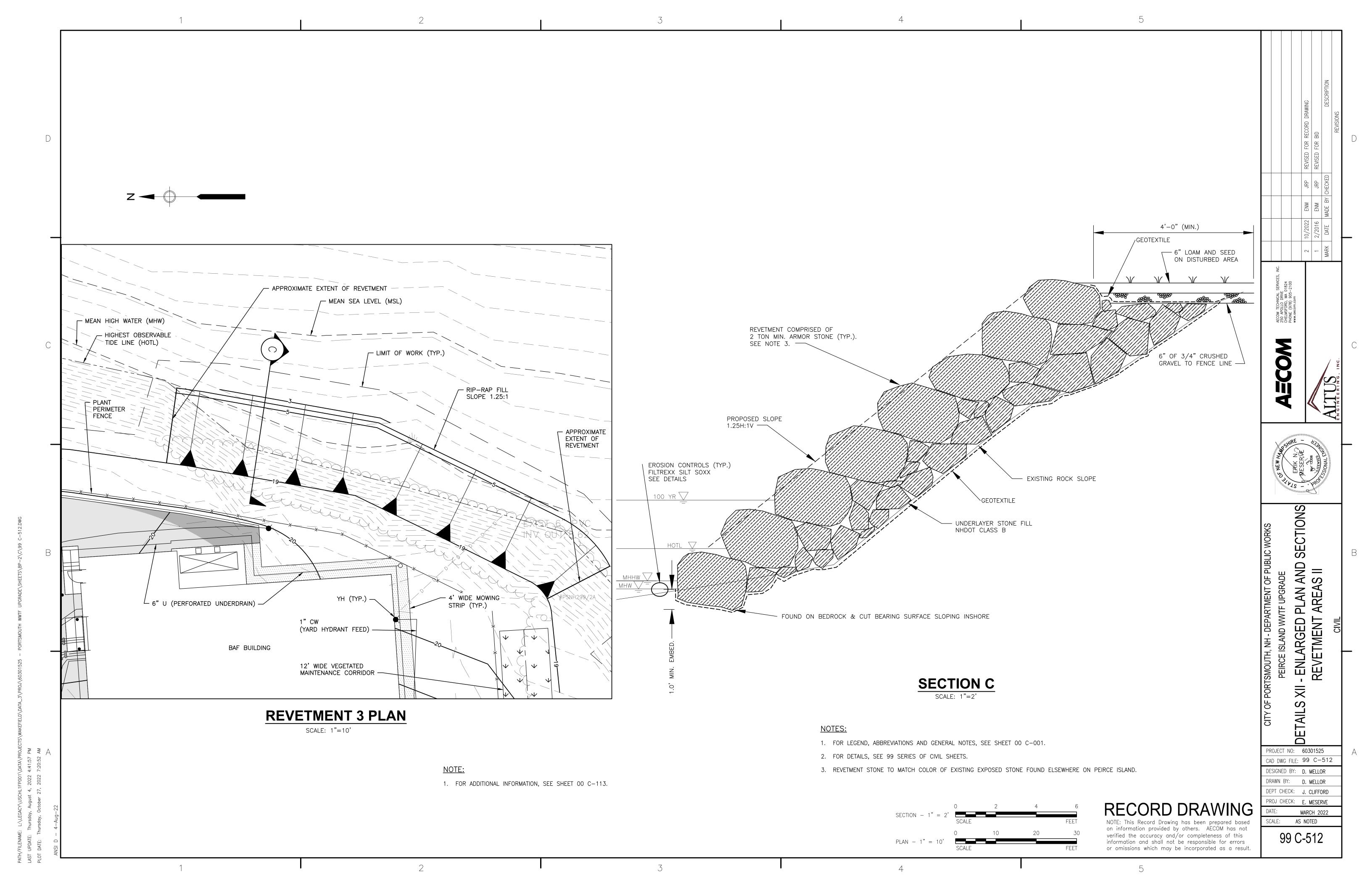
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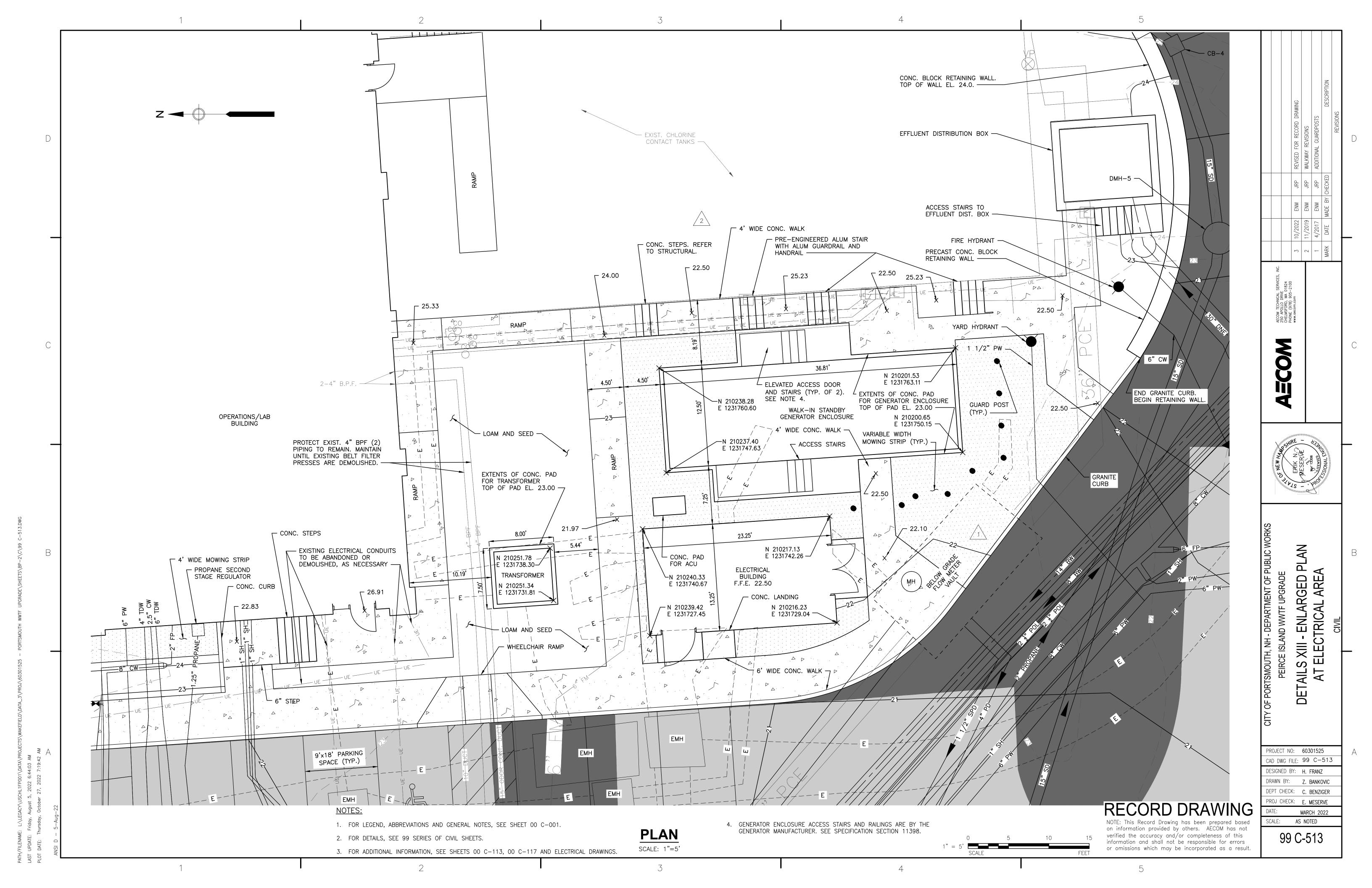
AS NOTED

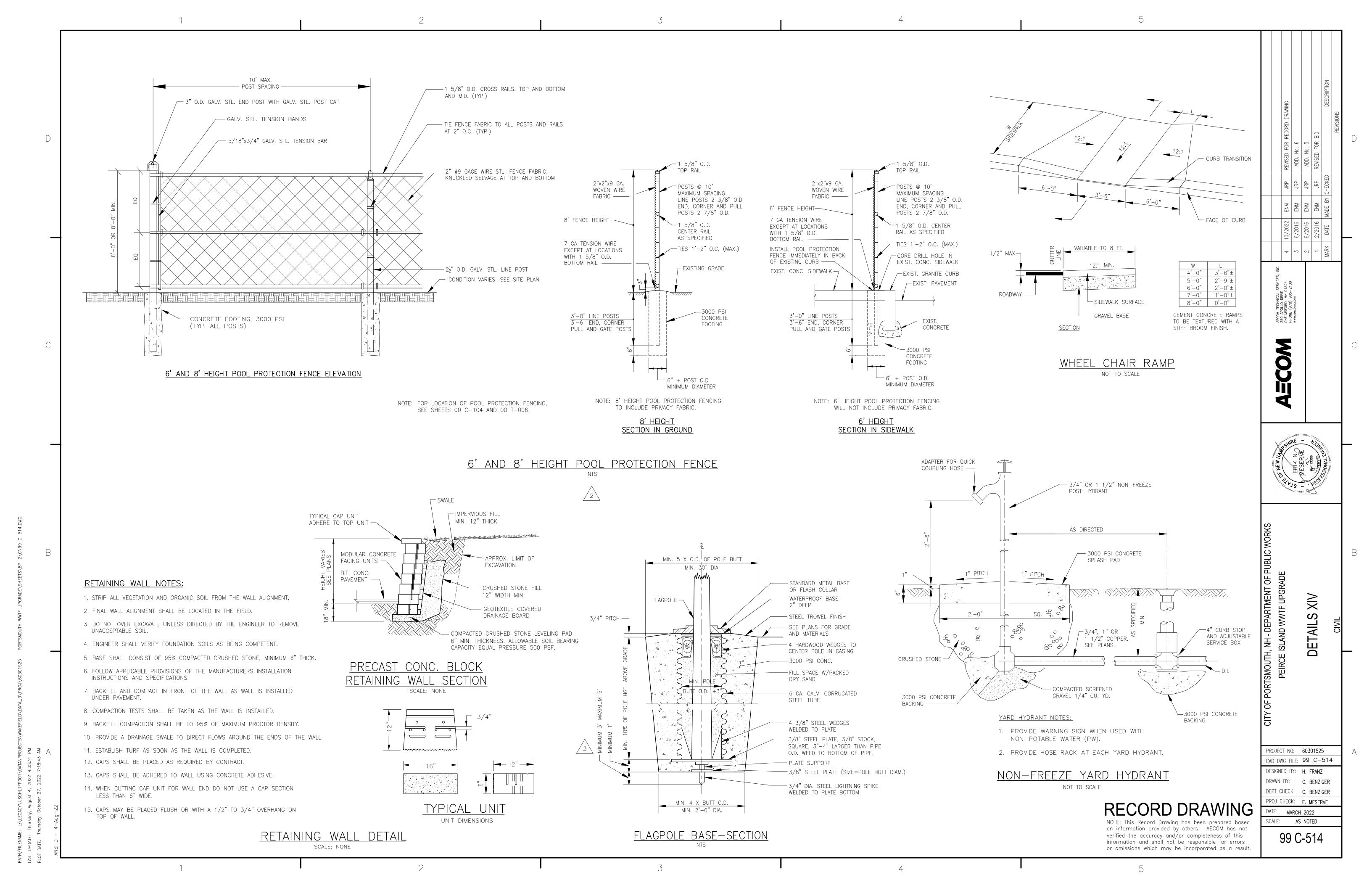
SCALE:

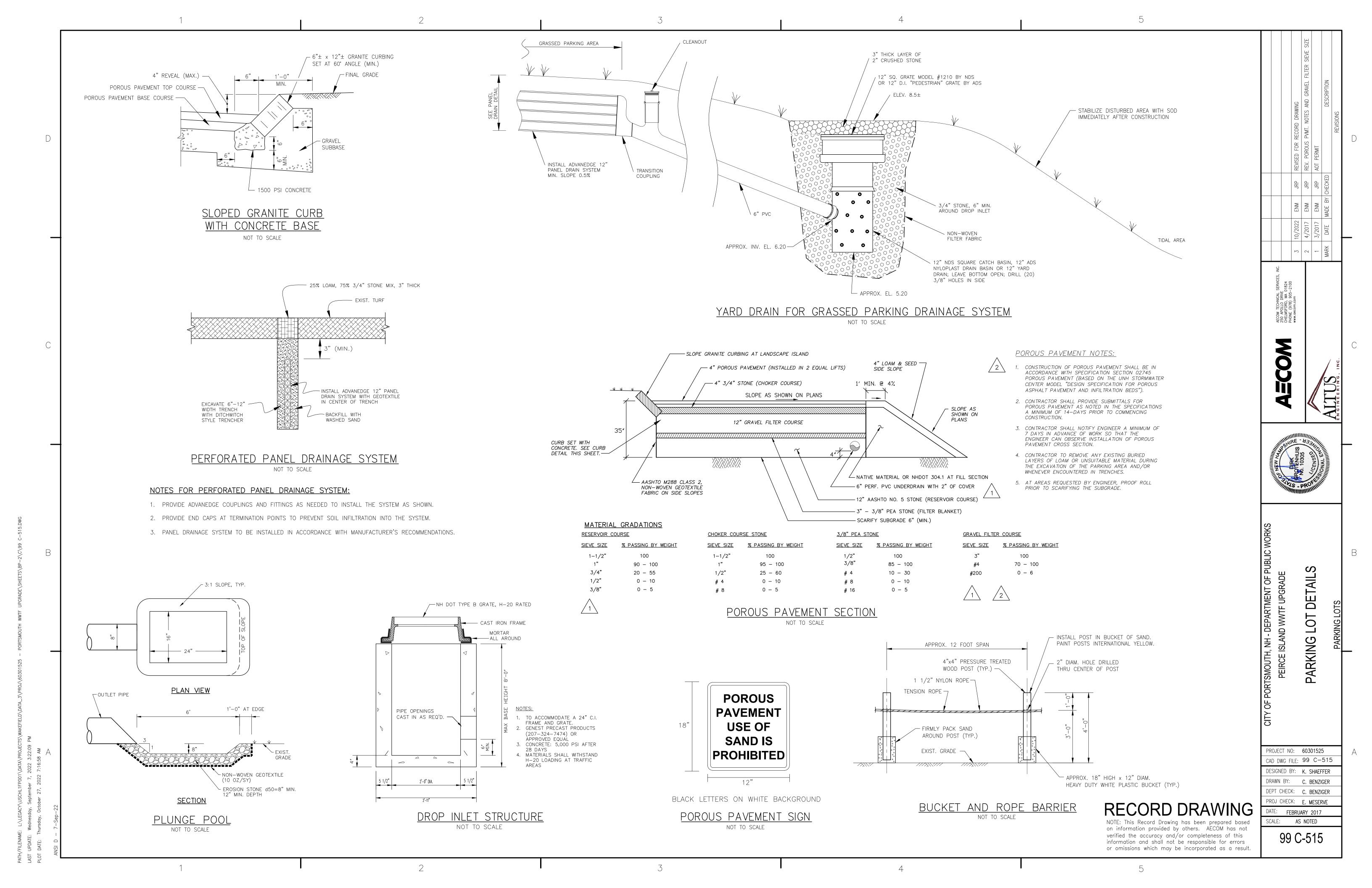


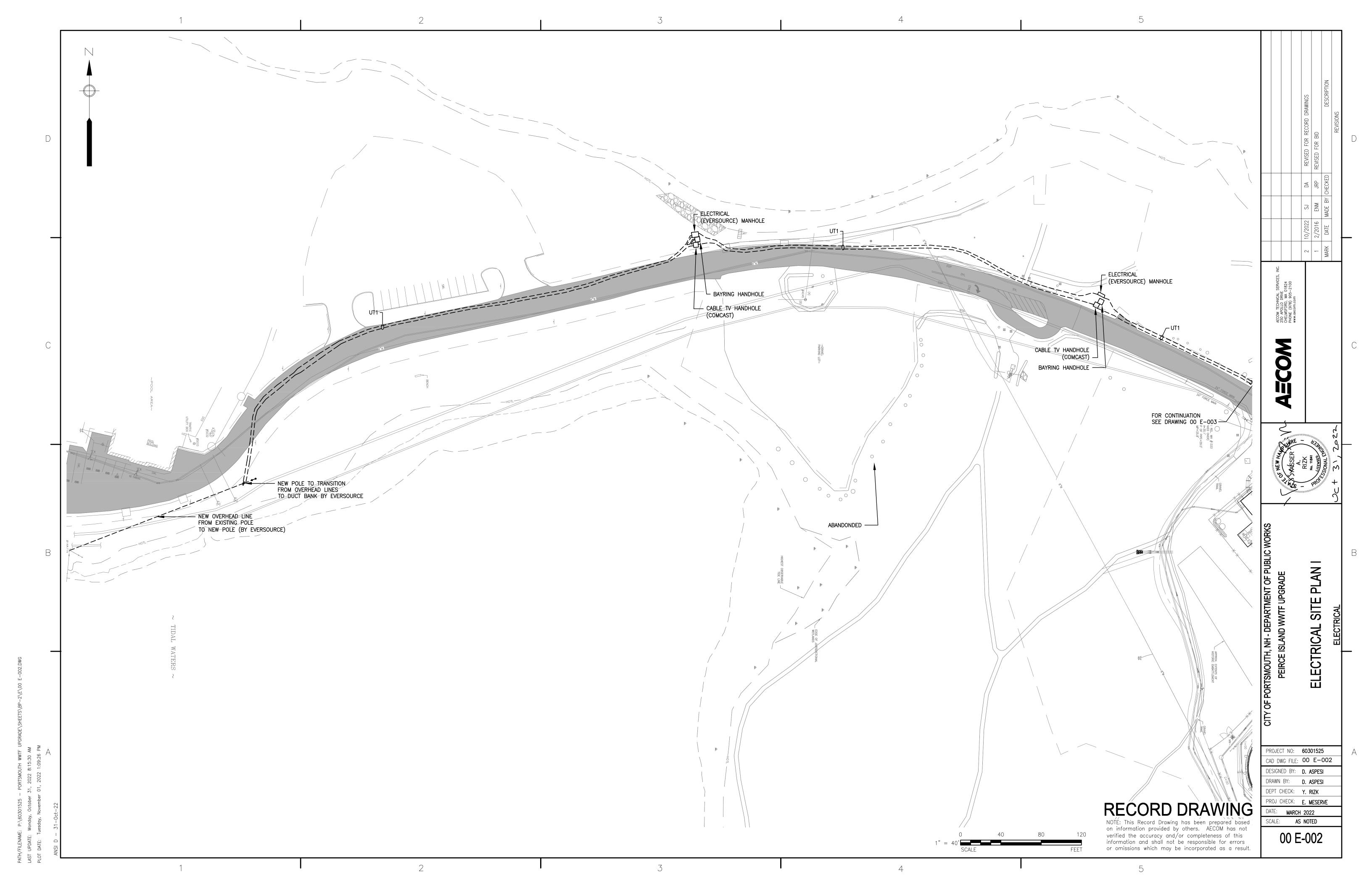


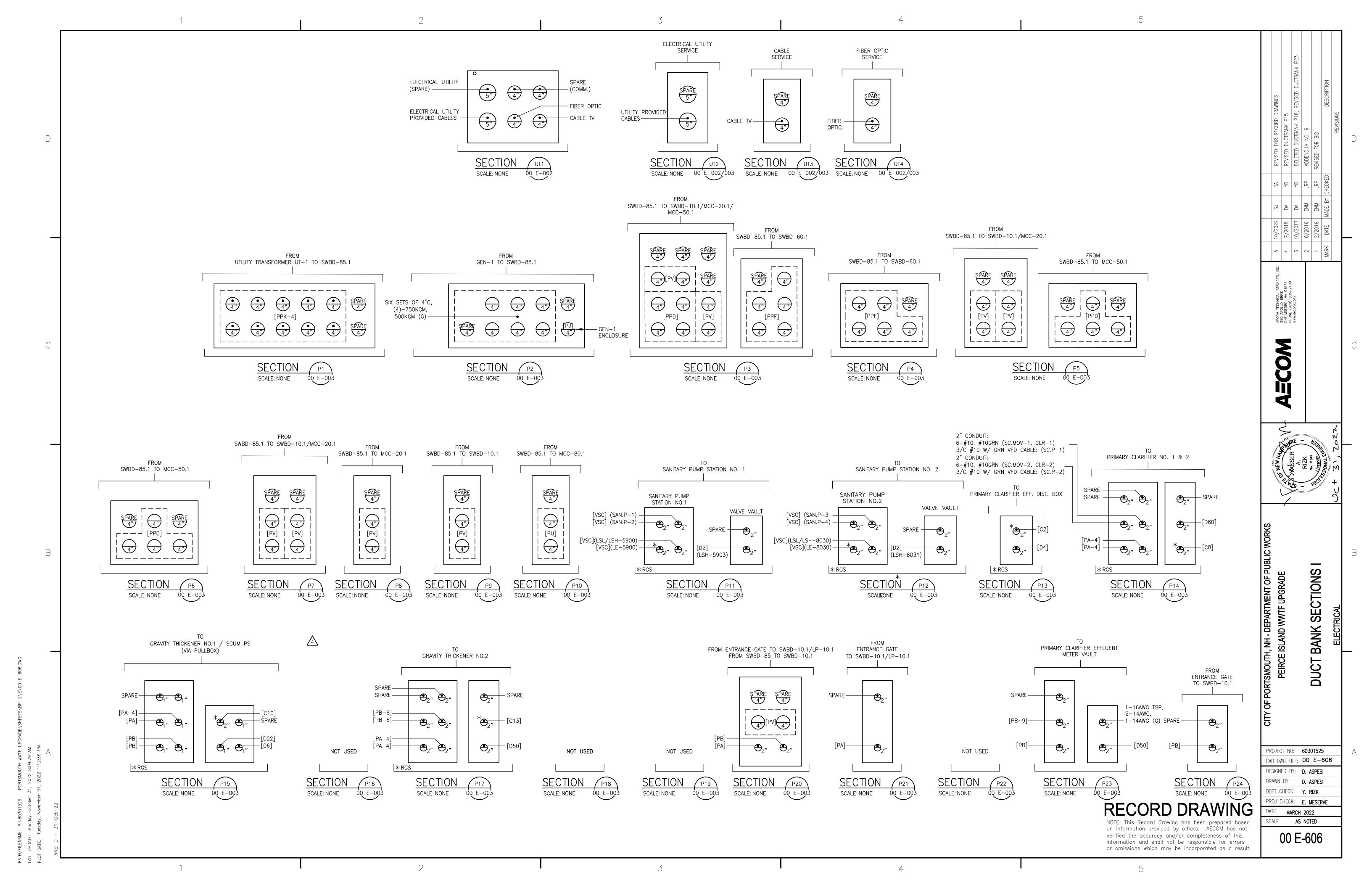












APPENDIX E NHDES WETLAND PERMIT

&

SHORELAND PERMIT



The State of New Hampshire

Department of Environmental Services



Robert R. Scott, Commissioner

September 02, 2021

CITY OF PORTSMOUTH TERRY DESMARAIS PE - CITY ENGINEER 680 PEVERLY HILL RD PORTSMOUTH NH 03801

Approved Standard Dredge and Fill Wetlands Permit Application with Mitigation (RSA 482-A) Re:

NHDES File Number: 2021-01572

Subject Property: 200 Peirce Island Rd, Portsmouth, Tax Map #208, Lot #1

Dear Applicant:

On September 02, 2021, the New Hampshire Department of Environmental Services (NHDES) Wetlands Bureau approved the above-referenced Standard Dredge and Fill Wetlands Permit Application. Enclosed please find Wetlands Permit # 2021-01572 to impact 12,951 square feet of previously developed upland tidal buffer zone and 890 square feet of undeveloped upland tidal buffer zone in order to improve resiliency of the access road to the Peirce Island Wastewater Treatment Facility (WWTF), upgrade an existing parking area, extend a public walking trail, and to replace and rehabilitate existing sewer and drinking water force mains. In addition, the project will temporarily impact 56,794 square feet of previously developed upland tidal buffer zone and 1,803 square feet of undeveloped upland tidal buffer zone for construction access and installation. Compensatory mitigation is provided for permanent impacts within the undeveloped upland tidal buffer zone as a 9,731 square foot buffer enhancement area to be planted.

This approval is based on the following findings:

- 1. This is classified as a Major impact project per Rule Env-Wt 610.17 for construction activity that involves greater than 10,000 square feet of impact in the previously developed upland tidal buffer zone and alteration of undeveloped upland tidal buffer zone (a priority resource area).
- 2. The applicant has addressed all of the required planning items that are used to determine the appropriate impact classification of a project and the type of approval required, per Rule Env-Wt 306.05.
- 3. The applicant has demonstrated that the avoidance and minimization requirements in Env-Wt 307, Env-Wt 311.07, Env-Wt 313, and Env-Wt 603.04 have been met, and has demonstrated that all of the requirements listed in Env-Wt 605.01(a) through (c) have been met, for projects in coastal areas, per Rule Env-Wt 605.01.
- 4. The project meets the approval criteria established in Rule Env-Wt 313.01.
- 5. The applicant for a permit for work in or adjacent to tidal waters/wetlands or the tidal buffer zone has demonstrated that adverse impacts listed in (a) through (d) have been avoided or minimized as required by Env-Wt 313.04, per Rule Env-Wt 605.02.
- 6. The project in or on a tidal buffer zone preserves the self-sustaining ability of the buffer area to provide habitat values, protect tidal environments from potential sources of pollution, provide stability of the coastal shoreline, and maintain existing buffers intact where the lot has disturbed area defined under RSA 483- B:4, VI, per Rule Env-Wt 604.02(c).
- 7. All resource-specific criteria established in Env-Wt 600 have been met, per Rule Env-Wt 313.01(a)(3).
- 8. All project-specific criteria established in Env-Wt 600 have been met, per Rule Env-Wt 313.01(a)(4).
- 9. Per Rule Env-Wt311.03(b)(7), the applicant has provided an explanation as to methods, timing, and manner as to how the project will meet standard permit conditions specified in Env-Wt 307.

File # 2021-01572 September 2, 2021 Page 2 of 2

- 10. All applicable conditions specified in Env-Wt 307 have been met, per Rule Env-Wt 313.01(a)(2).
- 11. Related NHDES Wetlands / Shoreland permit files include: 2015-01866, 2015-01878, 2020-02873, 2021-01561.
- 12. Per Rule Env-Wt 313.04(a)(1) compensatory mitigation is required for permanent impacts to priority resource areas (including the undeveloped upland tidal buffer zone). The applicant is offering permittee responsible mitigation in the form of a 9,731 square foot upland buffer planting area.
- 13. Per Rule Env-Wt 803.04(a), the applicant has prepared a monitoring plan that is commensurate with the complexity of the permittee-responsible mitigation project.
- 14. Per Rule Env-Wt 803.08(a), for permittee-responsible mitigation, other than for stream impacts, the applicant has demonstrated that the compensatory mitigation plan meets or exceeds the ratios listed in Table 800-1, relative to the amount of impacted jurisdictional areas.

Mitigation is required as part of this approval. The required mitigation must be completed as approved in the permit, in accordance with the conditions in the permit, and in conjunction with the project. Failure to comply with the mitigation requirements will be considered a violation of RSA 482-A.

In accordance with RSA 482-A:10, RSA 21-O:14, and Rules Env-Wtc 100-200, any person aggrieved by this decision may file a Notice of Appeal directly with the NH Wetlands Council (Council) within 30 days of the decision date, September 02, 2021. Every ground claiming the decision is unlawful or unreasonable must be fully set forth in the Notice of Appeal. Only the grounds set forth in the Notice of Appeal are considered by the Council. Information about the Council, including Council Rules, is available at https://nhec.nh.gov/wetlands/index.htm. For appeal related issues, contact the Council Appeals Clerk at (603) 271-6072.

If you have any questions, please contact me at Stefanie. Giallongo@des.nh.gov or (603) 559-1516.

Sincerely,

Stefanie M. Giallongo

ShipaH. Diastoryo

Inland Wetland Supervisor, Wetlands Bureau Land Resources Management, Water Division

cc: Agent

Municipal Clerk/Conservation Commission

ec: Assistant Wetlands Bureau Administrator

Wetland Mitigation Coordinator



The State of New Hampshire **Department of Environmental Services**

Robert R. Scott, Commissioner

WETLANDS AND NON-SITE SPECIFIC PERMIT 2021-01572

NOTE CONDITIONS

PERMITTEE: CITY OF PORTSMOUTH

TERRY DESMARAIS PE - CITY ENGINEER

680 PEVERLY HILL RD PORTSMOUTH NH 03801

PROJECT LOCATION 200 PEIRCE ISLAND RD, PORTSMOUTH

TAX MAP #208, LOT #1

WATERBODY: PISCATAQUA RIVER

APPROVAL DATE: SEPTEMBER 02, 2021 EXPIRATION DATE: SEPTEMBER 02, 2026

Based upon review of permit application 2021-01572 in accordance with RSA 482-A and RSA 485-A:17, the New Hampshire Department of Environmental Services (NHDES) hereby issues this Wetlands and Non-Site Specific Permit. To validate this Permit, signatures of the Permittee and the Principal Contractor are required.

PERMIT DESCRIPTION:

Impact 12,951 square feet of previously developed upland tidal buffer zone and 890 square feet of undeveloped upland tidal buffer zone in order to improve resiliency of the access road to the Peirce Island Wastewater Treatment Facility (WWTF), upgrade an existing parking area, extend a public walking trail, and to replace and rehabilitate existing sewer and drinking water force mains. In addition, the project will temporarily impact 56,794 square feet of previously developed upland tidal buffer zone and 1,803 square feet of undeveloped upland tidal buffer zone for construction access and installation. Compensatory mitigation is provided for permanent impacts within the undeveloped upland tidal buffer zone as a 9,731 square foot buffer enhancement area to be planted.

THIS PERMIT IS SUBJECT TO THE FOLLOWING PROJECT-SPECIFIC CONDITIONS:

- 1. All work shall be done in accordance with the plans by AECOM and Altus Engineering, Inc., titled Force Main and Water Main Replacement (dated April 2021), Overview Plan (G-001) and Parking Improvements (C-001), Erosion Control Notes and Parking Improvement Details (C-003, C-004; dated April 13, 2021) and Proposed Walking Trail (C-002; dated April 2020), as received by the NH Department of Environmental Services (NHDES) on May 20, 2021; Overall Site Plan (00 G-003-P OSP) dated April 13, 2021 and revised through July 23, 2021, last received by NHDES on July 30, 2021; Compensatory Mitigation and Post-Construction Monitoring Plan (received by NHDES September 1, 2021); and, Parking Improvements (L-001) dated August 31, 2021 and received by NHDES on September 01, 2021, per Rule Env-Wt 307.16.
- 2. Prior to the start of construction, the contractor shall install fencing around protected plant species to prevent unintentional encroachment, in accordance with Env-Wt 311.06(g).
- 3. All work shall comply with all applicable conditions specified in Env-Wt 307.
- 4. All development activities associated with any project shall be conducted in compliance with applicable requirements of RSA 483-B and Env-Wq 1400 during and after construction, per Rule Env-Wt 307.07.
- 5. All work, including management of soil stockpiles, shall be conducted so as to minimize erosion, minimize sediment transfer to surface waters or wetlands, and minimize turbidity in surface waters and wetlands using the techniques described in Env-Wq 1505.02, Env-Wq 1505.04, Env-Wq 1506, and Env-Wq 1508; the applicable BMP manual; or a

File # 2021-01572 September 2, 2021 Page 2 of 3

- combination thereof, if the BMP manual provides less protection to jurisdictional areas than the provisions of Env-Wq 1500, per Rule Env-Wt 307.03(b).
- 6. Water quality control measures shall be selected and implemented based on the size and nature of the project and the physical characteristics of the site, including slope, soil type, vegetative cover, and proximity to jurisdictional areas, per Rule Env-Wt 307.03(c)(1).
- 7. The person in charge of construction equipment shall inspect such equipment for leaking fuel, oil, and hydraulic fluid each day prior to entering surface waters or wetlands or operating in an area where such fluids could reach groundwater, surface waters, or wetlands, per Rule Env-Wt 307.03(g)(1).
- 8. Equipment shall be staged and refueled outside of jurisdictional areas (unless allowed) per Rule Env-Wt 307.15 and Env-Wt 307.03(h).

MONITORING:

- 9. Within 60 days of completing a mitigation project that included enhancement, the applicant shall submit a signed letter specifying the date of completion and the anticipated dates of submittal of the annual monitoring reports plus a post construction monitoring report documenting the conditions of the enhanced area in accordance with Env-Wt 807.03.
- 10. Compensatory mitigation project monitoring reports shall be submitted to the department annually, by December 1 of each monitoring year in accordance with the approved compensatory mitigation plan, Env- Wt 307.18(a) and Env- Wt 803.04.
- 11. Mitigation project monitoring shall span no fewer than 5 growing seasons for any mitigation project that includes plantings, in accordance with Env-Wt 803.04(b)(1).

THIS PERMIT IS SUBJECT TO THE FOLLOWING GENERAL CONDITIONS:

- 1. Pursuant to RSA 482-A:12, a copy of this permit shall be posted in a secure manner in a prominent place at the site of the approved project.
- 2. In accordance with Env-Wt 313.01(a)(5), and as required by RSA 482-A:11, II, work shall not infringe on the property rights or unreasonably affect the value or enjoyment of property of abutting owners.
- 3. In accordance with Env-Wt 314.01, a standard permit shall be signed by the permittee, and the principal contractor who will build or install the project prior to start of construction, and will not be valid until signed.
- 4. In accordance with Env-Wt 314.03(a), the permittee shall notify the department in writing at least one week prior to commencing any work under this permit.
- 5. In accordance with Env-Wt 314.08(a), the permittee shall file a completed notice of completion of work and certificate of compliance with the department within 10 working days of completing the work authorized by this permit.
- 6. In accordance with Env-Wt 314.06, transfer of this permit to a new owner shall require notification to, and approval of, the NHDES.
- 7. The permit holder shall ensure that work is done in a way that protects water quality per Env-Wt 307.03; protects fisheries and breeding areas per Env-Wt 307.04; protects against invasive species per Env-Wt 307.05; meets dredging activity conditions in Env-Wt 307.10; and meets filling activity conditions in Env-Wt 307.11.
- 8. This project has been screened for potential impact to known occurrences of protected species and exemplary natural communities in the immediate area. Since many areas have never been surveyed, or only cursory surveys have been performed, unidentified sensitive species or communities may be present. This permit does not absolve the permittee from due diligence in regard to state, local or federal laws regarding such communities or species. This permit does not authorize in any way the take of threatened or endangered species, as defined by RSA 212-A:2, or of any protected species or exemplary natural communities, as defined in RSA 217-A:3.
- 9. In accordance with Env-Wt 307.06(a) through (c), no activity shall jeopardize the continued existence of a threatened or endangered species, a species proposed for listing as threatened or endangered, or a designated or proposed critical habitat under the Federal Endangered Species Act, 16 U.S.C. §1531 et seq.; State Endangered Species Conservation Act, RSA 212-A; or New Hampshire Native Plant Protection Act, RSA 217-A.

File # 2021-01572
September 2, 2021
Page 3 of 3

10	In accordance with Env-Wt 307.02, and in accordance with federal requirements, all work in areas under the jurisdiction of the U.S. Army Corps of Engineers (USACE) shall comply with all conditions of the applicable state general permit.
	APPROVED:
	Sugart. History

Stefanie M. Giallongo Inland Wetland Supervisor, Wetlands Bureau Land Resources Management, Water Division

THE SIGNATURES BELOW ARE REQUIRED TO VALIDATE THIS PERMIT (Env-Wt 314.01).					
PERMITTEE SIGNATURE (required)	PRINCIPAL CONTRACTOR SIGNATURE (required)				

Wetland Permit Application for: Peirce Island Road, Parking Area, Recreational Trail, Pipeline Replacement, and Sliplining

City of Portsmouth, NH

Prepared For:
City of Portsmouth
Department of Public Works
680 Peverly Hill Road
Portsmouth, NH 03801

and **AECOM**250 Apollo Drive
Chelmsford, MA 01824

Date: **April 15, 2021**

Prepared By: Normandeau Associates, Inc. 25 Nashua Road Bedford, NH 03110

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EXHIBIT 1 - STANDARD DREDGE AND FILL WETLANDS PERMIT APPLICATION

EXHIBIT 2 - FEES/CHECK

EXHIBIT 4 - USACE APPENDIX B - NH GENERAL PERMITS REQUIRED INFORMATION AND CORPS SECONDARY IMPACTS CHECKLIST

EXHIBIT 5 - PROJECT PLANS

EXHIBIT 7 - PROJECT NARRATIVE (EXPLANATION OF METHODS, TIMING, AND MANNER OF HOW PROJECT WILL MEET STANDARD PERMIT CONDITIONS (ENV-WT 307))

EXHIBIT 8 - PERMITTEE RESPONSIBLE MITIGATION PROJECT WORKSHEET

EXHIBIT 9 - ADDITIONAL RESOURCE INFORMATION

EXHIBIT 10 - PROJECT SPECIFIC INFORMATION REQUIRED BY ENV-WT 500, 600, AND 900

EXHIBIT 11 - ABUTTERS LIST

EXHIBIT 12 - CERTIFIED MAILING RECEIPTS

EXHIBIT 13 - PROJECT DESIGN CONSIDERATION REQUIRED BY ENV-WT 313

EXHIBIT 14 - TAX MAP

EXHIBIT 15 - PHOTOS OF JURISDICTIONAL AREAS AND SHORELINE STRUCTURES

EXHIBIT 16 - USGS MAP

EXHIBIT 17 - CONSTRUCTION NARRATIVE

EXHIBIT 18+19 - COPY OF DEED

EXHIBIT 20 - NHB CORRESPONDENCE

EXHIBIT 21 - CONSERVATION COMISSION CORRESPONDENCE

EXHIBIT 22 - FEDERAL AGENCY CORRESPONDENCE

EXHIBIT 23 - AVOIDANCE AND MINIMIZATION NARRATIVE

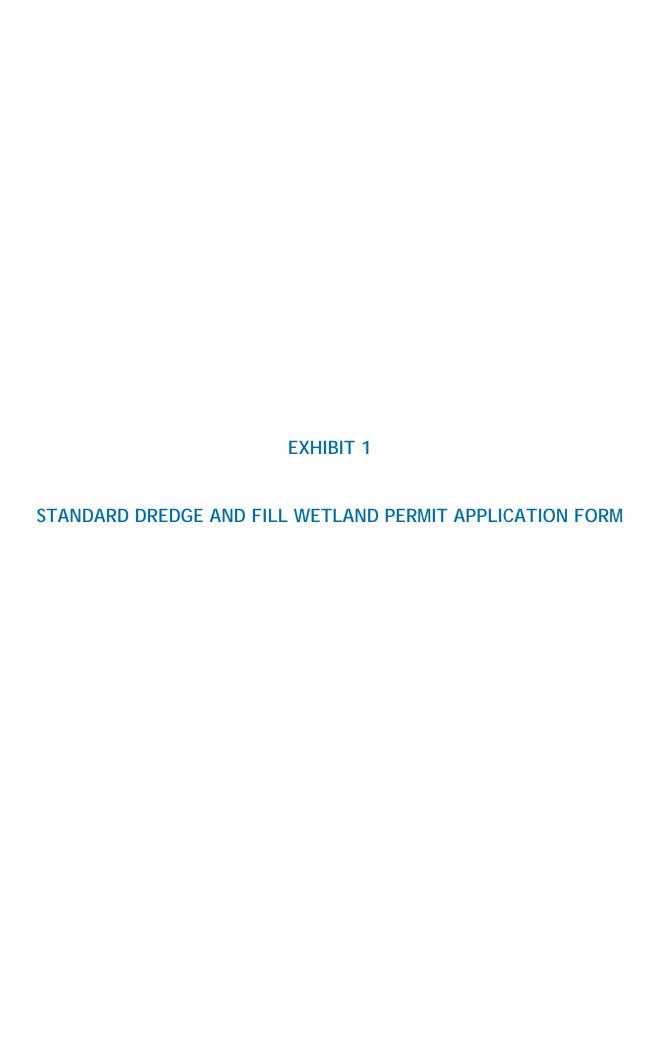
EXHIBIT 25 - COASTAL RESOURCE WORKSHEET

EXHIBIT 26 - PRIME WETLANDS

EXHIBIT 27 - ATTACHMENT A - MINOR AND MAJOR PROJECTS EXHIBIT 28 - FUNCTIONAL ASSESSMENT WORKSHEET

*Exhibit 3 and 6 - Planning actions and materials required by Env-Wt 311.01(a)-(c), Env-Wt 311.03(b)(3), and 311.06 are provided in various other portions of this application.

*Exhibit 24 - After-the-fact application is not applicable





STANDARD DREDGE AND FILL WETLANDS PERMIT APPLICATION



Water Division/Land Resources Management Wetlands Bureau

Check the Status of your Application

RSA/Rule: RSA 482-A/Env-Wt 100-900

APPLICANT'S NAME: Terry Desmarais, PE, City Engineer

			File No.:
Administrative	Administrative	Administrative	Check No.:

TOWN NAME: Portsmouth

			File No.:
Administrative Use Only	Administrative	Administrative Use Only	Check No.:
	Use Only		Amount:
			Initials:

A person may request a waiver of the requirements in Rules Env-Wt 100-900 to accommodate situations where strict adherence to the requirements would not be in the best interest of the public or the environment but is still in compliance with RSA 482-A. A person may also request a waiver of the standards for existing dwellings over water pursuant to RSA 482-A:26, III(b). For more information, please consult the Waiver Request Form.

SEC	SECTION 1 - REQUIRED PLANNING FOR ALL PROJECTS (Env-Wt 306.05; RSA 482-A:3, I(d)(2))				
Please use the <u>Wetland Permit Planning Tool (WPPT)</u> , the Natural Heritage Bureau (NHB) <u>DataCheck Tool</u> , the <u>Aquatic Restoration Mapper</u> , or other sources to assist in identifying key features such as: <u>priority resource areas (PRAs)</u> , <u>protected species or habitats</u> , coastal areas, designated rivers, or designated prime wetlands.					
Has	s the required planning been completed?	⊠ Yes ☐ No			
Do	es the property contain a PRA? If yes, provide the following information:	⊠ Yes ☐ No			
•	Does the project qualify for an Impact Classification Adjustment (e.g. NH Fish and Game Department (NHF&G) and NHB agreement for a classification downgrade) or a Project-Type Exception (e.g. Maintenance or Statutory Permit-by-Notification (SPN) project)? See Env-Wt 407.02 and Env-Wt 407.04.	Yes No			
•	Protected species or habitat? o If yes, species or habitat name(s): Iva frutescens o NHB Project ID #: NHB21-1136	Yes No			
•	Bog?	☐ Yes ⊠ No			
•	Floodplain wetland contiguous to a tier 3 or higher watercourse?	☐ Yes ⊠ No			
•	Designated prime wetland or duly-established 100-foot buffer?	☐ Yes ⊠ No			
•	Sand dune, tidal wetland, tidal water, or undeveloped tidal buffer zone?	⊠ Yes ☐ No			
Is t	he property within a Designated River corridor? If yes, provide the following information:	☐ Yes ☐ No			
•	Name of Local River Management Advisory Committee (LAC):				
•	A copy of the application was sent to the LAC on Month: Day: Year:				

Irm@des.nh.gov or (603) 271-2147 NHDES Wetlands Bureau, 29 Hazen Drive, PO Box 95, Concord, NH 03302-0095 www.des.nh.gov

For dredging projects, is the subject property contaminated? • If yes, list contaminant:		Yes No			
Is there potential to impact impaired waters, class A waters, or outstanding resour	ce waters?	Yes No			
For stream crossing projects, provide watershed size (see WPPT or Stream Stats): N/A					
SECTION 2 - PROJECT DESCRIPTION (Env-Wt 311.04(i))					
Provide a brief description of the project and the purpose of the project, outlining the scope of work to be performed and whether impacts are temporary or permanent. DO NOT reply "See attached"; please use the space provided below.					
The City of Portsmouth is nearing completion of a major upgrade to the Peirce Isla (WWTF; DES Wetland Permits 2015-1866 and 2015-1878). Several additional impressors reliability to the WWTF, and the public's access to the island. These improve road approximately 3 feet at its lowest point to elevate it above the 100-year floor converting a former informal public parking area and natural lands; and extending northeastern perimeter of the island. At the same time, the City is planning to perforce mains on Peirce Island between the Peirce Island Road Bridge and the Peirce Peirce Island between the Peirce Island Road Bridge and the Peirce Island Pool, and under the Peirce Island Road. The majority of the work lies within the Tidal Buffer.	ovements are propose ements include raising d line and to address so a public walking trail a manently replace the to Island WWTF, the wa d slip line one of the fo	the access ea level rise; around the two sewer ter main on			
SECTION 3 - PROJECT LOCATION					
Separate wetland permit applications must be submitted for each municipality within which wetland impacts occur.					
ADDRESS: 200 Peirce Island Road					
TOWN/CITY: Portsmouth					
TAX MAP/BLOCK/LOT/UNIT: 208/1					
US GEOLOGICAL SURVEY (USGS) TOPO MAP WATERBODY NAME: Piscataqua River N/A					
(Optional) LATITUDE/LONGITUDE in decimal degrees (to five decimal places):	43.07509° North				
	-70.74582° West				

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SECTION 4 - APPLICANT (DESIRED PERMIT HOLDER) INF If the applicant is a trust or a company, then complete v	•	• ••				
NAME: Terry Desmarais, P.E., City Engineer						
MAILING ADDRESS: 680 Peverly Hill Road						
TOWN/CITY: Portsmouth ZIP CODE: 03801						
EMAIL ADDRESS: tldesmarais@cityofportsmouth.com						
AX: N/A PHONE: (603) 766-1421						
ELECTRONIC COMMUNICATION: By initialing here: relative to this application electronically.	, I hereby authorize NHDE	S to communicate	e all matters			
SECTION 5 - AUTHORIZED AGENT INFORMATION (Env-	Wt 311.04(c))					
LAST NAME, FIRST NAME, M.I.: Meserve, Erik						
COMPANY NAME: AECOM						
MAILING ADDRESS: 250 Apollo Drive						
TOWN/CITY: Chelmsford STATE: MA ZIP CODE: 01824						
EMAIL ADDRESS: erik.meserve@aecom.com						
FAX: N/A	PHONE: (978) 905-3145					
ELECTRONIC COMMUNICATION: By initialing here , I hereby authorize NHDES to communicate all matters relative to this application electronically.						
SECTION 6 - PROPERTY OWNER INFORMATION (IF DIFF If the owner is a trust or a company, then complete with Same as applicant		•))			
NAME: City of Portsmouth						
MAILING ADDRESS: 97 Junkins Avenue						
TOWN/CITY: Portsmouth STATE: NH ZIP CODE: 03801						
EMAIL ADDRESS: N/A						
FAX: M/A	PHONE: N/A					
ELECTRONIC COMMUNICATION: By initialing here to this application electronically.	, I hereby authorize NHDES	to communicate	all matters relative			

SECTION 7 - RESOURCE-SPECIFIC CRITERIA ESTABLISHED IN Env-Wt 400, Env-Wt 500, Env-Wt 600, Env-Wt 700, OR Env-Wt 900 HAVE BEEN MET (Env-Wt 313.01(a)(3))

Describe how the resource-specific criteria have been met for each chapter listed above (please attach information about stream crossings, coastal resources, prime wetlands, or non-tidal wetlands and surface waters):

Peirce Island is located in the City of Portsmouth on the Piscataqua River. It is owned by the City and the State of NH, and provides multiple public services, including the WWTF, the State Fish Pier, and a public outdoor pool, boat ramp, park, and numerous walking trails. The Project Area occupies the Peirce Island Road Bridge, the eastern end of the island, and the road between Peirce Island Road Bridge and the WWTF. The Project Area is bordered by estuarine habitats, including rocky shore (E2RS1/2) and salt marsh (E2EM1). Most of the work lies within the 100-foot TBZ, although a small portion of the parking area lies within protected shoreline. No freshwater resources are within or adjacent to the impact area. A protected plant, *Iva frutescens*, occurs in the project vicinity. Please see Exhibit 25 - Coastal Resource Worksheet attached to this application for further discussion of the areas coastal resources and the proposed mitigation for the planned temporary and permanent impacts to the undistrubed TBZ. Please see Exhibit 8 - Permittee Responsible Mitigation Project Worksheet attached to this application for further discussion of the proposed mitigation for impacts to the protected plant, *Iva frutescens*.

SECTION 8 - AVOIDANCE AND MINIMIZATION

Impacts within wetland jurisdiction must be avoided to the maximum extent practicable (Env-Wt 313.03(a)).* Any project with unavoidable jurisdictional impacts must then be minimized as described in the Wetlands Best Management Practice Techniques For Avoidance and Minimization and the Wetlands Permitting: Avoidance, Minimization and Mitigation Fact Sheet. For minor or major projects, a functional assessment of all wetlands on the project site is required (Env-Wt 311.03(b)(10)).*

Please refer to the application checklist to ensure you have attached all documents related to avoidance and minimization, as well as functional assessment (where applicable). Use the <u>Avoidance and Minimization Checklist</u>, the <u>Avoidance and Minimization Narrative</u>, or your own avoidance and minimization narrative.

*See Env-Wt 311.03(b)(6) and Env-Wt 311.03(b)(10) for shoreline structure exemptions.

SECTION 9 - MITIGATION REQUIREMENT (Env-Wt 311.02)

If unavoidable jurisdictional impacts require mitigation, a mitigation <u>pre-application meeting</u> must occur at least 30 days but not more than 90 days prior to submitting this Standard Dredge and Fill Permit Application.

but not more than 90 days prior to submitting this Standard Dredge and Fill Permit Application.
Mitigation Pre-Application Meeting Date: Month: 8 Day: 19 Year: 2020
(N/A - Mitigation is not required)
SECTION 10 - THE PROJECT MEETS COMPENSATORY MITIGATION REQUIREMENTS (Env-Wt 313.01(a)(1)c)
52011011 10 1112 1 105201 11121 10 00111 2113/11011 1110101 112001 11101 1101 11101 11101 11101 11101 11101
Confirm that you have submitted a compensatory mitigation proposal that meets the requirements of Env-Wt 800 for all permanent unavoidable impacts that will remain after avoidance and minimization techniques have been exercised to the maximum extent practicable:

<u>www.des.nh.gov</u> 2020-05

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SECTION 11 - IMPACT AREA (Env-Wt 311.04(g))

For each jurisdictional area that will be/has been impacted, provide square feet (SF) and, if applicable, linear feet (LF) of impact, and note whether the impact is after-the-fact (ATF; i.e., work was started or completed without a permit).

For intermittent and ephemeral streams, the linear footage of impact is measured along the thread of the channel. *Please note, installation of a stream crossing in an ephemeral stream may be undertaken without a permit per Rule Env-Wt 309.02(d), however other dredge or fill impacts should be included below.*

For perennial streams/rivers, the linear footage of impact is calculated by summing the lengths of disturbances to the channel and banks.

Permanent impacts are impacts that will remain after the project is complete (e.g., changes in grade or surface materials). Temporary impacts are impacts not intended to remain (and will be restored to pre-construction conditions) after the project is completed.

JURISDICTIONAL AREA		PERMANENT		TEMPORARY			
		SF	LF	ATF	SF	LF	ATF
	Forested Wetland						
	Scrub-shrub Wetland						
spι	Emergent Wetland						
Wetlands	Wet Meadow						
We	Vernal Pool						
	Designated Prime Wetland						
	Duly-established 100-foot Prime Wetland Buffer						
er	Intermittent / Ephemeral Stream						
Vat	Perennial Stream or River						
Surface Water	Lake / Pond						
rfa	Docking - Lake / Pond						
Su	Docking - River						
	Bank - Intermittent Stream						
Banks	Bank - Perennial Stream / River						
Ba	Bank / Shoreline - Lake / Pond						
	Tidal Waters						
	Tidal Marsh						
Tidal	Sand Dune						
Ţ	Undeveloped Tidal Buffer Zone (TBZ)	890			1803		
	Previously-developed TBZ	12951			55624		
	Docking - Tidal Water						
	TOTAL	13841			57427		
SEC	TION 12 - APPLICATION FEE (RSA 482-A:3, I)						
	MINIMUM IMPACT FEE: Flat fee of \$400.						
	NON-ENFORCEMENT RELATED, PUBLICLY-FUN	DED AND S	UPERVISEI	D RESTORAT	ION PROJE	CTS, REGARD	LESS OF
	IMPACT CLASSIFICATION: Flat fee of \$400 (refe	er to RSA 48	32-A:3, 1(c)) for restricti	ons).		
	MINOR OR MAJOR IMPACT FEE: Calculate using	g the table	below:				
\$							
Permanent and temporary (non-docking): 71268 SF \times \$0.40 = 285			28507.2				
				CE		62.00	0
	Seasonal do			SF		× \$2.00 =	
	Permanent do			SF		× \$4.00 =	
	Projects pr	oposing sh	oreline stru	actures (incl	uding docks) add \$400 =	: \$

			Total :	0
The appli	cation fee for minor or major impact is	the above calculated to	tal or \$400, whichever is greater	12
	13 - PROJECT CLASSIFICATION (Env-Wt and project classification.	306.05)		0
		r Project	Major Project	
SECTION 1	4 - REQUIRED CERTIFICATIONS (Env-Wi	: 311.11)		
	n box below to certify:			
Initials: TD	To the best of the signer's knowledge ar	nd belief, all required notif	ications have been provided.	
Initials: TD	The information submitted on or with the signer's knowledge and belief.	ne application is true, com	plete, and not misleading to the be	st of the
The signer understands that: The submission of false, incomplete, or misleading information constitutes grounds for NHDES to: Deny the application. Revoke any approval that is granted based on the information. Initials: The signer is a certified wetland scientist, licensed surveyor, or professional engineer licensed to practice in New Hampshire, refer the matter to the joint board of licensure and certification established by RSA 310-A:1. The signer is subject to the penalties specified in New Hampshire law for falsification in official matters, currently RSA 641. The signature shall constitute authorization for the municipal conservation commission and the Department to inspect the site of the proposed project, except for minimum impact forestry SPN				
	projects and minimum impact tra inspect the site pursuant to RSA	ail projects, where the sigr	nature shall authorize only the Depa	rtment to
Initials: TD	If the applicant is not the owner of the puthe signer that he or she is aware of the a	roperty, each property ow application being filed and	ner signature shall constitute certif does not object to the filing.	ication by
SECTION 15	- REQUIRED SIGNATURES (Env-Wt 311	.04(d); Env-Wt 311.11)		
SIGNATURE	OVMR): An	PRINT NAME LEGIBLY: Terry Desmarais, P.E	DA DA	TE: 3/21
SIGNATURE (APPLICANT, IF DIFFERENT FROM OWNER):	PRINT NAME LEGIBLY:	DAT	
SIGNATURE (AGENT, IF APPLICABLE):	PRINT NAME LEGIBLY:	DAT	E:
SECTION 16	6 - TOWN / CITY CLERK SIGNATURE (Env	/-Wt 311.04(f))		

NHDES-W-06-012

As required by RSA 482-A:3, I(a)(1), I hereby certify that the applicant has filed four application forms, four detailed			
plans, and four USGS location maps with the town/city indicated below.			
TOWN/CITY CLERK SIGNATURE: PRINT NAME LEGIBLY:			
TOWN/CITY:	DATE:		

DIRECTIONS FOR TOWN/CITY CLERK:

Per RSA 482-A:3, I(a)(1)

- 1. IMMEDIATELY sign the original application form and four copies in the signature space provided above.
- 2. Return the signed original application form and attachments to the applicant so that the applicant may submit the application form and attachments to NHDES by mail or hand delivery.
- 3. IMMEDIATELY distribute a copy of the application with one complete set of attachments to each of the following bodies: the municipal Conservation Commission, the local governing body (Board of Selectmen or Town/City Council), and the Planning Board.
- 4. Retain one copy of the application form and one complete set of attachments and make them reasonably accessible for public review.

DIRECTIONS FOR APPLICANT:

Submit the original permit application form bearing the signature of the Town/City Clerk, additional materials, and the application fee to NHDES by mail or hand delivery at the address at the bottom of this page. Make check or money order payable to "Treasurer – State of NH".

Keep this checklist for your reference; do not submit with your application.

APPLICATION CHECKLIST

Unless specified, all items below are required. Failure to provide the required items will delay a decision on your project and may result in denial of your application. Please reference statute RSA 482-A, Fill and Dredge in Wetlands, and the Wetland Rules Env-Wt 100-900.

- The completed, dated, signed, and certified application (Env-Wt 311.03(b)(1)).
- Correct fee as determined in RSA 482-A:3, I(b) or (c), subject to any cap established by RSA 482-A:3, X (Env-Wt 311.03(b)(2)). Make check or money order payable to "Treasurer State of NH".
- The Required Planning actions required by Env-Wt 311.01(a)-(c) and Env-Wt 311.03(b)(3).
- US Army Corps of Engineers (ACE) "Appendix B, New Hampshire General Permits (GPs), Required Information and Corps Secondary Impacts Checklist" and its required attachments (Env-Wt 307.02). This includes the US Fish and Wildlife Service IPAC review and Section 106 Historic/Archaeological Resource review.
- Project plans described in Env-Wt 311.05 (Env-Wt 311.03(b)(4)).
- Maps, or electronic shape files and meta data, and other attachments specified in Env-Wt 311.06 (Env-Wt 311.03(b)(5)).
- Explanation of the methods, timing, and manner as to how the project will meet standard permit conditions required in Env-Wt 307 (Env-Wt 311.03(b)(7)).
- If applicable, the information regarding proposed compensatory mitigation specified in Env-Wt 311.08 and Chapter Env-Wt 800 Permittee Responsible Mitigation Project Worksheet, unless not required under Env-Wt 313.04 (Env-Wt 311.03(b)(8); Env-Wt 311.08; Env-Wt 313.04).
- Any additional information specific to the **type of resource** as specified in Env-Wt 311.09 (Env-Wt 311.03(b)(9); Env-Wt 311.04(j)).
- Project specific information required by Env-Wt 500, Env-Wt 600, and Env-Wt 900 (Env-Wt 311.03(b)(11)).
- A list containing the name, mailing address and tax map/lot number of each abutter to the subject property (Env-Wt 311.03(b)(12)).
- Copies of certified postal receipts or other proof of receipt of the notices that are required by RSA 482-A:3, I(d) (Env-Wt 311.03(b)(13)).
- Project design considerations required by Env-Wt 313 (Env-Wt 311.04(j)).
- Town tax map showing the subject property, the location of the project on the property, and the location of properties of abutters with each lot labeled with the name and mailing address of the abutter (Env-Wt 311.06(a)).
- Dated and labeled color photographs that:
 - (1) Clearly depict:
 - a. All jurisdictional areas, including but not limited to portions of wetland, shoreline, or surface water where impacts have or are proposed to occur.
 - b. All existing shoreline structures.
 - (2) Are mounted or printed no more than 2 per sheet on 8.5 x 11 inch sheets (Env-Wt 311.06(b)).
- A copy of the appropriate US Geological Survey map or updated data based on LiDAR at a scale of one inch equals 2,000 feet showing the location of the subject property and proposed project (Env-Wt 311.06(c)).
- A narrative that describes the work sequence, including pre-construction through post-construction, and the relative timing and progression of all work (Env-Wt 311.06(d)).

\boxtimes	For all projects in the protected tidal zone, a copy of the recorded deed with book and page numbers for the property (Env-Wt 311.06(e)).					
	If the applicant is not the owner in fee of the subject property, documentation of the applicant's legal interest in the subject property, provided that for utility projects in a utility corridor, such documentation may comprise a list that:					
	(1) Identifies the county registry of deeds and book and page numbers of all of the easements or other recorded instruments that provide the necessary legal interest; and					
	(2) Has been certified as complete and accurate by a knowledgeable representative of the applicant (Env-Wt 311.06(f)).					
	The NHB memo containing the NHB identification number and results as well as any written follow-up communications such as additional memos or email communications with either NHB or NHF&G (Env-Wt 311.06(g)). See Wetlands Permitting: Protected Species and Habitat Fact Sheet .					
	A statement of whether the applicant has received comments from the local conservation commission and, if so, how the applicant has addressed the comments (Env-Wt 311.06(h)).					
	For projects in LAC jurisdiction, a statement of whether the applicant has received comments from the LAC and, if so, how the applicant has addressed the comments (Env-Wt 311.06(i)).					
	If the applicant is also seeking to be covered by the state general permits, a statement of whether comments have been received from any federal agency and, if so, how the applicant has addressed the comments (Env-Wt 311.06(j)).					
\boxtimes	<u>Avoidance and Minimization Written Narrative</u> or the <u>Avoidance and Minimization Checklist</u> , or your own avoidance and minimization narrative (Env-Wt 311.07).					
	For after-the-fact applications: information required by Env-Wt 311.12.					
	Coastal Resource Worksheet for coastal projects as required under Env-Wt 600.					
	Prime Wetlands information required under Env-Wt 700. See WPPT for prime wetland mapping.					
Req	Required Attachments for Minor and Major Projects					
\boxtimes	Attachment A: Minor and Major Projects (Env-Wt 313.03).					
	<u>Functional Assessment Worksheet</u> or others means of documenting the results of actions required by Env-Wt 311.10 as part of an application preparation for a standard permit (Env-Wt 311.03(b)(3); Env-Wt 311.03(b)(10)). See <u>Functional Assessments for Wetlands and Other Aquatic Resources Fact Sheet</u> . For shoreline structures, see shoreline structures exemption in Env-Wt 311.03(b)(10)).					
Opt	Optional Materials					
	Stream Crossing Worksheet which summarizes the requirements for stream crossings under Env-Wt 900.					
	Request for concurrent processing of related shoreland / wetlands permit applications (Env-Wt 313.05).					

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EXHIBIT 2

FEES/CHECK

EXHIBIT 3

Required Planning Actions required by Env-Wt 311.01(a)-(c) and Env-Wt 311.03(b)(3)

Required Planning Actions

All Required Planning actions required by Env-Wt 311.01(a)-(c) and Env-Wt 311.03(b)(3) have been done. See results in Exhibits 4 and 19.

EXHIBIT 4

USACE APPENDIX B - NH GENERAL PERMITS REQUIRED INFORMATION AND CORPS SECONDARY IMPACTS CHECKLIST



Appendix B

New Hampshire General Permits (GPs) Required Information and Corps Secondary Impacts Checklist

In order for the Corps of Engineers to properly evaluate your application, applicants must submit the following information along with the New Hampshire DES Wetlands Bureau application or permit notification forms. Some projects may require more information. For a more comprehensive checklist, go to https://www.nae.usace.army.mil/Missions/Regulatory/ "Useful Documents, Forms and Publications" and then "Corps Application Form and Guidance." Check with the Corps at (978) 318-8832 for project-specific requirements. For your convenience, this Appendix B is also attached to the State of New Hampshire DES Wetlands Bureau application and Permit by Notification forms.

All Projects:

- New Hampshire Department of Environmental Services (DES) Wetlands Permit Application.
- Request for Project Review Form by the New Hampshire Division of Historical Resources (DHR) https://www.nh.gov/nhdhr/review/rpr.htm.
- Photographs of wetland/waterway to be impacted.
- Purpose of the project.
- Legible, reproducible plans no larger than 11"x17" with bar scale. Provide locus map and plan views of the entire property.
- Typical cross-section views of all wetland and waterway fill areas and wetland replication areas.
- In navigable waters, show mean low water (MLW) and mean high water (MHW) elevations. Show the high tide line (HTL) elevations when fill is involved. In other waters, show ordinary high water (OHW) elevation.
- On each plan, show the following for the project:
 - Vertical datum and the NAVD 1988 equivalent with the vertical units as U.S. feet. In coastal waters this may be mean higher high water (MHHW), mean high water (MHW), mean low water (MLW), mean lower low water (MLLW) or other tidal datum with the vertical units as U.S. feet. MLLW and MHHW are preferred. Provide the correction factor detailing how the vertical datum (e.g., MLLW) was derived using the latest National Tidal Datum Epoch for that area, typically 1983-2001.
 - Horizontal state plane coordinates in U.S. survey feet based on the Traverse Mercator Grid system for the State of New Hampshire (Zone 2800) NAD 83.
 - Project limits with existing and proposed conditions.
 - Limits of any Federal Navigation Project in the vicinity of the project area and horizontal State Plane Coordinates in U.S. survey feet for the limits of the proposed work closest to the Federal Navigation Project;
 - Volume, type, and source of fill material to be discharged into waters and wetlands, including the area(s) (in square feet or acres) of fill in wetlands, below the OHW in inland waters and below the HTL in coastal waters.
 - Delineation of all waterways and wetlands on the project site,:
- Use Federal delineation methods and include Corps wetland delineation data sheets (GC 2).
- For activities involving discharges of dredged or fill material into waters of the U.S., include a statement describing how impacts to waters of the U.S. are to be avoided and minimized, and either a statement describing how impacts to waters of the U.S. are to be compensated for (or a conceptual or detailed mitigation plan) or a statement explaining why compensatory mitigation should not be required for the proposed impacts. Please contact the Corps for guidance.

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New Hampshire General Permits (GPs) Appendix B - Corps Secondary Impacts Checklist (for inland wetland/waterway fill projects in New Hampshire)

- 1. Attach any explanations to this checklist. Lack of information could delay a Corps permit determination.
- 2. All references to "work" include all work associated with the project construction and operation. Work includes filling, clearing, flooding, draining, excavation, dozing, stumping, etc.
- 3. See GC 5, regarding single and complete projects.
- 4. Contact the Corps at (978) 318-8832 with any questions.

1. Impaired Waters				
1.1 Will any work occur within 1 mile upstream in the watershed of an impaired water? See_				
http://des.nh.gov/organization/divisions/water/wmb/section401/impaired_waters.htm				
to determine if there is an impaired water in the vicinity of your work area.*				
2. Wetlands				
2.1 Are there are streams, brooks, rivers, ponds, or lakes within 200 feet of any proposed work?				
2.2 Are there proposed impacts to SAS, special wetlands. Applicants may obtain information				
from the NH Department of Resources and Economic Development Natural Heritage Bureau				
(NHB) DataCheck Tool for information about resources located on the property at_		X		
https://www2.des.state.nh.us/nhb_datacheck/. The book Natural Community Systems of New				
ampshire also contains specific information about the natural communities found in NH.				
f wetland crossings are proposed, are they adequately designed to maintain hydrology,				
sediment transport & wildlife passage?	nt transport & wildlife passage?			
2.4 Would the project remove part or all of a riparian buffer? (Riparian buffers are lands adjacent				
to streams where vegetation is strongly influenced by the presence of water. They are often thin				
es of vegetation containing native grasses, flowers, shrubs and/or trees that line the stream				
banks. They are also called vegetated buffer zones.)				
2.5 The overall project site is more than 40 acres?				
2.6 What is the area of the previously filled wetlands?				
2.7 What is the area of the proposed fill in wetlands?	0			
2.8 What is the % of previously and proposed fill in wetlands to the overall project site?				
3. Wildlife				
3.1 Has the NHB & USFWS determined that there are known occurrences of rare species,				
exemplary natural communities, Federal and State threatened and endangered species and habitat,				
in the vicinity of the proposed project? (All projects require an NHB ID number & a USFWS				
IPAC determination.) NHB DataCheck Tool: https://www2.des.state.nh.us/nhb_datacheck/				
USFWS IPAC website: https://ecos.fws.gov/ipac/location/index				

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 3.2 Would work occur in any area identified as either "Highest Ranked Habitat in N.H." or "Highest Ranked Habitat in Ecological Region"? (These areas are colored magenta and green, respectively, on NH Fish and Game's map, "2010 Highest Ranked Wildlife Habitat by Ecological Condition.") Map information can be found at: PDF: https://wildlife.state.nh.us/wildlife/wap-high-rank.html. Data Mapper: www.granit.unh.edu. GIS: www.granit.unh.edu/data/downloadfreedata/category/databycategory.html. 			
3.3 Would the project impact more than 20 acres of an undeveloped land block (upland, wetland/waterway) on the entire project site and/or on an adjoining property(s)?			
3.4 Does the project propose more than a 10-lot residential subdivision, or a commercial or industrial development?			
3.5 Are stream crossings designed in accordance with the GC 21?			
4. Flooding/Floodplain Values			
4.1 Is the proposed project within the 100-year floodplain of an adjacent river or stream?	X		
4.2 If 4.1 is yes, will compensatory flood storage be provided if the project results in a loss of flood storage?			
5. Historic/Archaeological Resources			
For a minimum, minor or major impact project - a copy of the Request for Project Review (RPR) Form (www.nh.gov/nhdhr/review) with your DES file number shall be sent to the NH Division of Historical Resources as required on Page 11 GC 8(d) of the GP document**	X		

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^{*}Although this checklist utilizes state information, its submittal to the Corps is a Federal requirement.

** If your project is not within Federal jurisdiction, coordination with NH DHR is not required under Federal law.

Section 1.1

Peirce Island lies in the Lower Piscataqua River —South water quality assessment unit (AUID: NHEST600031001-02-02). It is listed as Severe for Aquatic Life and Swimming, and Poor for Boating and Fish Consumption. The constituents of concern are mercury, fecal coliform, enterococcus, dioxins and PCBs. The project will result in a net benefit to water quality by stabilizing the parking area (reduce sedimentation) and adding grass and native vegetation to treat runoff before it reaches the river (further reduce sedimentation and nutrient/pollutant abatement).

Section 2.1

This project is located within 200 feet of the tidal Piscataqua River. Much of the area to be impacted has been previously disturbed by the on-site essential infrastructure (WWTF) and an existing informal walking trail. Minor clearing of vegetation will occur during trail construction, but there will be a net benefit to the river in the parking area as a result of conversion from compacted gravel to a mix of grass, native shrubs, and pervious grass pavers.

Section 3.1

The NH State threatened intertidal shrub, marsh elder (*Iva frutescens*), is present on site. A survey was conducted identifying the current locations of marsh elder within the project area. During installation of the temporary sewer force mains in October, 2020 under Emergency Authorization 2020-02873, two areas of the adjacent marsh elder stands were inadvertently impacted, with some of the plants crushed and minor soil disturbance. After consultation with NHDES and NH Natural Bureau (NHNHB), several steps were prescribed by NHDES to mitigate the impacts. These included hand-raking and mulching the impact areas, erecting construction fencing between the marsh elder stands and the work area as future protection, monitoring the areas for one growing season to determine restoration success, and provide NHDES and NHNHB with documentation of the restoration work and the results of the monitoring effect.

Section 3.2

The 2020 Wildlife Action Plan map designates portions of the proposed work areas as Highest Ranked Habitat in N.H. (See attached map). We believe the designation of these areas as Highest Ranked Habitat in N.H. is a map scale issue, in which the extent of the adjacent estuarine area was overestimated. These areas are more likely a mixture of Unranked and Supporting Landscape.

Section 4.1

Portions of the proposed parking area are within the mapped 100-year FEMA floodplain. There will be a net loss of 80 cubic yards of flood storage due to elevating the road. The Piscataqua River is tidal in this location, therefore this minor loss of flood storage is highly unlikely to affect adjacent properties or impact water levels, and the increased elevations are necessary to ensure access to critical infrastructure during high water.

Section 5

The NH Division of Historical Resources (NHDHR) review determined no historical properties will be affected by the proposed project. Please see responses from NHDHR attached to the end of this Exhibit.





NH DIVISION OF HISTORICAL RESOURCES

Date: 3	3/1/21	Site No.	DHR Review No. 12424
Project:		rce Main Replacement Pr	
Report:			Piece Island Force Main Project, Portsmouth, NH
Other Pa	arties IAC, NHI	DES	
covered	nd Sec. 106 of the by these acts rela impacts pertinent	tive to historical and cu	ion with the SHPO to ensure the review of all actions ultural properties. The review should focus on the
FOR MC	DRE INFORMAT	TION CONTACT:	David Trubey, Review & Compliance Coordinator, (603-271-2813)
СОММІ	ENTS: Please che	ck one. Additional comm	nents should be included below or on a separate sheet.
/	CONCUR	WITH RESULTS	OF SURVEY FRECOMMENDATION O
		NO FULINGE STO	VDY.
	CONCLID WIT	TH CONDITION (In	diagta major recornetions about the president of
		ntive changes or modifica	dicate major reservations about the project and the ations desired.)
	TECHNICAL	COMMENTS (No fo	ormal position, technical comments may be attached.)
			,
	NO COMMEN	NTS	
Date: .	3-4-2021		
		1.11	
Reviewer	's signature:	axid shoolif	Title: L1 C COOLOMATOR

Amended RPR

After consultation with DHR, an amended RPR was prepared to address the excavation in the road on the west side of Peirce Island Road Bridge for sliplining the pipe under the bridge. This location is within the Nationally Registered Historic District and in close proximity to registered archaeological sites. The RPR amendment was submitted on April 15, 2021. DHR has indicated they will require a monitor be present during the excavation.

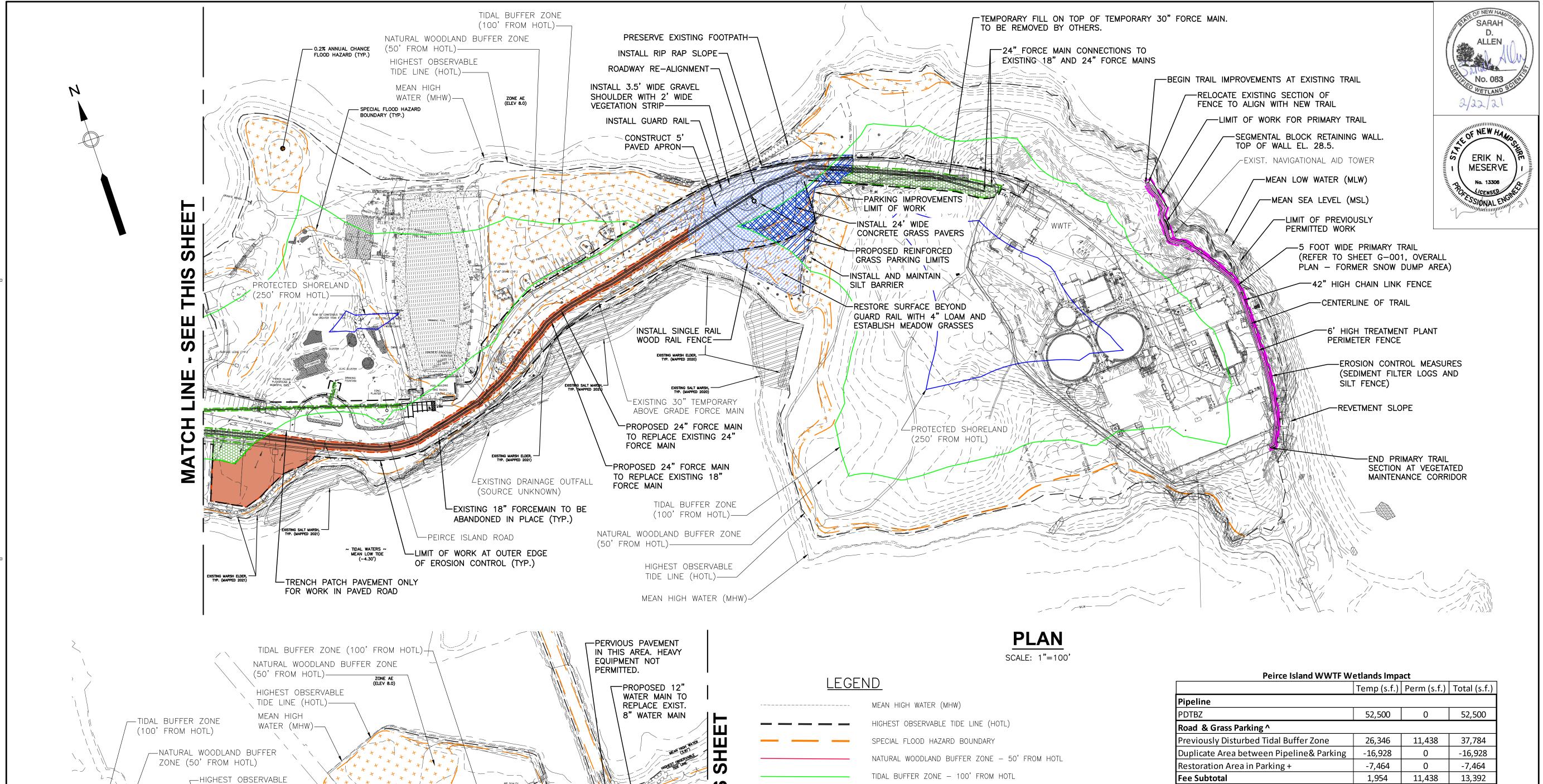
EXHIBIT 5

PROJECT PLANS

Project Plans

The following submittal is for multiple projects, including the Peirce Island Force Main and Water Main Replacement Project, Peirce Island Roadway and Snow Dump Improvements, and the Peirce Island Trail Extension. The following drawings are included to illustrate these projects:

- Overall Site Plan (All Projects) Sheet 00 G-003-P OSP
- Peirce Island Force Main and Water Main Replacement Project Plans (12 sheets)
- Peirce Island Roadway and Snow Dump Improvements and Peirce Island Trail Extension Plans (7 sheets)



PROTECTED SHORELAND - 250' FROM HOTL

PIPELINE AREA OF DISTURBANCE 0-100 FEET FROM HOTL

PIPELINE AREA OF DISTURBANCE 100-250 FEET FROM HOTL

PARKING AREA OF DISTURBANCE 0-100 FEET FROM HOTL

PARKING AREA OF DISTURBANCE 100-250 FEET FROM HOTL

DUPLICATE AREA OF DISTURBANCE 0-100 FEET FROM HOTL

DUPLICATE AREA OF DISTURBANCE 100-250 FEET FROM HOTL

TRAIL IMPROVEMENTS AREA OF DISTURBANCE 0-100 FEET FROM HOTL

LIMIT OF WORK (L.O.W.)

.2% ANNUAL CHANCE OF FLOOD HAZARD AREA

SALT MARSH AREA

MARSH ELDER

AREA OF DISTURBANCE BOUNDARY

MONITORING SYSTEM

EXISTING SALT MARSH, — TYP. (MAPPED 2021)

EXISTING SALT MARSH,
TYP. (MAPPED 2021)

TIDE LINE (HOTL)

-PROTECTED

SHORELAND

(250' FROM HOTL)

PROPOSED 10'x50' FUSIBLE PVC PIT

PEIRCE ISLAND

24" FORCE MAIN CONNECTION

TO EXISTING 16" FORCE MAIN-

PLAN

SCALE: 1"=100'

24" FORCE MAIN CONNECTION
TO EXISTING 24" FORCE MAIN—

EXISTING SALT MARSH, — TYP. (MAPPED 2021)

TEMPORARY FILL ON TOP OF

TEMPORARY 30" FORCE MAIN.

TO BE REMOVED BY OTHERS.-

AREA OF DISTURBANCE (TYP.)-

EXISTING 18" FORCEMAIN TO BE

ABANDONED IN PLACE (TYP.)-

BRIDGE-

Peirce Island WWTF Wetlands Impact			
	Temp (s.f.)	Perm (s.f.)	Total (s.f.)
Pipeline			
PDTBZ	52,500	0	52,500
Road & Grass Parking ^			
Previously Disturbed Tidal Buffer Zone	26,346	11,438	37,784
Duplicate Area between Pipeline& Parking	-16,928	0	-16,928
Restoration Area in Parking +	-7,464	0	-7,464
Fee Subtotal	1,954	11,438	13,392
Recreational Trail ^			
Undisturbed Tidal Buffer Zone	1,803	890	2,693
Previously Disturbed Tidal Buffer Zone	1,170	1,513	2,683
Previously Disturbed Tidal Buffer Zone *	(512)	(553)	(1,065)
Fee Subtotal	2,973	2,403	5,376
Fee Total	57,427	13,841	71,268

- ^ See Sheet G-001 for total impact area
- + To be restored to native habitat & excluded from fee (See Sheet G-001)
- * Previously permitted & excluded from fee

Peirce Island WWTF Shoreland Impact

	Temp (s.f.)	Perm (s.f.)	Total (s.f.)
Pipeline Temporary Impacts 100-250'			
Previously Disturbed Tidal Buffer Zone	35,900	0	35,900
Duplicate Area between Pipeline& Parking	-8,415	0	-8,415
Subtotal	27,485	0	27,485
Recreational Trail			
mpervious Area within 100' Tidal Buffer Zone			
Previously Disturbed Tidal Buffer Zone	0	2,956	2,956
Total	27,485	2,956	30,441

AECOM

PROJECT

PEIRCE ISLAND FORCE MAIN AND WATER MAIN REPLACEMENT Peirce Island, Portsmouth NH

OWNER

CITY OF PORTSMOUTH **NEW HAMPSHIRE**

680 Peverly Hill Road Portsmouth, NH 03801

ENGINEER

AECOM TECHNICAL SERVICES, INC. 250 APOLLO DRIVE CHELMSFORD, MA 01824 PHONE: (978) 905-2100 www.aecom.com





REGISTRATION

PERMIT SUBMITTAL PERMIT APPLICATION DRAWING NOT FOR CONSTRUCTION

I/R DATE DESCRIPTION

PROJECT NUMBER

ISSUE/REVISION

60649477

Designed By:	S. HE
Drawn By:	M. THIBODEAU
Dept Check:	C. BENZIGER
Proj Check:	E. MESERVE
Date:	APRIL 13, 2021
Scale:	AS NOTED

DISCIPLINE

CIVIL SHEET TITLE

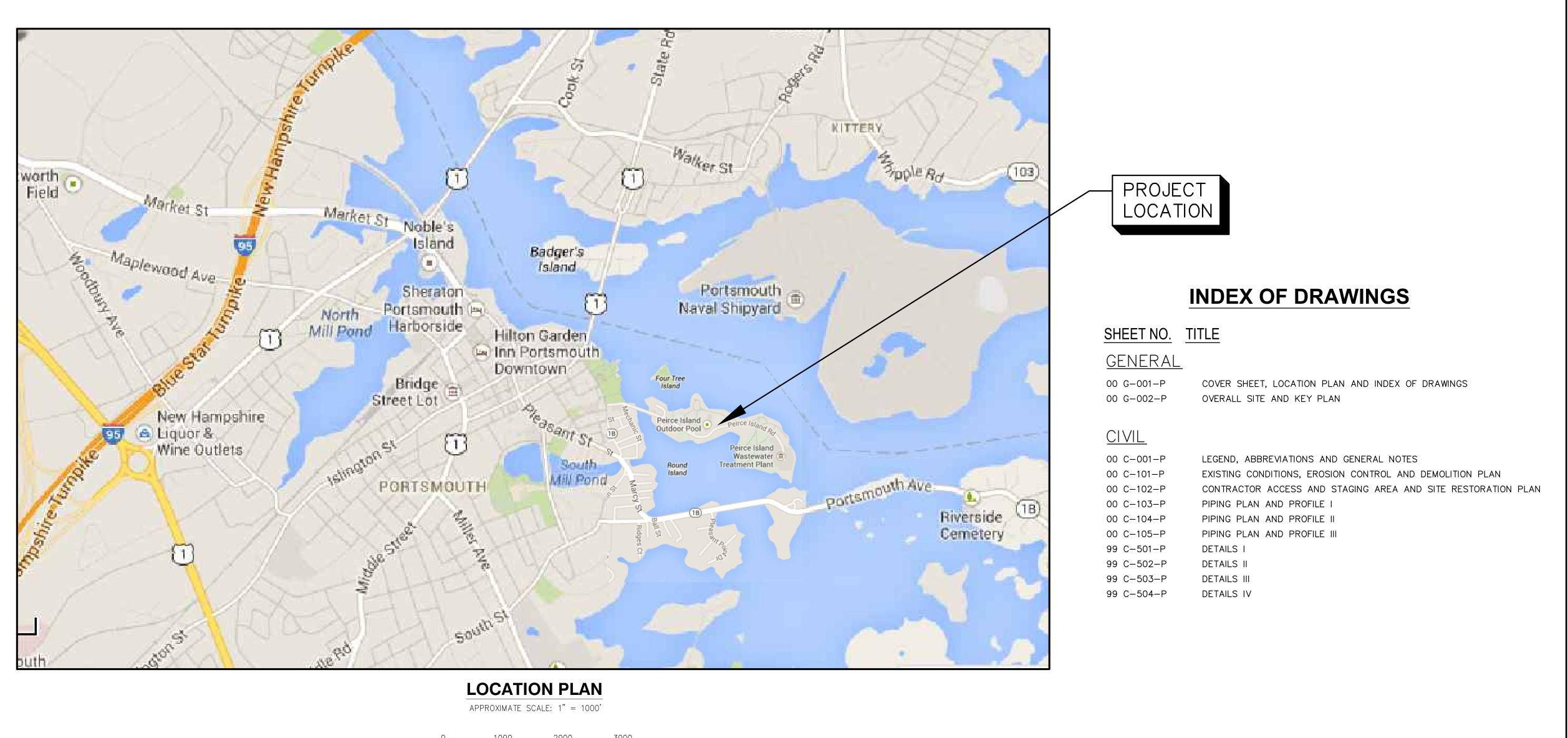
OVERALL SITE PLAN (ALL PROJECTS)

SHEET NUMBER

00 G-003-P OSP

CITY OF PORTSMOUTH, NEW HAMPSHIRE

FORCE MAIN AND WATER MAIN REPLACEMENT APRIL 2021



SCALE: 1"=1000'

AECOM

PROJE

PEIRCE ISLAND
FORCE MAIN AND
WATER MAIN
REPLACEMENT
Peirce Island, Portsmouth NH

OWNE

CITY OF PORTSMOUTH NEW HAMPSHIRE

680 Peverly Hill Road Portsmouth, NH 03801

ENGINEER

AECOM TECHNICAL SERVICES, INC. 250 APOLLO DRIVE CHELMSFORD, MA 01824 PHONE: (978) 905-2100 www.aecom.com

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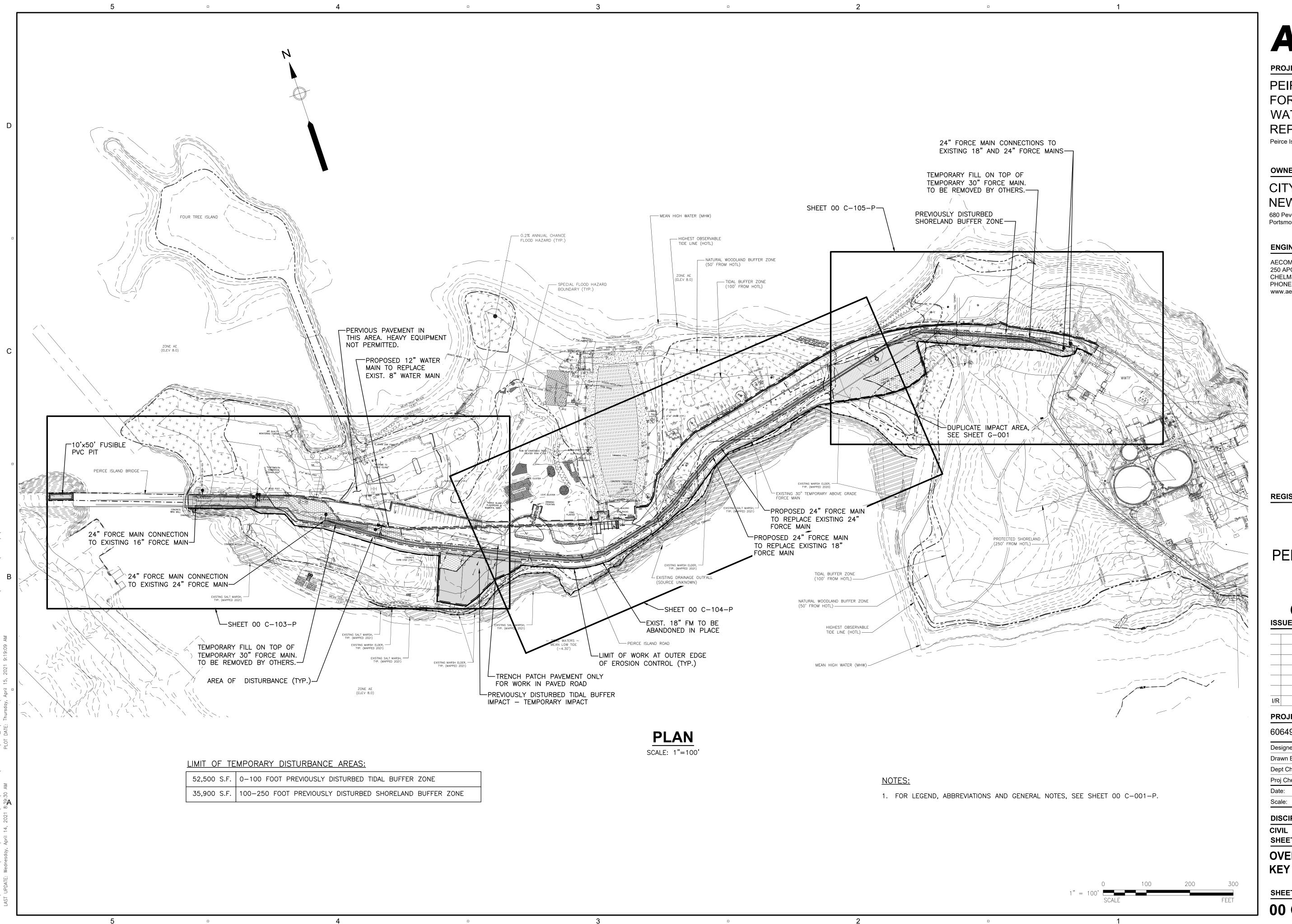
Designed By:	S. HE
Drawn By:	M. THIBODEAU
Dept Check:	C. BENZIGER
Proj Check:	E. MESERVE
Date:	APRIL 2021
Scale:	AS NOTED

DISCIPLINE

CIVIL SHEET TITLE

COVER SHEET, LOCATION PLAN AND INDEX OF DRAWINGS
SHEET NUMBER

00 G-001-P



PROJECT

PEIRCE ISLAND FORCE MAIN AND WATER MAIN REPLACEMENT Peirce Island, Portsmouth NH

OWNER

CITY OF PORTSMOUTH **NEW HAMPSHIRE**

680 Peverly Hill Road Portsmouth, NH 03801

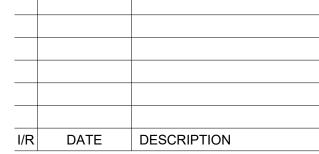
ENGINEER

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REGISTRATION

PERMIT SUBMITTAL PERMIT APPLICATION DRAWING NOT FOR CONSTRUCTION

ISSUE/REVISION



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Dept Check:	C. BENZIGER
Proj Check:	E. MESERVE
Date:	APRIL 2021
Scale:	AS NOTED

DISCIPLINE

SHEET TITLE

OVERALL SITE AND KEY PLAN

SHEET NUMBER

00 G-002-P

GENERAL NOTES

- 1. IT IS THE INTENT OF THE CONTRACT DOCUMENTS TO PRESCRIBE A COMPLETE WORK OR IMPROVEMENT. THE CONTRACT DOCUMENTS ARE COMPLEMENTARY, AND ANY REQUIREMENTS INDICATED IN ONE OF THE DOCUMENTS IS AS BINDING AS HAVING BEEN INDICATED IN ALL.
- 2. HORIZONTAL LOCATIONS SHOWN ARE REFERENCED TO THE NH STATE PLANE COORDINATE SYSTEM, NAD83.
- 3. VERTICAL DATUM IS NAVD 88 AND IS BASED ON NATIONAL GEODETIC SURVEY FIRST ORDER CLASS I BENCHMARKS "V31 USGS" (PID:OCO289) HAVING A PUBLISHED ELEVATION OF 29.19' AND "W31" (PID:OCO413) HAVING A PUBLISHED ELEVATION OF 20.54'. REFER ALSO TO VERTICAL DATUM CONVERSION NOTE BELOW.
- 4. TOPOGRAPHIC INFORMATION SHOWN IS THE RESULT OF A SURVEY MADE IN JULY 2013, AUGUST 2020 AND JANUARY 2021 BY DOUCET SURVEY, INC., 102 KENT PLACE, NEWMARKET, NH 03857. WETLAND BOUNDARIES, HIGHEST OBSERVABLE TIDE LINE (HOTL) AND EXISTING TREE SURVEY WERE DELINEATED BY NORMANDEAU ASSOCIATES, INC. ON JANUARY 14, 2021.
- 5. THE LOCATION OF ANY UNDERGROUND UTILITY INFORMATION SHOWN ON THIS PLAN IS BASED ON RECORD DRAWINGS AND IS APPROXIMATE. THE OWNER DOES NOT GUARANTEE THE ACCURACY OR COMPLETENESS OF UNDERGROUND UTILITIES SHOWN. PRIOR TO ANY EXCAVATION ON SITE THE CONTRACTOR SHALL CONTACT DIG SAFE AT 1-888-344-7233.
- 6. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL EXISTING CONDITIONS AT THE SITE.
- 7. THE CONTRACTOR SHALL ERECT EROSION CONTROL MEASURES PRIOR TO COMMENCING ANY CLEARING, EXCAVATION OR STORAGE OF BACKFILL MATERIAL ON-SITE. REFER TO SPECIFICATION SECTION 01568 AND DETAILS.
- 8. THE ENGINEER MAY DIRECT THE CONTRACTOR TO VARY THE PROPOSED WORK DURING CONSTRUCTION TO MEET EXISTING CONDITIONS.
- 9. THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES AND SHALL PROVIDE ALL NECESSARY CONTINUOUS BARRIERS OF SUFFICIENT TYPE, SIZE AND STRENGTH TO PREVENT ACCESS TO ALL OPEN EXCAVATIONS AT THE
- 10. INTERRUPTION TO WATER AND OTHER EXISTING UTILITIES SHALL BE REQUESTED IN WRITING BY THE CONTRACTOR 3 DAYS IN ADVANCE OF THE WORK AND REVIEWED BY THE ENGINEER.

COMPLETION OF EACH DAYS WORK. REFER TO SPECIFICATION SECTION 01046 FOR ADDITIONAL REQUIREMENTS

- 11. CONTRACTOR SHALL MAINTAIN FLOW OF SEWAGE IN ACCORDANCE WITH SECTION 01063.
- 12. EXISTING UTILITIES INTERFERING WITH THE WORK SHALL BE RELOCATED AS DIRECTED BY THE ENGINEER AT NO ADDITIONAL COST TO THE OWNER.
- 13. PIPE SHALL BE AS INDICATED IN THE PIPING SCHEDULE AND SPECIFICATIONS. PROVIDE RESTRAINED MECHANICAL JOINT FITTINGS FOR CONNECTIONS TO EXISTING PIPING AS SPECIFIED
- 14. PIPING WHICH IS EXPOSED DURING EXCAVATION, INCLUDING TEE'S, VALVES, AND FITTINGS, AND IS NOT TO BE DEMOLISHED, SHALL BE SUPPORTED, BRACED OR OTHERWISE PROTECTED DURING CONSTRUCTION ACTIVITIES.
- 15. ALL PIPING SHALL BE CONSTRUCTED WITH A MINIMUM OF 5 FEET OF COVER.
- 16. ALL PIPES SHALL SLOPE UNIFORMLY BETWEEN ELEVATIONS SHOWN UNLESS OTHERWISE INDICATED ON THE DRAWINGS OR DIRECTED BY THE ENGINEER. NO SAGS OR CRESTS IN PIPING WILL BE PERMITTED.
- 17. WHERE NEW PIPING IS TO BE CONNECTED TO EXISTING PIPING, THE CONTRACTOR SHALL FURNISH AND INSTALL ALL ADAPTERS, FITTINGS, AND ADDITIONAL PIPE WHICH MAY NOT BE SHOWN IN DETAILS (REQUIRED AS A RESULT OF CUTTING THE EXISTING PIPE BACK) IN ORDER TO COMPLETE THE CONNECTION AS REQUIRED.
- 18. ALL SIGNAGE, HEADWALLS, GUARD RAILS, GUARD POSTS, FENCES, CURBS, ROADWAYS, SIDEWALKS AND ANY OTHER OBJECTS DISTURBED BY CONTRACTOR ACTIVITIES SHALL BE RETURNED TO PRE-CONSTRUCTION CONDITION OR BETTER AS DIRECTED BY THE ENGINEER AT NO ADDITIONAL COST TO THE OWNER.
- 19. ALL AREAS OF EXCAVATION, BACKFILL, FILL AND GRADING SHALL BE RETURNED TO THE ORIGINAL GRADE UNLESS SHOWN ON THE DRAWINGS.
- 20. ALL UTILITY BOXES, FRAMES, GRATES, ETC. DISTURBED BY CONTRACTOR AND NOT TO BE ABANDONED SHALL BE RESET TO THE PROPER GRADE AT NO ADDITIONAL COST TO THE OWNER.
- 21. UNPAVED AREAS DISTURBED BY THE CONTRACTOR SHALL BE CLEARED AND GRUBBED IF REQUIRED, AND RESTORED WITH LOAM AND SEED.
- 22. ALL EXISTING PIPES TO BE ABANDONED SHALL BE PLUGGED AT OPEN ENDS. SEE PIPE PLUGGING DETAIL ON SHEET 99 C-502-P.
- 23. RECORD DRAWINGS FOR EXISTING FACILITIES CAN BE FOUND IN THE SPECIFICATIONS.

VERTICAL DATUM CONVERSION NOTE:

SURVEY BY DOUCET ASSOCIATES IS BASED ON NAVD 88 DATUM. EXISTING PLANT AND FORCE MAIN RECORD DRAWINGS ARE BASED ON NGVD 29 DATUM. TO CONVERT NAVD 88 ELEVATIONS TO NGVD 29, ADD 0.77 FEET. TO CONVERT NGVD ELEVATIONS TO NAVD 88 SUBTRACT 0.77 FEET.

GEOTECHNICAL NOTES

SYL

SINGLE YELLOW LINE

TEST PIT

TEMPORARY BENCHMARK

- 1. FOR EARTH EXCAVATION, BACKFILL, FILL AND GRADING SEE SPECIFICATION 02210.
- 2. FOR DEWATERING SEE SPECIFICATION 02140.
- 3. FOR EXCAVATION SUPPORT SYSTEM SEE SPECIFICATION 02160.
- 4. BORING LOCATIONS ARE SHOWN ON THE PLANS AND BORING LOGS ARE BOUND IN THE SPECIFICATIONS.
- 5. BORINGS WERE TAKEN FOR PURPOSES OF DESIGN AND INDICATE SUBSURFACE CONDITIONS AT BORING LOCATION ONLY. SUBSURFACE CONDITIONS MAY VARY FROM THOSE SHOWN IN THE LOG.
- 6. IN ALL AREAS WHERE DEWATERING IS NECESSARY, MEASURES SHALL BE TAKEN TO ENSURE THE PRESERVATION OF WATERCOURSES AND COMPLIANCE WITH ALL REGULATIONS AND LAWS. ALL DEWATERING MUST BE DISCHARGED INTO SEDIMENT TRAPS AS INDICATED IN THE DETAILS AND AS SPECIFIED IN SPECIFICATION SECTION 01568.
- 7. FOR ROCK EXCAVATION AND DISPOSAL, SEE SPECIFICATION SECTION 02211.

	<u>ABBREVIATIO</u>	<u>NS</u>	
APPROX.	APPROXIMATE	TS&V	TAPPING SLEEVE AND VALVE
B&B	BALL AND BURLAP	TYP.	TYPICAL
BLDG.	BUILDING	UE	UNDERGROUND ELECTRIC
СВ	CATCH BASIN	V	VENT
CONC.	CONCRETE	VERT.	VERTICAL
C.I.	CAST IRON	VGC	VERTICAL GRANITE CURB
CLF	CHAIN LINK FENCE	W	WIDTH
C.O. OR CO	CLEANOUT	WSO	WATER SHUT OFF
CW	CITY WATER OR CROSS WALK	WV	WATER VALVE
D	DRAIN		
DI	DUCTILE IRON		
DIA.	DIAMETER		
DIM.	DIMENSION		
DMH	DRAIN MANHOLE		
DWGS	DRAWINGS		
DYL OR DYCL	DOUBLE YELLOW CENTER LINE		
E	ELECTRICAL		
ECC.	ECCENTRIC		
EL. OR ELEV.	ELEVATION		
EMERG.	EMERGENCY		
EOP	EDGE OF PAVEMENT		
EXIST.	EXISTING		
FES	FLARED END SECTION		
	50,000,500,500,500,500,500,500,500,500,		
FM			
GAL.	FORCE MAIN GALLON		
GP GP	GUARD POST		
GRAN.	GRANITE		
GV	GATE VALVE		
HOTL	HIGHEST OBSERVABLE TIDE LINE		
INV.	INVERT		
L	LENGTH		
LF	LINEAR FOOT		
L.O.W.	LIMIT OF WORK		
MECH.	MECHANICAL		
MH	MANHOLE		
MHW	MEAN HIGH WATER		
MLW	MEAN LOW WATER		
MJ	MECHANICAL JOINT		
MSL	MEAN SEA LEVEL		
N.C.	NORMALLY CLOSED		
PBS	PRINTED BOTH SIDES		
PSNH	PUBLIC SERVICE OF NEW HAMPSHIRE		
PVC	POLYVINYL CHLORIDE		
RCP	REINFORCED CONCRETE PIPE		
RED.	REDUCER		
RET.	RETAIN OR RETAINING		
SAN	SANITARY DRAIN		
SD	STORM DRAIN		
SL	SLUDGE OR STOP LINE		
SMH	SEWER MANHOLE		
SWL	SINGLE WHITE LINE		
CVI	CINIOLE VELLOW LINE		

LEGEND

	UTILITY POLE & GUY WIRE UTILITY POLE W/ LIGHT SIGN YARD HYDRANT UNIDENTIFIED PIPE WOODEN POST FIRE HYDRANT WATER METER WATER GATE VALVE VENT PIPE WATER SHUTOFF VALVE CLEANOUT TRAFFIC DIRECTION ARROW ELECTRIC BOX CATCH BASIN (ROUND) CATCH BASIN DRAIN MANHOLE ELECTRIC MANHOLE CHEMICAL MANHOLE WATER MANHOLE UNIDENTIFIED MANHOLE JURISDICTIONAL WETLAND SYMBOL FLAG POLE CONIFEROUS TREE DECIDUOUS TREE SHRUB CONCRETE	PROPOSED LIMIT OF WORK AREA OF DISTURBANCE STRUCTURE PIPE PLUG OR CAP DEMOLITION ABANDON IN PLACE TREE REMOVAL TEE REDUCER BEND GATE VALVE PIPE - ≤ 6" DIAM. PIPE - > 6" DIAM. DIRECTION OF FLOW	
	UTILITY POLE W/ LIGHT SIGN YARD HYDRANT UNIDENTIFIED PIPE WOODEN POST FIRE HYDRANT WATER METER WATER GATE VALVE VENT PIPE WATER SHUTOFF VALVE CLEANOUT TRAFFIC DIRECTION ARROW ELECTRIC BOX CATCH BASIN (ROUND) CATCH BASIN DRAIN MANHOLE ELECTRIC MANHOLE CHEMICAL MANHOLE WATER MANHOLE UNIDENTIFIED MANHOLE JURISDICTIONAL WETLAND SYMBOL FLAG POLE CONIFEROUS TREE DECIDUOUS TREE SHRUB	AREA OF DISTURBANCE STRUCTURE PIPE PLUG OR CAP DEMOLITION ABANDON IN PLACE TREE REMOVAL TEE REDUCER BEND GATE VALVE PIPE - ≤ 6" DIAM. PIPE - > 6" DIAM.	
	SIGN YARD HYDRANT UNIDENTIFIED PIPE WOODEN POST FIRE HYDRANT WATER METER WATER GATE VALVE VENT PIPE WATER SHUTOFF VALVE CLEANOUT TRAFFIC DIRECTION ARROW ELECTRIC BOX CATCH BASIN (ROUND) CATCH BASIN DRAIN MANHOLE ELECTRIC MANHOLE CHEMICAL MANHOLE WATER MANHOLE UNIDENTIFIED MANHOLE JURISDICTIONAL WETLAND SYMBOL FLAG POLE CONIFEROUS TREE DECIDUOUS TREE SHRUB	STRUCTURE PIPE PLUG OR CAP DEMOLITION ABANDON IN PLACE TREE REMOVAL TEE REDUCER BEND GATE VALVE PIPE - ≤ 6" DIAM. PIPE - > 6" DIAM.	
	YARD HYDRANT UNIDENTIFIED PIPE WOODEN POST FIRE HYDRANT WATER METER WATER GATE VALVE VENT PIPE WATER SHUTOFF VALVE CLEANOUT TRAFFIC DIRECTION ARROW ELECTRIC BOX CATCH BASIN (ROUND) CATCH BASIN DRAIN MANHOLE ELECTRIC MANHOLE CHEMICAL MANHOLE WATER MANHOLE SEWER MANHOLE UNIDENTIFIED MANHOLE JURISDICTIONAL WETLAND SYMBOL FLAG POLE CONIFEROUS TREE DECIDUOUS TREE SHRUB	STRUCTURE PIPE PLUG OR CAP DEMOLITION ABANDON IN PLACE TREE REMOVAL TEE REDUCER BEND GATE VALVE PIPE - ≤ 6" DIAM. PIPE - > 6" DIAM.	
	FIRE HYDRANT WATER METER WATER GATE VALVE VENT PIPE WATER SHUTOFF VALVE CLEANOUT TRAFFIC DIRECTION ARROW ELECTRIC BOX CATCH BASIN (ROUND) CATCH BASIN DRAIN MANHOLE ELECTRIC MANHOLE CHEMICAL MANHOLE WATER MANHOLE UNIDENTIFIED MANHOLE JURISDICTIONAL WETLAND SYMBOL FLAG POLE CONIFEROUS TREE DECIDUOUS TREE SHRUB	PIPE PLUG OR CAP DEMOLITION ABANDON IN PLACE TREE REMOVAL TEE REDUCER BEND GATE VALVE PIPE - ≤ 6" DIAM. PIPE - > 6" DIAM.	
	FIRE HYDRANT WATER METER WATER GATE VALVE VENT PIPE WATER SHUTOFF VALVE CLEANOUT TRAFFIC DIRECTION ARROW ELECTRIC BOX CATCH BASIN (ROUND) CATCH BASIN DRAIN MANHOLE ELECTRIC MANHOLE CHEMICAL MANHOLE WATER MANHOLE UNIDENTIFIED MANHOLE JURISDICTIONAL WETLAND SYMBOL FLAG POLE CONIFEROUS TREE DECIDUOUS TREE SHRUB	DEMOLITION ABANDON IN PLACE TREE REMOVAL TEE REDUCER BEND GATE VALVE PIPE - \(\le \) 6" DIAM. PIPE - > 6" DIAM.	
	WATER METER WATER GATE VALVE VENT PIPE WATER SHUTOFF VALVE CLEANOUT TRAFFIC DIRECTION ARROW ELECTRIC BOX CATCH BASIN (ROUND) CATCH BASIN DRAIN MANHOLE ELECTRIC MANHOLE CHEMICAL MANHOLE WATER MANHOLE WATER MANHOLE UNIDENTIFIED MANHOLE JURISDICTIONAL WETLAND SYMBOL FLAG POLE CONIFEROUS TREE DECIDUOUS TREE SHRUB	DEMOLITION ABANDON IN PLACE TREE REMOVAL TEE REDUCER BEND GATE VALVE PIPE - \(\le \) 6" DIAM. PIPE - > 6" DIAM.	
	WATER GATE VALVE VENT PIPE WATER SHUTOFF VALVE CLEANOUT TRAFFIC DIRECTION ARROW ELECTRIC BOX CATCH BASIN (ROUND) CATCH BASIN DRAIN MANHOLE ELECTRIC MANHOLE CHEMICAL MANHOLE WATER MANHOLE SEWER MANHOLE UNIDENTIFIED MANHOLE JURISDICTIONAL WETLAND SYMBOL FLAG POLE CONIFEROUS TREE DECIDUOUS TREE SHRUB	ABANDON IN PLACE TREE REMOVAL TEE REDUCER BEND GATE VALVE PIPE - ≤ 6" DIAM. PIPE - > 6" DIAM.	
	WATER SHUTOFF VALVE CLEANOUT TRAFFIC DIRECTION ARROW ELECTRIC BOX CATCH BASIN (ROUND) CATCH BASIN DRAIN MANHOLE ELECTRIC MANHOLE CHEMICAL MANHOLE WATER MANHOLE SEWER MANHOLE UNIDENTIFIED MANHOLE JURISDICTIONAL WETLAND SYMBOL FLAG POLE CONIFEROUS TREE DECIDUOUS TREE SHRUB	TREE REMOVAL TEE REDUCER BEND GATE VALVE PIPE - ≤ 6" DIAM. PIPE - > 6" DIAM.	
	CLEANOUT TRAFFIC DIRECTION ARROW ELECTRIC BOX CATCH BASIN (ROUND) CATCH BASIN DRAIN MANHOLE ELECTRIC MANHOLE CHEMICAL MANHOLE WATER MANHOLE SEWER MANHOLE UNIDENTIFIED MANHOLE JURISDICTIONAL WETLAND SYMBOL FLAG POLE CONIFEROUS TREE DECIDUOUS TREE SHRUB	TREE REMOVAL TEE REDUCER BEND GATE VALVE PIPE - ≤ 6" DIAM. PIPE - > 6" DIAM.	
	TRAFFIC DIRECTION ARROW ELECTRIC BOX CATCH BASIN (ROUND) CATCH BASIN DRAIN MANHOLE ELECTRIC MANHOLE CHEMICAL MANHOLE WATER MANHOLE WATER MANHOLE UNIDENTIFIED MANHOLE JURISDICTIONAL WETLAND SYMBOL FLAG POLE CONIFEROUS TREE DECIDUOUS TREE SHRUB	TEE REDUCER BEND GATE VALVE PIPE - ≤ 6" DIAM. PIPE - > 6" DIAM.	
	ELECTRIC BOX CATCH BASIN (ROUND) CATCH BASIN DRAIN MANHOLE ELECTRIC MANHOLE CHEMICAL MANHOLE WATER MANHOLE SEWER MANHOLE UNIDENTIFIED MANHOLE JURISDICTIONAL WETLAND SYMBOL FLAG POLE CONIFEROUS TREE DECIDUOUS TREE	TEE REDUCER BEND GATE VALVE PIPE - ≤ 6" DIAM. PIPE - > 6" DIAM.	
	CATCH BASIN (ROUND) CATCH BASIN DRAIN MANHOLE ELECTRIC MANHOLE CHEMICAL MANHOLE WATER MANHOLE SEWER MANHOLE UNIDENTIFIED MANHOLE JURISDICTIONAL WETLAND SYMBOL FLAG POLE CONIFEROUS TREE DECIDUOUS TREE SHRUB	REDUCER BEND GATE VALVE PIPE $- \le 6$ " DIAM. PIPE $- > 6$ " DIAM.	
	CATCH BASIN DRAIN MANHOLE ELECTRIC MANHOLE CHEMICAL MANHOLE WATER MANHOLE SEWER MANHOLE UNIDENTIFIED MANHOLE JURISDICTIONAL WETLAND SYMBOL FLAG POLE CONIFEROUS TREE DECIDUOUS TREE SHRUB	BEND GATE VALVE PIPE $- \le 6$ " DIAM. PIPE $- > 6$ " DIAM.	
	ELECTRIC MANHOLE CHEMICAL MANHOLE WATER MANHOLE SEWER MANHOLE UNIDENTIFIED MANHOLE JURISDICTIONAL WETLAND SYMBOL FLAG POLE CONIFEROUS TREE DECIDUOUS TREE SHRUB	BEND GATE VALVE PIPE $- \le 6$ " DIAM. PIPE $- > 6$ " DIAM.	
	CHEMICAL MANHOLE WATER MANHOLE SEWER MANHOLE UNIDENTIFIED MANHOLE JURISDICTIONAL WETLAND SYMBOL FLAG POLE CONIFEROUS TREE DECIDUOUS TREE SHRUB	GATE VALVE PIPE $- \le 6$ " DIAM. PIPE $- > 6$ " DIAM.	<u>_</u>
	WATER MANHOLE SEWER MANHOLE UNIDENTIFIED MANHOLE JURISDICTIONAL WETLAND SYMBOL FLAG POLE CONIFEROUS TREE DECIDUOUS TREE SHRUB	PIPE $- \le 6$ " DIAM. PIPE $- > 6$ " DIAM.	₩
	SEWER MANHOLE UNIDENTIFIED MANHOLE JURISDICTIONAL WETLAND SYMBOL FLAG POLE CONIFEROUS TREE DECIDUOUS TREE SHRUB	PIPE - > 6" DIAM.	
	JURISDICTIONAL WETLAND SYMBOL FLAG POLE CONIFEROUS TREE DECIDUOUS TREE SHRUB	PIPE - > 6" DIAM.	2
	FLAG POLE CONIFEROUS TREE DECIDUOUS TREE SHRUB		2
(C)	DECIDUOUS TREE SHRUB	DIRECTION OF FLOW	
*	SHRUB		
	CONCRETE	MANHOLE	\bigcirc
		CLEANOUT	C.O. •
	BOULDER ROW OF BOULDERS		
Million and Millio	LANDSCAPED AREA	GUARD POST OR BOLLARD	•
	GRAVEL	CHAIN LINK FENCE	xx
	LEDGE OUTCROP BOLLARD	TEMPORARY FENCE	
\Longrightarrow	DRAINAGE FLOW DIRECTION ARROW		
XXX	— CHAINLINK FENCE	SEDIMENT FILTER LOG EROSION CONTROL	
—— OHW ———	— OVERHEAD WIRES — DRAIN LINE		
	TREE LINE	CONTOUR	23
··········		SPOT ELEVATION	× 23.50
——————————————————————————————————————		TOP OF SLOPE	
	- EDGE OF JURISDICTIONAL WETLAND	CRUSHED STONE MOWING STRIP	
	AREA OF STONE RIPRAP	CONCRETE	
⊕ B13−1 ⊕ MW−1	BORING MONITORING WELL	CURB	
	TEST PIT		
TP#2		POINT OF CONNECTION, NEW WORK TO EXIST.	
	MEAN HIGH WATER	LIMIT OF DISTURBANCE	
	- — HIGHEST OBSERVABLE TIDE LINE		
·	SPECIAL FLOOD HAZARD BOUNDARY		
	SALT MARSH AREA		
	MARSH ELDER		
+ -+ +	.2% ANNUAL CHANCE OF FLOOD HAZARD AREA		
· — · — ·	AREA OF DISTURBANCE BOUNDARY		
	AREA OF DISTURBANCE 0-100 FEET FR	OM HOTL	
	AREA OF DISTURBANCE 100-250 FEET	FROM HOTL	
////////////////////////////////////	DUPLICATE IMPACT AREA		



PROJECT

PEIRCE ISLAND FORCE MAIN AND WATER MAIN REPLACEMENT Peirce Island, Portsmouth NH

OWNER

CITY OF PORTSMOUTH **NEW HAMPSHIRE**

680 Peverly Hill Road Portsmouth, NH 03801

ENGINEER

AECOM TECHNICAL SERVICES, INC. 250 APOLLO DRIVE CHELMSFORD, MA 01824 PHONE: (978) 905-2100 www.aecom.com

REGISTRATION

SUBMITTAL PERMIT APPLICATION DRAWING NOT FOR CONSTRUCTION

I/R DATE DESCRIPTION

PROJECT NUMBER

ISSUE/REVISION

60649477

Designed By: S. HE M. THIBODEAU C. BENZIGER Dept Check: E. MESERVE **MARCH 2021 AS NOTED** Scale:

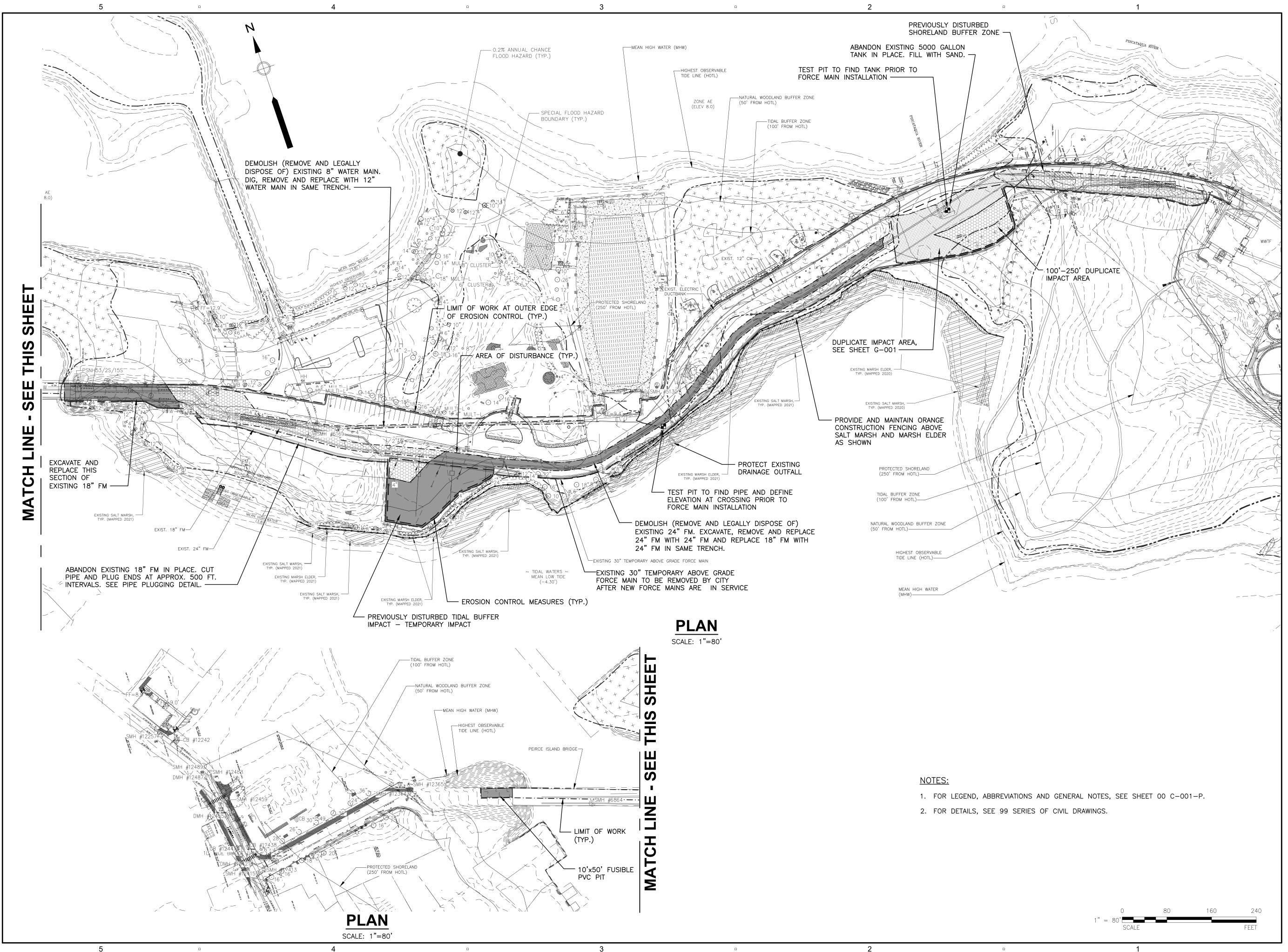
DISCIPLINE CIVIL

SHEET TITLE LEGEND, ABBREVIATIONS

AND GENERAL NOTES

SHEET NUMBER

00 C-001-P



PROJECT

PEIRCE ISLAND
FORCE MAIN AND
WATER MAIN
REPLACEMENT
Peirce Island, Portsmouth NH

OWNER

CITY OF PORTSMOUTH NEW HAMPSHIRE

680 Peverly Hill Road Portsmouth, NH 03801

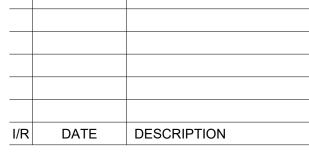
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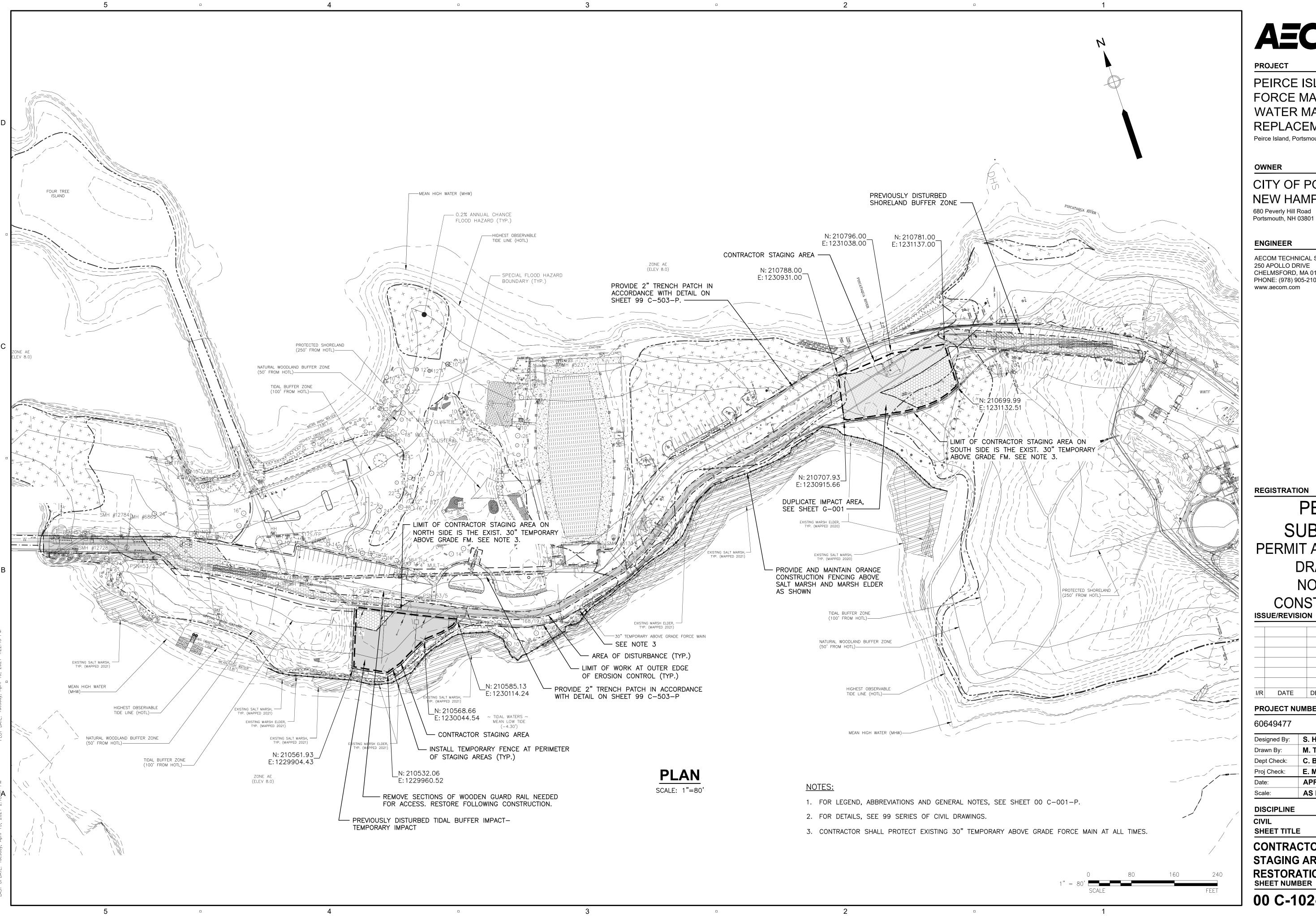
Designed By:	S. HE
Drawn By:	M. THIBODEAU
Dept Check:	C. BENZIGER
Proj Check:	E. MESERVE
Date:	APRIL 2021
Scale:	AS NOTED

DISCIPLINE CIVIL

SHEET TITLE

EXISTING CONDITIONS, EROSION CONTROL AND DEMOLITION PLAN SHEET NUMBER

00 C-101-P



PEIRCE ISLAND FORCE MAIN AND WATER MAIN REPLACEMENT Peirce Island, Portsmouth NH

OWNER

CITY OF PORTSMOUTH **NEW HAMPSHIRE**

680 Peverly Hill Road Portsmouth, NH 03801

ENGINEER

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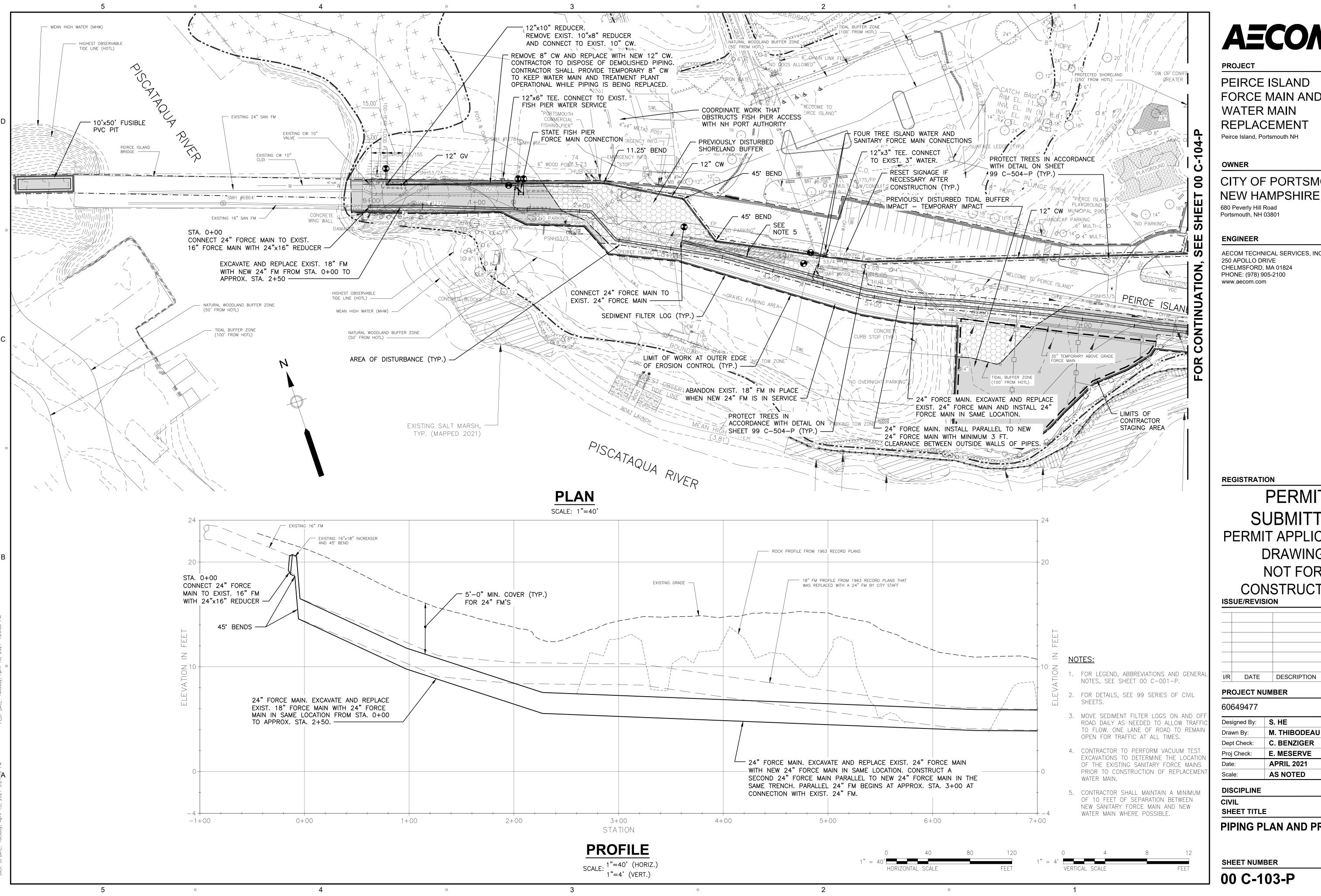
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DISCIPLINE

SHEET TITLE

CONTRACTOR ACCESS AND STAGING AREA AND SITE RESTORATION PLAN SHEET NUMBER

00 C-102-P



PEIRCE ISLAND FORCE MAIN AND

CITY OF PORTSMOUTH

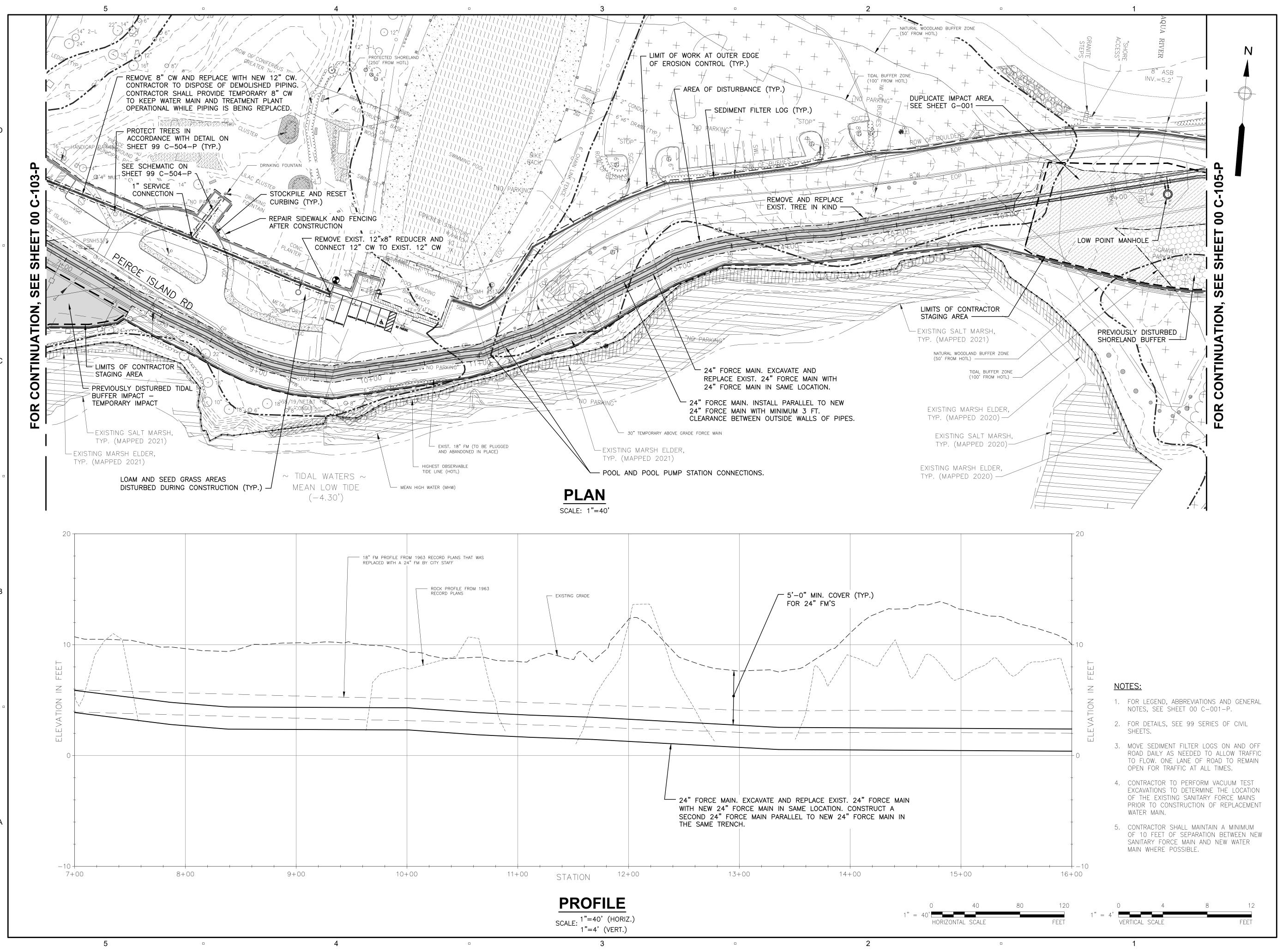
AECOM TECHNICAL SERVICES, INC.

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PIPING PLAN AND PROFILE I



PROJECT

PEIRCE ISLAND
FORCE MAIN AND
WATER MAIN
REPLACEMENT
Peirce Island, Portsmouth NH

OWNER

CITY OF PORTSMOUTH NEW HAMPSHIRE

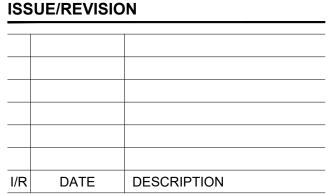
680 Peverly Hill Road Portsmouth, NH 03801

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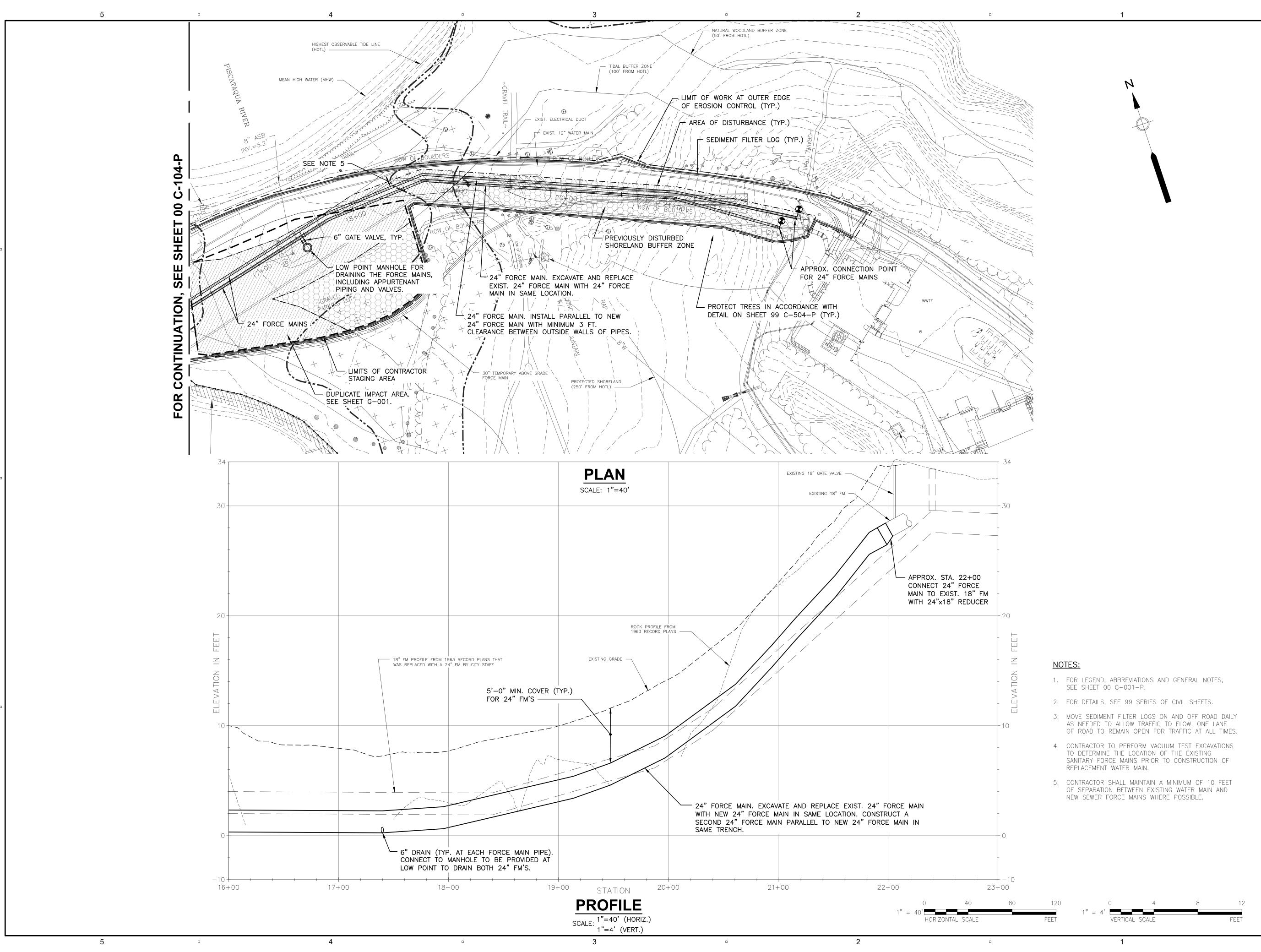
DISCIPLINE

CIVIL SHEET TITLE

PIPING PLAN AND PROFILE II

SHEET NUMBER

00 C-104-P



PROJECT

PEIRCE ISLAND
FORCE MAIN AND
WATER MAIN
REPLACEMENT
Peirce Island, Portsmouth NH

OWNER

CITY OF PORTSMOUTH NEW HAMPSHIRE

680 Peverly Hill Road Portsmouth, NH 03801

ENGINEER

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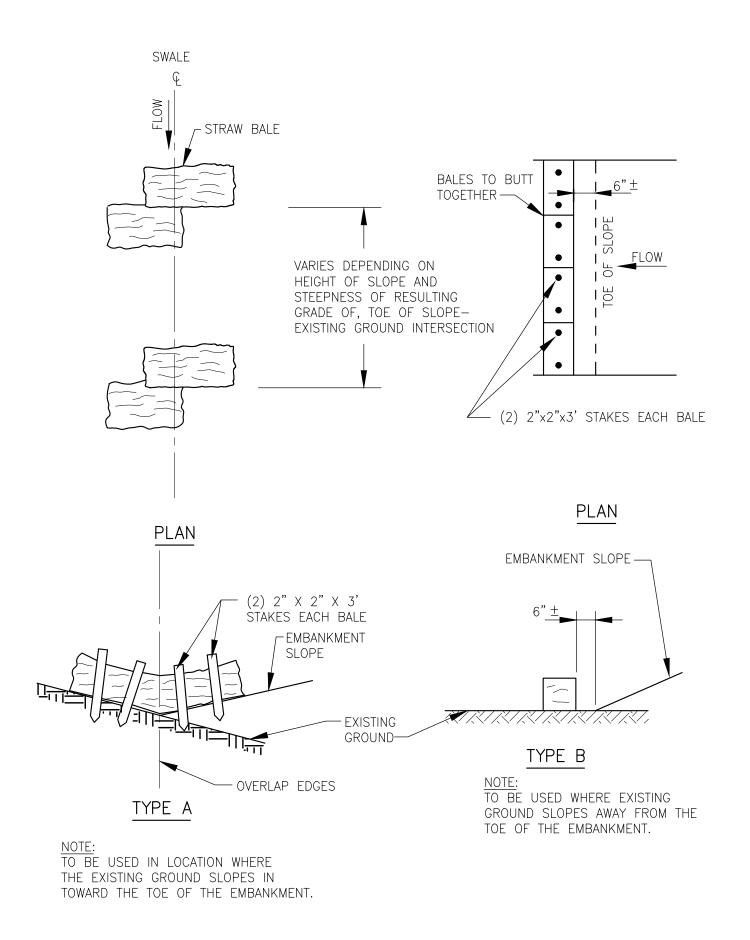
DISCIPLINE

CIVIL SHEET TITLE

PIPING PLAN AND PROFILE III

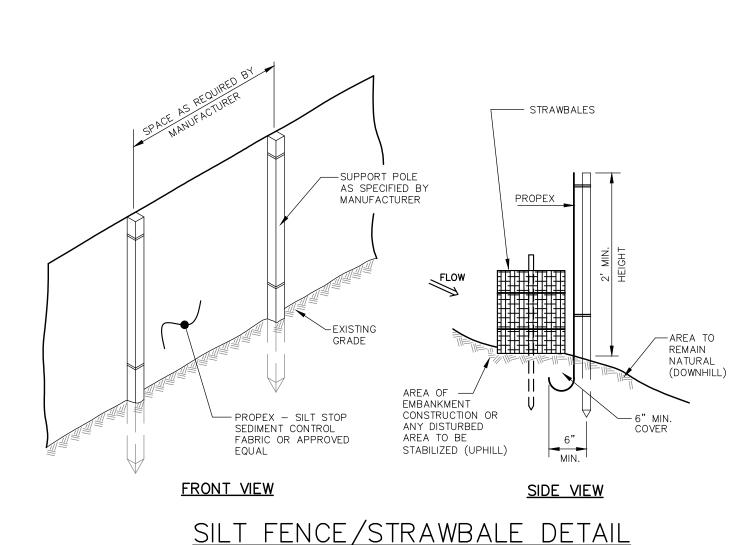
SHEET NUMBER

00 C-105-P

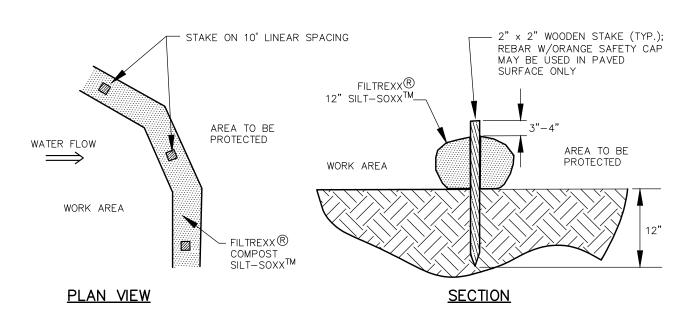


STRAW BALE EROSION CONTROL

NIS 2-1.60.4 (REV. 09-29-95)



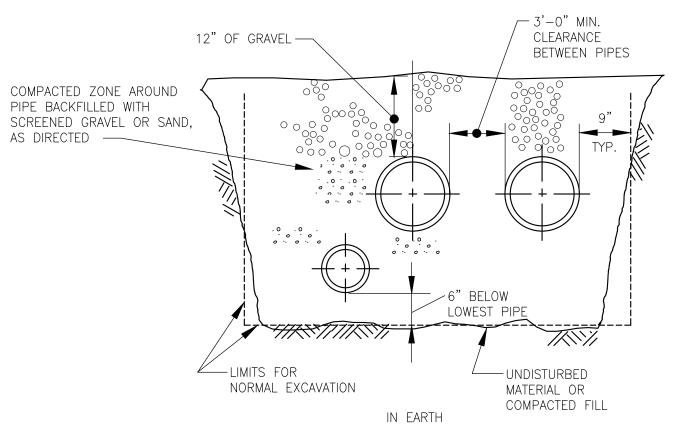
NOT TO SCALE



NOTES:

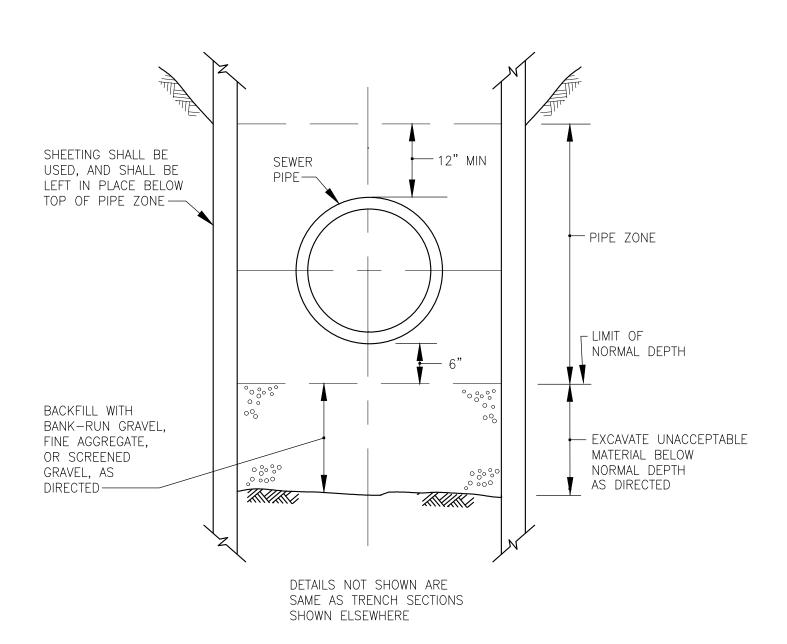
- 1. SILTSOXX MAY BY USED IN PLACE OF SILT FENCE OR OTHER SEDIMENT BARRIERS FOR AREAS OF REVETMENT CONSTRUCTION.
- 2. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
- 3. SILTSOXX COMPOST/SOIL/ROCK/SEED FILL MATERIAL SHALL BE ADJUSTED AS NECESSARY TO MEET THE REQUIREMENTS OF THE SPECIFIC APPLICATION.
- 4. ALL SEDIMENT TRAPPED BY SILTSOXX SHALL BE DISPOSED OF PROPERLY.

SEDIMENT FILTER LOG STAKING DETAIL NOT TO SCALE



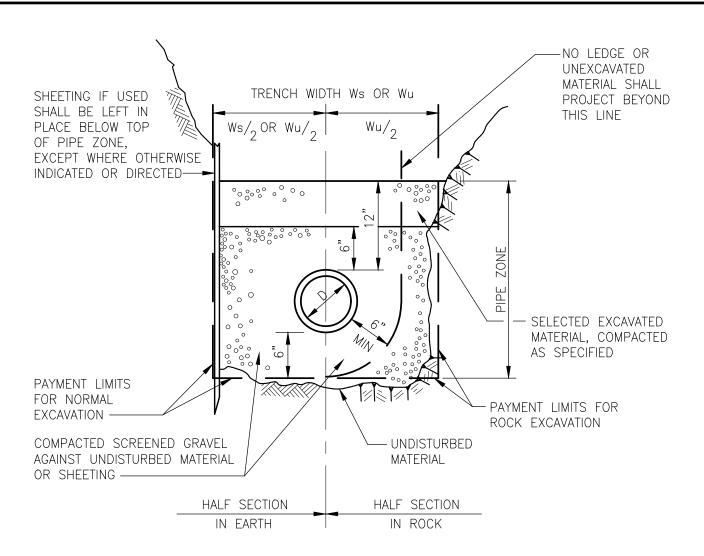
MULTIPLE PIPE TRENCH SECTION

NOT TO SCALE



TRENCH SECTION IN UNACCEPTABLE MATERIAL

NOT TO SCALE 2-1.1.21 (REV. 03-15-95)



TRENCH SECTION FOR PIPE 18 INCH DIAMETER AND SMALLER NOT TO SCALE

-NO LEDGE OR UNEXCAVATED MATERIAL SHALL TRENCH WIDTH Ws OR Wu SHEETING IF USED PROJECT BEYOND SHALL BE LEFT IN THIS LINE PLACE BELOW TOP Ws/2 OR Wu/2 OF PIPE ZONE, EXCEPT WHERE OTHERWISE INDICATED OR DIRECTED - SELECTED EXCAVATED MATERIAL, COMPACTED AS SPECIFIED PAYMENT LIMITS FOR NORMAL - PAYMENT LIMITS FOR EXCAVATION -ROCK EXCAVATION COMPACTED SCREENED GRAVEL UNDISTURBED AGAINST UNDISTURBED MATERIAL MATERIAL OR SHEETING -HALF SECTION HALF SECTION IN EARTH

TRENCH SECTION FOR DI OR PVC PIPE 20 INCH DIAMETER AND LARGER

NOT TO SCALE 2-1.1.2 (REV. 03-15-95)

TRENCH W	IDTH W	s OR V	Vu
NOMINAL PIPE DIAMETER		TH OF PIPE IN W GROUND SU	
D	0 TO 12'	12' TO 20'	>20'
24" AND SMALLER	5'-0"	7'-0"	9'-0"
OVER 24"	D + 3'-0"	D + 5'-0"	D + 7-0"

- 1. PIPE TRENCHES MAY BE EXCAVATED WIDER THAN TRENCH WIDTH WS (SHEETED) OR Wu (UNSHEETED) ABOVE THE TOP OF PIPE ZONE.
- 2. TRENCHES SHALL NOT BE EXCAVATED BEYOND THE TRENCH WIDTH WU BELOW THE TOP OF PIPE ZONE.
- 3. SHEETING MUST BE USED IF EXCAVATION AND BACKFILL, BELOW NORMAL DEPTH, IS REQUIRED. SHEETING SHALL BE LEFT IN PLACE BELOW A LINE 1'-0" ABOVE THE TOP OF PIPE.

GENERAL NOTES FOR PIPE TRENCHES

NOT TO SCALE 2-1.1.11 (REV. 10-23-95)

AECOM

PROJECT

PEIRCE ISLAND FORCE MAIN AND WATER MAIN REPLACEMENT

Peirce Island, Portsmouth NH

OWNER

CITY OF PORTSMOUTH NEW HAMPSHIRE

680 Peverly Hill Road Portsmouth, NH 03801

ENGINEER

AECOM TECHNICAL SERVICES, INC. 250 APOLLO DRIVE CHELMSFORD, MA 01824 PHONE: (978) 905-2100 www.aecom.com

REGISTRATION

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ISSUE/REVISION

I/R DATE DESCRIPTION

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60649477

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Dept Check:	C. BENZIGER
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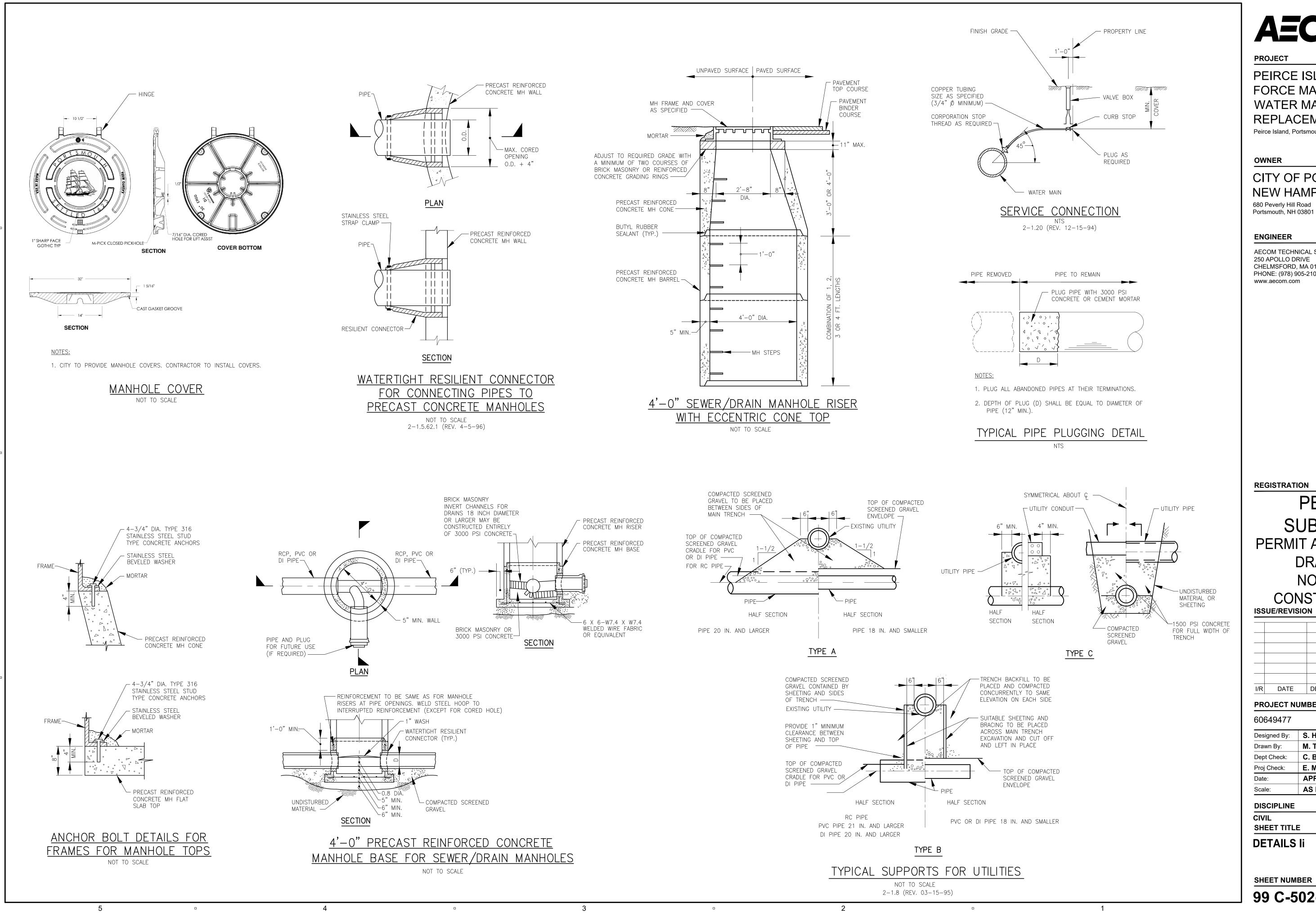
DISCIPLINE

CIVIL SHEET TITLE

DETAILS I

SHEET NUMBER

99 C-501-P



PEIRCE ISLAND FORCE MAIN AND WATER MAIN REPLACEMENT Peirce Island, Portsmouth NH

CITY OF PORTSMOUTH **NEW HAMPSHIRE**

680 Peverly Hill Road Portsmouth, NH 03801

AECOM TECHNICAL SERVICES, INC. 250 APOLLO DRIVE CHELMSFORD, MA 01824 PHONE: (978) 905-2100 www.aecom.com

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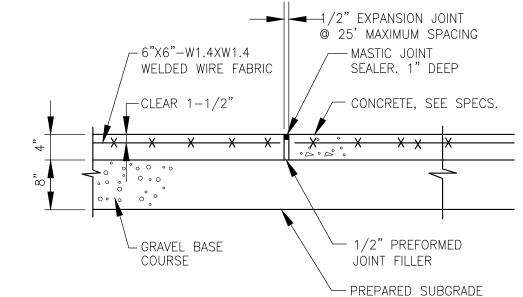
PROJECT NUMBER

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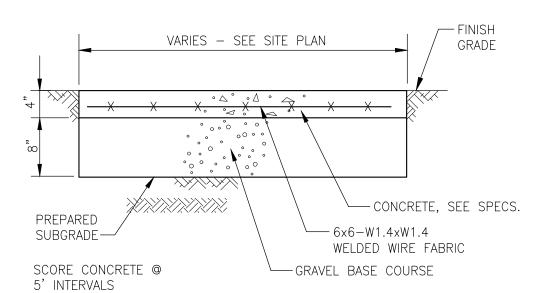
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DISCIPLINE

99 C-502-P

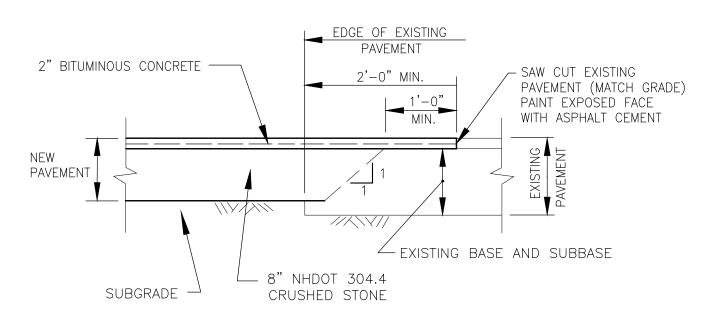


EXPANSION JOINT FOR CONCRETE WALKWAYS NOT TO SCALE 2-1.41.1.1 (REV. 12-15-94)

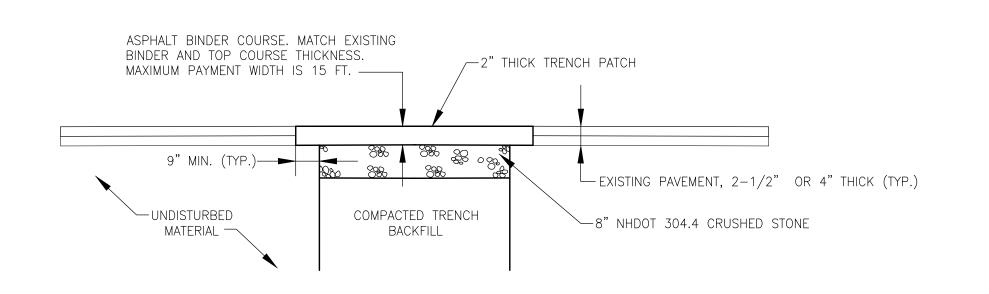


CONCRETE WALKWAY SECTION

NOT TO SCALE
2-1.41.1 (REV. 12-15-94)



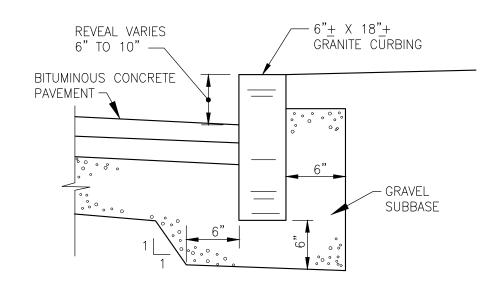
TYPICAL FORMAT OF PAVEMENT MATCHING DETAIL N.T.S.



1. REMOVE AND DISPOSE OF EXCESS MATERIAL TO LOCATION AS DIRECTED BY THE ENGINEER.

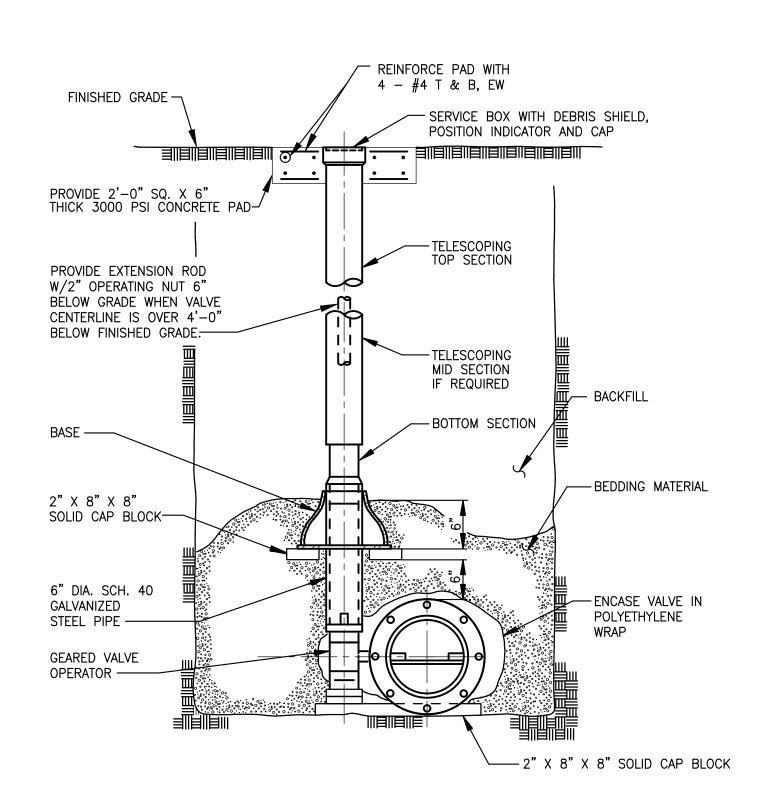
PAVEMENT TRENCH REPAIR NOT TO SCALE

NOTE:

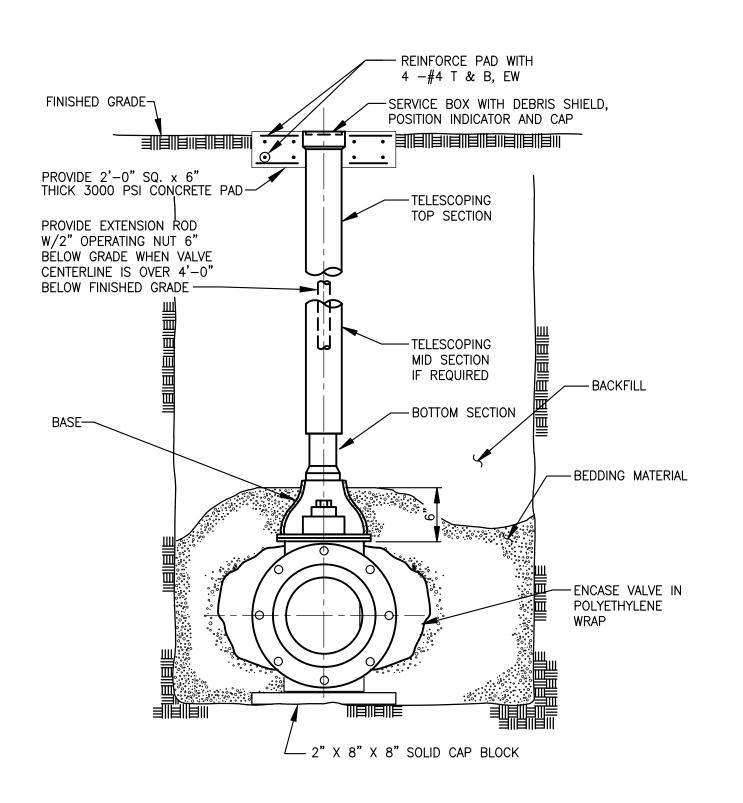


GRANITE CURB

NOT TO SCALE
2-1.42.1 (REV. 12-15-94)



BURIED BUTTERFLY OR PLUG VALVE



BURIED GATE VALVE

PROJECT

PEIRCE ISLAND
FORCE MAIN AND
WATER MAIN
REPLACEMENT
Peirce Island, Portsmouth NH

AECOM

OWNER

CITY OF PORTSMOUTH NEW HAMPSHIRE

680 Peverly Hill Road Portsmouth, NH 03801

ENGINEER

AECOM TECHNICAL SERVICES, INC. 250 APOLLO DRIVE CHELMSFORD, MA 01824 PHONE: (978) 905-2100 www.aecom.com

REGISTRATION

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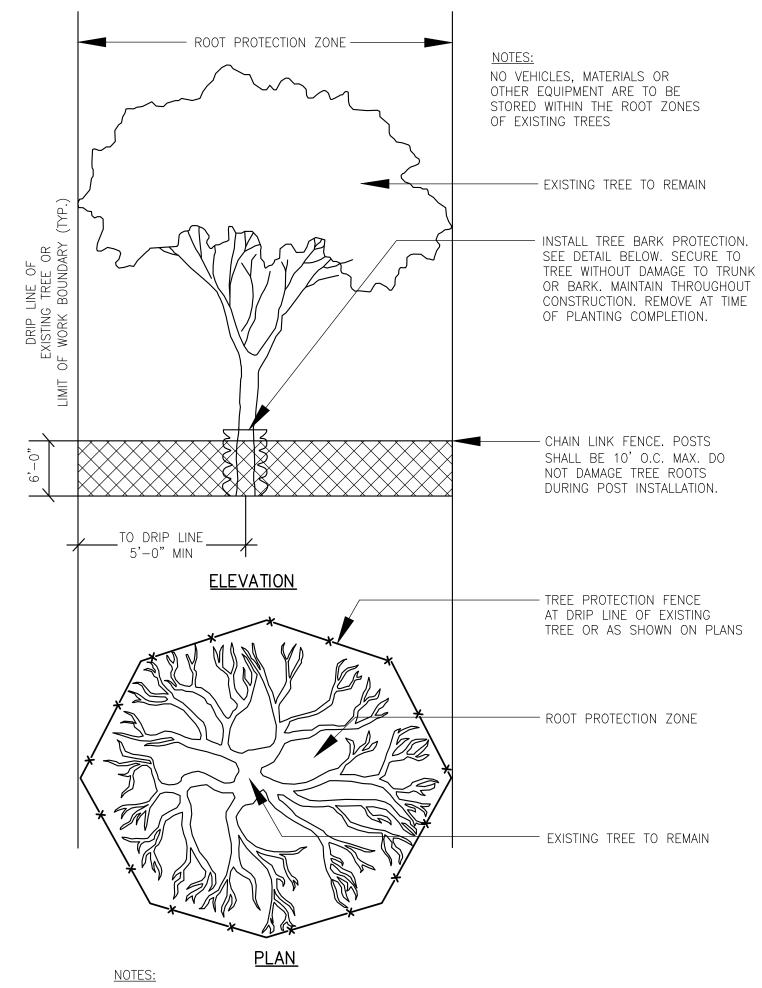
DISCIPLINE

CIVIL SHEET TITLE

DETAILS III

99 C-503-P

FOUNTAIN SERVICE CONNECTION SCHEMATIC

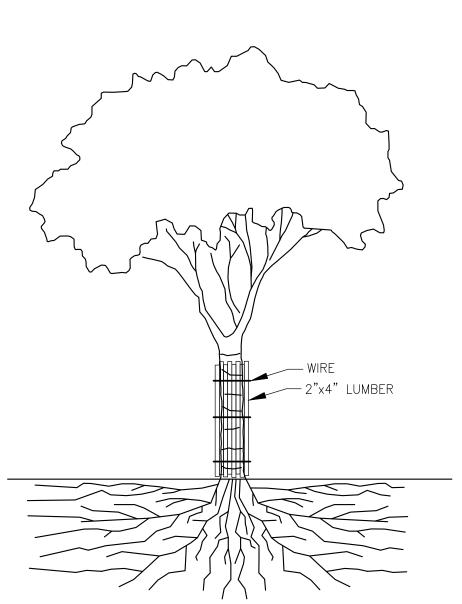


- 1. THIS DETAIL APPLIES FOR THE PROTECTION OF ALL TREES ON THE WWTF SITE, CONTRACTOR STAGING AREAS AND RESTRICTED USE CONSTRUCTION STAGING AREAS.
- 2. NO VEHICLES, MATERIALS OR OTHER EQUIPMENT ARE TO BE STORED WITHIN THE ROOT ZONES OF EXISTING TREES.

TREE PROTECTION

LANDSCAPING NOTES:

- 1. THE CONTRACTOR SHALL LOCATE AND VERIFY ALL UTILITIES PRIOR TO STARTING WORK. CONTRACTOR TO VERIFY THAT ADEQUATE DRAINAGE EXISTS PRIOR TO PLANTING.
- 2. THE CONTRACTOR SHALL SUPPLY ALL PLANT MATERIALS IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTING SHOWN ON ALL DRAWINGS. PLANT COUNTS ARE FOR CONVENIENCE ONLY. CONTRACTOR SHALL USE SUFFICIENT PLANT MATERIALS TO FULFILL DESIGN INTENT, BUT IN NO CASE SHALL CONTRACTOR USE FEWER PLANTS THAN LISTED.
- 3. ALL MATERIAL SHALL CONFORM TO THE GUIDELINES ESTABLISHED BY THE "AMERICAN STANDARD FOR NURSERY STOCK", PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
- 4. ALL PLANT MATERIALS ARE SUBJECT TO THE APPROVAL OF THE ENGINEER AT THE NURSERY AND AT THE SITE. ALL TREES SHALL HAVE A SINGLE LEADER UNLESS SPECIFIED OTHERWISE. NO UN-APPROVED SUBSTITUTIONS WILL BE ACCEPTED. PLANT SPECIES AND CULTIVAR, SIZE AND QUANTITY SHALL NOT CHANGE WITHOUT APPROVAL OF LANDSCAPE ARCHITECT.
- 5. LOCATION OF ALL TREES AND SHRUBS SHALL BE MARKED FOR THE APPROVAL OF THE PROJECT ENGINEER. MARKING SHALL BE COMPLETED THE DAY PRIOR TO COMMENCEMENT OF PLANTING.
- 6. ALL PLANTS SHALL BEAR THE SAME RELATIONSHIP TO FINISHED GRADE AS ORIGINAL GRADE BEFORE DIGGING. PLANT TO BE TRANSPLANTED SHALL BE DUG CAREFULLY, WITH ADEQUATE ROOT—BALLS AND PRUNED ACCORDING TO ANA STANDARD PRACTICE. TREES WITH ROOT FLARE COVERED BY MORE THAN 1.5" OF SOIL WILL BE REJECTED PRIOR TO INSTALLATION. SET PLANTS PLUMB.
- 7. ALL TREES AND SHRUBS SHALL BE BALLED IN BURLAP OR CONTAINERIZED, UNLESS SPECIFIED OTHERWISE. NO ROOT-BOUND CONTAINER GROWN STOCK WILL BE ACCEPTED. ALL PLASTIC ROOT WRAPPING AND METAL WIRE BASKETS SHALL BE CAREFULLY REMOVED AT THE TIME OF PLANTINGS, EXCEPT WIRE THAT IS DIRECTLY UNDER THE ROOT-BALLS.
- 8. AFTER CONDUCTING SOIL TESTS WITHIN PLANTING AREAS, THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING PLANTING TOPSOIL AND/OR AMENDMENTS FOR BACKFILLING AT ALL PLANTS, AS NECESSARY. SUBMIT WRITTEN CONTENT ANALYSIS TO OWNER/REP. FOR APPROVAL. ADD 'PHC HEALTHY START 3-4-3' AND 'MYCOR TREE OR PLANT SAVER 4-7-4', OR EQUAL. FOLLOW MANUFACTURER'S GUIDELINES. THE PLANTING TOPSOIL IS TO BE SANDY LOAM MODIFIED WITH ORGANIC COMPONENT TO HAVE AT LEAST 4% ORGANIC MATTER BUT NOT MORE THAN 8% ORGANIC MATTER, DRY WEIGHT BASIS, A COMPACTED MINIMUM INFILTRATION RATE OF 2.5 CM/HR, PH RANGE OF 5.5 TO 6.5, AND NO COARSE FRAGMENTS OVER 2.5 CM IN SIZE.
- 9. CONTRACTOR SHALL PLACE 2" TO 3" OF FINE SHREDDED, AGED 2 YEARS, DARK BROWN PINE BARK MULCH THROUGHOUT THE BED AREAS. DO NOT PLACE MULCH IN CONTACT WITH TREE TRUNK. SUBMIT SAMPLE OF MULCH FOR APPROVAL.
- 10. ALL EVERGREEN PLANTS SHALL BE SPRAYED WITH AN ANTI-DESICCANT THE FIRST WEEK OF NOVEMBER, THE FIRST WINTER FOLLOWING PLANTING.
- 11. FLOOD PLANTS THOROUGHLY ONCE IMMEDIATELY AFTER PLANTING AND TWICE DURING THE FIRST TWENTY—FOUR HOUR PERIOD AFTER PLANTING.
- 12. EXTREME CARE SHALL BE TAKEN NOT TO DISTURB EXISTING PLANT MATERIALS, EXCEPT THOSE SPECIFICALLY NOTED "TO BE TRANSPLANTED OR REMOVED". ANY PLANT INJURED OR DESTROYED SHALL BE REPLACED WITH A PLANT OF EQUAL OR GREATER SIZE AND SPECIES AT THE CONTRACTORS EXPENSE.
- 13. IF NECESSARY, NEW PLANTING SHOULD BE PLACED OUTSIDE OF THE CRITICAL ROOT ZONE (CRZ) OF EXISTING TREES. CRZ
 RADIUS EQUALS ONE—FOOT TIMES THE DBH (DIAMETER—AT—BREAST—HEIGHT) OF THE TREES, MEASURED FROM THE TREE TRUNK.
 TREE FENCING IS NECESSARY TO PROTECT EXISTING VEGETATION TO BE PRESERVED FROM BOTH FOOT AND VEHICULAR TRAFFIC.
 TREE FENCING TO BE LOCATED AT THE EDGE OF THE CRZ.
- 14. DO NOT WRAP TRUNK OF TREE.
- 15. THE CONTRACTOR SHALL MAINTAIN THE PLANTS FOR A MINIMUM OF 90 DAYS FOLLOWING INSTALLATION, OR LONGER IF CONTRACTED BY THE OWNER. BEFORE THE END OF THE 90-DAY PERIOD, THE CONTRACTOR SHALL PROVIDE A WRITTEN MAINTENANCE OUTLINES TO THE OWNERS AND THE CONTRACTOR SHALL BE AVAILABLE TO ANSWER QUESTIONS OR CONCERNS AT THAT TIME.
- 16. THE CONTRACTOR SHALL GUARANTEE ALL PLANTS FOR A MINIMUM OF ONE YEAR FROM FINAL ACCEPTANCE BY OWNER/REP.
 THE CONTRACTOR SHALL REPLACE ANY DEAD MATERIALS AT HIS/HER OWN EXPENSE.



NOTES:

- 1. THIS DETAIL APPLIES FOR THE PROTECTION OF ALL TREES ON THE WWTF SITE, CONTRACTOR STAGING AREAS AND RESTRICTED USE CONSTRUCTION STAGING AREAS.
- 2. IN SITUATIONS WHERE A PROTECTED TREE REMAINS IN THE IMMEDIATE AREA OF INTENDED CONSTRUCTION AND THE TREE MAY BE IN DANGER OF BEING DAMAGED BY CONSTRUCTION EQUIPMENT OR OTHER ACTIVITY, THE CONTRACTOR OR SUBCONTRACTOR SHALL PROTECT THE TREE WITH 2"x4" LUMBER ENCIRCLED WITH WIRE OR OTHER MEANS THAT DO NOT DAMAGE THE TREE. THE INTENT IS TO PROTECT THE TRUNK OF THE TREE AGAINST INCIDENTAL CONTACT BY LARGE CONSTRUCTION EQUIPMENT.

TREE BARK PROTECTION



PROJECT

PEIRCE ISLAND
FORCE MAIN AND
WATER MAIN
REPLACEMENT
Peirce Island, Portsmouth NH

OWNER

CITY OF PORTSMOUTH NEW HAMPSHIRE

680 Peverly Hill Road Portsmouth, NH 03801

ENGINEER

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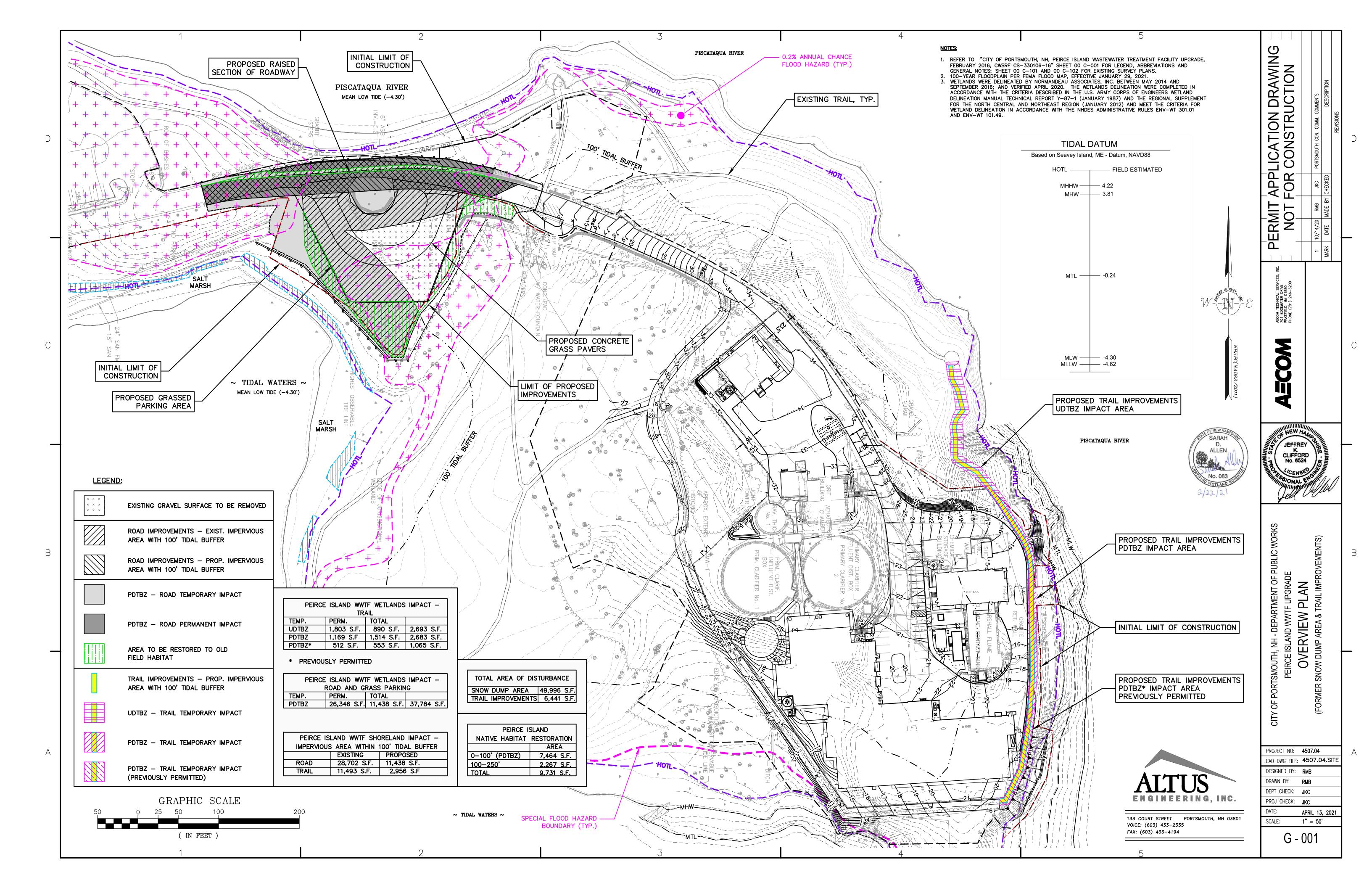
DISCIPLINE

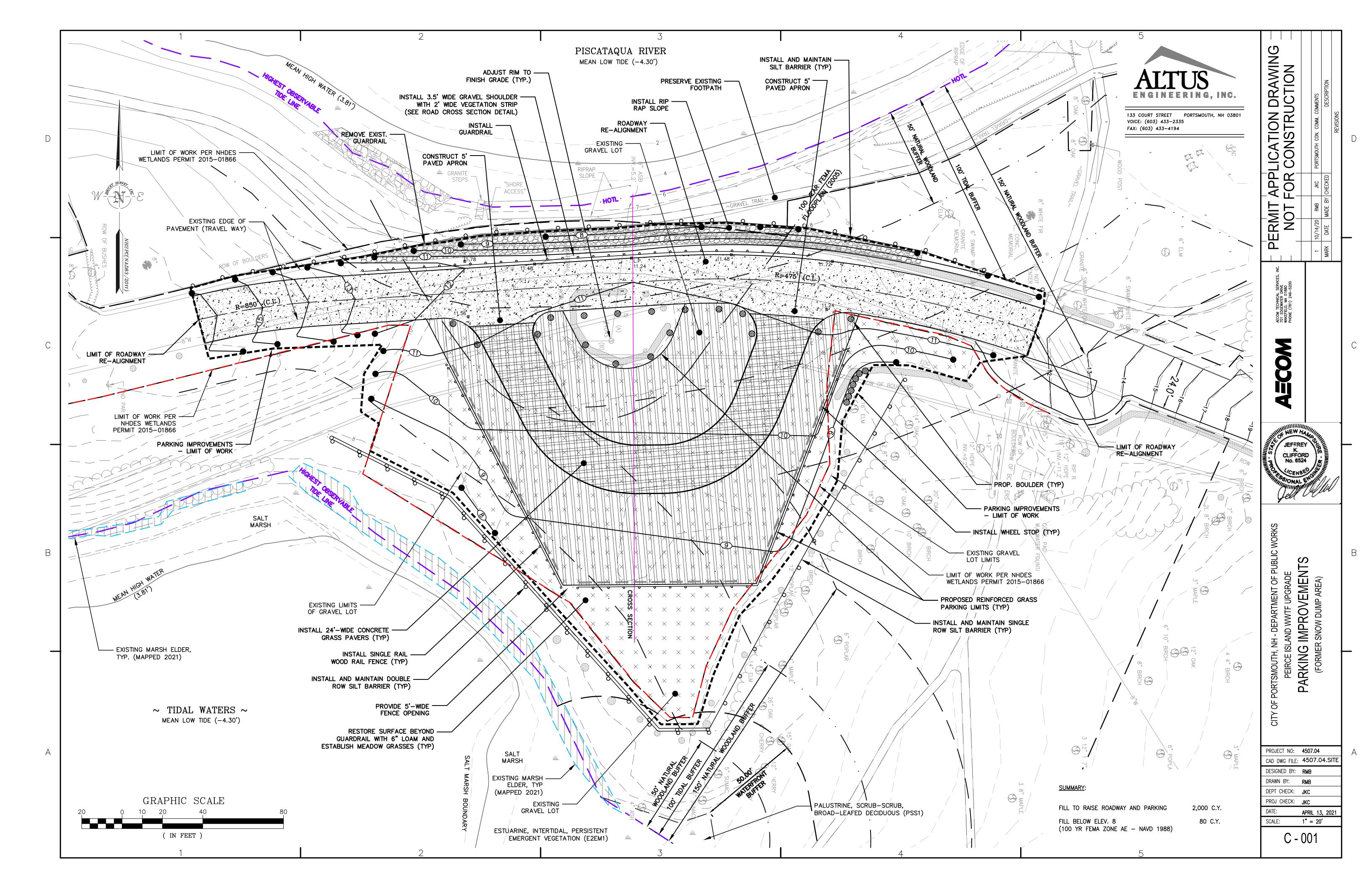
CIVIL SHEET TITLE

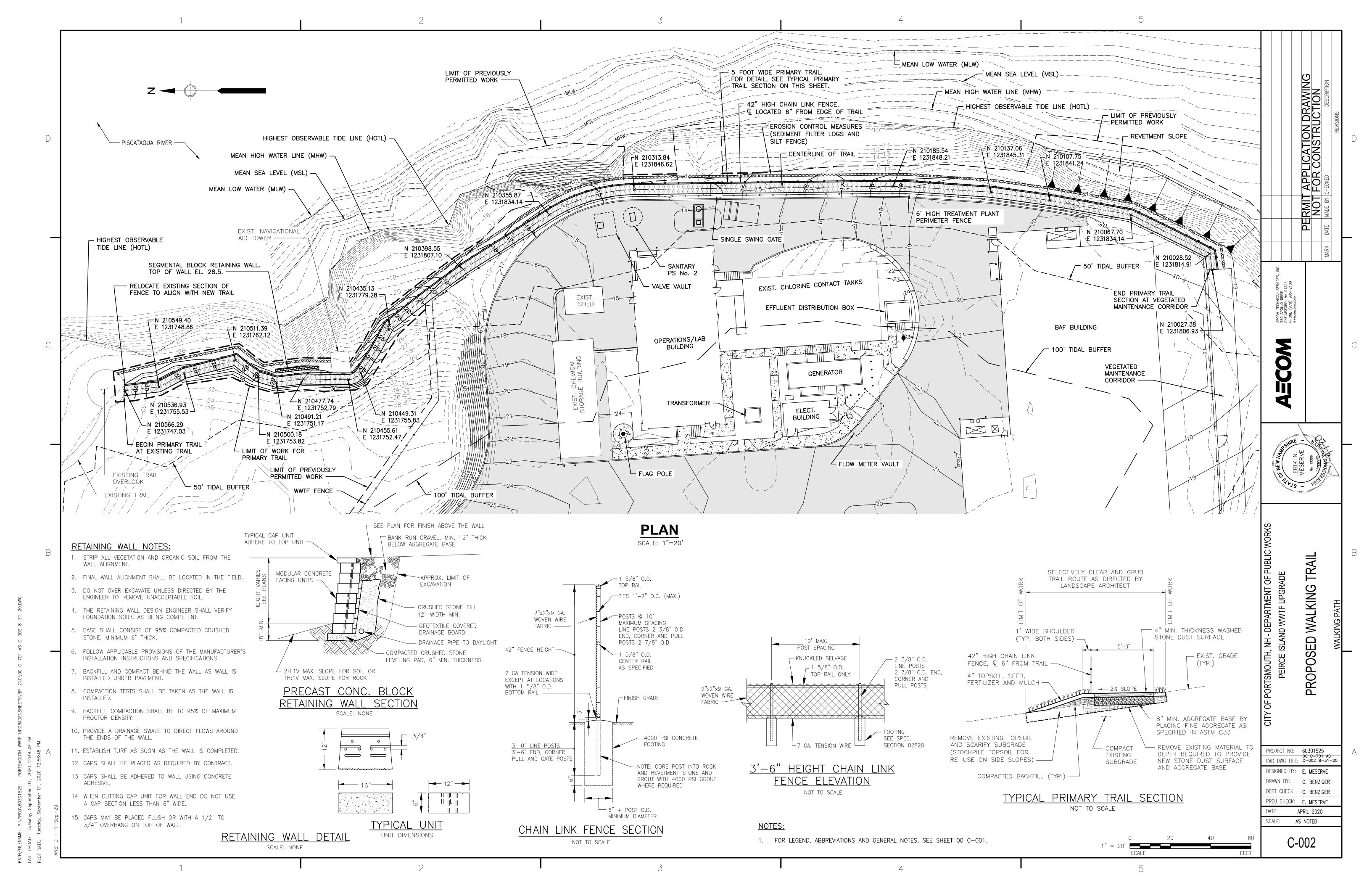
DETAILS IV

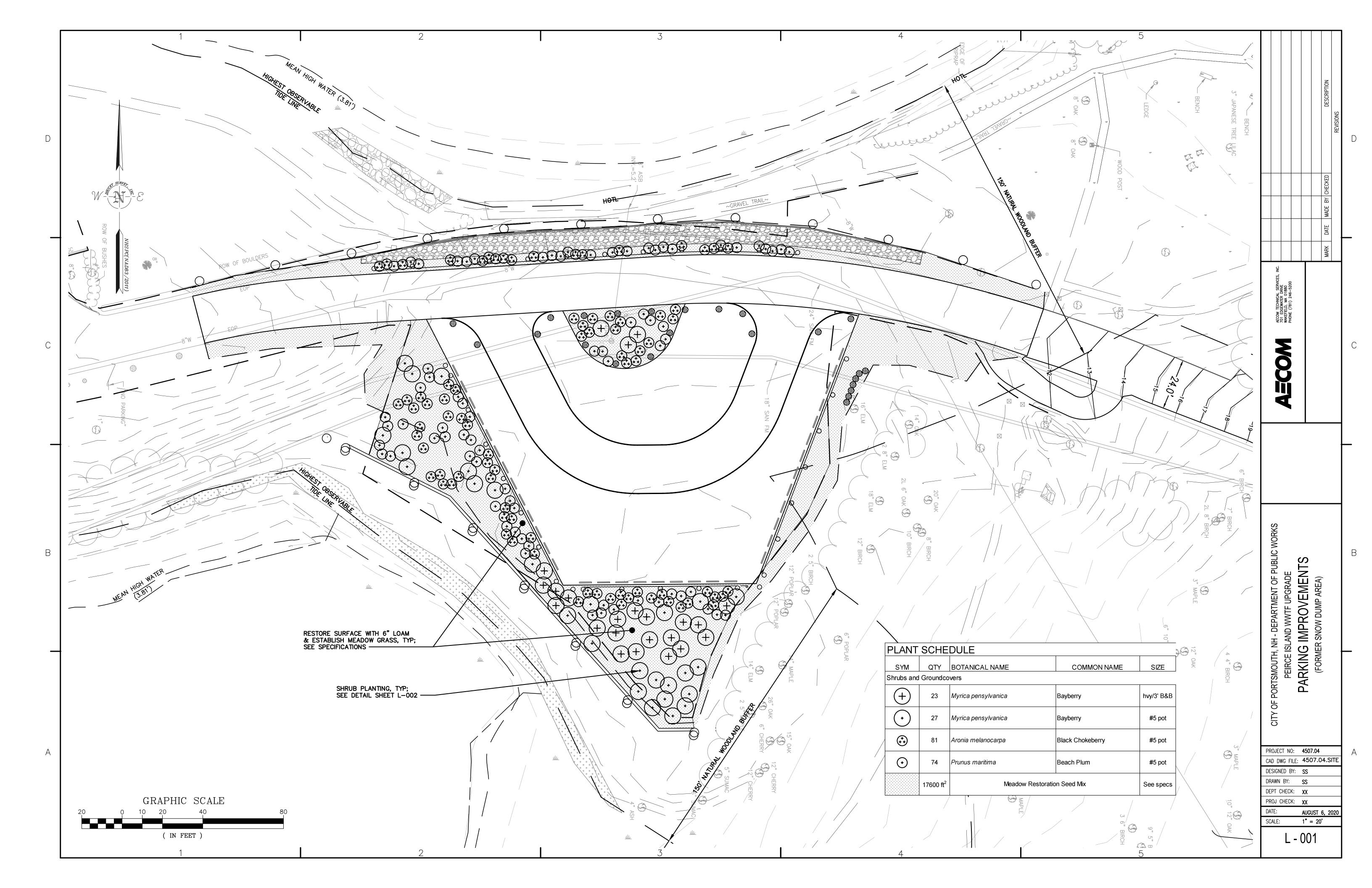
SHEET NUMBER

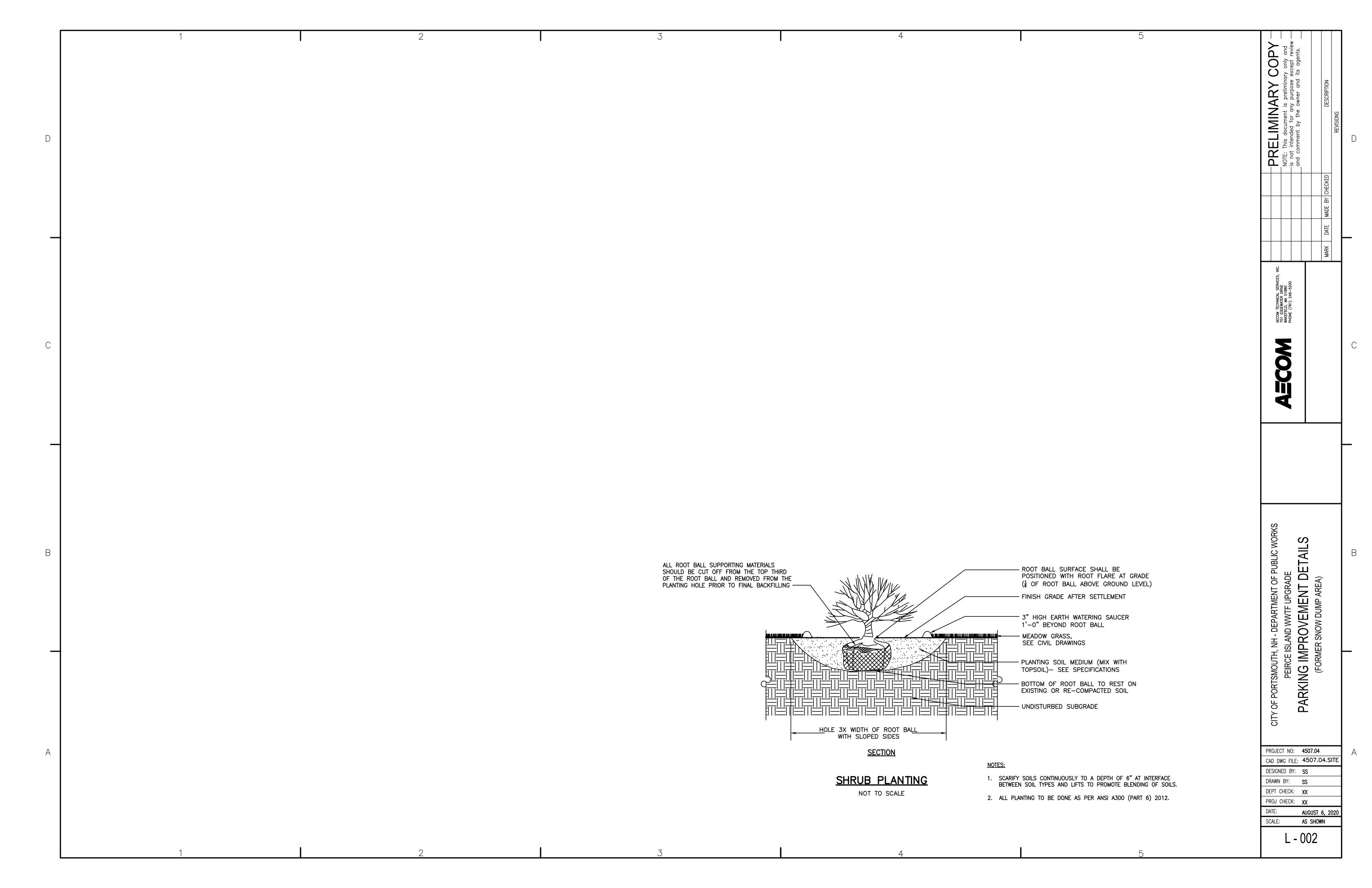
99 C-504-P











LATITUDE: 043' 04' 29" N LONGITUDE: 070° 44' 35" V

<u>APPLICANT:</u> CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS 680 PEVERLY HILL ROAD PORTSMOUTH, NEW HAMPSHIRE

DESCRIPTION

The project consists of improvements to raise the access road above anticipated 2100 100-year flood elevation; to convert an informal parking area the former snow dump, currently used as laydown area, to a formal grassed public parking area; and to extend the public walking trail 600 feet around the northeastern perimeter of the island.

DISTURBED AREA

The total area to be disturbed for the development improvements is approximately 55,738 SF (1.3 acres).

PROJECT PHASING

The proposed project will be completed in two phase. Phase I is the trail extension: Phase II is the road and grass parking improvements.

NAME OF RECEIVING WATER

The site drains directly to the Piscatagua River (tidal).

NPDES CONSTRUCTION GENERAL PERMIT

Contractor shall prepare a Stormwater Pollution Prevention Plan (SWPPP) is accordance with federal storm water permit requirements. The SWPPP must be prepared in a format acceptable to the Owner and three (3) copies provided to the City at least fourteen (14) days prior to initiating construction. Contractor is responsible for all cost associated with preparation and implementation of SWPPP including any temporary erosion control measures (whether indicated or not on these drawings) as required for the contractor's sequence of activities.

The Contractor and Owner shall each file a Notice of Intent (NOI) with the U.S.E.P.A. under the NPDES Construction General Permit. (U.S.E.P.A., 1200 Pennsylvania Avenue NW, Washington, DC 20460) All work shall be in accordance with NPDES General Permit: NHR120000, including NOI requirements, effluent limitations, standards and management for construction. The Contractor shall be responsible for obtaining a USEPA Construction Dewatering Permit, if required.

SEQUENCE OF MAJOR ACTIVITIES

- 1. Prepare SWPPP and file NPDES Notice of Intent, prior to any construction activities. The Contractor and Owner shall each file a Notice of Intent (N.O.I.) to U.S.E.P.A.
- 2. Install temporary erosion control measures including silt fences, stabilized construction entrance and inlet sediment filters as noted on the plan. All temporary erosion control measures shall be maintained in good working condition for the duration of the project.
- 3. Upon completion of Items 1 through 2, clear and grub wooded areas (some stumps may require grinding). Dispose of stumps in an approved offsite location.
- 4. Strip and stockpile loam. Stockpiles shall be temporarily stabilized with hay bales mulch and surrounded by a hay bale or silt fence barrier until material is removed and final grading is complete.
- 5. Reclaim/remove existing paved surfaces.
- 6. Perform all required demolition activities.
- 7. Initiate facility construction.

20.Install top course paving.

- 8. Construct ditches and swales early in construction sequence; stabilize them prior to directing flow to them.
- 9. Ditches and swales shall have sides and bottom reinforced with excelsior matting, Permanent turf reinforcement shall be installed at swale sloped greater than 5%.
- 10. Rough grade site including placement of borrow materials. 21. Construct drainage structures, parking area & road base materials. All roadways and parking lots shall be stabilized within 72 hours of achieving finished grade
- 19. Install base course paving, pavers & curbing.
- 21.Loam (6" min) and seed all disturbed areas not paved or otherwise stabilized
- within 72 hours of achieving finished grade. 22. When all construction activity is complete and site is stabilized, remove all hay bales, storm check dams, silt fences and sediment that has been trapped by these
- 23. File a Notice of Termination (N.O.T.) with U.S.E.P.A.

TEMPORARY EROSION & SEDIMENT CONTROL AND STABILIZATION PRACTICES

All work shall be in accordance with state and local permits. Work shall conform to the practices described in the "New Hampshire Stormwater Manual, Volumes 1 - 3", issued December 2008, as amended. As indicated in the sequence of Major Activities, the silt fences shall be installed prior to commencing any clearing or grading of the site. Structural controls shall be installed concurrently with the applicable activity. Once construction activity ceases permanently in an area, silt fences and any earth/dikes will be removed once permanent measures are established.

During construction, runoff will be diverted around the site with stabilized channels where possible. Sheet runoff from the site shall be filtered through hay bale barriers, stone check dams, and silt fences. All storm drain inlets shall be provided with hay bale filters or stone check dams. Stone rip rap shall be provided at the outlets of drain pipes and culverts where shown on the drawings.

Stabilize all ditches, swales and their contributing areas prior to directing flow to them.

Temporary and permanent vegetation and mulching is an integral component of the erosion and sedimentation control plan. All areas shall be inspected and maintained until vegetative cover is established. These control measures are essential to erosion prevention and also reduce costly rework of graded and shaped areas.

Temporary vegetation shall be maintained in these areas until permanent seeding is applied. Additionally, erosion and sediment control measures shall be maintained until permanent vegetation is

INSTALLATION, MAINTENANCE AND INSPECTION PROCEDURES FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES

- These are general inspection and maintenance practices that shall be used to implement the
- 1. The smallest practical portion of the site shall be denuded at one time, but in no case shall it exceed 5 acres at one time.
- 2. All control measures shall be inspected at least once each week and following any storm event of 0.5 inches or greater.
- 3. All measures shall be maintained in good working order; if a repair is necessary, it will be
- initiated within 24 hours. 4. Built-up sediment shall be removed from silt fence or other barriers when it has reached
- 5. All diversion dikes shall be inspected and any breaches promptly repaired.

one-third the height of the fence or bale, or when "bulges" occur.

- 6. Temporary seeding and planting shall be inspected for bare spots, washouts, and unhealthy
- 7. The owner's authorized engineer shall inspect the site on a periodic basis to review compliance with the Plans'
- 8. All roadways and parking lots shall be stabilized within 72 hours of achieving finished grade.
- 9. All cut and fill slopes shall be seeded/loamed within 72 hours of achieving finished grade.
- 10. An area shall be considered stable if one of the following has occurred:
- a. Base coarse gravels have been installed in greas to be paved:
- b. A minimum of 85% vegetated growth as been established; c. A minimum of 3 inches of non-erosive material such as stone of riprap has been
- installed: or -
- d. Erosion control blankets have been properly installed.
- 11. The length of time of exposure of area disturbed during construction shall not exceed 45

B. MULCHING

Mulch shall be used on highly erodible soils, on critically eroding areas, on areas where conservation of moisture will facilitate plant establishment, and where shown on the plans.

- 1. Timing In order for mulch to be effective, it must be in place prior to major storm events. There are two (2) types of standards which shall be used to assure this: a. Apply mulch prior to any storm event. This is applicable when working within 100 feet of
- wetlands. It will be necessary to closely monitor weather predictions, usually by contacting the National Weather Service in Concord, to have adequate warning of significant storms. b. Required Mulching within a specified time period. The time period can range from 21 to
- 28 days of inactivity on a area, the length of time varying with site conditions. Professional judgment shall be used to evaluate the interaction of site conditions (soil erodibility, season of year, extent of disturbance, proximity to sensitive resources, etc.) and the potential impact of erosion on adjacent areas to choose an appropriate time restriction.
- 2. Guidelines for Winter Mulch Application -

Type Hay or Straw	Rate per 1.000 s.f. 70 to 90 lbs.	<u>Use and Comments</u> Must be dry and free from mold. May be used with plantings.
Wood Chips or Bark Mulch	460 to 920 lbs.	Used mostly with trees and shrub plantings.
Jute and Fibrous Matting (Erosion Blanket	As per manufacturer Specifications	Used in slope areas, water courses and other Control areas.
Crushed Stone 1/4" to 1-1/2" dia.	Spread more than 1/2" thick	Effective in controlling wind and water erosion.
Erosion Control Mix	2" thick (min)	* The organic matter content is between 80 and 100%, dry weight basis. * Particle size by weight is 100% passing a 6"screen and a minimum of 70 %, maximum of 85%, passing a 0.75" screen. * The organic portion needs to be fibrous and elongated. * Large portions of silts, clays or fine sands are not acceptable in the mix.

* The pH should fall between 5.0 and 8.0. 3. Maintenance - All mulches must be inspected periodically, in particular after rainstorms, to check for rill erosion. If less than 90% of the soil surface is covered by mulch, additional

* Soluble salts content is less than 4.0

mmhos/cm.

C. TEMPORARY GRASS COVER

mulch shall be immediately applied.

. Seedbed Preparation -Apply fertilizer at the rate of 600 pounds per acre of 10-10-10. Apply limestone (equivalent to 50 percent calcium plus magnesium oxide) at a rate of three (3) tons per

2. Seeding -

- a. Utilize annual rye grass at a rate of 40 lbs/acre.
- b. Where the soil has been compacted by construction operations, loosen soil to a depth of two (2) inches before applying fertilizer, lime and seed.
- c. Apply seed uniformly by hand, cyclone seeder, or hydroseeder (slurry including seed and fertilizer). Hydroseedings, which include mulch, may be left on soil surface. Seeding rates must be increased 10% when hydroseeding.

3. Maintenance -

Temporary seedings shall be periodically inspected. At a minimum, 95% of the soil surface should be covered by vegetation. If any evidence of erosion or sedimentation is apparent, repairs shall be made and other temporary measures used in the interim (mulch, filter barriers, check dams, etc.).

1. Silt Fence

a. Synthetic filter fabric shall be a pervious sheet of propylene, nylon, polyester or ethylene yarn and shall be certified by the manufacturer or supplier as conforming to the following

<u>Physical Property</u>	<u>Test</u>	<u>Requirements</u>
Filtering Efficiency	VTM-51	75% minimum
Tensile Strength at 20% Maximum Elongation*	VTM-52	Extra Strength 50 lb/lin in (min) Standard Strength 30 lb/lin in (min)

* Requirements reduced by 50 percent after six (6) months of installation

Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizer to provide a minimum of six (6) months of expected usable construction life at a temperature range of 0 degrees F to 120° F.

VTM-51 0.3 gal/sf/min (min)

- b. Posts shall be spaced a maximum of ten (10) feet apart at the barrier location or as recommended by the manufacturer and driven securely into the ground (minimum of 16
- c. A trench shall be excavated approximately six (6) inches wide and eight (8) inches deep along the line of posts and upslope from the barrier.
- d. When standard strength filter fabric is used, a wire mesh support fence shall be fastened securely to the upslope side of the posts using heavy duty wire staples at least one (1) inch long, tie wires or hog rings. The wire shall extend no more than 36 inches above the original ground surfaces.
- e. The "standard strength" filter fabric shall be stapled or wired to the fence, and eight (8) inches of the fabric shall be extended into the trench. The fabric shall not extend more than 36 inches above the original ground surface. Filter fabric shall not be stapled to
- f. When extra strength filter fabric and closer post spacing are used, the wire mesh support fence may be eliminated. In such a case, the filter fabric is stapled or wired directly to the posts with all other provisions of item (g) applying.
- g. The trench shall be backfilled and the soil compacted over the filter fabric.
- h. Silt fences shall be removed when they have served their useful purpose but not before the upslope areas has been permanently stabilized.

2. Sequence of Installation -

Flow Rate

Sediment barriers shall be installed prior to any soil disturbance of the contributing upslope drainage area.

- a. Silt fence barriers shall be inspected immediately after each rainfall and at least daily during prolonged rainfall. They shall be repaired if there are any signs of erosion or sedimentation below them. Any required repairs shall be made immediately. If there are signs of undercutting at the center or the edges, or impounding of large volumes of water, the sediment barriers shall be replaced with a temporary stone check dam.
- b. Should the fabric on a silt fence or filter barrier decompose or become ineffective prior to the end of the expected usable life and the barrier still is necessary, the fabric shall be replaced promptly.
- c. Sediment deposits must be removed when deposits reach approximately one-third (1/3) the height of the barrier. d. Any sediment deposits remaining in place after the silt fence or other barrier is no longer
- required shall be removed. The area shall be prepared and seeded. e. Additional stone may have to be added to the construction entrance, rock barrier and riprap lined swales, etc., periodically to maintain proper function of the erosion control structure.
- Filtrexx Siltsoxx or approved equal install per manufacturer specifications.

E. PERMANENT SEEDING -

- 1. Bedding stones larger than $1\frac{1}{2}$, trash, roots, and other debris that will interfere with seeding and future maintenance of the area should be removed. Where feasible, the soil should be tilled to a depth of 5" to prepare a seedbed and mix fertilizer into the soil.
- 2. Fertilizer lime and fertilizer should be applied evenly over the area prior to or at the tim of seeding and incorporated into the soil. Kinds and amounts of lime and fertilizer should be based on an evaluation of soil tests. When a soil test is not available, the following minimum amounts should be applied:
 - Agricultural Limestone @ 100 lbs. per 1,000 s.f. 10-20-20 fertilizer @ 12 lbs. per 1.000 s.f.
- 3. Seed Mixture (recommended): SEE LANDSCAPE PLANS
- 4. Sodding sodding is done where it is desirable to rapidly establish cover on a disturbed area. Sodding an area may be substituted for permanent seeding procedures anywhere on site. Bed preparation, fertilizing, and placement of sod shall be performed according to the S.C.S. Handbook. Sodding is recommended for steep sloped areas, areas immediately adjacent to sensitive water courses, easily erodible soils (fine sand/silt), etc.

WINTER CONSTRUCTION NOTES

- 1. All proposed vegetated areas which do not exhibit a minimum of 85% vegetative growth by October 15th, or which are disturbed after October 15th, shall be stabilized by seeding and installing erosion control blankets on slopes greater than 3:1, and elsewhere seeding and placing 3 to 4 tons of mulch per acre, secured with anchored netting. The installation of erosion control blankets or mulch and netting shall not occur over accumulated snow or on frozen ground and shall be completed in advance of thaw or spring melt events;
- 2. All ditches or swales which do not exhibit a minimum of 85% vegetative growth by October 15th, or which are disturbed after October 15th, shall be stabilized temporarily with stone or erosion control blankets appropriate for the design flow conditions; and
- 3. After November 15th, incomplete road or parking surfaces where work has stopped for the winter season shall be protected with a minimum of 3 inches of crushed gravel per NHDOT Item 304.3.

Spill prevention and spill mitigation measures shall be implemented to prevent the release of fuel and other related substances to the environment. The measures shall be included at a minimum:

- iii. Label regulated containers clearly and visibly.
- iv. Inspect stage areas weekly.
- vi. Whenever possible, keep regulated containers that are stored outside more than 50 feet from surface water and storm drains, 75 feet from private wells, and 400 feet from
- vii. Secondary containment is required for containers containing regulated substances stored outside, except for on premise use fuel tanks or aboveground or underground storage
- - ii. Place drip pans under spigots, valves, and pumps.
 - iv. Use funnel and drip pans when transferring regulated substances. v. Perform transfers of regulated substances over an impervious surface.
- c) The training of on-site employees and on-site posting of release response information describing what to do in the event of regulated substances.
- d) Fueling and maintenance of excavation, earthmoving and other construction related equipment will comply with regulation of New Hampshire Department of Environmental Services (see WD-DWGB-22-6 Best management Practices for Fueling and Maintenance of Excavation and Earthmoving Equipment

SPILL PREVENTION MEASURED AND SPILL MITIGATION

a) The storage requirements shall include:

Storage of regulated substances on an impervious surface.

ii. Secure storage areas against unauthorized entry.

v. Cover regulated containers in outside storage areas.

tanks otherwise regulated.

b) The fuel handling requirements shall include:

Except when in use, keep containers containing regulated substances closed and sealed.

iii. Have spill control and containment equipment readily available in all work areas.

http://des.nh.gov/organization/ommissioner/pip/factsheets/dwab/documents/dwab-22-6.pdf

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TH, NH - DEPARTMENT OF PUBLIC WE ISLAND WWTF UPGRADE

N CONTROL NOTES

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PROJECT NO: **4507.04** CAD DWG FILE: 4507.04.SITE DESIGNED BY: RMB DRAWN BY: RMB DEPT CHECK: JKC ENGINEERING. INC. PROJ CHECK: JKC

133 COURT STREET PORTSMOUTH, NH 03801 VOICE: (603) 433-2335 FAX: (603) 433-4194

C - 003

NOTE:
ALL FACILITIES SHOULD BE INSPECTED ON AN ANNUAL BASIS AT A MINIMUM. IN ADDITION, ALL

FACILITIES SHOULD BE INSPECTED AFTER A SIGNIFICANT PRECIPITATION EVENT TO ENSURE THE

RESULT OF THE INCREASED RUNOFF. FOR THE PURPOSE OF THIS STORMWATER MANAGEMENT

PROGRAM. A SIGNIFICANT RAINFALL EVENT IS CONSIDERED AN EVENT OF THREE (3) INCHES IN

FACILITY IS DRAINING APPROPRIATELY AND TO IDENTIFY ANY DAMAGE THAT OCCURRED AS A

A 24-HOUR PERIOD OR 0.5 INCHES IN A ONE-HOUR PERIOD. IT IS ANTICIPATED THAT A

THAN A LONGER, HIGH VOLUME EVENT.

SHORT, INTENSE EVENT IS LIKELY TO HAVE A HIGHER POTENTIAL OF EROSION FOR THIS SITE

DATE: APRIL 13, 2021 SCALE: AS SHOWN

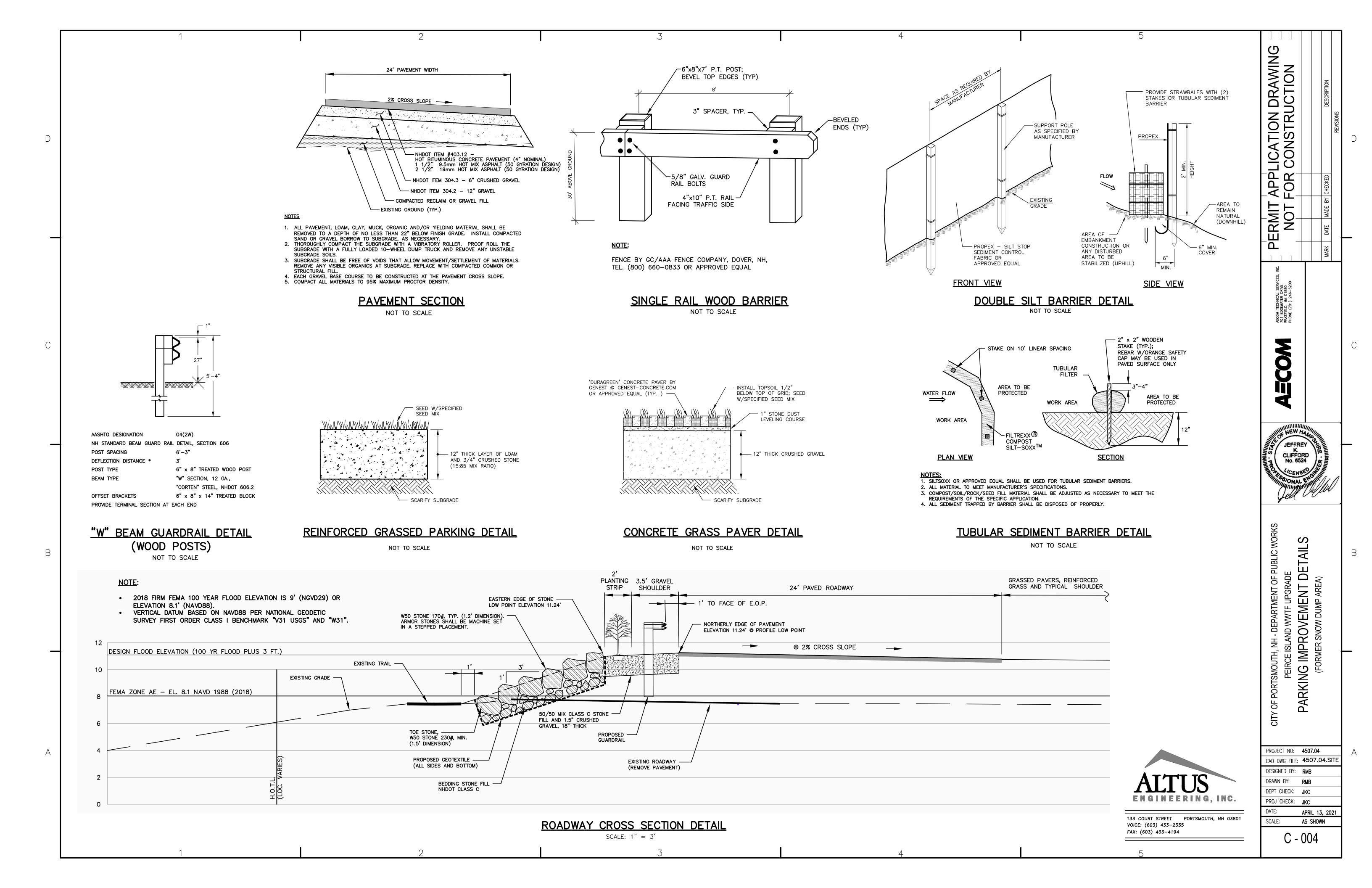


EXHIBIT 7

PROJECT NARRATIVE

(EXPLANATION OF METHODS, TIMING, AND MANNER OF HOW THE PROJECT WILL MEET STANDARD PERMIT CONDITIONS (ENV-WT 307))

Peirce Island Wastewater Treatment Facility Project Narrative

Section 1. Required Information

a. Project Purpose and Description (Env-Wt 603.02)

The City of Portsmouth is nearing completion of a major upgrade to the Peirce Island Wastewater Treatment Facility (WWTF; DES Wetland Permits 2015-1866 and 2015-1878). Several additional improvements are proposed to enhance access reliability to the WWTF, and the public's access to the island. These improvements include raising the access road approximately 3 feet at its lowest point to elevate it above the 100-year flood line; converting a former informal public parking area and permitted snow dump, currently used as the Project's construction laydown area, to a formal grassed public parking area and natural lands; and extending a public walking trail around the northeastern perimeter of the island. At the same time, the City is planning to permanently replace the two sewer force mains on Peirce Island between Peirce Island Road Bridge and the Peirce Island WWTF, replace the water main on Peirce Island between Peirce Island Road Bridge and the Peirce Island Pool, and slipline one of the force mains under the Peirce Island Road Bridge. The majority of the impacts will be temporary, associated with burial of the new water and sewer lines and the recreational path. Portions of the access road and the parking area will require permanent fill as described below.

Most of the work will occur in the tidal buffer zone, most of which is previously developed. Smaller portions associated with the parking area and the pipeline replacement work lie in the protected shoreland zone.

The specifics of the project are as follows:

Raising the Access Road

The access road currently floods during spring high tides and storm events. Since this is the only access and egress point for the WWTF, the road is considered critical infrastructure. Raising the road approximately 3 feet above its lowest point will elevate it out of the current 100-year flood line, and protect it against a sea level rise predicted to be 1.6 ft (See Coastal Vulnerability Assessment, Exhibit 25). The road will be shifted slightly to the south to accommodate the additional fill required.

No impacts to the rocky shore, salt marsh, or marsh elder (*Iva frutescens*; a NH Threatened species) are anticipated. Runoff from the road will be directed into the grassed parking area (described below) for treatment before before infiltrating and potentially draining as sheetflow to the south into Portsmouth Harbor. The existing walking trail and vegetation north of the road will be maintained, and a narrow buffer of stone and upland plantings is proposed between the trail and the road to protect the road from high water and wave action during storms.

Improving the Public Parking Area

Prior to the WWTF improvements, the current construction laydown area was an informal grassed parking area during the warmer months, and used as a permitted snow dump during the winter by the City. The City is proposing to restore a portion of the laydown area back to grassed parking to

accommodate up to 55 cars (Sheet C-001, Parking Improvements). A 24-foot wide travel lane of concrete grass pavers will provide a more stable corridor for vehicle travel. Both the grass parking area (approximately 14,148 sf) and the concrete grass pavers (approximately 5,478 sf) will be permeable to minimize runoff to the harbor. A low wooden fence will border the grass parking area to contain vehicles. The remainder of the gravel lot, approximately 8,120 sf, will be restored to an old field habitat using native species as shown on Sheet C-001.

The project will not adversely impact the adjacent tidal flats, salt marsh, or marsh elder. Because of the low volume of traffic, the permeable nature of the surfaces proposed in the parking area, and the restored herbaceous vegetation, the project will benefit adjacent resources by reducing the volume and improving the quality of runoff.

Recreational Trail

The proposed recreational trail follows an informal path currently used by pedestrians to circumnavigate the island (Exhibit 5, Sheet G-001). The trail extends a section of established walking trails and runs approximately 590 feet from the west end, starting at an existing overlook/"look out", to the east end of the WWTF where it joins a vegetated maintenance corridor leading back to the parking area. The trail will be 5 feet wide with a packed stone dust surface, and a 42-inch chain link fence downslope of the trail to protect walkers and vegetation. Any disturbed sideslope grades will be loamed and seeded.

All of this trail lies within the 50-foot waterfront buffer. Adverse impacts from the construction or use of the trail are expected to be minimal, due to the minor amount of tree clearing needed in the undisturbed tidal buffer and the existing cleared surfaces available for the path for the portion of the route to the east of the WWTF.

Sewer Force Main Replacement

The 24" sewer force main failed in September 2020. An Emergency Authorization (NHDES 2020-2873) was obtained to implement a temporary above-grade repair. The permanent solution is to replace both the existing 18" and 24" sewer force mains between the Peirce Island Road Bridge and the WWTF. The existing 18" sewer force main is closer to the adjacent tidal flats, salt marsh and marsh elder and will be drained and abandoned in place. The existing 24" sewer force main will be dug up, the trench widened, and the two new 24" sewer force mains will be placed in this trench. The areas that are disturbed as part of this work will be restored to pre-construction conditions.

Water Main Replacement

The existing 8" water main will be replaced with a 12" water main between the Peirce Island Road Bridge and the Peirce Island Pool, much of it within the Peirce Island roadway. The existing water main will be dug up and the new water main installed in its place. The areas that are disturbed as part of this work will be restored to pre-construction conditions. Upon completion of the pipe replacements, the road between Peirce Island Road Bridge and the WWTF will be regraded and receive a full width, 1-1/2" top course of pavement.

Sewer Force Main Sliplining

The 24" sewer force main under Peirce Island Road Bridge is showing signs of corrosion. To avoid unexpected failure of this pipeline, it will be sliplined with a 20" fusible PVC pipeline. Access pits will be excavated at either end of the bridge, and the 20" fusible PVC slipliner will be pulled through the

existing pipeline. The areas that are disturbed as part of this work will be in the roadway and will be restored to pre-construction conditions.

Description of Natural Resources

Peirce Island is located in the City of Portsmouth on the Piscataqua River. It is owned by the City and the State of NH, and provides multiple public services, including the WWTF, the State Fish Pier, a public outdoor pool, boat ramp, park and numerous walking trails. The slipline portion of the Project Area is contained to the Peirce Island Road Bridge. The pipeline replacement portion of the Project Area is linear on the west end of the island, widens out near the parking area, and narrows again for the recreational area at the east end near the wastewater treatment facility. The shoreline of the Piscataqua River adjacent the west end of Peirce Island Road Bridge and Peirce Island is bordered by estuarine habitats, including rocky shore (E2RS1/2) and salt marsh (E2EM1). No impacts to these wetland resources are proposed. Most of the work area lies within the 100-foot tidal buffer zone, with a smaller section of the pipeline corridor and of the parking area lying within protected shoreland. Based on consultation with DES Shoreland, a Permit-By-Notification application was submitted concurrently with the Wetlands application for temporary pipeline impacts in the protected shoreland outside of the tidal buffer zone. No freshwater resources are within or adjacent to the impact areas. Marsh elder, a State Threatened plant species, forms a narrow band along the southern shore of much of the island.

Tidal Buffer Zone

Most of the proposed work occurs within the jurisdictional tidal buffer zone (TBZ), the majority of which is previously developed (PDTBZ). The PDTBZ includes the paved road for the pipelines and slipline work on the bridge, grassed lawns and unpaved parking area in the vicinity of the pipeline work, paved areas and structures within the wastewater treatment facility, the access road, and the gravel lot used as a construction laydown area and snow dump. A smaller section of the TBZ in the proposed project area is undisturbed TBZ, primarily in the vicinity of the recreational trail. This section is dominated by small trees and vines: staghorn sumac (*Rhus typhina*), oriental bittersweet (*Celastrus orbiculatus*), black cherry (*Prunus serotina*) and gray birch (*Betula populifolia*). The ground cover is a mix of perennial grasses and some forbs.

Salt marsh

Several sections of salt marsh occur on the southern, more protected side of the island. The marshes are a mix of high marsh and low marsh with typical *Spartina* species (*S. alterniflora* in the low marsh and *S. patens* dominating the high marsh). Typical salt marsh forbs dominate in the upper marsh and marsh elder, *Iva frutescens*, (NH state-Threatened; see NHB21-1136) occurs in multiple stands along the upland border. This shrub is common in southern New England, and is reaching the northern edge of its geographic range in NH. No salt marsh will be impacted by the project. As partial mitigation for accidental impacts to marsh elder, a construction fence has been erected between the work area and the marsh elder to protect against encroachment.

Rocky shore

The western shoreline of the Piscataqua River adjacent Peirce Island Road Bridge and the eastern portion of Peirce Island below the Highest Observable Tide Line is predominantly bedrock outcrop and cobble gravel/shore. Rockweeds (*Ascophyllum* and *Fucus* spp) are prevalent in the lower intertidal zone on boulders and ledge. Much of the remaining rocky shore is unvegetated. The sections on which the bridge and WWTF are located is steep-sided exposed ledge and riprap. By the gravel lot and access road, the rocky shore is more gradual in slope and of finer gravel and cobble. Off the northwestern corner of the Peirce Island Rd. bridge, a shelf of cobble gravel occurs between the grassed upland bank and steep-sloped riprap. Much of the cobble gravel areas are unvegetated with minor occurrences of salt tolerant species such as *Spartina patens*, *Limonium carolinianum*, and *Solidago sempervirens*. No rocky shore will be impacted by the project.

Protected Shoreland

Approximately a third of the pipeline replacement work will occur in the protected shoreland zone above the PDTBZ at the west end of the island, and two small pieces lie outside of the previously permitted area near the WWTF. These areas of the island are developed and maintained, and includes Peirce Island Road, the boat ramp parking area, and mowed parkland.

State-Listed Species

The NHB data review (NHB21-1136; Exhibit 19) indicates eelgrass (*Zostera maritima*) and Atlantic and Shortnose Sturgeon (*Acipenser oxyrinchus* and *A. brevirostrum*) occur in the subtidal waters off Peirce Island. The proposed work will have no adverse impacts to those marine species. The project does not impact any estuarine or marine wetland resources, nor does it include in-water work that would adversely effect marine biota or their habitats.

b. Proposed Mitigation

Mitigation for impacts in the Undisturbed Tidal Buffer Zone

Mitigation for 890 sf of permanent impact to Undisturbed TBZ is provided by re-establishing approximately 9,730 sf of native grass and shrub habitat (Exhibit 5, Sheet C-001 and details) in the restored snow dump area. All other permanent impacts are associated with modifying the road and improving the parking area within Previously Developed TBZ. Additional water quality benefits will be gained by converting approximately 20,020 sf of impervious surface in the laydown/ parking area to grassed permeable substrates that will both infiltrate runoff, and remove nutrients and sediment from sheetflow prior to entering the Piscataqua River. On the north side of the road, the existing path and vegetation will remain intact, and additional stone and vegetation will be added to buffer scour and wave action to the road.

The re-establishment of native species around the perimeter of the parking area will enhance water quality treatment of any sheetflow that does not infiltrate from the parking area, thereby buffering the salt marsh and Piscataqua River from any surplus nutrients and sediments. Once final grading is completed, the enhancement area will receive a minimum of 4 inches of loam, and planted with a mix of the following shrubs: bayberry (*Myrica pensylvanica*), beach plum (*Prunus maritimus*), and black chokeberry (*Aronia melanocarpa*) (See landscaping details in Exhibit 5, Sheets L-001 and L-002). All of these species are native to the area and tolerant of periodic inundation by salt water, therefore should

be appropriate for this site. Once planted, the area will be seeded using a native upland conservation mix. The City agrees to monitor the site for 3 years to evaluate the stability of the area and to ensure at least 80% of the plantings or their ecological equivilents have successfully established.

Mitigation for Impacts to Marsh Elder

During installation of the temporary sewer force mains in October, 2020 under Emergency Authorization 2020-02873, two areas of the adjacent marsh elder stands (*Iva frutescens;* NH State Threatened) were inadvertently impacted, with some of the plants crushed and minor soil disturbance. After consultation with NHDES and NH Natural Heritage Bureau (NHNHB), several steps were prescribed by NHDES to mitigate the impacts. These included hand-raking and mulching the impact areas, erecting construction fencing between the marsh elder stands and the work area as future protection, monitoring the areas for one growing season to determine restoration success, and providing NHDES and NHNHB with documentation of the restoration work and the results of the monitoring effort. The City of Portsmouth completed the restoration work on November 14, 2020 and a letter documenting the work was sent to David Price, NHDES, on December 11, 2020. The City will be monitoring the recovery of the marsh elder during the 2021 growing season and will provide documentation of the monitoring results by October 1, 2021. The letter and accompanying photographs are attached.

Section 8. How Project meets Relevant Standard Conditions and Approval Criteria

Env-WT 307.03 Protection of Water Quality

- a) Water quality will be protected during construction using Best Management Practices (BMP) for controlling runoff and stabilizing sediments.
- b) Soil stockpiles will be managed to minimize risk of erosion and sedimentation to tidal waters or wetlands. See Exhibit 5, Sheet 99 C-501-P for erosion and sediment controls.
- c) All water quality measures are designed to provide maximum protection during storm events during construction, and will be removed from the site when construction is complete, and vegetated areas are stable.
- d) During construction, erosion and sedimentation control structures will be inspected daily, and any sediments accumulated behind erosion control structures will be removed and disposed at a stable and suitable site.
- e) Substrates exposed during construction will be permanently stabilized within 3 days of completion of final grades.
- f) No work requiring a coffer dam or turbidity barrier is proposed in or near open water.
- g) The contractor will be required to inspect equipment daily for leaking fuel, oil and hydraulic fluid prior to initiating work. All leaks shall be contained and repaired to prevent fluids from reaching groundwater, surface water or wetlands. Kits for oil and diesel spills will be readily accessible at each work site, and equipment operators will be trained in their use.
- h) Equipment shall be staged and refueled in accordance to Env-Wt 307.15.

Env-Wt 307.05 Protection Against Invasive Species

- a) through d) do not apply.
- e) To prevent the use of soil or seed stock containing nuisance or invasive species, the contractor shall follow the Invasive Plant BMPs.

Env-Wt 307.06 Protection of Rare, Threatened or Endangered Species or Critical Habitat

a) through c) No direct impacts to the marsh elder bordering the southern edge of the island shall occur. All work activities will be directed to avoid and minimize adverse impacts to soils upgradient of the plants. The construction fencing erected in 2020 shall be maintained for the duration of the project to protect the marsh elder and saltmarsh.

Env-Wt 307.07 Consistency with Shoreland Water Quality Protection Act

All project activities shall be conducted in compliance with the applicable requirements of RSA 483-B and Env-Wq 1400 during and after construction.

Env-Wt 307.11 Filling Activities

- a) Fill shall be clean sand, gravel, rock, or other material that:
 - (1) Meets the project's specifications for its use; and
 - (2) Does not contain any material that could contaminate surface or groundwater or otherwise adversely affect the ecosystem in which it is used;.
- b) Limits of fill shall be clearly identified prior to commencement of work and controlled in accordance with Env-Wt 307.03 to ensure that fill does not spill over or erode into any area where filling is not authorized
- c) Slopes shall be immediately stabilized by a method specified in Env-Wq 1506 or Env-Wq 1508, as applicable, to prevent erosion into adjacent wetlands or surface waters
- d) through k) do not apply
- I) This permit is requesting approximately 80 cy of fill to be placed in the TBZ, a PRA, to raise the access road to the WWTF as a critical infrastructure project.

<u>Env-Wt 307.12 Restoring Temporary Impacts; Site Stabilization. In addition to all other applicable</u> conditions in this part, the following conditions shall apply to restoring all temporary impacts:

- a) Within 3 days of final grading or temporary suspension of work in an area that is in or adjacent to surface waters, all exposed soil areas shall be stabilized by:
 - (1) Seeding and mulching, if during the growing season; or
 - (2) mulching with tackifiers on slopes less than 3:1 or netting and pinning on slopes steeper than 3:1 if not within the growing season
- b) Any seed mix used shall not contain plant species that are exotic aquatic weeds;
- c) Mulch used within an area being restored shall be natural straw or equivalent non-toxic, non-seedbearing organic material;
- d) If any temporary impact area that is stabilized with seeding or plantings does not have at least 75% successful establishment of wetlands vegetation after 2 growing seasons, the area shall be replanted or reseeded, as applicable;
- e) Does not apply.
- f) If a temporary impact area is restored by seeding or plantings, then:

- (1) The work shall not be deemed successful if the area is invaded by nuisance species such as common reed or purple loosestrife during the first full growing season following the completion of construction; and
- (2) The person responsible for the work shall submit a remediation plan to the department that proposes measures to be taken to eradicate nuisance species during this same period;
- g) Unless otherwise authorized, any trees cut in an area of authorized temporary impacts shall be cut at ground level with the shrub and tree roots left intact, to prevent disruption to the Tidal Buffer Zone soil structure and to allow stump sprouts to revegetate the work area.

Env-Wt 313.01 Criteria for Approving Standard Permit Applications

- a) The department shall not approve an application for a standard permit and issue a permit unless:
 - (1a) The project has provided a functional assessment and demonstrated there will be no adverse impacts to surrounding wetlands and waters, and the Tidal Buffer Zone.
 - (1b) Avoidance and minimization criteria have been met to the degree feasible;
 - (1c) A proposal for appropriate mitigation for impacts in the Tidal Buffer Zone demonstrates that there will be a net benefit for water quality and natural habitats.
 - (2) Recommended applicable conditions are provided above.
 - (3) All resource-specific criteria in Env-Wt 600 have been met.
 - (4) All project-specific criteria in Env-Wt 600 have been met.
 - (5) The work does not infringe on abutting properties, and provides public parking and recreational trail access.
- b) Does not apply.
- c) The requirements to avoid and minimize have been met:
 - (1) There are no practicable alternative that would have a less adverse impact on the area or the environment, and still meet the critical infrastructure needs and public benefits proposed.
 - (2) The project does not impact State wetlands or waters
 - (3) The project will enhance water quality and result in a net gain in permeable surfaces and stormwater treatment within the Tidal Buffer Zone.

EXHIBIT 8 PERMITTEE RESPONSIBLE MITIGATION PROJECT WORKSHEET



PERMITTEE RESPONSIBLE MITIGATION PROJECT WORKSHEET

Water Division/Land Resources Management Wetlands Bureau



Check the Status of your Application

RSA/Rule: 482-A: / Env-Wt 800

SECTION 1. PROPOSED PERMITTEE RESPONSIBLE MITIGATION PROJECT TYPE							
UPLAND BUFFER PRESERVATION: AQUATIC RESOURCE RESTORATION: MITIGATION PAYMENT:							
SECTION 2. PROPOSED MITIGATION PROJECT LOCATION INFORMATION (if applicable)							
STREET/ROAD: Peirce Island Road TOWN	N/CITY: Portsmouth TAX MAP/LOT #: 208/1						
SECTION 3. APPLICANT INFORMATION							
APPLICANT NAME: City of Portsmouth							
APPLICANT MAILING ADDRESS: 680 Peverly Hill Road							
CONTACT INDIVIDUAL: Terry Desmarais, PE							
DAYTIME TELEPHONE: (603) 766-1421	EMAIL (IF ANY): tldesmarais@cityofportsmouth.com						
SECTION 4. RESOURCE WORKSHEET SUMMARY							
AQUATIC RESOURCES INVOLVED IN PROJECT: See Table Below. N/A. See Text Below .							
TOTAL PRESERVATION PROPOSED: Upland: Acres	Wetland: Acres						
TOTAL LENGTH OF STREAM ON PROPERTY: Linear Feet % upland:	% having 100-ft wooded zone: in direction in direction						
# CONFIRMED VERNAL POOLS:	# POTENTIAL VERNAL POOLS:						
AREA OF WETLAND RESTORATION PROPOSED: acres	AREA OF WETLAND CREATION PROPOSED: acres						
AREA OF WETLAND ENHANCEMENT PROPOSED: acres AREA OF UPLAND ENHANCEMENT PROPOSED: 0.20 acres							
SECTION 5. BRIEF NARRATIVE DESCRIBING PROPOSED PERMITTEE RESPONSIBLE MITIGATION							
See Text Below, and Exhibit 7 - Project Narrative							
SECTION 6. SIGNATURE AND CERTIFICATION							
 I hereby certify that: The information contained in or otherwise submitted with this application is true, complete, and not misleading to the best of my knowledge and belief; I understand that: Submitting false, incomplete, or misleading information is grounds for denying the application or revoking any award of ARM Funds that is made based on such information; and I am subject to the penalties for making unsworn false statements specified RSA 641:3 or any successor New Hampshire statute. 							
SIGNATURE:	DATE:/						

Summary of Aquatic Resource(s) Involved in Project

The following information is required to be provided about the aquatic resources found on the proposed impact site and the mitigation site. New Hampshire RSA 482-A:3 requires a wetland permit for any proposed project that involves dredging and filling wetlands or impacts to the bed or bank surface waters such as rivers and streams. Before NHDES will issue a permit, applicants must demonstrate that their project proposal will avoid adverse impacts to aquatic resources and will minimize and mitigate those impacts that are unavoidable. When impacts to aquatic resources are unavoidable, applicants must identify the wetland and stream(s) resource types that will be lost during the development of the project. Identifying the functions and values of the aquatic resource that will be lost at the project site better ensures that they can be recreated and transferred to the proposed mitigation site. Please use the table formats provided below to document all aquatic resources types on the impact site and the mitigation site. A separate table should be prepared for each site. Additional rows may be required for projects proposing impacts to multiple resource types.

Wetland Resources: Wetlands shall be classified by US Fish and Wildlife Service Manual WS/OBS-79/31 Classification of Wetlands and Deepwater Habitats of the United States, Cowardin et al, 1979, reprinted 1992.

Stream Resources: For permittee responsible mitigation projects to restore or improve stream systems, the streams on the project site shall be reviewed and the following information collected to the best extent possible:

Stream order according to New Hampshire	Geomorphology including degradation
Hydrography Dataset (NHHD)	
Rosgen stream type	Position within the surrounding landscape
Impacts to upstream and downstream flooding	Connectivity improvement for aquatic
	organism passage
Stream bed materials	Fisheries presence
Sediment Transport capacity	Characterization of the adjacent buffers in
	terms of vegetative coverage
Channel form	Floodplain connectivity

These general principals are described within the <u>New Hampshire Stream Crossing Guidelines</u>, University of New Hampshire, May 2009.

NHDES-W-06-045

Wetland Functions & Values: A wetland evaluation is the process of determining the values of a wetland based on an assessment of the functions it performs. The evaluation of wetland functions and values should be determined through use of the <u>Method for Inventorying and Evaluating Freshwater Wetlands in New Hampshire</u>, 2015 edition (2015 NH Method) –OR– U.S. Army Corps of Engineers (USACE) New England District <u>Highway Methodology Workbook Supplement</u>, 1999 edition (1999 US ACE Highway Workbook Supplement). The evaluation should focus on the following:

Ecological Integrity (EI), Wetland-Dependent Wildlife Habitat (WH), Fish and Aquatic Habitat (FH), Scenic Quality (SQ), Educational Potential (EP), Wetland-based Recreation (WR), Flood Storage (FS), Groundwater (GW), Sediment Trapping (ST), Nutrient Trapping/Retention/Transformation (NT), Shoreline Anchoring (SA), Noteworthiness (NW).

Secondary Impacts: The <u>USACE federal mitigation guidance</u> should be consulted if the project involves conversion of forested wetlands to scrub-shrub or emergent wetlands, cutting of riparian buffer and impacts within the buffer to vernal pools.

WETLAND/STREAM RESOURCE SUMMARY

				/ -		120001102				
ID or Stream (I	Cowardin	Principal Functions & Values	Project Impacts					Vernal Pool	Other Comments	
	Wetland Class (list all that apply) or		Permanent Wetland (sq.ft.)	Permanent Stream Bank (lin.ft.)			Temporary (sq.ft.)	Secondary (sq.ft.)	Present? ID or Number	
	Stream Type			Bank Left	Bank Right	Channel				

MITIGATION RESOURCE SUMMARY

Wetland	Cowardin	Principal Functions &	1	Wetland/Stream Reso	ources	Vernal Pool	Other Comments
ID or	Wetland Class	Values	Area of	, ,			
Stream Number	(list all that apply) or Stream Type		Wetland (sq.ft. or acres)	Length on Property	% having 100 foot wooded zone	ID or Number	

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Peirce Island Wastewater Treatment Facility

Mitigation for impacts in the Undisturbed Tidal Buffer Zone

Mitigation for 890 sf of permanent impact to Undisturbed TBZ is provided by re-establishing 9,730 sf of native grass and shrub habitat (Exhibit 5, Sheet C-001 and details). All other permanent impacts are associated with modifying the road and improving the parking area within Previously Developed TBZ. Additional water quality benefits will be gained by converting approximately 20,020 sf of impervious surface in the laydown/ parking area to grassed permeable substrates that will both infiltrate runoff, and remove nutrients and sediment from sheetflow prior to entering the Piscataqua River. On the north side of the road, the existing path and vegetation will remain intact, and additional stone and vegetation will be added to buffer the road from scour and wave action.

The re-establishment of native species around the perimeter of the parking area will enhance water quality treatment of sheetflow from the parking area, thereby buffering the salt marsh and Piscataqua River from any surplus nutrients and sediments. Once final grading is completed, the enhancement area will receive a minimum of 6 inches of loam, and planted with a mix of the following shrubs: bayberry (*Myrica pennsylvanica*), beach plum (*Prunus maritimus*), and black chokeberry (*Aronia melanocarpa*) (See landscaping details in Exhibit 5, Sheets L-001 and L-002). All of these species are native to the area and tolerant of periodic inundation by salt water, therefore should be appropriate for this site. Once planted, the area will be seeded using a native upland conservation mix. The City agrees to monitor the site for 3 years to evaluate the stability of the area and to ensure at least 80% of the plantings or their ecological equivilents have successfully established.

Mitigation for Impacts to Marsh Elder

During installation of the temporary sewer force mains in October, 2020 under Emergency Authorization 2020-02873, two areas of the adjacent marsh elder stands (*Iva frutescens;* NH State Threatened) were inadvertently impacted, with some of the plants crushed and minor soil disturbance. After consultation with NHDES and NH Natural Heritage Bureau (NHNHB), several steps were prescribed by NHDES to mitigate the impacts. These included hand-raking and mulching the impact areas, erecting construction fencing between the marsh elder stands and the work area as future protection, monitoring the areas for one growing season to determine restoration success, and providing NHDES and NHNHB with documentation of the restoration work and the results of the monitoring effort. The City of Portsmouth completed the restoration work on November 14, 2020 and a letter documenting the work was sent to David Price, NHDES, on December 11, 2020. The City will be monitoring the recovery of the marsh elder during the 2021 growing season and will provide documentation of the monitoring results by October 1, 2021. The letter and accompanying photographs are attached.



PUBLIC WORKS DEPARTMENT

CITY OF PORTSMOUTH

680 Peverly Hill Road Portsmouth N.H. 03801 (603) 427-1530 FAX (603) 427-1539

December 11, 2020

Via Email
David Price
Wetlands Bureau, Land Resources Manager
Water Division, NH Department of Environmental Services
222 International Drive – Suite 175
Portsmouth, NH 03801

Re: Marsh Elder Restoration

Peirce Island, Portsmouth, New Hampshire

Dear Mr. Price:

On October 23, 2020 there was damage to some Marsh Elder plants on Peirce Island during installation of a temporary sewer force main. The temporary force main was installed on the ground as an emergency replacement to a leaking 24-inch sewer force main between the Mechanic Street Wastewater Pump Station and the Peirce Island Wastewater Treatment Facility. On November 2, 2020 the NH Wetlands Bureau outlined steps the City of Portsmouth needed to take to restore the Marsh Elder population on Peirce Island. The steps are outlines below:

- 1. Hand rake the existing ruts and place either weed-free straw or saltmarsh hay over exposed soil areas.
- 2. Appropriately fence (construction fence) off the existing populations to minimize any further impacts during construction.
- 3. Monitor the area to determine restoration success for a minimum of one (1) growing season.
- 4. Please provide DES and NHB with photographic documentation within 30 days of completion of Items 1 and 2 above.
- 5. By October 1, 2021, please provide DES and NHB with photographic documentation of the area to determine restoration success and the possible need for additional monitoring.

This letter is a formal notification of the completion of Items 1 and 2, as well as providing the photographic documentation stated in Item 4. The ruts were raked out and weed-free straw was installed over the exposed soil on November 13, 2020. The installation of construction fence to protect the Marsh Elder was completed on December 7, 2020. Please see Attachment A: Locations of Damaged Marsh Elder Plants, Attachment B: Weed-Free Straw Installation and Attachment C: Construction Fencing for photographic documentation.

If you need any more information or have any questions please contact me by phone at 603-766-1421 or by email at tldesmarais@cityofportsmouth.com.

Sincerely,

Terry Desmarais City Engineer Enclosures

ec: Amy Lamb, Natural Heritage Bureau

Peter Britz, Environmental Planner Zachary Cronin, Assistant City Engineer James Tow, General Foreman Utilities

Attachment A: Locations of Damaged Marsh Elder Plants



Attachment B: Weed-Free Straw Installation



Photo 1: Straw Restoration at Area A



Photo 2: Straw Restoration at Area A



Photo 3: Staw Restoration in Area B



Photo 4: Straw Restoration in Area B

Attachment C: Construction Fencing



Photo 1: Construction Fencing Area A



Photo 2: Construction Fencing Area B



Photo 3: Construction Fencing Along the Length of Temporary Sewer Force Main

ADDITIONAL RESOURCE INFORMATION (TREE INVENTORY REPORT)

Shoreland Tree Inventory Report Peirce Island Wastewater Treatment Facility City of Portsmouth, NH

Prepared For: Altus Engineering 133 Court Street Portsmouth, NH 03801

> Prepared On: April 12, 2021

Prepared By: Normandeau Associates, Inc. 25 Nashua Road Bedford, NH 03110

www.normandeau.com

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Table 2. Waterfront buffer grid scores for the Trail Survey
Table 3. Waterfront buffer tree and sapling inventory for the Pipeline Survey
Table 4. Waterfront buffer grid scores for the Pipeline Survey

Introduction

Normandeau Associates, Inc. (Normandeau), completed two tree inventories in the vicinity of the Pierce Island Wastewater Treatment Facility (WWTF) on Peirce Island in Portsmouth, New Hampshire. The first was performed to document existing vegetative conditions within the protected shoreland area by the proposed recreational trail along the eastern edge of the island, following a currently existing unofficial path. A second tree inventory assessment was performed in support of the replacement of the sewer force mains and water line on the southwestern edge of Peirce Island. The reference line for each inventory, in both cases the HOTL, was established on July 3, 2013 and surveyed by Doucet Survey, Inc. This line was verified during both the April 23, 2020 and January 14, 2021 field visits. This report outlines the results of these tree inventories, methods used, and the basic regulatory requirements associated with the removal of vegetation from the site.

Vegetation is an important component in preserving and protecting water quality. Well vegetated shorelands that are comprised of native trees, shrubs, and ground cover provide significant benefits in terms of stormwater runoff. The Shoreland Water Quality Protection Act (SWQPA), RSA 483-B, serves to protect the water quality of New Hampshire's surface waters by managing the disturbance of shoreland areas. The protected shoreland area includes lands located within 250 feet from the reference line of public waters. The reference line for coastal waters is the highest observable tide line (HOTL), which means a line defining the furthest landward limit of tidal flow. The HOTL was previously delineated by Normandeau.

The SWQPA attempts to maintain a shoreland buffer of natural vegetation to reduce the transportation of excess nutrients, sediments, and other pollutants into waterbodies. The SWQPA protects a 150-foot wide vegetated buffer adjacent to public waters such as lakes, ponds, rivers, and tidal waters. The vegetated buffer area is divided into two zones: the waterfront buffer and the natural woodland buffer. The waterfront buffer encompasses the first 50 feet beginning at the reference line, and the natural woodland buffer includes the area between 50 feet and 150 feet from the reference line.

Trees and saplings can be removed from the protected shoreland area, though different vegetation removal limitations apply within the two zones described above. Removal of trees and saplings within the waterfront buffer must be performed in accordance with a grid and point system. Removal of trees and saplings within the natural woodland buffer must comply with the unaltered state requirement. There are no limitations on tree removal in areas extending beyond 150 feet from the reference line.

Most of the work associated with the recreational trail and pipeline projects will occur in the 100-foot tidal buffer zone (TBZ), most of which was previously developed. However, approximately one-third of the pipeline replacement work falls outside of the TBZ but lies within the natural woodland buffer portion of the protected shoreland zone.

Methods

Normandeau wetland scientists performed the tree inventories on April 23, 2020 and January 14, 2021. All trees and saplings were included in the inventories, as well as large shrub species as measured at a height of 4.5 feet above the ground (on the uphill side). Vegetation was located using

a differential GPS unit capable of sub-meter accuracy. Each specimen was identified to the species level, if possible, and a diameter at breast height (DBH) measurement recorded. When a cluster of trees or saplings were growing from one individual plant, a diameter was recorded for each stem within the grouping. In addition to performing the inventory of individual trees and saplings, a general description of understory vegetation within the survey areas was also documented. After conducting the field inventories, trees and saplings within the waterfront buffer (first 50 feet beginning at the reference line) were assigned a score based on DBH. Tree and sapling scores were calculated using the following guidelines:

- Diameter of one to three inches = 1 point
- Diameter greater than 3 inches and including 6 inches = 5 points
- Diameter greater than 6 inches and including 12 inches = 10 points
- Diameter greater than 12 inches = 15 points

For specimens with multiple stems greater than 1 inch, a diameter was recorded for each individual stem as described above. To calculate the score for plants with multiple stems, the score for each stem was determined, and then a sum of all scores for the plant resulted in a total score for that specimen. For example, a plant with three stems measuring diameters of 3 inches (1 point), 5 inches (5 points), and 6 inches (5 points) was assigned a total score of 11 points.

To complete each tree inventory assessment, the waterfront buffer in each surveyed area was divided into 25-foot by 50-foot grid segments. The purpose of the grid segments was to determine the tree and sapling score within each grid. Under the SWQPA, a minimum tree and sapling score of 25 points must be maintained within each grid segment. A general characterization of the percent shrub cover within the waterfront buffer was also recorded during each survey. This included an account of dominant species as well as the presence of any invasive species that were not recorded during the tree inventories.

Results

The results of the tree inventories are reported separately as the Trail inventory conducted on April 23, 2020 and the Pipeline tree inventory conducted on January 14, 2021. A total of 25 and 81 grid segments were located in the Trail and Pipeline Survey areas, respectively.

Trail Survey

The overall vegetative site conditions in the Trail Survey area at the eastern end of Peirce Island consisted of a relatively densely spaced canopy of predominantly deciduous trees with significant occurrence of Asian bittersweet (*Celastrus orbiculatus*) in various portions of the site. The tree species observed within the 50-foot waterfront buffer are displayed in Table 1 below. The most dominant species within the waterfront buffer were staghorn sumac (*Rhus hirta*) and black cherry (*Prunus serotina*). A total of 60 stems of staghorn sumac were measured within the waterfront buffer with an average

diameter of 2.5 inches. A total of 54 stems of black cherry were documented within the waterfront buffer with an average diameter of 3.8 inches.

Table 1. Trees and sapling inventoried within the Trail Survey waterfront buffer.

Scientific Name	Common Name
Amelanchier sp.	Serviceberry
Betula papyrifera	Paper birch
Betula populifolia	Gray birch
Juniperus virginiana	Eastern red cedar
Malus sp.	Apple
Pinus strobus	Eastern white pine
Populus sp.	Aspen
Prunus serotina	Black cherry
Quercus rubra	Northern red oak
Rhus hirta	Staghorn sumac
Sorbus americana	American mountain ash

As detailed in the methods section of this report, the waterfront buffer was divided into 25-foot by 50-foot grid segments, with a total of 25 grids located in the Trail Survey area. The scores within these grid segments ranged from a low of 0 points in eight grids to a high of 81 points in grids 8 and 9 (Table 2). All grid segments and the location of each tree and shrub inventoried are depicted in the Trail Survey Tree Inventory Map provided in Appendix A. A complete table of the identified trees and shrubs for the Trail Survey is provided in Appendix B, Table 6.

Table 2. Protected Waterfront Buffer Grid Segment scores in the Trail Survey area. Bolded values do not meet the minimum 25 point score specified in RSA 483. Shaded segments are those whose score will be lowered below the minimum 25 point score due to tree removal necessary for the work.

Segment	Score	Shrub Cover	Score Post-Construction
1	52	90	52
2	62	90	56
3	47	90	35
4	32	90	29
5	29	90	2
6	35	90	35
7	33	90	32
8	81	90	70
9	81	50	79
10	6	40	6
11	1	10	1
12	0	0	0
13	0	10	0

Segment	Score	Shrub Cover	Score Post-Construction
14	11	20	11
15	8	20	8
16	3	15	3
17	12	15	12
18	0	15	0
19	0	10	0
20	6	10	6
21	10	5	10
22	0	0	0
23	0	0	0
24	0	0	0
25	0	0	0

Understory woody vegetation was estimated through the Trail Survey area. The northern end of survey area exhibits an understory consisting of sprouting deciduous tree saplings (many small staghorn sumac and black cherry), dense patches of the invasive Asian bittersweet. The understory

in this portion of the project area is approximately 90% cover. Vegetative cover within the eastern project area decreases southward and is 0% in certain sections (Table 2).

Although it was too early in the season to fully characterize the herbaceous vegetation, outside of the WWTF, it was generally undisturbed and unmaintained, and inside the WWTF footprint it was generally absent, replaced by constructed materials and fencing.

Pipeline Survey

The overall vegetative site conditions in the Pipeline Survey area consisted of small stands with relatively densely spaced canopy of predominately deciduous trees interrupted by stretches of open grassy areaThe tree species observed within the 50-foot waterfront buffer are displayed in Table 3 below. The most dominant species within the waterfront buffer were staghorn sumac (*Rhus hirta*) and crabapple (*Malus* sp.). A total of 105 stems of staghorn sumac were measured within the waterfront buffer with an average diameter of 1.3 inches. A total of 66 stems of crabapple were documented within the waterfront buffer with an average diameter of 2.6 inches.

Table 3. Trees and sapling inventoried within the Pipeline Survey waterfront buffer.

Scientific Name	Common Name
Abies balsamea	Balsam fir
Acer platanoides	Norway maple
Acer rubrum	Red maple
Amelanchier sp.	Serviceberry
Cornus florida	Dogwood
Juniperus virginiana	Eastern red cedar
Malus sp.	Apple
Myrica pensylvanica	Bayberry
Populus tremoloides	Quaking aspen
Prunus serotina	Black cherry
Quercus palustris	Pin oak
Quercus rubra	Northern red oak
Rhus hirta	Staghorn sumac
Sorbus americana	American mountain ash
N/A	Unknown

The scores within the 81 grid segments in the Pipeline Survey area ranged from a low of 0 points in 36 grids to a high of 98 points in grid 67 (Table 4). All grid segments and the location of each tree and shrub inventoried are depicted in the Pipeline Survey Tree Inventory Map provided in Appendix A. A complete table of the identified trees and shrubs for the Pipeline Survey is provided in Appendix B, Table 6.

Understory vegetation was estimated through the Pipeline Survey area. The western end exhibits an understory consisting of open grass and sparsely populated deciduous tree saplings (primarily small staghorn sumac). From Grids 15 to 23 there is little to no vegetative cover due to the boat ramp, parking area and paved road. In the central and eastern portions of the Pipeline Survey area (Grids 24 to 81) vegetative cover returns, with stretches of shrub cover ranging from 5 to 90%, again primarily small staghorn sumac, interspersed with stretches of open grassy area (Table 4).

Table 4. Protected Waterfront Buffer Grid Segment scores in the Pipeline Survey area. Bolded values do not meet the minimum 25 point score specified in RSA 483. Shaded segments are those whose score will be lowered below the minimum 25 point score due to tree removal necessary for the work.

_		Shrub	Score
Segment	Score	Cover	Post-Construction
1	6	0	6
2	59	0	59
3	30	0	30
4	0	5	0
5 6	28	5	28
6	13	5	13
7	11	5	11
8	75	5	75
9	48	5	48
10	21	5	21
11	50	5	50
12	0	0	0
13	0	0	0
14	30	0	30
15	0	0	0
16	0	0	0
17	0	0	0
18	0	0	0
19	0	0	0
20	0	0	0
21	0	0	0
22	0	0	0
23	0	0	0
24	35	0	35
25	0	5	0
26	1	5	1
27	31	5	31
28	0	0	0
29	32	25	32
30	51	25	51
31	27	25	27
32	16	25	16
33	36	25	36
34	36	25	36
35	19	25	19
36	1	25	1
37	8	75	8
38	16	75	16
39	0	75	0
40	21	75	21
41	35	75	35

Segment	Score	Shrub	Score		
		Cover	Post-Construction		
42	25	75	25		
43	15	75	15		
44	25	75	25		
45	10	75	10		
46	16	75	16		
47	17	75	17		
48	22	50	22		
49	21	50	21		
50	0	0	0		
51	0	0	0		
52	0	0	0		
53	0	0	0		
54	33	25	33		
55	0	0	0		
56	0	0	0		
57	23	30	23		
58	56	30	56		
59	25	30	25		
60	0	0	0		
61	0	0	0		
62	10	0	0		
63	0	0	0		
64	0	0	0		
65	0	0	0		
66	8	35	8		
67	98	35	98		
68	6	35	6		
69	29	35	29		
70	11	35	11		
71	6	35	6		
72	0	0	0		
73	0	0	0		
74	0	0	0		
75	0	0	0		
76	0	0	0		
77	0	0	0		
78	0	0	0		
79	2	0	2		
		0	0		
80 81	0 27	0 90	0 27		

The portion of the work area for the pipeline replacement that falls outside of the TBZ but within the natural woodland buffer consists of Peirce Island Road and a dirt and gravel parking area with grass medians associated with a public boat ramp. This area was cleared of trees and developed prior to July 1, 2008 and has been maintained as such since its development.

Discussion

As much of the total project area lies within the 100-ft tidal buffer zone (TBZ) (Figure 1 and 2), wetland regulations take precedence over much of the project area.

For the recreational trail, the majority of the work is proposed adjacent to the current footprint of the WWTF plant (Segments 10-25). No additional clearing will be required in those segments. For Segments 2-9, the trail will follow an existing informal path which will be graded and widened. In those segments, the resulting segment scores mostly do not drop below 25, with the exception of Segment 5. For this segment, impacts are mitigated by restoring pervious conditions and native shrub cover to over 9,000 SF in the parking area.

For the pipeline project, the majority of the work falls within the roadbed of Peirce Island Road, and will not require clearing natural vegetation. Segment 35 contains a tree located within the planned area of disturbance, specifically a laydown/staging area. Care will be taken to not remove or damage this tree. In Segment 62 a tree is located directly adjacent the area of disturbance for the pipeline and likely will need to be removed. This tree will be replaced at the end of the project. A few other individual trees may need to be cut outside of the waterfront buffer, but the City is committed to minimizing the need for impacting trees and replacing those that are unavoidably impacted. See construction plans for tree protection and planting details.

Appendix A – Tree Inventory Map



Date : 4/9/2021

Drawn By: eolliver

Tree DBH

- 1 to 3 in.
- ◆ >3 to 6 in.
- ♦ >6 to 12 in.
- ♦ >12 in.
- ---- Limit of Disturbance

- —— 100ft Tidal Buffer
- 250ft Shoreland Buffer
- Highest Observable Tide Line
 - Shoreland 25'x50' Grid



Pipeline Tree Inventory Portsmouth Wastewater Treatment Facility

Peirce Island Portsmouth, NH



25 Nashua Road Bedford, NH 03110 (603) 472-5191 www.normandeau.com





1 to 3 in.

100ft Tidal Buffer >3 to 6 in. 250ft Shoreland Buffer

>6 to 12 in.

Highest Observable Tide Line **Proposed Trail**

>12 in.

Shoreland 25'x50' Grid

100 50

Feet

Portsmouth Wastewater Treatment Facility

Peirce Island Portsmouth, NH



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Limit of Disturbance

Appendix B – Tree Inventory Data

Table 5. Trees and shrubs identified in Trail Survey area. Trees to be cut are shaded.

			Stem Diameter (in.)					
Tree ID	Grid	Species	1	2	3	4	5	Tree and Sapling Score
3	1	Rhus hirta	1	-	-	-	-	1
4	1	Rhus hirta	1	-	-	-	-	1
5	1	Rhus hirta	1	-	-	-	-	1
6	1	Prunus serotina	2	-	-	-	-	1
7	1	Prunus serotina	3	-	-	-	-	1
8	1	Prunus serotina	1	-	-	-	-	1
9	1	Rhus hirta	3	-	-	-	-	1
10	1	Prunus serotina	1	1	-	-	-	2
11	1	Prunus serotina	1	1	1	1	1	5
12	1	Rhus hirta	1	-	-	-	-	1
13	1	Prunus serotina	1	ı	ı	1	-	1
16	1	Prunus serotina	2	ı	1	1	-	1
17	1	Rhus hirta	3	-	-	•	-	1
18	1	Rhus hirta	1	-	-	-	-	1
19	1	Rhus hirta	1	-	-	•	-	1
20	1	Rhus hirta	1	1	-	-	-	2
21	1	Prunus serotina	3	1	1	1	-	1
22	1	Prunus serotina	4	3	2	1	-	8
58	1	Quercus rubra	20	-	-	-	-	15
59	1	Prunus serotina	2	1	1	-	-	2
72	1	Rhus hirta	1	1	-	-	-	2
73	1	unknown shrub	1	1	-	-	-	2
1	2	Prunus serotina	5	-	-	-	-	5
2	2	Rhus hirta	1	-	-	-	-	1
23	2	Rhus hirta	2	-	-	-	-	1
24	2	Prunus serotina	4	-	-	-	-	5
74	2	Malus sp.	4	-	-	-	-	5
77	2	Betula populifolia	10	-	-	-	-	10
78	2	Betula populifolia	16	12	10	-	-	35
25	3	Unidentified	3	-	-	-	-	1

ees to	ne cut	are shaded.	C.L.	om Di	nm et e	w /:	,	
Tree ID	Grid	Species	1	em Dia	amete	er (in	5	Tree and Sapling Score
26	3	Malus sp.	1	-	-	-	-	1
27	3	Rhus hirta	1	-	-	-	-	1
28	3	Rhus hirta	1	1	-	-	-	2
29	3	Sorbus americana	4	-	-	-	-	5
79	3	Betula populifolia	5	7	3	3	2	18
80	3	Pinus strobus	5	-	-	-	-	5
81	3	Pinus strobus	2	-	-	-	-	1
82	3	Amelanchier sp.	3	4	2	2	1	8
83	3	Amelanchier sp.	2	2	-	-	-	2
88	3	Rhus hirta	2	-	-	-	-	1
92	3	Prunus serotina	2	2	-	-	1	2
84	4	Rhus hirta	2	2	-	-	1	2
85	4	Prunus serotina	3	-	-	-	-	1
89	4	Rhus hirta	2	-	-	-	-	1
90	4	Rhus hirta	1	-	-	-	-	1
91	4	Rhus hirta	1	-	-	-	1	1
93	4	Sorbus americana	3	2	-	-	1	6
94	4	Juniperus virginiana	7	-	-	-	-	10
95	4	Juniperus virginiana	7	-	-	-	-	10
30	5	Rhus hirta	1	-	-	-	-	1
31	5	Rhus hirta	1	-	-	-	1	1
32	5	Rhus hirta	1	-	-	-	-	1
87	5	Rhus hirta	3	-	-	-	-	1
96	5	Prunus serotina	14	8	-	-	-	25
98	6	Prunus serotina	5	3	-	-	-	6
99	6	Prunus serotina	8	-	-	-	-	10
100	6	Prunus serotina	4	-	-	-	-	5
101	6	Prunus serotina	4	-	-	-	-	5
102	6	Prunus serotina	2	-	-	-	-	1
103	6	Prunus serotina	4	-	-	-	-	5

			Sto	Stem Diameter (in.)				
Tree ID	Grid	Species	1	2	3	4	5	Tree and Sapling Score
104	6	Sorbus americana	3	1	1	-	-	3
97	7	Rhus hirta	2	-	-	-	-	1
105	7	Betula populifolia	2	-	-	-	-	1
106	7	Betula populifolia	4	-	-	-	-	5
107	7	Betula populifolia	4	7	4	-	-	20
108	7	Betula popuifolia	2	-	-	-	-	1
109	7	Sorbus americana	4	-	-	-	-	5
33	8	Betula papyrifera	5	-	-	-	-	5
35	8	Populus sp.	5	-	-	-	-	5
36	8	Prunus serotina	3	-	-	-	-	1
37	8	Prunus serotina	19	19	-	-	-	30
39	8	Populus sp.	5	-	-	-	-	5
110	8	Rhus hirta	1	2	3	4	2	9
111	8	Rhus hirta	2	4	-	-	-	6
112	8	Rhus hirta	5	-	-	-	-	5
113	8	Rhus hirta	5	2	-	-	-	6
114	8	Rhus hirta	4	-	-	-	-	5
115	8	Prunus serotina	2	2	-	-	-	2
116	8	Prunus serotina	3	-	-	-	-	1
117	8	Amelanchier	2	-	-	-	-	1
38	9	Prunus serotina	19	22	-	-	-	30
118	9	Sorbus americana	2	4	3	-	-	7
119	9	Populus sp.	7	4	-	-	-	15
120	9	Populus sp.	5	-	-	-	-	5
121	9	Amelanchier sp.	4	-	-	-	-	5
122	9	Prunus serotina	1	-	-	-	-	1
123	9	Populus sp.	2	-	-	-	-	1
124	9	Populus sp.	2	-	-	-	-	1
125	9	Prunus serotina	4	1	-	-	-	6

			Sto	em Di	amete	er (in	.)	
Tree ID	Grid	Species	1	2	3	4	5	Tree and Sapling Score
126	9	Prunus serotina	1	1	1	-	-	2
128	9	Prunus serotina	1	1	-	-	-	2
129	9	Sorbus americana	4	2	-	-	-	6
41	10	Prunus serotina	3	-	-	-	-	1
42	10	Rhus hirta	3	-	-	-	-	1
127	10	Prunus serotina	1	2	-	-	-	2
130	10	Prunus serotina	2	2	-	-	-	2
40	11	Prunus serotina	1	-	-	-	-	1
131	14	Rhus hirta	10	-	-	-	-	10
132	14	Rhus hirta	2	-	-	-	-	1
43	15	Rhus hirta	3	-	-	-	-	5
44	15	Rhus hirta	3	-	-	-	-	1
45	15	Rhus hirta	1	-	-	-	-	1
46	15	Rhus hirta	2	-	-	-	-	1
47	16	Juniperus virginiana	2	-	-	-	-	1
48	16	Rhus hirta	3	-	-	-	-	1
49	16	Rhus hirta	2	-	1	-	1	1
50	17	Rhus hirta	3	-	-	-	1	1
51	17	Rhus hirta	3	-	-	-	1	1
52	17	Rhus hirta	2	-	-	-	-	1
53	17	Rhus hirta	1	-	-	-	1	1
54	17	Rhus hirta	1	-	1	-	1	1
55	17	Rhus hirta	1	-	-	-	1	1
56	17	Rhus hirta	1	-	-	-	1	1
57	17	Rhus hirta	2	-	-	-	1	1
133	17	Rhus hirta	2	1	-	-	-	2
134	17	Rhus hirta	2	1	-	-	1	2
135	20	Juniperus virginiana	1	-	-	-	1	1
136	20	Quercus rubra	4	-	-	-	-	5
137	21	Quercus rubra	6	-	-	-	-	5
138	21	Quercus rubra	6	-	-	-	-	5

Table 6. Trees and shrubs identified in Pipeline Survey area.

			Stem Diameter (in.)					
Tree ID	GRID	Species	1	2	3	4	5	Tree and Sapling Scores
313	1	Abies balsamea	1	-	-	-	-	1
314	1	Unknown shrub	1.5	1.4	1.1	1.1	1	5
309	2	Malus sp.	11	2.5	1.5	-	-	12
311	2	Acer platanoides	11.1	10.9	10.3	9.5	-	40
312	2	Betula populifera	11.9	3.4	-	-	-	15
315	2	Unknown	2.5	-	-	-	-	1
316	2	Unknown	1.6	-	-	1	1	1
310	3	Prunus serotina	8.1	7.8	7.4	1	1	30
298	5	Malus sp.	3.2	-	1	1	1	5
301	5	Malus sp.	2.6	-	-	-	-	1
302	5	Juniperus virginiana	2.1	-	-	-	-	1
297	5	Acer platanoides	6	9	-	-	-	15
299	5	Acer platanoides	3.6	-	-	-	-	5
300	5	Acer platanoides	2.4	-	-	-	-	1
293	6	Malus sp.	1.5	-	-	-	-	1
295	6	Malus sp.	1.5	1.3	-	1	-	2
294	6	Acer platanoides	7.3	-	-	-	-	10
296	7	Juniperus virginiana	-	3	-	1	1	1
292	7	Quercus rubra	8	-	-	-	-	10
287	8	Prunus serotina	5.4	-	-	-	-	5
285	8	Malus sp.	3.1	1.3	1.2	3.2	-	12
291	8	Acer platanoides	8	-	-	-	-	10
288	8	Acer platanoides	5.6	-	-	-	-	5
289	8	Acer platanoides	5.6	5.4	10	10	-	30
290	8	Acer platanoides	2.1	-	-	-	-	1
281	8	Populus tremoloides	3	-	-	1	1	1
282	8	Populus tremoloides	5.2	-	-	-	-	5
283	8	Populus tremoloides	4.2	-	-	-	-	5

a.				Stem Diameter (in.)				
Tree ID	GRID	Species	1	2	3	4	5	Tree and Sapling Scores
284	8	Populus tremoloides	2	-	-	-	-	1
275	9	Prunus serotina	5.1	3.2	3	-	-	11
276	9	Malus sp.	2	-	-	-	-	1
279	9	Juniperus virginiana	2	-	-	-	-	1
270	9	Acer platanoides	4	4.7	3.5	-	-	15
271	9	Acer platanoides	3.3	-	-	-	-	5
274	9	Acer platanoides	3	-	-	-	-	1
273	9	Acer platanoides	2.2	-	-	-	-	1
272	9	Acer platanoides	2.2	-	-	-	-	1
277	9	Acer platanoides	3.6	-	-	-	-	5
278	9	Acer platanoides	2.9	-	-	-	-	1
280	9	Acer platanoides	5.2	3	-	-	-	6
267	10	Acer platanoides	8	-	-	-	-	10
268	10	Acer platanoides	10	-	-	-	-	10
269	10	Acer platanoides	2	-	-	-	-	1
266	11	Prunus serotina	11	9	7	14	4.5	50
265	14	Acer platanoides	8	-	1	-	-	10
263	14	Amelanchier sp.	5.4	1.9	2	2.1	2.8	9
264	14	Amelanchier sp.	2.7	6.5	-	-	-	11
262	24	Acer rubrum	4	8	7	10	-	35
261	26	Juniperus virginiana	3	-	-	-	-	1
258	27	Malus sp.	3.5	5.5	4	-	-	15
260	27	Malus sp.	4	7	-	-	-	15
259	27	Juniperus virginiana	2	-	-	-	-	1
256	29	Malus sp.	1.5	2.5	3.1	1	-	8
254	29	Juniperus virginiana	4.2	10	5.5	2.5	2	22
255	29	Juniperus virginiana	1	-	-	-	-	1

			Stem Diamet				ameter (in.)		
Tree ID	GRID	Species	1	2	3	4	5	Tree and Sapling Scores	
257	29	Rhus hirta	1.1	-	-	-	-	1	
251	30	Prunus serotina	9.6	6.6	6.3	-	-	30	
252	30	Malus sp.	3	3.7	2.6	3	2	9	
253	30	Malus sp.	4.5	-	-	-	-	5	
248	30	Rhus hirta	1.5	1.6	2	-	-	3	
249	30	Rhus hirta	1.5	-	-	-	-	1	
250	30	Rhus hirta	1.8	1.6	1.5	-	-	3	
242	31	Cornus florida	2	2	2	2	2	5	
243	31	Cornus florida	2	2	2	1	1	5	
244	31	Cornus florida	1	-	-	-	-	1	
245	31	Rhus hirta	2.5	-	-	-	-	1	
241	31	Rhus hirta	1.6	1.3	-	-	-	2	
246	31	Rhus hirta	2.1	-	-	-	-	1	
247	31	Rhus hirta	2.3	4	3.3	2.8	-	12	
237	32	Rhus hirta	2.7	3.1	-	1	-	6	
239	32	Rhus hirta	2	2.7	-	1	-	2	
240	32	Rhus hirta	1.5	2.2	1.2	-	-	3	
238	32	Rhus hirta	3.9	-	-	-	-	5	
223	33	Malus sp.	2	2	2	2	2	5	
224	33	Malus sp.	2	2	2	1	1	5	
225	33	Malus sp.	1	-	-	-	-	1	
234	33	Rhus hirta	2.7	-	-	1	-	1	
232	33	Rhus hirta	2.3	-	-	1	-	1	
233	33	Rhus hirta	1.6	-	-	1	-	1	
229	33	Rhus hirta	3	-	-	-	-	1	
236	33	Rhus hirta	3.8	1.2	1	-	1	6	
230	33	Rhus hirta	2.9	1.1	-	1	-	2	
231	33	Rhus hirta	2.2	1	1	-	1	1	
235	33	Rhus hirta	2.2	-	-	-	-	1	
228	33	Rhus hirta	3.9	ı	1	-	ı	5	
227	33	Rhus hirta	2.9	-	-	-	-	1	
226	33	Rhus hirta	3.1	-	-	-	-	5	
222	34	Prunus serotina	11.9	-	-	-	-	10	

			Stem Diameter (in.)					
Tree ID	GRID	Species	1	2	3	4	5	Tree and Sapling Scores
220	34	Malus sp.	6.6	2.3	6.1	3	1.9	23
221	34	Malus sp.	1.3	2.2	2	1	1	3
219	35	Malus sp.	3.3	1	1.4	1.8	1.6	9
218	35	Sorbus americana	6.1	-	-	-	-	10
217	36	Malus sp.	2	-	-	-	-	1
215	37	Quercus rubra	1.2	1.7	1.8	1.6	1.3	5
216	37	Quercus rubra	1.6	1.8	1.3	-	-	3
213	38	Malus sp.	2	-	-	-	1	1
214	38	Quercus rubra	26.1	-	-	-		15
210	40	Quercus palustris	15.1	-	-	-	-	15
212	40	Quercus rubra	3.2	-	-	-	-	5
211	40	Amelanchier sp.	1.2	-	-	-	-	1
307	41	Prunus serotina	2	2	1	1	1	5
209	41	Quercus rubra	17.9	-	-	-	-	15
208	41	Quercus rubra	24.5	-	-	-	-	15
206	42	Prunus serotina	12	-	-	-	-	10
207	42	Quercus rubra	22	-	-	-	-	15
205	43	Quercus rubra	21.5	-	-	-	-	15
204	44	Quercus rubra	6.7	-	-	-	-	10
203	44	Quercus rubra	21.5	-	-	-	-	15
202	45	Quercus rubra	10.8	-	-	-	-	10
201	46	Quercus rubra	25	-	-	-	-	15
200	46	Unknown	1.4	-	-	-	-	1
196	47	Acer platanoides	2.8	2.3	1.9	-	-	3
197	47	Quercus palustris	11.2	-	-	-	-	10
198	47	Rhus hirta	2.1	1.4	-	-	-	2
199	47	Rhus hirta	2.5	-	-	-	-	1
195	47	Rhus hirta	2.9	-	-	-	-	1
194	48	Rhus hirta	3.3	-	-	-	-	5
193	48	Rhus hirta	3.8	3.2	2.5	3.8	2.8	17
192	49	Rhus hirta	4.6	-	-	-	-	5
191	49	Rhus hirta	4.2	3.7	4.1	2.7	-	16

			Stem Diameter (in.)				ı.)	
Tree ID	GRID	Species	1	2	3	4	5	Tree and Sapling Scores
188	54	Prunus serotina	5.8	9.3	9.5	1.8	5.5	31
189	54	Prunus serotina	1.5	-	-	-	1	1
190	54	Rhus hirta	2.4	-	-	-	-	1
184	57	Myrica pensylvanica	1.8	3.7	-	-	1	6
187	57	Malus sp.	1.5	1.2	1	1	1	2
185	57	Malus sp.	3	2.1	3	1	2	5
186	57	Juniperus virginiana	4.7	3.5	-	-	-	10
179	58	Prunus serotina	3.4	1.9	5.7	2.3	5.2	17
180	58	Prunus serotina	8	-	-	-	-	10
183	58	Malus sp.	4.3	3.1	4.7	1.7	1	17
178	58	Juniperus virginiana	5.4	-	-	-	-	5
182	58	Amelanchier sp.	1.5	2.6	-	-	-	2
181	58	Amelanchier sp.	3.1	-	-	-	-	5
176	59	Prunus serotina	6.2	5.7	-	-	-	15
177	59	Juniperus virginiana	8.1	-	-	-	-	10
306	62	Quercus rubra	11.2	-	-	-	-	10
175	66	Rhus hirta	2.7	-	-	-	-	1
174	66	Rhus hirta	1	2	4	-	-	7
168	67	Amelanchier sp.	1	2.5	1	1	2.9	5
169	67	Amelanchier sp.	3.3	2.9	4.3	-	-	11
165	67	Rhus hirta	2.5	-	-	-	-	1
167	67	Rhus hirta	1.9	2.1	2.1	-	-	3
164	67	Rhus hirta	3.9	-	-	-	-	5
166	67	Rhus hirta	3.5	-	-	-	-	5
163	67	Rhus hirta	2.7	-	-	-	-	1

		Stem Diameter (in.)					1.)	
Tree ID	GRID	Species	1	2	3	4	5	Tree and Sapling Scores
170	67	Rhus hirta	4.3	5	-	-	-	10
162	67	Rhus hirta	4.2	-	-	-	-	5
171	67	Rhus hirta	5.1	-	-	-	-	5
173	67	Rhus hirta	3.5	6.4	4	-	-	20
172	67	Rhus hirta	4.2	5.5	4.3	4	-	20
161	67	Rhus hirta	2.5	-	-	1	-	1
160	67	Rhus hirta	4.7	2.9	-	ı	-	6
159	68	Rhus hirta	3.5	2	-	1	-	6
156	69	Rhus hirta	2	-	-	1	-	1
157	69	Rhus hirta	6.5	3	-	1	-	11
154	69	Rhus hirta	3.5	2	-	1	-	6
155	69	Rhus hirta	4	3	-	1	-	6
158	69	Rhus hirta	4	-	-	-	-	5
153	70	Rhus hirta	2	3.5	5	1	-	11
150	71	Rhus hirta	2	-	-	-	-	1
151	71	Rhus hirta	3.5	-	-	ı	-	5
138	79	Amelanchier sp.	1	1	-	-	-	2
141	81	Malus sp.	1	1	1	-	-	3
140	81	Sorbus americana	2	2	1	1	1	5
142	81	Rhus hirta	1	1	3	-	-	3
143	81	Rhus hirta	3	2	-	-	-	2
145	81	Rhus hirta	3.5	-	-	-	-	5
144	81	Rhus hirta	2	-	-	-	-	1
148	81	Rhus hirta	1	1	1	-	-	3
146	81	Rhus hirta	1	1	-	-	-	2
147	81	Rhus hirta	1	1	-	-	-	2
149	81	Rhus hirta	1	-	-	-	-	1

PROJECT SPECIFIC INFORMATION REQUIRED BY ENV-WT 500, 600, AND 900

(SEE EXHIBIT 7 - PROJECT NARRATIVE)

ABUTTERS LIST

Abutters List

Pease Development Authority c/o Portsmouth Fish Cooperative 1 Peirce Island Road Portsmouth, NH 03801

CERTIFIED MAILING RECEIPTS



Civil Site Planning Environmental Engineering 133 Court Street Portsmouth, NH 03801-4413

May 14, 2021

Subject: NHDES Wetlands Permit Application

Tax Map 208 Lot 1

City of Portsmouth WWTP 200 Peirce Island Road Portsmouth, NH

P4507

Dear Abutter:

Pursuant to State of New Hampshire RSA Chapter 482-A, this letter is to notify you that the City of Portsmouth (Tax Map 208, Lot 1), owner and applicant, is submitting a Wetland Permit Application to the NHDES Wetlands Bureau.

The application proposes to replace force mains in connection with the improvements previously approved for the Wastewater Treatment Plant. The utility installations and other site improvements will impact areas within the previously disturbed 100' tidal buffer zone. There are additional impacts located between the 100-foot and 250-foot zones of the Shoreland Protection Buffer.

This letter is for the notification of abutting property owners only. The work is greater than 20-feet from abutting your parcel therefore no further action by you is required.

Once filed, the plans that show the proposed project are available for viewing during normal business hours at the City of Portsmouth City Clerk's office (603) 610-7245 or at the office of the DES Wetlands Bureau (603) 271-2147, 6 Hazen Drive, Concord, N.H. (8am to 4pm). It is suggested the appropriate office is contacted to verify availability of the documents prior to visiting them. Please feel free to contact the project Authorized Agent, Erik Meserve (AECOM), at (978) 905-3145, or the City Engineer, Terry Desmarais at (603) 766-1421 if you have any questions.

Sincerely

President

wde\4507.001.abutter-notify-wetland.ltr.doc CERTIFIED MAIL

Tel: (603) 433-2335

E-mail: Altus@altus-eng.com

_	U.S. Postal Service™ CERTIFIED MAIL® REC Domestic Mail Only	EIPT
6230	For delivery information, visit our website Portsmouth r NH 03801	at www.usps.com*.
10 0000 5874	Certified Mail Fee \$3.60 \$ 0.00 Extra Services & Fees (check box, add fee \$4,000,000 per juice) Return Receipt (electronic) \$ 0.00 Certified Mail Restricted Delivery \$ 0.00 Adult Signature Required Adult Signature Restricted Delivery \$ 0.00 Postage \$0.55	0801 15 Postmark
1290	Total Postage and Fees \$4,15	05/14/3021
7020		MYO FIRTH COPERATION POAD NH 0380
	PS Form 3800, April 2015 PSN 7530-02-000-9047	See Reverse for Instructions

X

PROJECT DESIGN CONSIDERATION REQUIRED BY ENV-WT 313
(SEE EXHIBIT 7 - PROJECT NARRATIVE)

TAX MAP



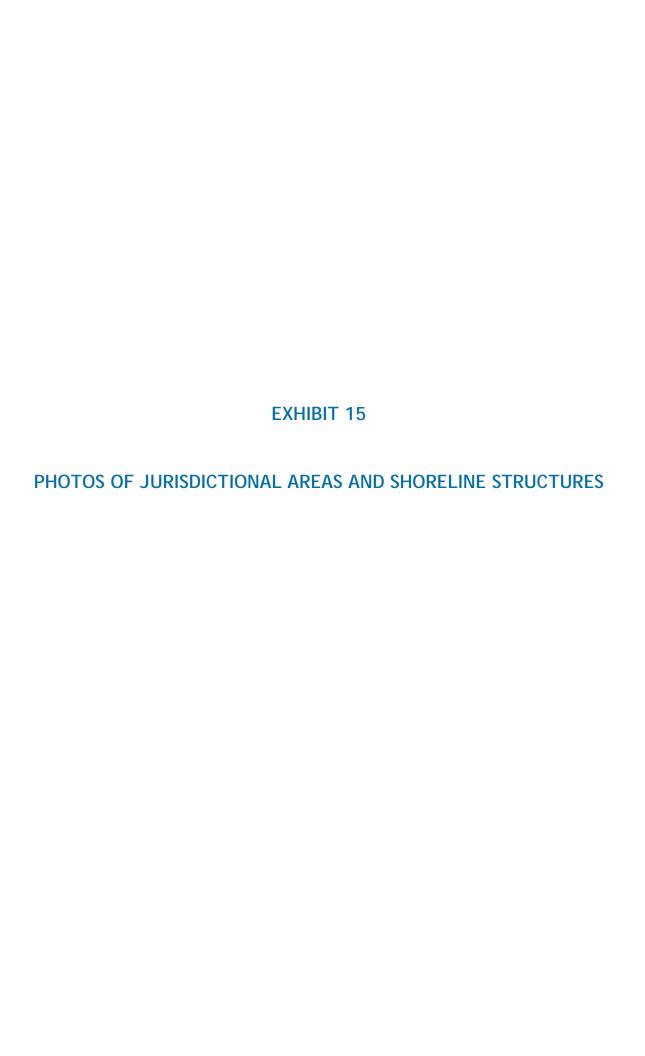




Photo 1. Gravel shoreline on north side of island near the proposed parking area, looking east. (04-23-20)



Photo 2. Construction laydown area in developed Tidal Buffer Zone, looking north from salt marsh. (04-23-20)



Photo 3. Salt marsh with Iva frutescens at upland edge on southern side of island looking west. (04-23-20)





Photo 5. Staghorn sumac and Asian bittersweet growing in Protected Waterfront Buffer east of wastewater treatment facility along proposed path, looking north. (04-23-20)



Photo 6. Staghorn sumac dominated shrubland in densely covered portion of proposed path, facing south. (04-23-20)



Photo 7. Dense vegetation surrounding existing staghorn sumac and black cherry dominated portion of the proposed path, looking south. (04-23-20)



Photo 8. Dense bittersweet along the west side of the communications tower on portion of proposed path, looking south. (04-23-20)



Photo 9. Spoil pile in construction laydown area at the proposed parking site, looking south. (04-23-20)



Photo 10. Rip-rap along the edge of the proposed path east of wastewater treatment facility, looking south. (04-23-20)



Photo 11. Southern end of the proposed path that curves around the southeastern corner of the wastewater treatment facility, bordered by rip-rap to the east, looking south. (04-23-20)



Photo 12. From eastern end of the boat ramp parking area, looking east. (01-14-21)



Photo 13. From bridge at western end of the pipeline replacement, looking east. (01-14-21)



Photo 14. From northern embankment off east end of Peirce Island Road Bridge, looking west. (04-06-21)



Photo 15. From the western end of the boat launch parking area along the pipeline replacement, looking east. (01-14-21)



Photo 16. From laydown area at eastern end of the boat launch parking area, looking east. (01-14-21)



Photo 17. Along the pipeline replacement near Grid 42 of the tree inventory for the Pipeline Survey, looking east. (01-14-21)



Photo 18. Along the pipeline replacement near Grid 46 of the tree inventory for the Pipeline Survey, looking east. (01-14-21)



Photo 19. From the vicinity of the USACE Corps in the eastern portion of the pipeline replacement, looking west. (01-14-21)



Photo 20. From the vicinity of the USACE Corps in the eastern portion of the pipeline replacement, looking east. (01-14-21)



Photo 21. From eastern end of the pipeline replacement near the planned parking area, looking west. (01-14-21)



Photo 22. Shoreline off southwestern corner of Peirce Island bridge looking west. (03-23-21)



Photo 23. Shoreline off southwestern corner of Peirce Island bridge looking northeast. (03-23-21)



Photo 24. Shoreline off northwestern corner of Peirce Island Road Bridge looking west. (03-23-21)



Photo 25. From west end of rocky shore shelf off the northwestern corner of Peirce Island bridge looking northwest. (03-23-21)

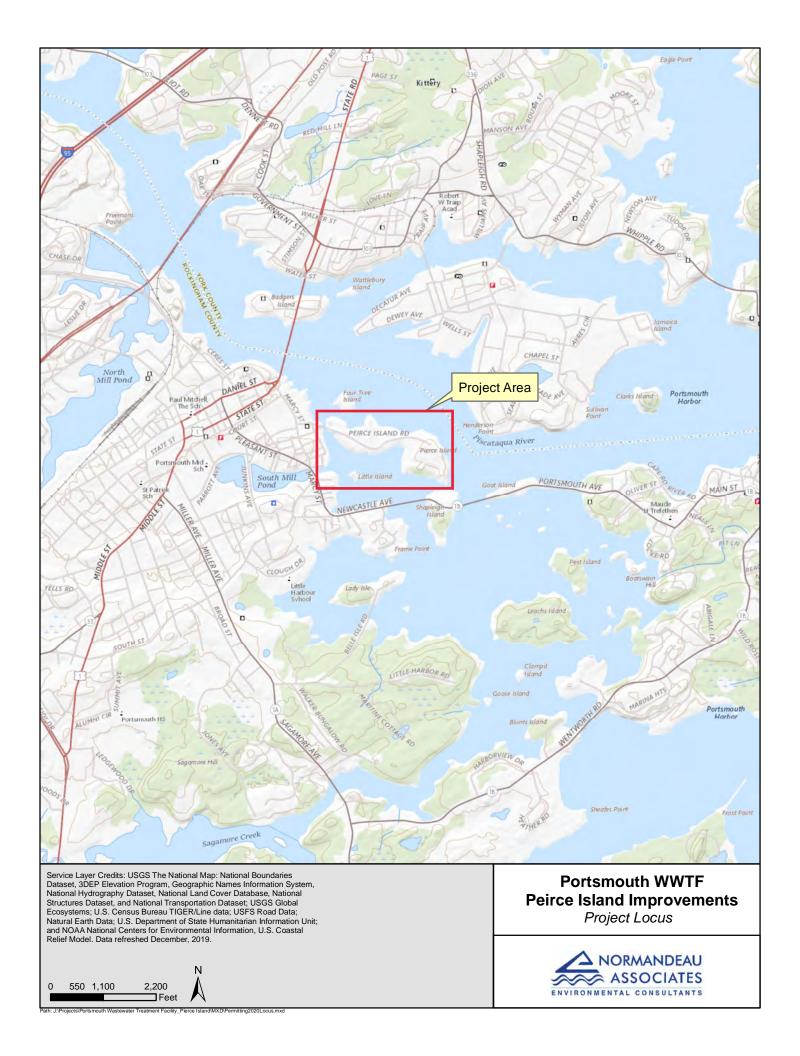


Photo 26. From the north side of the Peirce Island Bridge Rd. Bridge facing east. (04-15-21)



Photo 27. From the south side of the Peirce Island Road Bridge facing east. (04-15-21)

USGS MAP



CONSTRUCTION NARRATIVE

(NARRATIVE OF WORK SEQUENCE, INCLUDING PRE- AND POST-CONSTRUCTION, AND RELATIVE TIMING AND PROGRESSION OF ALL WORK)

Construction Narrative

The proposed site improvements adjacent to the Peirce Island Wastewater Treatment Facility project will be constructed in three phases over the next 5 years, beginning with installation of the water main and sewer force mains in 2021 as Phase 1. The sewer force mains will improve the reliability of the City's wastewater collection system, maximize flow to the WWTF, and allow removal of the temporary, above ground force main that is currently in use. The water main replacement will take place at the same time. Prior to the start of work construction fencing will be erected between the work area and adjacent marsh elder stands, and erosion and sediment best management practices will be installed (see Erosion BMPs, Exhibit 5, Sheet C-101 P and detail sheets). Trenches will be dug, one of the existing force mains and the existing water main removed, and new pipelines installed. The two force mains will be installed in the same trench, approximately 3' apart. The existing force main that is not removed will be drained, plugged with grout, and abandoned in place. When both of the new force mains are operational, the temporary above-ground force main will be removed. The project will also include sliplining the existing 24" force main under the Peirce Island Rd. Bridge to address corrosion in the existing pipe. Pits will be excavated within the road bed on either end of the bridge, and a smaller diameter pipeline pulled through the existing force main before being connected at either end. The construction period is expected to be 5 months. Erosion and sedimentation controls will remain in place until the vegetation in the grassy areas that are disturbed as part of construction is established (at least 80% cover), after which the areas will be re-opened to the public.

It is expected that the foot trail extension (Phase 2), will also take place in 2021. The trail extension will improve public access and recreation by formalizing a looped trail around the east end of Peirce Island. Upon installation of erosion and sediment best management practices, clearing and grubbing operations will commence. The work will be performed within an approximate 12-ft-wide limit of work, using small tracked construction vehicles. Details for the trail construction are provided in Exhibit 5, Sheet C-002. Construction of the trail and stabilization of the site is expected to take 4 to 6 weeks to complete.

To address logistical and funding considerations, the Phase 3 work, proposed improvements to Peirce Island Road (to address tidal flooding) and the conversion of the former snow dump to a grassed parking area, will be constructed after 2021. The start time will be dependent on funding and completion of the current work at the WWTF, but the work will be complete within the 5-year limit of the permit (2026). Work will begin with the installation of erosion and sediment control best management practices. It is anticipated that much of initial earth moving for the road and parking area will be done simultaneously. Vehicular traffic must be maintained at all times to the Peirce Island Wastewater Treatment Plant, therefore completion of the roadway improvements will be a priority. Once the roadway is functional, the project will proceed with installation of the proposed revetment along the roadway and the establishment of turf at the grassed parking area, and creation of the vegetated buffer around the parking area. Details for the Phase 3 work are provided in Exhibit 5, Sheets C-001.

The Phase 3 construction period is expected to be 6 to 8 weeks. Erosion and sedimentation controls will remain in place until the vegetation in the grassed parking area is established (at least 80% cover), after which the area will be open to the public.

EXHIBIT 18/19

COPY OF DEED

Thou let mere by There or west that we Joseph & Dience of Brook e live in the Country of horfolk, Elizabeth W. Macmalion, athervise know as Clisabeth W. Macmahou of Boston in the Country of Suffolk and ann B. Bratt, otherwise knows as lunic B. Bratt, of Neigham in the Country of Grenie et al Olymouth , all in the Commonwealth of Meass achiesetts , for and in consederation of the sum of one dollar and other valuable consederations, to ity of Gortomouth us in hand before the delivery hours, well and truly paid by the City of Cortemouth, a municipal Conferention located in the Country of Rocks ingham and State of New Hampshire, the receipt whereof we do hereby acknowledge, have granted, bargained and sold and by these presents do give, grant, bargain, sell, alien, enfoff, couvey and confirm unto the said City of Portsmouth, its successors or assigns forever, the following described tracts of land with the building thereon , and all right and priwileges apportenant and belonging thereto, situate in the said City of Bonts mouth, and bounded and discubed as follows, to wit:

The closard situated in Viscatagua River, within the limits of the said City of Bortemouth, with the buildings thereon, containing troutyseven acres, more or less, known as Slive's Clotand and formerly known as Garbridge's closand and Janverin's closand, together with the flate adjoining to the same; being the same premises devised by Joshua W.

Period to Joseph m. Deirce by well Executed July 2211839 and allowed by the Court of Grobate, may 12, 1876, and devised by the said Joseph Mr. Plince by will executed June 4, 1910 and proven and allowed March 7, 1916, to the Grantors herein as residuary legates; also,

a certain tract or parcel of land with the buildings thereon, situate on mechanic Street in said Portsmouth, and bounded and described as follows, to wit, Beginning at the northwesterly corner of land now or formerly of addie a Curtis and mechanic Street, and running in a northorly direction along said mechanic thut, one hundred forty-six feet, two inches, (146.2) to land now or formerly of John E. Beasley , thence turning and running in an easterly direction along land of said Beasley, thurty (30), feet more or less to the Discatagua Giver; thence turning and running in a southerly direction along said Sherer,

and hundred forty five feet six findes (45,6) to land of the rachfilled to Carties; thence turing and running in a meeting direction, along land of the said Civilia, supleer (16), feet, to the point begun at. laid tract Containing three throusand twelve square feet, more or less, and being the premises described as being Lot # 63 on Plan #7 of the "Blan of the City of Portsmouth" on file at the assessor's Offire in said City; also

Weighte privileges and grants rested in the granter on ent their devisors or grantors by the State of Their Hampshire, authorizing and permitting the construction of a budge from the Southerly part of said City of Portsmouth to Beine's Clotand hereinkefore referred to .

To Have and To Hold the said granted fremises , with all the privileges and apportenances to the same belonging , to it the said City of Portsmouth and its successors and arright forever

and we, the said Joseph B. Vierce, Clisabeth M. Macmahon and Unn B. Gratt and our lives executors and administrators do hereby

NHB CORRESPONDENCE

CONFIDENTIAL – NH Dept. of Environmental Services review

Memo

NH Natural Heritage Bureau NHB Datacheck Results Letter

To: Elizabeth Olliver, Normandeau Associates, Inc.

25 NashuaRoad Bedford, NH 03110

From: Amy Lamb, NH Natural Heritage Bureau

Date: 4/6/2021 (valid until 04/06/2022)

Re: Review by NH Natural Heritage Bureau

Permits: NHDES - Wetland Standard Dredge & Fill - Major

NHB ID: NHB21-1136 Town: Portsmouth Location: 200 Peirce Island Road

Description: Replace failed sewer force mains from western bridge abutment to WWTF, and water main to swimming pool. Work will include

removal of 1 existing sewer force main, burial of 2 new force mains in its place, and abandoning a second force main in place. The existing lines hung under Peirce Island Road Bridge will be slip lined to ensure integrity. All work will be confined to the existing

footprint - a mix of in-road, and offroad. Work is an amendment to NHB13-3237 and NHB15-1528, and NHB20-1059.

cc: Kim Tuttle

As requested, I have searched our database for records of rare species and exemplary natural communities, with the following results.

Τ

Comments NHB: Please confirm that all shoreline impact areas have been surveyed for marsh elder, and that the conditions on the attached 2016 memo are still valid. Please send the final plan for the proposed plantings discussed in relation to the NHB20-1059 project segment. The eelgrass record, newly added to the NHB database, was included for your information.

F&G. Please contact the NHFGMarine Division to address impacts to Atlantic and Shortnose Sturgeon and anadromous fish species. Please contact Mike Dionne or Cheri Patters on at (603) 868-1095.

Natural Community State¹ Federal Notes

Eelgrass bed

Plant species State¹ Federal Notes

marsh elder (*Iva frutescens*) Threats are primarily alterations to the hydrology of the wetland, such as ditching or tidal restrictions that might affect the sheet flow of tidal waters across the intertidal flat, activities that eliminate plants, and increased input of nutrients and pollutants in

stormrunoff.

CONFIDENTIAL – NH Dept. of Environmental Services review

Memo

NH Natural Heritage Bureau NHB Datacheck Results Letter

Vertebrate species	State ¹	Federal	Notes
Atlantic Sturgeon (Acipenser oxyrinchus oxyrinchus)	T	T	Contact the NH Fish & Game Dept and the US Fish & Wildlife Service (see below).
Shortnose Sturgeon (Acipenser brevirostrum)	E	Е	Contact the NH Fish & Game Dept and the US Fish & Wildlife Service (see below).

¹Codes: "E" = Endangered, "T" = Threatened, "SC" = Special Concern, "--" = an exemplary natural community, or a rare species tracked by NH Natural Heritage that has not yet been added to the official state list. An asterisk (*) indicates that the most recent report for that occurrence was more than 20 years ago.

Contact for all animal reviews: Kim Tuttle, NHF&G, (603) 271-6544.

A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

CONFIDENTIAL – NH Dept. of Environmental Services review

NHB21-1136



NHB21-1136 EOCODE: CE00000130*002*NH

New Hampshire Natural Heritage Bureau - Community Record

Eelgrass bed

Legal Status Conservation Status

Federal: Not listed Global: Not ranked (need more information)

State: Not listed State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked

Comments on Rank: --

Detailed Description: 2017: 174.6 acres of eelgrass bed mapped over 90 individual patches.

General Area: 2017: In permanently inundated tidal waters from Little Bay down to the mouth of

Portsmouth Harbor. Often occurred with macroalgae.

General Comments: 2017: Data derived from report on annual mapping of eelgrass extent in the Great Bay

estuary.

Management Comments:

--

Location

Survey Site Name: Piscataqua River

Managed By:

County:

Town(s): Out-Of-State

Size: 183.6 acres Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2017: Eelgrass beds in portions of Portsmouth Harbor, the Piscataqua River, and Little Bay. Includes

areas in Maine state waters.

Dates documented

First reported: 2017 Last reported: 2017

NHB21-1136 EOCODE: PDAST58090*005*NH

New Hampshire Natural Heritage Bureau - Plant Record

marsh elder (Iva frutescens)

Legal Status Conservation Status

Global: Demonstrably widespread, abundant, and secure Federal: Not listed

Listed Threatened State: Imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Excellent quality, condition and landscape context ('A' on a scale of A-D). This rank may be for the state rather than relative to others in the region. Comments on Rank:

Detailed Description: 2020: Tidal Pool: Species observed in flower. 2017: Leachs Island: Several thousand plants

spread along 800+ feet of shoreline. 10-20% dieback, 10-15% yellowing, 65-80% normal to

vigorous. Aphids observed on 80% of clumps. 2016: Peirce Island: Additional

subpopulations located, raising total number of plants to over 600. Plants appear to be in much better health than 2014, with all individuals in fruit and in good vigor. Shaws Hill: Several clumps over an area approximately 30 x 15 feet. Estimated at over 200 individuals. Tidal Pool: Plants in 3 areas along shoreline near tidal pool. 2014 Peirce Island: Over 500 plants were observed, all stunted, with approximately 50-60% dead stems, mostly confined

to the upper portions of the plants. 1996: Constant observation since 1953 reported, including all stages of phenology and age structure. 1982: Good clump observed.

General Area: 2017: Leachs Island: Upper edge of brackish mars h/rocky shore. Plants absent from areas

with broader expanse of marsh. Rocks present in most areas where the plants are growing. Associated species include black oak (Quercus velutina), saltmarsh rush (Juncus gerardii), sea-blite (Sugeda sp.), hastate-leaved orache (Atriplex cf. prostrata), smooth cordgrass (Spartina alterniflora), Carolina sea-lavender (Limonium carolinianum), and seaside plantain (*Plantago maritima* ssp. *juncoides*). 2016: Peirce Island: Population forms a narrow band immediately above the highest observed wrack line along the shore. Associated upland species include staghorn sumac (Rhus hirta), autumn-olive (Elaeagnus umbellata var.

parvifolia), Asian bittersweet (Celastrus orbiculatus), and speckled alder (Alnus incana ssp. rugosa). The saline areas downslope of the marsh elder contained over 50% unvegetated substrate, as well as a mixture of cordgrass (Spartina sp.) and saltgrass (Distichlis spicata). Shaws Hill: Surrounding land use is developed. All plants below highest observable tide line in high salt marsh, located among saltmeadow cordgrass (Spartina patens), smooth

cordgrass (Spartina alterniflora), and seaside goldenrod (Solidago sempervirens). Tidal Pool: Sagamore Creek/Great Bay shoreline, with smooth cordgrass (Sparting alterniflora). saltmarsh rush (Juncus gerardii), saltmeadow cordgrass (Spartina patens), seaside goldenrod (Solidago sempervirens), and sea-blite (Suaeda spp.). 1996: On shores of several is lands and peninsulas in the more or less enclosed bay system. Associated plant species: Solidago sempervirens (seaside goldenrod), Juncus gerardii (salt marsh rush), Spartina patens (salt-

meadow cord-grass), Triglochin maritimum (arrow-grass), Elymus virginicus (Virginia wild rye), Atriplex patula (narrow-leaved orach), and Artemisia vulgaris (common mugwort).

Substrate: gravel and marsh peat and muck. 1982: On shore at Pleasant Point.

General Comments: 2016: Peirce Island: "The population currently appears to be in good health, although the

> results of the June 2014 surveys indicated that there may be some intermittent pressure on this population. The propensity of this species to grow in a very narrow band along the tide line does not allow for rapid adaptation to changing sea levels, storm events, or polluted runoff that a larger, robust population may resist. If sea levels gradually rise as expected, the marsh elder will be unable to move inland due to a small but steep cut bank that forms the upland break adjacent to the marsh elder population. The remaining subpopulations may also be getting shaded by the adjacent upland vegetation, which appears to be encroaching on the shoreline. This vegetation is comprised of large shrub species and the invasive Oriental

bitters weet that is capable of overtaking the native plants in the area."

Management

Comments:

NHB21-1136 EOCODE: PDAST58090*005*NH

Location

Survey Site Name: Little Harbor, back channel

Managed By: Little Harbor Trust

County: Rockingham Town(s): Portsmouth

Size: 59.9 acres Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2017: Leachs Island: Island in New Castle only accessible by boat. Plants observed on south shore of

island 2016: Peirce Island: Along the southern shore of Peirce Island, along the edge of a small cove west of the wastewater treatment facility. Shaws Hill: Take Laurel Lane off New Castle Avenue, bear left onto driveway right-of-way servicing 51A and 51B Laurel Lane. At end of right-of-way, 51B will be located on the right. Tidal Pool: Along Sagamore Creek shoreline on Creek Farm Reservation property in Portsmouth. In the vicinity of Rte. 1B which encircles the Little Harbor back

channel from Portsmouth to New Castle and Rye. Many of the sites are visible only by boat.

Dates documented

First reported: 1953 Last reported: 2020-08-02

NHB21-1136 EOCODE: AFCAA01040*003*NH

New Hampshire Natural Heritage Bureau - Animal Record

Atlantic Sturgeon (Acipenser oxyrinchus oxyrinchus)

Legal Status Conservation Status

Federal: Listed Threatened Global: Rare or uncommon

State: Listed Threatened State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked

Comments on Rank: --

Detailed Description: 2016: 1 individual, sexunknown, detected in the lower Piscataqua River. 2015: 1 individual,

sex unknown, detected in Portsmouth Harbor. 2012: 1 individual, sexunknown, detected in

Little Bay.

General Area: 2016: Tidal waters in Portsmouth Harbor, Little Bay, and the Piscataqua River.

General Comments: --Management --

Comments:

Location

Survey Site Name: Piscataqua River

Managed By:

County:

Town(s): Out-Of-State

Size: 7749.3 acres Elevation:

Precision: Within 1.5 miles of the area indicated on the map (location information is vague or uncertain).

Directions: 2016: Tidal waters of Portsmouth Harbor, Little Bay, and the Piscataqua River.

Dates documented

First reported: 2012-06-02 Last reported: 2016-05-27

The U.S. Fish & Wildlife Service has jurisdiction over Federally listed species. Please contact themat 70 Commercial Street, Suite 300, Concord NH 03301 or at (603) 223-2541.

NHB21-1136 EOCODE: AFCAA01010*001*NH

New Hampshire Natural Heritage Bureau - Animal Record

Shortnose Sturgeon (Acipenser brevirostrum)

Legal Status Conservation Status

Federal: Listed Endangered Global: Rare or uncommon

State: Listed Endangered State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked

Comments on Rank: --

Detailed Description: 2016: 2 individuals, 1 female and 1 sex unknown, detected in Portsmouth Harbor and the

lower Piscataqua River. 2015: 3 females and 2 other individuals, sexunknown detected in Portsmouth Harbor. 2014: 1 female detected moving from Portsmouth Harbor up the Piscataqua River to the mouth of the Cocheco River. 2012: 1 female detected in Little Bay.

2011: 1 female detected in Little Bay. 2010: 1 female detected in Little Bay.

General Area: 2016: Tidal waters in Portsmouth Harbor, Little Bay, and the Piscataqua River.

General Comments: --Management --

Comments:

Location

Survey Site Name: Piscataqua River

Managed By:

County:

Town(s): Out-Of-State

Size: 7749.3 acres Elevation:

Precision: Within 1.5 miles of the area indicated on the map (location information is vague or uncertain).

Directions: 2016: Tidal waters of Ports mouth Harbor, Little Bay, and the Piscataqua River.

Dates documented

First reported: 2010-11-03 Last reported: 2016-10-20

The U.S. Fish & Wildlife Service has jurisdiction over Federally listed species. Please contact them at 70 Commercial Street, Suite 300, Concord NH 03301 or at (603) 223-2541.

CONSERVATION COMISSION CORRESPONDENCE

Conservation Commission Correspondence

The City of Portsmouth Engineer and Environmental Planner conducted a site walk with the Conservation Commission on September 9, 2020. They walked the entire project and introduced the plan to apply for an Emergency Authorization due to a pipeline failure within the project area.

FEDERAL AGENCY CORRESPONDENCE

Federal Agency Correspondence

No federal natural or cultural resources are directly or indirectly impacted by this project, therefore no federal agency review is anticipated.

EXHIBIT 23

AVOIDANCE AND MINIMIZATION NARRATIVE



AVOIDANCE AND MINIMIZATION WRITTEN NARRATIVE



Water Division/Land Resources Management Wetlands Bureau

Check the Status of your Application

RSA/ Rule: RSA 482-A/ Env-Wt 311.04(j); Env-Wt 311.07; Env-Wt 313.01(a)(1)b; Env-Wt 313.01(c)

APPLICANT'S NAME: Terry Demarais, PE, City of Portsmouth TOWN NAME: Portsmouth

An applicant for a standard permit shall submit with the permit application a written narrative that explains how all impacts to functions and values of all jurisdictional areas have been avoided and minimized to the maximum extent practicable. This attachment can be used to guide the narrative (attach additional pages if needed). Alternatively, the applicant may attach a completed Avoidance and Minimization Checklist (NHDES-W-06-050) to the permit application.

SECTION 1 - WATER ACCESS STRUCTURES (Env-Wt 311.07(b)(1))

Is the primary purpose of the proposed project to construct a water access structure?

The primary purpose of this project does not involve a water access structure.

SECTION 2 - BUILDABLE LOT (Env-Wt 311.07(b)(1))

Does the proposed project require access through wetlands to reach a buildable lot or portion thereof?

The proposed project does not require access through wetlands to reach a buildable lot.

SECTION 3 - AVAILABLE PROPERTY (Env-Wt 311.07(b)(2))*

For any project that proposes permanent impacts of more than one acre, or that proposes permanent impacts to a PRA, or both, are any other properties reasonably available to the applicant, whether already owned or controlled by the applicant or not, that could be used to achieve the project's purpose without altering the functions and values of any jurisdictional area, in particular wetlands, streams, and PRAs?

*Except as provided in any project-specific criteria and except for NH Department of Transportation projects that qualify for a categorical exclusion under the National Environmental Policy Act.

The proposed project has impacts to the developed and undeveloped tidal buffer zone. The project is intended to provide improvements to the access road to the Wastewater Treatment Facility, public access to the island, extend the existing walking path located within the tidal buffer zone, replace sewer force and water mains, and work to avoid unexpected pipeline failure. No other property can provide access to the island. Improvements to the road necessarily must take place on this property as it is the sole property providing access to the Wastewater Treatment Facility. The parking area is intended for public access to recreational opportunities on this end of Peirce Island, and would be ineffective on adjacent other city-owned properties. Installation of the sewer force and water mains will improve the reliability of the City's wastewater collection system, maximize flow to the WWTF, and allow removal of the temporary, above ground force main currently in use. The sewer force main under Peirce Island Road Bridge is showing signs of corrosion; sliplining it will help avoid unexpected failure of this pipeline.

SECTION 4 - ALTERNATIVES (Env-Wt 311.07(b)(3))

Could alternative designs or techniques, such as different layouts, different construction sequencing, or alternative technologies be used to avoid impacts to jurisdictional areas or their functions and values as described in the Wetlands Wetlands Wetlands Wetlands Wetlands Wetlands Wetlands Wetlands Wetlands Wetlands Wetlands Wetlands <a href="Best M

The proposed project includes a walking trail extending from an existing trail located within the tidal buffer zone. The Wastewater Treatment Facility limits the location of the path within the tidal buffer zone. The path is located at the site of an existing informal path, and it thus requires the least disturbance to the site of any possible alternative path location. This path configuration also requires the least amount of grading of any potential path configuration. Placement of the raised road maximizes use of its present configuration and will also result in lower impacts than any other placement. The parking area will result in a net improvement to existing conditions. The installation of the new sewer force and water mains, as well as the sliplining of the sewer force main under the bridge, are in situ.

SECTION 5 - CONFORMANCE WITH Env-Wt 311.10(c) (Env-Wt 311.07(b)(4))**

How does the project conform to Env-Wt 311.10(c)?

**Except for projects solely limited to construction or modification of non-tidal shoreline structures only need to complete relevant sections of Attachment A.

The trail portions of the project have been sited at the maximum practicable distance from the tidal wetland (rocky shore). The road will be co-located with the existing road to minimize new impacts, and the parking area is located in a previously degraded tidal buffer and will result in an improvement to current conditions. The sewer force and water main installations and sliplining of the sewer force main under the bridge are sited at pre-existing locations of infrastructure associated with the WWTF.

EXHIBIT 25

COASTAL RESOURCE WORKSHEET AS REQUIRED BY ENV-WT 600 (ALSO SEE EXHIBIT 7 - PROJECT NARRATIVE)



COASTAL RESOURCE WORKSHEET

Water Division/Land Resources Management Wetlands Bureau



Check the Status of your Application

RSA/Rule: RSA 482-A/ Env-Wt 600

APPLICANT LAST NAME, FIRST NAME, M.I.: Desmarais, Terry, PE, City of Portsmouth

This worksheet may be used to present the information required for projects in coastal areas, in addition to the information required for Lower-Scrutiny Approvals, Expedited Permits, and Standard Permits under Env-Wt 603.01.

Please refer to Env-Wt 605.03 for impacts requiring compensatory mitigation.

SECTION 1 - REQUIRED INFORMATION (Env-Wt 603.02; Env-Wt 603.06; Env-Wt 603.09)

The following information is required for projects in coastal areas.

Describe the purpose of the proposed project, including the overall goal of the project, the core project purpose consisting of a concise description of the facilities and work that could impact jurisdictional areas, and the intended project outcome. Specifically identify all natural resource assets in the area proposed to be impacted and include maps created through a data screening in accordance with Env-Wt 603.03 (refer to Section 2) and Env-Wt 603.04 (refer to Section 3) as attachments.

The City of Portsmouth is nearing completion of a major upgrade to the Peirce Island Wastewater Treatment Facility (WWTF; DES Wetland Permits 2015-1866 and 2015-1878). Several additional improvements are proposed to enhance access reliability to the WWTF, and the public's access to the island. These improvements include raising the access road approximately 3 feet at its lowest point to elevate it above the 100-year flood line and to address sea level rise; converting a former informal public parking area and permitted snow dump, currently used as the Project's construction laydown area, to a formal grassed public parking area and natural lands; and extending a public recreational trail around the northeastern perimeter of the island. At the same time, the City is planning to permanently replace the two sewer force mains on Peirce Island between the Peirce Island Road Bridge and the Peirce Island WWTF, replace the water main on Peirce Island between the Peirce Island Road Bridge and the Peirce Island Pool, and slipline one of the force mains under the Peirce Island Road Bridge. The majority of the work lies within Previously Developed Tidal Buffer Zone (TBZ).

The specifics of the project and a detailed description of the Tidal Buffer Zone and surrounding natural resources are included in Exhibit 7 - Project Narrative.

2020-05

For standard permit projects, provide:
A Coastal Functional Assessment (CFA) report in accordance with Env-Wt 603.04 (refer to Section 3).
A vulnerability assessment in accordance with Env-Wt 603.05 (refer to Section 4).
Explain all recommended methods and other considerations to protect the natural resource assets during and as a result of project construction in accordance with Env-Wt 311.07, Env-Wt 313, and Env-Wt 603.04.
All impacts are confined to the Tidal Buffer Zone. No impacts to tidal wetlands or waters, including the rocky shore, salt marshes, or <i>Iva frutescens</i> (a NH Threatened species) are anticipated. Runoff from the road will be directed into the grassed parking area for sediment, nutrient and contaminant removal before draining as sheetflow to the south into Portsmouth Harbor. The existing walking trail north of the road will be maintained, and a narrow buffer of stone and upland plantings is proposed between the trail and the road to protect the road from high water and wave action during storms.
See additional detail in Exhibit 7 - Project Narrative.
Provide a narrative showing how the project meets the standard conditions in Env-Wt 307 and the approval criteria in Env-Wt 313.01.
Env-Wt 313.01.

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Provide a project design narrative that includes the following:
A discussion of how the proposed project:
 Uses best management practices and standard conditions in Env-Wt 307; Meets all avoidance and minimization requirements in Env-Wt 311.07 and Env-Wt 313.03; Meets approval criteria in Env-Wt 313.01; Meets evaluation criteria in Env-Wt 313.01(c); Meets CFA requirements in Env-Wt 603.04; and Considers sea-level rise and potential flooding evaluated pursuant to Env-Wt 603.05;
A construction sequence, erosion/siltation control methods to be used, and a dewatering plan; and
A discussion of how the completed project will be maintained and managed.
Upon completion the project will be maintained as part of the City's Department of Public Works management of lands.
Provide design plans that meet the requirements of Env-Wt 603.07 (refer to Section 5);
Provide water depth supporting information required by Env-Wt 603.08 (refer to Section 6); and
For any major project that proposes to construct a structure in tidal waters/wetlands or to extend an existing structure seaward, provide a statement from the Pease Development Authority Division of Ports and Harbors (DP&H) chief harbormaster, or designee, for the subject location relative to the proposed structure's impact on navigation. If the proposed structure might impede existing public passage along the subject shoreline on foot or by non-motorized watercraft, the applicant shall explain how the impediments have been minimized to the greatest extent practicable.
Not applicable.

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SECTION 2 - DATA SCREENING (Env-Wt 603.03, in addition to Env-Wt 306.05)

Please use the Wetland Permit Planning Tool, or any other database or source, to indicate the presence of:

- Existing salt marsh and salt marsh migration pathways;
- Eelgrass beds;
- Documented shellfish sites;
- Projected sea-level rise; and
- 100-year floodplain.

Conduct data screening as described to identify documented essential fish habitat, and tides and currents that may be impacted by the proposed project, by using the following links:

- National Oceanic and Atmospheric Administration (NOAA) Tides & Currents; and
- NOAA Essential Fish Habitat Mapper.
- Verify or correct the information collected from the data screenings by conducting an on-site assessment of the subject property in accordance with Env-Wt 406 and Env-Wt 603.04.

SECTION 3 - COASTAL FUNCTIONAL ASSESSMENT/ AVOIDANCE AND MINIMIZATION (Env-Wt 603.04; Env-Wt 605.01; Env-Wt 605.02; Env-Wt 605.03)

Projects in coastal areas shall:

- Not impair the navigation, recreation, or commerce of the general public; and
- Minimize alterations in prevailing currents.

An applicant for a permit for work in or adjacent to tidal waters/wetlands or the tidal buffer zone shall demonstrate that the following have been avoided or minimized as required by Env-Wt 313.04:

- Adverse impacts to beach or tidal flat sediment replenishment;
- Adverse impacts to the movement of sediments along a shore;
- Adverse impacts on a tidal wetland's ability to dissipate wave energy and storm surge; and
- Adverse impacts of project runoff on salinity levels in tidal environments.

For standard permit applications submitted for minor or major projects:

- Attach a CFA based on the data screening information and on-site evaluation required by Env-Wt 603.03. The CFA for tidal wetlands or tidal waters shall be:
 - Performed by a qualified coastal professional; and
 - Completed using one of the following methods:
 - a. The US Army Corps of Engineers (USACE) Highway Methodology Workbook, dated 1993, together with the USACE New England District *Highway Methodology Workbook Supplement*, dated 1999; or
 - b. An alternative scientifically-supported method with cited reference and the reasons for the alternative method substantiated.

For any project that	would impact tidal	wetlands, tidal wat	ters, or associated s	sand dunes, the	applicant shall:

- Use the results of the CFA to select the location of the proposed project having the least impact to tidal wetlands, tidal waters, or associated sand dunes;
- Design the proposed project to have the least impact to tidal wetlands, tidal waters, or associated sand dunes;
- Where impact to wetland and other coastal resource functions is unavoidable, limit the project impacts to the least valuable functions, avoiding and minimizing impact to the highest and most valuable functions; and
- ☐ Include on-site minimization measures and construction management practices to protect coastal resource areas.

Projects in coastal areas shall use results of this CFA to:

- Minimize adverse impacts to finfish, shellfish, crustacean, and wildlife;
- Minimize disturbances to groundwater and surface water flow;
- Avoid impacts that could adversely affect fish habitat, wildlife habitat, or both; and
- Avoid impacts that might cause erosion to shoreline properties.

SECTION 4 - VULNERABILITY ASSESSMENT (Env-Wt 603.05)

Refer to the New Hampshire Coastal Flood Risk Summary Part 1: Science and New Hampshire Coastal Flood Risk Summary Part II: Guidance for Using Scientific Projections or other best available science to:

Determine the time period over which the project is designed to serve.

The useful life of the Peirce Island Wastewater Treatment Facility structures are 50 years, however upgrades to major components of treatment works are typically performed every 20 to 30 years as identified in the 2016 revision of TR-16 Guides for the Design of Wastewater Treatment Works. In consideration of the WWTF's next major upgrade and varying projections for sea level rise, the proposed roadway improvements are based on an "incremental action point" at 2050 (30 year design period).

Identify the project's relative risk tolerance to flooding and potential damage or loss likely to result from flooding to buildings, infrastructure, salt marshes, sand dunes and other valuable coastal resource areas.

The road providing access to the WWTF currently floods several times a year at its low point in the proposed project area and is at risk of wave wash-over from the north side (Piscataqua River), which has the potential to cause erosion and undermine the existing road. Thus, the road is considered to have a low relative flood risk tolerance. The road also provides access to critical infrastructure at the WWTF, allowing operations and maintenance access to continue during storms and high water.

The proposed parking area (current laydown area) has a moderate risk tolerance as no structural damage from flooding is likely.

The proposed sewer force and water main installations have a high risk tolerance as these installations will be buried and will not be located close to high risk areas. The pipe to be sliplined under the Peirce Island Rd. Bridge has a high risk tolerance because its elevation is well above the projected flood zone. The walking path extension also has a high risk tolerance because its elevation is well above the projected flood zone and it is a minor landscape feature.

The salt marshes on the south side of the island in the project vicinity, including the stand of *Iva frutescens*, have a high risk tolerance since they can survive prolonged flooding by seawater and are protected from the higher-impact fetch and wave action generated on the north side.

Reference the projected sea-level rise (SLR) scenario that most closely matches the end of the project design life and the project's tolerance to risk or loss.

TR-16 recommends that wastewater works be designed for flood levels 2-3 feet above the current 100 flood elevation to address "storm surge, wave action and anticipated sea-level rise". The proposed access road improvements have been designed to be at least 3 feet above the current 100 year flood elevation which provides a conservative approach for the 30 year incremental action point.

The proposed roadway elevation also addresses sea-level analysis specific to the New Hampshire seacoast for the 30 year incremental action point. The anticipated 2050 sea-level rise (SLR) at this location is approximately 0.9 feet, based on the RCP4.5 projection (1.15 feet) and the Corps' intermediate sea level rise projection (0.6 feet). The calculations for this work were performed by a coastal engineer, based on the RCP 4.5 projection curve, which anticipates a 3.0' rise at this location by 2100. See attached memorandum re "Coastal Resiliency Basis of Design".

Identify areas of the proposed project site subject to flooding from SLR.

Much of the work area for the road, sewer force and water mains, and parking area currently lies within the predicted 9.0 foot elevation for RSLR at 2050. After construction, all of the road will be elevated above that contour.

Identify areas currently located within the 100-year floodplain and subject to coastal flood risk.

The current FEMA flood map for this site has the 100 year flood elevation at 9 feet NGVD29. The more precise NOAA 100-year flood elevation for 2018 based on tide data is 8.1 feet NAVD88 from the datum for the nearby Seavey Island, Maine (Portsmouth Naval Shipyard). Approximately 12,650 square feet of the road and parking area lie below elevation 8.1 (see Exhibit 5, Sheet C-001).

Describe how the project design will consider and address the selected SLR scenario within the project design life, including in the design plans.

The project proposes to raise the road approximately 3 feet at its lowest elevation, to bring it to Elev. 11.24 NAVD88 (see Exhibit 5, Sheet C-001). This will raise the road approximately 3 feet above the current 100 year floodplain and 2 feet above the projected 100-year floodplain for 2050 (Elev. 8.9). The northern edge of the road will be a 3:1 slope of a mix of stone and vegetation, approximately 2.5 feet high. Seaward of the toe of slope, the existing path and vegetation will remain intact.

The parking area will be sloped down to Elev 8.0 to minimize filling. Permeable grass and concrete-grass pavers will improve water quality of the parking area over its current packed gravel condition. Minimal fill (80 cubic yards) is proposed in the existing floodplain. The pipeline work area, including the bridge crossing, is entirely above the 100-year floodplain for 2100.

The proposed recreational path extension is entirely above the floodplain, at a minimum elevation of 27 feet NAVD88.

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Where there are conflicts between the project's purpose and the vulnerability assessment results, schedule a preapplication meeting with the department to evaluate design alternatives, engineering approaches, and use of the beavailable science. Pre-application meeting date held: N/A	est
SECTION 5 - DESIGN PLANS (Env-Wt 603.07, in addition to Env-Wt 311) Submit design plans for the project in both plan and elevation views that clearly depict and identify all required elements.	
The plan view shall depict the following:	
The engineering scale used, which shall be no larger than one inch equals 50 feet;	
The location of tidal datum lines depicted as lines with the associated elevation noted, based on North American Vertical Datum of 1988 (NAVD 88), derived from https://tidesandcurrents.noaa.gov/datum_options.html , as described in Section 6.	
An imaginary extension of property boundary lines into the waterbody and a 20-foot setback from those propert line extensions;	у
The location of all special aquatic sites at or within 100 feet of the subject property;	
Existing bank contours;	
The name and license number, if applicable, of each individual responsible for the plan, including:	
a. The agent for tidal docking structures who determined elevations represented on plans; and	
b. The qualified coastal professional who completed the CFA report and located the identified resources on the plan;	
The location and dimensions of all existing and proposed structures and landscape features on the property;	
☐ Tidal datum(s) with associated elevations noted, based on NAVD 88; and	
Location of all special aquatic sites within 100-feet of the property.	
The elevation view shall depict the following:	
The nature and slope of the shoreline;	
The location and dimensions of all proposed structures, including permanent piers, pilings, float stop structures, ramps, floats, and dolphins; and	
Water depths depicted as a line with associated elevation at highest observable tide, mean high tide, and mean low tide, and the date and tide height when the depths were measured. Refer to Section 6 for more instructions regarding water depth supporting information.	
See specific design and plan requirements for certain types of coastal projects:	
 Overwater structures (Env-Wt 606). Tidal shoreline stabilization (Env-Wt 609). 	
 Dredging activities (Env-Wt 607). Protected tidal zone (Env-Wt 610). 	

• Tidal beach maintenance (Env-Wt 608).

 Sand Dunes (Env-Wt 611).
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SECTION 6 - WATER DEPTH SUPPORTING INFORMATION REQUIRED (Env-Wt 603.08)
Using current predicted NOAA tidal datum for the location, and tying field measurements to NAVD 88, field observations of at least three tide events, including at least one minus tide event, shall be located to document the range of the tide in the proposed location showing the following levels: Mean lower low water;
Mean low water;
Mean high water;
Mean tide level;
Mean higher high water;
Highest observable tide line; and
Predicted sea-level rise as identified in the vulnerability assessment in Env-Wt 603.05.
The following data shall be presented in the application project narrative to support how water depths were determined:
The date, time of day, and weather conditions when water depths were recorded; and
The name and license number of the licensed land surveyor who conducted the field measurements.
For tidal stream crossing projects, provide:
Water depth information to show how the tier 4 stream crossing is designed to meet Env-Wt 904.07(c) and (d).
For repair, rehabilitation or replacement of tier 4 stream crossings:
Demonstrate how the requirements of Env-Wt 904.09 are met.
SECTION 7 - GENERAL CRITERIA FOR TIDAL BEACHES, TIDAL SHORELINE, AND SAND DUNES (Env-Wt 604.01)
Any person proposing a project in or on a tidal beach, tidal shoreline, or sand dune, or any combination thereof, shall
evaluate the proposed project based on:
The standard conditions in Env-Wt 307;
The avoidance and minimization requirements in Env-Wt 311.07 and Env-Wt 313.03;
☐ The approval criteria in Env-Wt 313.01; ☐ The evaluation criteria in Env-Wt 313.05;
The project specific criteria in Env-Wt 600; Section 7 does
The CFA required by Env-Wt 603.04; and The vulnerability assessment required by Env-Wt 603.05.
New permanent impacts to sand dunes that provide coastal storm surge protection for protected species or habitat shall not be allowed except:
To protect public safety; and
Only if constructed by a state agency, coastal resiliency project, or for a federal homeland security project.
Projects in or on a tidal beach, tidal shoreline, or sand dune shall support integrated shoreline management that:

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Optimizes the natural function of the shoreline, including protection or restoration of habitat, water quality, and self-sustaining stability to flooding and storm surge; and		
Protects upland infrastructure from coastal hazards with a preference for living shorelines over hardened shoreline practices.		
SECTION 8 - GENERAL CRITERIA FOR TIDAL BUFFER ZONES (Env-Wt 604.02)		
The 100-foot statutory limit on the extent of the tidal buffer zone shall be measured horizontally. Any person proposing a project in or on an undeveloped tidal buffer zone shall evaluate the proposed project based on:		
The standard conditions in Env-Wt 307;		
The avoidance and minimization requirements in Env-Wt 311.07 and Env-Wt 313.03;		
☐ The approval criteria in Env-Wt 313.01;		
The evaluation criteria in Env-Wt 313.05;		
The project specific criteria in Env-Wt 600;		
The CFA required by Env-Wt 603.04; and		
The vulnerability assessment required by Env-Wt 603.05.		
Projects in or on a tidal buffer zone shall preserve the self-sustaining ability of the buffer area to:		
Provide habitat values;		
Protect tidal environments from potential sources of pollution;		
Provide stability of the coastal shoreline; and		
Maintain existing buffers intact where the lot has disturbed area defined under RSA 483-B:4, IV.		
SECTION 9 - GENERAL CRITERIA FOR TIDAL WATERS/WETLANDS (Env-Wt 604.03)		
Except as allowed under Env-Wt 606, permanent new impacts to tidal wetlands shall be allowed only to protect public safety or homeland security. Evaluation of impacts to tidal wetlands and tidal waters shall be based on:		
The standard conditions in Env-Wt 307;		
The avoidance and minimization requirements in Env-Wt 311.07 and Env-Wt 313.03;		
The approval criteria in Env-Wt 313.01;		
The evaluation criteria in Env-Wt 313.05; Section 9 does		
The project specific criteria in Env-Wt 600;		
The CFA required by Env-Wt 603.04; and		
The vulnerability assessment required by Env-Wt 603.05.		
Projects in tidal surface waters or tidal wetlands shall:		
Optimize the natural function of the tidal wetland, including protection or restoration of habitat, water quality, and self-sustaining stability to storm surge;		
Be designed with a preference for living shorelines over hardened stabilization practices; and		

Be limited to public infrastructure or restoration projects that are in the interest of the general public, including a road, a bridge, energy infrastructure, or a project that addresses predicted sea-level rise and coastal flood risk.

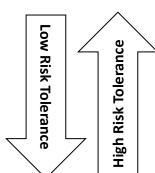
SECTION 10 – GUIDANCE

Your application must follow the New Hampshire Coastal Risk and Hazards Commission's Guiding Principles or other best available science. Below are some of these guidance principles:

- Incorporate science-based coastal flood risk projections into planning;
- Apply risk tolerance* to assessment, planning, design, and construction;
- Protect natural resources and public access;
- Create a bold vision, start immediately, and respond incrementally and opportunistically as projected coastal flood risks increase over time; and
- Consider the full suite of actions including effectiveness and consequences of actions.

*Risk tolerance is a project's willingness to accept a higher or lower probability of flooding impacts. The diagram below gives examples of project with lower and higher risk tolerance:

Critical infrastructures, historic sites, essential ecosystems, and high value assets typically have lower risk tolerance, and thus should be planned, designed, and constructed using higher coastal flood risk projections.



Sheds, pathways, and small docks typically have higher risk tolerance and thus may be planned, designed, and constructed using less protective coastal flood risk projections.

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DOVER, NH 03821-1166

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MEMORANDUM

Date: February 12, 2021

To: Eric Weinrieb, PE

Altus Engineering, Inc.

From: Duncan Mellor, PE

Principal Coastal Engineer

Re: Peirce Island WWTF Access Road Coastal Resiliency Basis of Design

The wastewater treatment facility (WWTF) access road crosses a low area on Peirce Island before rising to the higher elevation of the treatment plant. The access road here is proposed to be raised to maintain facility access during storm surges and in anticipation of sea level rise over time. This low area section of road is adjacent to the main Piscataqua channel with a wind wave fetch of 3,000' from Badgers Island.

WAVE CONDITIONS:

A typical engineering design code for wind criteria is a reference by the American Society of Civil Engineers, ASCE 7-10, which includes maps showing design wind speed (3 second gust, 7% probability of exceedance in 50 years) in the US. This design wind speed when used for wave generation is reduced to remove the added load factor and adjusted down to fit the minimum wind duration to grow these waves to fully developed waves for the wind fetch and water depth. Transforming the wave into shore/shallows gives a 2.6' breaking wave (far in excess of limits for vegetated shoreline). For riprap sizing the W₅₀ mean size is 170# (about 1.2' dimension), based on a 2:1 slope. Minimum toe stone size is 230# (about 1.5' size). From a public safety, walking on the rocks standpoint, larger stone is generally more stable when properly set.

Per the NOAA Seavey Island extreme tides data (surge without wave action), the 100-yr flood level is EL 8.1' NAVD88 for 2018 (latest data), which does match the FEMA AE zone elevation of EL 8' NAVD88. With a surge and wave action you may still get some waves washing over the road with wave runup to EL 10.2' with no future sea level rise allowance.

As the wave fetch from Badger's Island would be a northwesterly wind, this design wave condition might not occur during extreme storm surges in a Northeaster or hurricane.

Design guides for alternative road edge wave erosion protection included *Living Shorelines: The Science and Management of Nature-Based Coastal Protection*¹. Chapter 11 discusses living/planted shoreline design, and multiple cited references indicate a maximum wave height for salt marsh without toe stone berm armoring, is about a 1 foot wave. As the site design wave condition significantly exceed 1 foot, and wave breaking on the shore is expected, some level of stone armoring is needed to ensure that access to the WWTF survives storm conditions.

The State of New Jersey has a well written living shoreline guideline² that provides recommended sill stone sizes as a function of wind fetch length (design wind speed and duration not mentioned). For this site with a 0.6 mile fetch, they recommend 300 to 900 pound stones with 1.4' to 2.0' size. This is in good agreement with the site specific wave forecasting and revetment stone sizing performed.

Wave runup, with and without sea level rise projections, will overtop a stone sill/berm if utilized as a toe for a planted slope. There are several well recognized coastal engineering guidelines that indicate bioengineered slopes at this site will fail due to wave action overtopping the seawall.

The Army Corps of Engineers EM-1110-2-1100³ for grassed sea dikes subject to wave action will have no damage at overtopping of 0.001 cfs/LF (0.6 cups of water per 5 seconds/LF of embankment). Damage will begin at overtopping rates between 0.01 and 0.1 cfs/LF (1 foot of erosion per hour).

Practical case study experience in Europe has been incorporated into EurOtop software⁴. Table 3.1 in the EurOtop manual for calculating wave overtopping volumes provides a discharge limit of 0.001 (cfs/LF) for grass covered slopes. For this site the wave forecasting and runup in storm events and with sea level rise allowance, indicate that stone armoring is needed up to road surface elevation due to wave overtopping.

ROAD ELEVATION & RESILIENCY:

TR-16 Guides for the Design of Wastewater Treatment Works (2016 rev)⁵ is a standard for evaluation and design of wastewater treatment facilities with general guidance for coastal resiliency provisions and climate change. The TR-16 coastal resilience allowances follow the former Obama Executive Order that federally funded projects be designed for flood resistance to 2 or 3 feet above the FEMA 100 yr flood (1% annual chance) elevation depending on how critical the structure is to maintaining service. The FEMA flood hazard elevations do not currently include provisions for future sea level rise, so TR-16 added elevation increase allowances for climate change flood protection design extending 2 or 3

feet above the FEMA 100 yr flood elevation, based on how critical the structure is to the facility function. The FEMA flood map for this site has the 100 year flood elevation (AE zone) at 8 feet NAVD88 datum, following FEMA policy to only provide flood elevations to the nearest foot. The more precise NOAA 100-year flood elevation for 2018 based on tide data is 8.1 feet NAVD88 datum for the adjacent Seavey Island, Maine (Portsmouth Naval Shipyard across the channel).

TR-16 recommends that future sea level rise allowances are added to existing flood study elevations. TR-16 provides generalized added freeboard allowances for sea level rise, however these design criteria do not include a timeline for design life and do not consider site-specific considerations⁶.

The Portsmouth Harbor NOAA tide station (Seavey Island) has extensive data gaps (years) where no data were collected. The NOAA tide station in Portland, Maine, however does have observed tide levels with over 100 years of data. The Portland tide station has sea level record since 1912 with an average rise of 1.89+/- 0.14 mm/year at 95% confidence. Looking at the Portland tide data over the last 38 years (two tidal epochs) the rate of sea level rise is about 2.6 mm/year (with a larger standard deviation). It is reasonable to use this 2.6 mm/year (10 inches /100 years) rise rate as a lower limit of anticipated sea level rise near term.

There are recent reports presenting projections for accelerating sea level rise caused by global warming. The latest federal government guide is 2017 NOAA Tech Report 0837, Sweet et.al. with tabulated values for relative sea level every 10 years starting in the year 2000, with consideration of land/earth crust vertical movement at selected tide gauge cities, and changes in local sea level including by gravitational changes associated with anticipated ice cap melting. This NOAA report does provide eighteen different decadal projections for local sea level rise at Portland, Maine, but did not relate these to the carbon emissions Representative Concentration Pathway (RCP) models developed by the Intergovernmental Panel on Climate Change (IPCC). Interpolation between the NOAA projection values for RCP4.5 sea level rise values, is plotted in green on Figure 1. The RCP4.5 interpolation between NOAA curves for Portland, indicates about 2.5 feet of sea level rise by year 2100. It is apparent that the actual observed rates of sea level rise from tide data in Portland, from a global average to 20 distributed tide stations and from satellite altimetry measurements (global), that the actual rate of sea level rise is significantly less than the NOAA report projected rate of rise. For early 2020, the NOAA projection curve which started in year 2000, is about 2.7 inches higher than observations and the trends are diverging. Thus the RCP4.5 carbon model and associated global warming sea level rise are not supported by observed data for Maine and New Hampshire.

The US Army Corps of Engineers sea level rise projection curves are shown in yellow and red in Figure 1. The "high" red curve has already diverged from observations. The

"intermediate" yellow curve has much better agreement with observations to date, and suggests 1.6 feet of sea level rise by 2100 above 1992 sea level.

Sea Level Observations versus Sea Level Rise Projections

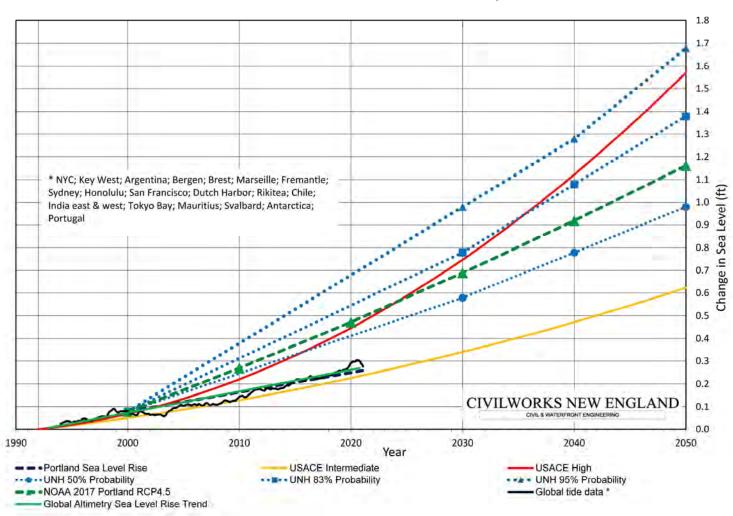


Figure 1 Comparison of Sea Level Rise Projections to Observations

The University of New Hampshire (UNH) issued a two part report *New Hampshire Coastal Flood Risk Summary*⁹ in 2019 and 2020, which has been adopted by the state of New Hampshire and is the recommended policy in regulatory permitting by the NH Department of Environmental Services. Both the NOAA projections and the UNH projections use sea level rise projections starting from a sea level in the year 2000, developed by Kopp et. al. (2014)¹⁰. The UNH report does list probabilities for multiple sea level rise curves, using different probabilities for different projects tolerance for risk. It is important to understand

that these probabilities are Bayesian probabilities, based on future expectations, not traditional probabilities calculated from observational data, such as FEMA flood levels.

The 50% UNH probability sea level rise curve (lower dotted blue line) is plotted from the UNH Part I science report, and it is not used in the Part II guidance report. The Part II guidance report uses the 83% probability curve for the low end of design for projects with a high tolerance for sea level rise. The 95% probability curve is recommended for design of projects with a medium tolerance for sea level rise. UNH does recommend higher 99% and 99.9% probability curves, recommended for design of projects with low and very low tolerance for sea level rise, however these were not plotted given the greater divergence from observed data. For early 2020, the UNH 83% projection curve is about 3.5 inches higher than observations, for UNH 95% projection curve is about 5.2 inches higher than observations and both trends are diverging. The UNH guidance projection curves are based on older rise projections and the UNH model was not calibrated in consideration of actual sea level rise observations and trend over the last 20 years. Since the UNH sea level rise projections are already significantly in higher than observations with a steeper rise trend, they are not recommended for project design.

The design guidance in TR-16 for 100 year flood level plus 3 feet of sea level rise allowance is reasonable and conservative relative to observations, relative to a NOAA RCP4.5 sea level rise projection and relative to the Army Corps of Engineers intermediate sea level rise projection until at least year 2100.

REFERENCES:

- 1 Living Shorelines: The Science and Management of Nature-Based Coastal Protection, CRC Press, 2017, ISBN 9781315151465.
- 2 *Living Shorelines Engineering Guidelines*, New Jersey Department of Environmental Protection, revised Feb., 2016, SIT-DL-14-9-2942.
- 3 EM-1110-2-1100, Part 6, Table VI-5-6, Coastal Engineering Manual, US Army Corps of Engineers 2011.
- 4 *EurOtop*, 2018. Manual on wave overtopping of sea defences and related structures. Van der Meer, J.W., Allsop, N.W.H., Bruce, T., De Rouck, J., Kortenhaus, A., Pullen, T., Schüttrumpf, H., Troch, P. and Zanuttigh, B.
- 5 TR-16 Guides For The Design of Wastewater Treatment Works, NEIWPCC, 2011 Ed., rev 2016.
- 6 Coastal Flood Protection: TR-16 Criteria Versus Site Specific Analysis, D. Mellor, NEWEA Journal, Summer 2020, Vol. 54, No. 2, ISSN 1077-3002.

- 7 Global and Regional Sea Level Rise Scenarios for the United States. NOAA Technical Report NOS CO-OPS 083, Sweet, W.V., R.E. Kopp, C.P. Weaver, J. Obeysekera, R.M. Horton, E.R. Thieler, and C. Zervas, NOAA/NOS Center for Operational Oceanographic Products and Services, 2017.
- 8 *Procedures to Evaluate Sea Level Change: Impacts, Responses, and Adaptation*, ETL 1100-2-1, June 30, 2014, US Army Corps of Engineers.
- 9 New Hampshire Coastal Flood Risk Summary Part I: Science; Part II: Guidance for Using Scientific Projections, NH Coastal Flood Risk Science and Technical Advisory Panel (2020), Univ. of New Hampshire, 2019/2020.
- 10 Probabilistic 21st and 22nd Century Sea-Level Projections at a Global Network of Tide Gauge Sites. Earth's Future, Kopp, R.E., Horton, R.M., Little, C.M., Mitrovica, J.X., Oppenheimer, M., Rasmussen, D.J., Strauss, B.H., & Tebaldi, C. (2014).

C:\Users\Dmellor\Documents\Altus\WWTP\Memo Coastal Design Basis 2-16-21.Docx

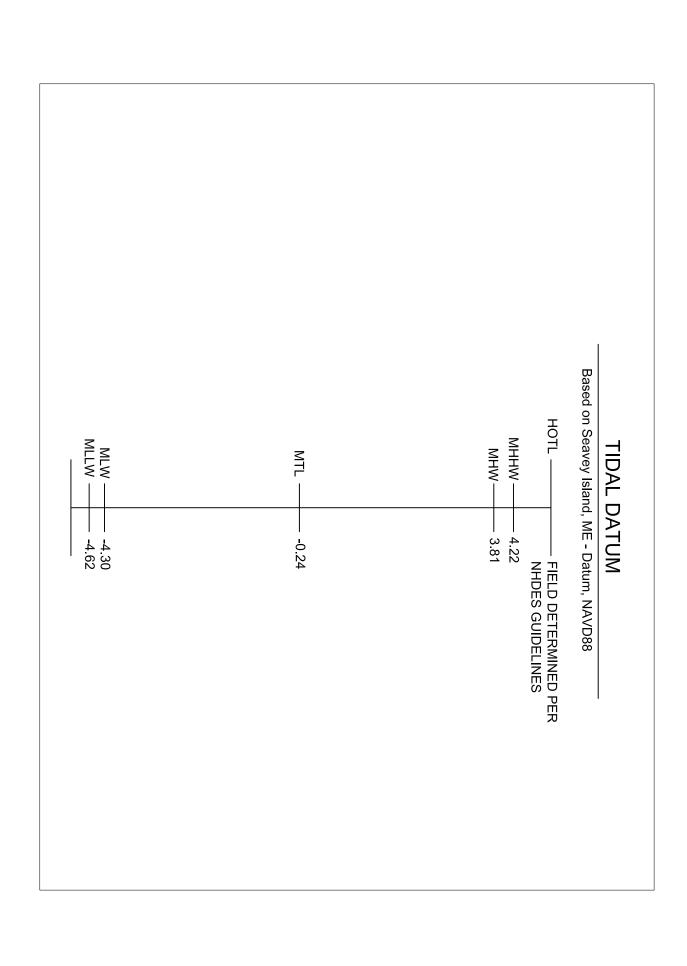


EXHIBIT 26

PRIME WETLANDS

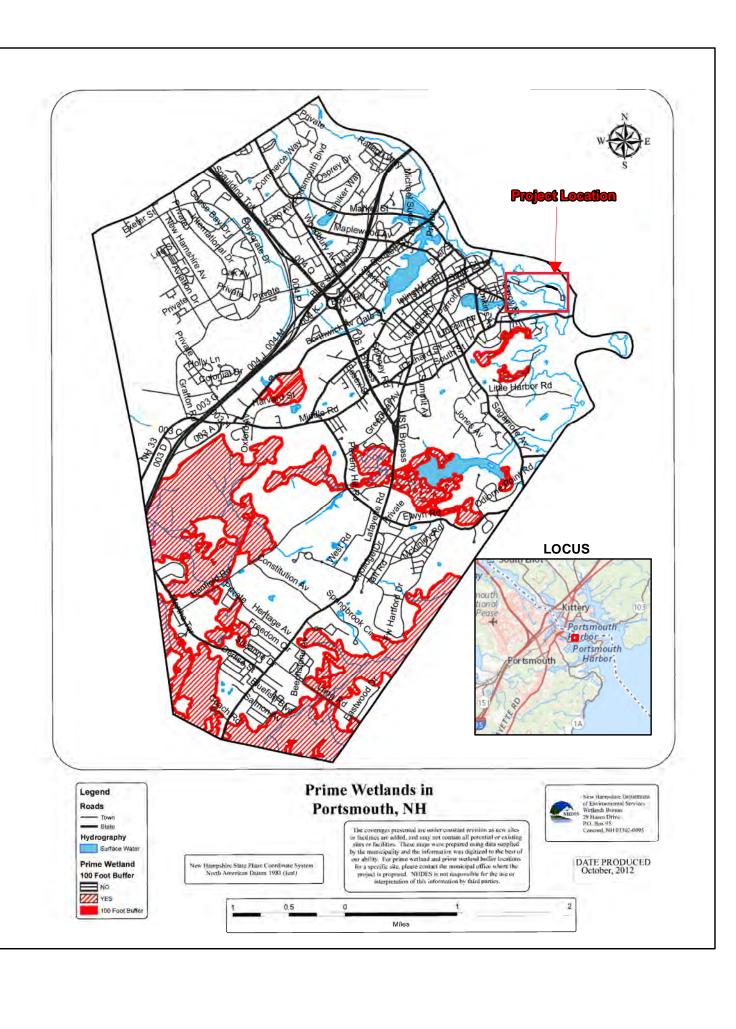


EXHIBIT 27

ATTACHMENT A - MINOR AND MAJOR PROJECTS



STANDARD DREDGE AND FILL WETLANDS PERMIT APPLICATION ATTACHMENT A: MINOR AND MAJOR PROJECTS



Water Division/Land Resources Management Wetlands Bureau

Check the Status of your Application

RSA/ Rule: RSA 482-A/ Env-Wt 311.10; Env-Wt 313.01(a)(1); Env-Wt 313.03

APPLICANT'S NAME: Terry Demarais, PE TOWN NAME: Portsmouth

Attachment A is required for *all minor and major projects*, and must be completed *in addition* to the <u>Avoidance and Minimization Narrative</u> or <u>Checklist</u> that is required by Env-Wt 307.11.

For projects involving construction or modification of non-tidal shoreline structures over areas of surface waters having an absence of wetland vegetation, only Sections I.X through I.XV are required to be completed.

PART I: AVOIDANCE AND MINIMIZATION

In accordance with Env-Wt 313.03(a), the Department shall not approve any alteration of any jurisdictional area unless the applicant demonstrates that the potential impacts to jurisdictional areas have been avoided to the maximum extent practicable and that any unavoidable impacts have been minimized, as described in the Wetlands Best Management Practice Techniques For Avoidance and Minimization.

SECTION I.I - ALTERNATIVES (Env-Wt 313.03(b)(1))

Describe how there is no practicable alternative that would have a less adverse impact on the area and environments under the Department's jurisdiction.

This project necessarily requires disturbance of a portion of Undeveloped Tidal Buffer Zone in which an unofficial trail will be converted to a walking path. The path connects existing trails located within the Undeveloped and Developed Tidal Buffer Zone and no alternative exists while providing shoreline views that are otherwise obstructed by the existing wastewater treatment facility. Additional work within the Developed Tidal Buffer Zone will be improvements to an existing road providing the sole access to the wastewater treatment facility; replacement of a gravel parking area with a pervious grass surface and vegetated buffer, resulting in improvements to existing environmental conditions; installation of new sewer force and water mains which will improve the reliability of the City's wastewater collection system, maximize flow to the WWTF, and allow removal of the temporary, above ground force main currently in use; and sliplining of one of the sewer force mains under the Peirce Island Road Bridge which will help avoid unexpected failure of the pipeline.

SECTION I.II - MARSHES (Env-Wt 313.03(b)(2))
Describe how the project avoids and minimizes impacts to tidal marshes and non-tidal marshes where documented to provide sources of nutrients for finfish, crustacean, shellfish, and wildlife of significant value.
No jurisdictional wetlands providing sources of nutrients for finfish, crustaceans, shellfish, and wildlife of significant value are being impacted as part of this project.
SECTION I.III - HYDROLOGIC CONNECTION (Env-Wt 313.03(b)(3))
Describe how the project maintains hydrologic connections between adjacent wetland or stream systems. No hydrologic connections exist between adjacent wetland or stream systems within the area for this project.

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SECTION I.IV - JURISDICTIONAL IMPACTS (Env-Wt 313.03(b)(4))

Describe how the project avoids and minimizes impacts to wetlands and other areas of jurisdiction under RSA 482-A, especially those in which there are exemplary natural communities, vernal pools, protected species and habitat, documented fisheries, and habitat and reproduction areas for species of concern, or any combination thereof.

There is no proposed impact to jurisdictional wetlands, exemplary natural communities, vernal pools, documented fisheries, and habitat and reproduction areas for species of concern. The environment to be impacted by this project is predominately Previously Disturbed Tidal Buffer Zone and a lesser amount of Undeveloped Tidal Buffer Zone.

There is a protected species, *Iva frutescens*, in the vicinity of the proposed grass parking area and the sewer force and water main replacements. NH Natural Heritage Bureau (NHNHB) has been consulted and has determined the parking area as planned will have no adverse impact on populations of this species. During installation of temporary sewer force mains in October, 2020 under Emergency Authorization 2020-02873, two areas of the adjacent marsh elder stands (*Iva frutescens*; NH State Threatened) were inadvertently impacted. After consultation with NHDES and NHNHB, several steps were prescribed by NHDES to mitigate the impacts. To prevent future impacts, construction fencing will be erected between the marsh elder stands and the work area prior to the start of work.

SECTION I.V - PUBLIC COMMERCE, NAVIGATION, OR RECREATION (Env-Wt 313.03(b)(5))

Describe how the project avoids and minimizes impacts that eliminate, depreciate or obstruct public commerce, navigation, or recreation.

There is no potential for impacts that would eliminate, depreciate, or obstruct public commerce in relation to this project. No businesses will be closed as a result of road construction, and the project will have a long term benefit to accessibility to the Peirce Island area and reliability of the WWTF. The project includes a recreational trail which will provide a public benefit to the community.

SECTION I.VI - FLOODPLAIN WETLANDS (Env-Wt 313.03(b)(6)) Describe how the project avoids and minimizes impacts to floodplain wetlands that provide flood storage.
The road and parking area improvements will result in 80 CY of fill in the coastal 100-year floodplain to raise the elevation of the road providing the only access to the wastewater treatment facility. This impact will have negligible effect on tidal elevations during storms, and will be mitigated by improvements to water quality by replacing the currently unvegetated sand and gravel substrate in the parking area with grassed pavers and a vegetated buffer to treat runoff from the parking area and stabilize the substrates.
SECTION I.VII - RIVERINE FORESTED WETLAND SYSTEMS AND SCRUB-SHRUB – MARSH COMPLEXES (Env-Wt 313.03(b)(7))
Describe how the project avoids and minimizes impacts to natural riverine forested wetland systems and scrub-shrub – marsh complexes of high ecological integrity.
There are no natural riverine forested wetland systems or scrub-shrub marsh complexes affected by the proposed project.

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SECTION I.VIII - DRINKING WATER SUPPLY AND GROUNDWATER AQUIFER LEVELS (Env-Wt 313.03(b)(8)) Describe how the project avoids and minimizes impacts to wetlands that would be detrimental to adjacent drinking water supply and groundwater aquifer levels.
This project is located immediately upstream of the tidal system, thus impacts to the site will not affect drinking water supplies or groundwater aquifers.
SECTION I.IX - STREAM CHANNELS (Env-Wt 313.03(b)(9)) Describe how the project avoids and minimizes adverse impacts to stream channels and the ability of such channels to handle runoff of waters.
There are no stream channels in the area to be impacted by the project.

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SECTION I.X - SHORELINE STRUCTURES - CONSTRUCTION SURFACE AREA (Env-Wt 313.03(c)(1)) Describe how the project has been designed to use the minimum construction surface area over surface waters
necessary to meet the stated purpose of the structures.
There is no planned construction of shoreline structures for this project.
SECTION I.XI - SHORELINE STRUCTURES - LEAST INTRUSIVE UPON PUBLIC TRUST (Env-Wt 313.03(c)(2)) Describe how the type of construction proposed is the least intrusive upon the public trust that will ensure safe docking on the frontage.
Describe how the type of construction proposed is the least intrusive upon the public trust that will ensure safe
Describe how the type of construction proposed is the least intrusive upon the public trust that will ensure safe docking on the frontage.
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Describe how the type of construction proposed is the least intrusive upon the public trust that will ensure safe docking on the frontage.

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SECTION I.XII - SHORELINE STRUCTURES – ABUTTING PROPERTIES (Env-Wt 313.03(c)(3)) Describe how the structures have been designed to avoid and minimize impacts on ability of abutting owners to use and enjoy their properties.
There is no planned construction of shoreline structures for this project.
SECTION I.XIII - SHORELINE STRUCTURES – COMMERCE AND RECREATION (Env-Wt 313.03(c)(4)) Describe how the structures have been designed to avoid and minimize impacts to the public's right to navigation,
passage, and use of the resource for commerce and recreation.
There is no planned construction of shoreline structures for this project.

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SECTION I.XIV - SHORELINE STRUCTURES – WATER QUALITY, AQUATIC VEGETATION, WILDLIFE AND FINFISH HABITAT (Env-Wt 313.03(c)(5))	
Describe how the structures have been designed, located, and configured to avoid impacts to water quality, aquatic vegetation, and wildlife and finfish habitat.	
There is no planned construction of shoreline structures for this project.	
SECTION I.XV - SHORELINE STRUCTURES – VEGETATION REMOVAL, ACCESS POINTS, AND SHORELINE STABILITY (Env-Wt 313.03(c)(6))	
Describe how the structures have been designed to avoid and minimize the removal of vegetation, the number of access points through wetlands or over the bank, and activities that may have an adverse effect on shoreline stability.	
There is no planned construction of shoreline structures for this project.	

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PART II: FUNCTIONAL ASSESSMENT

REQUIREMENTS

Ensure that project meets the requirements of Env-Wt 311.10 regarding functional assessment (Env-Wt 311.04(j); Env-Wt 311.10).

FUNCTIONAL ASSESSMENT METHOD USED:

This project does not have any direct impacts to wetlands or waters. The US Army Corps of Engineers highway methodology was used to evaluate the functions of the tidal wetlands adjacent to impacted Tidal Buffer Zone.

NAME OF CERTIFIED WETLAND SCIENTIST (FOR NON-TIDAL PROJECTS) OR QUALIFIED COASTAL PROFESSIONAL (FOR TIDAL PROJECTS) WHO COMPLETED THE ASSESSMENT: Sarah Allen, NH CWS 083

DATE OF ASSESSMENT: 04/07/2021

Check this box to confirm that the application includes a NARRATIVE ON FUNCTIONAL ASSESSMENT:



For minor or major projects requiring a standard permit without mitigation, the applicant shall submit a wetland evaluation report that includes completed checklists and information demonstrating the RELATIVE FUNCTIONS AND VALUES OF EACH WETLAND EVALUATED. Check this box to confirm that the application includes this information, if applicable:



Note: The Wetlands Functional Assessment worksheet can be used to compile the information needed to meet functional assessment requirements.

EXHIBIT 28

FUNCTIONAL ASSESSMENT WORKSHEET



WETLANDS FUNCTIONAL ASSESSMENT WORKSHEET

Water Division/Land Resource Management Wetlands Bureau



Check the Status of your Application

RSA/Rule: RSA 482-A / Env-Wt 311.03(b)(10); Env-Wt 311.10

APPLICANT LAST NAME, FIRST NAME, M.I.: Terry Demarais, PE, City of Portsmouth

As required by Env-Wt 311.03(b)(10), an application for a standard permit for minor and major projects must include a functional assessment of all wetlands on the project site as specified in Env-Wt 311.10. This worksheet will help you compile data for the functional assessment needed to meet federal (US Army Corps of Engineers (USACE); if applicable) and NHDES requirements. Additional requirements are needed for projects in tidal area; please refer to the Coastal Area Worksheet (NHDES-W-06-079) for more information.

Both a desktop review and a field examination are needed to accurately determine surrounding land use, hydrology, hydroperiod, hydric soils, vegetation, structural complexity of wetland classes, hydrologic connections between wetlands or stream systems or wetland complex, position in the landscape, and physical characteristics of wetlands and associated surface waters. The results of the evaluation are to be used to select the location of the proposed project having the least impact to wetland functions and values (Env-Wt 311.10). This worksheet can be used in conjunction with the <u>Avoidance and Minimization Written Narrative (NHDES-W-06-089)</u> and the <u>Avoidance and Minimization Checklist (NHDES-W-06-050)</u> to address Env-Wt 313.03 (Avoidance and Minimization). If more than one wetland/ stream resource is identified, multiple worksheets can be attached to the application. All wetland, vernal pools, and stream identification (ID) numbers are to be displayed and located on the wetlands delineation of the subject property.

SECTION 1 - LOCATION (USACE HIGHWAY METHODOLOGY)		
ADJACENT LAND USE: Maintained parkland, shrub border, old field, access road, and construction laydown		
CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? Yes No		
DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): 30 ft		
SECTION 2 - DELINEATION (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)		
CERTIFIED WETLAND SCIENTIST (if in a non-tidal area) or QUALIFIED COASTAL PROFESSIONAL (if in a tidal area) who prepared this assessment: Sarah Allen , NHCWS 083		
DATE(S) OF SITE VISIT(S): 04/23/21; 01/14/21	DELINEATION PER ENV-WT 406 COMPLETED? ☐ Yes ☐ No	
CONFIRM THAT THE EVALUATION IS BASED ON:		
○ Office and ○ Office and		
Field examination.		
METHOD USED FOR FUNCTIONAL ASSESSMENT (check one and fill in blank if "other"):		
☐ USACE Highway Methodology.		
Other scientifically supported method (enter name/ title):		

SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGH	SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)				
WETLAND ID: Salt marsh south of laydown	LOCATION: (LAT/ LONG) 43.074282/-70.744530				
WETLAND AREA: 0.5 ac	DOMINANT WETLAND SYSTEMS PRESENT: Fringe salt marsh				
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? None	COWARDIN CLASS: E2EM1				
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? ☐ Yes ☑ No	IS THE WETLAND PART OF: A wildlife corridor or A habitat island?				
if not, where does the wetland lie in the drainage basin? Lower	IS THE WETLAND HUMAN-MADE? ☐ Yes No				
IS THE WETLAND IN A 100-YEAR FLOODPLAIN? Yes No	ARE VERNAL POOLS PRESENT? Yes No (If yes, complete the Vernal Pool Table)				
ARE ANY WETLANDS PART OF A STREAM OR OPEN-WATER SYSTEM? ✓ Yes ✓ No	ARE ANY PUBLIC OR PRIVATE WELLS DOWNSTREAM/DOWNGRADIENT? Yes No				
PROPOSED WETLAND IMPACT TYPE: None	PROPOSED WETLAND IMPACT AREA: None				
CECTION A WETLANDS FUNCTIONS AND VALUES (USACE U	UCUMAY METHODOLOGY, Fm., M/t 211 10				

SECTION 4 - WETLANDS FUNCTIONS AND VALUES (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)

The following table can be used to compile data on wetlands functions and values. The reference numbers indicated in the "Functions/ Values" column refer to the following functions and values:

- 1. Ecological Integrity (from RSA 482-A:2, XI)
- 2. Educational Potential (from USACE Highway Methodology: Educational/Scientific Value)
- 3. Fish & Aquatic Life Habitat (from USACE Highway Methodology: Fish & Shellfish Habitat)
- 4. Flood Storage (from USACE Highway Methodology: Floodflow Alteration)
- 5. Groundwater Recharge (from USACE Highway Methodology: Groundwater Recharge/Discharge)
- 6. Noteworthiness (from USACE Highway Methodology: Threatened or Endangered Species Habitat)
- 7. Nutrient Trapping/Retention & Transformation (from USACE Highway Methodology: Nutrient Removal)
- 8. Production Export (Nutrient) (from USACE Highway Methodology)
- 9. Scenic Quality (from USACE Highway Methodology: Visual Quality/Aesthetics)
- 10. Sediment Trapping (from USACE Highway Methodology: Sediment /Toxicant Retention)
- 11. Shoreline Anchoring (from USACE Highway Methodology: Sediment/Shoreline Stabilization)
- 12. Uniqueness/Heritage (from USACE Highway Methodology)
- 13. Wetland-based Recreation (from USACE Highway Methodology: Recreation)
- 14. Wetland-dependent Wildlife Habitat (from USACE Highway Methodology: Wildlife Habitat)

First, determine if a wetland is suitable for a particular function and value ("Suitability" column) and indicate the rationale behind your determination ("Rationale" column). Please use the rationale reference numbers listed in Appendix A of USACE *The Highway Methodology Workbook Supplement*. Second, indicate which functions and values are principal ("Principal Function/value?" column). As described in *The Highway Methodology Workbook Supplement*, "functions and values can be principal if they are an important physical component of a wetland ecosystem (function only) and/or are considered of special value to society, from a local, regional, and/or national perspective". "Important Notes" are to include characteristics the evaluator used to determine the principal function and value of the wetland.

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NHDES Wetlands Bureau, 29 Hazen Drive, PO Box 95, Concord, NH 03302-0095

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FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE (Reference #)	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	⊠ Yes □ No	Fringing salt marsh on lee of island provides physical and biological value to area	☐ Yes ☑ No	Patchy, has strip of marsh elder along upland edge, often above HOTL
2	⊠ Yes □ No	1,2,8,9,14	☐ Yes ☑ No	Marsh is of limited value due to small size and fringe nature.
3	⊠ Yes □ No	1,2,3,4,5,6	⊠ Yes □ No	Site is adjacent to Piscataqua River, with anadromous fish migration. Offers nursery and forage to multiple fish species.
4	Yes No	6,10,11,13,18	☐ Yes ☑ No	Fringe marsh provides minor storage and buffer during storms and flooding
5	☐ Yes ⊠ No	4,8,15	☐ Yes ☑ No	Borders tidal waters, minor seepage visible, underlain by gravel and bedrock
6	⊠ Yes □ No	1	⊠ Yes □ No	Marsh supports <i>Iva frutescens</i> , a State-Threatened species.
7	⊠ Yes □ No	3,5,7,8,9,11,12,14	☐ Yes ⊠ No	Fring marsh vegetation provides limited nutrient removal opportunities of runoff from access road and parking areas.
8	Yes No	2,5,6,7,9,11,13	☐ Yes ☑ No	Fringe marsh vegetation supports invertebrates and exports detritus for food web support.
9	⊠ Yes □ No	2,7,12	☐ Yes ☑ No	Fringe marsh adds visual benefit in developed Portsmouth landscape.
10	⊠ Yes □ No	1,3,4,8,16	Yes No	Fringe marsh provides modest sediment removal function from runoff from access road and parking area.
11	⊠ Yes □ No	1,6,7,10,11,12,13,15	⊠ Yes □ No	Fringe marsh provides important energy absorbing action to protect shoreline from scour.
12	⊠ Yes □ No	1,10,13,14,22,24,28	⊠ Yes □ No	Marsh is adjacent to the Peirce Island trail system and supports the rare shrub, <i>Iva frutescens</i> .
13	☐ Yes ⊠ No	7,9,10,12	☐ Yes ☑ No	Marsh in close proximity to proposed parking area, but access will be discouraged by fencing.

14	∑ Yes ☐ No	3,6,8,13,19	☐ Yes ⊠ No	Fringe marsh provides modest wildlife habitat on island in developed Portsmouth harbor.
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SECTION 5 - VERNAL POOL SUMMARY (Env-Wt 311.10)

Delineations of vernal pools shall be based on the characteristics listed in the definition of "vernal pool" in Env-Wt 104.44. To assist in the delineation, individuals may use either of the following references:

- *Identifying and Documenting Vernal Pools in New Hampshire 3rd Ed.*, 2016, published by the New Hampshire Fish and Game Department; or
- The USACE *Vernal Pool Assessment* draft guidance dated 9-10-2013 and form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

All vernal pool ID numbers are to be displayed and located on the wetland delineation of the subject property.

"Important Notes" are to include documented reproductive and wildlife values, landscape context, and relationship to other vernal pools/wetlands.

Note: For projects seeking federal approval from the USACE, please attach a completed copy of The USACE "Vernal Pool Assessment" form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

Guidance.					
VERNAL POOL ID NUMBER	DATE(S) OBSERVED	PRIMARY INDICATORS PRESENT (LIST)	SECONDAR' INDICATOR: PRESENT (LIS	S LENGTH OF	IMPORTANT NOTES
1					
2					
3					
4					
5					
SECTION 6	6 - STREAM RE	SOURCES SUMMARY	Υ		
DESCRIPTI	ION OF STREA	M:		STREAM TYPE (ROSGEN	N):
HAVE FISH	HERIES BEEN D	OCUMENTED?		DOES THE STREAM SYS Yes No	TEM APPEAR STABLE?
OTHER KE	Y ON-SITE FUN	ICTIONS OF NOTE:			

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The following table can be used to compile data on stream resources. "Important Notes" are to include characteristics the evaluator used to determine principal function and value of each stream. The functions and values reference number are defined in Section 4. PRINCIPAL FUNCTIONS/ SUITABILITY FUNCTION/VALUE? **RATIONALE** IMPORTANT NOTES **VALUES** (Y/N) (Y/N) Yes Yes 1 No No Yes Yes 2 No No Yes | Yes 3 No No Yes | Yes 4 No No Yes Yes 5 No No Yes Yes 6 No No Yes Yes 7 No No Yes Yes 8 No No Yes Yes 9 No No Yes Yes 10 No No Yes | Yes 11 No No Yes Yes 12 No No Yes Yes 13 No No Yes Yes 14 No ΙNο SECTION 7 - ATTACHMENTS (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)

- Wildlife and vegetation diversity/abundance list.
- Photograph of wetland.
- Wetland delineation plans showing wetlands, vernal pools, and streams in relation to the impact area and surrounding landscape. Wetland IDs, vernal pool IDs, and stream IDs must be indicated on the plans.

For projects in tidal areas only: additional information required by Env-Wt 603.03/603.04. Please refer to the Coastal Area Worksheet (NHDES-W-06-079) for more information.



WETLANDS FUNCTIONAL ASSESSMENT WORKSHEET

Water Division/Land Resource Management Wetlands Bureau



Check the Status of your Application

RSA/Rule: RSA 482-A / Env-Wt 311.03(b)(10); Env-Wt 311.10

APPLICANT LAST NAME, FIRST NAME, M.I.: Terry Demarais, PE, City of Portsmouth

As required by Env-Wt 311.03(b)(10), an application for a standard permit for minor and major projects must include a functional assessment of all wetlands on the project site as specified in Env-Wt 311.10. This worksheet will help you compile data for the functional assessment needed to meet federal (US Army Corps of Engineers (USACE); if applicable) and NHDES requirements. Additional requirements are needed for projects in tidal area; please refer to the Coastal Area Worksheet (NHDES-W-06-079) for more information.

Both a desktop review and a field examination are needed to accurately determine surrounding land use, hydrology, hydroperiod, hydric soils, vegetation, structural complexity of wetland classes, hydrologic connections between wetlands or stream systems or wetland complex, position in the landscape, and physical characteristics of wetlands and associated surface waters. The results of the evaluation are to be used to select the location of the proposed project having the least impact to wetland functions and values (Env-Wt 311.10). This worksheet can be used in conjunction with the <u>Avoidance and Minimization Written Narrative (NHDES-W-06-089)</u> and the <u>Avoidance and Minimization Checklist (NHDES-W-06-050)</u> to address Env-Wt 313.03 (Avoidance and Minimization). If more than one wetland/ stream resource is identified, multiple worksheets can be attached to the application. All wetland, vernal pools, and stream identification (ID) numbers are to be displayed and located on the wetlands delineation of the subject property.

SECTION 1 - LOCATION (USACE HIGHWAY METHODOLOGY)				
ADJACENT LAND USE: Upland shrub/forest, walking trail, access road and wastewater treatment facility				
CONTIGUOUS UNDEVELOPED BUFFER ZO	NE PRESENT? Yes No			
DISTANCE TO NEAREST ROADWAY OR OT	HER DEVELOPMENT (in feet): 10			
SECTION 2 - DELINEATION (USACE HIGH)	WAY METHODOLOGY; Env-Wt 311.10)			
CERTIFIED WETLAND SCIENTIST (if in a non-tidal area) or QUALIFIED COASTAL PROFESSIONAL (if in a tidal area) who prepared this assessment: Sarah Allen, NHCWS 083				
DATE(S) OF SITE VISIT(S): 04/23/21; 01/14/21	DELINEATION PER ENV-WT 406 COMPLETED? ✓ Yes ✓ No			
CONFIRM THAT THE EVALUATION IS BASE	ED ON:			
✓ Office and ✓ Office and				
Field examination.				
METHOD USED FOR FUNCTIONAL ASSESSMENT (check one and fill in blank if "other"):				
USACE Highway Methodology.				
Other scientifically supported method	l (enter name/ title):			

SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGH	WAY METHODOLOGY; Env-Wt 311.10)		
WETLAND ID: Rocky shore on north side of island	LOCATION: (LAT/ LONG) 43o4'23/70o44'23.6		
WETLAND AREA: 0.5 ac	DOMINANT WETLAND SYSTEMS PRESENT: Rocky shore		
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? NA	COWARDIN CLASS: E2RS		
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? ☐ Yes No	IS THE WETLAND PART OF: A wildlife corridor or A habitat island?		
if not, where does the wetland lie in the drainage basin? Lower	IS THE WETLAND HUMAN-MADE? ☐ Yes ☑ No		
IS THE WETLAND IN A 100-YEAR FLOODPLAIN? ☑ Yes ☐ No	ARE VERNAL POOLS PRESENT? Yes No (If yes, complete the Vernal Pool Table)		
ARE ANY WETLANDS PART OF A STREAM OR OPEN-WATER SYSTEM? ✓ Yes ✓ No	ARE ANY PUBLIC OR PRIVATE WELLS DOWNSTREAM/DOWNGRADIENT? Yes No		
PROPOSED WETLAND IMPACT TYPE: None	PROPOSED WETLAND IMPACT AREA: None		
SECTION A - WETLANDS FUNCTIONS AND VALUES (LISACE H	IIGHWAY METHODOLOGY: Env-Wt 311 10)		

The following table can be used to compile data on wetlands functions and values. The reference numbers indicated in the "Functions/ Values" column refer to the following functions and values:

- 1. Ecological Integrity (from RSA 482-A:2, XI)
- 2. Educational Potential (from USACE Highway Methodology: Educational/Scientific Value)
- 3. Fish & Aquatic Life Habitat (from USACE Highway Methodology: Fish & Shellfish Habitat)
- 4. Flood Storage (from USACE Highway Methodology: Floodflow Alteration)
- 5. Groundwater Recharge (from USACE Highway Methodology: Groundwater Recharge/Discharge)
- 6. Noteworthiness (from USACE Highway Methodology: Threatened or Endangered Species Habitat)
- 7. Nutrient Trapping/Retention & Transformation (from USACE Highway Methodology: Nutrient Removal)
- 8. Production Export (Nutrient) (from USACE Highway Methodology)
- 9. Scenic Quality (from USACE Highway Methodology: Visual Quality/Aesthetics)
- 10. Sediment Trapping (from USACE Highway Methodology: Sediment /Toxicant Retention)
- 11. Shoreline Anchoring (from USACE Highway Methodology: Sediment/Shoreline Stabilization)
- 12. Uniqueness/Heritage (from USACE Highway Methodology)
- 13. Wetland-based Recreation (from USACE Highway Methodology: Recreation)
- 14. Wetland-dependent Wildlife Habitat (from USACE Highway Methodology: Wildlife Habitat)

First, determine if a wetland is suitable for a particular function and value ("Suitability" column) and indicate the rationale behind your determination ("Rationale" column). Please use the rationale reference numbers listed in Appendix A of USACE The Highway Methodology Workbook Supplement. Second, indicate which functions and values are principal ("Principal Function/value?" column). As described in The Highway Methodology Workbook Supplement, "functions and values can be principal if they are an important physical component of a wetland ecosystem (function only) and/or are considered of special value to society, from a local, regional, and/or national perspective". "Important Notes" are to include characteristics the evaluator used to determine the principal function and value of the wetland.

FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE (Reference #)	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	⊠ Yes □ No	Porvides buffer from wave action and habitat for marine species	Yes No	Undisturbed habitat on steep sections, more level sections are used by walkers
2	☐ Yes ☑ No	2	☐ Yes ☑ No	Steep rocky slopes prohibit access.
3	⊠ Yes □ No	3,4,5,6	⊠ Yes □ No	Adjacent to Piscataqua River, with anadromous fish migration. Offers nursery and forage to multiple fish species.
4	Yes No	3,9,13	☐ Yes ☑ No	Steep gradient provides minimal storage during storms and flooding.
5	☐ Yes ☑ No	7	☐ Yes ☑ No	Steep ledge limits discharge potential.
6	Yes No	None	☐ Yes ☑ No	Mapped as high value on WAP, but appears to be spillover from estuary
7	Yes No	2,4,5	☐ Yes ☑ No	Rockweed provides minimal nutrient removal opportunities from runoff.
8	⊠ Yes □ No	2,5,6	☐ Yes ☑ No	Rockweed provides some forage and shelter for higher trophic organisms, occasional detritus.
9	⊠ Yes □ No	6,7,12	☐ Yes ☑ No	Path will allow public viewing.
10	☐ Yes ☑ No	8	☐ Yes ⊠ No	Hard, steep substrate provides minimal sediment removal function.
11	Yes No	2,8,10,11,16	⊠ Yes □ No	Ledge protects against erosion, rockweed dissipates wave energy.
12	Yes No	14,18,22	☐ Yes ☑ No	Typical rocky shore of Piscataqua River, but path will allow public viewing.
13	☐ Yes ☑ No	6,7,9	☐ Yes ☑ No	Steep rocky slopes prohibit access.
14	⊠ Yes □ No	24	☐ Yes ☑ No	Marine invertebrates and rockweed provide forage for seaducks.

SECTION 5 - VERNAL POOL SUMMARY (Env-Wt 311.10)

Delineations of vernal pools shall be based on the characteristics listed in the definition of "vernal pool" in Env-Wt 104.44. To assist in the delineation, individuals may use either of the following references:

- *Identifying and Documenting Vernal Pools in New Hampshire 3rd Ed.*, 2016, published by the New Hampshire Fish and Game Department; or
- The USACE *Vernal Pool Assessment* draft guidance dated 9-10-2013 and form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

All vernal pool ID numbers are to be displayed and located on the wetland delineation of the subject property.

"Important Notes" are to include documented reproductive and wildlife values, landscape context, and relationship to other vernal pools/wetlands.

Note: For projects seeking federal approval from the USACE, please attach a completed copy of The USACE "Vernal Pool Assessment" form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

VERNAL POOL ID NUMBER	DATE(S) OBSERVED	PRIMARY INDICATORS PRESENT (LIST)	SECONDARY INDICATORS PRESENT (LIST)		LENGTH OF HYDROPERIOD	IMPORTANT NOTES		
1								
2								
3					-		-	
4					-			
5								
SECTION 6	6 - STREAM RE	SOURCES SUMMARY	Y					
DESCRIPTI	ION OF STREAI	M:		STRE	AM TYPE (ROSGEN	1):		
HAVE FISHERIES BEEN DOCUMENTED? Yes No			DOES THE STREAM SYSTEM APPEAR STABLE? Yes No					
OTHER KE	Y ON-SITE FUN	ICTIONS OF NOTE:						
the evalua	-	etermine principal fur			-	otes" are to include characteristics nctions and values reference		

Irm@des.nh.gov or (603) 271-2147
NHDES Wetlands Bureau, 29 Hazen Drive, PO Box 95, Concord, NH 03302-0095
www.des.nh.gov

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FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES			
1	Yes No		Yes No				
2	Yes No		Yes No				
3	Yes No		Yes No				
4	Yes No		Yes No				
5	Yes No		☐ Yes ☐ No				
6	Yes No		☐ Yes ☐ No				
7	Yes No		☐ Yes ☐ No				
8	Yes No		☐ Yes ☐ No				
9	Yes No		☐ Yes ☐ No				
10	Yes No		☐ Yes ☐ No				
11	Yes No		☐ Yes ☐ No				
12	Yes No		Yes No				
13	Yes No		Yes No				
14	4 Yes Yes No						
SECTION 7 - ATTACHMENTS (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)							
Wildlife and vegetation diversity/abundance list.							
1 = 1							
	Wetland delineation plans showing wetlands, vernal pools, and streams in relation to the impact area and surrounding landscape. Wetland IDs, vernal pool IDs, and stream IDs must be indicated on the plans.						
		•		·			
For projects in tidal areas only: additional information required by Env-Wt 603.03/603.04. Please refer to the Coastal Area Worksheet (NHDES-W-06-079) for more information.							

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Portsmouth Wastewater Treatment Facility	City/County: Portsmouth/Rockingham Sampling Date: 1/14/2020
Applicant/Owner: City of Portsmouth	State: NH Sampling Point: HOT-UPL
Investigator(s): B. Griffith	Section, Township, Range:
	relief (concave, convex, none): Slope %: 3
Subregion (LRR or MLRA): LRR R Lat: 43.074354	Long: -70.744328 Datum: WGS 1984
Soil Map Unit Name: Urban land-Canton complex, 3 to 15 percent slopes	NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year?	Yes X No (If no, explain in Remarks.)
Are Vegetation, Soil, or Hydrology significantly distur	
Are Vegetation, Soil, or Hydrology naturally problems	
SUMMARY OF FINDINGS – Attach site map showing sam	pling point locations, transects, important features, etc.
Hydrophytic Vegetation Present? Yes No X	Is the Sampled Area
Hydric Soil Present? Yes No X	within a Wetland? Yes No_X_
Wetland Hydrology Present? Yes No X	If yes, optional Wetland Site ID:
HYDROLOGY	
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1) Water-Stained Leaves (I	
High Water Table (A2) Aquatic Fauna (B13) Application (A2)	Moss Trim Lines (B16)
Saturation (A3) Marl Deposits (B15) Headrange 2 of the Order	Dry-Season Water Table (C2)
Water Marks (B1) — Hydrogen Sulfide Odor (
Sediment Deposits (B2) Oxidized Rhizospheres Oxidized Rhizospheres	
Drift Deposits (B3) Presence of Reduced In	
Algal Mat or Crust (B4) Iron Deposits (B5) Recent Iron Reduction in Thin Muck Surface (C7)	· · · · · · · · · · · · · · · · · · ·
<u> </u>	
Inundation Visible on Aerial Imagery (B7) Other (Explain in Remar Sparsely Vegetated Concave Surface (B8)	rks) Microtopographic Relief (D4) FAC-Neutral Test (D5)
	FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Yes No Depth (inches):	
Water Table Present? Yes No Depth (inches):	
Saturation Present? Yes No Depth (inches):	: Wetland Hydrology Present? Yes No _X
(includes capillary fringe)	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, pre	evious inspections), if available:
Remarks:	
Nomano.	

 VEGETATION – Use scientific names of plants.
 Sampling Point:
 HOT-UPL

Tree Stratum (Plot size: 30' R)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1 2				Number of Dominant Species That Are OBL, FACW, or FAC:0(A)
3. 4.				Total Number of Dominant Species Across All Strata: (B)
5 6				Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)
7				Prevalence Index worksheet:
		=Total Cover		Total % Cover of: Multiply by:
Sapling/Shrub Stratum (Plot size: 15' R)		•		OBL species 0 x 1 = 0
				FACW species 0 x 2 = 0
				FAC species 0 x 3 = 0
2				
3.				FACU species 100 x 4 = 400
4		·		UPL species 0 x 5 = 0
5				Column Totals: 100 (A) 400 (B)
6				Prevalence Index = B/A = 4.00
7				Hydrophytic Vegetation Indicators:
		=Total Cover		1 - Rapid Test for Hydrophytic Vegetation
Herb Stratum (Plot size: 5' R)				2 - Dominance Test is >50%
1. Digitaria sanguinalis	70	Yes	FACU	3 - Prevalence Index is ≤3.0 ¹
2. Festuca rubra	20	Yes	FACU	4 - Morphological Adaptations ¹ (Provide supporting
3. Plantago lanceolata	10	No	FACU	data in Remarks or on a separate sheet)
	10	110	1 700	Double continuity when the Manager transfer of (Forelete)
4				Problematic Hydrophytic Vegetation ¹ (Explain)
5				¹ Indicators of hydric soil and wetland hydrology must
6.				be present, unless disturbed or problematic.
7				Definitions of Vegetation Strata:
8.				Tree – Woody plants 3 in. (7.6 cm) or more in
9.				diameter at breast height (DBH), regardless of height.
10.				Continue (shows by Manada, plants land them 2 in DDI)
11.				Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
12.				
	100	=Total Cover		Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody Vine Stratum (Plot size: 30' R)				
				Woody vines – All woody vines greater than 3.28 ft in
1				height.
2				Hydrophytic
3				Vegetation
4.				Present? Yes No X
		=Total Cover		
Remarks: (Include photo numbers here or on a separ	ate sheet.)			

SOIL Sampling Point HOT-UPL

Profile Desc Depth	cription: (Describe t Matrix	to the de		ument tl x Featur		ator or co	onfirm the absence of	f indicators.)
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-6	10YR 4/4	100					Sandy	
6-10	10YR 4/4	80	10YR 5/6	20	С		Sandy	Distinct redox concentrations
		_ _ _		 		 		
				_ _ _	_ _ _			
¹ Type: C=C	oncentration, D=Depl	etion, RM	=Reduced Matrix, N	/IS=Mas	ked Sand	d Grains.	² Location: Pl	L=Pore Lining, M=Matrix.
Black Hi Hydroge Stratified Depleted Thick Da Sandy M Sandy G Sandy R Stripped Dark Su	(A1) bipedon (A2) stic (A3) sn Sulfide (A4) d Layers (A5) d Below Dark Surface ark Surface (A12) Mucky Mineral (S1) Beleyed Matrix (S4) sedox (S5) I Matrix (S6) rface (S7)	ion and w	Polyvalue Belo MLRA 149B Thin Dark Surf High Chroma S Loamy Mucky Loamy Gleyed Depleted Matri Redox Dark Su Depleted Dark Redox Depress Marl (F10) (LR) ace (S9) Sands (S Mineral Matrix (x (F3) urface (F Surface sions (F6 R K, L)) (LRR R 611) (LRI (F1) (LRI F2) 66) (F7) 8)	, MLRA 1 R K, L) R K, L)	2 cm Mu Coast Pr 49B) 5 cm Mu Polyvalue Thin Dari Iron-Man Piedmon Mesic Sp Red Pare Very Sha	or Problematic Hydric Soils ³ : ck (A10) (LRR K, L, MLRA 149B) airie Redox (A16) (LRR K, L, R) cky Peat or Peat (S3) (LRR K, L, R) e Below Surface (S8) (LRR K, L) k Surface (S9) (LRR K, L) ganese Masses (F12) (LRR K, L, R) t Floodplain Soils (F19) (MLRA 149B) codic (TA6) (MLRA 144A, 145, 149B) ent Material (F21) allow Dark Surface (F22) xplain in Remarks)
Type: Depth (ii	nches):						Hydric Soil Presen	nt? Yes No X
	m is revised from No 2015 Errata. (http://w							CS Field Indicators of Hydric Soils,

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Portsmouth Wastewater Treatment Facility	City/County: Portsmouth/Rockingham Sampling Date: 1/14/2020			
Applicant/Owner: City of Portsmouth State: NH Sampling Point: HOT-W				
Investigator(s): B. Griffith	Section, Township, Range:			
	relief (concave, convex, none): Slope %: 3			
Subregion (LRR or MLRA): LRR R Lat: 43.074282	Long: -70.744530 Datum: WGS 1984			
Soil Map Unit Name: Urban land-Caton complex, 3 to 15 percent slopes	NWI classification: E2EM1			
Are climatic / hydrologic conditions on the site typical for this time of year?	Yes X No (If no, explain in Remarks.)			
Are Vegetation, Soil, or Hydrology significantly distur				
Are Vegetation, Soil, or Hydrology naturally problems				
SUMMARY OF FINDINGS – Attach site map showing sam	pling point locations, transects, important features, etc.			
Hydrophytic Vegetation Present? Yes X No	Is the Sampled Area			
Hydric Soil Present? Yes X No	within a Wetland? Yes X No			
Wetland Hydrology Present? Yes X No	If yes, optional Wetland Site ID:			
HYDROLOGY				
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)			
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)			
X Surface Water (A1) Water-Stained Leaves (I				
X High Water Table (A2) Aquatic Fauna (B13)	Moss Trim Lines (B16)			
Saturation (A3)Marl Deposits (B15)Dry-Season Water Table (C2)				
Water Marks (B1) Hydrogen Sulfide Odor (C1) Crayfish Burrows (C8)				
Sediment Deposits (B2) Oxidized Rhizospheres on Living Roots (C3) Saturation Visible on Aerial Imagery (C9)				
Drift Deposits (B3) Presence of Reduced Iro				
Algal Mat or Crust (B4) Recent Iron Reduction in				
Iron Deposits (B5) Thin Muck Surface (C7) Shallow Aquitard (D3) Other (First in Remarks) Minutes a graph in Relief (D4)				
Inundation Visible on Aerial Imagery (B7) Other (Explain in Remar				
Sparsely Vegetated Concave Surface (B8)	X FAC-Neutral Test (D5)			
Field Observations:				
Surface Water Present? Yes X No Depth (inches):				
Water Table Present? Yes X No Depth (inches):				
Saturation Present? Yes X No Depth (inches):	:0 Wetland Hydrology Present? Yes X No			
(includes capillary fringe)				
Describe Recorded Data (stream gauge, monitoring well, aerial photos, pre	evious inspections), if available:			
Remarks:				

VEGETATION – Use scientific names of plants.

Sampling Point: HOT-Wet

·	Absolute	Dominant	Indicator	T		
Tree Stratum (Plot size: 30' R)	% Cover	Species?	Status	Dominance Test worksheet:		
1				Number of Dominant Species		
2				That Are OBL, FACW, or FAC:1 (A)		
3				Total Number of Dominant		
4				Species Across All Strata: 1 (B)		
5				Percent of Dominant Species		
6				That Are OBL, FACW, or FAC: 100.0% (A/B)		
7.				Prevalence Index worksheet:		
		=Total Cover		Total % Cover of: Multiply by:		
Sapling/Shrub Stratum (Plot size: 15' R)				OBL species 5 x 1 = 5		
1.				FACW species 95 x 2 = 190		
2				FAC species 0 x 3 = 0		
3				FACU species 0 x 4 = 0		
4.				UPL species 0 x 5 = 0		
5		_		Column Totals: 100 (A) 195 (B)		
6.		<u> </u>		Prevalence Index = B/A = 1.95		
7.				Hydrophytic Vegetation Indicators:		
		=Total Cover		1 - Rapid Test for Hydrophytic Vegetation		
Herb Stratum (Plot size: 5' R)	1	1		X 2 - Dominance Test is >50%		
Spartina patens	95	Yes	FACW	X 3 - Prevalence Index is ≤3.0 ¹		
Salicornia depressa	5	No	OBL	4 - Morphological Adaptations ¹ (Provide supporting		
3				data in Remarks or on a separate sheet)		
4.				Problematic Hydrophytic Vegetation ¹ (Explain)		
5				¹ Indicators of hydric soil and wetland hydrology must		
6				be present, unless disturbed or problematic.		
7				Definitions of Vegetation Strata:		
8.				Tree – Woody plants 3 in. (7.6 cm) or more in		
9.				diameter at breast height (DBH), regardless of height.		
10				Sapling/shrub – Woody plants less than 3 in. DBH		
11				and greater than or equal to 3.28 ft (1 m) tall.		
12				Herb – All herbaceous (non-woody) plants, regardless		
	100	=Total Cover		of size, and woody plants less than 3.28 ft tall.		
Woody Vine Stratum (Plot size: 30' R)				Woody vines – All woody vines greater than 3.28 ft in		
1.				height.		
2.						
3.				Hydrophytic		
				Vegetation Present? Yes X No		
-		=Total Cover				
Remarks: (Include photo numbers here or on a separ	rate sheet)					
Remarks. (molude prioto numbors note of on a separ	ale silect.,					

SOIL Sampling Point HOT-Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth	Matrix			x Featur		. 2		
(inches)	Color (moist)	<u>%</u>	Color (moist)	<u>%</u>	Type ¹	Loc ²	Texture Remarks	
0-1	10y 4/1	100					Sandy	
1-3	10YR 3/1	100					Peat	
3-19	10Y 4/1	100					Sandy	
								_
	oncentration, D=Depl	etion, RM	1=Reduced Matrix, N	/IS=Mas	ked Sand	I Grains.		
Hydric Soil I Histosol			Polyvalue Belo	w Surfa	ca (S8) (I	RR R	Indicators for Problematic Hydric Soils ³ : 2 cm Muck (A10) (LRR K, L, MLRA 149B)	`
	pipedon (A2)		MLRA 149B		ce (50) (I	LIXIX IX,	Coast Prairie Redox (A16) (LRR K, L, R)	'
Black Hi			Thin Dark Surf	•	(LRR R	, MLRA 1		R)
Hydroge	n Sulfide (A4)		High Chroma S	Sands (S	611) (LRF	R K, L)	Polyvalue Below Surface (S8) (LRR K, L)	·
Stratified	l Layers (A5)		Loamy Mucky	Mineral	(F1) (LR F	R K, L)	Thin Dark Surface (S9) (LRR K, L)	
X Depleted	Below Dark Surface	(A11)	Loamy Gleyed	Matrix (F2)		Iron-Manganese Masses (F12) (LRR K, L,	R)
	ark Surface (A12)		Depleted Matri				Piedmont Floodplain Soils (F19) (MLRA 1	
	lucky Mineral (S1)		Redox Dark Su				Mesic Spodic (TA6) (MLRA 144A, 145, 14	9B)
	leyed Matrix (S4)		Depleted Dark				Red Parent Material (F21)	
	edox (S5) Matrix (S6)		Marl (F10) (LR		8)		Very Shallow Dark Surface (F22) Other (Explain in Remarks)	
	face (S7)		Mail (F10) (LN	K K, L)			Other (Explain in Remarks)	
³ Indicators of	f hydrophytic vegetati	on and w	etland hydrology mu	ust be pr	esent, ur	nless dist	turbed or problematic.	
	_ayer (if observed):							
Type:								
Depth (ir	nches):						Hydric Soil Present? Yes X No	_
Remarks:								
	m is revised from No 2015 Errata. (http://w		-				n 2.0 to include the NRCS Field Indicators of Hydric Soils	,
version 7.0,	2013 Enata. (http://w	ww.iiics.	usua.gov/internet/1	SL_DOC	OWILINI	5/111C3 14/	P2P2_031233.d00x)	

Peirce Island Wastewater Treatment Facility Wetland Narrative

Section 1. Required Information

Peirce Island is located in the City of Portsmouth on the Piscataqua River. It is owned by the City and the State of NH, and provides multiple public services, including the WWTF, the State Fish Pier, a public outdoor pool, boat ramp, park and numerous walking trails. The slip lined portion of the Project Area is contained to the Peirce Island Road Bridge. The pipeline replacement portion of the Project Area is linear on the west end of the island, widens out near the parking area, and narrows again for the recreational area at the east end near the wastewater treatment facility. Peirce Island is bordered by estuarine habitats, including rocky shore (E2RS1/2) and salt marsh (E2EM1). No impacts to these wetland resources are proposed. Most of the work area lies within the 100-foot tidal buffer zone, with a smaller section of the pipeline corridor and of the parking area lying within protected shoreland. Based on consultation with DES Shoreland, a Permit-By-Notification application was submitted concurrently with the Wetlands application for pipeline impacts in the protected shoreland, but outside of the tidal buffer zone. No freshwater resources are within or adjacent to the impact areas. Marsh elder, a State Threatened plant species, forms a narrow band along much of the southern shore of the island.

See representative photographs of resources in Exhibit 15.

Tidal Buffer Zone

Most of the proposed work occurs within the jurisdictional tidal buffer zone (TBZ), the majority of which is previously developed (PDTBZ). The PDTBZ includes the paved road in the vicinity of the pipeline and slipline work, grassed lawns and unpaved parking area in the vicinity of the pipeline work, paved areas and structures within the wastewater treatment facility, and the gravel lot used as a construction laydown area and snow dump. A smaller section of the TBZ in the proposed project area is undisturbed TBZ, primarily in the vicinity of the recreational trail. This section is dominated by small trees and vines: staghorn sumac (*Rhus typhina*), oriental bittersweet (*Celastrus orbiculatus*), black cherry (*Prunus serotina*) and gray birch (*Betula populifolia*). The ground cover is a mix of perennial grasses and some forbs.

Salt Marsh

Several sections of salt marsh occur on the southern, more protected side of the island. The marshes are a mix of high marsh and low marsh with typical *Spartina* species (*S. alterniflora* in the low marsh and *S. patens* dominating the high marsh). Typical salt marsh forbs dominate in the upper marsh and marsh elder, *Iva frutescens*, (NH state-Threatened) occurs along the upland border. This shrub is common in southern New England, and is reaching the northern edge of its geographic range in NH.

Rocky Shore

The eastern portion of Peirce Island and the shoreline of the Piscataqua River adjacent Peirce Island Road Bridge below the Highest Observable Tide Line are predominantly bedrock outcrop and cobble gravel/shore. Rockweeds (*Ascophyllum* and *Fucus* spp) are prevalent in the lower intertidal zone on boulders and ledge. Much of the remaining rocky shore is unvegetated. The sections on which the bridge and the WWTF are located are steep-sided exposed ledge or boulders, with abundant rockweeds. By the gravel lot and access road, the rocky shore is more gradual in slope and of finer gravel and cobble. Off the northwestern corner of the Peirce Island Rd. Bridge, a narrow shelf of cobble and gravel occurs between the grassed upland bank and steep-sloped riprap. The cobble gravel areas are generally unvegetated with minor occurrences of salt tolerant species such as *Spartina patens*, *Limonium carolinianum*, and *Solidago sempervirens*.

Protected Shoreland

Approximately a third of the pipeline replacement work will occur in the protected shoreland zone above the PDTBZ. These areas of the island are developed and maintained, and includes Peirce Island Road, the boat ramp parking area and mowed parkland. A Shoreland PBN for utility maintenance was submitted concurrently with this Wetlands application.

State-Listed Species

The NHB data review (NHB21-1136; Exhibit 19) indicates eelgrass (*Zostera maritima*) and Atlantic and Shortnose Sturgeon (*Acipenser oxyrinchus* and *A. brevirostrum*) occur in the subtidal waters off Peirce Island. The proposed work will have no adverse impacts to those marine species. The project does not impact any estuarine or marine wetland resources, nor does it include in-water work that would adversely affect marine biota or their habitats.



The State of New Hampshire

Department of Environmental Services



Robert R. Scott, Commissioner

May 24, 2021

CITY OF PORTSMOUTH 97 JUNKINS AVE PORTSMOUTH NH 03801 PORTSMOUTH NH 03801

Re: Accepted Shoreland Permit by Notification (RSA 483-B)

NHDES File Number: 2021-01561

Subject Property: 200 Peirce Island Road, Portsmouth, Tax Map #208, Lot #1

Dear Applicant:

On May 20, 2021, the New Hampshire Department of Environmental Services (NHDES) Shoreland Program received the above-referenced Shoreland Permit by Notification (SPBN). In accordance with RSA 483-B:5-b, I and Env-Wq 1406.19, on May 20, 2021, the NHDES accepted the SPBN. The enclosed SPBN form is your permit. Any individual conducting work under this permit is advised to post a copy of the enclosed SPBN form on site in a prominent location, visible to inspecting personnel, at all times during construction.

Only the impacts shown on the submitted plans and accepted by NHDES as part of the SPBN are authorized under RSA 483-B. Any and all impacts not shown on the accepted plans or permitted through another SPBN or Shoreland Permit Application will render this SPBN invalid and will be in violation of RSA 483-B.

Please note that this SPBN cannot be amended. Prior to any change to the size or location of the proposed impacts, please contact me at Craig.Day@des.nh.gov or (603) 271-0649 to determine the appropriate method to obtain any additional approval under RSA 483-B:5-b as may be required. Please do not hesitate to contact me as noted above if you have additional questions.

Sincerely,

Craig W. Day

Character

Shoreland Specialist, Shoreland Program
Wetlands Bureau, Land Resources Management

Water Division

Enclosure

cc: Erik N. Meserve



SHORELAND PERMIT BY NOTIFICATION (PBN) NOTIFICATION FORM



Water Division/Land Resources Management Shoreland Program Check the Status of your PBN

RSA/Rule: RSA 483-B/Env-Wq 1400

(D)	ECEIVEN		PBN Accepted, Expires:	5 24 2026
	Administrative MAY 2 0 2021	Administrative Use	PBN Rejected	Reviewer's Initials: CLUO
	Only	Only	File No.: 2621-6150	Admin's Initials: BH
LAND	NHDES RESOURCES MANAGEMENT		Check No.: 20/423	Amount: \$40,00

This form requests authorization to excavate, fill, or construct new structures within the protected shoreland, which is 250 feet landward of the reference line of public waters, as regulated under RSA 483-B. Refer to the cover sheet to determine your eligibility to use this form in lieu of the standard Shoreland Permit Application. **Please note:** Notification packages missing required components will be rejected and the fee will not be returned.

SECTION 1 - PROPERTY OWNER (RSA 483-B:5-b; Env-Wq 1406.17)					
LAST NAME, FIRST NAME, M.I.: City of Portsmouth					
MAILING ADDRESS: 97 Junkins Avenue	TOWN/ CITY: Portsmouth	STATE: NH	ZIP CODE: 03801		
PHONE: N/A	EMAIL: N/A				
SECTION 2 - PROJECT LOCATION (RSA 483-B:5-b; Env-Wq 1406.17)					
ADDRESS: 200 Peirce Island Road	TOWN/ CITY: Portsmouth	STATE: NH	ZIP CODE: 03801		
WATERBODY NAME: Piscataqua River	BODY NAME: Piscataqua River TAX MAP/ LOT: 208/1				
SECTION 3 - CONTRACTOR OR AGENT (Env-Wq 1406.17)					
LAST NAME, FIRST NAME, M.I: Meserve, Erik, N.					
MAILING ADDRESS: 250 Apollo Drive	TOWN/ CITY: Chelmsford	STATE: MA	ZIP CODE: 01824		
PHONE: (978) 905-3145 EMAIL: erik.meserve@aecom.com					

SECTION 4 - PROJECT DESCRIPTION (Env-Wq 1406.17)

Provide a **brief** description of the proposed project including square footage of impacts and dimensions of new structures.

The City of Portsmouth is proposing several improvements to Peirce Island including: a recreational trail; converting a former informal parking area and permitted snow dump to a formal grassed public parking area and natural lands; permanently replacing two sewer force mains and one water main; and slip lining a sewer force main under Peirce Island Road Bridge. This application is submitted concurrently with a Standard Dredge & Fill Wetlands application to address pipeline impacts that will occur in the protected shoreland and outside the tidal buffer zone. Please see Exhibit 3 for an expanded Project Description.

TOTAL SQUARE FEET OF IMPACT: 30,441 TOTAL SQUARE FEET OF NET CHANGE IN IMPERVIOUS AREA: 0 sf

Total impact area is determined by the sum of all areas disturbed by excavation, fill, and construction. Examples include, but are not limited to: constructing new driveways, constructing new structures, removing or replacing structure foundations, grading, and installing a new septic system or well.



SHORELAND PERMIT BY NOTIFICATION (PBN) **ELIGIBILITY AND CHECKLIST**



Water Division/Land Resources Management **Shoreland Program**

Check the Status of your PBN

Keep this page for your reference; do not submit with your application.
Please read this checklist and confirm that your project meets the qualifications for a Shoreland Permit by Notification (PBN). Note that if a PBN is rejected, there is no process for adjustment, and the fee will not be returned.
ELIGIBILITY
Your project must meet EACH of the following statements to qualify for the simplified PBN process:
The project does not include work in the water or within the bank of a waterbody, such as a dock, boathouse, or retaining wall; the project is not within the 100-foot tidal buffer zone; and the project does not include beach sand replenishment.
The project does not impact more than 1,500 square feet or result in a net increase of more than 900 square feet of impervious area. "Project" is defined as the full scope of development activities that are proposed to take place on a parcel of property within 5 years of the application date. These square footage limits do not apply to project types 2, 3, and 4 listed in Section 5.
The project has not already begun or been completed. After-the-Fact projects must be reviewed as Shoreland Permit Applications.
The project does not include the modification, expansion, or redevelopment of a <u>nonconforming structure</u> . These projects typically require a More Nearly Conforming Request and review as Shoreland Permit Applications. Note that exceptions <i>may</i> apply to some projects involving decks attached to nonconforming primary structure. Contact the Shoreland Program for more information.
Does your project proposal meet ALL of the statements above?
XES. Proceed to completing the Shoreland PBN form below.
NO. You cannot use this form – you must use the standard <u>Shoreland Permit Application Form</u> and/ or a <u>Wetlands Permit Application Form</u> .
UNSURE?
Check the <u>List of Activities That Do Not Require Shoreland Permitting.</u>
See the Shoreland Program's <u>Vegetation Management Fact Sheet</u> and <u>Frequently Asked Questions</u> .
• Contact the Shoreland Program at shoreland@des.nh.gov or call (603) 271-2147 to speak with a Shoreland Specialist.
INSTRUCTIONS
Mail your complete application form and supporting materials to: NHDES Shoreland Program, 29 Hazen Drive, PO Box 95, Concord, NH 03302-0095.
To increase the chances of your PBN being accepted, ensure that you have completed the following:
\square The property owner has read and signed the form and initialed the conditions and certifications in Sections 9 and 10.
The notification includes a check with the correct fee, per Section 6.
\square The notification includes photos of each area that will be impacted, per Section 7.
\square The notification includes a complete plan of the proposed work in accordance with Section 8 of the PBN Form.
WHAT TO EXPECT

shoreland@des.nh.gov or (603) 271-2147 NHDES Shoreland Program, 29 Hazen Drive, PO Box 95, Concord, NH 03302-0095 www.des.nh.gov

The New Hampshire Department of Environmental Services (NHDES) will review your notification within five business days and

email (if provided) or mail you a copy of the accepted notification or a notice of rejection.

YES NO						
YES NO	This project proposes a pervious (i.e. permeable) surface technology. Plans must include the location and type of the surface and a cross-section depicting the construction method, materials, and specifications as					
	9 - CONDITIONS (Env-Wq 1406.20; RSA 48	33-B:9, V, (d))				
Initial eac	ch of the required conditions below.					
	Erosion and siltation control measures shather the project; and remain in place					
1 4 1	Erosion and siltation controls shall be approcharacteristics of the site, including slope, soi					
6	No person undertaking any activity in the activity to cause or contribute to, any violated to or successor rules in Env-Wq 1700.					
1.0. 4.	Any fill used shall be clean sand, gravel, ro	ock, or other suitable material.				
1	5. For any project where mechanized equipment will be used, orange construction fence shall: be installed prior to the start of work at the limits of the temporary impact area as shown on the plans approved as part of a permit or accepted as part of the permit by notification; be maintained throughout the project; and remain in place until all mechanized equipment has been removed from the site.					
	10 - CERTIFICATIONS (Env-Wq 1406.18) ch of the required certifications below.					
1,0 -1.	The property owner shall sign the notification	tion form below.				
2. The signature(s) shall constitute certification that: the information provided is true, complete, and not misleading to the knowledge and belief of the signer; the signer understands that any permit by notification obtained based on false, incomplete, or misleading information is not valid; the project as proposed complies with the minimum standards established in RSA 483-B:9, V and will be constructed in strict accordance with the proposal; the signer accepts the responsibility for understanding and maintaining compliance with RSA 483-B and these rules; the signer understands that an accepted shoreland permit by notification shall not exempt the work proposed from other state, local, or federal approvals; the signer understands that incomplete notifications shall be rejected and the notification fee shall not be returned; and the signer is subject to the applicable penalties in RSA 641, Falsification In Official Matters.						
3. The signature of the property owner certifies that the property owner has authorized the agent to act on the property owner's behalf for purposes of the notification. (X) Not Applicable)						
SECTION 11 - REQUIRED SIGNATURE (RSA 483-B:5-b; Env-Wq 1406.18)						
SIGNATUF	RE/(OWNER)!	PRINT NAME LEGIBLY: City Ferry Jesmarais, Engineer	DATE: 5/12/21			
SIGNATUR	RE (AGENT, IF APPLICABLE):	PRINT NAME LEGIBLY:	DATE:			

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SECTION 5 - PBN CRITERIA (RSA 483-B:5-b; Env-Wq 1406.05) Check one of the following project type criteria.					
1. This project impacts less than 1,500 square feet in total, with a net increase in impervious area, if any, of no more than 900 square feet. PBN Impact Limit: 1,500 square feet/ Fee: \$400.					
_		proposed for the purpose of stormwater management improvements, erosion control, or restoration or enhancement. <i>PBN Impact Limit: None/ Fee: \$200.</i>			
_		for the maintenance, repair, and improvement of public utilities, public roads, and public access mpact Limit: None/ Fee: \$400.			
_		nsists of geotechnical borings, test wells, drinking water wells or is a site remediation project and irements of Env-Wq 1406.05. <i>PBN Impact Limit: None / Fee: \$400.</i>			
SECTION	6 - FEE (RSA	A 483-B:5-b; Env-Wq 1406.16)			
		determine fee. Make checks and money orders payable to "Treasurer - State of NH". Undated cepted. TOTAL FEE: \$400			
SECTION	7 - PHOTOS	(RSA 483-B:5-b; Env-Wq 1406.16)			
□ Date	ed photograp	ohs of each area proposed to be impacted are required for all projects.			
Check YE	S or NO to a	QUIREMENTS (RSA 483-B:5-b; Env-Wq 1406.16) Il statements, and review the applicable plan requirements. If your plans do not include the equired, your notification will be rejected.			
⊠ YES	YES Required for all projects: A clear and detailed plan of work depicting, at a minimum, all impact areas, the reference line, and property lines. Plans that are not to scale must show all relevant dimensions and distances from the reference line and dimensions.				
YES NO	dimensions	t proposes an increase in <u>impervious</u> (i.e. non-permeable) area. Plans must include the and locations of all existing and proposed impervious surfaces on the lot that are within 250 reference line. Decks are typically considered impervious.			
YES NO	< 20%	This project proposes an increase in impervious area, and the total post-construction impervious area on the lot within 250 feet of the reference line will not exceed 20%.			
☐ YES ☑ NO	1 111 - 311% 1				
☐ YES ⊠ NO	1 > 30% I stormwater management system designed and certified by a professional engineer to account				
☐ YES ☑ NO	waterfront huffer that will be impacted including groundcover, and calculate the tree and canling point scores in				
∑ YES □ NO	= I area of the woodland hifter to be deciphated and maintained as hatilral woodland. See the vegetation I				

NHDES-W-06-039

☐ YES	This project proposes to install or expand an <u>accessory structure</u> , such as a patio or shed, within 50 feet of the reference line. All plans <i>must</i> demonstrate that the height, size, and setback limitations for accessory structures will be met. These limitations are described within the <u>Accessory Structure Fact Sheet</u> . The <u>shoreland frontage</u> on this lot is: 8,284 linear feet. N/A – There is no direct frontage on this lot.					
☐ YES ⊠ NO	This project proposes a pervious (i.e. permeable) surface technology. Plans must include the location and type of the surface and a cross-section depicting the construction method, materials, and specifications as					
1	N 9 - CONDITIONS (Env-Wq 1406.20; RSA 48	33-B:9, V, (d))				
Initial e	ach of the required conditions below.					
T.1).	1. Erosion and siltation control measures sha throughout the project; and remain in place					
T.D.	Erosion and siltation controls shall be appro characteristics of the site, including slope, soi					
T.D.	3. No person undertaking any activity in the activity to cause or contribute to, any viola 1700 or successor rules in Env-Wq 1700.					
1.0.	4. Any fill used shall be clean sand, gravel, ro	ock, or other suitable material.				
1.1)	5. For any project where mechanized equipment will be used, orange construction fence shall: be installed prior to the start of work at the limits of the temporary impact area as shown on the plans approved as part of a permit or accepted as part of the permit by notification; be maintained throughout the project; and remain in place until all mechanized equipment has been removed from the site.					
	N 10 - CERTIFICATIONS (Env-Wq 1406.18) each of the required certifications below.					
1.0.	1. The property owner shall sign the notifica	tion form below.				
2. The signature(s) shall constitute certification that: the information provided is true, complete, and not misleading to the knowledge and belief of the signer; the signer understands that any permit by notification obtained based on false, incomplete, or misleading information is not valid; the project as proposed complies with the minimum standards established in RSA 483-B:9, V and will be constructed in strict accordance with the proposal; the signer accepts the responsibility for understanding and maintaining compliance with RSA 483-B and these rules; the signer understands that an accepted shoreland permit by notification shall not exempt the work proposed from other state, local, or federal approvals; the signer understands that incomplete notifications shall be rejected and the notification fee shall not be returned; and the signer is subject to the applicable penalties in RSA 641, Falsification In Official Matters.						
3. The signature of the property owner certifies that the property owner has authorized the agent to act on the property owner's behalf for purposes of the notification. (Not Applicable)						
SECTION 11 - REQUIRED SIGNATURE (RSA 483-B:5-b; Env-Wq 1406.18)						
SIGNAT	URE/(OWNER)?	PRINT NAME LEGIBLY: (ity Ferry Remarks, Engineer	DATE: 5/12-/2-1			
SIGNAT	URE (AGENT, IF APPLICABLE):	PRINT NAME LEGIBLY:	DATE:			