

**COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF FISH AND GAME
DIVISION OF FISHERIES AND WILDLIFE**



**ITEMIZED PROPOSAL
WITH
SPECIAL PROVISIONS
FOR**

**SCHOOLHOUSE POND DAM REMOVAL PROJECT, ARNOLD POND DAM REMOVAL
PROJECT, AND SALMON BROOK DAM REMOVAL PROJECT**

SUTTON, MA AND BROOKFIELD, MA

THIS PROPOSAL TO BE OPENED AND READ

NOVEMBER 5, 2024

11:00 AM

THE COMMONWEALTH OF MASSACHUSETTS: NOTICE TO CONTRACTORS:

The Department of Fish and Game, through the Division of Fisheries and Wildlife, invites sealed bids for a project consisting of removal of Schoolhouse Pond Dam, Arnold Pond Dam, and Salmon Brook Dams. Schoolhouse Pond Dam Removal includes demolition of a concrete, stone, and earthen dam, construction of precast concrete culvert and wingwalls, construction of pilot channel through former impoundment, riprap slope protection, boulder riffle grade control, guardrail, pavement restoration, streambed restoration, tree plantings at cemetery located at 20 Armsby Road; site restoration, water control and miscellaneous work in the Town of Sutton, MA. Arnold Pond Dam Removal includes demolition of the existing concrete, stone, and earthen dam, embankment regrading, installation of pedestrian bridge, construction of cast-in-place concrete abutments, placement of recovered stone around bridge abutments, site restoration, water control, and miscellaneous work in the Town of Sutton, MA. Salmon Brook Dams Removal includes establishing access route to dams, demolition of a concrete, stone, and earthen dam, demolition of a second earthen embankment dam, demolition of stone culvert, site restoration, and miscellaneous work in the Town of Brookfield, MA. The work shall be performed in accordance with plans and specifications prepared by Tighe & Bond, Inc. The estimated project value is (\$2,072,000).

Bids will be submitted on the forms furnished by the Department in the bid package and will be received at the Massachusetts Office of Fishing and Boating Access, One Rabbit Hill Road, Westborough, Massachusetts, 01581, until 11:00 AM, local time, Tuesday, November 5, 2024, at which time they will be publicly opened. All bids must be submitted in accordance with the Contract Documents and shall be accompanied by a bid deposit in the amount of 5% of the value of the bid. Bid deposits, payable to the Commonwealth of Massachusetts, Department of Fish and Game, shall be in the form of a bid bond, certified, cashier's or treasurer's check issued by a responsible bank or trust company.

Contract Documents will be available after October 9, 2024 from the Tighe & Bond website located at <http://www.tighebond.com/Projects-Out-to-Bid/> Prospective bidders are required to register on the Tighe & Bond website to download Bidding Documents.

A non-mandatory pre-bid meeting will be held on October 22, 2024 at 10:00 AM, local time, at MassWildlife Field Head Quarters at 1 Rabbit Hill Road, Westborough, MA, 01581. Bidders must be pre-qualified by the Massachusetts Dept. of Transportation (MassDOT) Highway Division to bid on the above project. An award will not be made to a Contractor who is not pre-qualified by MassDOT Highway Division prior to the opening of proposals. Bidders shall also have a minimum of 10 years of experience and shall have successfully completed at least five dam and roadway culvert construction projects of similar size within the last 10 years. Additional qualification requirements apply. Submit a summary of experience and representative projects with references to show compliance with the requirements listed above. Minimum wage rates for this project have been predetermined by M.G.L. under Chapter 149, Section 26 to 27D, inclusive. Proposals that do not have the Affidavit (of non-collusion, etc.) properly completed will be declared informal. Bids are subject to provisions M.G.L. Chapter 30, Sections 39F, 39G, 39H, 39K and 39M and Chapter 149, Sections 44A to 44H, inclusive. This contract is subject to all State Laws and Regulations concerning Minority Business Enterprises including Executive Order 237. The right is reserved to waive any informality in or reject any or all proposals. **An award will not be made to any Contractor who is not able to complete the work no later than October 30, 2026.**

By: Tom O'Shea, Commissioner of Department of Fish and Game.

INSTRUCTION TO BIDDERS

1.0 BIDDING REQUIREMENTS

1.1 Deadline

The Department of Fish and Game, through the Division of Fisheries and Wildlife, invites sealed bids for the removal of Schoolhouse Pond Dam, Arnold Pond Dam, and Salmon Brook Dams, including related work. The estimated project value is (\$2,072,000). All bids must be received by **11:00 AM on November 5, 2024** at the office of Massachusetts Office of Fishing and Boating Access, One Rabbit Hill Road, Westborough, MA 01581, at which time they will be publicly opened. Bids for all items must be received in sealed envelopes clearly marked: "**BID: SCHOOLHOUSE POND DAM REMOVAL, ARNOLD POND DAM REMOVAL, SUTTON, MA, SALMON BROOK DAM REMOVAL, BROOKFIELD, MA**". All questions concerning this bid or the plans should be submitted in writing to Daniel Hammerberg, Tighe & Bond, 1 University Ave #100, Westwood, MA 02090, DHammerberg@tighebond.com. In order to receive consideration, questions must be received by Engineer at least five days prior to the date fixed for the opening of Bids. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda to all parties recorded by Engineer as having received the Bidding Documents not later than three days prior to the date fixed for the opening of Bids. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

1.2 Bid Deposit

All bids must be accompanied by a bid deposit equal to 5% of the total contract value. The deposit may be in the form of a certified check, bank, treasurer's or cashier's check, cash or a bid bond from a licensed surety company.

This bid deposit shall become the property of the Commonwealth of Massachusetts as liquidated damages if, after an award is made, said bidder shall fail to enter into the required contract within seven (7) days, after notice of said award.

All bid deposits of unsuccessful bidders, except those of the lowest responsible and eligible general bidders, shall be returned after the opening of the general bids. The bid deposits of the lowest responsible and eligible bidders shall be returned upon the execution and delivery of the general contract, or if no award is made, upon the expiration of thirty (30) days after the opening of the general bids. A bid may not be withdrawn by the bidder for a period of sixty (60) days excluding Saturdays, Sundays and legal holidays, after the day of bid opening.

1.3 Performance Bond & Labor and Materials Payment Bond

Prior to the signing of the contract the successful bidder must provide continuous bonds, each in an amount equal to one hundred percent (100%) of the total contract value. Such surety must be in accordance with the laws of the Commonwealth of Massachusetts governing public work, to cover faithful performance of the contract and payment of all obligations arising there under. Further, said surety must be current, and shall remain with the Department for the duration of the contract.

2.0 BIDDER'S REQUIREMENTS

2.1 General Insurance

The successful bidder must be prepared to provide evidence of insurance in the form of a Certificate of Insurance, and in amounts as indicated in the Specifications under the heading Insurance, including proof of Workman's Compensation coverage and Automobile and Vehicular coverage.

2.2 Experience Requirements and MassDOT Prequalification

Bidders must be pre-qualified by the Massachusetts Dept. of Transportation (MassDOT) Highway Division in order to bid on the above project. An award will not be made to a Contractor who is not pre-qualified by MassDOT Highway Division prior to the opening of proposals. Bidders shall also have the

following qualifications:

- Have a minimum of 10 years of experience
- As prime contractor, have successfully completed at least five dam and roadway culvert-related construction projects of similar size, defined as in excess of \$500,000 in value per project, within the last 10 years. This experience shall consist of at least one project that includes the removal of a state-registered dam, at least one municipal or state culvert or bridge project, and at least one project in excess of \$1,000,000 in value.

2.3 Pre-Bid Meeting

A non-mandatory pre-bid meeting will be held on October 22, 2024 at 10:00 AM, local time, at MassWildlife Field Head Quarters at 1 Rabbit Hill Road, Westborough, MA, 01581. Representatives of Owner and Engineer will be present to discuss the Project. Engineer will transmit to all prospective Bidders of record such Addenda as Engineer considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

3.0 BID REQUIREMENTS

3.1 General Requirements

All bids for consideration must fulfill bidding requirements and bidder's requirements, as outlined in Section 1.0 and 2.0 above. Failure to adhere to any of those, and all additional requirements herein, may invalidate your bid and eliminate it from consideration. The Department will not accept responsibility for inconsistencies in the bid or bidder's problems, based on the bidder's failure to view the site, and inform him/herself of general site conditions.

3.2 Permits, Fees and Notices

With the exception of the permits listed herein, the Contractor shall obtain all permits, licenses, certificates inspection and other legal documents required, both permanent and temporary. All permits must be followed during the work.

The following permits have been obtained for the project and are enclosed:

Arnold Pond Dam Removal

- An Order of Conditions from the Sutton Conservation Commission
- Chapter 253 Dam Safety Permit from the Mass. Office of Dam Safety
- 401 Water Quality Certification from the Massachusetts Department of Environmental Protection
- Section 404 authorization from US Army Corps of Engineers

Schoolhouse Pond Dam Removal

- An Order of Conditions from the Sutton Conservation Commission
- Chapter 253 Dam Safety Permit from the Mass. Office of Dam Safety
- 401 Water Quality Certification from the Massachusetts Department of Environmental Protection
- Section 404 authorization from US Army Corps of Engineers

Salmon Brook Dam Removals

- 401 Water Quality Certification from the Massachusetts Department of Environmental Protection

The following permits have been applied for but have not been obtained at the time of bidding. No work is allowed at these sites until these permits are received:

Arnold Pond Dam Removal:

- None

Schoolhouse Pond Dam Removal:

- None

Salmon Brook Dam Removals:

- An Order of Conditions from the Brookfield Conservation Commission
- Section 404 authorization from US Army Corps of Engineers

3.3 Applications for Progress Payments

A separate Schedule of Values and Application for Payment shall be submitted for each of the three sites where work under this project is proposed for funding tracking purposes. All requests for payment must be itemized and submitted to the Engineer for approval. The procedure for payments shall be as follows:

1. The Contractor shall prepare a draft pay estimate and submit to the Engineer for review and comment.
2. The Engineer prepares the pay estimate and submits to the Contractor for signatures.
3. Contractor shall sign and return the pay estimate to the DFW for payment.
4. Progress payments shall be no more frequent than biweekly.

Price adjustments have been included for hot mix asphalt mixtures, diesel fuel, and gasoline for the Schoolhouse Pond Dam removal project as it is a roadway project. There are no price adjustments for the Arnold Pond Dam and Salmon Brook Dam removal projects since they are dam projects not covered by price adjustment law.

3.4 Manpower Utilization

Weekly manpower utilization reports, as included in the specifications, shall be submitted.

4.0 Basis of Bid

1. Bidders shall submit a Bid on a lump sum and unit price basis as provided for in the Bid form.
2. Discrepancies between words and figures will be resolved in favor of the words.
3. The award will be based on the lowest eligible base Bid.

DFW – Schoolhouse Pond Dam, Arnold Pond Dam, and Salmon Brook Dam Removals Project

SIGNATURES REQUIRED

| Signatures Required | Page # | Penalty for failure to Sign |
|--|----------------|------------------------------------|
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| Statement of Tax Compliance (REAP) | 40 | Informal Bid |
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**SPECIAL PROVISIONS FOR SCHOOLHOUSE POND DAM, ARNOLD POND DAM, AND
SALMON BROOK DAM REMOVALS PROJECT,
VARIOUS LOCATIONS
SUTTON, MASSACHUSETTS AND BROOKFIELD, MASSACHUSETTS**

**THE GENERAL CONTRACTOR'S MINORITY EMPLOYEE PERCENTAGE FOR THIS JOB
WILL NOT BE LESS THAN 5%**

Work to be Done

The work to be done consists of removing of Schoolhouse Pond Dam including demolition of a concrete, stone, and earthen dam, construction of precast concrete culvert and wingwalls, construction of pilot channel through former impoundment, riprap slope protection, boulder riffle grade control, guardrail, pavement restoration, streambed restoration, tree plantings at cemetery located at 20 Armsby Road; site restoration, water control and miscellaneous work in the Town of Sutton, MA. Arnold Pond Dam Removal includes demolition of the existing concrete, stone, and earthen dam, embankment regrading, installation of pedestrian bridge, construction of cast-in-place concrete abutments, placement of recovered stone around bridge abutments, edge of bank restoration; site restoration, water control and miscellaneous work in the Town of Sutton, MA. Salmon Brook Dams Removal includes establishing access route to dams, demolition of a concrete, stone, and earthen dam, demolition of a second earthen embankment dam, demolition of stone culvert, site restoration, and miscellaneous work in the Town of Brookfield, MA. The work required shall be completed as shown on the plans, as specified herein and as directed. All work must be completed no later than **October 30, 2026, although intermediate milestones are to be adhered to.**

Plans

The location and details of the work to be done are shown on three sets of plans including the following:

- A set of plans consisting of nine (9) sheets entitled “**Massachusetts Division of Fisheries and Wildlife, Arnold Pond Dam Removal Project, Sutton, Massachusetts**” dated October 2024, and hereby referred to and made part of these Specifications.
- A set of plans consisting of seventeen (17) sheets entitled “**Massachusetts Division of Fisheries and Wildlife, Schoolhouse Pond Dam Removal Project, Sutton, Massachusetts**” dated October 2024, and hereby referred to and made part of these Specifications.
- A set of plans consisting of seven (7) sheets entitled “**Massachusetts Division of Fisheries and Wildlife, Salmon Brook Dam Removal Project, Brookfield, Massachusetts**” dated October 2024, and hereby referred to and made part of these Specifications.

These plans are attached hereto. These plans are on file at the offices of Tighe & Bond, Inc, 53 Southampton Road, Westfield, MA 01085.

Physical Data

The information and data furnished herein are provided for the Contractor's information, however, it is expressly understood that the Engineer will not be held responsible for any interpretation or conclusion drawn there from by the Contractor.

General

The Contractor must satisfy himself, by his own investigation and research, regarding conditions affecting the work to be done and the plant equipment, labor and materials needed, and make his bid sole reliance thereon.

Wherever the term "Standard Specifications" is used hereinafter in these Special Provisions, it shall mean the Standard Specifications for Highways and Bridges of the Department of Public Works of Massachusetts, 1988 Edition and any and all addenda and revisions thereto, with the following exceptions: Section 1.17 "Department" shall be defined as the Commonwealth of Massachusetts, Department of Fish and Game, Division of Fisheries and Wildlife, Section 1.19 "engineer" shall be

defined as the Chief Engineer of the Department of Fish and Game, Division of Fisheries and Wildlife or his designee. Where not specified, referred hereto or superseded by these Special Provisions, all applicable sections of the "Standard Specifications" shall apply.

In addition, on pg. 35, paragraph 1, eliminate the second sentence, eliminate all of paragraph 2, and eliminate all of paragraph 3. Appeals to agency decisions shall be made through courts of law.

Five percent retainage will be withheld from progress payments following M.G.L. Chapter 30 Section 39K.

The Contractor shall furnish all labor and materials, tools, plant and equipment and do all the work necessary to furnish and install and complete the work in accordance with these Special Provisions and the Standard Specifications.

During construction, the Contractor shall secure all necessary permits from owners, and all releases from the owners of record to trespass on their property in the transportation of materials and equipment to the work site. The Contractor shall repair at his own expense any damage caused by him to lawns, driveways, structures, etc. Upon completion of the work, the Contractor shall remove from the site all debris, excess materials, tools and equipment, and shall leave the premises in a neat and orderly condition, to the satisfaction of the Engineer.

At all times, the Contractor shall be required to conform to all local, State and Federal regulations as to proper use of highways, bridges, etc. The Contractor shall at all times, while conducting water based construction activities, comply with all navigational safety rules and regulations including the proper approved navigation lighting.

Discrepancies between the Supplemental Conditions and the Standard Specifications will be resolved in favor of the Supplemental Conditions. Discrepancies between the Supplemental Conditions and the Technical Specifications shall be brought to the attention of the Engineer in writing for interpretation.

The award of the contract is subject to available funding.

The Contractor is responsible to estimate the quantity of materials required to complete the work as part of the Bid. The Contractor shall be bound hereunder whether or not such estimate is approximately correct.

No equipment or machinery having caterpillar or heavy treads that would mar or damage pavements shall be permitted to move or to operate from existing pavements unless such equipment or machinery is moved on suitable pontoons or trailers. Any damages caused by the Contractor for his operations shall be repaired by Contractor.

The Contractor shall so limit his operations and carry on his work in such manner and sequence as to insure the least possible interference with navigation, traffic and normal use of the adjacent areas. Special attention is called to the requirements of Section 7.09, 7.10 and 7.11 of the "Standard Specifications", which refer to "Public Safety and Convenience", "Barricades and Warning Signs", and "Traffic Officers".

Particular attention of all bidders is called to Section 8.01, 8.03, 8.10, 8.11 and 8.12 and 8.13 of the "Standard Specifications", which refer to "Subletting or Assignment of Contract", "Prosecution of Work", "Determination and Extension of Contract Time for Completion", "Failure to Complete Work on Time", "Default Termination", and "Convenience Termination".

The Department reserves the right to reject any bid it deems unbalanced. The Department reserves the right to require a Contractor to submit a breakdown of any unbalanced or lump sum bid with dollar amounts, said breakdown subject to the approval of the Engineer. The Contractors attention is called to Section 2.09 of the Standard Specifications.

In the event that the work described in the contract is not physically completed within the time stipulated therein, the Contractor shall pay to the party of the first part a designated sum per day for the entire period of overrun in accordance with the Schedule of Deductions listed below:

Supplementing Subsection 8.11
SCHEDULE OF DEDUCTIONS

| Project Value | | | Deductions/\$/day |
|-----------------|----|------------|-------------------|
| 0 | to | 100,000 | 250.00 |
| 100,000 | to | 500,000 | 375.00 |
| 500,000 | to | 1,000,000 | 425.00 |
| 1,000,000 | to | 2,000,000 | 550.00 |
| 2,000,000 | to | 3,000,000 | 675.00 |
| 3,000,000 | to | 4,000,000 | 800.00 |
| 4,000,000 | to | 5,000,000 | 925.00 |
| 5,000,000 | to | 10,000,000 | 1,050.00 |
| 10,000,000 | to | 15,000,000 | 1,175.00 |
| over 15,000,000 | | | 1,500.00 |

The work limits shown on the plans, shall be laid out in the field by the Contractor and any damage to structures caused by his operations shall be satisfactorily remedied at the sole expense of the Contractor.

The Contractor's use of the site for work is subject to the regulations of the Town and must be restricted to the limits of work shown on the contract drawings or as directed by the Engineer. Should the Contractor require areas for storage of construction materials or equipment, additional to those areas provided, such additional areas must be arranged by the Contractor at no additional cost to the Department.

The Contractor's attention is drawn to Section 7.05 in the "Standard Specifications" which refers to "Insurance Requirements".

The Contractor shall construct such temporary access roads as may be necessary for his equipment, men and materials to reach the sites of the work and to carry out the terms of this contract. Upon completion of the work, all temporary access roads shall be removed and the areas restored to their original conditions to the satisfaction of the Engineer. Particular care to avoid undue disturbance must be taken on properties owned by private landowners as shown on the plans.

The Contractor's attention is called to the Section 7.14 of the "Standard Specifications", "Responsibility for Damage Claims".

Applicable Laws, Regulations and Permits

The bidders attention is directed to the fact that all applicable State Laws, Municipal Ordinances, permits and the rules and regulations of all authorities having jurisdiction over construction of the Project shall apply to the CONTRACT throughout, and they will be deemed to be included in the CONTRACT the same as though herein.

An Order of Conditions has been obtained from the Sutton Conservation Commission and Brookfield Conservation Commission, under the Commonwealth of Massachusetts Wetlands Protection Act, General Laws, Chapter 131, Section 40. That Order is hereby made part of these Specifications, and is attached hereto.

A Dam Safety Permit has also been obtained from the Mass. Office of Dam Safety. That permit is also hereby made part of these Specifications, and is attached hereto.

A 401 Water Quality Certification has been obtained from the Massachusetts Department of Environmental Protection and is hereby made part of these Specifications and attached hereto.

A 404 General Permits registration from United States Army Corps of Engineers has been obtained and is hereby made part of these Specifications and attached hereto.

The Contractor must adhere to the conditions of these permits and licenses.

All other necessary permits are the responsibility of and shall be obtained and paid for by the Contractor.

Surveying Control

Available survey baselines and bench marks are shown on the plans. These reference marks will be recovered by the Contractor prior to the start of the work. The Contractor's plan for project control shall be submitted to the Engineer for approval prior to starting any work.

The Contractor shall provide at his own expense all materials and labor as may be required to establish all project control range lines, tide boards, additional reference marks and line and grade stakes.

If the Contractor, through willfulness or carelessness, removes or permits to be removed such reference marks before the prosecution of the work requires it, they shall be replaced at his own expense. All work shall conform during its progress and on its completion truly to the lines and grades given by the Engineer. The work shall be done in a thoroughly substantial and workmanlike manner, in accordance with the plans and specifications.

The Engineer shall be permitted at all times to check the lines, elevations, reference marks, batter boards, etc., set by the Contractor. Any errors or discrepancies in lines, elevations, shall be corrected. Such a check shall not be construed as 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 completion of the entire work. The Contractor shall be available to assist the Engineer with these checks as needed.

The Contractor shall make, check, and be responsible for all measurements and dimensions necessary for proper construction.

The level of the water referred to in these Special Provisions and shown on the plans is that established by the Engineer during the preliminary surveys for the work herein described.

Observation of Project Work

Observers will be assigned to the project by the Engineer on a full-time or part-time basis, as required to cover the work to be performed under the contract. An Engineer will be present whenever materials are being placed, and if for any reason the work of placing materials is not carried on continuously, the Contractor shall give the Engineer timely written notice of the expected arrival of materials in order that the Engineer shall be present when they arrive. No materials shall be paid for under this contract which have not been examined and passed by the Engineer, or which for any reason are placed outside the prescribed limits of the work unless approved in writing by the engineer.

Manuals and Certificates

Maintenance and/or Operation Manuals, Material Specifications, Certificates of Testing and Treatment, shall be provided for items manufactured off-site upon delivery of material to the site as required by the Engineer. Retainage will not be released until all literature mentioned above is submitted to the Engineer.

Clean Air and Water Pollution Control Acts (Supplementing Sec. 7.01)

The Contractor is subject to the provisions of the Clean Air Act of 1970 (42 U.S.C. 1857 et. seq.) and the Federal Water Pollution Control Act (33 U.S.C. 1251 et. seq., as amended), and the Contractor agrees to comply with said Acts, and all applicable standards, orders, or regulations issued there under. The Contractor agrees it will insert the provisions of this paragraph in any subcontract arising from this Contract.

Prevention of Water Pollution-Sanitary Provisions

(Supplementing Section 7.02)

During the performance of all work under this contract, the Contractor shall adopt such precautions in the conduct of his operations as may be necessary to avoid contaminating water in adjacent streams or pond areas. All moving of equipment, water control in foundations areas, and other operations likely to create silting, shall be so planned and conducted as to minimize pollution in adjacent streams or pond areas. Water used for any purpose whatsoever by the Contractor, which has been contaminated with soil, bitumen, salt or other pollutants shall be so discharged as to avoid affecting nearby waters. Under no circumstances shall the Contractor discharge pollutants directly into any adjacent streams or pond areas.

When the Contractor uses water from natural sources for any of his operations, intake methods shall be such as to avoid contaminating the source of supply and maintain adequate downstream flow when the source is a stream.

Insurance

The Contractor shall carry and maintain in effect during the entire currency of the contract, at his own expense, the following kinds and amounts of insurance in a company or companies approved by the Department. Such insurance shall cover claims and suits which arise out of or result from the Contractor's execution of the contract work whether such execution is by the Contractor himself or by any Subcontractor, or by any other entity representing the Contractor:

Worker's Compensation as required by the Worker's Compensation Laws of the Commonwealth of Massachusetts and, in conjunction therewith, Employer's Liability with a minimum limit of \$500,000.

"Broad Form" Comprehensive General Liability including, but not limited to, Bodily Injury, Personal Injury and Property Damage Liability, Full Contractual Liability and liability arising from Explosion, Collapse and Underground Damage, Minimum limit of liability - \$1,000,000.

Automobile Bodily Injury and Property Damage Liability for all owned, non-owned and hired automobiles operated in connection with the performance of the contract. Minimum limits of liability:

| | |
|-----------------|--------------|
| Bodily Injury | -\$1,000,000 |
| Property Damage | -\$ 250,000 |

Certificate of Insurance, Prior to beginning work under the contract, the Contractor shall furnish the Department a Certificate of Insurance acceptable to said Department evidencing the existence of the forgoing insurance coverage. Such Certificate also shall provide that the Department will be notified at least thirty (30) days in advance of the cancellation of non-renewal of any insurance covered by the Certificate.

The following shall be included on the policy(s) and identified on the certificate(s) as additional insureds:

1. Department of Fish & Game
251 Causeway Street
Boston, MA 02114-2152
2. Tighe & Bond, Inc.
53 Southampton Rd.
Westfield, MA 01085

Cleaning Site and Periodical Cleaning

The Contractor shall at all times prevent the accumulation of waste materials or rubbish in the construction and storage area, including interiors of buildings. Cleaning will be carried out day by day as may be necessary for the work area utilized by the Contractor. Waste materials and rubbish shall be removed from the site at each cleaning.

The Contractor shall at the completion of his work remove all temporary structures, utilities and services which have been installed for the prosecution of his work.

Compliance with the Wetlands Protection Act

An Order of Conditions has been obtained from the Sutton Conservation Commission and Brookfield Conservation Commission, under the Commonwealth of Massachusetts Wetlands Protection Act, General Laws, Chapter 131, Section 40. That Order is hereby made part of these Specifications and is attached hereto.

Minimum Wage Rates

Attention is called to the fact that Minimum Wage Rates are established for the project and are set forth herein.

Overloaded Trucks

The Department will not accept any materials delivered to any project in motor vehicles or semi-trailer units that exceed the legal maximum gross weight allowed for the particular class as specified in Section 19A of Chapter 90 of the General Laws of Massachusetts. The provisions of sub-section 7.03 of the "Standard Specifications" shall still apply.

Massachusetts General Laws, Chapter 62C, Section 49A (REAP)

The Attention of all Bidders is drawn to the provisions of Massachusetts General Law 62C, Section 49A which requires Contractors to certify that they have filed all state tax returns and have paid all required state taxes.

The Department will furnish a blank certification form which, will be completed by the Contractor, signed and incorporated into the Contract. This attestation must be provided at the time of issuing, renewing or extending the contract. It is to be noted that submission of the social security or federal identification number is strictly voluntary and no contract may be denied because this information was not provided.

Executive Order 130 (Anti-Boycott Covenant)

The Contractor warrants, represents and agrees that during the time this contract is in effect, neither it nor any affiliated company, as hereafter defined, participates in or cooperates with an international boycott, as defined in Section 999 (b),(3) and (4) of the Internal Revenue Code of 1954, as amended, or engages in conduct declared to be unlawful by Section 2 of Chapter 151E, Massachusetts General Law. If there shall be a breach in the warranty, representation and agreement contained in this paragraph, then without limiting such other rights as it may have, the Commonwealth shall be entitled to rescind this contract.

As used herein, an affiliated company shall be any business entity of which at least 51% of the ownership interests are directly or indirectly owned by the Contractor or by a person or persons or business entity or entities directly or indirectly owning at least 51% of the ownership interests of the Contractor.

Executive Order No. 213

Employment Opportunities through State Contracts

WHEREAS, the Commonwealth administers and funds various programs of public assistance; and

WHEREAS, it is in the interest of the Commonwealth and the recipients of public assistance that such recipients secure employment and thereby become economically self-sufficient; and

WHEREAS, the Commonwealth spends hundreds of millions of dollars annually to contract with private providers for a vast array of health, social and other services; and

WHEREAS, these private contractors hire thousands of employees to provide these critical services; and

WHEREAS, it is the policy of the Commonwealth to provide as many job opportunities as possible to recipients of public assistance;

NOW, THEREFORE, I, EDWARD J. KING, Governor of the Commonwealth, by virtue of the authority vested in me as Supreme Executive Magistrate by the Constitution and the statutes of the Commonwealth, do hereby order as follows:

(I) Subject to regulations to be promulgated by the Commissioner of Administration, as hereunder provided, every agency, bureau, board, commission, institution, and department of the Executive Branch of the Commonwealth shall include the following requirement in solicitations of bids, contracts, or agreements, having an effective date on or after July 1, 1982 or solicitations of bids, contracts, or agreements, entered into subsequent to the effective date of said regulations for the provision of paid services entered into with a private contractor who employs under contract(s) with the Commonwealth a total of twenty (20) or more persons: (1) at least 5 percent of the total number of the contractor's employees working under all of its contract(s) with the Commonwealth must have been recipients of public assistance program(s) administered by the Department of Public Welfare.

(II) In complying with the above clause, however, no contractor shall be required to lay-off or release existing employees to meet the 5 percent requirements. It is expected that expansion and normal attrition will provide the vacancies necessary to meet the 5 percent requirement.

(III) The Commissioner of Administration shall promulgate regulations to carry out the purposes of this Executive Order. Such regulations may include Provisions: (1) Specifying the procedures by which the Department of Public Welfare will refer qualified recipients to the contractor; (2) Creating exemptions for those specific positions requiring skills or professional levels not available in the public assistance recipient groups; (3) Specifying the method by which a contractor not meeting the 5 percent requirement upon initial performance will achieve compliance, and establishing time limits therefore; (4) Specifying the method by which the contractor shall report on its compliance with this Order; (5) Specifying the conditions under which the contract may be terminated for non-compliance; and (6) Specifying any other conditions or procedures necessary to carry out the purpose of this Executive Order; (7) In specified cases, the Commissioner of Administration may grant provider waivers.

(IV) All contracting state agencies are hereby directed to cooperate fully with the Commissioner of Administration in the implementation of this Order, and to provide all information requested by the Commissioner.

(V) All contracting state agencies shall file a report with their executive offices as well as the Commissioner of Administration six months after promulgation of the regulations under this Executive Order, and then annually thereafter, stating the degree of compliance with the Order, whether the purpose of the Order has been accomplished, and any recommendations for change.

(VI) The Commissioner of Administration shall report to the Governor on the degree of compliance with this Executive Order, whether the purpose of the Order has been accomplished, and any recommendations for change.

EXECUTIVE ORDER 195

Right to Examine Records

Executive Order 195, signed by Governor Edward J. King, on April 27, 1981: "The Governor or his designee, the secretary of administration and finance, and the state auditor or his designee shall have the right at

reasonable times and upon reasonable notice to examine the books, records and other compilations of data of (vendor) which pertain to the performance of the provisions and requirements of this contract."

Compliance to Executive Order No. 281

Your attention is drawn to the publication entitled "South Africa & Namibia Lists" which identifies vendors that are doing business with these two governments. In accordance with Executive Order No. 281, no business will be done with these vendors unless exempt as stipulated in the above referenced publication.

**Additional Bond Security (M.G.L., Ch. 149, Sec. 29) and
Additional Legal Requirements (M.G.L., 39O, and 39R):**

In addition to the five (5%) percent Bid Bond required to accompany the bid, the successful bidder will be required to furnish a Performance Bond in an amount equal to one hundred percent (100%) of the Contract Sum as security for the faithful performance of this contract and also Material and Payment Bond in an amount not less than one hundred percent (100%) of the Contract Sum or in a penal sum not less than that prescribed by the State, Territorial or Local Law, as security for payment of persons performing labor on the project under this contract. The Performance Bond and the Labor and Materials Payment Bond may be in one or in separate instruments in accordance with local law and shall be delivered to the Owner not later than the date of execution of the contract. In addition to the other legal requirements set forth in this contract, the Contractor must be familiar with Sections 39P and 39R of Chapter 30 of the M.G.L.

The Contractor must also be familiar with Section 39 of said Chapter 30, Subsections (a) and (b) which reads as follows:

- a) The awarding authority may order the general contractor in writing to suspend, delay, or interrupt all or any part of the work for such a period of time as it may determine to be appropriate for the convenience of the awarding authority, provided however, that if there is a suspension, delay or interruption of work for fifteen (15) days or more due to a failure of the awarding authority to act within the time specified in this contract, the awarding authority shall make an adjustment in the contract price for any increase in the cost of performance of this contract, but shall not include any profit to the general contractor on such increase; and provide further, that the awarding authority shall not make any adjustments in the contract price under this provision for any suspension, delay, interruption or failure to act to the extent that such is due to any cause for which this contract provides for any equitable adjustment of the contract price under any other contract provisions.
- b) The general contractor must submit the amount of the claim under provisions (a) to the awarding authority in writing as soon as practicable after the end of the suspension, delay, interruption or failure to act and, on any event, not later than the date of the final payment under this contract and, except for costs due to suspension order, the awarding authority shall not approve any costs in the claim incurred more than twenty (20) days before the general contractor notifies the awarding authority in writing of the act or failure to act involved in the claim.

**TECHNICAL SPECIFICATIONS
(Under Separate Cover)**

**COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF FISH & GAME
DIVISION OF FISHERIES AND WILDLIFE**

SPECIAL PROVISION FOR PARTICIPATION BY MINORITY OR WOMEN'S BUSINESS ENTERPRISES

(Implementing Chapter 102, Section 24 and
Chapter 273, Section 124, of the Acts of 1994)

Revised: December 2009

I. M/WBE PARTICIPATION GOAL

On this contract, the Department of Fish and Game has established a goal for participation by Minority or Women Business Enterprise(s). One half of the goal shall be met in the form of contractor activity. This goal shall remain in effect throughout the life of the contract.

Minority or Women Business Enterprises 11.4 % MBE 7.4% WBE 4%

II. POLICY

It is the policy of the Department of Fish and Game that Minority and Women Business Enterprises (M/WBEs) shall have the maximum opportunity to participate in the performance of its state funded contracts.

III. M/WBE OBLIGATION

The contractor agrees to take all necessary and reasonable steps to ensure that MBE and WBEs have the maximum opportunity to compete for, and to perform, Department contracts.

IV. FAILURE TO COMPLY WITH M/WBE REQUIREMENTS

All contractors and subcontractors are hereby advised that failure to carry out the requirements of these provisions constitutes a breach of contract which may result in termination of the contract, a determination that the contractor or subcontractor be barred from bidding on Department contracts for up to three (3) years, or any other remedy as the Department may impose under section XI of these special provisions.

V. REQUIRED SUBCONTRACT PROVISIONS

The Prime Contractor shall include the provisions of sections II, III, and IV above in every subcontract making those provisions binding on each subcontractor, supplier, manufacturer, consultant or service provider.

VI. DEFINITIONS

For the purpose of these special provisions, the terms listed below are defined as follows:

"Minority Business Enterprise or MBE means any individual, business organization, or non-profit corporation certified as an MBE or as a Portuguese owned firm by the State Office of Minority and Women Business Assistance (SOMWBA), or by the Department for the purposes of a particular bid or proposal to be submitted to the Department.

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Women Business Enterprise or WBE means any individual, business or organization, or non-profit corporation certified as a WBE by SOMWBA, or by the Department for the purposes of a particular bid or proposal to be submitted to the Department.

"Contractor activity" means any work, including but not limited to, construction, demolition, renovation, survey, test boring services, or maintenance work performed under the contract.

"Approved Joint Venture" means a joint venture between a M/WBE(s) and a non-M/WBE(s), which has been established for the purpose of participation on a particular contract, where:

1. The M/WBE partner(s) shares in the ownership, control, management responsibilities, risks and profits of the joint venture; and
2. The joint venture has been approved by the Department for M/WBE participation on the particular contract.

"Equipment Rental Firm" means a firm that owns equipment and assumes actual and contractual responsibility to rent said equipment to perform a useful function of the work of the contract consistent with normal industry practice.

"Material Supplier" means a vendor engaged in sales to the highway construction industry from an established place of business or source of supply, which:

1. Manufactures goods from raw materials or substantially alters them before resale, or
2. Provides and maintains a storage facility for materials used in the work, consistent with normal industry practice.

"SOMWBA" means the Massachusetts State Office of Minority and Women Business Assistance.

VII. ELIGIBILITY of M/WBEs

Only firms, other than the Prime Contractor, which have been certified by SOMWBA and/or the Department as eligible to participate on state funded contracts as MBEs, Portuguese owned businesses or WBEs may be used on this contract for credit toward the M/WBE participation goal.

1. **SOMWBA Directory of Certified M/WBEs:** The State Office of Minority and Women Business Assistance publishes a Directory of certified MBE and WBEs. This Directory can be obtained from SOMWBA. It lists those firms which have been certified as minority or Portuguese owned (MBEs) or women owned (WBEs) in accordance with the criteria of 425 CMR 2.00 et seq to participate as M/WBEs on state funded contracts. It also lists the kinds of work in which each firm engages but does not constitute an endorsement of the quality or performance of any business and does not represent Department subcontractor approval.

2. **Application for Certification by the Department for a Particular Project:** A firm which has (1) submitted a fully completed M/WBE application to SOMWBA at least 30 days previously, (2) has provided in a timely manner, any additional information which may have been requested by SOMWBA, and (3) can provide evidence, satisfactory to the Department, of a bidder's conditional commitment to subcontract with the firm, if certified, may apply directly to the Department to be certified for participation on the particular contract.

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3. Joint Venture Approval: To obtain recognition as an approved joint venture between a M/WBE(s) and a non-M/WBE(s), the joint venture must provide to the DF&G Office of Civil Rights, at least 14 business days before the bid opening date, an application for joint venture participation approval, and a copy of the joint venture agreement, which shall include a detailed breakdown of the following:

- (a) Capital participation by the M/WBE,
- (b) Specific equipment to be provided to the joint venture by the M/WBE,
- (c) Specific responsibilities of the M/WBE in the management of the joint venture,
- (d) Workforce and specific skills to be provided to the joint venture by the M/WBE, and
- (e) Percentage distribution to the M/WBE of the projected profit or loss incurred by the joint venture.

(f) The joint venture shall provide all such additional information as may be requested by the Department for the purpose of determining joint venture eligibility.

VIII. COUNTING M/WBE PARTICIPATION TOWARDS M/WBE GOALS

In order for M/WBE participation to count toward the contract goal, the M/WBE must have independently managed, supervised and performed the contract work with its own workforce, equipment and resources. M/WBE participation which fulfills these requirements shall be counted toward meeting the M/WBE goal in accordance with the following rules:

1. If a firm has been determined to be an eligible MBE or WBE, the total dollar value of the contract performed by the M/WBE is counted toward the applicable goal as follows:

a. Except as provided below, in section VIII (1)(g), work performed by a M/WBE prime contractor shall not be counted toward the M/WBE goal, and all prime contractors, including M/WBE prime contractors, must comply with the M/WBE requirements of this contract.

b. For a M/WBE material supplier, sixty percent (60%) of the amount to be paid for materials and supplies required under this contract shall be credited toward the goal.

c. For a M/WBE who provides a bonafide service such as professional, technical, consultant or managerial services and assistance in the procurement of essential personnel, facilities, equipment, materials, or supplies required for performance of the contract, reasonable fees or commissions charged for the service shall be listed, but the cost of items themselves shall not be credited.

d. For a M/WBE hauler, trucker, or delivery service, which is not also the manufacturer of or a regular dealer in the materials and supplies, reasonable fees charged for delivery of materials and supplies required on the job site shall be credited; the cost of the materials and supplies themselves shall not be credited.

e. For a M/WBE who provides any bonds or insurance specifically required for the performance of the contract, reasonable fees or commissions charged for such service shall be listed, but the face amount or actual premium paid for the bond or insurance shall not be credited.

f. The Department shall determine if the fees or commissions listed in accordance with paragraphs (c), (d), and (e) are not excessive as compared with fees or commissions customarily allowed for similar services.

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g. That portion of the contract total dollar value equal to the percentage of ownership and control of the M/WBE partner(s) in an approved joint venture shall be counted toward the contract goal, except that credit for M/WBE participation in an approved prime joint venture shall not exceed one half of the contract goal.

IX. AWARD DOCUMENTATION AND PROCEDURES

1. The two lowest bidders, including any M/WBE bidder, shall submit, by the close of business on the third business day after the bid opening, a completed Schedule of M/WBE participation, in the form attached, which shall list:

a. The full company name, address and telephone number of each M/WBE with whom the bidder intends to make a commitment;

b. The contract item(s), by number(s) and quantity(ies), if applicable, or specific description of other business activity to be performed by each M/WBE as set forth in the Letters of Intent. The bidder shall list only firms which have the capacity to perform, manage and supervise the work proposed in accordance with the requirements of section X of these special provisions.

c. The total dollar amount to be paid to each M/WBE. (Bidders are cautioned that at least one half of the participation goal must be met with contract work.)

d. The total dollar amount to be paid to each M/WBE which is eligible for credit toward the M/WBE goal under the crediting rules set out in section VIII.

e. The total creditable M/WBE participation as a percentage of the total bid price.

2. All firms listed on the Schedule must be currently certified. The bidder may list a newly certified firm which is not yet listed in the SOMWBA Directory, but is urged to obtain a copy of the SOMWBA certification letter from the M/WBE and attach it to the Schedule of Participation.

3. The two lowest bidders shall submit with their Schedules of Participation, fully completed, signed Letters of Intent from each of the M/WBEs listed on the Schedule. The Letters of Intent shall be in the form attached and shall identify specifically the contract activity the M/WBE proposes to perform, expressed as contract item number, if applicable, description of the activity, quantity, unit price and total price. In the event of discrepancy between the Schedule and the Letter of Intent, the Letter of Intent shall govern.

4. Failure to meet, or to demonstrate good faith efforts to meet, the requirements of these special provisions shall render a bid non-responsive. Therefore, in order to be eligible for award, the bidder (1) must list on the Schedule of Participation, and provide the required Letters of Intent for, M/WBE participation which meets or exceeds the contract goal in accordance with the terms of these special provisions or (2) must demonstrate, to the satisfaction of the Department, that good faith efforts were made to achieve the goal. If the Commission finds that the percentage of M/WBE participation submitted by the bidder on its Schedule does not meet the contract goal, or that the Letters of Intent were not timely filed, and that the bidder has not demonstrated good faith efforts to comply with these requirements, it shall reject the bidder's proposal and may retain the proposal guaranty.

5. Evidence of good faith efforts will be evaluated by the Department in the selection of the lowest responsible bidder.

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All information requested by the Department for the purpose of evaluating the bidder's efforts to achieve the goal must be provided within seven days after the bid opening date and must be accurate and complete in every detail. The apparent low bidder's attainment of the M/WBE goal or a satisfactory demonstration of good faith efforts, is a prerequisite for award of the contract. Actions which constitute evidence of good faith efforts to meet a M/WBE goal include, but are not limited to, all of the following:

a. Efforts made to select portions of the work proposed to be performed by M/WBE's in order to increase the likelihood of achieving the stated goal, including, where appropriate, but not limited to, breaking down contracts into economically feasible units to facilitate M/WBE participation. The value of such work is required to at least equal the M/WBE goal.

b. Reasonable written notification prior to the opening of bids soliciting individual M/WBEs interested in participation in the contract as subcontractors, regular dealers, manufacturers, consultants, or service providers and identifying the specific items or type of work being solicited.

c. Written notification to M/WBE economic development assistance agencies and organizations which provide assistance in recruitment and placement of M/WBEs, describing the type of work, supplies or services being considered for M/WBE subcontracting on this contract.

d. Efforts made to negotiate with M/WBEs for specific items of work including evidence of:

(1) The names, addresses, telephone numbers of M/WBEs who were contacted, the dates of initial contact and whether initial solicitations of interest were followed up by contacts with M/WBEs to determine with certainty whether the M/WBEs were interested. Personal or phone contacts are expected.

(2) A description of the information provided the M/WBEs regarding the plans and specifications and estimated quantities for portions of the work to be performed.

(3) A statement of why additional agreements with M/WBEs were not reached.

(4) Documentation of each M/WBE contacted but rejected and the reasons for the rejection.

e. Absence of any agreements between the contractor and the M/WBE in which M/WBE promises not to provide subcontracting quotations to other bidders.

f. Efforts made to assist the M/WBEs that need assistance in obtaining bonding, insurance, or lines of credit required by the contractor.

g. Documentation that qualified M/WBEs are not available, or are not interested.

h. Attendance at any meeting scheduled by the Department to encourage better contractor-M/WBE relationships and/or to inform M/WBEs of forthcoming M/WBE utilization opportunities.

i. Advertisement, in general circulation media, in trade association publications and in disadvantaged business enterprise-focused media, of interest in utilizing M/WBEs and the area of interest.

j. Efforts to effectively use the services of available minority community organizations; women organizations, minority, women and disadvantaged contractor's groups; local, state and federal disadvantaged business assistance offices; and other organizations that provides assistance in recruitment and placement of M/WBEs.

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6. The demonstration of good faith efforts must establish that the contractor has actively and aggressively sought out M/WBEs to participate in the project and has taken all actions which could be reasonably expected to achieve the goal. Examples of circumstances or actions not acceptable as reasons for failure to meet the M/WBE goal, include, but are not limited to:

- a. The M/WBE was unable to provide performance and/or payment bonds.
- b. The M/WBE's commercially reasonable bid was rejected based on price.
- c. The M/WBE would not agree to perform items of work at the unit bid price.
- d. The Contractor does not want to subcontract a percentage of the work sufficient to meet the goal.
- e. Solicitation by mail or fax only.

X. COMPLIANCE

1. All activity performed by an M/WBE for credit toward the contract goal must be performed, managed and supervised by the M/WBE. Prime Contractor shall not enter into, or condone, any other arrangement.

2. The Prime Contractor shall not perform with its own organization, or assign to any other business, any activity designated for the M/WBE(s) named on the Schedule submitted by the Prime Contractor under section IX, or under section X(6), without the approval of the Department in accordance with the requirements of sections X(6) and (10).

3. The Department may (1) suspend payment for any activity which was not performed by the M/WBE to whom the activity was committed on the approved Schedule of Participation, or which was not performed in accordance with the requirements of subsection X(1).

4. The Department retains the right to approve or disapprove all subcontractors. Requests by the Prime Contractor for approval of participation by a M/WBE subcontractor for credit toward the contract goal must include, in addition to any other requirements for subcontractor approval, the following:

- a. A copy of the proposed subcontract. The subcontract must be for at least the dollar amount, and for the work described, in the Prime Contractor's Schedule of Participation.
- b. A resume stating the qualifications and experience of the M/WBE superintendent and/or foreperson who will supervise the on-site work. A new resume will be required for any change in supervisory personnel during the progress of the work.
- c. A Schedule of Operations indicating when the M/WBE is expected perform the work.
- d. A list of (1) equipment owned by the M/WBE to be used on the project, and (2) equipment to be leased by the M/WBE for use on the project.
- e. A list of: (1) all projects (public and private) which the M/WBE is currently performing, (2) all projects (public and private) to which the M/WBE is committed, (3) all projects (public and private) to which the M/WBE intends to make a commitment. For each contract, list the contracting organization, the name and telephone number of a contact person for the contracting organization, the dollar value of the work, a description of the work, and the M/WBE's work schedule for each project.

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5. If, pursuant to the subcontractor approval process, the Department finds that a M/WBE subcontractor does not have sufficient experience or resources to perform, manage and supervise work of the kind proposed in accordance with the requirements of section X(1), approval of the M/WBE subcontractor may be denied. In the event of such denial, the Prime Contractor shall proceed in accordance with the requirements of sections X(6) and (10).

6. If, for reasons beyond its control, the Prime Contractor cannot comply with its M/WBE commitment in accordance with the Schedule of participation submitted under section IX and the terms of these special provisions, the Prime Contractor shall submit to the Department the reasons for its inability to comply with its obligations under section I and shall submit, and request approval for, a revised Schedule of Participation. If approved by the Department, the revised Schedule shall govern the Prime Contractor's performance in meeting its obligations under these special provisions.

7. A Prime Contractor's compliance with the participation goal in section I shall be determined by reference to the required percentage of the total contract price, including any additions and modifications thereto, provided, however, that no decrease in the dollar amount of a bidder's commitment to any M/WBE shall be allowed without the approval of the Department.

8. If the contract amount is increased, the Prime Contractor shall submit a revised Schedule of Participation in accordance with sections X(6) and (10).

9. In the event of the decertification of a M/WBE participating or scheduled to participate on the contract for credit toward the goal, the Contractor shall proceed in accordance with sections X(6) and (10).

10. The Prime Contractor shall notify the Department immediately of any facts which come to its attention indicating that it may or will be unable to comply with any aspect of its M/WBE obligation under this contract.

11. Any notice required by these special provisions shall be given in writing to the Engineer with a copy to the DF&G, Office of Fishing and Boating Access, One Rabbit Hill Road, Westborough, Massachusetts, 01581.

12. The Prime Contractor shall submit to the Department in the form attached, and in accordance with the directions thereon, a Record of Payment to Minority/Women/Disadvantaged Business Enterprises.

13. The Contractor shall pay each M/WBE for satisfactory performance of its contract no later than 10 days from receipt of payment for the work from the Department. Any delay or postponement of payment to the M/WBE(s) must be for good cause and only with the prior approval of the Department.

14. The Department may withhold the Contractor's next periodic payment if each M/WBE is not paid in accordance with subsection X(13).

15. The Department may require specific performance of the Prime Contractor's commitment under the contract by requiring the Prime Contractor to subcontract with a M/WBE for any contract or specialty item.

XI. SANCTIONS

If the Prime Contractor does not comply with the terms of these special provisions and cannot demonstrate to the satisfaction of the Department that good faith efforts were made to achieve such compliance, the Department may, in addition to any other remedy provided for in the contract, and notwithstanding any other provision in the contract:

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1. Retain, in connection with final acceptance and final payment, an amount determined by multiplying the total contract amount by the percentage in section I, less the amount paid to approve M/WBE(s) for work performed under the contract in accordance with the provisions of section X. The Prime Contractor shall have the right to appeal such retention of funds in accordance with the provisions of M.G.L. c.30A.

2. Suspend, terminate or cancel this contract, in whole or in part, and call upon the Prime Contractor's surety to perform all terms and conditions in the contract.

3. In accordance with 720 CMR 5.05(1)(f), modify or revoke the Prime Contractor's Prequalification status or recommend that the Prime Contractor not receive award of a pending contract. The Prime Contractor may appeal the determination of the Prequalification Committee in accordance with the provisions of 720 CMR 5.06.

4. Initiate debarment proceedings under M.G.L. c.29 §29F.

XII. FURTHER INFORMATION

Any proposed M/WBE, bidder, contractor or subcontractor shall provide such information as is necessary in the judgement of the Department to ascertain its compliance with the terms of these special provisions.

END OF DOCUMENT

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SPECIAL PROVISIONS FOR RIGHT-TO-KNOW ACT REQUIREMENTS

January, 1986

The Contractor's attention is directed to Massachusetts General Laws, Chapter 111F, commonly known as the Right-To-Know Act, and to the regulations promulgated pursuant thereto. Among the provisions of the Right-To-Know Act is a requirement that employers make available to employees Materials Safety Data Sheets (MSDS) for any substance on the Massachusetts Substance List (MSL) to which employees are, have been, or may be exposed.

To ensure prompt compliance with these regulations and legislation, the Contractor shall:

1. Deliver to the Department, prior to the start of any work under this contract, copies of MSDS for all MSL substances to be used, stored, processed or manufactured at the worksite by the Contractor.
2. Train employees of the Department, who may be exposed to MSL substances as a result of the Contractor's work under this contract, with regard to those specific substances in accordance with requirements of the Right-To-Know Act.
3. Observe all safety precautions recommended on the MSDS for any MSL substance to be used, stored, processed, or manufactured at the worksite by the Contractor.
4. Inform the Department in writing regarding specific protective equipment recommended in the MSDS for MSL substances to which employees of the Department may be exposed as a result of the Contractor's work under this contract.

The Department shall not be liable for any delay or suspension of work caused by the refusal of its employees to perform any work due to the Contractor's failure to comply with the Right-To-Know Act. The Contractor agrees to hold the Department or the Commissioner of the Department harmless and fully indemnified for any and all claims, demands, fines, actions, complaints, and causes of action resulting from or arising out of the Contractor's failure to comply with the requirements of the Right-To-Know Act.

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THE COMMONWEALTH OF MASSACHUSETTS SUPPLEMENTAL EQUAL EMPLOYMENT OPPORTUNITY ANTIDISCRIMINATION AND AFFIRMATIVE ACTION PROGRAM

I. Definitions

For purposes of this contract, "minority" refers to Asian-Americans, Blacks, Spanish Surname Americans, North American Indians, and Cape Verdeans. "Commission" refers to the Massachusetts Commission Against Discrimination.

II. Contractor's Agreement

During the performance of this Contract, the Contractor and all subcontractors (hereinafter collectively referred to as the Contractor), for him/herself, his/her assignees and successors in interest, agree as follows:

In connection with the performance of work under this contract, the Contractor shall not discriminate against any employee or applicant for employment because of race, color, religious creed, national original, age or sex. The aforesaid provision shall include, but not be limited to, the following: employment upgrading, demotion, or transfer; recruitment advertising, layoff or termination; rates of pay or other forms of compensation; conditions or privileges of employment; and selection for apprenticeship.

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

In connection with the performance of work under this contract, the Contractor, shall undertake in good faith affirmative action measures designed to eliminate any discriminatory barriers in the terms and conditions of employment on the grounds of race, color, religious creed, national original, age or sex, and to eliminate and remedy any effects of such discrimination in the past. Such affirmative action shall entail positive and aggressive measures to ensure equal opportunity in the areas of hiring, upgrading, demotion or transfer, recruitment, layoff or termination, rate of compensation, and in-service or apprenticeship training programs. This affirmative action shall include all action required to guarantee equal employment opportunity for all persons, regardless of race, color, religious creed, national origin, age or sex. A purpose of this provision is to ensure to the fullest extent possible an adequate supply of skilled tradesmen for this and future Commonwealth public construction projects.

III. Remedial Action

As part of his/her obligation of remedial action under foregoing section, the Contractor shall maintain on this project not less than the percent ratio of minority employee man hours to total man hours in each job category including but not limited to bricklayers, carpenters, cement masons, electricians, ironworkers, operating engineers, and those "classes of work" enumerated in Section 44C of Chapter 149 of the Massachusetts General Laws. The percentage ratio for this project is found on page 1 of the Special Provisions.

In the hiring of minority journeymen, apprentices, trainees and advanced trainees, the Contractor shall rely on referrals from a multi-employer affirmative action program approved by the Commission, traditional referral methods utilized by the construction industry, and referrals from agencies, not more than three in number at any one time, designated by the Liaison Committee or the Commission.

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IV. Records

At the discretion of the Commission there may be established for the life of the contract a body to be known as the Liaison Committee. The Liaison Committee shall be composed of one representative each from the agency or agencies administering this project, hereinafter called the administering agency, the Commission and such other representatives as may be designated by the Commission in conjunction with the administering agency.

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

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

Records of employment referral orders, prepared by the Contractor, shall be made available to the Commission and to the Liaison Committee on request.

The Contractor shall prepare weekly reports in a form approved by the Commission of hours worked in each trade by each employee, identified as minority or non-minority. Copies of these shall be provided at the end of each such week to the Commission and to the Liaison Committee.

V. Affirmative Action in Negotiating with Minority Subcontractors

If the Contractor shall use any subcontractor for any work performed under this contract, he/she shall take affirmative action to negotiate with qualified minority subcontractors. This affirmative action shall cover both pre-bid and post-bid periods. It shall include notification to the Office of Minority Business Assistance (within the Executive Office of Communities and Development) or its designee, while bids are in preparation, of all products, work or services for which the Contractor intends to negotiate bids.

VI. Preference in Hiring

In the employment of journeymen, apprentices, trainees and advanced trainees, the Contractor shall give preference, first to citizens of the Commonwealth who have served in the armed forces of the United States in time of war and have been honorably discharged therefrom or released from active duty therein, and who are qualified to perform the work to which the employment relates, and, secondly, to citizens of the Commonwealth generally, and, if such cannot be obtained in sufficient numbers, then to citizens of the United States.

The requirements of the above paragraph do not apply to any project or part thereof, financed in whole or in part with Federal Funds.

VII. Access During Construction

A designee of the Commission and a designee of the Liaison Committee shall each have right of access to the construction site.

VIII. Compliance with Requirements

The Contractor shall comply with the provisions of Executive Order No. 74, as amended by Executive Order No. 116 dated May 1, 1975, and of Chapter 151B as amended, of the Massachusetts General Laws, both of which are herein incorporated and made a part of this contract.

**COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF FISH & GAME
DIVISION OF FISHERIES AND WILDLIFE**

IX. Non-Discrimination

The Contractor, in the performance of all work after award, and prior to completion of the contract work, will not discriminate on grounds of race, color, religious creed, national origin, age or sex in employment practices, in the selection or retention of subcontractors, or in the procurement of materials and rentals of equipment.

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

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

XI. Compliance - Information, Reports and Sanctions

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

2. Whenever the administering agency, the Commission, or the Liaison Committee believes the General Contractor or any subcontractor may not be operating in compliance with the terms of this Section, the Commission directly, or through its designated agent, shall conduct an appropriate investigation, and may confer with the parties, to determine if such Contractor is operating in compliance with the terms of this Section. If the Commission or its agent finds the General Contractor or any subcontractor not in compliance, it shall make a preliminary report on non-compliance, and notify such Contractor in writing of such steps, as will in the judgement of the Commission or its agent bring such Contractor into compliance. In the event that such Contractor fails or refuses to fully perform such steps, the Commission shall make a final report of non-compliance, and recommend to the administering agency the imposition of one or more of the sanctions listed below. If, however, the Commission believes the General Contractor or any subcontractor has taken or is taking every possible measure to achieve compliance, it shall not make a final report of non-compliance. Within fourteen days of the receipt of the recommendations of the Commission, the administering agency shall move to impose one or more of the following sanctions, as it may deem appropriate to attain full and effective enforcement:

a. The recovery by the administering agency from the General Contractor of 1/100 of 1% of the contract award price or \$ 1000, whichever sum is greater, in the nature of liquidated damages or, if a subcontractor is in non-compliance, the recovery by the administering agency from the General Contractor, to be assessed by the General Contractor as a back charge against the subcontractor, of 1/10 of 1% of the subcontractor price, or \$ 400 whichever sum is greater, in the nature of liquidated damages, for each week that such party fails or refuses to comply;

b. The suspension of any payment or part thereof due under the contract until such time as the General Contractor or any subcontractor is able to demonstrate his/her compliance with the terms of the contract;

c. The termination, or cancellation, of the contract, in whole or in part, unless the General Contractor or any subcontractor is able to demonstrate within a specified time his/her compliance with the terms of the contract;

d. The denial to the General Contractor or any subcontractor of the right to participate in any future contracts awarded by the administering agency for a period of up to three years.

**COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF FISH & GAME
DIVISION OF FISHERIES AND WILDLIFE**

3. If at any time after the imposition of one or more of the above sanctions a Contractor is able to demonstrate that he/she is in compliance with this Section, he/she may request the administering agency, in consultation with the Commission, to suspend the sanctions conditionally, pending a final determination by the Commission as to whether the Contractor is in compliance. Upon final determination of the Commission, the administering agency, based on the recommendation of the Commission, shall either lift the sanctions or reimpose them.

4. Sanctions enumerated under Sections XI-2 shall not be imposed by the administering agency except after an adjudicatory proceeding, as that term is used, under Massachusetts General Laws Chapter 30A, has been conducted. No investigation by the Commission or its agent shall be initiated without prior notice to the Contractor.

XII. Severability

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

XIII. Bidders' Requirements (Revised: March 1977)

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

XIV. Subcontractor's Certification

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

SPECIMEN COPY

SUBCONTRACTOR'S CERTIFICATION

_____ certifies that:
(Subcontractor)

1. It tends to use the following listed construction trades in the work under the subcontract _____

_____ ; and

2. will comply with the minority manpower ratio and specific affirmative action steps contained herein.

(Signature of authorized representative of subcontractor)

In order to ensure that the said subcontractor's certification becomes a part of all subcontracts under the prime contract, no subcontract shall be executed until an authorized representative of the Public Access Board has determined, in writing, that the said certification has been incorporated in such subcontract, regardless of tier. Any subcontract executed without such written approval shall be void.

**COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF FISH & GAME
DIVISION OF FISHERIES AND WILDLIFE**

XV. Materiality

The requirements made of the bidder pursuant to these bid conditions are material, and will govern the bidders performance on the project and will be made a part of his/her bid.

**MINIMUM MINORITY PERCENTAGES TO BE APPLIED TO
STATE AND STATE-ASSISTED CONTRACTS WITHIN THE
COMMONWEALTH OF MASSACHUSETTS**

The following percentages shall apply:

Area:

| | |
|---|-----|
| Boston: Impact Area (Jamaica Plain (part), Mattapan, South Cove, Chinatown, Bay Village, Roxbury, Dorchester, South End) | 30% |
| Other Areas | 10% |
| Cambridge: | 12% |
| New Bedford: | 18% |
| Springfield: | 10% |
| All other cities and towns: | 5% |

**COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF FISH & GAME
DIVISION OF FISHERIES AND WILDLIFE**

COMMONWEALTH OF MASSACHUSETTS PUBLIC EMPLOYMENT LAWS

The Contractor's attention is directed to Massachusetts General Laws, Chapter 149, Sections 25 through 27H, and 150A. This contract is considered to fall within the ambit of that law, which provides that in general, the Prevailing Rate or Total Rate must be paid to employees working on projects funded by the Commonwealth of Massachusetts or any political subdivision including Massachusetts Highway Department.

A Federal Aid project is also subject to the Federal Minimum Wage Rate law for construction. When comparing a state minimum wage rate, monitored by the Massachusetts' Attorney General, versus federal minimum wage rate, monitored by the U.S. Department of Labor's Wage and Hour Division, for a particular job classification the higher wage is at all times to be paid to the affected employee.

Every contractor or subcontractor engaged in this contract to which sections twenty-seven and twenty-seven A apply will keep a true and accurate record of all mechanics and apprentices, teamsters, chauffeurs and laborers employed thereon, showing the name, address and occupational classification of each such employee on this contract, and the hours worked by, and the wages paid to, each such employee, and shall furnish to the PAB's Resident Engineer, on a weekly basis, a copy of said record, in a form approved by PAB and in accordance with M.G.L. c. 149, § 27B, signed by the employer or his/her authorized agent under the penalties of perjury.

Each such contractor or subcontractor shall preserve its payroll records for a period of three years from the date of completion of the contract.

The Prevailing Wage Rate generally includes the following:

Minimum Hourly Wage + Employer Contributions to Benefit Plans = Prevailing Wage Rate or Total Rate

Any employer who does not make contributions to Benefit Plans must pay the total Prevailing Wage Rate directly to the employee.

Any deduction from the Prevailing Wage Rate or Total Rate for contributions to benefit plans can only be for a Health & Welfare, Pension, or Supplementary Unemployment plan meeting the requirements of the Employee Retirement Income Security Act (ERISA) of 1974. The maximum allowable deduction for these benefits from the prevailing wage rate cannot be greater than the amount allowed by Executive Office of Labor (EOL) for the specified benefits. Any additional expense of providing benefits to the employees is to be borne by the employer and cannot be deducted from the Minimum Hourly Wage. If the employer's benefit expense is less than that so provided by EOL the difference will be paid directly to the employee. The rate established must be paid to all employees who perform work on the project.

When an employer makes deductions from the Minimum Hourly Wage for an employee's contribution to social security, state taxes, federal taxes, and/or other contribution programs, allowed by law, the employer shall furnish each employee a suitable pay slip, check stub or envelope notifying the employee of the amount of the deductions.

No contractor or subcontractor contracting for any part of the contract week shall require or permit any laborer or mechanic to be employed on such work in excess of eight hours in any calendar day or in excess of forty hours in any workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times his basic rate of pay for all hours worked in excess of eight hours in any calendar day or in excess of forty hours in such workweek, whichever is the greater number of overtime hours.

Apprentice Rates are permitted only when there is an Apprentice Agreement registered with the Massachusetts Division of Apprentice Training in accordance with M.G.L. c. 23, § 11E-11L.

The Prevailing Wage Rates issued for each project shall be the rates paid for the entire project. The Prevailing Wage Rates must be posted on the job site at all times and be visible from a public way.

**COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF FISH & GAME
DIVISION OF FISHERIES AND WILDLIFE**

In addition, each such contractor and subcontractor shall furnish to the FBA's Resident Engineer, within fifteen days after completion of its portion of the work, a statement, executed by the contractor or subcontractor or by any authorized officer or employee of the contractor or subcontractor who supervises the payment of wages, in the following form:

STATEMENT OF COMPLIANCE

Date: _____, 20____

I, _____ do hereby state:
(Name of signatory party) (Title)

That I pay or supervise the payment of the persons employed by:

(Contractor or Subcontractor)

on the _____
(Project Location and Contract Number)

and that all mechanics and apprentices, teamsters, chauffeurs and laborers employed on said project have been paid in accordance with wages determined under the provisions of sections twenty-six and twenty-seven of chapter one hundred and forty-nine of the General Law.

Signature _____

Title _____

The above-mentioned copies of payroll records and statements of compliance shall be available for inspection by any interested party filing a written request to the Office of Fishing and Boating Access Resident Engineer for such inspection.

All bidders are cautioned that the aforementioned laws require that employers pay to covered employees no less than the applicable minimum wages. In addition, the same laws require that the applicable prevailing wages become incorporated as part of this contract. The prevailing minimum wage law establishes serious civil and criminal penalties for violations, including imprisonment and exclusion from future public contracts. Bidders are cautioned to carefully read the relevant sections of the Massachusetts General Laws (most recently amended July, 1993).

PROPOSAL

FOR Schoolhouse Pond Dam, Arnold Pond Dam, and Salmon Brook Dam Removals;
COMMONWEALTH OF MASSACHUSETTS, (Department of Fish and Game, Division of
Fisheries and Wildlife);

LOCATION

The work referred to herein is in the town of Sutton and town of Brookfield, county of Worcester, Commonwealth of Massachusetts, and as shown by a set of plans on file in the office of the Department of Fish and Game, Office of Fishing and Boating Access entitled:

- **“Massachusetts Division of Fisheries and Wildlife, Arnold Pond Dam Removal Project, Sutton, Massachusetts”** by the Tighe & Bond Inc., dated **October 2024**, consisting of **9** sheets.
- **“Massachusetts Division of Fisheries and Wildlife, Schoolhouse Pond Dam Removal Project, Sutton, Massachusetts”** by the Tighe & Bond Inc., dated **October 2024**, consisting of **17** sheets.
- **“Massachusetts Division of Fisheries and Wildlife, Salmon Brook Dam Removal Project, Brookfield, Massachusetts”** by the Tighe & Bond Inc., dated **October 2024**, consisting of **7** sheets..

This proposal includes Addendum numbered _____.

To the Party of the First Part:

The undersigned, as bidder, declares that the only persons or parties interested in this proposal as principals are those named herein, that this proposal is made without collusion with any other person, firm or corporation, this proposal is made having carefully examined the location of the proposed work (including having performed a site visit), the proposed form of contract, the standard specifications and plans therein referred to and the Special Provisions hereto annexed; and he proposes and agrees, if this proposal is accepted, that he will contract with the Party of the First Part, in the form of the contract referred to herein and to be annexed hereto, to provide all necessary machinery, tools apparatus and other means of construction and to do all the work and furnish all the materials specified in the contract, in the manner and time therein prescribed, and according to the requirements of the Engineer as therein set forth, and that he will take in payment therefore the following unit prices to wit:

| ITEM NUMBER | ESTIMATED QUANTITY | ITEM WITH UNIT BID PRICE WRITTEN IN WORDS | UNIT BID PRICE WRITTEN IN FIGURES | UNIT BID PRICE WRITTEN IN WORDS |
|-------------|--------------------|---|-----------------------------------|---------------------------------|
| 1 | 1 | Removal of Schoolhouse Pond Dam: The work of the General Contractor, being all work other than that covered by Item 1A, Item 1B and Item 1C, the lump sum price of | | |

| | | | | |
|--|-----------|---|---------|-----------------------------------|
| 1A | Allowance | Price adjustment for HMA mixtures as related to the Schoolhouse Pond Dam removal. | \$500 | Five hundred dollars |
| 1B | Allowance | Price adjustment for diesel fuel as related to the Schoolhouse Pond Dam removal. | \$1,500 | One thousand five hundred dollars |
| 1C | Allowance | Price adjustment for gasoline as related to the Schoolhouse Pond Dam removal. | \$1,500 | One thousand five hundred dollars |
| 2 | 1 | Removal of Arnold Pond Dam, the lump sum price of | | |
| 3 | 1 | Removal of Salmon Brook Dams, the lump sum price of | | |
| TOTAL AMOUNT OF BASE BID PLUS ALLOWANCES: | | | | |
| In Words: | | | | |
| In Figures: | | | | |

The foregoing prices shall include the furnishing of all materials (except as herein otherwise specified) the performing of all the labor requisite or proper, and the providing of all the necessary machinery, tools, apparatus and other means of construction, the doing of all the above mentioned work in the manner set forth, described and shown in the specification and on the drawings for the work and in the form of the contract, and the completion thereof by **October 30, 2026**. The period of work shall begin from the day when the Contractor's copy of the contract will have been delivered.

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

The undersigned offers the following information as evidence of his qualifications to perform the work as bid upon according to all the requirements of the plans and specifications.

1. Have been in business under present name for _____ years

2. The bidder is requested to state below what work they have done to demonstrate compliance with the project experience requirements.

| Completion Date | Project Name | Contract Amount | Design Engineer | Reference Name | Telephone Number |
|-----------------|--------------|-----------------|-----------------|----------------|------------------|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |

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

Signed by: _____ Title: _____

Federal Employers Identification No. or
Social Security No. _____

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

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

| Owner or Partner | Address |
|------------------|---------|
|------------------|---------|

If the bidder is a corporation, give the State in which incorporated and the name and business address of the following officers:

President

Treasurer

Clerk

State here if bid is submitted by joint venture: _____

and if any of the joint ventures is a corporation, a copy of the vote of the corporation authorizing the joint venture should be attached hereto,

The proposed surety on the bond to be given is:

SAMPLE

At a meeting of the Board of Directors of the _____
(Name of Corporation)

_____ held on _____ at which
(Date)

all the Directors were present or waived notice, it was
or

At a regularly called meeting of the Board of Directors of the

_____ held on _____
(Name of Corporation) (Date)

at which a quorum was present, it was voted that _____,
(Name)

officer _____ of

this company, be and he hereby is authorized to execute contracts and bonds in the name and behalf of said company, and affix its corporate seal thereto; and such execution of any contract or obligation in this company's name on behalf by such officer _____

_____ under seal of this company shall be valid and binding upon this company.

A true copy

ATTEST: _____
(Clerk)

Place of business _____

Date of this contract _____

I hereby certify that I am the Clerk of the _____

_____ that
(Name of Corporation)

_____ is the duly elected officer
(Name)

_____ of said company, and that the above vote has not been amended or rescinded and remains in full force and as of this date.

(Clerk)

Corporate Seal

FORM OF NON-COLLUSIVE AFFIDAVIT

State of _____

) ss.

County of _____)

_____ being first sworn, depose and says:

That he is _____

(a partner or officer of the firm of, etc.)

the party making the foregoing proposal bid, that such proposal or bid is genuine and non-collusive or sham: that said has not colluded, conspired, connived or agreed directly or indirectly with any bidder or person to put in a sham bid or to refrain from bidding, and has not in any manner, directly or indirectly, sought by agreement or collusion, or communication or conference, with any person, to fix the bid price of affiant or of any bidder, or to fix any overhead, profit or cost element of said bid price, or of that of any other bidder, or to secure any advantage against the Department of Fish and Game or any person interested in the contract; and that all statements in said proposal or bid are true.

Signature of:

Bidder, if bidder is an individual

Partner, if the bidder is a corporation

Subscribed and sworn to before

me this _____ day of _____, 20____

Notary Public

Seal

My commission expires _____

REVENUE ENFORCEMENT AND PROTECTION CERTIFICATION (REAP)

Pursuant to Section 36 of Chapter 233 of the Acts of 1983, Amending Section of 49A (b), of Chapter 62c, General Laws,

I, _____

authorized signatory for _____

whose principal place of business is at _____

do hereby certify under the penalties of perjury that to the best of my knowledge and belief _____

has complied with any and all applicable state tax laws.

Name of Corporation _____
Or Company

Title of Person signing _____

Signature _____ Date _____

The bidder must demonstrate compliance with Commonwealth tax laws, including M.G.L. C. 62C, s49A. The bidder must submit an original or photocopy of a Certificate of Good Standing, which has been issued by the Massachusetts Department of Revenue within the past year. To obtain a Certificate of Good Standing, the bidder must submit the request to:

Department of Revenue, Tax Payer Division, Certificate Unit
P.O. Box 7066, Boston, MA 02204
(617)887-6550 (617)887-6262 FAX

Include the following information:

Name, address and telephone number of the corporation.

Reason for request. Be sure to mark your request with the word "**BID**". Types of taxes to which the corporation is subject and the corresponding Massachusetts identification number (if any).

Power of Attorney Form M-2848, if applicable.

Signature of a major officer of the corporation.

The Certificate of Good Standing must be provided prior to final execution of the Contract Form.

CONTRACT

THE COMMONWEALTH OF MASSACHUSETTS

DEPARTMENT OF FISH AND GAME **Division of Fisheries and Wildlife**

Clause 1. This agreement made this _____ day of _____, 20____, between the Commonwealth of Massachusetts, by the Department of Fish and Game, Division of Fisheries and Wildlife, for the said Commonwealth and

_____, **a corporation duly organized under the laws of the Commonwealth of Massachusetts and having a usual place of business in _____, Massachusetts,** herein called the Contractor.

Clause 2. Witnesseth, The parties to this agreement, each in consideration of the agreements on the part of the other herein contained, do hereby agree, the Commonwealth of Massachusetts for itself, and said Contractor for itself and its successors and assigns as follows:

The Contractor agrees to furnish all equipment, machinery, tools and labor and furnish and deliver all materials required to be furnished and delivered in and about the improvement and to do and perform all work in **Sutton Massachusetts in accordance with the Itemized Proposal with Special Provisions for the Schoolhouse Pond Dam, Arnold Pond Dam, and Salmon Brook Dam Removals Project.**

In strict conformity with the provisions herein contained and of the Notice to Contractors, Proposal and Special Provisions hereto attached, and all applicable Standard Specifications for Highways and Bridges with the plans referred to herein. All said plans, Standard Specifications, Supplemental Specifications, Special Provisions, Notice to Contractors and Proposal are hereby made part of this contract.

Clause 3. In consideration of the foregoing premises the Commonwealth agrees to pay and the Contractor agrees to receive as full compensation for everything furnished and done by the Contractor under this contract, including all work required but not shown on the plans for the items herein mentioned, and also for all loss or damage arising out of the nature of the work aforesaid, or from the action of the elements, or from any delay or from any unforeseen obstruction or difficulty encountered in the prosecution of the work, and for all risks of every description connected with the work, and for all expenses incurred by or in consequence of the suspension or discontinuance of the work as herein specified, and for well and faithfully completing the work, and the whole thereof, as herein provided, such unit prices are set out in the accompanying proposal, and for all work required, for which there is no item in the proposal, such compensation as is provided for in the aforesaid specifications.

In witness whereof, the said Contractor has caused these presents to be signed in its name and behalf and its corporate seal to be affixed by

_____ Its _____

and _____ Its _____

thereto duly authorized, and the said Commonwealth has executed these presents by its Office of Fishing and Boating Access on the year and day above written

Director, DFW-Mass. Division of Fisheries and Wildlife

BY _____ Contractor

_____ Corporate Seal

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF FISH AND GAME
Division of Fisheries and Wildlife

SCHEDULE OF PARTICIPATION BY MINORITY OR WOMEN ENTERPRISES (M/WBE)

PROJECT NAME: Schoolhouse, Arnold, and Salmon Brook Dam Removal Projects
 PROJECTION LOCATION: Sutton and Brookfield, Massachusetts
 DATE OF BID OPENING: November 5, 2024

| Name, Address and Phone Number of M/WBE | Name of Activity | (a.) M/WBE Contractor Activity Amount | (b.) M/WBE Other Business Amount | (c.) Total Amount eligible for credit under rules in Section VIII of the Special Provisions |
|---|--------------------------------|---------------------------------------|----------------------------------|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| Total Bid Amount \$ | Totals | \$ | | \$ |
| | M/WBE Percentage of Total bid: | % | | % |

Column (a.) must be at least one-half of the M/WBE percentage goals.

SIGNATURE: _____ DATE: _____ Tel. No. _____

NAME AND TITLE (PRINT): _____

Bidders are cautioned to read the Special Provision for Participation by Minority or Women Business Enterprises.

To be submitted within seven days after the bid opening date

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF FISH AND GAME
Division of Fisheries and Wildlife

**MINORITY OR WOMEN'S BUSINESS ENTERPRISE PARTICIPATION
LETTER OF INTENT**

PROJECT NAME: Schoolhouse, Arnold, and Salmon Brook Dam Removal Projects
PROJECTION LOCATION: Sutton and Brookfield, Massachusetts
DATE OF BID OPENING: November 5, 2024

FROM: _____
(Minority or Women's Business Enterprise)

TO: _____
(Name of Prime Contractor)

1. My company is currently certified as an MBE or WBE by the State Office of Minority and Women Business Assistance. There have been no changes affecting the ownership, control or independence of my since my last certification review.
2. If any such change occurs prior to my company's completion of this proposed work, I will give written notification to your firm and to the DF&G-Office of Fishing and Boating Access.
3. (For contractor activity only.) My firm will provide to you, upon request, for the purpose of obtaining subcontractor approval from OFBA; (1) a resume stating the qualifications and experience of the superintendent or foreperson who will supervise on site-work; (2) a list of equipment owned or leased by my firm for use on the project; (3) a list of all projects (public or private) which my firm is currently performing, is committed to perform, or intends to make a commitment to perform. I shall include, for each project, the name, telephone number of a contact person for the contracting organization, the dollar value of the work, description of the work, and my firm's work schedule for the project.
4. If you are awarded the contract, my company intends to enter into an agreement with your firm to perform the items of work or other activity described on the following sheet for the prices indicated.
5. My firm has the ability to manage, supervise and perform the activity described on the following page.

SIGNATURE: _____ DATE: _____
(M/WBE)

NAME AND TITLE (PRINT): _____

To be submitted within seven days after the bid opening date

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF FISH AND GAME
Division of Fisheries and Wildlife

MINORITY OR WOMEN’S BUSINESS ENTERPRISE PARTICIPATION

PROJECT NAME: Schoolhouse, Arnold, and Salmon Brook Dam Removal Projects
 PROJECTION LOCATION: Sutton and Brookfield, Massachusetts
 DATE OF BID OPENING: November 5, 2024

| Item Number if applicable | Description of Activity with notifications such as Labor Only, or Complete | Quantity | Unit Price | Amount |
|------------------------------|---|----------|---------------|--------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| TOTAL: | | | | |

SIGNATURE: _____ DATE: _____
(M/WBE)

NAME AND TITLE (PRINT): _____

To be submitted within seven days after the bid opening date

COMMONWEALTH TERMS AND CONDITIONS



This Commonwealth Terms and Conditions form is jointly issued by the Executive Office for Administration and Finance (ANF), the Office of the Comptroller (CTR) and the Operational Services Division (OSD) for use by all Commonwealth of Massachusetts ("State") Departments and Contractors. ***Any changes or electronic alterations by either the Department or the Contractor to the official version of this form, as jointly published by ANF, CTR and OSD, shall be void.*** Upon execution of these Commonwealth Terms and Conditions by the Contractor and filing as prescribed by the Office of the Comptroller, these Commonwealth Terms and Conditions will be incorporated by reference into any Contract for Commodities and Services executed by the Contractor and any State Department, in the absence of a superseding law or regulation requiring a different Contract form. Performance shall include

services rendered, obligations due, costs incurred, commodities and deliverables provided and accepted by the Department, programs provided or other commitments authorized under a Contract. A deliverable shall include any tangible product to be delivered as an element of performance under a Contract. The Commonwealth is entitled to ownership and possession of all deliverables purchased or developed with State funds. Contract shall mean the Standard Contract Form issued jointly by ANF, CTR and OSD.

1. Contract Effective Start Date. Notwithstanding verbal or other representations by the parties, or an earlier start date indicated in a Contract, the effective start date of performance under a Contract shall be the date a Contract has been executed by an authorized signatory of the Contractor, the Department, a later date specified in the Contract or the date of any approvals required by law or regulation, whichever is later.

2. Payments And Compensation. The Contractor shall only be compensated for performance delivered and accepted by the Department in accordance with the specific terms and conditions of a Contract. All Contract payments are subject to appropriation pursuant to M.G.L. C. 29, §26, or the availability of sufficient non-appropriated funds for the purposes of a Contract, and shall be subject to intercept pursuant to M.G.L. C. 7A, §3 and 815 CMR 9.00. Overpayments shall be reimbursed by the Contractor or may be offset by the Department from future payments in accordance with state finance law. Acceptance by the Contractor of any payment or partial payment, without any written objection by the Contractor, shall in each instance operate as a release and discharge of the State from all claims, liabilities or other obligations relating to the performance of a Contract.

3. Contractor Payment Mechanism. All Contractors will be paid using the Payment Voucher System unless a different payment mechanism is required. The Contractor shall timely submit invoices (Payment Vouchers - Form PV) and supporting documentation as prescribed in a Contract.

The Department shall review and return rejected invoices within fifteen (15) days of receipt with a written explanation for rejection. Payments shall be made in accordance with the bill paying policy issued by the Office of the Comptroller and 815 CMR 4.00, provided that payment periods listed in a Contract of less than forty-five (45) days from the date of receipt of an invoice shall be effective only to enable a Department to take advantage of early payment incentives and shall not subject any payment made within the forty-five (45) day period to a penalty. The Contractor Payroll System, shall be used only for "Individual Contractors" who have been determined to be "Contract Employees" as a result of the Department's completion of an Internal Revenue Service SS-8 form in accordance with the Omnibus Budget Reconciliation Act (OBRA) 1990, and shall automatically process all state and federal mandated payroll, tax and retirement deductions.

4. Contract Termination Or Suspension. A Contract shall terminate on the date specified in a Contract, unless this date is properly amended in accordance with all applicable laws and regulations prior to this date, or unless terminated or suspended under this Section upon prior written notice to the Contractor. The Department may terminate a Contract without cause and without penalty, or may terminate or suspend a Contract if the Contractor breaches any material term or condition or fails to perform or fulfill any material obligation required by a Contract, or in the event of an elimination of an appropriation or availability of sufficient funds for the purposes of a Contract, or in the event of an unforeseen public emergency mandating immediate Department action. Upon immediate notification to the other party, neither the Department nor the Contractor shall be deemed to be in breach for failure or delay in performance due to Acts of God or other causes factually beyond their control and without their fault or negligence. Subcontractor failure to perform or price increases due to market fluctuations or product availability will not be deemed factually beyond the Contractor's control.

5. Written Notice. Any notice shall be deemed delivered and received when submitted in writing in person or when delivered by any other appropriate method evidencing actual receipt by the Department or the Contractor. Any written notice of termination or suspension delivered to the Contractor shall state the effective date and period of the notice, the reasons for the termination or suspension, if applicable, any alleged breach or failure to perform, a reasonable period to cure any alleged breach or failure to perform, if applicable, and any instructions or restrictions concerning allowable activities, costs or expenditures by the Contractor during the notice period.

6. Confidentiality. The Contractor shall comply with M.G.L. C. 66A if the Contractor becomes a "holder" of "personal data". The Contractor shall also protect the physical security and restrict any access to personal or other Department data in the Contractor's possession, or used by the Contractor in the performance of a Contract, which shall include, but is not limited to the Department's public records, documents, files, software, equipment or systems.

7. Record-keeping And Retention, Inspection Of Records. The Contractor shall maintain records, books, files and other data as specified in a Contract and in such detail as shall properly substantiate claims for payment under a Contract, for a minimum retention period of seven (7) years beginning on the first day after the final payment under a Contract, or such longer period as is necessary for the resolution of any litigation, claim, negotiation, audit or other inquiry involving a Contract. The Department shall have access, as well as any parties identified under Executive Order 195, during the Contractor's regular business hours and upon reasonable prior notice, to such records, including on-site reviews and reproduction of such records at a reasonable expense.

8. Assignment. The Contractor may not assign or delegate, in whole or in part, or otherwise transfer any liability, responsibility, obligation, duty or interest under a Contract, with the exception that the Contractor shall be authorized to assign present and prospective claims for money due to the Contractor pursuant to a Contract in accordance with M.G.L. C. 106, §9-318. The Contractor must provide sufficient notice of assignment and supporting documentation to enable the Department to verify and implement the assignment. Payments to third party assignees will be processed as if such payments were being made directly to the Contractor and these payments will be subject to intercept, offset, counter claims or any other Department rights which are available to the Department or the State against the Contractor.

9. Subcontracting By Contractor. Any subcontract entered into by the Contractor for the purposes of fulfilling the obligations under a Contract must be in writing, authorized in advance by the Department and shall be consistent with and subject to the provisions of these Commonwealth Terms and Conditions and a Contract. Subcontracts will not relieve or discharge the Contractor from any duty, obligation, responsibility or liability arising under a Contract. The Department is entitled to copies of all subcontracts and shall not be bound by any provisions contained in a subcontract to which it is not a party.

10. Affirmative Action, Non-Discrimination In Hiring And Employment. The Contractor shall comply with all federal and state laws, rules and regulations promoting fair employment practices or prohibiting employment discrimination and unfair labor practices and shall not discriminate in the hiring of any applicant for employment nor shall any qualified employee be demoted, discharged or otherwise subject to discrimination in the tenure, position, promotional opportunities, wages, benefits or terms and conditions of their employment because of race, color, national origin, ancestry, age, sex, religion, disability, handicap, sexual orientation or for exercising any rights afforded by law. The Contractor commits to purchasing supplies and services from certified minority or women-owned businesses, small businesses or businesses owned by socially or

COMMONWEALTH TERMS AND CONDITIONS



economically disadvantaged persons or persons with disabilities.

11. Indemnification. Unless otherwise exempted by law, the Contractor shall indemnify and hold harmless the State, including the Department, its agents, officers and employees against any and all claims, liabilities and costs for any personal injury or property damages, patent or copyright infringement or other damages that the State may sustain which arise out of or in connection with the Contractor's performance of a Contract, including but not limited to the negligence, reckless or intentional conduct of the Contractor, its agents, officers, employees or subcontractors. The Contractor shall at no time be considered an agent or representative of the Department or the State. After prompt notification of a claim by the State, the Contractor shall have an

opportunity to participate in the defense of such claim and any negotiated settlement agreement or judgment. The State shall not be liable for any costs incurred by the Contractor arising under this paragraph. Any indemnification of the Contractor shall be subject to appropriation and applicable law.

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

13. Risk Of Loss. The Contractor shall bear the risk of loss for any Contractor materials used for a Contract and for all deliverables, Department personal or other data which is in the possession of the Contractor or used by the Contractor in the performance of a Contract until possession, ownership and full legal title to the deliverables are transferred to and accepted by the Department.

14. Forum, Choice of Law And Mediation. Any actions arising out of a Contract shall be governed by the laws of Massachusetts, and shall be brought and maintained in a State or federal court in Massachusetts which shall have exclusive jurisdiction thereof. The Department, with the approval of the Attorney General's Office, and the Contractor may agree to voluntary mediation through the Massachusetts Office of Dispute Resolution (MODR) of any Contract dispute and will share the costs of such mediation. No legal or equitable rights of the parties shall be limited by this Section.

15. Contract Boilerplate Interpretation, Severability, Conflicts With Law, Integration. Any amendment or attachment to any Contract which contains conflicting language or has the affect of a deleting, replacing or modifying any printed language of these Commonwealth Terms and Conditions, as officially published by ANF, CTR and OSD, shall be interpreted as superseded by the official printed language. If any provision of a Contract is found to be superseded by state or federal law or regulation, in whole or in part, then both parties shall be relieved of all obligations under that provision only to the extent necessary to comply with the superseding law, provided however, that the remaining provisions of the Contract, or portions thereof, shall be enforced to the fullest extent permitted by law. All amendments must be executed by the parties in accordance with Section 1. of these Commonwealth Terms and Conditions and filed with the original record copy of a Contract as prescribed by CTR. The printed language of the Standard Contract Form, as officially published by ANF, CTR and OSD, which incorporates by reference these Commonwealth Terms and Conditions, shall supersede any conflicting verbal or written agreements relating to the performance of a Contract, or attached thereto, including contract forms, purchase orders or invoices of the Contractor. The order of priority of documents to interpret a Contract shall be as follows: the printed language of the Commonwealth Terms and Conditions, the Standard Contract Form, the Department's Request for Response (RFR) solicitation document and the Contractor's Response to the RFR solicitation, excluding any language stricken by a Department as unacceptable and including any negotiated terms and conditions allowable pursuant to law or regulation.

IN WITNESS WHEREOF, The Contractor certify under the pains and penalties of perjury that it shall comply with these Commonwealth Terms and Conditions for any applicable Contract executed with the Commonwealth as certified by their authorized signatory below:

CONTRACTOR AUTHORIZED SIGNATORY: _____ (signature)

Print Name: _____

Title: _____

Date: _____

(Check One): Organization Individual

Full Legal Organization or Individual Name: _____

Doing Business As: Name (If Different): _____

Tax Identification Number: _____

Address: _____

Telephone: _____ FAX: _____

INSTRUCTIONS FOR FILING THE COMMONWEALTH TERMS AND CONDITIONS

A "Request for Verification of Taxation Reporting Information" form (Massachusetts Substitute W-9 Format), that contains the Contractor's correct TIN, name and legal address information, must be on file with the Office of the Comptroller. If the Contractor has not previously filed this form with the Comptroller, or if the information contained on a previously filed form has changed, please fill out a W-9 form and return it attached to the executed COMMONWEALTH TERMS AND CONDITIONS.

If the Contractor is responding to a Request for Response (RFR), the COMMONWEALTH TERMS AND CONDITIONS must be submitted with the Response to RFR or as specified in the RFR. Otherwise, Departments or Contractors must timely submit the completed and properly executed COMMONWEALTH TERMS AND CONDITIONS (and the W-9 form if applicable) to the: **Payee and Payments Unit, Office of the Comptroller, 9th Floor, One Ashburton Place, Boston, MA 02108** in order to record the filing of this form on the MMARS Vendor File. Contractors are required to execute and file this form only once.

Request for Taxpayer Identification Number and Certification

Completed form should be given to the requesting department or the department you are currently doing business with.

Please print or type

Name (List legal name, if joint names, list first & circle the name of the person whose TIN you enter in Part I-See Specific Instruction on page 2)

Business name, if different from above. (See Specific Instruction on page 2)

Check the appropriate box: Individual/Sole proprietor Corporation Partnership Other

Legal Address: number, street, and apt. or suite no. **Remittance Address:** if different from legal address number, street, and apt. or suite no.

City, state and ZIP code

Phone # () **Fax #** () **Email address:**

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. For individuals, this is your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I Instruction on page 2. For other entities, it is your employer identification number (EIN). If you do not have a number, see How to get a TIN on page 2.
Note: If the account is in more than one name, see the chart on page 2 for guidelines on whose number to enter.

Social security number

□□□-□□-□□□□

OR

Employer identification number

□□-□□□□□□

DUNS

□□□□□□□□

Vendors:
Dunn and Bradstreet Universal Numbering System (DUNS)

Part II Certification

Under penalties of perjury, I certify that:

- The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me), and
- I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Services (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding, and
- I am an U.S. person (including an U.S. resident alien).
- I am currently a Commonwealth of Massachusetts's state employee: (check one): No Yes If yes, In compliance with the State Ethics Commission requirements.

Certification instructions: You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply.

Sign Here **Authorized Signature** **Date**

Purpose of Form

A person who is required to file an information return with the IRS must get your correct taxpayer identification number (TIN) to report, for example, income paid to you, real estate transactions, mortgage interest you paid, acquisition or debt, or contributions you made to an IRA.

Use Form W-9 only if you are a U.S. person (including a resident alien), to give your correct TIN to the person requesting it (the requester) and, when applicable, to:

- Certify the TIN you are giving is correct (or you are waiting for a number to be issued).
- Certify you are not subject to backup withholding.

If you are a foreign person, use the appropriate Form W-8. See Pub 515, Withholding of Tax on Nonresident Aliens and Foreign Corporations.

What is backup withholding? Persons making certain payments to you must withhold a designated percentage, currently 28% and pay to the IRS of such payments under certain

conditions. This is called "backup withholding." Payments that may be subject to backup withholding include interest, dividends, broker and barter exchange transactions, rents, royalties, nonemployee pay, and certain payments from fishing boat operators. Real estate transactions are not subject to backup withholding.

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

- You do not furnish your TIN to the requester, or
- You do not certify your TIN when required (see the Part II Instructions on page 2 for details), or
- The IRS tells the requester that you furnished an incorrect TIN, or
- The IRS tells you that you are subject to backup withholding because you did not report all your interest and dividends only), or

5. You do not certify to the requester that you are not subject to backup withholding under 4 above (for reportable interest and dividend accounts opened after 1983 only).

Certain payees and payments are exempt from backup withholding. See the Part II Instructions on page 2.

Penalties

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

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

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

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

Specific Instructions

Name. If you are an individual, you must generally enter the name shown on your social security card. However, if you have changed your last name, for instance, due to marriage without informing the Social Security Administration of the name change, enter your first name, the last name shown on your social security card, and your new last name.

If the account is in joint names, list first and then circle the name of the person or entity whose number you enter in Part I of the form.

Sole proprietor. Enter your individual name as shown on your social security card on the "Name" line. You may enter your business, trade, or "doing business as (DBA)" name on the "Business name" line.

Limited liability company (LLC). If you are a single-member LLC (including a foreign LLC with a domestic owner) that is disregarded as an entity separate from its owner under Treasury regulations section 301.7701-3, enter the owner's name on the "Name" line. Enter the LLC's name on the "Business name" line.

Caution: A disregarded domestic entity that has a foreign owner must use the appropriate Form W-9.

Other entities. Enter your business name as shown on required Federal tax documents on the "Name" line. This name should match the name shown on the charter or other legal document creating the entity. You may enter any business, trade, or DBA name on the "Business name" line.

Part I - Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box.

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

If you are a sole proprietor and you have an EIN, you may enter either your SSN or EIN. However, the IRS prefers that you use your SSN.

If you are an LLC that is disregarded as an entity separate from its owner (see **Limited liability company (LLC)** above), and are owned by an individual, enter your SSN (or "pre-LLC" EIN, if desired). If the owner of a disregarded LLC is a corporation, partnership, etc., enter the owner's EIN.

Note: See the chart on this page for further clarification of name and TIN combinations.

How to get a TIN. If you do not have a TIN, apply for one immediately. To apply for an SSN, get Form SS-5, Application for a Social Security Card, from your local Social Security Administration office. Get Form W-7, Application for IRS Individual Taxpayer Identification Number, to apply for an ITIN or Form SS-4, Application for Employer Identification Number, to apply for an EIN. You can get Forms W-7 and SS-4 from the IRS by calling 1-800-TAX-FORM (1-800-829-3676) or from the IRS's Internet Web Site www.irs.gov.

If you do not have a TIN, write "Applied For" in the space for the TIN, sign and date the form, and give it to the requester. For interest and dividend payments, and certain payments made with respect to readily tradable instruments, generally you will have 60 days to get a TIN and give it to the requester before you are subject to backup withholding on payments.

The 60-day rule does not apply to other types of payments. You will be subject to backup withholding on all such payments until you provide your TIN to the requester.

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

Part II - Certification

To establish to the paying agent that your TIN is correct or you are a U.S. person, or resident alien, sign Form W-9.

For a joint account, only the person whose TIN is shown in Part I should sign (when required).

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

Dunn and Bradstreet Universal Numbering System (DUNS) number requirement – The United States Office of Management and Budget (OMB) requires all vendors that receive federal grant funds have their DUNS number recorded with and subsequently reported to the granting agency. If a contractor has multiple DUNS numbers the contractor should provide the primary number listed with the Federal government's Central Contractor Registration (CCR) at www.ccr.gov. Any entity that does not have a DUNS number can apply for one on-line at www.dnb.com under the DNB D-U-N Number Tab.

Privacy Act Notice

Section 6109 of the Internal Revenue Code requires you to give your correct TIN to persons who must file information returns with the IRS to report interest, dividends, and certain other income paid to you, mortgage interest you paid, the acquisition or abandonment of secured property, cancellation of debt, or contributions you made to an IRA or MSA. The IRS uses the numbers for identification purposes and to help verify the accuracy of your tax return. The IRS may also provide this information to the Department of Justice for civil and criminal litigation, and to cities, states, and the District of Columbia to carry out their tax laws.

You must provide your TIN whether or not you are required to file a tax return. Payers must generally withhold a designated percentage, currently 28% of taxable interest, dividend, and certain other payments to a payee who does not give a TIN to a payer. Certain penalties may also apply.

What Name and Number to Give the Requester

| For this type of account: | Give name and SSN of: |
|---|---|
| 1. Individual | The individual |
| 2. Two or more individuals (joint account) | The actual owner of the account or, if combined funds, the first individual on the account ¹ |
| 3. Custodian account of a minor (Uniform Gift to Minors Act) | The minor ² |
| 4. a. The usual revocable savings trust (grantor is also trustee) | The grantor-trustee ¹ |
| b. So-called trust account that is not a legal or valid trust under state law | The actual owner ¹ |
| 5. Sole proprietorship | The owner ³ |
| For this type of account: | Give name and EIN of: |
| 6. Sole proprietorship | The owner ³ |
| 7. A valid trust, estate, or pension trust | Legal entity ⁴ |
| 8. Corporate | The corporation |
| 9. Association, club, religious, charitable, educational, or other tax-exempt organization | The organization |
| 10. Partnership | The partnership |
| 11. A broker or registered nominee | The broker or nominee |
| 12. Account with the Department of Agriculture in the name of a public entity (such as a state or local government, school district, or prison) that receives agricultural program payments | The public entity |

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

² Circle the minor's name and furnish the minor's SSN.

³ You must show your individual name, but you may also enter your business or "DBA" name. You may use either your SSN or EIN (if you have one).

⁴ List first and circle the name of the legal trust, estate, or pension trust. (Do not furnish the TIN of the personal representative or trustee unless the legal entity itself is not designated in the account title.)

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

If you have questions on completing this form, please contact the Office of the State Comptroller. (617) 873-2468.

Upon completion of this form, please send it to the Commonwealth of Massachusetts Department you are doing business with.

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ARPA Funding Source Requirement

Coronavirus State Fiscal Recovery Fund (FRF) Contract Addendum

(Assistance Listing Number 21.027)

Notice: The contract, agreement, statement of work, or purchase order (“Contract”) between _____ (“Contractor”) and the Department of Fish and Game to which this addendum is attached or otherwise incorporated is funded, in whole or in part, using federal assistance provided to the Commonwealth of Massachusetts by the U.S. Department of the Treasury under Section 9901 of the American Rescue Plan Act of 2021 (“ARPA”), which established the Coronavirus State Fiscal Recovery Fund (“FRF”).

In accordance with ARPA, the U.S. Department of the Treasury’s regulations implementing the FRF (31 CFR Part 35), the [Award Terms and Conditions](#), and the Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards, [2 C.F.R. Part 200](#), the following terms and conditions apply to the Contractor in connection with its performance of the Contract.

These terms and conditions are in addition to, and in no way limit or alter, the other terms, conditions, rights, and remedies set forth in or applicable to the Contract, including those set forth in the Commonwealth of Massachusetts Standard Contract Form and Commonwealth Terms and Conditions. In the event of any conflict among the requirements applicable to the Contract, the most stringent requirements will apply.

1. Eligible Costs.

- a. The Contractor agrees to incur only those costs that are necessary, reasonable, and directly allocable for the purpose of completing the contracted project or program.
- b. Indirect costs are not an eligible use of funds received under this Contract.
- c. Costs may be incurred only during the period of this Contract.

2. Financial Management.

- a. Contractor may not deviate significantly from its established policies and practices regarding the incurrence of costs.

3. Suspension and Debarment (Executive Orders 12549 and 12689).

- a. This Contract is funded through payments received by the Commonwealth of Massachusetts from the FRF. FRF funds are subject to 2 CFR Part 200 and U.S. Department of the Treasury’s implementing regulations at 31 CFR Part 19. The Contract is a covered transaction for purposes of such regulations.
- b. As such, the Contractor is required to verify, and by executing this Contract the Contractor hereby certifies, that neither it nor any of the Contractor’s principals are excluded, disqualified, or otherwise ineligible (as such terms are defined at 31 CFR Part 19, Subpart I) for participation in a covered transaction. Such parties are ineligible if listed on the government-wide Excluded Parties List System in the System for Award Management (SAM) in accordance with 2 CFR Part 180 and U.S. Department of the Treasury’s implementing regulations at 31 CFR Part 19 that implement Executive Orders 12549 and 12689, “Debarment and Suspension.”

- c. The Contractor must comply with 31 CFR Part 19, subpart C, and shall include a requirement to comply with these requirements in any lower tier covered transaction it enters into under this award.
- d. The Contractor shall have an ongoing duty during the term of this Contract to disclose to the Department of Fish and Game on an ongoing basis any occurrence that would prevent the Contractor from making the certifications contained in this Section 4. Such disclosure shall be made in writing to the Department of Fish and Game within five (5) business days of when the Contractor discovers or reasonably believes there is a likelihood of such occurrence. This certification is a material representation of fact relied upon by the Department of Fish and Game. If it is later determined that the Contractor did not comply with 31 CFR Part 19, subpart C, in addition to remedies available to Department of Fish and Game, the Federal government may pursue available remedies, including but not limited to suspension and/or debarment.

4. Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment (2 CFR § 200.216).

- a. Pursuant to 2 CFR §200.216, the Department of Fish and Game is prohibited from using FRF funds to procure, 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.
- b. As described in Public Law 115-232, section 889, "Covered telecommunications equipment or services" is:
 - i. Telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities);
 - ii. For the purpose of public safety, security of government facilities, physical security surveillance of critical 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);
 - iii. Telecommunications or video surveillance services provided by such entities or using such equipment; and
 - iv. Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of 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.
- c. The Contractor agrees that it shall not provide covered telecommunications equipment or services in the performance of this Contract.
- d. A compilation of prohibited telecommunications and video surveillance equipment and services entities may be found in the System for Award Management (SAM) excluded parties list.

5. Reporting Program Performance

- a. Contractor is responsible for the collection of performance information for services under this Contract in a format and using metrics defined by the Department of Fish and Game.
- b. Contractor is responsible for the submission of such performance reports to the Department of Fish and Game as required by the federal government.
- c. Contractor is responsible for the submission of such performance reports to the Department of Fish and Game as required by the Commonwealth of Massachusetts, the Federal Funds Equity and Accountability Review Panel, the Massachusetts State Auditor, and the Massachusetts Inspector General.
- d. Contractor acknowledges that performance information for services under this Contract will be displayed publicly on a website published by the Commonwealth as required by Chapter 288 of the Acts of 2020, Chapter 102 of the Acts of 2021, and other related laws.
- e. Contractor shall take all reasonable steps necessary to protect personally identifiable information collected during the performance of services required by this Contract and prevent the submission or publication of such information.

6. Remedies for Contract Violation. Should the Contractor violate any of the terms of the Contract, the Department of Fish and Game may pursue all available administrative, contractual, or legal remedies, as well as any applicable sanctions and penalties.

7. Contract Work Hours and Safety Standards Act (40 U.S.C. 3701-3708). [To the extent the Contract involves the employment of mechanics or laborers (as defined in 29 CFR Part 5 and including watchmen and guards) for any part of the contract work, the Contractor agrees to the following terms:

- a. *Overtime requirements.* The Contractor shall not 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.
- b. *Violation; liability for unpaid wages; liquidated damages.* In the event of any violation of the clause set forth in paragraph (a) of this section, the Contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, the Contractor and any such 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) of this section, in the sum of \$29 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) of this section.
- c. *Withholding for unpaid wages and liquidated damages.* the Department of Fish and Game shall upon its own action or upon written request of an authorized representative

Department of Fish and Game
Office of Fishing and Boating Access

- d. of the Department of Labor 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) of this section.
 - e. *Records.* The Contractor 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. The records to be maintained under this paragraph shall be made available by the Contractor for inspection, copying, or transcription by authorized representatives of the Department of Fish and Game and the Department of Labor, and the Contractor will permit such representatives to interview employees during working hours on the job.
 - f. *Subcontracts.* The Contractor shall insert in any subcontracts the clauses set forth in paragraph (a) through (d) 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) through (d) of this section.
- 8. The Clean Air Act (42 U.S.C. 7401-7671q.) and the Federal Water Pollution Control Act (33 U.S.C. 1251-1387), as amended.**
- a. The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251-1387).
 - b. The Contractor agrees to report each violation to the Executive Office of Energy and Environmental Affairs and understands and agrees that the Department of Fish and Game will, in turn, report each violation as required to assure notification to the U.S. Department of the Treasury and the appropriate Environmental Protection Agency Regional Office.
 - c. The Contractor agrees to include the above requirements in each subcontract financed in whole or in part with FRF funds.
- 9. Other Federal Environmental Laws and Regulations.** The Contractor shall comply with all other applicable federal environmental laws and regulations.
- 10. Byrd Anti-Lobbying Amendment (31 U.S.C. 1352).** The Contractor certifies that:
- a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or

Department of Fish and Game
Office of Fishing and Boating Access

- an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the Contractor shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
 - c. To the extent the Contractor is permitted and intends to utilize subcontractors under the Contract, the Contractor shall require that the language of this certification be included in all subcontracts and that all subcontractors shall certify and disclose accordingly.
 - d. This certification is a material representation of fact upon which reliance was placed when this Contract was entered into or amended. The making of this certification is a prerequisite for entering into or amending this Contract imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

- 11. Non-Discrimination.** The Contractor shall comply with all applicable federal laws and regulations prohibiting discrimination including, without limitation, the following:
- a. Title VI of the Civil Rights Act of 1964 (42 U.S.C. §§ 2000d et seq.) and U.S. Department of the Treasury's implementing regulations at 31 C.F.R. Part 22, which prohibit discrimination on the basis of race, color, or national origin under programs or activities receiving federal financial assistance;
 - b. The Fair Housing Act, Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§ 3601 et seq.), which prohibits discrimination in housing on the basis of race, color, religion, national origin, sex, familial status, or disability;
 - c. Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. § 794), which prohibits discrimination on the basis of disability under any program or activity receiving federal financial assistance;
 - d. The Age Discrimination Act of 1975, as amended (42 U.S.C. §§ 6101 et seq.), and U.S. Department of the Treasury's implementing regulations at 31 C.F.R. Part 23, which prohibit discrimination on the basis of age in programs or activities receiving federal financial assistance; and
 - e. Title II of the Americans with Disabilities Act of 1990, as amended (42 U.S.C. §§ 12101 et seq.), which prohibits discrimination on the basis of disability under programs, activities, and services provided or made available by state and local governments or instrumentalities or agencies thereto.

- 12. Publications.** To the extent the Contractor is authorized or directed to produce publications pursuant to this Contract, any such publications produced with FRF funds must display the

Department of Fish and Game
Office of Fishing and Boating Access

following language: "This project [is being] [was] supported, in whole or in part, by federal award number [enter project FAIN] awarded to the Commonwealth of Massachusetts by the U.S. Department of the Treasury."

13. Maintenance of and Access to Records.

- a. The Contractor shall maintain records pertinent to the Contract in a manner consistent with 2 C.F.R. § 200.334.
- b. The Contractor shall make available to the Department of Fish and Game, the U. S. Department of the Treasury, the Treasury Office of Inspector General, the Government Accountability Office, or any of their authorized representatives any documents, papers, or other records, including electronic records, of the Contractor that are pertinent to the Contract, in order to make audits, investigations, examinations, excerpts, transcripts, and copies of such documents. This right also includes timely and reasonable access to the Contractor's personnel for the purpose of interview and discussion related to such documents. This right of access shall continue as long as records are retained.

14. Increasing Seat Belt Use in the United States. Pursuant to Executive Order 13043, 62 FR 19217 (Apr. 18, 1997), the Contractor is encouraged to adopt and enforce on-the job seat belt policies and programs for their employees when operating company-owned, rented or personally owned vehicles.

15. Reducing Text Messaging While Driving. Pursuant to Executive Order 13513, 74 FR 51225 (Oct. 6, 2009), the Contractor is encouraged to adopt and enforce policies that ban text messaging while driving and should establish workplace safety policies to decrease accidents caused by distracted drivers.

16. Subcontractors. To the extent the Contractor is permitted and intends to utilize subcontractors under the Contract, the Contractor agrees to incorporate all relevant provisions of this addendum into its written agreement with the subcontractor.

On behalf of _____ ("Contractor"), I certify that I am an authorized signatory for the contractor and that I have read, understood, and will comply with requirements set forth in this contract addendum:

Authorized signatory signature: _____ Date _____

Print name: _____

Print title: _____

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Massachusetts Prevailing Wage Rates



MAURA HEALEY
Governor

KIM DRISCOLL
Lt. Governor

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

Prevailing Wage Rates

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

LAUREN JONES
Secretary

MICHAEL FLANAGAN
Director

Awarding Authority: Division of Fisheries and Wildlife
Contract Number: **City/Town:** BROOKFIELD
Description of Work: Demolition of a concrete, stone, and earthen dam, construction of precast concrete culvert and wingwalls, pilot channel through former impoundment, riprap, guardrail, pavement, streambed restoration.
Job Location: W. Sutton Rd, Sutton, Salmon Brook Rd, Brookfield

Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

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

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|---|----------------|-----------|---------|---------|---------------------------|------------|
| Construction | | | | | | |
| (2 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i> | 06/01/2024 | \$39.95 | \$15.07 | \$18.67 | \$0.00 | \$73.69 |
| | 12/01/2024 | \$39.95 | \$15.07 | \$20.17 | \$0.00 | \$75.19 |
| | 01/01/2025 | \$39.95 | \$15.57 | \$20.17 | \$0.00 | \$75.69 |
| | 06/01/2025 | \$40.95 | \$15.57 | \$20.17 | \$0.00 | \$76.69 |
| | 12/01/2025 | \$40.95 | \$15.57 | \$21.78 | \$0.00 | \$78.30 |
| | 01/01/2026 | \$40.95 | \$16.17 | \$21.78 | \$0.00 | \$78.90 |
| | 06/01/2026 | \$41.95 | \$16.17 | \$21.78 | \$0.00 | \$79.90 |
| | 12/01/2026 | \$41.95 | \$16.17 | \$23.52 | \$0.00 | \$81.64 |
| | 01/01/2027 | \$41.95 | \$16.77 | \$23.52 | \$0.00 | \$82.24 |
| (3 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i> | 06/01/2024 | \$40.02 | \$15.07 | \$18.67 | \$0.00 | \$73.76 |
| | 12/01/2024 | \$40.02 | \$15.07 | \$20.17 | \$0.00 | \$75.26 |
| | 01/01/2025 | \$40.02 | \$15.57 | \$20.17 | \$0.00 | \$75.76 |
| | 06/01/2025 | \$41.02 | \$15.57 | \$20.17 | \$0.00 | \$76.76 |
| | 12/01/2025 | \$41.02 | \$15.57 | \$21.78 | \$0.00 | \$78.37 |
| | 01/01/2026 | \$41.02 | \$16.17 | \$21.78 | \$0.00 | \$78.97 |
| | 06/01/2026 | \$42.02 | \$16.17 | \$21.78 | \$0.00 | \$79.97 |
| | 12/01/2026 | \$42.02 | \$16.17 | \$23.52 | \$0.00 | \$81.71 |
| | 01/01/2027 | \$42.02 | \$16.77 | \$23.52 | \$0.00 | \$82.31 |
| (4 & 5 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i> | 06/01/2024 | \$40.14 | \$15.07 | \$18.67 | \$0.00 | \$73.88 |
| | 12/01/2024 | \$40.14 | \$15.07 | \$20.17 | \$0.00 | \$75.38 |
| | 01/01/2025 | \$40.14 | \$15.57 | \$20.17 | \$0.00 | \$75.88 |
| | 06/01/2025 | \$41.14 | \$15.57 | \$20.17 | \$0.00 | \$76.88 |
| | 12/01/2025 | \$41.14 | \$15.57 | \$21.78 | \$0.00 | \$78.49 |
| | 01/01/2026 | \$41.14 | \$16.17 | \$21.78 | \$0.00 | \$79.09 |
| | 06/01/2026 | \$42.14 | \$16.17 | \$21.78 | \$0.00 | \$80.09 |
| | 12/01/2026 | \$42.14 | \$16.17 | \$23.52 | \$0.00 | \$81.83 |
| | 01/01/2027 | \$42.14 | \$16.77 | \$23.52 | \$0.00 | \$82.43 |
| ADS/SUBMERSIBLE PILOT <i>PILE DRIVER LOCAL 56 (ZONE 2)</i> | 08/01/2020 | \$103.05 | \$9.40 | \$23.12 | \$0.00 | \$135.57 |
| For apprentice rates see "Apprentice- PILE DRIVER" | | | | | | |
| AIR TRACK OPERATOR <i>LABORERS - ZONE 2</i> | 06/01/2024 | \$39.28 | \$9.65 | \$18.40 | \$0.00 | \$67.33 |
| | 12/01/2024 | \$40.61 | \$9.65 | \$18.40 | \$0.00 | \$68.66 |
| | 06/01/2025 | \$42.00 | \$9.65 | \$18.40 | \$0.00 | \$70.05 |
| | 12/01/2025 | \$43.38 | \$9.65 | \$18.40 | \$0.00 | \$71.43 |
| | 06/01/2026 | \$44.82 | \$9.65 | \$18.40 | \$0.00 | \$72.87 |
| | 12/01/2026 | \$46.26 | \$9.65 | \$18.40 | \$0.00 | \$74.31 |
| | 06/01/2027 | \$47.71 | \$9.65 | \$18.40 | \$0.00 | \$75.76 |
| | 12/01/2027 | \$49.16 | \$9.65 | \$18.40 | \$0.00 | \$77.21 |
| | 06/01/2028 | \$50.66 | \$9.65 | \$18.40 | \$0.00 | \$78.71 |
| | 12/01/2028 | \$52.16 | \$9.65 | \$18.40 | \$0.00 | \$80.21 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|--|-----------------------|------------------|---------------|----------------|----------------------------------|-------------------|
| AIR TRACK OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i> | 06/01/2024 | \$39.28 | \$9.65 | \$17.80 | \$0.00 | \$66.73 |
| | 12/01/2024 | \$40.61 | \$9.65 | \$17.80 | \$0.00 | \$68.06 |
| | 06/01/2025 | \$42.00 | \$9.65 | \$17.80 | \$0.00 | \$69.45 |
| | 12/01/2025 | \$43.38 | \$9.65 | \$17.80 | \$0.00 | \$70.83 |
| | 06/01/2026 | \$44.82 | \$9.65 | \$17.80 | \$0.00 | \$72.27 |
| | 12/01/2026 | \$46.26 | \$9.65 | \$17.80 | \$0.00 | \$73.71 |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway) | | | | | | |
| ASBESTOS WORKER (PIPES & TANKS) <i>HEAT & FROST INSULATORS LOCAL 6 (WORCESTER)</i> | 06/01/2024 | \$41.80 | \$14.50 | \$11.05 | \$0.00 | \$67.35 |
| | 12/01/2024 | \$42.80 | \$14.50 | \$11.05 | \$0.00 | \$68.35 |
| | 06/01/2025 | \$43.80 | \$14.50 | \$11.05 | \$0.00 | \$69.35 |
| | 12/01/2025 | \$44.80 | \$14.50 | \$11.05 | \$0.00 | \$70.35 |
| ASPHALT RAKER <i>LABORERS - ZONE 2</i> | 06/01/2024 | \$38.78 | \$9.65 | \$18.40 | \$0.00 | \$66.83 |
| | 12/01/2024 | \$40.11 | \$9.65 | \$18.40 | \$0.00 | \$68.16 |
| | 06/01/2025 | \$41.50 | \$9.65 | \$18.40 | \$0.00 | \$69.55 |
| | 12/01/2025 | \$42.88 | \$9.65 | \$18.40 | \$0.00 | \$70.93 |
| | 06/01/2026 | \$44.32 | \$9.65 | \$18.40 | \$0.00 | \$72.37 |
| | 12/01/2026 | \$45.76 | \$9.65 | \$18.40 | \$0.00 | \$73.81 |
| | 06/01/2027 | \$47.21 | \$9.65 | \$18.40 | \$0.00 | \$75.26 |
| | 12/01/2027 | \$48.66 | \$9.65 | \$18.40 | \$0.00 | \$76.71 |
| | 06/01/2028 | \$50.16 | \$9.65 | \$18.40 | \$0.00 | \$78.21 |
| | 12/01/2028 | \$51.66 | \$9.65 | \$18.40 | \$0.00 | \$79.71 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| ASPHALT RAKER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i> | 06/01/2024 | \$38.78 | \$9.65 | \$17.80 | \$0.00 | \$66.23 |
| | 12/01/2024 | \$40.11 | \$9.65 | \$17.80 | \$0.00 | \$67.56 |
| | 06/01/2025 | \$41.50 | \$9.65 | \$17.80 | \$0.00 | \$68.95 |
| | 12/01/2025 | \$42.88 | \$9.65 | \$17.80 | \$0.00 | \$70.33 |
| | 06/01/2026 | \$44.32 | \$9.65 | \$17.80 | \$0.00 | \$71.77 |
| | 12/01/2026 | \$45.76 | \$9.65 | \$17.80 | \$0.00 | \$73.21 |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway) | | | | | | |
| AUTOMATIC GRADER-EXCAVATOR (RECLAIMER) <i>OPERATING ENGINEERS LOCAL 98</i> | 12/01/2023 | \$39.56 | \$13.78 | \$15.15 | \$0.00 | \$68.49 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| BACKHOE/FRONT-END LOADER OPERATOR <i>OPERATING ENGINEERS LOCAL 98</i> | 12/01/2023 | \$39.56 | \$13.78 | \$15.15 | \$0.00 | \$68.49 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| BARCO-TYPE JUMPING TAMPER <i>LABORERS - ZONE 2</i> | 06/01/2024 | \$38.78 | \$9.65 | \$18.40 | \$0.00 | \$66.83 |
| | 12/01/2024 | \$40.11 | \$9.65 | \$18.40 | \$0.00 | \$68.16 |
| | 06/01/2025 | \$41.50 | \$9.65 | \$18.40 | \$0.00 | \$69.55 |
| | 12/01/2025 | \$42.88 | \$9.65 | \$18.40 | \$0.00 | \$70.93 |
| | 06/01/2026 | \$44.32 | \$9.65 | \$18.40 | \$0.00 | \$72.37 |
| | 12/01/2026 | \$45.76 | \$9.65 | \$18.40 | \$0.00 | \$73.81 |
| | 06/01/2027 | \$47.21 | \$9.65 | \$18.40 | \$0.00 | \$75.26 |
| | 12/01/2027 | \$48.66 | \$9.65 | \$18.40 | \$0.00 | \$76.71 |
| | 06/01/2028 | \$50.16 | \$9.65 | \$18.40 | \$0.00 | \$78.21 |
| | 12/01/2028 | \$51.66 | \$9.65 | \$18.40 | \$0.00 | \$79.71 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|---|----------------|-----------|---------|---------|---------------------------|------------|
| BATCH/CEMENT PLANT - ON SITE <i>OPERATING ENGINEERS LOCAL 98</i> | 12/01/2023 | \$39.03 | \$13.78 | \$15.15 | \$0.00 | \$67.96 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| BLOCK PAVER, RAMMER / CURB SETTER <i>LABORERS - ZONE 2</i> | 06/01/2024 | \$39.28 | \$9.65 | \$18.40 | \$0.00 | \$67.33 |
| | 12/01/2024 | \$40.61 | \$9.65 | \$18.40 | \$0.00 | \$68.66 |
| | 06/01/2025 | \$42.00 | \$9.65 | \$18.40 | \$0.00 | \$70.05 |
| | 12/01/2025 | \$43.38 | \$9.65 | \$18.40 | \$0.00 | \$71.43 |
| | 06/01/2026 | \$44.82 | \$9.65 | \$18.40 | \$0.00 | \$72.87 |
| | 12/01/2026 | \$46.26 | \$9.65 | \$18.40 | \$0.00 | \$74.31 |
| | 06/01/2027 | \$47.71 | \$9.65 | \$18.40 | \$0.00 | \$75.76 |
| | 12/01/2027 | \$49.16 | \$9.65 | \$18.40 | \$0.00 | \$77.21 |
| | 06/01/2028 | \$50.66 | \$9.65 | \$18.40 | \$0.00 | \$78.71 |
| | 12/01/2028 | \$52.16 | \$9.65 | \$18.40 | \$0.00 | \$80.21 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| BLOCK PAVER, RAMMER / CURB SETTER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i> | 06/01/2024 | \$39.28 | \$9.65 | \$17.80 | \$0.00 | \$66.73 |
| | 12/01/2024 | \$40.61 | \$9.65 | \$17.80 | \$0.00 | \$68.06 |
| | 06/01/2025 | \$42.00 | \$9.65 | \$17.80 | \$0.00 | \$69.45 |
| | 12/01/2025 | \$43.38 | \$9.65 | \$17.80 | \$0.00 | \$70.83 |
| | 06/01/2026 | \$44.82 | \$9.65 | \$17.80 | \$0.00 | \$72.27 |
| | 12/01/2026 | \$46.26 | \$9.65 | \$17.80 | \$0.00 | \$73.71 |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway)" | | | | | | |
| BOILER MAKER <i>BOILERMAKERS LOCAL 29</i> | 01/01/2024 | \$48.12 | \$7.07 | \$20.60 | \$0.00 | \$75.79 |

Apprentice - BOILERMAKER - Local 29

Effective Date - 01/01/2024

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

Notes:

Apprentice to Journeyworker Ratio:1:4

| | | | | | | |
|--|------------|---------|---------|---------|--------|----------|
| BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) <i>BRICKLAYERS LOCAL 3 (WORCESTER)</i> | 08/01/2024 | \$62.36 | \$11.49 | \$22.90 | \$0.00 | \$96.75 |
| | 02/01/2025 | \$63.66 | \$11.49 | \$22.90 | \$0.00 | \$98.05 |
| | 08/01/2025 | \$65.81 | \$11.49 | \$22.90 | \$0.00 | \$100.20 |
| | 02/01/2026 | \$67.16 | \$11.49 | \$22.90 | \$0.00 | \$101.55 |
| | 08/01/2026 | \$69.36 | \$11.49 | \$22.90 | \$0.00 | \$103.75 |
| | 02/01/2027 | \$70.76 | \$11.49 | \$22.90 | \$0.00 | \$105.15 |

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - BRICK/PLASTER/CEMENT MASON - Local 3 Worcester

Effective Date - 08/01/2024

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$31.18 | \$11.49 | \$22.90 | \$0.00 | \$65.57 |
| 2 | 60 | \$37.42 | \$11.49 | \$22.90 | \$0.00 | \$71.81 |
| 3 | 70 | \$43.65 | \$11.49 | \$22.90 | \$0.00 | \$78.04 |
| 4 | 80 | \$49.89 | \$11.49 | \$22.90 | \$0.00 | \$84.28 |
| 5 | 90 | \$56.12 | \$11.49 | \$22.90 | \$0.00 | \$90.51 |

Effective Date - 02/01/2025

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$31.83 | \$11.49 | \$22.90 | \$0.00 | \$66.22 |
| 2 | 60 | \$38.20 | \$11.49 | \$22.90 | \$0.00 | \$72.59 |
| 3 | 70 | \$44.56 | \$11.49 | \$22.90 | \$0.00 | \$78.95 |
| 4 | 80 | \$50.93 | \$11.49 | \$22.90 | \$0.00 | \$85.32 |
| 5 | 90 | \$57.29 | \$11.49 | \$22.90 | \$0.00 | \$91.68 |

Notes:

Apprentice to Journeyworker Ratio:1:5

| | | | | | | |
|---|------------|---------|---------|---------|--------|---------|
| BULLDOZER/POWER SHOVEL/TREE SHREDDER /CLAM SHELL OPERATING | 12/01/2023 | \$39.56 | \$13.78 | \$15.15 | \$0.00 | \$68.49 |
|---|------------|---------|---------|---------|--------|---------|

ENGINEERS LOCAL 98

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

| | | | | | | |
|---|------------|---------|--------|---------|--------|---------|
| CAISSON & UNDERPINNING BOTTOM MAN LABORERS - FOUNDATION AND MARINE | 06/01/2024 | \$46.63 | \$9.65 | \$18.22 | \$0.00 | \$74.50 |
| | 12/01/2024 | \$48.10 | \$9.65 | \$18.22 | \$0.00 | \$75.97 |
| | 06/01/2025 | \$49.60 | \$9.65 | \$18.22 | \$0.00 | \$77.47 |
| | 12/01/2025 | \$51.10 | \$9.65 | \$18.22 | \$0.00 | \$78.97 |
| | 06/01/2026 | \$52.65 | \$9.65 | \$18.22 | \$0.00 | \$80.52 |
| | 12/01/2026 | \$54.15 | \$9.65 | \$18.22 | \$0.00 | \$82.02 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|--|------------|---------|--------|---------|--------|---------|
| CAISSON & UNDERPINNING LABORER LABORERS - FOUNDATION AND MARINE | 06/01/2024 | \$45.48 | \$9.65 | \$18.22 | \$0.00 | \$73.35 |
| | 12/01/2024 | \$46.95 | \$9.65 | \$18.22 | \$0.00 | \$74.82 |
| | 06/01/2025 | \$48.45 | \$9.65 | \$18.22 | \$0.00 | \$76.32 |
| | 12/01/2025 | \$49.95 | \$9.65 | \$18.22 | \$0.00 | \$77.82 |
| | 06/01/2026 | \$51.50 | \$9.65 | \$18.22 | \$0.00 | \$79.37 |
| | 12/01/2026 | \$53.00 | \$9.65 | \$18.22 | \$0.00 | \$80.87 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|--|------------|---------|--------|---------|--------|---------|
| CAISSON & UNDERPINNING TOP MAN LABORERS - FOUNDATION AND MARINE | 06/01/2024 | \$45.81 | \$9.65 | \$18.22 | \$0.00 | \$73.68 |
| | 12/01/2024 | \$47.28 | \$9.65 | \$18.22 | \$0.00 | \$75.15 |
| | 06/01/2025 | \$48.78 | \$9.65 | \$18.22 | \$0.00 | \$76.65 |
| | 12/01/2025 | \$50.28 | \$9.65 | \$18.22 | \$0.00 | \$78.15 |
| | 06/01/2026 | \$51.83 | \$9.65 | \$18.22 | \$0.00 | \$79.70 |
| | 12/01/2026 | \$53.33 | \$9.65 | \$18.22 | \$0.00 | \$81.20 |

For apprentice rates see "Apprentice- LABORER"

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|--|----------------|-----------|--------|---------|---------------------------|------------|
| CARBIDE CORE DRILL OPERATOR LABORERS - ZONE 2 | 06/01/2024 | \$38.78 | \$9.65 | \$18.40 | \$0.00 | \$66.83 |
| | 12/01/2024 | \$40.11 | \$9.65 | \$18.40 | \$0.00 | \$68.16 |
| | 06/01/2025 | \$41.50 | \$9.65 | \$18.40 | \$0.00 | \$69.55 |
| | 12/01/2025 | \$42.88 | \$9.65 | \$18.40 | \$0.00 | \$70.93 |
| | 06/01/2026 | \$44.32 | \$9.65 | \$18.40 | \$0.00 | \$72.37 |
| | 12/01/2026 | \$45.76 | \$9.65 | \$18.40 | \$0.00 | \$73.81 |
| | 06/01/2027 | \$47.21 | \$9.65 | \$18.40 | \$0.00 | \$75.26 |
| | 12/01/2027 | \$48.66 | \$9.65 | \$18.40 | \$0.00 | \$76.71 |
| | 06/01/2028 | \$50.16 | \$9.65 | \$18.40 | \$0.00 | \$78.21 |
| | 12/01/2028 | \$51.66 | \$9.65 | \$18.40 | \$0.00 | \$79.71 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|---|------------|---------|--------|---------|--------|---------|
| CARPENTER CARPENTERS -ZONE 2 (Eastern Massachusetts) | 09/01/2024 | \$48.37 | \$9.83 | \$19.97 | \$0.00 | \$78.17 |
| | 03/01/2025 | \$49.62 | \$9.83 | \$19.97 | \$0.00 | \$79.42 |
| | 09/01/2025 | \$50.87 | \$9.83 | \$19.97 | \$0.00 | \$80.67 |
| | 03/01/2026 | \$52.12 | \$9.83 | \$19.97 | \$0.00 | \$81.92 |
| | 09/01/2026 | \$53.37 | \$9.83 | \$19.97 | \$0.00 | \$83.17 |
| | 03/01/2027 | \$54.62 | \$9.83 | \$19.97 | \$0.00 | \$84.42 |

Apprentice - CARPENTER - Zone 2 Eastern MA

Effective Date - 09/01/2024

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

Effective Date - 03/01/2025

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 45 | \$22.33 | \$9.83 | \$1.73 | \$0.00 | \$33.89 |
| 2 | 45 | \$22.33 | \$9.83 | \$1.73 | \$0.00 | \$33.89 |
| 3 | 55 | \$27.29 | \$9.83 | \$3.40 | \$0.00 | \$40.52 |
| 4 | 55 | \$27.29 | \$9.83 | \$3.40 | \$0.00 | \$40.52 |
| 5 | 70 | \$34.73 | \$9.83 | \$16.51 | \$0.00 | \$61.07 |
| 6 | 70 | \$34.73 | \$9.83 | \$16.51 | \$0.00 | \$61.07 |
| 7 | 80 | \$39.70 | \$9.83 | \$18.24 | \$0.00 | \$67.77 |
| 8 | 80 | \$39.70 | \$9.83 | \$18.24 | \$0.00 | \$67.77 |

Notes:

Apprentice to Journeyworker Ratio:1:5

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|---------------------------------------|----------------|-----------|--------|---------|---------------------------|------------|
| CARPENTER WOOD FRAME | 10/01/2024 | \$26.65 | \$7.02 | \$4.80 | \$0.00 | \$38.47 |
| <i>CARPENTERS-ZONE 3 (Wood Frame)</i> | 10/01/2025 | \$27.75 | \$7.02 | \$4.80 | \$0.00 | \$39.57 |
| | 10/01/2026 | \$28.85 | \$7.02 | \$4.80 | \$0.00 | \$40.67 |

All Aspects of New Wood Frame Work

Apprentice - CARPENTER (Wood Frame) - Zone 3

Effective Date - 10/01/2024

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 60 | \$15.99 | \$7.02 | \$0.00 | \$0.00 | \$23.01 |
| 2 | 60 | \$15.99 | \$7.02 | \$0.00 | \$0.00 | \$23.01 |
| 3 | 65 | \$17.32 | \$7.02 | \$1.00 | \$0.00 | \$25.34 |
| 4 | 70 | \$18.66 | \$7.02 | \$1.00 | \$0.00 | \$26.68 |
| 5 | 75 | \$19.99 | \$7.02 | \$4.80 | \$0.00 | \$31.81 |
| 6 | 80 | \$21.32 | \$7.02 | \$4.80 | \$0.00 | \$33.14 |
| 7 | 85 | \$22.65 | \$7.02 | \$4.80 | \$0.00 | \$34.47 |
| 8 | 90 | \$23.99 | \$7.02 | \$4.80 | \$0.00 | \$35.81 |

Effective Date - 10/01/2025

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 60 | \$16.65 | \$7.02 | \$0.00 | \$0.00 | \$23.67 |
| 2 | 60 | \$16.65 | \$7.02 | \$0.00 | \$0.00 | \$23.67 |
| 3 | 65 | \$18.04 | \$7.02 | \$1.00 | \$0.00 | \$26.06 |
| 4 | 70 | \$19.43 | \$7.02 | \$1.00 | \$0.00 | \$27.45 |
| 5 | 75 | \$20.81 | \$7.02 | \$4.80 | \$0.00 | \$32.63 |
| 6 | 80 | \$22.20 | \$7.02 | \$4.80 | \$0.00 | \$34.02 |
| 7 | 85 | \$23.59 | \$7.02 | \$4.80 | \$0.00 | \$35.41 |
| 8 | 90 | \$24.98 | \$7.02 | \$4.80 | \$0.00 | \$36.80 |

Notes:

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80
 Step 1&2 \$18.52/ 3&4 \$21.07/ 5&6 \$28.70/ 7&8 \$31.26

Apprentice to Journeyworker Ratio:1:5

| | | | | | | |
|--|------------|---------|---------|---------|--------|---------|
| CEMENT MASONRY/PLASTERING | 01/01/2024 | \$49.33 | \$13.00 | \$23.57 | \$1.30 | \$87.20 |
| <i>BRICKLAYERS LOCAL 3 (WORCESTER)</i> | | | | | | |

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - CEMENT MASONRY/PLASTERING - Worcester

Effective Date - 01/01/2024

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$24.67 | \$13.00 | \$15.93 | \$0.00 | \$53.60 |
| 2 | 60 | \$29.60 | \$13.00 | \$18.57 | \$1.30 | \$62.47 |
| 3 | 65 | \$32.06 | \$13.00 | \$19.57 | \$1.30 | \$65.93 |
| 4 | 70 | \$34.53 | \$13.00 | \$20.57 | \$1.30 | \$69.40 |
| 5 | 75 | \$37.00 | \$13.00 | \$21.57 | \$1.30 | \$72.87 |
| 6 | 80 | \$39.46 | \$13.00 | \$22.57 | \$1.30 | \$76.33 |
| 7 | 90 | \$44.40 | \$13.00 | \$23.57 | \$1.30 | \$82.27 |

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

Apprentice to Journeyworker Ratio:1:3

| | | | | | | |
|---|------------|---------|--------|---------|--------|---------|
| CHAIN SAW OPERATOR LABORERS - ZONE 2 | 06/01/2024 | \$38.78 | \$9.65 | \$18.40 | \$0.00 | \$66.83 |
| | 12/01/2024 | \$40.11 | \$9.65 | \$18.40 | \$0.00 | \$68.16 |
| | 06/01/2025 | \$41.50 | \$9.65 | \$18.40 | \$0.00 | \$69.55 |
| | 12/01/2025 | \$42.88 | \$9.65 | \$18.40 | \$0.00 | \$70.93 |
| | 06/01/2026 | \$44.32 | \$9.65 | \$18.40 | \$0.00 | \$72.37 |
| | 12/01/2026 | \$45.76 | \$9.65 | \$18.40 | \$0.00 | \$73.81 |
| | 06/01/2027 | \$47.21 | \$9.65 | \$18.40 | \$0.00 | \$75.26 |
| | 12/01/2027 | \$48.66 | \$9.65 | \$18.40 | \$0.00 | \$76.71 |
| | 06/01/2028 | \$50.16 | \$9.65 | \$18.40 | \$0.00 | \$78.21 |
| | 12/01/2028 | \$51.66 | \$9.65 | \$18.40 | \$0.00 | \$79.71 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|---|------------|---------|---------|---------|--------|---------|
| COMPRESSOR OPERATOR OPERATING ENGINEERS LOCAL 98 | 12/01/2023 | \$39.03 | \$13.78 | \$15.15 | \$0.00 | \$67.96 |
|---|------------|---------|---------|---------|--------|---------|

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

| | | | | | | |
|--|------------|---------|---------|---------|--------|---------|
| CRANE OPERATOR OPERATING ENGINEERS LOCAL 98 | 12/01/2023 | \$43.06 | \$13.78 | \$15.15 | \$0.00 | \$71.99 |
|--|------------|---------|---------|---------|--------|---------|

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

| | | | | | | |
|---|------------|---------|--------|---------|--------|---------|
| DELEADER (BRIDGE) PAINTERS LOCAL 35 - ZONE 2 | 07/01/2024 | \$57.26 | \$9.95 | \$23.95 | \$0.00 | \$91.16 |
| | 01/01/2025 | \$58.46 | \$9.95 | \$23.95 | \$0.00 | \$92.36 |

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 07/01/2024

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

Effective Date - 01/01/2025

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

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

| | | | | | | |
|-------------------|------------|---------|--------|---------|--------|---------|
| DEMO: ADZEMAN | 06/10/2024 | \$45.53 | \$9.65 | \$18.40 | \$0.00 | \$73.58 |
| LABORERS - ZONE 2 | 12/02/2024 | \$47.00 | \$9.65 | \$18.40 | \$0.00 | \$75.05 |
| | 06/02/2025 | \$48.50 | \$9.65 | \$18.40 | \$0.00 | \$76.55 |
| | 12/01/2025 | \$50.00 | \$9.65 | \$18.40 | \$0.00 | \$78.05 |
| | 06/01/2026 | \$51.55 | \$9.65 | \$18.40 | \$0.00 | \$79.60 |
| | 12/07/2026 | \$53.05 | \$9.65 | \$18.40 | \$0.00 | \$81.10 |
| | 06/07/2027 | \$54.65 | \$9.65 | \$18.40 | \$0.00 | \$82.70 |
| | 12/06/2027 | \$56.25 | \$9.65 | \$18.40 | \$0.00 | \$84.30 |
| | 06/05/2028 | \$57.93 | \$9.65 | \$18.40 | \$0.00 | \$85.98 |
| | 12/04/2028 | \$59.60 | \$9.65 | \$18.40 | \$0.00 | \$87.65 |

For apprentice rates see "Apprentice- LABORER"

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|--|----------------|-----------|--------|---------|---------------------------|------------|
| DEMO: BACKHOE/LOADER/HAMMER OPERATOR <i>LABORERS - ZONE 2</i> | 06/10/2024 | \$46.53 | \$9.65 | \$18.40 | \$0.00 | \$74.58 |
| | 12/02/2024 | \$48.00 | \$9.65 | \$18.40 | \$0.00 | \$76.05 |
| | 06/02/2025 | \$49.50 | \$9.65 | \$18.40 | \$0.00 | \$77.55 |
| | 12/01/2025 | \$51.00 | \$9.65 | \$18.40 | \$0.00 | \$79.05 |
| | 06/01/2026 | \$52.55 | \$9.65 | \$18.40 | \$0.00 | \$80.60 |
| | 12/07/2026 | \$54.05 | \$9.65 | \$18.40 | \$0.00 | \$82.10 |
| | 06/07/2027 | \$55.65 | \$9.65 | \$18.40 | \$0.00 | \$83.70 |
| | 12/06/2027 | \$57.25 | \$9.65 | \$18.40 | \$0.00 | \$85.30 |
| | 06/05/2028 | \$58.93 | \$9.65 | \$18.40 | \$0.00 | \$86.98 |
| | 12/04/2028 | \$60.60 | \$9.65 | \$18.40 | \$0.00 | \$88.65 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|---|------------|---------|--------|---------|--------|---------|
| DEMO: BURNERS <i>LABORERS - ZONE 2</i> | 06/10/2024 | \$46.28 | \$9.65 | \$18.40 | \$0.00 | \$74.33 |
| | 12/02/2024 | \$47.75 | \$9.65 | \$18.40 | \$0.00 | \$75.80 |
| | 06/02/2025 | \$49.25 | \$9.65 | \$18.40 | \$0.00 | \$77.30 |
| | 12/01/2025 | \$50.75 | \$9.65 | \$18.40 | \$0.00 | \$78.80 |
| | 06/01/2026 | \$52.30 | \$9.65 | \$18.40 | \$0.00 | \$80.35 |
| | 12/07/2026 | \$53.80 | \$9.65 | \$18.40 | \$0.00 | \$81.85 |
| | 06/07/2027 | \$55.40 | \$9.65 | \$18.40 | \$0.00 | \$83.45 |
| | 12/06/2027 | \$57.00 | \$9.65 | \$18.40 | \$0.00 | \$85.05 |
| | 06/05/2028 | \$58.68 | \$9.65 | \$18.40 | \$0.00 | \$86.73 |
| | 12/04/2028 | \$60.35 | \$9.65 | \$18.40 | \$0.00 | \$88.40 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|--|------------|---------|--------|---------|--------|---------|
| DEMO: CONCRETE CUTTER/SAWYER <i>LABORERS - ZONE 2</i> | 06/10/2024 | \$46.53 | \$9.65 | \$18.40 | \$0.00 | \$74.58 |
| | 12/02/2024 | \$48.00 | \$9.65 | \$18.40 | \$0.00 | \$76.05 |
| | 06/02/2025 | \$49.50 | \$9.65 | \$18.40 | \$0.00 | \$77.55 |
| | 12/01/2025 | \$51.00 | \$9.65 | \$18.40 | \$0.00 | \$79.05 |
| | 06/01/2026 | \$52.55 | \$9.65 | \$18.40 | \$0.00 | \$80.60 |
| | 12/07/2026 | \$54.05 | \$9.65 | \$18.40 | \$0.00 | \$82.10 |
| | 06/07/2027 | \$55.65 | \$9.65 | \$18.40 | \$0.00 | \$83.70 |
| | 12/06/2027 | \$57.25 | \$9.65 | \$18.40 | \$0.00 | \$85.30 |
| | 06/05/2028 | \$58.93 | \$9.65 | \$18.40 | \$0.00 | \$86.98 |
| | 12/04/2028 | \$60.60 | \$9.65 | \$18.40 | \$0.00 | \$88.65 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|---|------------|---------|--------|---------|--------|---------|
| DEMO: JACKHAMMER OPERATOR <i>LABORERS - ZONE 2</i> | 06/10/2024 | \$46.28 | \$9.65 | \$18.40 | \$0.00 | \$74.33 |
| | 12/02/2024 | \$47.75 | \$9.65 | \$18.40 | \$0.00 | \$75.80 |
| | 06/02/2025 | \$49.25 | \$9.65 | \$18.40 | \$0.00 | \$77.30 |
| | 12/01/2025 | \$50.75 | \$9.65 | \$18.40 | \$0.00 | \$78.80 |
| | 06/01/2026 | \$52.30 | \$9.65 | \$18.40 | \$0.00 | \$80.35 |
| | 12/07/2026 | \$53.80 | \$9.65 | \$18.40 | \$0.00 | \$81.85 |
| | 06/07/2027 | \$55.40 | \$9.65 | \$18.40 | \$0.00 | \$83.45 |
| | 12/06/2027 | \$57.00 | \$9.65 | \$18.40 | \$0.00 | \$85.05 |
| | 06/05/2028 | \$58.68 | \$9.65 | \$18.40 | \$0.00 | \$86.73 |
| | 12/04/2028 | \$60.35 | \$9.65 | \$18.40 | \$0.00 | \$88.40 |

For apprentice rates see "Apprentice- LABORER"

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|--|----------------|-----------|---------|---------|---------------------------|------------|
| DEMO: WRECKING LABORER <i>LABORERS - ZONE 2</i> | 06/10/2024 | \$45.53 | \$9.65 | \$18.40 | \$0.00 | \$73.58 |
| | 12/02/2024 | \$47.00 | \$9.65 | \$18.40 | \$0.00 | \$75.05 |
| | 06/02/2025 | \$48.50 | \$9.65 | \$18.40 | \$0.00 | \$76.55 |
| | 12/01/2025 | \$50.00 | \$9.65 | \$18.40 | \$0.00 | \$78.05 |
| | 06/01/2026 | \$51.55 | \$9.65 | \$18.40 | \$0.00 | \$79.60 |
| | 12/07/2026 | \$53.05 | \$9.65 | \$18.40 | \$0.00 | \$81.10 |
| | 06/07/2027 | \$54.65 | \$9.65 | \$18.40 | \$0.00 | \$82.70 |
| | 12/06/2027 | \$56.25 | \$9.65 | \$18.40 | \$0.00 | \$84.30 |
| | 06/05/2028 | \$57.93 | \$9.65 | \$18.40 | \$0.00 | \$85.98 |
| | 12/04/2028 | \$59.60 | \$9.65 | \$18.40 | \$0.00 | \$87.65 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| DIVER <i>PILE DRIVER LOCAL 56 (ZONE 2)</i> | 08/01/2020 | \$68.70 | \$9.40 | \$23.12 | \$0.00 | \$101.22 |
| For apprentice rates see "Apprentice- PILE DRIVER" | | | | | | |
| DIVER TENDER <i>PILE DRIVER LOCAL 56 (ZONE 2)</i> | 08/01/2020 | \$49.07 | \$9.40 | \$23.12 | \$0.00 | \$81.59 |
| For apprentice rates see "Apprentice- PILE DRIVER" | | | | | | |
| DIVER TENDER (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 2)</i> | 08/01/2020 | \$73.60 | \$9.40 | \$23.12 | \$0.00 | \$106.12 |
| For apprentice rates see "Apprentice- PILE DRIVER" | | | | | | |
| DIVER/SLURRY (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 2)</i> | 08/01/2020 | \$103.05 | \$9.40 | \$23.12 | \$0.00 | \$135.57 |
| For apprentice rates see "Apprentice- PILE DRIVER" | | | | | | |
| DRAWBRIDGE OPERATOR (Construction) <i>DRAWBRIDGE - SEIU LOCAL 888</i> | 07/01/2020 | \$26.77 | \$6.67 | \$3.93 | \$0.16 | \$37.53 |
| ELECTRICIAN <i>ELECTRICIANS LOCAL 96</i> | 09/01/2024 | \$47.05 | \$13.99 | \$19.22 | \$0.00 | \$80.26 |
| | 09/07/2025 | \$48.16 | \$14.98 | \$19.60 | \$0.00 | \$82.74 |
| | 09/06/2026 | \$49.38 | \$15.96 | \$20.00 | \$0.00 | \$85.34 |

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - ELECTRICIAN - Local 96

Effective Date - 09/01/2024

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 40 | \$18.82 | \$13.99 | \$0.56 | \$0.00 | \$33.37 |
| 2 | 45 | \$21.17 | \$13.99 | \$0.64 | \$0.00 | \$35.80 |
| 3 | 48 | \$22.58 | \$13.99 | \$15.79 | \$0.00 | \$52.36 |
| 4 | 55 | \$25.88 | \$13.99 | \$16.26 | \$0.00 | \$56.13 |
| 5 | 65 | \$30.58 | \$13.99 | \$16.91 | \$0.00 | \$61.48 |
| 6 | 80 | \$37.64 | \$13.99 | \$17.90 | \$0.00 | \$69.53 |

Effective Date - 09/07/2025

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 40 | \$19.26 | \$14.98 | \$0.58 | \$0.00 | \$34.82 |
| 2 | 45 | \$21.67 | \$14.98 | \$0.65 | \$0.00 | \$37.30 |
| 3 | 48 | \$23.12 | \$14.98 | \$16.09 | \$0.00 | \$54.19 |
| 4 | 55 | \$26.49 | \$14.98 | \$16.57 | \$0.00 | \$58.04 |
| 5 | 65 | \$31.30 | \$14.98 | \$17.25 | \$0.00 | \$63.53 |
| 6 | 80 | \$38.53 | \$14.98 | \$18.26 | \$0.00 | \$71.77 |

Notes:

Steps 1-2 are 1000 hrs; Steps 3-6 are 1500 hrs.

Apprentice to Journeyworker Ratio:2:3***

| | | | | | | |
|--------------------------------|------------|---------|---------|---------|--------|----------|
| ELEVATOR CONSTRUCTOR | 01/01/2024 | \$61.98 | \$16.18 | \$20.96 | \$0.00 | \$99.12 |
| ELEVATOR CONSTRUCTORS LOCAL 41 | 01/01/2025 | \$62.83 | \$16.28 | \$21.36 | \$0.00 | \$100.47 |
| | 01/01/2026 | \$63.68 | \$16.38 | \$21.76 | \$0.00 | \$101.82 |
| | 01/01/2027 | \$64.53 | \$16.48 | \$22.16 | \$0.00 | \$103.17 |

Apprentice - ELEVATOR CONSTRUCTOR - Local 41

Effective Date - 01/01/2024

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$30.99 | \$16.18 | \$0.00 | \$0.00 | \$47.17 |
| 2 | 55 | \$34.09 | \$16.18 | \$20.96 | \$0.00 | \$71.23 |
| 3 | 65 | \$40.29 | \$16.18 | \$20.96 | \$0.00 | \$77.43 |
| 4 | 70 | \$43.39 | \$16.18 | \$20.96 | \$0.00 | \$80.53 |
| 5 | 80 | \$49.58 | \$16.18 | \$20.96 | \$0.00 | \$86.72 |

Effective Date - 01/01/2025

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$31.42 | \$16.28 | \$0.00 | \$0.00 | \$47.70 |
| 2 | 55 | \$34.56 | \$16.28 | \$21.36 | \$0.00 | \$72.20 |
| 3 | 65 | \$40.84 | \$16.28 | \$21.36 | \$0.00 | \$78.48 |
| 4 | 70 | \$43.98 | \$16.28 | \$21.36 | \$0.00 | \$81.62 |
| 5 | 80 | \$50.26 | \$16.28 | \$21.36 | \$0.00 | \$87.90 |

Notes:

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

Apprentice to Journeyworker Ratio:1:1

| | | | | | | |
|--|------------|---------|---------|---------|--------|---------|
| ELEVATOR CONSTRUCTOR HELPER <i>ELEVATOR CONSTRUCTORS LOCAL 41</i> | 01/01/2024 | \$43.39 | \$16.18 | \$20.96 | \$0.00 | \$80.53 |
| | 01/01/2025 | \$43.98 | \$16.28 | \$21.36 | \$0.00 | \$81.62 |
| | 01/01/2026 | \$44.58 | \$16.38 | \$21.76 | \$0.00 | \$82.72 |
| | 01/01/2027 | \$45.17 | \$16.48 | \$22.16 | \$0.00 | \$83.81 |

For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"

| | | | | | | |
|--|------------|---------|--------|---------|--------|---------|
| FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i> | 06/01/2024 | \$38.78 | \$9.65 | \$17.80 | \$0.00 | \$66.23 |
| | 12/01/2024 | \$40.11 | \$9.65 | \$17.80 | \$0.00 | \$67.56 |
| | 06/01/2025 | \$41.50 | \$9.65 | \$17.80 | \$0.00 | \$68.95 |
| | 12/01/2025 | \$42.88 | \$9.65 | \$17.80 | \$0.00 | \$70.33 |
| | 06/01/2026 | \$44.32 | \$9.65 | \$17.80 | \$0.00 | \$71.77 |
| | 12/01/2026 | \$45.76 | \$9.65 | \$17.80 | \$0.00 | \$73.21 |

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

| | | | | | | |
|---|------------|---------|--------|--------|--------|---------|
| FIELD ENG.INST/ROD-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 98</i> | 06/01/1999 | \$18.84 | \$4.80 | \$4.10 | \$0.00 | \$27.74 |
|---|------------|---------|--------|--------|--------|---------|

| | | | | | | |
|--|------------|---------|--------|--------|--------|---------|
| FIELD ENG.PARTY CHIEF:BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 98</i> | 06/01/1999 | \$21.33 | \$4.80 | \$4.10 | \$0.00 | \$30.23 |
|--|------------|---------|--------|--------|--------|---------|

| | | | | | | |
|---|------------|---------|--------|--------|--------|---------|
| FIELD ENG.SURVEY CHIEF-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 98</i> | 06/01/1999 | \$22.33 | \$4.80 | \$4.10 | \$0.00 | \$31.23 |
|---|------------|---------|--------|--------|--------|---------|

| | | | | | | |
|--|------------|---------|---------|---------|--------|---------|
| FIRE ALARM INSTALLER <i>ELECTRICIANS LOCAL 96</i> | 09/01/2024 | \$47.05 | \$13.99 | \$19.22 | \$0.00 | \$80.26 |
| | 09/07/2025 | \$48.16 | \$14.98 | \$19.60 | \$0.00 | \$82.74 |
| | 09/06/2026 | \$49.38 | \$15.96 | \$20.00 | \$0.00 | \$85.34 |

For apprentice rates see "Apprentice- ELECTRICIAN"

| | | | | | | |
|---|------------|---------|---------|---------|--------|---------|
| FIRE ALARM REPAIR / MAINT/COMMISSIONING <i>ELECTRICIANS LOCAL 96</i> | 09/01/2024 | \$47.05 | \$13.99 | \$19.22 | \$0.00 | \$80.26 |
| | 09/07/2025 | \$48.16 | \$14.98 | \$19.60 | \$0.00 | \$82.74 |
| | 09/06/2026 | \$49.38 | \$15.96 | \$20.00 | \$0.00 | \$85.34 |

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|--|----------------|-----------|---------|---------|---------------------------|------------|
| FIREMAN <i>OPERATING ENGINEERS LOCAL 98</i> | 12/01/2023 | \$39.03 | \$13.78 | \$15.15 | \$0.00 | \$67.96 |

For apprentice rates see "Apprentice- ELECTRICIAN"

Apprentice - OPERATING ENGINEERS - Local 98 Class 3

Effective Date - 12/01/2023

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 60 | \$23.42 | \$13.78 | \$15.15 | \$0.00 | \$52.35 |
| 2 | 70 | \$27.32 | \$13.78 | \$15.15 | \$0.00 | \$56.25 |
| 3 | 80 | \$31.22 | \$13.78 | \$15.15 | \$0.00 | \$60.15 |
| 4 | 90 | \$35.13 | \$13.78 | \$15.15 | \$0.00 | \$64.06 |

Notes:

Steps 1-2 are 1000 hrs.; Steps 3-4 are 2000 hrs.

Apprentice to Journeyworker Ratio:1:6

| | | | | | | |
|--|------------|---------|--------|---------|--------|---------|
| FLAGGER & SIGNALER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i> | 06/01/2024 | \$27.01 | \$9.65 | \$17.80 | \$0.00 | \$54.46 |
| | 12/01/2024 | \$27.01 | \$9.65 | \$17.80 | \$0.00 | \$54.46 |
| | 06/01/2025 | \$28.09 | \$9.65 | \$17.80 | \$0.00 | \$55.54 |
| | 12/01/2025 | \$28.09 | \$9.65 | \$17.80 | \$0.00 | \$55.54 |
| | 06/01/2026 | \$29.21 | \$9.65 | \$17.80 | \$0.00 | \$56.66 |
| | 12/01/2026 | \$29.21 | \$9.65 | \$17.80 | \$0.00 | \$56.66 |

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

| | | | | | | |
|---|------------|---------|--------|---------|--------|---------|
| FLOORCOVERER <i>FLOORCOVERERS LOCAL 2168 ZONE II</i> | 03/01/2024 | \$49.47 | \$8.83 | \$20.27 | \$0.00 | \$78.57 |
|---|------------|---------|--------|---------|--------|---------|

Apprentice - FLOORCOVERER - Local 2168 Zone II

Effective Date - 03/01/2024

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 50 | \$24.74 | \$8.83 | \$1.76 | \$0.00 | \$35.33 |
| 2 | 55 | \$27.21 | \$8.83 | \$1.76 | \$0.00 | \$37.80 |
| 3 | 60 | \$29.68 | \$8.83 | \$3.52 | \$0.00 | \$42.03 |
| 4 | 65 | \$32.16 | \$8.83 | \$3.52 | \$0.00 | \$44.51 |
| 5 | 70 | \$34.63 | \$8.83 | \$16.75 | \$0.00 | \$60.21 |
| 6 | 75 | \$37.10 | \$8.83 | \$16.75 | \$0.00 | \$62.68 |
| 7 | 80 | \$39.58 | \$8.83 | \$18.51 | \$0.00 | \$66.92 |
| 8 | 85 | \$42.05 | \$8.83 | \$18.51 | \$0.00 | \$69.39 |

Notes: Steps are 750 hrs.

% After 10/1/17; 45/45/55/55/70/70/80/80 (1500hr Steps)

Step 1&2 \$32.63/ 3&4 \$39.28/ 5&6 \$59.86/ 7&8 \$66.52

Apprentice to Journeyworker Ratio:1:1

| | | | | | | |
|--|------------|---------|---------|---------|--------|---------|
| FORK LIFT <i>OPERATING ENGINEERS LOCAL 98</i> | 12/01/2023 | \$39.25 | \$13.78 | \$15.15 | \$0.00 | \$68.18 |
|--|------------|---------|---------|---------|--------|---------|

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|---|----------------|-----------|---------|---------|---------------------------|------------|
| GENERATORS/LIGHTING PLANTS <i>OPERATING ENGINEERS LOCAL 98</i> | 12/01/2023 | \$35.80 | \$13.78 | \$15.15 | \$0.00 | \$64.73 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) <i>GLAZIERS LOCAL 35 (ZONE 2)</i> | 07/01/2024 | \$46.76 | \$9.95 | \$23.95 | \$0.00 | \$80.66 |
| | 01/01/2025 | \$47.96 | \$9.95 | \$23.95 | \$0.00 | \$81.86 |

Apprentice - GLAZIER - Local 35 Zone 2

Effective Date - 07/01/2024

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

Effective Date - 01/01/2025

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

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

| | | | | | | |
|--|------------|---------|---------|---------|--------|---------|
| GRADER/TRENCHING MACHINE/DERRICK <i>OPERATING ENGINEERS LOCAL 98</i> | 12/01/2023 | \$39.56 | \$13.78 | \$15.15 | \$0.00 | \$68.49 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| HVAC (DUCTWORK) <i>SHEETMETAL WORKERS LOCAL 63</i> | 07/01/2024 | \$40.98 | \$12.20 | \$18.74 | \$2.13 | \$74.05 |
| | 01/01/2025 | \$42.23 | \$12.20 | \$18.74 | \$2.13 | \$75.30 |
| For apprentice rates see "Apprentice- SHEET METAL WORKER" | | | | | | |
| HVAC (ELECTRICAL CONTROLS) <i>ELECTRICIANS LOCAL 96</i> | 09/01/2024 | \$47.05 | \$13.99 | \$19.22 | \$0.00 | \$80.26 |
| | 09/07/2025 | \$48.16 | \$14.98 | \$19.60 | \$0.00 | \$82.74 |
| | 09/06/2026 | \$49.38 | \$15.96 | \$20.00 | \$0.00 | \$85.34 |
| For apprentice rates see "Apprentice- ELECTRICIAN" | | | | | | |
| HVAC (TESTING AND BALANCING - AIR) <i>SHEETMETAL WORKERS LOCAL 63</i> | 07/01/2024 | \$40.98 | \$12.20 | \$18.74 | \$2.13 | \$74.05 |
| | 01/01/2025 | \$42.23 | \$12.20 | \$18.74 | \$2.13 | \$75.30 |
| For apprentice rates see "Apprentice- SHEET METAL WORKER" | | | | | | |

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|--|----------------|-----------|---------|---------|---------------------------|------------|
| HVAC (TESTING AND BALANCING -WATER) <i>PLUMBERS LOCAL 4</i> | 09/01/2024 | \$55.35 | \$9.90 | \$17.42 | \$0.00 | \$82.67 |
| | 03/01/2025 | \$56.75 | \$9.90 | \$17.42 | \$0.00 | \$84.07 |
| | 09/01/2025 | \$58.15 | \$9.90 | \$17.42 | \$0.00 | \$85.47 |
| | 03/01/2026 | \$59.55 | \$9.90 | \$17.42 | \$0.00 | \$86.87 |
| For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER" | | | | | | |
| HVAC MECHANIC <i>PLUMBERS LOCAL 4</i> | 09/01/2024 | \$55.35 | \$9.90 | \$17.42 | \$0.00 | \$82.67 |
| | 03/01/2025 | \$56.75 | \$9.90 | \$17.42 | \$0.00 | \$84.07 |
| | 09/01/2025 | \$58.15 | \$9.90 | \$17.42 | \$0.00 | \$85.47 |
| | 03/01/2026 | \$59.55 | \$9.90 | \$17.42 | \$0.00 | \$86.87 |
| For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER" | | | | | | |
| HYDRAULIC DRILLS <i>LABORERS - ZONE 2</i> | 06/01/2024 | \$39.28 | \$9.65 | \$18.40 | \$0.00 | \$67.33 |
| | 12/01/2024 | \$40.61 | \$9.65 | \$18.40 | \$0.00 | \$68.66 |
| | 06/01/2025 | \$42.00 | \$9.65 | \$18.40 | \$0.00 | \$70.05 |
| | 12/01/2025 | \$43.38 | \$9.65 | \$18.40 | \$0.00 | \$71.43 |
| | 06/01/2026 | \$44.82 | \$9.65 | \$18.40 | \$0.00 | \$72.87 |
| | 12/01/2026 | \$46.26 | \$9.65 | \$18.40 | \$0.00 | \$74.31 |
| | 06/01/2027 | \$47.71 | \$9.65 | \$18.40 | \$0.00 | \$75.76 |
| | 12/01/2027 | \$49.16 | \$9.65 | \$18.40 | \$0.00 | \$77.21 |
| | 06/01/2028 | \$50.66 | \$9.65 | \$18.40 | \$0.00 | \$78.71 |
| 12/01/2028 | \$52.16 | \$9.65 | \$18.40 | \$0.00 | \$80.21 | |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| HYDRAULIC DRILLS (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i> | 06/01/2024 | \$39.28 | \$9.65 | \$17.80 | \$0.00 | \$66.73 |
| | 12/01/2024 | \$40.61 | \$9.65 | \$17.80 | \$0.00 | \$68.06 |
| | 06/01/2025 | \$42.00 | \$9.65 | \$17.80 | \$0.00 | \$69.45 |
| | 12/01/2025 | \$43.38 | \$9.65 | \$17.80 | \$0.00 | \$70.83 |
| | 06/01/2026 | \$44.82 | \$9.65 | \$17.80 | \$0.00 | \$72.27 |
| | 12/01/2026 | \$46.26 | \$9.65 | \$17.80 | \$0.00 | \$73.71 |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway)" | | | | | | |
| INSULATOR (PIPES & TANKS) <i>HEAT & FROST INSULATORS LOCAL 6 (WORCESTER)</i> | 09/01/2024 | \$51.23 | \$14.75 | \$19.61 | \$0.00 | \$85.59 |
| | 09/01/2025 | \$54.31 | \$14.75 | \$19.61 | \$0.00 | \$88.67 |
| | 09/01/2026 | \$57.38 | \$14.75 | \$19.61 | \$0.00 | \$91.74 |

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - ASBESTOS INSULATOR (Pipes & Tanks) - Local 6 Worcester

Effective Date - 09/01/2024

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$25.62 | \$14.75 | \$14.32 | \$0.00 | \$54.69 |
| 2 | 60 | \$30.74 | \$14.75 | \$15.37 | \$0.00 | \$60.86 |
| 3 | 70 | \$35.86 | \$14.75 | \$16.43 | \$0.00 | \$67.04 |
| 4 | 80 | \$40.98 | \$14.75 | \$17.49 | \$0.00 | \$73.22 |

Effective Date - 09/01/2025

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$27.16 | \$14.75 | \$14.32 | \$0.00 | \$56.23 |
| 2 | 60 | \$32.59 | \$14.75 | \$15.37 | \$0.00 | \$62.71 |
| 3 | 70 | \$38.02 | \$14.75 | \$16.43 | \$0.00 | \$69.20 |
| 4 | 80 | \$43.45 | \$14.75 | \$17.49 | \$0.00 | \$75.69 |

Notes:

Steps are 1 year

Apprentice to Journeyworker Ratio:1:4

| | | | | | | |
|---|------------|---------|--------|---------|--------|---------|
| IRONWORKER/WELDER <i>IRONWORKERS LOCAL 7 (WORCESTER AREA)</i> | 03/16/2024 | \$53.67 | \$8.35 | \$26.70 | \$0.00 | \$88.72 |
|---|------------|---------|--------|---------|--------|---------|

Apprentice - IRONWORKER - Local 7 Worcester

Effective Date - 03/16/2024

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 60 | \$32.20 | \$8.35 | \$26.70 | \$0.00 | \$67.25 |
| 2 | 70 | \$37.57 | \$8.35 | \$26.70 | \$0.00 | \$72.62 |
| 3 | 75 | \$40.25 | \$8.35 | \$26.70 | \$0.00 | \$75.30 |
| 4 | 80 | \$42.94 | \$8.35 | \$26.70 | \$0.00 | \$77.99 |
| 5 | 85 | \$45.62 | \$8.35 | \$26.70 | \$0.00 | \$80.67 |
| 6 | 90 | \$48.30 | \$8.35 | \$26.70 | \$0.00 | \$83.35 |

Notes:

Apprentice to Journeyworker Ratio:1:4

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|---|----------------|-----------|--------|---------|---------------------------|------------|
| JACKHAMMER & PAVING BREAKER OPERATOR LABORERS - ZONE 2 | 06/01/2024 | \$38.78 | \$9.65 | \$18.40 | \$0.00 | \$66.83 |
| | 12/01/2024 | \$40.11 | \$9.65 | \$18.40 | \$0.00 | \$68.16 |
| | 06/01/2025 | \$41.50 | \$9.65 | \$18.40 | \$0.00 | \$69.55 |
| | 12/01/2025 | \$42.88 | \$9.65 | \$18.40 | \$0.00 | \$70.93 |
| | 06/01/2026 | \$44.32 | \$9.65 | \$18.40 | \$0.00 | \$72.37 |
| | 12/01/2026 | \$45.76 | \$9.65 | \$18.40 | \$0.00 | \$73.81 |
| | 06/01/2027 | \$47.21 | \$9.65 | \$18.40 | \$0.00 | \$75.26 |
| | 12/01/2027 | \$48.66 | \$9.65 | \$18.40 | \$0.00 | \$76.71 |
| | 06/01/2028 | \$50.16 | \$9.65 | \$18.40 | \$0.00 | \$78.21 |
| | 12/01/2028 | \$51.66 | \$9.65 | \$18.40 | \$0.00 | \$79.71 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|------------------------------|------------|---------|--------|---------|--------|---------|
| LABORER LABORERS - ZONE 2 | 06/01/2024 | \$38.53 | \$9.65 | \$18.40 | \$0.00 | \$66.58 |
| | 12/01/2024 | \$39.86 | \$9.65 | \$18.40 | \$0.00 | \$67.91 |
| | 06/01/2025 | \$41.25 | \$9.65 | \$18.40 | \$0.00 | \$69.30 |
| | 12/01/2025 | \$42.63 | \$9.65 | \$18.40 | \$0.00 | \$70.68 |
| | 06/01/2026 | \$44.07 | \$9.65 | \$18.40 | \$0.00 | \$72.12 |
| | 12/01/2026 | \$45.51 | \$9.65 | \$18.40 | \$0.00 | \$73.56 |
| | 06/01/2027 | \$46.96 | \$9.65 | \$18.40 | \$0.00 | \$75.01 |
| | 12/01/2027 | \$48.41 | \$9.65 | \$18.40 | \$0.00 | \$76.46 |
| | 06/01/2028 | \$49.91 | \$9.65 | \$18.40 | \$0.00 | \$77.96 |
| | 12/01/2028 | \$51.41 | \$9.65 | \$18.40 | \$0.00 | \$79.46 |

Apprentice - LABORER - Zone 2

Effective Date - 06/01/2024

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 60 | \$23.12 | \$9.65 | \$18.40 | \$0.00 | \$51.17 |
| 2 | 70 | \$26.97 | \$9.65 | \$18.40 | \$0.00 | \$55.02 |
| 3 | 80 | \$30.82 | \$9.65 | \$18.40 | \$0.00 | \$58.87 |
| 4 | 90 | \$34.68 | \$9.65 | \$18.40 | \$0.00 | \$62.73 |

Effective Date - 12/01/2024

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 60 | \$23.92 | \$9.65 | \$18.40 | \$0.00 | \$51.97 |
| 2 | 70 | \$27.90 | \$9.65 | \$18.40 | \$0.00 | \$55.95 |
| 3 | 80 | \$31.89 | \$9.65 | \$18.40 | \$0.00 | \$59.94 |
| 4 | 90 | \$35.87 | \$9.65 | \$18.40 | \$0.00 | \$63.92 |

Notes:

Apprentice to Journeyworker Ratio:1:5

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|--|----------------|-----------|--------|---------|---------------------------|------------|
| LABORER (HEAVY & HIGHWAY) LABORERS - ZONE 2 (HEAVY & HIGHWAY) | 06/01/2024 | \$38.53 | \$9.65 | \$17.80 | \$0.00 | \$65.98 |
| | 12/01/2024 | \$39.86 | \$9.65 | \$17.80 | \$0.00 | \$67.31 |
| | 06/01/2025 | \$41.25 | \$9.65 | \$17.80 | \$0.00 | \$68.70 |
| | 12/01/2025 | \$42.63 | \$9.65 | \$17.80 | \$0.00 | \$70.08 |
| | 06/01/2026 | \$44.07 | \$9.65 | \$17.80 | \$0.00 | \$71.52 |
| | 12/01/2026 | \$45.51 | \$9.65 | \$17.80 | \$0.00 | \$72.96 |

Apprentice - LABORER (Heavy & Highway) - Zone 2

Effective Date - 06/01/2024

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

Effective Date - 12/01/2024

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

Notes:

Apprentice to Journeyworker Ratio:1:5

| | | | | | | |
|--|------------|---------|---------|---------|---------|---------|
| LABORER: CARPENTER TENDER LABORERS - ZONE 2 | 06/01/2024 | \$38.53 | \$9.65 | \$18.40 | \$0.00 | \$66.58 |
| | 12/01/2024 | \$39.86 | \$9.65 | \$18.40 | \$0.00 | \$67.91 |
| | 06/01/2025 | \$41.25 | \$9.65 | \$18.40 | \$0.00 | \$69.30 |
| | 12/01/2025 | \$42.63 | \$9.65 | \$18.40 | \$0.00 | \$70.68 |
| | 06/01/2026 | \$44.07 | \$9.65 | \$18.40 | \$0.00 | \$72.12 |
| | 12/01/2026 | \$45.51 | \$9.65 | \$18.40 | \$0.00 | \$73.56 |
| | 06/01/2027 | \$46.96 | \$9.65 | \$18.40 | \$0.00 | \$75.01 |
| | 12/01/2027 | \$48.41 | \$9.65 | \$18.40 | \$0.00 | \$76.46 |
| | 06/01/2028 | \$49.91 | \$9.65 | \$18.40 | \$0.00 | \$77.96 |
| 12/01/2028 | \$51.41 | \$9.65 | \$18.40 | \$0.00 | \$79.46 | |

For apprentice rates see "Apprentice- LABORER"

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|---|-----------------------|------------------|---------------|----------------|----------------------------------|-------------------|
| LABORER: CEMENT FINISHER TENDER <i>LABORERS - ZONE 2</i> | 06/01/2024 | \$38.53 | \$9.65 | \$18.40 | \$0.00 | \$66.58 |
| | 12/01/2024 | \$39.86 | \$9.65 | \$18.40 | \$0.00 | \$67.91 |
| | 06/01/2025 | \$41.25 | \$9.65 | \$18.40 | \$0.00 | \$69.30 |
| | 12/01/2025 | \$42.63 | \$9.65 | \$18.40 | \$0.00 | \$70.68 |
| | 06/01/2026 | \$44.07 | \$9.65 | \$18.40 | \$0.00 | \$72.12 |
| | 12/01/2026 | \$45.51 | \$9.65 | \$18.40 | \$0.00 | \$73.56 |
| | 06/01/2027 | \$46.96 | \$9.65 | \$18.40 | \$0.00 | \$75.01 |
| | 12/01/2027 | \$48.41 | \$9.65 | \$18.40 | \$0.00 | \$76.46 |
| | 06/01/2028 | \$49.91 | \$9.65 | \$18.40 | \$0.00 | \$77.96 |
| | 12/01/2028 | \$51.41 | \$9.65 | \$18.40 | \$0.00 | \$79.46 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER <i>LABORERS - ZONE 2</i> | 06/03/2024 | \$38.62 | \$9.65 | \$17.76 | \$0.00 | \$66.03 |
| | 12/02/2024 | \$39.95 | \$9.65 | \$17.76 | \$0.00 | \$67.36 |
| | 06/02/2025 | \$41.34 | \$9.65 | \$17.76 | \$0.00 | \$68.75 |
| | 12/01/2025 | \$42.72 | \$9.65 | \$17.76 | \$0.00 | \$70.13 |
| | 06/01/2026 | \$44.16 | \$9.65 | \$17.76 | \$0.00 | \$71.57 |
| | 12/07/2026 | \$45.60 | \$9.65 | \$17.76 | \$0.00 | \$73.01 |
| | 06/07/2027 | \$47.05 | \$9.65 | \$17.76 | \$0.00 | \$74.46 |
| | 12/06/2027 | \$48.50 | \$9.65 | \$17.76 | \$0.00 | \$75.91 |
| | 06/05/2028 | \$50.00 | \$9.65 | \$17.76 | \$0.00 | \$77.41 |
| | 12/04/2028 | \$51.50 | \$9.65 | \$17.76 | \$0.00 | \$78.91 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| LABORER: MASON TENDER <i>LABORERS - ZONE 2</i> | 06/01/2024 | \$38.78 | \$9.65 | \$18.40 | \$0.00 | \$66.83 |
| | 12/01/2024 | \$40.11 | \$9.65 | \$18.40 | \$0.00 | \$68.16 |
| | 06/01/2025 | \$41.50 | \$9.65 | \$18.40 | \$0.00 | \$69.55 |
| | 12/01/2025 | \$42.88 | \$9.65 | \$18.40 | \$0.00 | \$70.93 |
| | 06/01/2026 | \$44.32 | \$9.65 | \$18.40 | \$0.00 | \$72.37 |
| | 12/01/2026 | \$45.76 | \$9.65 | \$18.40 | \$0.00 | \$73.81 |
| | 06/01/2027 | \$47.21 | \$9.65 | \$18.40 | \$0.00 | \$75.26 |
| | 12/01/2027 | \$48.66 | \$9.65 | \$18.40 | \$0.00 | \$76.71 |
| | 06/01/2028 | \$50.16 | \$9.65 | \$18.40 | \$0.00 | \$78.21 |
| | 12/01/2028 | \$51.66 | \$9.65 | \$18.40 | \$0.00 | \$79.71 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| LABORER: MASON TENDER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i> | 06/01/2024 | \$38.78 | \$9.65 | \$17.80 | \$0.00 | \$66.23 |
| | 12/01/2024 | \$40.11 | \$9.65 | \$17.80 | \$0.00 | \$67.56 |
| | 06/01/2025 | \$41.50 | \$9.65 | \$17.80 | \$0.00 | \$68.95 |
| | 12/01/2025 | \$42.88 | \$9.65 | \$17.80 | \$0.00 | \$70.33 |
| | 06/01/2026 | \$44.32 | \$9.65 | \$17.80 | \$0.00 | \$71.77 |
| | 12/01/2026 | \$45.76 | \$9.65 | \$17.80 | \$0.00 | \$73.21 |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway)" | | | | | | |

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|--|----------------|-----------|---------|---------|---------------------------|------------|
| LABORER: MULTI-TRADE TENDER <i>LABORERS - ZONE 2</i> | 06/01/2024 | \$38.53 | \$9.65 | \$18.40 | \$0.00 | \$66.58 |
| | 12/01/2024 | \$39.86 | \$9.65 | \$18.40 | \$0.00 | \$67.91 |
| | 06/01/2025 | \$41.25 | \$9.65 | \$18.40 | \$0.00 | \$69.30 |
| | 12/01/2025 | \$42.63 | \$9.65 | \$18.40 | \$0.00 | \$70.68 |
| | 06/01/2026 | \$44.07 | \$9.65 | \$18.40 | \$0.00 | \$72.12 |
| | 12/01/2026 | \$45.51 | \$9.65 | \$18.40 | \$0.00 | \$73.56 |
| | 06/01/2027 | \$46.96 | \$9.65 | \$18.40 | \$0.00 | \$75.01 |
| | 12/01/2027 | \$48.41 | \$9.65 | \$18.40 | \$0.00 | \$76.46 |
| | 06/01/2028 | \$49.91 | \$9.65 | \$18.40 | \$0.00 | \$77.96 |
| | 12/01/2028 | \$51.41 | \$9.65 | \$18.40 | \$0.00 | \$79.46 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| LABORER: TREE REMOVER <i>LABORERS - ZONE 2</i> | 06/01/2024 | \$38.53 | \$9.65 | \$18.40 | \$0.00 | \$66.58 |
| | 12/01/2024 | \$39.86 | \$9.65 | \$18.40 | \$0.00 | \$67.91 |
| | 06/01/2025 | \$41.25 | \$9.65 | \$18.40 | \$0.00 | \$69.30 |
| | 12/01/2025 | \$42.63 | \$9.65 | \$18.40 | \$0.00 | \$70.68 |
| | 06/01/2026 | \$44.07 | \$9.65 | \$18.40 | \$0.00 | \$72.12 |
| | 12/01/2026 | \$45.51 | \$9.65 | \$18.40 | \$0.00 | \$73.56 |
| | 06/01/2027 | \$46.96 | \$9.65 | \$18.40 | \$0.00 | \$75.01 |
| | 12/01/2027 | \$48.41 | \$9.65 | \$18.40 | \$0.00 | \$76.46 |
| | 06/01/2028 | \$49.91 | \$9.65 | \$18.40 | \$0.00 | \$77.96 |
| | 12/01/2028 | \$51.41 | \$9.65 | \$18.40 | \$0.00 | \$79.46 |
| This classification applies to the removal of standing trees, and the trimming and removal of branches and limbs when related to public works construction or site clearance incidental to construction . For apprentice rates see "Apprentice- LABORER" | | | | | | |
| LASER BEAM OPERATOR <i>LABORERS - ZONE 2</i> | 06/01/2024 | \$38.78 | \$9.65 | \$18.40 | \$0.00 | \$66.83 |
| | 12/01/2024 | \$40.11 | \$9.65 | \$18.40 | \$0.00 | \$68.16 |
| | 06/01/2025 | \$41.50 | \$9.65 | \$18.40 | \$0.00 | \$69.55 |
| | 12/01/2025 | \$42.88 | \$9.65 | \$18.40 | \$0.00 | \$70.93 |
| | 06/01/2026 | \$44.32 | \$9.65 | \$18.40 | \$0.00 | \$72.37 |
| | 12/01/2026 | \$45.76 | \$9.65 | \$18.40 | \$0.00 | \$73.81 |
| | 06/01/2027 | \$47.21 | \$9.65 | \$18.40 | \$0.00 | \$75.26 |
| | 12/01/2027 | \$48.66 | \$9.65 | \$18.40 | \$0.00 | \$76.71 |
| | 06/01/2028 | \$50.16 | \$9.65 | \$18.40 | \$0.00 | \$78.21 |
| | 12/01/2028 | \$51.66 | \$9.65 | \$18.40 | \$0.00 | \$79.71 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| LASER BEAM OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i> | 06/01/2024 | \$38.78 | \$9.65 | \$17.80 | \$0.00 | \$66.23 |
| | 12/01/2024 | \$40.11 | \$9.65 | \$17.80 | \$0.00 | \$67.56 |
| | 06/01/2025 | \$41.50 | \$9.65 | \$17.80 | \$0.00 | \$68.95 |
| | 12/01/2025 | \$42.88 | \$9.65 | \$17.80 | \$0.00 | \$70.33 |
| | 06/01/2026 | \$44.32 | \$9.65 | \$17.80 | \$0.00 | \$71.77 |
| | 12/01/2026 | \$45.76 | \$9.65 | \$17.80 | \$0.00 | \$73.21 |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway)" | | | | | | |
| MARBLE & TILE FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE & TILE</i> | 08/01/2024 | \$49.32 | \$11.49 | \$21.62 | \$0.00 | \$82.43 |
| | 02/01/2025 | \$50.36 | \$11.49 | \$21.62 | \$0.00 | \$83.47 |
| | 08/01/2025 | \$52.08 | \$11.49 | \$21.62 | \$0.00 | \$85.19 |
| | 02/01/2026 | \$53.16 | \$11.49 | \$21.62 | \$0.00 | \$86.27 |
| | 08/01/2026 | \$54.92 | \$11.49 | \$21.62 | \$0.00 | \$88.03 |
| | 02/01/2027 | \$56.04 | \$11.49 | \$21.62 | \$0.00 | \$89.15 |

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

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

Effective Date - 08/01/2024

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

Effective Date - 02/01/2025

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$25.18 | \$11.49 | \$21.62 | \$0.00 | \$58.29 |
| 2 | 60 | \$30.22 | \$11.49 | \$21.62 | \$0.00 | \$63.33 |
| 3 | 70 | \$35.25 | \$11.49 | \$21.62 | \$0.00 | \$68.36 |
| 4 | 80 | \$40.29 | \$11.49 | \$21.62 | \$0.00 | \$73.40 |
| 5 | 90 | \$45.32 | \$11.49 | \$21.62 | \$0.00 | \$78.43 |

Notes:

Apprentice to Journeyworker Ratio:1:3

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

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

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

Effective Date - 08/01/2024

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

Effective Date - 02/01/2025

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$32.91 | \$11.49 | \$23.56 | \$0.00 | \$67.96 |
| 2 | 60 | \$39.49 | \$11.49 | \$23.56 | \$0.00 | \$74.54 |
| 3 | 70 | \$46.07 | \$11.49 | \$23.56 | \$0.00 | \$81.12 |
| 4 | 80 | \$52.66 | \$11.49 | \$23.56 | \$0.00 | \$87.71 |
| 5 | 90 | \$59.24 | \$11.49 | \$23.56 | \$0.00 | \$94.29 |

Notes:

Apprentice to Journeyworker Ratio:1:5

| | | | | | | |
|--|------------|---------|---------|---------|--------|---------|
| MECH. SWEEPER OPERATOR (ON CONST. SITES) OPERATING ENGINEERS LOCAL 98 | 12/01/2023 | \$39.56 | \$13.78 | \$15.15 | \$0.00 | \$68.49 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| MECHANIC/WELDER/BOOM TRUCK OPERATING ENGINEERS LOCAL 98 | 12/01/2023 | \$39.03 | \$13.78 | \$15.15 | \$0.00 | \$67.96 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| MILLWRIGHT (Zone 3) MILLWRIGHTS LOCAL 1121 - Zone 3 | 01/01/2024 | \$41.20 | \$10.08 | \$21.22 | \$0.00 | \$72.50 |
| | 01/06/2025 | \$43.48 | \$10.08 | \$21.22 | \$0.00 | \$74.78 |
| | 01/05/2026 | \$45.76 | \$10.08 | \$21.22 | \$0.00 | \$77.06 |

Apprentice - MILLWRIGHT - Local 1121 Zone 3

Effective Date - 01/01/2024

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 55 | \$22.66 | \$10.08 | \$5.36 | \$0.00 | \$38.10 |
| 2 | 65 | \$26.78 | \$10.08 | \$6.34 | \$0.00 | \$43.20 |
| 3 | 75 | \$30.90 | \$10.08 | \$18.78 | \$0.00 | \$59.76 |
| 4 | 85 | \$35.02 | \$10.08 | \$19.76 | \$0.00 | \$64.86 |

Effective Date - 01/06/2025

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 55 | \$23.91 | \$10.08 | \$5.36 | \$0.00 | \$39.35 |
| 2 | 65 | \$28.26 | \$10.08 | \$6.34 | \$0.00 | \$44.68 |
| 3 | 75 | \$32.61 | \$10.08 | \$18.78 | \$0.00 | \$61.47 |
| 4 | 85 | \$36.96 | \$10.08 | \$19.76 | \$0.00 | \$66.80 |

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

Apprentice to Journeyworker Ratio:1:4

| | | | | | | |
|-----------------------------------|------------|---------|--------|---------|--------|---------|
| MORTAR MIXER LABORERS - ZONE 2 | 06/01/2024 | \$38.78 | \$9.65 | \$18.40 | \$0.00 | \$66.83 |
| | 12/01/2024 | \$40.11 | \$9.65 | \$18.40 | \$0.00 | \$68.16 |
| | 06/01/2025 | \$41.50 | \$9.65 | \$18.40 | \$0.00 | \$69.55 |
| | 12/01/2025 | \$42.88 | \$9.65 | \$18.40 | \$0.00 | \$70.93 |
| | 06/01/2026 | \$44.32 | \$9.65 | \$18.40 | \$0.00 | \$72.37 |
| | 12/01/2026 | \$45.76 | \$9.65 | \$18.40 | \$0.00 | \$73.81 |
| | 06/01/2027 | \$47.21 | \$9.65 | \$18.40 | \$0.00 | \$75.26 |
| | 12/01/2027 | \$48.66 | \$9.65 | \$18.40 | \$0.00 | \$76.71 |
| | 06/01/2028 | \$50.16 | \$9.65 | \$18.40 | \$0.00 | \$78.21 |
| | 12/01/2028 | \$51.66 | \$9.65 | \$18.40 | \$0.00 | \$79.71 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|---------------------------------------|------------|---------|---------|---------|--------|---------|
| OILER OPERATING ENGINEERS LOCAL 98 | 12/01/2023 | \$35.02 | \$13.78 | \$15.15 | \$0.00 | \$63.95 |
|---------------------------------------|------------|---------|---------|---------|--------|---------|

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

| | | | | | | |
|---|------------|---------|---------|---------|--------|---------|
| OTHER POWER DRIVEN EQUIPMENT - CLASS VI OPERATING ENGINEERS LOCAL 98 | 12/01/2023 | \$32.74 | \$13.78 | \$15.15 | \$0.00 | \$61.67 |
|---|------------|---------|---------|---------|--------|---------|

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

| | | | | | | |
|---|------------|---------|--------|---------|--------|---------|
| Painter (BRIDGES/TANKS) PAINTERS LOCAL 35 - ZONE 2 | 07/01/2024 | \$57.26 | \$9.95 | \$23.95 | \$0.00 | \$91.16 |
| | 01/01/2025 | \$58.46 | \$9.95 | \$23.95 | \$0.00 | \$92.36 |

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 07/01/2024

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

Effective Date - 01/01/2025

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

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

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

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

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

Effective Date - 07/01/2024

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

Effective Date - 01/01/2025

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

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

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

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

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

Effective Date - 07/01/2024

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

Effective Date - 01/01/2025

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

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

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

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER - Local 35 Zone 2 - BRUSH NEW

Effective Date - 07/01/2024

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

Effective Date - 01/01/2025

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

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

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

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER Local 35 Zone 2 - BRUSH REPAINT

Effective Date - 07/01/2024

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

Effective Date - 01/01/2025

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

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

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

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

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

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|---|----------------|-----------|--------|---------|---------------------------|------------|
| PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) <i>PILE DRIVER LOCAL 56 (ZONE 2)</i> For apprentice rates see "Apprentice- PILE DRIVER" | 08/01/2020 | \$46.11 | \$9.40 | \$23.12 | \$0.00 | \$78.63 |
| PILE DRIVER <i>PILE DRIVER LOCAL 56 (ZONE 2)</i> | 08/01/2020 | \$46.11 | \$9.40 | \$23.12 | \$0.00 | \$78.63 |

Apprentice - PILE DRIVER - Local 56 Zone 2

Effective Date - 08/01/2020

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

Notes: Apprentice wages shall be no less than the following Steps;
(Same as set in Zone 1)
1\$57.06/2\$61.96/3\$66.87/4\$69.32/5\$71.78/6\$71.78/7\$76.68/8\$76.68

Apprentice to Journeyworker Ratio:1:5

| | | | | | | |
|---------------------------------------|------------|---------|--------|---------|--------|---------|
| PIPELAYER <i>LABORERS - ZONE 2</i> | 06/01/2024 | \$38.78 | \$9.65 | \$18.40 | \$0.00 | \$66.83 |
| | 12/01/2024 | \$40.11 | \$9.65 | \$18.40 | \$0.00 | \$68.16 |
| | 06/01/2025 | \$41.50 | \$9.65 | \$18.40 | \$0.00 | \$69.55 |
| | 12/01/2025 | \$42.88 | \$9.65 | \$18.40 | \$0.00 | \$70.93 |
| | 06/01/2026 | \$44.32 | \$9.65 | \$18.40 | \$0.00 | \$72.37 |
| | 12/01/2026 | \$45.76 | \$9.65 | \$18.40 | \$0.00 | \$73.81 |
| | 06/01/2027 | \$47.21 | \$9.65 | \$18.40 | \$0.00 | \$75.26 |
| | 12/01/2027 | \$48.66 | \$9.65 | \$18.40 | \$0.00 | \$76.71 |
| | 06/01/2028 | \$50.16 | \$9.65 | \$18.40 | \$0.00 | \$78.21 |
| | 12/01/2028 | \$51.66 | \$9.65 | \$18.40 | \$0.00 | \$79.71 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|---|------------|---------|--------|---------|--------|---------|
| PIPELAYER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i> | 06/01/2024 | \$38.78 | \$9.65 | \$17.80 | \$0.00 | \$66.23 |
| | 12/01/2024 | \$40.11 | \$9.65 | \$17.80 | \$0.00 | \$67.56 |
| | 06/01/2025 | \$41.50 | \$9.65 | \$17.80 | \$0.00 | \$68.95 |
| | 12/01/2025 | \$42.88 | \$9.65 | \$17.80 | \$0.00 | \$70.33 |
| | 06/01/2026 | \$44.32 | \$9.65 | \$17.80 | \$0.00 | \$71.77 |
| | 12/01/2026 | \$45.76 | \$9.65 | \$17.80 | \$0.00 | \$73.21 |

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

| | | | | | | |
|---|------------|---------|--------|---------|--------|---------|
| PLUMBER & PIPEFITTER <i>PLUMBERS LOCAL 4</i> | 09/01/2024 | \$55.35 | \$9.90 | \$17.42 | \$0.00 | \$82.67 |
| | 03/01/2025 | \$56.75 | \$9.90 | \$17.42 | \$0.00 | \$84.07 |
| | 09/01/2025 | \$58.15 | \$9.90 | \$17.42 | \$0.00 | \$85.47 |
| | 03/01/2026 | \$59.55 | \$9.90 | \$17.42 | \$0.00 | \$86.87 |

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PLUMBER/PIPEFITTER - Local 4

Effective Date - 09/01/2024

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 40 | \$22.14 | \$9.90 | \$0.00 | \$0.00 | \$32.04 |
| 2 | 50 | \$27.68 | \$9.90 | \$0.00 | \$0.00 | \$37.58 |
| 3 | 60 | \$33.21 | \$9.90 | \$0.00 | \$0.00 | \$43.11 |
| 4 | 70 | \$38.75 | \$9.90 | \$7.71 | \$0.00 | \$56.36 |
| 5 | 80 | \$44.28 | \$9.90 | \$7.71 | \$0.00 | \$61.89 |

Effective Date - 03/01/2025

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 40 | \$22.70 | \$9.90 | \$0.00 | \$0.00 | \$32.60 |
| 2 | 50 | \$28.38 | \$9.90 | \$0.00 | \$0.00 | \$38.28 |
| 3 | 60 | \$34.05 | \$9.90 | \$0.00 | \$0.00 | \$43.95 |
| 4 | 70 | \$39.73 | \$9.90 | \$7.71 | \$0.00 | \$57.34 |
| 5 | 80 | \$45.40 | \$9.90 | \$7.71 | \$0.00 | \$63.01 |

Notes:
 Steps - 2000 hrs; Step 4 w/lic 75%, Step 5 w/lic 85%
 Step 4 w/lic \$52.59, Step 5 w/lic \$57.44

Apprentice to Journeyworker Ratio:1:3

| | | | | | | |
|--|------------|---------|--------|---------|--------|---------|
| PNEUMATIC CONTROLS (TEMP.) PLUMBERS LOCAL 4 | 09/01/2024 | \$55.35 | \$9.90 | \$17.42 | \$0.00 | \$82.67 |
| | 03/01/2025 | \$56.75 | \$9.90 | \$17.42 | \$0.00 | \$84.07 |
| | 09/01/2025 | \$58.15 | \$9.90 | \$17.42 | \$0.00 | \$85.47 |
| | 03/01/2026 | \$59.55 | \$9.90 | \$17.42 | \$0.00 | \$86.87 |

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

| | | | | | | |
|--|------------|---------|--------|---------|--------|---------|
| PNEUMATIC DRILL/TOOL OPERATOR LABORERS - ZONE 2 | 06/01/2024 | \$39.28 | \$9.65 | \$18.40 | \$0.00 | \$67.33 |
| | 12/01/2024 | \$40.61 | \$9.65 | \$18.40 | \$0.00 | \$68.66 |
| | 06/01/2025 | \$42.00 | \$9.65 | \$18.40 | \$0.00 | \$70.05 |
| | 12/01/2025 | \$43.38 | \$9.65 | \$18.40 | \$0.00 | \$71.43 |
| | 06/01/2026 | \$44.82 | \$9.65 | \$18.40 | \$0.00 | \$72.87 |
| | 12/01/2026 | \$46.26 | \$9.65 | \$18.40 | \$0.00 | \$74.31 |
| | 06/01/2027 | \$47.71 | \$9.65 | \$18.40 | \$0.00 | \$75.76 |
| | 12/01/2027 | \$49.16 | \$9.65 | \$18.40 | \$0.00 | \$77.21 |
| | 06/01/2028 | \$50.66 | \$9.65 | \$18.40 | \$0.00 | \$78.71 |
| | 12/01/2028 | \$52.16 | \$9.65 | \$18.40 | \$0.00 | \$80.21 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|--|------------|---------|--------|---------|--------|---------|
| PNEUMATIC DRILL/TOOL OPERATOR (HEAVY & HIGHWAY) LABORERS - ZONE 2 (HEAVY & HIGHWAY) | 06/01/2024 | \$38.78 | \$9.65 | \$17.80 | \$0.00 | \$66.23 |
| | 12/01/2024 | \$40.11 | \$9.65 | \$17.80 | \$0.00 | \$67.56 |
| | 06/01/2025 | \$41.50 | \$9.65 | \$17.80 | \$0.00 | \$68.95 |
| | 12/01/2025 | \$42.88 | \$9.65 | \$17.80 | \$0.00 | \$70.33 |
| | 06/01/2026 | \$44.32 | \$9.65 | \$17.80 | \$0.00 | \$71.77 |
| | 12/01/2026 | \$45.76 | \$9.65 | \$17.80 | \$0.00 | \$73.21 |

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

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|---|----------------|-----------|---------|---------|---------------------------|------------|
| POWDERMAN & BLASTER <i>LABORERS - ZONE 2</i> | 06/01/2024 | \$39.53 | \$9.65 | \$18.40 | \$0.00 | \$67.58 |
| | 12/01/2024 | \$40.86 | \$9.65 | \$18.40 | \$0.00 | \$68.91 |
| | 06/01/2025 | \$42.25 | \$9.65 | \$18.40 | \$0.00 | \$70.30 |
| | 12/01/2025 | \$43.63 | \$9.65 | \$18.40 | \$0.00 | \$71.68 |
| | 06/01/2026 | \$45.07 | \$9.65 | \$18.40 | \$0.00 | \$73.12 |
| | 12/01/2026 | \$46.51 | \$9.65 | \$18.40 | \$0.00 | \$74.56 |
| | 06/01/2027 | \$47.96 | \$9.65 | \$18.40 | \$0.00 | \$76.01 |
| | 12/01/2027 | \$49.41 | \$9.65 | \$18.40 | \$0.00 | \$77.46 |
| | 06/01/2028 | \$50.91 | \$9.65 | \$18.40 | \$0.00 | \$78.96 |
| | 12/01/2028 | \$52.41 | \$9.65 | \$18.40 | \$0.00 | \$80.46 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| POWDERMAN & BLASTER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i> | 06/01/2024 | \$39.53 | \$9.40 | \$17.55 | \$0.00 | \$66.48 |
| | 12/01/2024 | \$40.86 | \$9.40 | \$17.55 | \$0.00 | \$67.81 |
| | 06/01/2025 | \$42.25 | \$9.40 | \$17.55 | \$0.00 | \$69.20 |
| | 12/01/2025 | \$43.63 | \$9.40 | \$17.55 | \$0.00 | \$70.58 |
| | 06/01/2026 | \$45.07 | \$9.40 | \$17.55 | \$0.00 | \$72.02 |
| | 12/01/2026 | \$46.51 | \$9.40 | \$17.55 | \$0.00 | \$73.46 |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway)" | | | | | | |
| PUMP OPERATOR (CONCRETE) <i>OPERATING ENGINEERS LOCAL 98</i> | 12/01/2023 | \$39.56 | \$13.78 | \$15.15 | \$0.00 | \$68.49 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| PUMP OPERATOR (DEWATERING, OTHER) <i>OPERATING ENGINEERS LOCAL 98</i> | 12/01/2023 | \$39.03 | \$13.78 | \$15.15 | \$0.00 | \$67.96 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| READY-MIX CONCRETE DRIVER <i>TEAMSTERS 404 - Construction Service (Northampton)</i> | 05/01/2024 | \$26.14 | \$11.82 | \$7.25 | \$0.00 | \$45.21 |
| RIDE-ON MOTORIZED BUGGY OPERATOR <i>LABORERS - ZONE 2</i> | 06/01/2024 | \$38.78 | \$9.65 | \$18.40 | \$0.00 | \$66.83 |
| | 12/01/2024 | \$40.11 | \$9.65 | \$18.40 | \$0.00 | \$68.16 |
| | 06/01/2025 | \$41.50 | \$9.65 | \$18.40 | \$0.00 | \$69.55 |
| | 12/01/2025 | \$42.88 | \$9.65 | \$18.40 | \$0.00 | \$70.93 |
| | 06/01/2026 | \$44.32 | \$9.65 | \$18.40 | \$0.00 | \$72.37 |
| | 12/01/2026 | \$45.76 | \$9.65 | \$18.40 | \$0.00 | \$73.81 |
| | 06/01/2027 | \$47.21 | \$9.65 | \$18.40 | \$0.00 | \$75.26 |
| | 12/01/2027 | \$48.66 | \$9.65 | \$18.40 | \$0.00 | \$76.71 |
| | 06/01/2028 | \$50.16 | \$9.65 | \$18.40 | \$0.00 | \$78.21 |
| | 12/01/2028 | \$51.66 | \$9.65 | \$18.40 | \$0.00 | \$79.71 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| ROLLER OPERATOR <i>OPERATING ENGINEERS LOCAL 98</i> | 12/01/2023 | \$38.42 | \$13.78 | \$15.15 | \$0.00 | \$67.35 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| ROOFER (Inc.Roofing Waterproofing &Roofing Damproofing) <i>ROOFERS LOCAL 33</i> | 08/01/2024 | \$51.03 | \$13.03 | \$21.70 | \$0.00 | \$85.76 |
| | 02/01/2025 | \$52.28 | \$13.03 | \$21.70 | \$0.00 | \$87.01 |
| | 08/01/2025 | \$53.78 | \$13.03 | \$21.70 | \$0.00 | \$88.51 |
| | 02/01/2026 | \$55.03 | \$13.03 | \$21.70 | \$0.00 | \$89.76 |

Apprentice - ROOFER - Local 33

Effective Date - 08/01/2024

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$25.52 | \$13.03 | \$6.52 | \$0.00 | \$45.07 |
| 2 | 60 | \$30.62 | \$13.03 | \$21.70 | \$0.00 | \$65.35 |
| 3 | 65 | \$33.17 | \$13.03 | \$21.70 | \$0.00 | \$67.90 |
| 4 | 75 | \$38.27 | \$13.03 | \$21.70 | \$0.00 | \$73.00 |
| 5 | 85 | \$43.38 | \$13.03 | \$21.70 | \$0.00 | \$78.11 |

Effective Date - 02/01/2025

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$26.14 | \$13.03 | \$6.52 | \$0.00 | \$45.69 |
| 2 | 60 | \$31.37 | \$13.03 | \$21.70 | \$0.00 | \$66.10 |
| 3 | 65 | \$33.98 | \$13.03 | \$21.70 | \$0.00 | \$68.71 |
| 4 | 75 | \$39.21 | \$13.03 | \$21.70 | \$0.00 | \$73.94 |
| 5 | 85 | \$44.44 | \$13.03 | \$21.70 | \$0.00 | \$79.17 |

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

Apprentice to Journeyworker Ratio:**

| | | | | | | |
|---|------------|---------|---------|---------|--------|---------|
| ROOFER SLATE / TILE / PRECAST CONCRETE <i>ROOFERS LOCAL 33</i> | 08/01/2024 | \$51.28 | \$13.03 | \$21.70 | \$0.00 | \$86.01 |
| | 02/01/2025 | \$52.53 | \$13.03 | \$21.70 | \$0.00 | \$87.26 |
| | 08/01/2025 | \$54.03 | \$13.03 | \$21.70 | \$0.00 | \$88.76 |
| | 02/01/2026 | \$55.28 | \$13.03 | \$21.70 | \$0.00 | \$90.01 |
| For apprentice rates see "Apprentice- ROOFER" | | | | | | |
| SCRAPER <i>OPERATING ENGINEERS LOCAL 98</i> | 12/01/2023 | \$39.03 | \$13.78 | \$15.15 | \$0.00 | \$67.96 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| SELF-POWERED ROLLERS AND COMPACTORS (TAMPERS) <i>OPERATING ENGINEERS LOCAL 98</i> | 12/01/2023 | \$38.42 | \$13.78 | \$15.15 | \$0.00 | \$67.35 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| SELF-PROPELLED POWER BROOM <i>OPERATING ENGINEERS LOCAL 98</i> | 12/01/2023 | \$35.80 | \$13.78 | \$15.15 | \$0.00 | \$64.73 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| SHEETMETAL WORKER <i>SHEETMETAL WORKERS LOCAL 63</i> | 07/01/2024 | \$40.98 | \$12.20 | \$18.74 | \$2.13 | \$74.05 |
| | 01/01/2025 | \$42.23 | \$12.20 | \$18.74 | \$2.13 | \$75.30 |

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - SHEET METAL WORKER - Local 63

Effective Date - 07/01/2024

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 45 | \$18.44 | \$5.49 | \$4.86 | \$0.85 | \$29.64 |
| 2 | 50 | \$20.49 | \$6.10 | \$5.40 | \$0.94 | \$32.93 |
| 3 | 55 | \$22.54 | \$6.71 | \$9.71 | \$1.15 | \$40.11 |
| 4 | 60 | \$24.59 | \$7.32 | \$9.71 | \$1.23 | \$42.85 |
| 5 | 65 | \$26.64 | \$7.93 | \$9.71 | \$1.31 | \$45.59 |
| 6 | 70 | \$28.69 | \$8.54 | \$9.71 | \$1.39 | \$48.33 |
| 7 | 75 | \$30.74 | \$9.15 | \$9.71 | \$1.47 | \$51.07 |
| 8 | 80 | \$32.78 | \$9.76 | \$17.66 | \$1.78 | \$61.98 |
| 9 | 85 | \$34.83 | \$10.37 | \$17.66 | \$1.86 | \$64.72 |
| 10 | 90 | \$36.88 | \$10.98 | \$17.66 | \$1.94 | \$67.46 |

Effective Date - 01/01/2025

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 45 | \$19.00 | \$5.49 | \$4.86 | \$0.85 | \$30.20 |
| 2 | 50 | \$21.12 | \$6.10 | \$5.40 | \$0.94 | \$33.56 |
| 3 | 55 | \$23.23 | \$6.71 | \$9.71 | \$1.15 | \$40.80 |
| 4 | 60 | \$25.34 | \$7.32 | \$9.71 | \$1.23 | \$43.60 |
| 5 | 65 | \$27.45 | \$7.93 | \$9.71 | \$1.31 | \$46.40 |
| 6 | 70 | \$29.56 | \$8.54 | \$9.71 | \$1.39 | \$49.20 |
| 7 | 75 | \$31.67 | \$9.15 | \$9.71 | \$1.47 | \$52.00 |
| 8 | 80 | \$33.78 | \$9.76 | \$17.66 | \$1.78 | \$62.98 |
| 9 | 85 | \$35.90 | \$10.37 | \$17.66 | \$1.86 | \$65.79 |
| 10 | 90 | \$38.01 | \$10.98 | \$17.66 | \$1.94 | \$68.59 |

Notes:

Apprentice to Journeyworker Ratio:1:3

| | | | | | | |
|---|------------|---------|---------|---------|--------|---------|
| SPECIALIZED EARTH MOVING EQUIP < 35 TONS TEAMSTERS JOINT COUNCIL NO. 10 ZONE B | 06/01/2024 | \$40.24 | \$15.07 | \$18.67 | \$0.00 | \$73.98 |
| | 12/01/2024 | \$40.24 | \$15.07 | \$20.17 | \$0.00 | \$75.48 |
| | 01/01/2025 | \$40.24 | \$15.57 | \$20.17 | \$0.00 | \$75.98 |
| | 06/01/2025 | \$41.24 | \$15.57 | \$20.17 | \$0.00 | \$76.98 |
| | 12/01/2025 | \$41.24 | \$15.57 | \$21.78 | \$0.00 | \$78.59 |
| | 01/01/2026 | \$41.24 | \$16.17 | \$21.78 | \$0.00 | \$79.19 |
| | 06/01/2026 | \$42.24 | \$16.17 | \$21.78 | \$0.00 | \$80.19 |
| | 12/01/2026 | \$42.24 | \$16.17 | \$23.52 | \$0.00 | \$81.93 |
| | 01/01/2027 | \$42.24 | \$16.77 | \$23.52 | \$0.00 | \$82.53 |

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|--|----------------|-----------|---------|---------|---------------------------|------------|
| SPECIALIZED EARTH MOVING EQUIP > 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i> | 06/01/2024 | \$40.53 | \$15.07 | \$18.67 | \$0.00 | \$74.27 |
| | 12/01/2024 | \$40.53 | \$15.07 | \$20.17 | \$0.00 | \$75.77 |
| | 01/01/2025 | \$40.53 | \$15.57 | \$20.17 | \$0.00 | \$76.27 |
| | 06/01/2025 | \$41.53 | \$15.57 | \$20.17 | \$0.00 | \$77.27 |
| | 12/01/2025 | \$41.53 | \$15.57 | \$21.78 | \$0.00 | \$78.88 |
| | 01/01/2026 | \$41.53 | \$16.17 | \$21.78 | \$0.00 | \$79.48 |
| | 06/01/2026 | \$42.53 | \$16.17 | \$21.78 | \$0.00 | \$80.48 |
| | 12/01/2026 | \$42.53 | \$16.17 | \$23.52 | \$0.00 | \$82.22 |
| | 01/01/2027 | \$42.53 | \$16.77 | \$23.52 | \$0.00 | \$82.82 |
| SPRINKLER FITTER <i>SPRINKLER FITTERS LOCAL 669</i> | 04/01/2023 | \$47.43 | \$11.45 | \$16.61 | \$0.00 | \$75.49 |

Apprentice - SPRINKLER FITTER - Local 669

Effective Date - 04/01/2023

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 45 | \$21.34 | \$8.22 | \$0.00 | \$0.00 | \$29.56 |
| 2 | 50 | \$23.72 | \$8.22 | \$0.00 | \$0.00 | \$31.94 |
| 3 | 55 | \$26.09 | \$11.45 | \$7.20 | \$0.00 | \$44.74 |
| 4 | 60 | \$28.46 | \$11.45 | \$8.35 | \$0.00 | \$48.26 |
| 5 | 65 | \$30.83 | \$11.45 | \$8.35 | \$0.00 | \$50.63 |
| 6 | 70 | \$33.20 | \$11.45 | \$8.60 | \$0.00 | \$53.25 |
| 7 | 75 | \$35.57 | \$11.45 | \$8.60 | \$0.00 | \$55.62 |
| 8 | 80 | \$37.94 | \$11.45 | \$8.60 | \$0.00 | \$57.99 |
| 9 | 85 | \$40.32 | \$11.45 | \$8.60 | \$0.00 | \$60.37 |
| 10 | 90 | \$42.69 | \$11.45 | \$8.60 | \$0.00 | \$62.74 |

Notes:

Apprentice to Journeyworker Ratio:1:1

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

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - TERRAZZO FINISHER - Local 3 Marble & Tile

Effective Date - 08/01/2024

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

Effective Date - 02/01/2025

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$32.37 | \$11.49 | \$23.59 | \$0.00 | \$67.45 |
| 2 | 60 | \$38.84 | \$11.49 | \$23.59 | \$0.00 | \$73.92 |
| 3 | 70 | \$45.32 | \$11.49 | \$23.59 | \$0.00 | \$80.40 |
| 4 | 80 | \$51.79 | \$11.49 | \$23.59 | \$0.00 | \$86.87 |
| 5 | 90 | \$58.27 | \$11.49 | \$23.59 | \$0.00 | \$93.35 |

Notes:

Apprentice to Journeyworker Ratio:1:3

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

For apprentice rates see "Apprentice- LABORER"

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

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|---|------------|---------|--------|---------|--------|---------|
| TEST BORING LABORER <i>LABORERS - FOUNDATION AND MARINE</i> | 06/01/2024 | \$45.48 | \$9.65 | \$18.22 | \$0.00 | \$73.35 |
| | 12/01/2024 | \$46.95 | \$9.65 | \$18.22 | \$0.00 | \$74.82 |
| | 06/01/2025 | \$48.45 | \$9.65 | \$18.22 | \$0.00 | \$76.32 |
| | 12/01/2025 | \$49.95 | \$9.65 | \$18.22 | \$0.00 | \$77.82 |
| | 06/01/2026 | \$51.50 | \$9.65 | \$18.22 | \$0.00 | \$79.37 |
| | 12/01/2026 | \$53.00 | \$9.65 | \$18.22 | \$0.00 | \$80.87 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|--|------------|---------|---------|---------|--------|---------|
| TRACTORS <i>OPERATING ENGINEERS LOCAL 98</i> | 12/01/2023 | \$38.42 | \$13.78 | \$15.15 | \$0.00 | \$67.35 |
|--|------------|---------|---------|---------|--------|---------|

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|---|----------------|-----------|---------|---------|---------------------------|------------|
| TRAILERS FOR EARTH MOVING EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i> | 06/01/2024 | \$40.82 | \$15.07 | \$18.67 | \$0.00 | \$74.56 |
| | 12/01/2024 | \$40.82 | \$15.07 | \$20.17 | \$0.00 | \$76.06 |
| | 01/01/2025 | \$40.82 | \$15.57 | \$20.17 | \$0.00 | \$76.56 |
| | 06/01/2025 | \$41.82 | \$15.57 | \$20.17 | \$0.00 | \$77.56 |
| | 12/01/2025 | \$41.82 | \$15.57 | \$21.78 | \$0.00 | \$79.17 |
| | 01/01/2026 | \$41.82 | \$16.17 | \$21.78 | \$0.00 | \$79.77 |
| | 06/01/2026 | \$42.82 | \$16.17 | \$21.78 | \$0.00 | \$80.77 |
| | 12/01/2026 | \$42.82 | \$16.17 | \$23.52 | \$0.00 | \$82.51 |
| | 01/01/2027 | \$42.82 | \$16.77 | \$23.52 | \$0.00 | \$83.11 |
| TUNNEL WORK - COMPRESSED AIR <i>LABORERS (COMPRESSED AIR)</i> | 06/01/2024 | \$57.71 | \$9.65 | \$19.00 | \$0.00 | \$86.36 |
| | 12/01/2024 | \$59.18 | \$9.65 | \$19.00 | \$0.00 | \$87.83 |
| | 06/01/2025 | \$60.68 | \$9.65 | \$19.00 | \$0.00 | \$89.33 |
| | 12/01/2025 | \$62.18 | \$9.65 | \$19.00 | \$0.00 | \$90.83 |
| | 06/01/2026 | \$63.73 | \$9.65 | \$19.00 | \$0.00 | \$92.38 |
| | 12/01/2026 | \$65.23 | \$9.65 | \$19.00 | \$0.00 | \$93.88 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) <i>LABORERS (COMPRESSED AIR)</i> | 06/01/2024 | \$59.71 | \$9.65 | \$19.00 | \$0.00 | \$88.36 |
| | 12/01/2024 | \$61.18 | \$9.65 | \$19.00 | \$0.00 | \$89.83 |
| | 06/01/2025 | \$62.68 | \$9.65 | \$19.00 | \$0.00 | \$91.33 |
| | 12/01/2025 | \$64.18 | \$9.65 | \$19.00 | \$0.00 | \$92.83 |
| | 06/01/2026 | \$65.73 | \$9.65 | \$19.00 | \$0.00 | \$94.38 |
| | 12/01/2026 | \$67.23 | \$9.65 | \$19.00 | \$0.00 | \$95.88 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| TUNNEL WORK - FREE AIR <i>LABORERS (FREE AIR TUNNEL)</i> | 06/01/2024 | \$49.78 | \$9.65 | \$19.00 | \$0.00 | \$78.43 |
| | 12/01/2024 | \$51.25 | \$9.65 | \$19.00 | \$0.00 | \$79.90 |
| | 06/01/2025 | \$52.75 | \$9.65 | \$19.00 | \$0.00 | \$81.40 |
| | 12/01/2025 | \$54.25 | \$9.65 | \$19.00 | \$0.00 | \$82.90 |
| | 06/01/2026 | \$55.80 | \$9.65 | \$19.00 | \$0.00 | \$84.45 |
| | 12/01/2026 | \$57.30 | \$9.65 | \$19.00 | \$0.00 | \$85.95 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| TUNNEL WORK - FREE AIR (HAZ. WASTE) <i>LABORERS (FREE AIR TUNNEL)</i> | 06/01/2024 | \$51.78 | \$9.65 | \$19.00 | \$0.00 | \$80.43 |
| | 12/01/2024 | \$53.25 | \$9.65 | \$19.00 | \$0.00 | \$81.90 |
| | 06/01/2025 | \$54.75 | \$9.65 | \$19.00 | \$0.00 | \$83.40 |
| | 12/01/2025 | \$56.25 | \$9.65 | \$19.00 | \$0.00 | \$84.90 |
| | 06/01/2026 | \$57.80 | \$9.65 | \$19.00 | \$0.00 | \$86.45 |
| | 12/01/2026 | \$59.30 | \$9.65 | \$19.00 | \$0.00 | \$87.95 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| VAC-HAUL <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i> | 06/01/2024 | \$40.24 | \$15.07 | \$18.67 | \$0.00 | \$73.98 |
| | 12/01/2024 | \$40.24 | \$15.07 | \$20.17 | \$0.00 | \$75.48 |
| | 01/01/2025 | \$40.24 | \$15.57 | \$20.17 | \$0.00 | \$75.98 |
| | 06/01/2025 | \$41.24 | \$15.57 | \$20.17 | \$0.00 | \$76.98 |
| | 12/01/2025 | \$41.24 | \$15.57 | \$21.78 | \$0.00 | \$78.59 |
| | 01/01/2026 | \$41.24 | \$16.17 | \$21.78 | \$0.00 | \$79.19 |
| | 06/01/2026 | \$42.24 | \$16.17 | \$21.78 | \$0.00 | \$80.19 |
| | 12/01/2026 | \$42.24 | \$16.17 | \$23.52 | \$0.00 | \$81.93 |
| | 01/01/2027 | \$42.24 | \$16.77 | \$23.52 | \$0.00 | \$82.53 |

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|---|----------------|-----------|---------|---------|---------------------------|------------|
| VOICE-DATA-VIDEO TECHNICIAN <i>ELECTRICIANS LOCAL 96</i> | 09/01/2024 | \$35.29 | \$13.99 | \$17.57 | \$0.00 | \$66.85 |
| | 09/07/2025 | \$36.12 | \$14.98 | \$17.91 | \$0.00 | \$69.01 |
| | 09/06/2026 | \$37.04 | \$15.96 | \$18.27 | \$0.00 | \$71.27 |

Apprentice - VOICE-DATA-VIDEO TECHNICIAN - Local 96

Effective Date - 09/01/2024

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$17.65 | \$13.99 | \$4.41 | \$0.00 | \$36.05 |
| 2 | 55 | \$19.41 | \$13.99 | \$4.46 | \$0.00 | \$37.86 |
| 3 | 60 | \$21.17 | \$13.99 | \$17.15 | \$0.00 | \$52.31 |
| 4 | 65 | \$22.94 | \$13.99 | \$17.20 | \$0.00 | \$54.13 |
| 5 | 70 | \$24.70 | \$13.99 | \$17.25 | \$0.00 | \$55.94 |
| 6 | 75 | \$26.47 | \$13.99 | \$17.30 | \$0.00 | \$57.76 |
| 7 | 80 | \$28.23 | \$13.99 | \$17.36 | \$0.00 | \$59.58 |
| 8 | 85 | \$30.00 | \$13.99 | \$17.41 | \$0.00 | \$61.40 |

Effective Date - 09/07/2025

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$18.06 | \$14.98 | \$4.51 | \$0.00 | \$37.55 |
| 2 | 55 | \$19.87 | \$14.98 | \$4.57 | \$0.00 | \$39.42 |
| 3 | 60 | \$21.67 | \$14.98 | \$17.48 | \$0.00 | \$54.13 |
| 4 | 65 | \$23.48 | \$14.98 | \$17.53 | \$0.00 | \$55.99 |
| 5 | 70 | \$25.28 | \$14.98 | \$17.59 | \$0.00 | \$57.85 |
| 6 | 75 | \$27.09 | \$14.98 | \$17.64 | \$0.00 | \$59.71 |
| 7 | 80 | \$28.90 | \$14.98 | \$17.70 | \$0.00 | \$61.58 |
| 8 | 85 | \$30.70 | \$14.98 | \$17.75 | \$0.00 | \$63.43 |

Notes:

Apprentice to Journeyworker Ratio:1:1

| | | | | | | |
|--|------------|---------|--------|---------|--------|---------|
| WAGON DRILL OPERATOR <i>LABORERS - ZONE 2</i> | 06/01/2024 | \$39.28 | \$9.65 | \$18.40 | \$0.00 | \$67.33 |
| | 12/01/2024 | \$40.61 | \$9.65 | \$18.40 | \$0.00 | \$68.66 |
| | 06/01/2025 | \$42.00 | \$9.65 | \$18.40 | \$0.00 | \$70.05 |
| | 12/01/2025 | \$43.38 | \$9.65 | \$18.40 | \$0.00 | \$71.43 |
| | 06/01/2026 | \$44.82 | \$9.65 | \$18.40 | \$0.00 | \$72.87 |
| | 12/01/2026 | \$46.26 | \$9.65 | \$18.40 | \$0.00 | \$74.31 |
| | 06/01/2027 | \$47.71 | \$9.65 | \$18.40 | \$0.00 | \$75.76 |
| | 12/01/2027 | \$49.16 | \$9.65 | \$18.40 | \$0.00 | \$77.21 |
| | 06/01/2028 | \$50.66 | \$9.65 | \$18.40 | \$0.00 | \$78.71 |
| | 12/01/2028 | \$52.16 | \$9.65 | \$18.40 | \$0.00 | \$80.21 |

For apprentice rates see "Apprentice- LABORER"

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

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

| | | | | | | |
|--|------------|---------|--------|---------|--------|---------|
| WATER METER INSTALLER <i>PLUMBERS LOCAL 4</i> | 09/01/2024 | \$55.35 | \$9.90 | \$17.42 | \$0.00 | \$82.67 |
| | 03/01/2025 | \$56.75 | \$9.90 | \$17.42 | \$0.00 | \$84.07 |
| | 09/01/2025 | \$58.15 | \$9.90 | \$17.42 | \$0.00 | \$85.47 |
| | 03/01/2026 | \$59.55 | \$9.90 | \$17.42 | \$0.00 | \$86.87 |

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

Additional Apprentice Information:

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

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

All steps are six months (1000 hours.)

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

** Multiple ratios are listed in the comment field.

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

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



MAURA HEALEY
Governor

KIM DRISCOLL
Lt. Governor

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

Prevailing Wage Rates

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

LAUREN JONES
Secretary

MICHAEL FLANAGAN
Director

Awarding Authority: Division of Fisheries and Wildlife
Contract Number: **City/Town:** SUTTON
Description of Work: Demolition of a concrete, stone, and earthen dam, construction of precast concrete culvert and wingwalls, pilot channel through former impoundment, riprap, guardrail, pavement, streambed restoration.
Job Location: W. Sutton Rd, Sutton, Salmon Brook Rd, Brookfield

Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

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

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|---|----------------|-----------|---------|---------|---------------------------|------------|
| Construction | | | | | | |
| (2 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i> | 06/01/2024 | \$39.95 | \$15.07 | \$18.67 | \$0.00 | \$73.69 |
| | 12/01/2024 | \$39.95 | \$15.07 | \$20.17 | \$0.00 | \$75.19 |
| | 01/01/2025 | \$39.95 | \$15.57 | \$20.17 | \$0.00 | \$75.69 |
| | 06/01/2025 | \$40.95 | \$15.57 | \$20.17 | \$0.00 | \$76.69 |
| | 12/01/2025 | \$40.95 | \$15.57 | \$21.78 | \$0.00 | \$78.30 |
| | 01/01/2026 | \$40.95 | \$16.17 | \$21.78 | \$0.00 | \$78.90 |
| | 06/01/2026 | \$41.95 | \$16.17 | \$21.78 | \$0.00 | \$79.90 |
| | 12/01/2026 | \$41.95 | \$16.17 | \$23.52 | \$0.00 | \$81.64 |
| | 01/01/2027 | \$41.95 | \$16.77 | \$23.52 | \$0.00 | \$82.24 |
| (3 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i> | 06/01/2024 | \$40.02 | \$15.07 | \$18.67 | \$0.00 | \$73.76 |
| | 12/01/2024 | \$40.02 | \$15.07 | \$20.17 | \$0.00 | \$75.26 |
| | 01/01/2025 | \$40.02 | \$15.57 | \$20.17 | \$0.00 | \$75.76 |
| | 06/01/2025 | \$41.02 | \$15.57 | \$20.17 | \$0.00 | \$76.76 |
| | 12/01/2025 | \$41.02 | \$15.57 | \$21.78 | \$0.00 | \$78.37 |
| | 01/01/2026 | \$41.02 | \$16.17 | \$21.78 | \$0.00 | \$78.97 |
| | 06/01/2026 | \$42.02 | \$16.17 | \$21.78 | \$0.00 | \$79.97 |
| | 12/01/2026 | \$42.02 | \$16.17 | \$23.52 | \$0.00 | \$81.71 |
| | 01/01/2027 | \$42.02 | \$16.77 | \$23.52 | \$0.00 | \$82.31 |
| (4 & 5 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i> | 06/01/2024 | \$40.14 | \$15.07 | \$18.67 | \$0.00 | \$73.88 |
| | 12/01/2024 | \$40.14 | \$15.07 | \$20.17 | \$0.00 | \$75.38 |
| | 01/01/2025 | \$40.14 | \$15.57 | \$20.17 | \$0.00 | \$75.88 |
| | 06/01/2025 | \$41.14 | \$15.57 | \$20.17 | \$0.00 | \$76.88 |
| | 12/01/2025 | \$41.14 | \$15.57 | \$21.78 | \$0.00 | \$78.49 |
| | 01/01/2026 | \$41.14 | \$16.17 | \$21.78 | \$0.00 | \$79.09 |
| | 06/01/2026 | \$42.14 | \$16.17 | \$21.78 | \$0.00 | \$80.09 |
| | 12/01/2026 | \$42.14 | \$16.17 | \$23.52 | \$0.00 | \$81.83 |
| | 01/01/2027 | \$42.14 | \$16.77 | \$23.52 | \$0.00 | \$82.43 |
| ADS/SUBMERSIBLE PILOT <i>PILE DRIVER LOCAL 56 (ZONE 2)</i> | 08/01/2020 | \$103.05 | \$9.40 | \$23.12 | \$0.00 | \$135.57 |
| For apprentice rates see "Apprentice- PILE DRIVER" | | | | | | |
| AIR TRACK OPERATOR <i>LABORERS - ZONE 2</i> | 06/01/2024 | \$39.28 | \$9.65 | \$18.40 | \$0.00 | \$67.33 |
| | 12/01/2024 | \$40.61 | \$9.65 | \$18.40 | \$0.00 | \$68.66 |
| | 06/01/2025 | \$42.00 | \$9.65 | \$18.40 | \$0.00 | \$70.05 |
| | 12/01/2025 | \$43.38 | \$9.65 | \$18.40 | \$0.00 | \$71.43 |
| | 06/01/2026 | \$44.82 | \$9.65 | \$18.40 | \$0.00 | \$72.87 |
| | 12/01/2026 | \$46.26 | \$9.65 | \$18.40 | \$0.00 | \$74.31 |
| | 06/01/2027 | \$47.71 | \$9.65 | \$18.40 | \$0.00 | \$75.76 |
| | 12/01/2027 | \$49.16 | \$9.65 | \$18.40 | \$0.00 | \$77.21 |
| | 06/01/2028 | \$50.66 | \$9.65 | \$18.40 | \$0.00 | \$78.71 |
| | 12/01/2028 | \$52.16 | \$9.65 | \$18.40 | \$0.00 | \$80.21 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|--|-----------------------|------------------|---------------|----------------|----------------------------------|-------------------|
| AIR TRACK OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i> | 06/01/2024 | \$39.28 | \$9.65 | \$17.80 | \$0.00 | \$66.73 |
| | 12/01/2024 | \$40.61 | \$9.65 | \$17.80 | \$0.00 | \$68.06 |
| | 06/01/2025 | \$42.00 | \$9.65 | \$17.80 | \$0.00 | \$69.45 |
| | 12/01/2025 | \$43.38 | \$9.65 | \$17.80 | \$0.00 | \$70.83 |
| | 06/01/2026 | \$44.82 | \$9.65 | \$17.80 | \$0.00 | \$72.27 |
| | 12/01/2026 | \$46.26 | \$9.65 | \$17.80 | \$0.00 | \$73.71 |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway) | | | | | | |
| ASBESTOS WORKER (PIPES & TANKS) <i>HEAT & FROST INSULATORS LOCAL 6 (WORCESTER)</i> | 06/01/2024 | \$41.80 | \$14.50 | \$11.05 | \$0.00 | \$67.35 |
| | 12/01/2024 | \$42.80 | \$14.50 | \$11.05 | \$0.00 | \$68.35 |
| | 06/01/2025 | \$43.80 | \$14.50 | \$11.05 | \$0.00 | \$69.35 |
| | 12/01/2025 | \$44.80 | \$14.50 | \$11.05 | \$0.00 | \$70.35 |
| ASPHALT RAKER <i>LABORERS - ZONE 2</i> | 06/01/2024 | \$38.78 | \$9.65 | \$18.40 | \$0.00 | \$66.83 |
| | 12/01/2024 | \$40.11 | \$9.65 | \$18.40 | \$0.00 | \$68.16 |
| | 06/01/2025 | \$41.50 | \$9.65 | \$18.40 | \$0.00 | \$69.55 |
| | 12/01/2025 | \$42.88 | \$9.65 | \$18.40 | \$0.00 | \$70.93 |
| | 06/01/2026 | \$44.32 | \$9.65 | \$18.40 | \$0.00 | \$72.37 |
| | 12/01/2026 | \$45.76 | \$9.65 | \$18.40 | \$0.00 | \$73.81 |
| | 06/01/2027 | \$47.21 | \$9.65 | \$18.40 | \$0.00 | \$75.26 |
| | 12/01/2027 | \$48.66 | \$9.65 | \$18.40 | \$0.00 | \$76.71 |
| | 06/01/2028 | \$50.16 | \$9.65 | \$18.40 | \$0.00 | \$78.21 |
| | 12/01/2028 | \$51.66 | \$9.65 | \$18.40 | \$0.00 | \$79.71 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| ASPHALT RAKER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i> | 06/01/2024 | \$38.78 | \$9.65 | \$17.80 | \$0.00 | \$66.23 |
| | 12/01/2024 | \$40.11 | \$9.65 | \$17.80 | \$0.00 | \$67.56 |
| | 06/01/2025 | \$41.50 | \$9.65 | \$17.80 | \$0.00 | \$68.95 |
| | 12/01/2025 | \$42.88 | \$9.65 | \$17.80 | \$0.00 | \$70.33 |
| | 06/01/2026 | \$44.32 | \$9.65 | \$17.80 | \$0.00 | \$71.77 |
| | 12/01/2026 | \$45.76 | \$9.65 | \$17.80 | \$0.00 | \$73.21 |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway) | | | | | | |
| ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2024 | \$56.03 | \$15.30 | \$16.40 | \$0.00 | \$87.73 |
| | 12/01/2024 | \$57.48 | \$15.30 | \$16.40 | \$0.00 | \$89.18 |
| | 06/01/2025 | \$58.78 | \$15.30 | \$16.40 | \$0.00 | \$90.48 |
| | 12/01/2025 | \$60.23 | \$15.30 | \$16.40 | \$0.00 | \$91.93 |
| | 06/01/2026 | \$61.53 | \$15.30 | \$16.40 | \$0.00 | \$93.23 |
| | 12/01/2026 | \$62.98 | \$15.30 | \$16.40 | \$0.00 | \$94.68 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| BACKHOE/FRONT-END LOADER <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2024 | \$56.03 | \$15.30 | \$16.40 | \$0.00 | \$87.73 |
| | 12/01/2024 | \$57.48 | \$15.30 | \$16.40 | \$0.00 | \$89.18 |
| | 06/01/2025 | \$58.78 | \$15.30 | \$16.40 | \$0.00 | \$90.48 |
| | 12/01/2025 | \$60.23 | \$15.30 | \$16.40 | \$0.00 | \$91.93 |
| | 06/01/2026 | \$61.53 | \$15.30 | \$16.40 | \$0.00 | \$93.23 |
| | 12/01/2026 | \$62.98 | \$15.30 | \$16.40 | \$0.00 | \$94.68 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|---|----------------|-----------|--------|---------|---------------------------|------------|
| BARCO-TYPE JUMPING TAMPER <i>LABORERS - ZONE 2</i> | 06/01/2024 | \$38.78 | \$9.65 | \$18.40 | \$0.00 | \$66.83 |
| | 12/01/2024 | \$40.11 | \$9.65 | \$18.40 | \$0.00 | \$68.16 |
| | 06/01/2025 | \$41.50 | \$9.65 | \$18.40 | \$0.00 | \$69.55 |
| | 12/01/2025 | \$42.88 | \$9.65 | \$18.40 | \$0.00 | \$70.93 |
| | 06/01/2026 | \$44.32 | \$9.65 | \$18.40 | \$0.00 | \$72.37 |
| | 12/01/2026 | \$45.76 | \$9.65 | \$18.40 | \$0.00 | \$73.81 |
| | 06/01/2027 | \$47.21 | \$9.65 | \$18.40 | \$0.00 | \$75.26 |
| | 12/01/2027 | \$48.66 | \$9.65 | \$18.40 | \$0.00 | \$76.71 |
| | 06/01/2028 | \$50.16 | \$9.65 | \$18.40 | \$0.00 | \$78.21 |
| | 12/01/2028 | \$51.66 | \$9.65 | \$18.40 | \$0.00 | \$79.71 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| BLOCK PAVER, RAMMER / CURB SETTER <i>LABORERS - ZONE 2</i> | 06/01/2024 | \$39.28 | \$9.65 | \$18.40 | \$0.00 | \$67.33 |
| | 12/01/2024 | \$40.61 | \$9.65 | \$18.40 | \$0.00 | \$68.66 |
| | 06/01/2025 | \$42.00 | \$9.65 | \$18.40 | \$0.00 | \$70.05 |
| | 12/01/2025 | \$43.38 | \$9.65 | \$18.40 | \$0.00 | \$71.43 |
| | 06/01/2026 | \$44.82 | \$9.65 | \$18.40 | \$0.00 | \$72.87 |
| | 12/01/2026 | \$46.26 | \$9.65 | \$18.40 | \$0.00 | \$74.31 |
| | 06/01/2027 | \$47.71 | \$9.65 | \$18.40 | \$0.00 | \$75.76 |
| | 12/01/2027 | \$49.16 | \$9.65 | \$18.40 | \$0.00 | \$77.21 |
| | 06/01/2028 | \$50.66 | \$9.65 | \$18.40 | \$0.00 | \$78.71 |
| | 12/01/2028 | \$52.16 | \$9.65 | \$18.40 | \$0.00 | \$80.21 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| BLOCK PAVER, RAMMER / CURB SETTER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i> | 06/01/2024 | \$39.28 | \$9.65 | \$17.80 | \$0.00 | \$66.73 |
| | 12/01/2024 | \$40.61 | \$9.65 | \$17.80 | \$0.00 | \$68.06 |
| | 06/01/2025 | \$42.00 | \$9.65 | \$17.80 | \$0.00 | \$69.45 |
| | 12/01/2025 | \$43.38 | \$9.65 | \$17.80 | \$0.00 | \$70.83 |
| | 06/01/2026 | \$44.82 | \$9.65 | \$17.80 | \$0.00 | \$72.27 |
| | 12/01/2026 | \$46.26 | \$9.65 | \$17.80 | \$0.00 | \$73.71 |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway)" | | | | | | |
| BOILER MAKER <i>BOILERMAKERS LOCAL 29</i> | 01/01/2024 | \$48.12 | \$7.07 | \$20.60 | \$0.00 | \$75.79 |

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - BOILERMAKER - Local 29

Effective Date - 01/01/2024

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

Notes:

Apprentice to Journeyworker Ratio:1:4

| | | | | | | |
|--|------------|---------|---------|---------|--------|----------|
| BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) | 08/01/2024 | \$62.36 | \$11.49 | \$22.90 | \$0.00 | \$96.75 |
| BRICKLAYERS LOCAL 3 (WORCESTER) | 02/01/2025 | \$63.66 | \$11.49 | \$22.90 | \$0.00 | \$98.05 |
| | 08/01/2025 | \$65.81 | \$11.49 | \$22.90 | \$0.00 | \$100.20 |
| | 02/01/2026 | \$67.16 | \$11.49 | \$22.90 | \$0.00 | \$101.55 |
| | 08/01/2026 | \$69.36 | \$11.49 | \$22.90 | \$0.00 | \$103.75 |
| | 02/01/2027 | \$70.76 | \$11.49 | \$22.90 | \$0.00 | \$105.15 |

Apprentice - BRICK/PLASTER/CEMENT MASON - Local 3 Worcester

Effective Date - 08/01/2024

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$31.18 | \$11.49 | \$22.90 | \$0.00 | \$65.57 |
| 2 | 60 | \$37.42 | \$11.49 | \$22.90 | \$0.00 | \$71.81 |
| 3 | 70 | \$43.65 | \$11.49 | \$22.90 | \$0.00 | \$78.04 |
| 4 | 80 | \$49.89 | \$11.49 | \$22.90 | \$0.00 | \$84.28 |
| 5 | 90 | \$56.12 | \$11.49 | \$22.90 | \$0.00 | \$90.51 |

Effective Date - 02/01/2025

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$31.83 | \$11.49 | \$22.90 | \$0.00 | \$66.22 |
| 2 | 60 | \$38.20 | \$11.49 | \$22.90 | \$0.00 | \$72.59 |
| 3 | 70 | \$44.56 | \$11.49 | \$22.90 | \$0.00 | \$78.95 |
| 4 | 80 | \$50.93 | \$11.49 | \$22.90 | \$0.00 | \$85.32 |
| 5 | 90 | \$57.29 | \$11.49 | \$22.90 | \$0.00 | \$91.68 |

Notes:

Apprentice to Journeyworker Ratio:1:5

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|--|----------------|-----------|---------|---------|---------------------------|------------|
| BULLDOZER/GRADER/SCRAPER <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2024 | \$55.41 | \$15.30 | \$16.40 | \$0.00 | \$87.11 |
| | 12/01/2024 | \$56.85 | \$15.30 | \$16.40 | \$0.00 | \$88.55 |
| | 06/01/2025 | \$58.13 | \$15.30 | \$16.40 | \$0.00 | \$89.83 |
| | 12/01/2025 | \$59.57 | \$15.30 | \$16.40 | \$0.00 | \$91.27 |
| | 06/01/2026 | \$60.85 | \$15.30 | \$16.40 | \$0.00 | \$92.55 |
| | 12/01/2026 | \$62.29 | \$15.30 | \$16.40 | \$0.00 | \$93.99 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| CAISSON & UNDERPINNING BOTTOM MAN <i>LABORERS - FOUNDATION AND MARINE</i> | 06/01/2024 | \$46.63 | \$9.65 | \$18.22 | \$0.00 | \$74.50 |
| | 12/01/2024 | \$48.10 | \$9.65 | \$18.22 | \$0.00 | \$75.97 |
| | 06/01/2025 | \$49.60 | \$9.65 | \$18.22 | \$0.00 | \$77.47 |
| | 12/01/2025 | \$51.10 | \$9.65 | \$18.22 | \$0.00 | \$78.97 |
| | 06/01/2026 | \$52.65 | \$9.65 | \$18.22 | \$0.00 | \$80.52 |
| | 12/01/2026 | \$54.15 | \$9.65 | \$18.22 | \$0.00 | \$82.02 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| CAISSON & UNDERPINNING LABORER <i>LABORERS - FOUNDATION AND MARINE</i> | 06/01/2024 | \$45.48 | \$9.65 | \$18.22 | \$0.00 | \$73.35 |
| | 12/01/2024 | \$46.95 | \$9.65 | \$18.22 | \$0.00 | \$74.82 |
| | 06/01/2025 | \$48.45 | \$9.65 | \$18.22 | \$0.00 | \$76.32 |
| | 12/01/2025 | \$49.95 | \$9.65 | \$18.22 | \$0.00 | \$77.82 |
| | 06/01/2026 | \$51.50 | \$9.65 | \$18.22 | \$0.00 | \$79.37 |
| | 12/01/2026 | \$53.00 | \$9.65 | \$18.22 | \$0.00 | \$80.87 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| CAISSON & UNDERPINNING TOP MAN <i>LABORERS - FOUNDATION AND MARINE</i> | 06/01/2024 | \$45.81 | \$9.65 | \$18.22 | \$0.00 | \$73.68 |
| | 12/01/2024 | \$47.28 | \$9.65 | \$18.22 | \$0.00 | \$75.15 |
| | 06/01/2025 | \$48.78 | \$9.65 | \$18.22 | \$0.00 | \$76.65 |
| | 12/01/2025 | \$50.28 | \$9.65 | \$18.22 | \$0.00 | \$78.15 |
| | 06/01/2026 | \$51.83 | \$9.65 | \$18.22 | \$0.00 | \$79.70 |
| | 12/01/2026 | \$53.33 | \$9.65 | \$18.22 | \$0.00 | \$81.20 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| CARBIDE CORE DRILL OPERATOR <i>LABORERS - ZONE 2</i> | 06/01/2024 | \$38.78 | \$9.65 | \$18.40 | \$0.00 | \$66.83 |
| | 12/01/2024 | \$40.11 | \$9.65 | \$18.40 | \$0.00 | \$68.16 |
| | 06/01/2025 | \$41.50 | \$9.65 | \$18.40 | \$0.00 | \$69.55 |
| | 12/01/2025 | \$42.88 | \$9.65 | \$18.40 | \$0.00 | \$70.93 |
| | 06/01/2026 | \$44.32 | \$9.65 | \$18.40 | \$0.00 | \$72.37 |
| | 12/01/2026 | \$45.76 | \$9.65 | \$18.40 | \$0.00 | \$73.81 |
| | 06/01/2027 | \$47.21 | \$9.65 | \$18.40 | \$0.00 | \$75.26 |
| | 12/01/2027 | \$48.66 | \$9.65 | \$18.40 | \$0.00 | \$76.71 |
| | 06/01/2028 | \$50.16 | \$9.65 | \$18.40 | \$0.00 | \$78.21 |
| 12/01/2028 | \$51.66 | \$9.65 | \$18.40 | \$0.00 | \$79.71 | |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| CARPENTER <i>CARPENTERS -ZONE 2 (Eastern Massachusetts)</i> | 09/01/2024 | \$48.37 | \$9.83 | \$19.97 | \$0.00 | \$78.17 |
| | 03/01/2025 | \$49.62 | \$9.83 | \$19.97 | \$0.00 | \$79.42 |
| | 09/01/2025 | \$50.87 | \$9.83 | \$19.97 | \$0.00 | \$80.67 |
| | 03/01/2026 | \$52.12 | \$9.83 | \$19.97 | \$0.00 | \$81.92 |
| | 09/01/2026 | \$53.37 | \$9.83 | \$19.97 | \$0.00 | \$83.17 |
| | 03/01/2027 | \$54.62 | \$9.83 | \$19.97 | \$0.00 | \$84.42 |

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - CARPENTER - Zone 2 Eastern MA

Effective Date - 09/01/2024

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

Effective Date - 03/01/2025

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 45 | \$22.33 | \$9.83 | \$1.73 | \$0.00 | \$33.89 |
| 2 | 45 | \$22.33 | \$9.83 | \$1.73 | \$0.00 | \$33.89 |
| 3 | 55 | \$27.29 | \$9.83 | \$3.40 | \$0.00 | \$40.52 |
| 4 | 55 | \$27.29 | \$9.83 | \$3.40 | \$0.00 | \$40.52 |
| 5 | 70 | \$34.73 | \$9.83 | \$16.51 | \$0.00 | \$61.07 |
| 6 | 70 | \$34.73 | \$9.83 | \$16.51 | \$0.00 | \$61.07 |
| 7 | 80 | \$39.70 | \$9.83 | \$18.24 | \$0.00 | \$67.77 |
| 8 | 80 | \$39.70 | \$9.83 | \$18.24 | \$0.00 | \$67.77 |

Notes:

Apprentice to Journeyworker Ratio:1:5

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

All Aspects of New Wood Frame Work

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - CARPENTER (Wood Frame) - Zone 3

Effective Date - 10/01/2024

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 60 | \$15.99 | \$7.02 | \$0.00 | \$0.00 | \$23.01 |
| 2 | 60 | \$15.99 | \$7.02 | \$0.00 | \$0.00 | \$23.01 |
| 3 | 65 | \$17.32 | \$7.02 | \$1.00 | \$0.00 | \$25.34 |
| 4 | 70 | \$18.66 | \$7.02 | \$1.00 | \$0.00 | \$26.68 |
| 5 | 75 | \$19.99 | \$7.02 | \$4.80 | \$0.00 | \$31.81 |
| 6 | 80 | \$21.32 | \$7.02 | \$4.80 | \$0.00 | \$33.14 |
| 7 | 85 | \$22.65 | \$7.02 | \$4.80 | \$0.00 | \$34.47 |
| 8 | 90 | \$23.99 | \$7.02 | \$4.80 | \$0.00 | \$35.81 |

Effective Date - 10/01/2025

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 60 | \$16.65 | \$7.02 | \$0.00 | \$0.00 | \$23.67 |
| 2 | 60 | \$16.65 | \$7.02 | \$0.00 | \$0.00 | \$23.67 |
| 3 | 65 | \$18.04 | \$7.02 | \$1.00 | \$0.00 | \$26.06 |
| 4 | 70 | \$19.43 | \$7.02 | \$1.00 | \$0.00 | \$27.45 |
| 5 | 75 | \$20.81 | \$7.02 | \$4.80 | \$0.00 | \$32.63 |
| 6 | 80 | \$22.20 | \$7.02 | \$4.80 | \$0.00 | \$34.02 |
| 7 | 85 | \$23.59 | \$7.02 | \$4.80 | \$0.00 | \$35.41 |
| 8 | 90 | \$24.98 | \$7.02 | \$4.80 | \$0.00 | \$36.80 |

Notes:

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80
 Step 1&2 \$18.52/ 3&4 \$21.07/ 5&6 \$28.70/ 7&8 \$31.26

Apprentice to Journeyworker Ratio:1:5

| | | | | | | |
|--|------------|---------|---------|---------|--------|---------|
| CEMENT MASONRY/PLASTERING BRICKLAYERS LOCAL 3 (WORCESTER) | 01/01/2024 | \$49.33 | \$13.00 | \$23.57 | \$1.30 | \$87.20 |
|--|------------|---------|---------|---------|--------|---------|

Apprentice - CEMENT MASONRY/PLASTERING - Worcester

Effective Date - 01/01/2024

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$24.67 | \$13.00 | \$15.93 | \$0.00 | \$53.60 |
| 2 | 60 | \$29.60 | \$13.00 | \$18.57 | \$1.30 | \$62.47 |
| 3 | 65 | \$32.06 | \$13.00 | \$19.57 | \$1.30 | \$65.93 |
| 4 | 70 | \$34.53 | \$13.00 | \$20.57 | \$1.30 | \$69.40 |
| 5 | 75 | \$37.00 | \$13.00 | \$21.57 | \$1.30 | \$72.87 |
| 6 | 80 | \$39.46 | \$13.00 | \$22.57 | \$1.30 | \$76.33 |
| 7 | 90 | \$44.40 | \$13.00 | \$23.57 | \$1.30 | \$82.27 |

Notes:

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

Apprentice to Journeyworker Ratio:1:3

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|---|----------------|-----------|---------|---------|---------------------------|------------|
| CHAIN SAW OPERATOR <i>LABORERS - ZONE 2</i> | 06/01/2024 | \$38.78 | \$9.65 | \$18.40 | \$0.00 | \$66.83 |
| | 12/01/2024 | \$40.11 | \$9.65 | \$18.40 | \$0.00 | \$68.16 |
| | 06/01/2025 | \$41.50 | \$9.65 | \$18.40 | \$0.00 | \$69.55 |
| | 12/01/2025 | \$42.88 | \$9.65 | \$18.40 | \$0.00 | \$70.93 |
| | 06/01/2026 | \$44.32 | \$9.65 | \$18.40 | \$0.00 | \$72.37 |
| | 12/01/2026 | \$45.76 | \$9.65 | \$18.40 | \$0.00 | \$73.81 |
| | 06/01/2027 | \$47.21 | \$9.65 | \$18.40 | \$0.00 | \$75.26 |
| | 12/01/2027 | \$48.66 | \$9.65 | \$18.40 | \$0.00 | \$76.71 |
| | 06/01/2028 | \$50.16 | \$9.65 | \$18.40 | \$0.00 | \$78.21 |
| | 12/01/2028 | \$51.66 | \$9.65 | \$18.40 | \$0.00 | \$79.71 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2024 | \$57.15 | \$15.30 | \$16.40 | \$0.00 | \$88.85 |
| | 12/01/2024 | \$58.63 | \$15.30 | \$16.40 | \$0.00 | \$90.33 |
| | 06/01/2025 | \$59.96 | \$15.30 | \$16.40 | \$0.00 | \$91.66 |
| | 12/01/2025 | \$61.43 | \$15.30 | \$16.40 | \$0.00 | \$93.13 |
| | 06/01/2026 | \$62.76 | \$15.30 | \$16.40 | \$0.00 | \$94.46 |
| | 12/01/2026 | \$64.24 | \$15.30 | \$16.40 | \$0.00 | \$95.94 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| COMPRESSOR OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2024 | \$36.17 | \$15.30 | \$16.40 | \$0.00 | \$67.87 |
| | 12/01/2024 | \$37.12 | \$15.30 | \$16.40 | \$0.00 | \$68.82 |
| | 06/01/2025 | \$37.97 | \$15.30 | \$16.40 | \$0.00 | \$69.67 |
| | 12/01/2025 | \$38.92 | \$15.30 | \$16.40 | \$0.00 | \$70.62 |
| | 06/01/2026 | \$39.78 | \$15.30 | \$16.40 | \$0.00 | \$71.48 |
| | 12/01/2026 | \$40.73 | \$15.30 | \$16.40 | \$0.00 | \$72.43 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| DELEADER (BRIDGE) <i>PAINTERS LOCAL 35 - ZONE 2</i> | 07/01/2024 | \$57.26 | \$9.95 | \$23.95 | \$0.00 | \$91.16 |
| | 01/01/2025 | \$58.46 | \$9.95 | \$23.95 | \$0.00 | \$92.36 |

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 07/01/2024

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

Effective Date - 01/01/2025

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

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

| | | | | | | |
|-------------------|------------|---------|--------|---------|--------|---------|
| DEMO: ADZEMAN | 06/10/2024 | \$45.53 | \$9.65 | \$18.40 | \$0.00 | \$73.58 |
| LABORERS - ZONE 2 | 12/02/2024 | \$47.00 | \$9.65 | \$18.40 | \$0.00 | \$75.05 |
| | 06/02/2025 | \$48.50 | \$9.65 | \$18.40 | \$0.00 | \$76.55 |
| | 12/01/2025 | \$50.00 | \$9.65 | \$18.40 | \$0.00 | \$78.05 |
| | 06/01/2026 | \$51.55 | \$9.65 | \$18.40 | \$0.00 | \$79.60 |
| | 12/07/2026 | \$53.05 | \$9.65 | \$18.40 | \$0.00 | \$81.10 |
| | 06/07/2027 | \$54.65 | \$9.65 | \$18.40 | \$0.00 | \$82.70 |
| | 12/06/2027 | \$56.25 | \$9.65 | \$18.40 | \$0.00 | \$84.30 |
| | 06/05/2028 | \$57.93 | \$9.65 | \$18.40 | \$0.00 | \$85.98 |
| | 12/04/2028 | \$59.60 | \$9.65 | \$18.40 | \$0.00 | \$87.65 |

For apprentice rates see "Apprentice- LABORER"

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|--|----------------|-----------|--------|---------|---------------------------|------------|
| DEMO: BACKHOE/LOADER/HAMMER OPERATOR <i>LABORERS - ZONE 2</i> | 06/10/2024 | \$46.53 | \$9.65 | \$18.40 | \$0.00 | \$74.58 |
| | 12/02/2024 | \$48.00 | \$9.65 | \$18.40 | \$0.00 | \$76.05 |
| | 06/02/2025 | \$49.50 | \$9.65 | \$18.40 | \$0.00 | \$77.55 |
| | 12/01/2025 | \$51.00 | \$9.65 | \$18.40 | \$0.00 | \$79.05 |
| | 06/01/2026 | \$52.55 | \$9.65 | \$18.40 | \$0.00 | \$80.60 |
| | 12/07/2026 | \$54.05 | \$9.65 | \$18.40 | \$0.00 | \$82.10 |
| | 06/07/2027 | \$55.65 | \$9.65 | \$18.40 | \$0.00 | \$83.70 |
| | 12/06/2027 | \$57.25 | \$9.65 | \$18.40 | \$0.00 | \$85.30 |
| | 06/05/2028 | \$58.93 | \$9.65 | \$18.40 | \$0.00 | \$86.98 |
| | 12/04/2028 | \$60.60 | \$9.65 | \$18.40 | \$0.00 | \$88.65 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|---|------------|---------|--------|---------|--------|---------|
| DEMO: BURNERS <i>LABORERS - ZONE 2</i> | 06/10/2024 | \$46.28 | \$9.65 | \$18.40 | \$0.00 | \$74.33 |
| | 12/02/2024 | \$47.75 | \$9.65 | \$18.40 | \$0.00 | \$75.80 |
| | 06/02/2025 | \$49.25 | \$9.65 | \$18.40 | \$0.00 | \$77.30 |
| | 12/01/2025 | \$50.75 | \$9.65 | \$18.40 | \$0.00 | \$78.80 |
| | 06/01/2026 | \$52.30 | \$9.65 | \$18.40 | \$0.00 | \$80.35 |
| | 12/07/2026 | \$53.80 | \$9.65 | \$18.40 | \$0.00 | \$81.85 |
| | 06/07/2027 | \$55.40 | \$9.65 | \$18.40 | \$0.00 | \$83.45 |
| | 12/06/2027 | \$57.00 | \$9.65 | \$18.40 | \$0.00 | \$85.05 |
| | 06/05/2028 | \$58.68 | \$9.65 | \$18.40 | \$0.00 | \$86.73 |
| | 12/04/2028 | \$60.35 | \$9.65 | \$18.40 | \$0.00 | \$88.40 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|--|------------|---------|--------|---------|--------|---------|
| DEMO: CONCRETE CUTTER/SAWYER <i>LABORERS - ZONE 2</i> | 06/10/2024 | \$46.53 | \$9.65 | \$18.40 | \$0.00 | \$74.58 |
| | 12/02/2024 | \$48.00 | \$9.65 | \$18.40 | \$0.00 | \$76.05 |
| | 06/02/2025 | \$49.50 | \$9.65 | \$18.40 | \$0.00 | \$77.55 |
| | 12/01/2025 | \$51.00 | \$9.65 | \$18.40 | \$0.00 | \$79.05 |
| | 06/01/2026 | \$52.55 | \$9.65 | \$18.40 | \$0.00 | \$80.60 |
| | 12/07/2026 | \$54.05 | \$9.65 | \$18.40 | \$0.00 | \$82.10 |
| | 06/07/2027 | \$55.65 | \$9.65 | \$18.40 | \$0.00 | \$83.70 |
| | 12/06/2027 | \$57.25 | \$9.65 | \$18.40 | \$0.00 | \$85.30 |
| | 06/05/2028 | \$58.93 | \$9.65 | \$18.40 | \$0.00 | \$86.98 |
| | 12/04/2028 | \$60.60 | \$9.65 | \$18.40 | \$0.00 | \$88.65 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|---|------------|---------|--------|---------|--------|---------|
| DEMO: JACKHAMMER OPERATOR <i>LABORERS - ZONE 2</i> | 06/10/2024 | \$46.28 | \$9.65 | \$18.40 | \$0.00 | \$74.33 |
| | 12/02/2024 | \$47.75 | \$9.65 | \$18.40 | \$0.00 | \$75.80 |
| | 06/02/2025 | \$49.25 | \$9.65 | \$18.40 | \$0.00 | \$77.30 |
| | 12/01/2025 | \$50.75 | \$9.65 | \$18.40 | \$0.00 | \$78.80 |
| | 06/01/2026 | \$52.30 | \$9.65 | \$18.40 | \$0.00 | \$80.35 |
| | 12/07/2026 | \$53.80 | \$9.65 | \$18.40 | \$0.00 | \$81.85 |
| | 06/07/2027 | \$55.40 | \$9.65 | \$18.40 | \$0.00 | \$83.45 |
| | 12/06/2027 | \$57.00 | \$9.65 | \$18.40 | \$0.00 | \$85.05 |
| | 06/05/2028 | \$58.68 | \$9.65 | \$18.40 | \$0.00 | \$86.73 |
| | 12/04/2028 | \$60.35 | \$9.65 | \$18.40 | \$0.00 | \$88.40 |

For apprentice rates see "Apprentice- LABORER"

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|--|--|-----------|---------|---------|---------------------------|------------|
| DEMO: WRECKING LABORER <i>LABORERS - ZONE 2</i> | 06/10/2024 | \$45.53 | \$9.65 | \$18.40 | \$0.00 | \$73.58 |
| | 12/02/2024 | \$47.00 | \$9.65 | \$18.40 | \$0.00 | \$75.05 |
| | 06/02/2025 | \$48.50 | \$9.65 | \$18.40 | \$0.00 | \$76.55 |
| | 12/01/2025 | \$50.00 | \$9.65 | \$18.40 | \$0.00 | \$78.05 |
| | 06/01/2026 | \$51.55 | \$9.65 | \$18.40 | \$0.00 | \$79.60 |
| | 12/07/2026 | \$53.05 | \$9.65 | \$18.40 | \$0.00 | \$81.10 |
| | 06/07/2027 | \$54.65 | \$9.65 | \$18.40 | \$0.00 | \$82.70 |
| | 12/06/2027 | \$56.25 | \$9.65 | \$18.40 | \$0.00 | \$84.30 |
| | 06/05/2028 | \$57.93 | \$9.65 | \$18.40 | \$0.00 | \$85.98 |
| | 12/04/2028 | \$59.60 | \$9.65 | \$18.40 | \$0.00 | \$87.65 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| DIRECTIONAL DRILL MACHINE OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2024 | \$55.41 | \$15.30 | \$16.40 | \$0.00 | \$87.11 |
| | 12/01/2024 | \$56.85 | \$15.30 | \$16.40 | \$0.00 | \$88.55 |
| | 06/01/2025 | \$58.13 | \$15.30 | \$16.40 | \$0.00 | \$89.83 |
| | 12/01/2025 | \$59.57 | \$15.30 | \$16.40 | \$0.00 | \$91.27 |
| | 06/01/2026 | \$60.85 | \$15.30 | \$16.40 | \$0.00 | \$92.55 |
| | 12/01/2026 | \$62.29 | \$15.30 | \$16.40 | \$0.00 | \$93.99 |
| | For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | |
| DIVER <i>PILE DRIVER LOCAL 56 (ZONE 2)</i> | 08/01/2020 | \$68.70 | \$9.40 | \$23.12 | \$0.00 | \$101.22 |
| For apprentice rates see "Apprentice- PILE DRIVER" | | | | | | |
| DIVER TENDER <i>PILE DRIVER LOCAL 56 (ZONE 2)</i> | 08/01/2020 | \$49.07 | \$9.40 | \$23.12 | \$0.00 | \$81.59 |
| For apprentice rates see "Apprentice- PILE DRIVER" | | | | | | |
| DIVER TENDER (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 2)</i> | 08/01/2020 | \$73.60 | \$9.40 | \$23.12 | \$0.00 | \$106.12 |
| For apprentice rates see "Apprentice- PILE DRIVER" | | | | | | |
| DIVER/SLURRY (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 2)</i> | 08/01/2020 | \$103.05 | \$9.40 | \$23.12 | \$0.00 | \$135.57 |
| For apprentice rates see "Apprentice- PILE DRIVER" | | | | | | |
| DRAWBRIDGE OPERATOR (Construction) <i>DRAWBRIDGE - SEIU LOCAL 888</i> | 07/01/2020 | \$26.77 | \$6.67 | \$3.93 | \$0.16 | \$37.53 |
| ELECTRICIAN <i>ELECTRICIANS LOCAL 96</i> | 09/01/2024 | \$47.05 | \$13.99 | \$19.22 | \$0.00 | \$80.26 |
| | 09/07/2025 | \$48.16 | \$14.98 | \$19.60 | \$0.00 | \$82.74 |
| | 09/06/2026 | \$49.38 | \$15.96 | \$20.00 | \$0.00 | \$85.34 |

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - ELECTRICIAN - Local 96

Effective Date - 09/01/2024

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 40 | \$18.82 | \$13.99 | \$0.56 | \$0.00 | \$33.37 |
| 2 | 45 | \$21.17 | \$13.99 | \$0.64 | \$0.00 | \$35.80 |
| 3 | 48 | \$22.58 | \$13.99 | \$15.79 | \$0.00 | \$52.36 |
| 4 | 55 | \$25.88 | \$13.99 | \$16.26 | \$0.00 | \$56.13 |
| 5 | 65 | \$30.58 | \$13.99 | \$16.91 | \$0.00 | \$61.48 |
| 6 | 80 | \$37.64 | \$13.99 | \$17.90 | \$0.00 | \$69.53 |

Effective Date - 09/07/2025

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 40 | \$19.26 | \$14.98 | \$0.58 | \$0.00 | \$34.82 |
| 2 | 45 | \$21.67 | \$14.98 | \$0.65 | \$0.00 | \$37.30 |
| 3 | 48 | \$23.12 | \$14.98 | \$16.09 | \$0.00 | \$54.19 |
| 4 | 55 | \$26.49 | \$14.98 | \$16.57 | \$0.00 | \$58.04 |
| 5 | 65 | \$31.30 | \$14.98 | \$17.25 | \$0.00 | \$63.53 |
| 6 | 80 | \$38.53 | \$14.98 | \$18.26 | \$0.00 | \$71.77 |

Notes:

Steps 1-2 are 1000 hrs; Steps 3-6 are 1500 hrs.

Apprentice to Journeyworker Ratio:2:3***

| | | | | | | |
|--------------------------------|------------|---------|---------|---------|--------|----------|
| ELEVATOR CONSTRUCTOR | 01/01/2024 | \$61.98 | \$16.18 | \$20.96 | \$0.00 | \$99.12 |
| ELEVATOR CONSTRUCTORS LOCAL 41 | 01/01/2025 | \$62.83 | \$16.28 | \$21.36 | \$0.00 | \$100.47 |
| | 01/01/2026 | \$63.68 | \$16.38 | \$21.76 | \$0.00 | \$101.82 |
| | 01/01/2027 | \$64.53 | \$16.48 | \$22.16 | \$0.00 | \$103.17 |

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - ELEVATOR CONSTRUCTOR - Local 41

Effective Date - 01/01/2024

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$30.99 | \$16.18 | \$0.00 | \$0.00 | \$47.17 |
| 2 | 55 | \$34.09 | \$16.18 | \$20.96 | \$0.00 | \$71.23 |
| 3 | 65 | \$40.29 | \$16.18 | \$20.96 | \$0.00 | \$77.43 |
| 4 | 70 | \$43.39 | \$16.18 | \$20.96 | \$0.00 | \$80.53 |
| 5 | 80 | \$49.58 | \$16.18 | \$20.96 | \$0.00 | \$86.72 |

Effective Date - 01/01/2025

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$31.42 | \$16.28 | \$0.00 | \$0.00 | \$47.70 |
| 2 | 55 | \$34.56 | \$16.28 | \$21.36 | \$0.00 | \$72.20 |
| 3 | 65 | \$40.84 | \$16.28 | \$21.36 | \$0.00 | \$78.48 |
| 4 | 70 | \$43.98 | \$16.28 | \$21.36 | \$0.00 | \$81.62 |
| 5 | 80 | \$50.26 | \$16.28 | \$21.36 | \$0.00 | \$87.90 |

Notes:

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

Apprentice to Journeyworker Ratio:1:1

| | | | | | | |
|--|------------|---------|---------|---------|--------|---------|
| ELEVATOR CONSTRUCTOR HELPER <i>ELEVATOR CONSTRUCTORS LOCAL 41</i> | 01/01/2024 | \$43.39 | \$16.18 | \$20.96 | \$0.00 | \$80.53 |
| | 01/01/2025 | \$43.98 | \$16.28 | \$21.36 | \$0.00 | \$81.62 |
| | 01/01/2026 | \$44.58 | \$16.38 | \$21.76 | \$0.00 | \$82.72 |
| | 01/01/2027 | \$45.17 | \$16.48 | \$22.16 | \$0.00 | \$83.81 |

For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"

| | | | | | | |
|--|------------|---------|--------|---------|--------|---------|
| FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i> | 06/01/2024 | \$38.78 | \$9.65 | \$17.80 | \$0.00 | \$66.23 |
| | 12/01/2024 | \$40.11 | \$9.65 | \$17.80 | \$0.00 | \$67.56 |
| | 06/01/2025 | \$41.50 | \$9.65 | \$17.80 | \$0.00 | \$68.95 |
| | 12/01/2025 | \$42.88 | \$9.65 | \$17.80 | \$0.00 | \$70.33 |
| | 06/01/2026 | \$44.32 | \$9.65 | \$17.80 | \$0.00 | \$71.77 |
| | 12/01/2026 | \$45.76 | \$9.65 | \$17.80 | \$0.00 | \$73.21 |

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

| | | | | | | |
|---|------------|---------|---------|---------|--------|---------|
| FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i> | 05/01/2024 | \$50.79 | \$15.00 | \$16.40 | \$0.00 | \$82.19 |
| | 11/01/2024 | \$52.08 | \$15.00 | \$16.40 | \$0.00 | \$83.48 |
| | 05/01/2025 | \$53.52 | \$15.00 | \$16.40 | \$0.00 | \$84.92 |
| | 11/01/2025 | \$54.81 | \$15.00 | \$16.40 | \$0.00 | \$86.21 |
| | 05/01/2026 | \$56.25 | \$15.00 | \$16.40 | \$0.00 | \$87.65 |
| | 11/01/2026 | \$57.54 | \$15.00 | \$16.40 | \$0.00 | \$88.94 |
| | 05/01/2027 | \$58.97 | \$15.00 | \$16.40 | \$0.00 | \$90.37 |

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|--|----------------|-----------|---------|---------|---------------------------|------------|
| FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i> | 05/01/2024 | \$52.37 | \$15.00 | \$16.40 | \$0.00 | \$83.77 |
| | 11/01/2024 | \$53.67 | \$15.00 | \$16.40 | \$0.00 | \$85.07 |
| | 05/01/2025 | \$55.12 | \$15.00 | \$16.40 | \$0.00 | \$86.52 |
| | 11/01/2025 | \$56.42 | \$15.00 | \$16.40 | \$0.00 | \$87.82 |
| | 05/01/2026 | \$57.87 | \$15.00 | \$16.40 | \$0.00 | \$89.27 |
| | 11/01/2026 | \$59.17 | \$15.00 | \$16.40 | \$0.00 | \$90.57 |
| | 05/01/2027 | \$60.62 | \$15.00 | \$16.40 | \$0.00 | \$92.02 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i> | 05/01/2024 | \$24.91 | \$15.00 | \$16.40 | \$0.00 | \$56.31 |
| | 11/01/2024 | \$25.67 | \$15.00 | \$16.40 | \$0.00 | \$57.07 |
| | 05/01/2025 | \$26.52 | \$15.00 | \$16.40 | \$0.00 | \$57.92 |
| | 11/01/2025 | \$27.28 | \$15.00 | \$16.40 | \$0.00 | \$58.68 |
| | 05/01/2026 | \$28.13 | \$15.00 | \$16.40 | \$0.00 | \$59.53 |
| | 11/01/2026 | \$28.89 | \$15.00 | \$16.40 | \$0.00 | \$60.29 |
| | 05/01/2027 | \$29.74 | \$15.00 | \$16.40 | \$0.00 | \$61.14 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| FIRE ALARM INSTALLER <i>ELECTRICIANS LOCAL 96</i> | 09/01/2024 | \$47.05 | \$13.99 | \$19.22 | \$0.00 | \$80.26 |
| | 09/07/2025 | \$48.16 | \$14.98 | \$19.60 | \$0.00 | \$82.74 |
| | 09/06/2026 | \$49.38 | \$15.96 | \$20.00 | \$0.00 | \$85.34 |
| For apprentice rates see "Apprentice- ELECTRICIAN" | | | | | | |
| FIRE ALARM REPAIR / MAINT/COMMISSIONING <i>ELECTRICIANS LOCAL 96</i> | 09/01/2024 | \$47.05 | \$13.99 | \$19.22 | \$0.00 | \$80.26 |
| | 09/07/2025 | \$48.16 | \$14.98 | \$19.60 | \$0.00 | \$82.74 |
| | 09/06/2026 | \$49.38 | \$15.96 | \$20.00 | \$0.00 | \$85.34 |
| For apprentice rates see "Apprentice- ELECTRICIAN" | | | | | | |
| FIREMAN (ASST. ENGINEER) <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2024 | \$45.23 | \$15.30 | \$16.40 | \$0.00 | \$76.93 |
| | 12/01/2024 | \$46.41 | \$15.30 | \$16.40 | \$0.00 | \$78.11 |
| | 06/01/2025 | \$47.47 | \$15.30 | \$16.40 | \$0.00 | \$79.17 |
| | 12/01/2025 | \$48.64 | \$15.30 | \$16.40 | \$0.00 | \$80.34 |
| | 06/01/2026 | \$49.70 | \$15.30 | \$16.40 | \$0.00 | \$81.40 |
| | 12/01/2026 | \$50.88 | \$15.30 | \$16.40 | \$0.00 | \$82.58 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| FLAGGER & SIGNALER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i> | 06/01/2024 | \$27.01 | \$9.65 | \$17.80 | \$0.00 | \$54.46 |
| | 12/01/2024 | \$27.01 | \$9.65 | \$17.80 | \$0.00 | \$54.46 |
| | 06/01/2025 | \$28.09 | \$9.65 | \$17.80 | \$0.00 | \$55.54 |
| | 12/01/2025 | \$28.09 | \$9.65 | \$17.80 | \$0.00 | \$55.54 |
| | 06/01/2026 | \$29.21 | \$9.65 | \$17.80 | \$0.00 | \$56.66 |
| | 12/01/2026 | \$29.21 | \$9.65 | \$17.80 | \$0.00 | \$56.66 |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway)" | | | | | | |
| FLOORCOVERER <i>FLOORCOVERERS LOCAL 2168 ZONE II</i> | 03/01/2024 | \$49.47 | \$8.83 | \$20.27 | \$0.00 | \$78.57 |

Apprentice - FLOORCOVERER - Local 2168 Zone II

Effective Date - 03/01/2024

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 50 | \$24.74 | \$8.83 | \$1.76 | \$0.00 | \$35.33 |
| 2 | 55 | \$27.21 | \$8.83 | \$1.76 | \$0.00 | \$37.80 |
| 3 | 60 | \$29.68 | \$8.83 | \$3.52 | \$0.00 | \$42.03 |
| 4 | 65 | \$32.16 | \$8.83 | \$3.52 | \$0.00 | \$44.51 |
| 5 | 70 | \$34.63 | \$8.83 | \$16.75 | \$0.00 | \$60.21 |
| 6 | 75 | \$37.10 | \$8.83 | \$16.75 | \$0.00 | \$62.68 |
| 7 | 80 | \$39.58 | \$8.83 | \$18.51 | \$0.00 | \$66.92 |
| 8 | 85 | \$42.05 | \$8.83 | \$18.51 | \$0.00 | \$69.39 |

Notes: Steps are 750 hrs.
 % After 10/1/17; 45/45/55/55/70/70/80/80 (1500hr Steps)
 Step 1&2 \$32.63/ 3&4 \$39.28/ 5&6 \$59.86/ 7&8 \$66.52

Apprentice to Journeyworker Ratio:1:1

| | | | | | | |
|--|------------|---------|---------|---------|--------|---------|
| FORK LIFT/CHERRY PICKER <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2024 | \$56.03 | \$15.30 | \$16.40 | \$0.00 | \$87.73 |
| | 12/01/2024 | \$57.48 | \$15.30 | \$16.40 | \$0.00 | \$89.18 |
| | 06/01/2025 | \$58.78 | \$15.30 | \$16.40 | \$0.00 | \$90.48 |
| | 12/01/2025 | \$60.23 | \$15.30 | \$16.40 | \$0.00 | \$91.93 |
| | 06/01/2026 | \$61.53 | \$15.30 | \$16.40 | \$0.00 | \$93.23 |
| | 12/01/2026 | \$62.98 | \$15.30 | \$16.40 | \$0.00 | \$94.68 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| GENERATOR/LIGHTING PLANT/HEATERS <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2024 | \$36.17 | \$15.30 | \$16.40 | \$0.00 | \$67.87 |
| | 12/01/2024 | \$37.12 | \$15.30 | \$16.40 | \$0.00 | \$68.82 |
| | 06/01/2025 | \$37.97 | \$15.30 | \$16.40 | \$0.00 | \$69.67 |
| | 12/01/2025 | \$38.92 | \$15.30 | \$16.40 | \$0.00 | \$70.62 |
| | 06/01/2026 | \$39.78 | \$15.30 | \$16.40 | \$0.00 | \$71.48 |
| | 12/01/2026 | \$40.73 | \$15.30 | \$16.40 | \$0.00 | \$72.43 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) <i>GLAZIERS LOCAL 35 (ZONE 2)</i> | 07/01/2024 | \$46.76 | \$9.95 | \$23.95 | \$0.00 | \$80.66 |
| | 01/01/2025 | \$47.96 | \$9.95 | \$23.95 | \$0.00 | \$81.86 |

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - GLAZIER - Local 35 Zone 2

Effective Date - 07/01/2024

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

Effective Date - 01/01/2025

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

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

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

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - OPERATING ENGINEERS - Local 4

Effective Date - 06/01/2024

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

Effective Date - 12/01/2024

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

Notes:

Apprentice to Journeyworker Ratio:1:6

| | | | | | | |
|--|------------|---------|---------|---------|--------|---------|
| HVAC (DUCTWORK) SHEETMETAL WORKERS LOCAL 63 | 07/01/2024 | \$40.98 | \$12.20 | \$18.74 | \$2.13 | \$74.05 |
| | 01/01/2025 | \$42.23 | \$12.20 | \$18.74 | \$2.13 | \$75.30 |

For apprentice rates see "Apprentice- SHEET METAL WORKER"

| | | | | | | |
|---|------------|---------|---------|---------|--------|---------|
| HVAC (ELECTRICAL CONTROLS) ELECTRICIANS LOCAL 96 | 09/01/2024 | \$47.05 | \$13.99 | \$19.22 | \$0.00 | \$80.26 |
| | 09/07/2025 | \$48.16 | \$14.98 | \$19.60 | \$0.00 | \$82.74 |
| | 09/06/2026 | \$49.38 | \$15.96 | \$20.00 | \$0.00 | \$85.34 |

For apprentice rates see "Apprentice- ELECTRICIAN"

| | | | | | | |
|---|------------|---------|---------|---------|--------|---------|
| HVAC (TESTING AND BALANCING - AIR) SHEETMETAL WORKERS LOCAL 63 | 07/01/2024 | \$40.98 | \$12.20 | \$18.74 | \$2.13 | \$74.05 |
| | 01/01/2025 | \$42.23 | \$12.20 | \$18.74 | \$2.13 | \$75.30 |

For apprentice rates see "Apprentice- SHEET METAL WORKER"

| | | | | | | |
|---|------------|---------|--------|---------|--------|---------|
| HVAC (TESTING AND BALANCING -WATER) PLUMBERS LOCAL 4 | 09/01/2024 | \$55.35 | \$9.90 | \$17.42 | \$0.00 | \$82.67 |
| | 03/01/2025 | \$56.75 | \$9.90 | \$17.42 | \$0.00 | \$84.07 |
| | 09/01/2025 | \$58.15 | \$9.90 | \$17.42 | \$0.00 | \$85.47 |
| | 03/01/2026 | \$59.55 | \$9.90 | \$17.42 | \$0.00 | \$86.87 |

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

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|--|----------------|-----------|---------|---------|---------------------------|------------|
| HVAC MECHANIC <i>PLUMBERS LOCAL 4</i> | 09/01/2024 | \$55.35 | \$9.90 | \$17.42 | \$0.00 | \$82.67 |
| | 03/01/2025 | \$56.75 | \$9.90 | \$17.42 | \$0.00 | \$84.07 |
| | 09/01/2025 | \$58.15 | \$9.90 | \$17.42 | \$0.00 | \$85.47 |
| | 03/01/2026 | \$59.55 | \$9.90 | \$17.42 | \$0.00 | \$86.87 |
| For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER" | | | | | | |
| HYDRAULIC DRILLS <i>LABORERS - ZONE 2</i> | 06/01/2024 | \$39.28 | \$9.65 | \$18.40 | \$0.00 | \$67.33 |
| | 12/01/2024 | \$40.61 | \$9.65 | \$18.40 | \$0.00 | \$68.66 |
| | 06/01/2025 | \$42.00 | \$9.65 | \$18.40 | \$0.00 | \$70.05 |
| | 12/01/2025 | \$43.38 | \$9.65 | \$18.40 | \$0.00 | \$71.43 |
| | 06/01/2026 | \$44.82 | \$9.65 | \$18.40 | \$0.00 | \$72.87 |
| | 12/01/2026 | \$46.26 | \$9.65 | \$18.40 | \$0.00 | \$74.31 |
| | 06/01/2027 | \$47.71 | \$9.65 | \$18.40 | \$0.00 | \$75.76 |
| | 12/01/2027 | \$49.16 | \$9.65 | \$18.40 | \$0.00 | \$77.21 |
| | 06/01/2028 | \$50.66 | \$9.65 | \$18.40 | \$0.00 | \$78.71 |
| | 12/01/2028 | \$52.16 | \$9.65 | \$18.40 | \$0.00 | \$80.21 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| HYDRAULIC DRILLS (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i> | 06/01/2024 | \$39.28 | \$9.65 | \$17.80 | \$0.00 | \$66.73 |
| | 12/01/2024 | \$40.61 | \$9.65 | \$17.80 | \$0.00 | \$68.06 |
| | 06/01/2025 | \$42.00 | \$9.65 | \$17.80 | \$0.00 | \$69.45 |
| | 12/01/2025 | \$43.38 | \$9.65 | \$17.80 | \$0.00 | \$70.83 |
| | 06/01/2026 | \$44.82 | \$9.65 | \$17.80 | \$0.00 | \$72.27 |
| | 12/01/2026 | \$46.26 | \$9.65 | \$17.80 | \$0.00 | \$73.71 |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway)" | | | | | | |
| INSULATOR (PIPES & TANKS) <i>HEAT & FROST INSULATORS LOCAL 6 (WORCESTER)</i> | 09/01/2024 | \$51.23 | \$14.75 | \$19.61 | \$0.00 | \$85.59 |
| | 09/01/2025 | \$54.31 | \$14.75 | \$19.61 | \$0.00 | \$88.67 |
| | 09/01/2026 | \$57.38 | \$14.75 | \$19.61 | \$0.00 | \$91.74 |

Apprentice - ASBESTOS INSULATOR (Pipes & Tanks) - Local 6 Worcester

Effective Date - 09/01/2024

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$25.62 | \$14.75 | \$14.32 | \$0.00 | \$54.69 |
| 2 | 60 | \$30.74 | \$14.75 | \$15.37 | \$0.00 | \$60.86 |
| 3 | 70 | \$35.86 | \$14.75 | \$16.43 | \$0.00 | \$67.04 |
| 4 | 80 | \$40.98 | \$14.75 | \$17.49 | \$0.00 | \$73.22 |

Effective Date - 09/01/2025

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$27.16 | \$14.75 | \$14.32 | \$0.00 | \$56.23 |
| 2 | 60 | \$32.59 | \$14.75 | \$15.37 | \$0.00 | \$62.71 |
| 3 | 70 | \$38.02 | \$14.75 | \$16.43 | \$0.00 | \$69.20 |
| 4 | 80 | \$43.45 | \$14.75 | \$17.49 | \$0.00 | \$75.69 |

Notes:

Steps are 1 year

Apprentice to Journeyworker Ratio:1:4

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|--|----------------|-----------|--------|---------|---------------------------|------------|
| IRONWORKER/WELDER <i>IRONWORKERS LOCAL 7 (WORCESTER AREA)</i> | 03/16/2024 | \$53.67 | \$8.35 | \$26.70 | \$0.00 | \$88.72 |

Apprentice - IRONWORKER - Local 7 Worcester

Effective Date - 03/16/2024

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 60 | \$32.20 | \$8.35 | \$26.70 | \$0.00 | \$67.25 |
| 2 | 70 | \$37.57 | \$8.35 | \$26.70 | \$0.00 | \$72.62 |
| 3 | 75 | \$40.25 | \$8.35 | \$26.70 | \$0.00 | \$75.30 |
| 4 | 80 | \$42.94 | \$8.35 | \$26.70 | \$0.00 | \$77.99 |
| 5 | 85 | \$45.62 | \$8.35 | \$26.70 | \$0.00 | \$80.67 |
| 6 | 90 | \$48.30 | \$8.35 | \$26.70 | \$0.00 | \$83.35 |

Notes:

Apprentice to Journeyworker Ratio:1:4

| | | | | | | |
|--|------------|---------|--------|---------|--------|---------|
| JACKHAMMER & PAVING BREAKER OPERATOR <i>LABORERS - ZONE 2</i> | 06/01/2024 | \$38.78 | \$9.65 | \$18.40 | \$0.00 | \$66.83 |
| | 12/01/2024 | \$40.11 | \$9.65 | \$18.40 | \$0.00 | \$68.16 |
| | 06/01/2025 | \$41.50 | \$9.65 | \$18.40 | \$0.00 | \$69.55 |
| | 12/01/2025 | \$42.88 | \$9.65 | \$18.40 | \$0.00 | \$70.93 |
| | 06/01/2026 | \$44.32 | \$9.65 | \$18.40 | \$0.00 | \$72.37 |
| | 12/01/2026 | \$45.76 | \$9.65 | \$18.40 | \$0.00 | \$73.81 |
| | 06/01/2027 | \$47.21 | \$9.65 | \$18.40 | \$0.00 | \$75.26 |
| | 12/01/2027 | \$48.66 | \$9.65 | \$18.40 | \$0.00 | \$76.71 |
| | 06/01/2028 | \$50.16 | \$9.65 | \$18.40 | \$0.00 | \$78.21 |
| | 12/01/2028 | \$51.66 | \$9.65 | \$18.40 | \$0.00 | \$79.71 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|-------------------------------------|------------|---------|--------|---------|--------|---------|
| LABORER <i>LABORERS - ZONE 2</i> | 06/01/2024 | \$38.53 | \$9.65 | \$18.40 | \$0.00 | \$66.58 |
| | 12/01/2024 | \$39.86 | \$9.65 | \$18.40 | \$0.00 | \$67.91 |
| | 06/01/2025 | \$41.25 | \$9.65 | \$18.40 | \$0.00 | \$69.30 |
| | 12/01/2025 | \$42.63 | \$9.65 | \$18.40 | \$0.00 | \$70.68 |
| | 06/01/2026 | \$44.07 | \$9.65 | \$18.40 | \$0.00 | \$72.12 |
| | 12/01/2026 | \$45.51 | \$9.65 | \$18.40 | \$0.00 | \$73.56 |
| | 06/01/2027 | \$46.96 | \$9.65 | \$18.40 | \$0.00 | \$75.01 |
| | 12/01/2027 | \$48.41 | \$9.65 | \$18.40 | \$0.00 | \$76.46 |
| | 06/01/2028 | \$49.91 | \$9.65 | \$18.40 | \$0.00 | \$77.96 |
| | 12/01/2028 | \$51.41 | \$9.65 | \$18.40 | \$0.00 | \$79.46 |

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - LABORER - Zone 2

Effective Date - 06/01/2024

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 60 | \$23.12 | \$9.65 | \$18.40 | \$0.00 | \$51.17 |
| 2 | 70 | \$26.97 | \$9.65 | \$18.40 | \$0.00 | \$55.02 |
| 3 | 80 | \$30.82 | \$9.65 | \$18.40 | \$0.00 | \$58.87 |
| 4 | 90 | \$34.68 | \$9.65 | \$18.40 | \$0.00 | \$62.73 |

Effective Date - 12/01/2024

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 60 | \$23.92 | \$9.65 | \$18.40 | \$0.00 | \$51.97 |
| 2 | 70 | \$27.90 | \$9.65 | \$18.40 | \$0.00 | \$55.95 |
| 3 | 80 | \$31.89 | \$9.65 | \$18.40 | \$0.00 | \$59.94 |
| 4 | 90 | \$35.87 | \$9.65 | \$18.40 | \$0.00 | \$63.92 |

Notes:

Apprentice to Journeyworker Ratio:1:5

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

Apprentice - LABORER (Heavy & Highway) - Zone 2

Effective Date - 06/01/2024

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

Effective Date - 12/01/2024

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

Notes:

Apprentice to Journeyworker Ratio:1:5

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|---|----------------|-----------|--------|---------|---------------------------|------------|
| LABORER: CARPENTER TENDER <i>LABORERS - ZONE 2</i> | 06/01/2024 | \$38.53 | \$9.65 | \$18.40 | \$0.00 | \$66.58 |
| | 12/01/2024 | \$39.86 | \$9.65 | \$18.40 | \$0.00 | \$67.91 |
| | 06/01/2025 | \$41.25 | \$9.65 | \$18.40 | \$0.00 | \$69.30 |
| | 12/01/2025 | \$42.63 | \$9.65 | \$18.40 | \$0.00 | \$70.68 |
| | 06/01/2026 | \$44.07 | \$9.65 | \$18.40 | \$0.00 | \$72.12 |
| | 12/01/2026 | \$45.51 | \$9.65 | \$18.40 | \$0.00 | \$73.56 |
| | 06/01/2027 | \$46.96 | \$9.65 | \$18.40 | \$0.00 | \$75.01 |
| | 12/01/2027 | \$48.41 | \$9.65 | \$18.40 | \$0.00 | \$76.46 |
| | 06/01/2028 | \$49.91 | \$9.65 | \$18.40 | \$0.00 | \$77.96 |
| | 12/01/2028 | \$51.41 | \$9.65 | \$18.40 | \$0.00 | \$79.46 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|---|------------|---------|--------|---------|--------|---------|
| LABORER: CEMENT FINISHER TENDER <i>LABORERS - ZONE 2</i> | 06/01/2024 | \$38.53 | \$9.65 | \$18.40 | \$0.00 | \$66.58 |
| | 12/01/2024 | \$39.86 | \$9.65 | \$18.40 | \$0.00 | \$67.91 |
| | 06/01/2025 | \$41.25 | \$9.65 | \$18.40 | \$0.00 | \$69.30 |
| | 12/01/2025 | \$42.63 | \$9.65 | \$18.40 | \$0.00 | \$70.68 |
| | 06/01/2026 | \$44.07 | \$9.65 | \$18.40 | \$0.00 | \$72.12 |
| | 12/01/2026 | \$45.51 | \$9.65 | \$18.40 | \$0.00 | \$73.56 |
| | 06/01/2027 | \$46.96 | \$9.65 | \$18.40 | \$0.00 | \$75.01 |
| | 12/01/2027 | \$48.41 | \$9.65 | \$18.40 | \$0.00 | \$76.46 |
| | 06/01/2028 | \$49.91 | \$9.65 | \$18.40 | \$0.00 | \$77.96 |
| | 12/01/2028 | \$51.41 | \$9.65 | \$18.40 | \$0.00 | \$79.46 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|---|------------|---------|--------|---------|--------|---------|
| LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER <i>LABORERS - ZONE 2</i> | 06/03/2024 | \$38.62 | \$9.65 | \$17.76 | \$0.00 | \$66.03 |
| | 12/02/2024 | \$39.95 | \$9.65 | \$17.76 | \$0.00 | \$67.36 |
| | 06/02/2025 | \$41.34 | \$9.65 | \$17.76 | \$0.00 | \$68.75 |
| | 12/01/2025 | \$42.72 | \$9.65 | \$17.76 | \$0.00 | \$70.13 |
| | 06/01/2026 | \$44.16 | \$9.65 | \$17.76 | \$0.00 | \$71.57 |
| | 12/07/2026 | \$45.60 | \$9.65 | \$17.76 | \$0.00 | \$73.01 |
| | 06/07/2027 | \$47.05 | \$9.65 | \$17.76 | \$0.00 | \$74.46 |
| | 12/06/2027 | \$48.50 | \$9.65 | \$17.76 | \$0.00 | \$75.91 |
| | 06/05/2028 | \$50.00 | \$9.65 | \$17.76 | \$0.00 | \$77.41 |
| | 12/04/2028 | \$51.50 | \$9.65 | \$17.76 | \$0.00 | \$78.91 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|---|------------|---------|--------|---------|--------|---------|
| LABORER: MASON TENDER <i>LABORERS - ZONE 2</i> | 06/01/2024 | \$38.78 | \$9.65 | \$18.40 | \$0.00 | \$66.83 |
| | 12/01/2024 | \$40.11 | \$9.65 | \$18.40 | \$0.00 | \$68.16 |
| | 06/01/2025 | \$41.50 | \$9.65 | \$18.40 | \$0.00 | \$69.55 |
| | 12/01/2025 | \$42.88 | \$9.65 | \$18.40 | \$0.00 | \$70.93 |
| | 06/01/2026 | \$44.32 | \$9.65 | \$18.40 | \$0.00 | \$72.37 |
| | 12/01/2026 | \$45.76 | \$9.65 | \$18.40 | \$0.00 | \$73.81 |
| | 06/01/2027 | \$47.21 | \$9.65 | \$18.40 | \$0.00 | \$75.26 |
| | 12/01/2027 | \$48.66 | \$9.65 | \$18.40 | \$0.00 | \$76.71 |
| | 06/01/2028 | \$50.16 | \$9.65 | \$18.40 | \$0.00 | \$78.21 |
| | 12/01/2028 | \$51.66 | \$9.65 | \$18.40 | \$0.00 | \$79.71 |

For apprentice rates see "Apprentice- LABORER"

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|--|----------------|-----------|---------|---------|---------------------------|------------|
| LABORER: MASON TENDER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i> | 06/01/2024 | \$38.78 | \$9.65 | \$17.80 | \$0.00 | \$66.23 |
| | 12/01/2024 | \$40.11 | \$9.65 | \$17.80 | \$0.00 | \$67.56 |
| | 06/01/2025 | \$41.50 | \$9.65 | \$17.80 | \$0.00 | \$68.95 |
| | 12/01/2025 | \$42.88 | \$9.65 | \$17.80 | \$0.00 | \$70.33 |
| | 06/01/2026 | \$44.32 | \$9.65 | \$17.80 | \$0.00 | \$71.77 |
| | 12/01/2026 | \$45.76 | \$9.65 | \$17.80 | \$0.00 | \$73.21 |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway) | | | | | | |
| LABORER: MULTI-TRADE TENDER <i>LABORERS - ZONE 2</i> | 06/01/2024 | \$38.53 | \$9.65 | \$18.40 | \$0.00 | \$66.58 |
| | 12/01/2024 | \$39.86 | \$9.65 | \$18.40 | \$0.00 | \$67.91 |
| | 06/01/2025 | \$41.25 | \$9.65 | \$18.40 | \$0.00 | \$69.30 |
| | 12/01/2025 | \$42.63 | \$9.65 | \$18.40 | \$0.00 | \$70.68 |
| | 06/01/2026 | \$44.07 | \$9.65 | \$18.40 | \$0.00 | \$72.12 |
| | 12/01/2026 | \$45.51 | \$9.65 | \$18.40 | \$0.00 | \$73.56 |
| | 06/01/2027 | \$46.96 | \$9.65 | \$18.40 | \$0.00 | \$75.01 |
| | 12/01/2027 | \$48.41 | \$9.65 | \$18.40 | \$0.00 | \$76.46 |
| | 06/01/2028 | \$49.91 | \$9.65 | \$18.40 | \$0.00 | \$77.96 |
| 12/01/2028 | \$51.41 | \$9.65 | \$18.40 | \$0.00 | \$79.46 | |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| LABORER: TREE REMOVER <i>LABORERS - ZONE 2</i> | 06/01/2024 | \$38.53 | \$9.65 | \$18.40 | \$0.00 | \$66.58 |
| | 12/01/2024 | \$39.86 | \$9.65 | \$18.40 | \$0.00 | \$67.91 |
| | 06/01/2025 | \$41.25 | \$9.65 | \$18.40 | \$0.00 | \$69.30 |
| | 12/01/2025 | \$42.63 | \$9.65 | \$18.40 | \$0.00 | \$70.68 |
| | 06/01/2026 | \$44.07 | \$9.65 | \$18.40 | \$0.00 | \$72.12 |
| | 12/01/2026 | \$45.51 | \$9.65 | \$18.40 | \$0.00 | \$73.56 |
| | 06/01/2027 | \$46.96 | \$9.65 | \$18.40 | \$0.00 | \$75.01 |
| | 12/01/2027 | \$48.41 | \$9.65 | \$18.40 | \$0.00 | \$76.46 |
| | 06/01/2028 | \$49.91 | \$9.65 | \$18.40 | \$0.00 | \$77.96 |
| 12/01/2028 | \$51.41 | \$9.65 | \$18.40 | \$0.00 | \$79.46 | |
| This classification applies to the removal of standing trees, and the trimming and removal of branches and limbs when related to public works construction or site clearance incidental to construction . For apprentice rates see "Apprentice- LABORER" | | | | | | |
| LASER BEAM OPERATOR <i>LABORERS - ZONE 2</i> | 06/01/2024 | \$38.78 | \$9.65 | \$18.40 | \$0.00 | \$66.83 |
| | 12/01/2024 | \$40.11 | \$9.65 | \$18.40 | \$0.00 | \$68.16 |
| | 06/01/2025 | \$41.50 | \$9.65 | \$18.40 | \$0.00 | \$69.55 |
| | 12/01/2025 | \$42.88 | \$9.65 | \$18.40 | \$0.00 | \$70.93 |
| | 06/01/2026 | \$44.32 | \$9.65 | \$18.40 | \$0.00 | \$72.37 |
| | 12/01/2026 | \$45.76 | \$9.65 | \$18.40 | \$0.00 | \$73.81 |
| | 06/01/2027 | \$47.21 | \$9.65 | \$18.40 | \$0.00 | \$75.26 |
| | 12/01/2027 | \$48.66 | \$9.65 | \$18.40 | \$0.00 | \$76.71 |
| | 06/01/2028 | \$50.16 | \$9.65 | \$18.40 | \$0.00 | \$78.21 |
| 12/01/2028 | \$51.66 | \$9.65 | \$18.40 | \$0.00 | \$79.71 | |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| LASER BEAM OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i> | 06/01/2024 | \$38.78 | \$9.65 | \$17.80 | \$0.00 | \$66.23 |
| | 12/01/2024 | \$40.11 | \$9.65 | \$17.80 | \$0.00 | \$67.56 |
| | 06/01/2025 | \$41.50 | \$9.65 | \$17.80 | \$0.00 | \$68.95 |
| | 12/01/2025 | \$42.88 | \$9.65 | \$17.80 | \$0.00 | \$70.33 |
| | 06/01/2026 | \$44.32 | \$9.65 | \$17.80 | \$0.00 | \$71.77 |
| | 12/01/2026 | \$45.76 | \$9.65 | \$17.80 | \$0.00 | \$73.21 |

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|---|----------------|-----------|---------|---------|---------------------------|------------|
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway) | | | | | | |
| MARBLE & TILE FINISHERS BRICKLAYERS LOCAL 3 - MARBLE & TILE | 08/01/2024 | \$49.32 | \$11.49 | \$21.62 | \$0.00 | \$82.43 |
| | 02/01/2025 | \$50.36 | \$11.49 | \$21.62 | \$0.00 | \$83.47 |
| | 08/01/2025 | \$52.08 | \$11.49 | \$21.62 | \$0.00 | \$85.19 |
| | 02/01/2026 | \$53.16 | \$11.49 | \$21.62 | \$0.00 | \$86.27 |
| | 08/01/2026 | \$54.92 | \$11.49 | \$21.62 | \$0.00 | \$88.03 |
| | 02/01/2027 | \$56.04 | \$11.49 | \$21.62 | \$0.00 | \$89.15 |

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

Effective Date - 08/01/2024

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

Effective Date - 02/01/2025

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$25.18 | \$11.49 | \$21.62 | \$0.00 | \$58.29 |
| 2 | 60 | \$30.22 | \$11.49 | \$21.62 | \$0.00 | \$63.33 |
| 3 | 70 | \$35.25 | \$11.49 | \$21.62 | \$0.00 | \$68.36 |
| 4 | 80 | \$40.29 | \$11.49 | \$21.62 | \$0.00 | \$73.40 |
| 5 | 90 | \$45.32 | \$11.49 | \$21.62 | \$0.00 | \$78.43 |

Notes:

Apprentice to Journeyworker Ratio:1:3

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

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

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

Effective Date - 08/01/2024

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

Effective Date - 02/01/2025

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$32.91 | \$11.49 | \$23.56 | \$0.00 | \$67.96 |
| 2 | 60 | \$39.49 | \$11.49 | \$23.56 | \$0.00 | \$74.54 |
| 3 | 70 | \$46.07 | \$11.49 | \$23.56 | \$0.00 | \$81.12 |
| 4 | 80 | \$52.66 | \$11.49 | \$23.56 | \$0.00 | \$87.71 |
| 5 | 90 | \$59.24 | \$11.49 | \$23.56 | \$0.00 | \$94.29 |

Notes:

Apprentice to Journeyworker Ratio:1:5

| | | | | | | |
|---|------------|---------|---------|---------|--------|---------|
| MECH. SWEEPER OPERATOR (ON CONST. SITES) <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2024 | \$55.41 | \$15.30 | \$16.40 | \$0.00 | \$87.11 |
| | 12/01/2024 | \$56.85 | \$15.30 | \$16.40 | \$0.00 | \$88.55 |
| | 06/01/2025 | \$58.13 | \$15.30 | \$16.40 | \$0.00 | \$89.83 |
| | 12/01/2025 | \$59.57 | \$15.30 | \$16.40 | \$0.00 | \$91.27 |
| | 06/01/2026 | \$60.85 | \$15.30 | \$16.40 | \$0.00 | \$92.55 |
| | 12/01/2026 | \$62.29 | \$15.30 | \$16.40 | \$0.00 | \$93.99 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| MECHANICS MAINTENANCE <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2024 | \$55.41 | \$15.30 | \$16.40 | \$0.00 | \$87.11 |
| | 12/01/2024 | \$56.85 | \$15.30 | \$16.40 | \$0.00 | \$88.55 |
| | 06/01/2025 | \$58.13 | \$15.30 | \$16.40 | \$0.00 | \$89.83 |
| | 12/01/2025 | \$59.57 | \$15.30 | \$16.40 | \$0.00 | \$91.27 |
| | 06/01/2026 | \$60.85 | \$15.30 | \$16.40 | \$0.00 | \$92.55 |
| | 12/01/2026 | \$62.29 | \$15.30 | \$16.40 | \$0.00 | \$93.99 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| MILLWRIGHT (Zone 3) <i>MILLWRIGHTS LOCAL 1121 - Zone 3</i> | 01/01/2024 | \$41.20 | \$10.08 | \$21.22 | \$0.00 | \$72.50 |
| | 01/06/2025 | \$43.48 | \$10.08 | \$21.22 | \$0.00 | \$74.78 |
| | 01/05/2026 | \$45.76 | \$10.08 | \$21.22 | \$0.00 | \$77.06 |

Apprentice - MILLWRIGHT - Local 1121 Zone 3

Effective Date - 01/01/2024

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 55 | \$22.66 | \$10.08 | \$5.36 | \$0.00 | \$38.10 |
| 2 | 65 | \$26.78 | \$10.08 | \$6.34 | \$0.00 | \$43.20 |
| 3 | 75 | \$30.90 | \$10.08 | \$18.78 | \$0.00 | \$59.76 |
| 4 | 85 | \$35.02 | \$10.08 | \$19.76 | \$0.00 | \$64.86 |

Effective Date - 01/06/2025

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 55 | \$23.91 | \$10.08 | \$5.36 | \$0.00 | \$39.35 |
| 2 | 65 | \$28.26 | \$10.08 | \$6.34 | \$0.00 | \$44.68 |
| 3 | 75 | \$32.61 | \$10.08 | \$18.78 | \$0.00 | \$61.47 |
| 4 | 85 | \$36.96 | \$10.08 | \$19.76 | \$0.00 | \$66.80 |

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

Apprentice to Journeyworker Ratio:1:4

| | | | | | | |
|-----------------------------------|------------|---------|--------|---------|--------|---------|
| MORTAR MIXER LABORERS - ZONE 2 | 06/01/2024 | \$38.78 | \$9.65 | \$18.40 | \$0.00 | \$66.83 |
| | 12/01/2024 | \$40.11 | \$9.65 | \$18.40 | \$0.00 | \$68.16 |
| | 06/01/2025 | \$41.50 | \$9.65 | \$18.40 | \$0.00 | \$69.55 |
| | 12/01/2025 | \$42.88 | \$9.65 | \$18.40 | \$0.00 | \$70.93 |
| | 06/01/2026 | \$44.32 | \$9.65 | \$18.40 | \$0.00 | \$72.37 |
| | 12/01/2026 | \$45.76 | \$9.65 | \$18.40 | \$0.00 | \$73.81 |
| | 06/01/2027 | \$47.21 | \$9.65 | \$18.40 | \$0.00 | \$75.26 |
| | 12/01/2027 | \$48.66 | \$9.65 | \$18.40 | \$0.00 | \$76.71 |
| | 06/01/2028 | \$50.16 | \$9.65 | \$18.40 | \$0.00 | \$78.21 |
| | 12/01/2028 | \$51.66 | \$9.65 | \$18.40 | \$0.00 | \$79.71 |

For apprentice rates see "Apprentice- LABORER"

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

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

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

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|---|----------------|-----------|---------|---------|---------------------------|------------|
| OTHER POWER DRIVEN EQUIPMENT - CLASS II <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2024 | \$55.41 | \$15.30 | \$16.40 | \$0.00 | \$87.11 |
| | 12/01/2024 | \$56.85 | \$15.30 | \$16.40 | \$0.00 | \$88.55 |
| | 06/01/2025 | \$58.13 | \$15.30 | \$16.40 | \$0.00 | \$89.83 |
| | 12/01/2025 | \$59.57 | \$15.30 | \$16.40 | \$0.00 | \$91.27 |
| | 06/01/2026 | \$60.85 | \$15.30 | \$16.40 | \$0.00 | \$92.55 |
| | 12/01/2026 | \$62.29 | \$15.30 | \$16.40 | \$0.00 | \$93.99 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| PAINTER (BRIDGES/TANKS) <i>PAINTERS LOCAL 35 - ZONE 2</i> | 07/01/2024 | \$57.26 | \$9.95 | \$23.95 | \$0.00 | \$91.16 |
| | 01/01/2025 | \$58.46 | \$9.95 | \$23.95 | \$0.00 | \$92.36 |

Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 07/01/2024

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

Effective Date - 01/01/2025

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

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

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

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

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

Effective Date - 07/01/2024

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

Effective Date - 01/01/2025

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

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

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

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

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

Effective Date - 07/01/2024

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

Effective Date - 01/01/2025

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

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

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

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER - Local 35 Zone 2 - BRUSH NEW

Effective Date - 07/01/2024

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

Effective Date - 01/01/2025

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

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

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

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER Local 35 Zone 2 - BRUSH REPAINT

Effective Date - 07/01/2024

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

Effective Date - 01/01/2025

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

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

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

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

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

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|---|----------------|-----------|--------|---------|---------------------------|------------|
| PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) <i>PILE DRIVER LOCAL 56 (ZONE 2)</i> For apprentice rates see "Apprentice- PILE DRIVER" | 08/01/2020 | \$46.11 | \$9.40 | \$23.12 | \$0.00 | \$78.63 |
| PILE DRIVER <i>PILE DRIVER LOCAL 56 (ZONE 2)</i> | 08/01/2020 | \$46.11 | \$9.40 | \$23.12 | \$0.00 | \$78.63 |

Apprentice - PILE DRIVER - Local 56 Zone 2

Effective Date - 08/01/2020

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

Notes: Apprentice wages shall be no less than the following Steps;
(Same as set in Zone 1)
1\$57.06/2\$61.96/3\$66.87/4\$69.32/5\$71.78/6\$71.78/7\$76.68/8\$76.68

Apprentice to Journeyworker Ratio:1:5

| | | | | | | |
|---------------------------------------|------------|---------|--------|---------|--------|---------|
| PIPELAYER <i>LABORERS - ZONE 2</i> | 06/01/2024 | \$38.78 | \$9.65 | \$18.40 | \$0.00 | \$66.83 |
| | 12/01/2024 | \$40.11 | \$9.65 | \$18.40 | \$0.00 | \$68.16 |
| | 06/01/2025 | \$41.50 | \$9.65 | \$18.40 | \$0.00 | \$69.55 |
| | 12/01/2025 | \$42.88 | \$9.65 | \$18.40 | \$0.00 | \$70.93 |
| | 06/01/2026 | \$44.32 | \$9.65 | \$18.40 | \$0.00 | \$72.37 |
| | 12/01/2026 | \$45.76 | \$9.65 | \$18.40 | \$0.00 | \$73.81 |
| | 06/01/2027 | \$47.21 | \$9.65 | \$18.40 | \$0.00 | \$75.26 |
| | 12/01/2027 | \$48.66 | \$9.65 | \$18.40 | \$0.00 | \$76.71 |
| | 06/01/2028 | \$50.16 | \$9.65 | \$18.40 | \$0.00 | \$78.21 |
| | 12/01/2028 | \$51.66 | \$9.65 | \$18.40 | \$0.00 | \$79.71 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|---|------------|---------|--------|---------|--------|---------|
| PIPELAYER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i> | 06/01/2024 | \$38.78 | \$9.65 | \$17.80 | \$0.00 | \$66.23 |
| | 12/01/2024 | \$40.11 | \$9.65 | \$17.80 | \$0.00 | \$67.56 |
| | 06/01/2025 | \$41.50 | \$9.65 | \$17.80 | \$0.00 | \$68.95 |
| | 12/01/2025 | \$42.88 | \$9.65 | \$17.80 | \$0.00 | \$70.33 |
| | 06/01/2026 | \$44.32 | \$9.65 | \$17.80 | \$0.00 | \$71.77 |
| | 12/01/2026 | \$45.76 | \$9.65 | \$17.80 | \$0.00 | \$73.21 |

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

| | | | | | | |
|---|------------|---------|--------|---------|--------|---------|
| PLUMBER & PIPEFITTER <i>PLUMBERS LOCAL 4</i> | 09/01/2024 | \$55.35 | \$9.90 | \$17.42 | \$0.00 | \$82.67 |
| | 03/01/2025 | \$56.75 | \$9.90 | \$17.42 | \$0.00 | \$84.07 |
| | 09/01/2025 | \$58.15 | \$9.90 | \$17.42 | \$0.00 | \$85.47 |
| | 03/01/2026 | \$59.55 | \$9.90 | \$17.42 | \$0.00 | \$86.87 |

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PLUMBER/PIPEFITTER - Local 4

Effective Date - 09/01/2024

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 40 | \$22.14 | \$9.90 | \$0.00 | \$0.00 | \$32.04 |
| 2 | 50 | \$27.68 | \$9.90 | \$0.00 | \$0.00 | \$37.58 |
| 3 | 60 | \$33.21 | \$9.90 | \$0.00 | \$0.00 | \$43.11 |
| 4 | 70 | \$38.75 | \$9.90 | \$7.71 | \$0.00 | \$56.36 |
| 5 | 80 | \$44.28 | \$9.90 | \$7.71 | \$0.00 | \$61.89 |

Effective Date - 03/01/2025

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1 | 40 | \$22.70 | \$9.90 | \$0.00 | \$0.00 | \$32.60 |
| 2 | 50 | \$28.38 | \$9.90 | \$0.00 | \$0.00 | \$38.28 |
| 3 | 60 | \$34.05 | \$9.90 | \$0.00 | \$0.00 | \$43.95 |
| 4 | 70 | \$39.73 | \$9.90 | \$7.71 | \$0.00 | \$57.34 |
| 5 | 80 | \$45.40 | \$9.90 | \$7.71 | \$0.00 | \$63.01 |

Notes:

Steps - 2000 hrs; Step 4 w/lic 75%, Step 5 w/lic 85%
Step 4 w/lic \$52.59, Step 5 w/lic \$57.44

Apprentice to Journeyworker Ratio:1:3

| | | | | | | |
|---|------------|---------|--------|---------|--------|---------|
| PNEUMATIC CONTROLS (TEMP.) <i>PLUMBERS LOCAL 4</i> | 09/01/2024 | \$55.35 | \$9.90 | \$17.42 | \$0.00 | \$82.67 |
| | 03/01/2025 | \$56.75 | \$9.90 | \$17.42 | \$0.00 | \$84.07 |
| | 09/01/2025 | \$58.15 | \$9.90 | \$17.42 | \$0.00 | \$85.47 |
| | 03/01/2026 | \$59.55 | \$9.90 | \$17.42 | \$0.00 | \$86.87 |

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

| | | | | | | |
|---|------------|---------|--------|---------|--------|---------|
| PNEUMATIC DRILL/TOOL OPERATOR <i>LABORERS - ZONE 2</i> | 06/01/2024 | \$39.28 | \$9.65 | \$18.40 | \$0.00 | \$67.33 |
| | 12/01/2024 | \$40.61 | \$9.65 | \$18.40 | \$0.00 | \$68.66 |
| | 06/01/2025 | \$42.00 | \$9.65 | \$18.40 | \$0.00 | \$70.05 |
| | 12/01/2025 | \$43.38 | \$9.65 | \$18.40 | \$0.00 | \$71.43 |
| | 06/01/2026 | \$44.82 | \$9.65 | \$18.40 | \$0.00 | \$72.87 |
| | 12/01/2026 | \$46.26 | \$9.65 | \$18.40 | \$0.00 | \$74.31 |
| | 06/01/2027 | \$47.71 | \$9.65 | \$18.40 | \$0.00 | \$75.76 |
| | 12/01/2027 | \$49.16 | \$9.65 | \$18.40 | \$0.00 | \$77.21 |
| | 06/01/2028 | \$50.66 | \$9.65 | \$18.40 | \$0.00 | \$78.71 |
| | 12/01/2028 | \$52.16 | \$9.65 | \$18.40 | \$0.00 | \$80.21 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | |
|---|------------|---------|--------|---------|--------|---------|
| PNEUMATIC DRILL/TOOL OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i> | 06/01/2024 | \$38.78 | \$9.65 | \$17.80 | \$0.00 | \$66.23 |
| | 12/01/2024 | \$40.11 | \$9.65 | \$17.80 | \$0.00 | \$67.56 |
| | 06/01/2025 | \$41.50 | \$9.65 | \$17.80 | \$0.00 | \$68.95 |
| | 12/01/2025 | \$42.88 | \$9.65 | \$17.80 | \$0.00 | \$70.33 |
| | 06/01/2026 | \$44.32 | \$9.65 | \$17.80 | \$0.00 | \$71.77 |
| | 12/01/2026 | \$45.76 | \$9.65 | \$17.80 | \$0.00 | \$73.21 |

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

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|---|----------------|-----------|---------|---------|---------------------------|------------|
| POWDERMAN & BLASTER <i>LABORERS - ZONE 2</i> | 06/01/2024 | \$39.53 | \$9.65 | \$18.40 | \$0.00 | \$67.58 |
| | 12/01/2024 | \$40.86 | \$9.65 | \$18.40 | \$0.00 | \$68.91 |
| | 06/01/2025 | \$42.25 | \$9.65 | \$18.40 | \$0.00 | \$70.30 |
| | 12/01/2025 | \$43.63 | \$9.65 | \$18.40 | \$0.00 | \$71.68 |
| | 06/01/2026 | \$45.07 | \$9.65 | \$18.40 | \$0.00 | \$73.12 |
| | 12/01/2026 | \$46.51 | \$9.65 | \$18.40 | \$0.00 | \$74.56 |
| | 06/01/2027 | \$47.96 | \$9.65 | \$18.40 | \$0.00 | \$76.01 |
| | 12/01/2027 | \$49.41 | \$9.65 | \$18.40 | \$0.00 | \$77.46 |
| | 06/01/2028 | \$50.91 | \$9.65 | \$18.40 | \$0.00 | \$78.96 |
| | 12/01/2028 | \$52.41 | \$9.65 | \$18.40 | \$0.00 | \$80.46 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| POWDERMAN & BLASTER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i> | 06/01/2024 | \$39.53 | \$9.40 | \$17.55 | \$0.00 | \$66.48 |
| | 12/01/2024 | \$40.86 | \$9.40 | \$17.55 | \$0.00 | \$67.81 |
| | 06/01/2025 | \$42.25 | \$9.40 | \$17.55 | \$0.00 | \$69.20 |
| | 12/01/2025 | \$43.63 | \$9.40 | \$17.55 | \$0.00 | \$70.58 |
| | 06/01/2026 | \$45.07 | \$9.40 | \$17.55 | \$0.00 | \$72.02 |
| | 12/01/2026 | \$46.51 | \$9.40 | \$17.55 | \$0.00 | \$73.46 |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway)" | | | | | | |
| POWER SHOVEL/DERRICK/TRENCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2024 | \$56.03 | \$15.30 | \$16.40 | \$0.00 | \$87.73 |
| | 12/01/2024 | \$57.48 | \$15.30 | \$16.40 | \$0.00 | \$89.18 |
| | 06/01/2025 | \$58.78 | \$15.30 | \$16.40 | \$0.00 | \$90.48 |
| | 12/01/2025 | \$60.23 | \$15.30 | \$16.40 | \$0.00 | \$91.93 |
| | 06/01/2026 | \$61.53 | \$15.30 | \$16.40 | \$0.00 | \$93.23 |
| | 12/01/2026 | \$62.98 | \$15.30 | \$16.40 | \$0.00 | \$94.68 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| PUMP OPERATOR (CONCRETE) <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2024 | \$55.41 | \$15.30 | \$16.40 | \$0.00 | \$87.11 |
| | 12/01/2024 | \$56.85 | \$15.30 | \$16.40 | \$0.00 | \$88.55 |
| | 06/01/2025 | \$58.13 | \$15.30 | \$16.40 | \$0.00 | \$89.83 |
| | 12/01/2025 | \$59.57 | \$15.30 | \$16.40 | \$0.00 | \$91.27 |
| | 06/01/2026 | \$60.85 | \$15.30 | \$16.40 | \$0.00 | \$92.55 |
| | 12/01/2026 | \$62.29 | \$15.30 | \$16.40 | \$0.00 | \$93.99 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| PUMP OPERATOR (DEWATERING, OTHER) <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2024 | \$36.17 | \$15.30 | \$16.40 | \$0.00 | \$67.87 |
| | 12/01/2024 | \$37.12 | \$15.30 | \$16.40 | \$0.00 | \$68.82 |
| | 06/01/2025 | \$37.97 | \$15.30 | \$16.40 | \$0.00 | \$69.67 |
| | 12/01/2025 | \$38.92 | \$15.30 | \$16.40 | \$0.00 | \$70.62 |
| | 06/01/2026 | \$39.78 | \$15.30 | \$16.40 | \$0.00 | \$71.48 |
| | 12/01/2026 | \$40.73 | \$15.30 | \$16.40 | \$0.00 | \$72.43 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| READY-MIX CONCRETE DRIVER <i>TEAMSTERS 170 - Dauphinais (Bellingham)</i> | 01/01/2024 | \$27.00 | \$10.76 | \$5.45 | \$0.00 | \$43.21 |
| | 12/01/2024 | \$27.60 | \$11.26 | \$6.15 | \$0.00 | \$45.01 |
| | 01/01/2025 | \$27.60 | \$11.26 | \$6.15 | \$0.00 | \$45.01 |

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|--|----------------|-----------|---------|---------|---------------------------|------------|
| RECLAIMERS <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2024 | \$55.41 | \$15.30 | \$16.40 | \$0.00 | \$87.11 |
| | 12/01/2024 | \$56.85 | \$15.30 | \$16.40 | \$0.00 | \$88.55 |
| | 06/01/2025 | \$58.13 | \$15.30 | \$16.40 | \$0.00 | \$89.83 |
| | 12/01/2025 | \$59.57 | \$15.30 | \$16.40 | \$0.00 | \$91.27 |
| | 06/01/2026 | \$60.85 | \$15.30 | \$16.40 | \$0.00 | \$92.55 |
| | 12/01/2026 | \$62.29 | \$15.30 | \$16.40 | \$0.00 | \$93.99 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| RIDE-ON MOTORIZED BUGGY OPERATOR <i>LABORERS - ZONE 2</i> | 06/01/2024 | \$38.78 | \$9.65 | \$18.40 | \$0.00 | \$66.83 |
| | 12/01/2024 | \$40.11 | \$9.65 | \$18.40 | \$0.00 | \$68.16 |
| | 06/01/2025 | \$41.50 | \$9.65 | \$18.40 | \$0.00 | \$69.55 |
| | 12/01/2025 | \$42.88 | \$9.65 | \$18.40 | \$0.00 | \$70.93 |
| | 06/01/2026 | \$44.32 | \$9.65 | \$18.40 | \$0.00 | \$72.37 |
| | 12/01/2026 | \$45.76 | \$9.65 | \$18.40 | \$0.00 | \$73.81 |
| | 06/01/2027 | \$47.21 | \$9.65 | \$18.40 | \$0.00 | \$75.26 |
| | 12/01/2027 | \$48.66 | \$9.65 | \$18.40 | \$0.00 | \$76.71 |
| | 06/01/2028 | \$50.16 | \$9.65 | \$18.40 | \$0.00 | \$78.21 |
| 12/01/2028 | \$51.66 | \$9.65 | \$18.40 | \$0.00 | \$79.71 | |
| For apprentice rates see "Apprentice- LABORER" | | | | | | |
| ROLLER/SPREADER/MULCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2024 | \$55.41 | \$15.30 | \$16.40 | \$0.00 | \$87.11 |
| | 12/01/2024 | \$56.85 | \$15.30 | \$16.40 | \$0.00 | \$88.55 |
| | 06/01/2025 | \$58.13 | \$15.30 | \$16.40 | \$0.00 | \$89.83 |
| | 12/01/2025 | \$59.57 | \$15.30 | \$16.40 | \$0.00 | \$91.27 |
| | 06/01/2026 | \$60.85 | \$15.30 | \$16.40 | \$0.00 | \$92.55 |
| | 12/01/2026 | \$62.29 | \$15.30 | \$16.40 | \$0.00 | \$93.99 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| ROOFER (Inc.Roofer Waterproofing &Roofer Damproofg) <i>ROOFERS LOCAL 33</i> | 08/01/2024 | \$51.03 | \$13.03 | \$21.70 | \$0.00 | \$85.76 |
| | 02/01/2025 | \$52.28 | \$13.03 | \$21.70 | \$0.00 | \$87.01 |
| | 08/01/2025 | \$53.78 | \$13.03 | \$21.70 | \$0.00 | \$88.51 |
| | 02/01/2026 | \$55.03 | \$13.03 | \$21.70 | \$0.00 | \$89.76 |

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - ROOFER - Local 33

Effective Date - 08/01/2024

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$25.52 | \$13.03 | \$6.52 | \$0.00 | \$45.07 |
| 2 | 60 | \$30.62 | \$13.03 | \$21.70 | \$0.00 | \$65.35 |
| 3 | 65 | \$33.17 | \$13.03 | \$21.70 | \$0.00 | \$67.90 |
| 4 | 75 | \$38.27 | \$13.03 | \$21.70 | \$0.00 | \$73.00 |
| 5 | 85 | \$43.38 | \$13.03 | \$21.70 | \$0.00 | \$78.11 |

Effective Date - 02/01/2025

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$26.14 | \$13.03 | \$6.52 | \$0.00 | \$45.69 |
| 2 | 60 | \$31.37 | \$13.03 | \$21.70 | \$0.00 | \$66.10 |
| 3 | 65 | \$33.98 | \$13.03 | \$21.70 | \$0.00 | \$68.71 |
| 4 | 75 | \$39.21 | \$13.03 | \$21.70 | \$0.00 | \$73.94 |
| 5 | 85 | \$44.44 | \$13.03 | \$21.70 | \$0.00 | \$79.17 |

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

Apprentice to Journeyworker Ratio:**

| | | | | | | |
|---|------------|---------|---------|---------|--------|---------|
| ROOFER SLATE / TILE / PRECAST CONCRETE <i>ROOFERS LOCAL 33</i> | 08/01/2024 | \$51.28 | \$13.03 | \$21.70 | \$0.00 | \$86.01 |
| | 02/01/2025 | \$52.53 | \$13.03 | \$21.70 | \$0.00 | \$87.26 |
| | 08/01/2025 | \$54.03 | \$13.03 | \$21.70 | \$0.00 | \$88.76 |
| | 02/01/2026 | \$55.28 | \$13.03 | \$21.70 | \$0.00 | \$90.01 |
| For apprentice rates see "Apprentice- ROOFER" | | | | | | |
| SHEETMETAL WORKER <i>SHEETMETAL WORKERS LOCAL 63</i> | 07/01/2024 | \$40.98 | \$12.20 | \$18.74 | \$2.13 | \$74.05 |
| | 01/01/2025 | \$42.23 | \$12.20 | \$18.74 | \$2.13 | \$75.30 |

Apprentice - SHEET METAL WORKER - Local 63

Effective Date - 07/01/2024

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 45 | \$18.44 | \$5.49 | \$4.86 | \$0.85 | \$29.64 |
| 2 | 50 | \$20.49 | \$6.10 | \$5.40 | \$0.94 | \$32.93 |
| 3 | 55 | \$22.54 | \$6.71 | \$9.71 | \$1.15 | \$40.11 |
| 4 | 60 | \$24.59 | \$7.32 | \$9.71 | \$1.23 | \$42.85 |
| 5 | 65 | \$26.64 | \$7.93 | \$9.71 | \$1.31 | \$45.59 |
| 6 | 70 | \$28.69 | \$8.54 | \$9.71 | \$1.39 | \$48.33 |
| 7 | 75 | \$30.74 | \$9.15 | \$9.71 | \$1.47 | \$51.07 |
| 8 | 80 | \$32.78 | \$9.76 | \$17.66 | \$1.78 | \$61.98 |
| 9 | 85 | \$34.83 | \$10.37 | \$17.66 | \$1.86 | \$64.72 |
| 10 | 90 | \$36.88 | \$10.98 | \$17.66 | \$1.94 | \$67.46 |

Effective Date - 01/01/2025

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 45 | \$19.00 | \$5.49 | \$4.86 | \$0.85 | \$30.20 |
| 2 | 50 | \$21.12 | \$6.10 | \$5.40 | \$0.94 | \$33.56 |
| 3 | 55 | \$23.23 | \$6.71 | \$9.71 | \$1.15 | \$40.80 |
| 4 | 60 | \$25.34 | \$7.32 | \$9.71 | \$1.23 | \$43.60 |
| 5 | 65 | \$27.45 | \$7.93 | \$9.71 | \$1.31 | \$46.40 |
| 6 | 70 | \$29.56 | \$8.54 | \$9.71 | \$1.39 | \$49.20 |
| 7 | 75 | \$31.67 | \$9.15 | \$9.71 | \$1.47 | \$52.00 |
| 8 | 80 | \$33.78 | \$9.76 | \$17.66 | \$1.78 | \$62.98 |
| 9 | 85 | \$35.90 | \$10.37 | \$17.66 | \$1.86 | \$65.79 |
| 10 | 90 | \$38.01 | \$10.98 | \$17.66 | \$1.94 | \$68.59 |

Notes:

Apprentice to Journeyworker Ratio:1:3

| | | | | | | |
|--|------------|---------|---------|---------|--------|---------|
| SPECIALIZED EARTH MOVING EQUIP < 35 TONS | 06/01/2024 | \$40.24 | \$15.07 | \$18.67 | \$0.00 | \$73.98 |
| TEAMSTERS JOINT COUNCIL NO. 10 ZONE B | 12/01/2024 | \$40.24 | \$15.07 | \$20.17 | \$0.00 | \$75.48 |
| | 01/01/2025 | \$40.24 | \$15.57 | \$20.17 | \$0.00 | \$75.98 |
| | 06/01/2025 | \$41.24 | \$15.57 | \$20.17 | \$0.00 | \$76.98 |
| | 12/01/2025 | \$41.24 | \$15.57 | \$21.78 | \$0.00 | \$78.59 |
| | 01/01/2026 | \$41.24 | \$16.17 | \$21.78 | \$0.00 | \$79.19 |
| | 06/01/2026 | \$42.24 | \$16.17 | \$21.78 | \$0.00 | \$80.19 |
| | 12/01/2026 | \$42.24 | \$16.17 | \$23.52 | \$0.00 | \$81.93 |
| | 01/01/2027 | \$42.24 | \$16.77 | \$23.52 | \$0.00 | \$82.53 |

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|--|----------------|-----------|---------|---------|---------------------------|------------|
| SPECIALIZED EARTH MOVING EQUIP > 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i> | 06/01/2024 | \$40.53 | \$15.07 | \$18.67 | \$0.00 | \$74.27 |
| | 12/01/2024 | \$40.53 | \$15.07 | \$20.17 | \$0.00 | \$75.77 |
| | 01/01/2025 | \$40.53 | \$15.57 | \$20.17 | \$0.00 | \$76.27 |
| | 06/01/2025 | \$41.53 | \$15.57 | \$20.17 | \$0.00 | \$77.27 |
| | 12/01/2025 | \$41.53 | \$15.57 | \$21.78 | \$0.00 | \$78.88 |
| | 01/01/2026 | \$41.53 | \$16.17 | \$21.78 | \$0.00 | \$79.48 |
| | 06/01/2026 | \$42.53 | \$16.17 | \$21.78 | \$0.00 | \$80.48 |
| | 12/01/2026 | \$42.53 | \$16.17 | \$23.52 | \$0.00 | \$82.22 |
| | 01/01/2027 | \$42.53 | \$16.77 | \$23.52 | \$0.00 | \$82.82 |
| SPRINKLER FITTER <i>SPRINKLER FITTERS LOCAL 669</i> | 04/01/2023 | \$47.43 | \$11.45 | \$16.61 | \$0.00 | \$75.49 |

Apprentice - SPRINKLER FITTER - Local 669

Effective Date - 04/01/2023

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 45 | \$21.34 | \$8.22 | \$0.00 | \$0.00 | \$29.56 |
| 2 | 50 | \$23.72 | \$8.22 | \$0.00 | \$0.00 | \$31.94 |
| 3 | 55 | \$26.09 | \$11.45 | \$7.20 | \$0.00 | \$44.74 |
| 4 | 60 | \$28.46 | \$11.45 | \$8.35 | \$0.00 | \$48.26 |
| 5 | 65 | \$30.83 | \$11.45 | \$8.35 | \$0.00 | \$50.63 |
| 6 | 70 | \$33.20 | \$11.45 | \$8.60 | \$0.00 | \$53.25 |
| 7 | 75 | \$35.57 | \$11.45 | \$8.60 | \$0.00 | \$55.62 |
| 8 | 80 | \$37.94 | \$11.45 | \$8.60 | \$0.00 | \$57.99 |
| 9 | 85 | \$40.32 | \$11.45 | \$8.60 | \$0.00 | \$60.37 |
| 10 | 90 | \$42.69 | \$11.45 | \$8.60 | \$0.00 | \$62.74 |

Notes:

Apprentice to Journeyworker Ratio:1:1

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

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

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

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|--|----------------|-----------|---------|---------|---------------------------|------------|
| TERRAZZO FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE & TILE</i> | 08/01/2024 | \$63.44 | \$11.49 | \$23.59 | \$0.00 | \$98.52 |
| | 02/01/2025 | \$64.74 | \$11.49 | \$23.59 | \$0.00 | \$99.82 |
| | 08/01/2025 | \$66.89 | \$11.49 | \$23.59 | \$0.00 | \$101.97 |
| | 02/01/2026 | \$68.24 | \$11.49 | \$23.59 | \$0.00 | \$103.32 |
| | 08/01/2026 | \$70.44 | \$11.49 | \$23.59 | \$0.00 | \$105.52 |
| | 02/01/2027 | \$71.84 | \$11.49 | \$23.59 | \$0.00 | \$106.92 |

Apprentice - TERRAZZO FINISHER - Local 3 Marble & Tile

Effective Date - 08/01/2024

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

Effective Date - 02/01/2025

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$32.37 | \$11.49 | \$23.59 | \$0.00 | \$67.45 |
| 2 | 60 | \$38.84 | \$11.49 | \$23.59 | \$0.00 | \$73.92 |
| 3 | 70 | \$45.32 | \$11.49 | \$23.59 | \$0.00 | \$80.40 |
| 4 | 80 | \$51.79 | \$11.49 | \$23.59 | \$0.00 | \$86.87 |
| 5 | 90 | \$58.27 | \$11.49 | \$23.59 | \$0.00 | \$93.35 |

Notes:

Apprentice to Journeyworker Ratio:1:3

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

For apprentice rates see "Apprentice- LABORER"

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

For apprentice rates see "Apprentice- LABORER"

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

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|--|--|------------------|---------------|----------------|----------------------------------|-------------------|
| TUNNEL WORK - FREE AIR (HAZ. WASTE) <i>LABORERS (FREE AIR TUNNEL)</i> | 06/01/2024 | \$51.78 | \$9.65 | \$19.00 | \$0.00 | \$80.43 |
| | 12/01/2024 | \$53.25 | \$9.65 | \$19.00 | \$0.00 | \$81.90 |
| | 06/01/2025 | \$54.75 | \$9.65 | \$19.00 | \$0.00 | \$83.40 |
| | 12/01/2025 | \$56.25 | \$9.65 | \$19.00 | \$0.00 | \$84.90 |
| | 06/01/2026 | \$57.80 | \$9.65 | \$19.00 | \$0.00 | \$86.45 |
| | 12/01/2026 | \$59.30 | \$9.65 | \$19.00 | \$0.00 | \$87.95 |
| | For apprentice rates see "Apprentice- LABORER" | | | | | |
| VAC-HAUL <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i> | 06/01/2024 | \$40.24 | \$15.07 | \$18.67 | \$0.00 | \$73.98 |
| | 12/01/2024 | \$40.24 | \$15.07 | \$20.17 | \$0.00 | \$75.48 |
| | 01/01/2025 | \$40.24 | \$15.57 | \$20.17 | \$0.00 | \$75.98 |
| | 06/01/2025 | \$41.24 | \$15.57 | \$20.17 | \$0.00 | \$76.98 |
| | 12/01/2025 | \$41.24 | \$15.57 | \$21.78 | \$0.00 | \$78.59 |
| | 01/01/2026 | \$41.24 | \$16.17 | \$21.78 | \$0.00 | \$79.19 |
| | 06/01/2026 | \$42.24 | \$16.17 | \$21.78 | \$0.00 | \$80.19 |
| | 12/01/2026 | \$42.24 | \$16.17 | \$23.52 | \$0.00 | \$81.93 |
| 01/01/2027 | \$42.24 | \$16.77 | \$23.52 | \$0.00 | \$82.53 | |
| VOICE-DATA-VIDEO TECHNICIAN <i>ELECTRICIANS LOCAL 96</i> | 09/01/2024 | \$35.29 | \$13.99 | \$17.57 | \$0.00 | \$66.85 |
| | 09/07/2025 | \$36.12 | \$14.98 | \$17.91 | \$0.00 | \$69.01 |
| | 09/06/2026 | \$37.04 | \$15.96 | \$18.27 | \$0.00 | \$71.27 |

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - VOICE-DATA-VIDEO TECHNICIAN - Local 96

Effective Date - 09/01/2024

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$17.65 | \$13.99 | \$4.41 | \$0.00 | \$36.05 |
| 2 | 55 | \$19.41 | \$13.99 | \$4.46 | \$0.00 | \$37.86 |
| 3 | 60 | \$21.17 | \$13.99 | \$17.15 | \$0.00 | \$52.31 |
| 4 | 65 | \$22.94 | \$13.99 | \$17.20 | \$0.00 | \$54.13 |
| 5 | 70 | \$24.70 | \$13.99 | \$17.25 | \$0.00 | \$55.94 |
| 6 | 75 | \$26.47 | \$13.99 | \$17.30 | \$0.00 | \$57.76 |
| 7 | 80 | \$28.23 | \$13.99 | \$17.36 | \$0.00 | \$59.58 |
| 8 | 85 | \$30.00 | \$13.99 | \$17.41 | \$0.00 | \$61.40 |

Effective Date - 09/07/2025

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1 | 50 | \$18.06 | \$14.98 | \$4.51 | \$0.00 | \$37.55 |
| 2 | 55 | \$19.87 | \$14.98 | \$4.57 | \$0.00 | \$39.42 |
| 3 | 60 | \$21.67 | \$14.98 | \$17.48 | \$0.00 | \$54.13 |
| 4 | 65 | \$23.48 | \$14.98 | \$17.53 | \$0.00 | \$55.99 |
| 5 | 70 | \$25.28 | \$14.98 | \$17.59 | \$0.00 | \$57.85 |
| 6 | 75 | \$27.09 | \$14.98 | \$17.64 | \$0.00 | \$59.71 |
| 7 | 80 | \$28.90 | \$14.98 | \$17.70 | \$0.00 | \$61.58 |
| 8 | 85 | \$30.70 | \$14.98 | \$17.75 | \$0.00 | \$63.43 |

Notes:

Apprentice to Journeyworker Ratio:1:1

| | | | | | | |
|---|------------|---------|--------|---------|--------|---------|
| WAGON DRILL OPERATOR LABORERS - ZONE 2 | 06/01/2024 | \$39.28 | \$9.65 | \$18.40 | \$0.00 | \$67.33 |
| | 12/01/2024 | \$40.61 | \$9.65 | \$18.40 | \$0.00 | \$68.66 |
| | 06/01/2025 | \$42.00 | \$9.65 | \$18.40 | \$0.00 | \$70.05 |
| | 12/01/2025 | \$43.38 | \$9.65 | \$18.40 | \$0.00 | \$71.43 |
| | 06/01/2026 | \$44.82 | \$9.65 | \$18.40 | \$0.00 | \$72.87 |
| | 12/01/2026 | \$46.26 | \$9.65 | \$18.40 | \$0.00 | \$74.31 |
| | 06/01/2027 | \$47.71 | \$9.65 | \$18.40 | \$0.00 | \$75.76 |
| | 12/01/2027 | \$49.16 | \$9.65 | \$18.40 | \$0.00 | \$77.21 |
| | 06/01/2028 | \$50.66 | \$9.65 | \$18.40 | \$0.00 | \$78.71 |
| | 12/01/2028 | \$52.16 | \$9.65 | \$18.40 | \$0.00 | \$80.21 |

For apprentice rates see "Apprentice- LABORER"

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

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

| Classification | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|--|----------------|-----------|---------|---------|---------------------------|------------|
| WASTE WATER PUMP OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i> | 06/01/2024 | \$56.03 | \$15.30 | \$16.40 | \$0.00 | \$87.73 |
| | 12/01/2024 | \$57.48 | \$15.30 | \$16.40 | \$0.00 | \$89.18 |
| | 06/01/2025 | \$58.78 | \$15.30 | \$16.40 | \$0.00 | \$90.48 |
| | 12/01/2025 | \$60.23 | \$15.30 | \$16.40 | \$0.00 | \$91.93 |
| | 06/01/2026 | \$61.53 | \$15.30 | \$16.40 | \$0.00 | \$93.23 |
| | 12/01/2026 | \$62.98 | \$15.30 | \$16.40 | \$0.00 | \$94.68 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | |
| WATER METER INSTALLER <i>PLUMBERS LOCAL 4</i> | 09/01/2024 | \$55.35 | \$9.90 | \$17.42 | \$0.00 | \$82.67 |
| | 03/01/2025 | \$56.75 | \$9.90 | \$17.42 | \$0.00 | \$84.07 |
| | 09/01/2025 | \$58.15 | \$9.90 | \$17.42 | \$0.00 | \$85.47 |
| | 03/01/2026 | \$59.55 | \$9.90 | \$17.42 | \$0.00 | \$86.87 |
| For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER" | | | | | | |

Additional Apprentice Information:

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

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

All steps are six months (1000 hours.)

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

** Multiple ratios are listed in the comment field.

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

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

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Payroll Compliance Form

WEEKLY PAYROLL RECORDS REPORT & STATEMENT OF COMPLIANCE

In accordance with Massachusetts General Law c. 149, §27B, a true and accurate record must be kept of all persons employed on the public works project for which the enclosed rates have been provided. A Payroll Form is available from the Department of Labor Standards (DLS) at www.mass.gov/dols/pw and includes all the information required to be kept by law. Every contractor or subcontractor is required to keep these records and preserve them for a period of three years from the date of completion of the contract.

On a weekly basis, every contractor and subcontractor is required to submit a certified copy of their weekly payroll records to the awarding authority; this includes the payroll forms and the Statement of Compliance form. The certified payroll records must be submitted either by regular mail or by e-mail to the awarding authority. Once collected, the awarding authority is required to preserve those records for three years from the date of completion of the project.

Each such contractor and subcontractor shall furnish weekly **and** within 15 days after completion of its portion of the work, to the awarding authority directly by first-class mail or e-mail, a statement, executed by the contractor, subcontractor or by any authorized officer thereof who supervised the payment of wages, this form, accompanied by their payroll:

STATEMENT OF COMPLIANCE

_____, 20_____

I, _____, _____
(Name of signatory party) (Title)

do hereby state:

That I pay or supervise the payment of the persons employed by

_____ on the _____
(Contractor, subcontractor or public body) (Building or project)

and that all mechanics and apprentices, teamsters, chauffeurs and laborers employed on said project have been paid in accordance with wages determined under the provisions of sections twenty-six and twenty-seven of chapter one hundred and forty nine of the General Laws.

Signature _____

Title _____

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Certified Payroll Report Form

MASSACHUSETTS WEEKLY CERTIFIED PAYROLL REPORT FORM



| | | | |
|-----------------------------------|-----------------------------------|---------------------------------------|------------------------------------|
| Company's Name: | Address: | Phone No.: | Payroll No.: |
| | | | |
| Employer's Signature: | Title: | Contract No: | Tax Payer ID Number |
| | | | |
| Awarding Authority's Name: | Public Works Project Name: | Public Works Project Location: | Min. Wage Rate Sheet Number |
| | | | |

| General / Prime Contractor's Name: | | Subcontractor's Name: | | "Employer" Hourly Fringe Benefit Contributions | | | | | | | | | | | | | | | |
|---|----------------------|-----------------------------------|----------------|---|-----|-----|-----|-----|-----|-----|--------------------------------------|----------------------|--------------------------------|------------------------|------------------|-----------------------------|-------------------|---------|---------------|
| | | | | | | | | | | | | | | | | | | | |
| Employee Name & Complete Address | Work Classification: | Employee is OSHA 10 certified (?) | Appr. Rate (%) | Hours Worked | | | | | | | Project Hours (A) All Other Hours | Hourly Base Wage (B) | Health & Welfare Insurance (C) | ERISA Pension Plan (D) | Supp. Unemp. (E) | Total Hourly Prev. Wage (F) | (B+C+D+E) | (A x F) | Check No. (H) |
| | | | | Su. | Mo. | Tu. | We. | Th. | Fr. | Sa. | | | | | | | Total Gross Wages | | |
| | | | | | | | | | | | | | | | | | | | |
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Are all apprentice employees identified above currently registered with the MA DLS's Division of Apprentice Standards? YES NO

For all apprentices performing work during the reporting period, attach a copy of the apprentice identification card issued by the Massachusetts Department of Labor Standards / Division of Apprentice Standards. No apprentices are identified above

NOTE: Pursuant to MGL c. 149, s. 27B, every contractor and subcontractor is required to submit a **true and accurate** copy of their certified weekly payroll records to the awarding authority by first-class mail or e-mail. In addition, each weekly payroll must be accompanied by a statement of compliance signed by the employer. Failure to comply may result in the commencement of a criminal action or the issuance of a civil citation.

| |
|--|
| Date Received by Awarding Authority / / |
|--|

SCHOOLHOUSE POND DAM REMOVAL
GEOTECHNICAL DATA, PERMITS AND APPROVALS

SECTION 00300

GEOTECHNICAL DATA

PART 1 GENERAL

1.1 SUMMARY

- A. For the preparation of Bidding Documents for the Schoolhouse Pond Dam Removal Project, Engineer has relied upon the following reports and tests of subsurface and latent physical conditions of the site. The location of all bore holes is shown on the Drawings.
1. Soil boring data (attached)
 - a. The subsurface data are not guaranteed as to accuracy or completeness, nor are they a part of the Contract Documents.
 - b. Bidders are cautioned that the subsurface data have been utilized for general design purposes only. No explicit or implicit representation is made as to the nature of the materials which may be encountered below the surface of the ground.
 - c. The making available of this subsurface data to Bidders is not intended to relieve them from their responsibility to familiarize themselves with the subsurface and other site conditions.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

J:\M\M0944 Mass DFG\DFG DFW Dams\Schoolhouse Pond\Design\Specifications\Division 0\00300.docx

Section 00300

Attachment A

Boring Logs and Soil Testing Data

Project: Arnold Pond Dam Removal - Pedestrian Bridge
 Location: West Sutton, MA
 Client: Mass Wildlife

Boring No. B-1
 Page 1 of 1
 File No. M-0944-051
 Checked by: M. Trovato

Drilling Co.: Soil X Corp.

Foreman: Mike Tisdale
 T&B Rep.: A. DeMarco
 Date Start: 03/04/24 Date End: 03/04/24
 Location: See Exploration Location Plan
 GS. Elev. 606' Datum: NAVD88

| Casing | Sampler |
|------------------------|-------------|
| Note 2 | Split Spoon |
| -- | 1-3/8"/2" |
| -- | 140# |
| -- | 30" |
| ATV S11 B-57 Track Rig | |

Groundwater Readings

| Date | Time | Depth | Casing | Sta. Time |
|----------|------|-------|--------|-----------------|
| 3/4/2024 | | 9' | N/A | During Drilling |
| | | | | |
| | | | | |

| Depth (ft.) | Core Rate (min/ft) | Sample No. / Rec. (in) | Sample Depth (ft.) | Blows Per 6" | Sample Description | General Stratigraphy | Notes | |
|-------------|--------------------|------------------------|--------------------|--------------|---|----------------------|-------|---|
| 5 | | S1 / 11 | 0-2 | 4-8 | S1: Medium dense, brown, fine to coarse SAND, little Gravel, trace organics, dry | FILL | 1 | |
| | | | | 15-6 | | | | |
| | | S2 / 10 | 2-4 | 9-7 | S2: Medium dense, brown, fine to coarse SAND, little Gravel, trace Silt, dry | | | |
| | | | | 6-4 | | | | |
| | | S3 / 15 | 4-6 | 8-8 | S3: Medium dense, brown, GRAVEL and fine to coarse SAND, trace Silt, trace Organics, dry | | | |
| 10 | | | | 8-11 | | | | |
| | | S4 / 14 | 6-8 | 14-10 | S4: Medium dense, brown, fine to coarse SAND, little Gravel, little Silt, trace Organics, dry | | | |
| | | | | 8-9 | | | | |
| | | S5 / 6 | 8-10 | 13-17 | S5: Dense, brown, fine to coarse SAND, little Gravel, little Silt, wet | | | |
| | | | | 18-11 | | | | |
| 15 | | S6 / 0 | 10-12 | 9-5 | S6: No recovery | | 2 | |
| | | | | 3-5 | | | | |
| | | S7A / 8 | 14-14.7 | 31-37 | S7A: Very dense, grey, GRAVEL and fine to coarse SAND, little Silt, wet | | | |
| | | S7B / 3 | 14.7-16 | 14-8 | S7B: Very dense, dark brown, fibrous PEAT, wet | 14.7' 14.9' PEAT | | |
| 20 | | | | | | GLACIAL TILL | | |
| | | S8 / 4 | 19-21 | 31-14 | S8: Dense, grey, GRAVEL and fine to medium SAND, little Silt, wet | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 25 | | S9 / 10 | 24-25.9 | 33-20 | S9: Dense, grey, fine to coarse SAND, little Gravel, little Silt, moist | | | |
| | | | | 19-50/5 | | | | |
| | | | | | | | | |
| 30 | | S10 / 0 | 29 | 50/0 | S10: SPT refusal - no sample recovered Note: Rock core attempted 29 to 31 feet - no recovery due to core barrel jamming. | | 31' | 3 |
| | | | | | End of Boring - 31 feet. | | | |

| | | | | | | |
|--|-------------------------|------------|----------------------------|------------|-----------|-----|
| Notes: 1. Automatic hammer used for SPT and driving casing. 2. Hollow stem auger to 10 ft bgs, then switched to flush-joint casing. Hollow stem auger with 4.25-inch I.D. and 7.625-inch flight O.D. 3. Boring grouted upon completion. | <u>Proportions Used</u> | | <u>Density/Consistency</u> | | | |
| | TRACE (TR.) | 0 - <10% | VERY LOOSE | 0-4 | VERY SOFT | <2 |
| | LITTLE (LI.) | 10 - <20% | LOOSE | 4-10 | SOFT | 2-4 |
| | SOME (SO.) | 20 - <35% | MEDIUM DENSE | 10-30 | MEDIUM | 4-8 |
| AND | 35 - <50% | DENSE | 30-50 | STIFF | 8-15 | |
| | | VERY DENSE | >50 | VERY STIFF | 15-30 | |
| | | | | HARD | >30 | |

Project: Arnold Pond Dam Removal - Pedestrian Bridge
 Location: West Sutton, MA
 Client: Mass Wildlife

Boring No. B-2
 Page 1 of 1
 File No. M-0944-051
 Checked by: M. Trovato

Drilling Co.: Soil X Corp.

Foreman: Mike Tisdale
 T&B Rep.: A. DeMarco
 Date Start: 03/04/24 Date End: 03/04/24
 Location: See Exploration Location Plan
 GS. Elev. 606' Datum: NAVD88

| Casing | Sampler |
|------------------------|-------------|
| Note 2 | Split Spoon |
| -- | 1-3/8"/2" |
| -- | 140# |
| -- | 30" |
| ATV S11 B-57 Track Rig | |

Groundwater Readings

| Date | Time | Depth | Casing | Sta. Time |
|----------|------|-------|--------|-----------------|
| 3/4/2024 | | 9' | N/A | During Drilling |
| | | | | |
| | | | | |

| Depth (ft.) | Core Rate (min/ft) | Sample No. / Rec. (in) | Sample Depth (ft.) | Blows Per 6" | Sample Description | General Stratigraphy | Notes | |
|-------------|--------------------|------------------------|--------------------|--------------|--|----------------------|-------|---|
| 5 | | S1 / 12 | 0-2 | 3-14 | S1: Medium dense, brown, fine to coarse SAND, some Gravel, trace Silt, trace organics, dry | FILL | 1 | |
| | | | | 9-6 | | | | |
| | | S2 / 6 | 2-4 | 4-6 | S2: Medium dense, brown, fine to coarse SAND and GRAVEL, trace Silt, dry | | | |
| | | | | 8-8 | | | | |
| | | S3 / 13 | 4-6 | 3-3 | S3: Loose, tan, fine to coarse SAND, little Gravel, little Silt, dry | | | |
| 10 | | | | 6-8 | | | | |
| | | S4 / 13 | 6-8 | 7-6 | S4: Medium dense, tan, fine to coarse SAND, little Gravel, little Silt, dry | | | |
| | | | | 8-10 | | | | |
| | | S5 / 13 | 8-10 | 8-8 | S5: Medium dense, brown, fine to coarse SAND and GRAVEL, trace Silt, wet | | | |
| | | | | 6-3 | | | | 2 |
| 15 | | S6 / 0 | 10-12 | 12-10 | S6: No recovery | | | |
| | | | | 6-5 | | | | |
| | | | | | | | | |
| | | S7 / 4 | 14-14.3 | 50/4 | S7: Rock fragments | 14' | | |
| | | | | | | | | |
| 20 | | | | | | GLACIAL TILL | | |
| | | S8 / 4 | 19-19.3 | 50/4 | S8: Rock fragments | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 25 | | | | | | | | |
| | | S9 / 0 | 24 | 50/0 | S9: SPT refusal - no sample recovered | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 30 | | | | | | 29' | | |
| | | S10 / 0 | 29 | 50/0 | S10: SPT refusal - no sample recovered End of Boring - 29 feet. | | 3 | |
| | | | | | | | | |

| | | | | |
|---|------------------|------------|---------------------|-------|
| Notes: 1. Automatic hammer used for SPT and driving casing. 2. Hollow stem auger to 10 ft then switched to flush-joint casing. Hollow stem auger had 4.25-inch I.D. and 7.625-inch flight O.D. 3. Boring grouted upon completion | Proportions Used | | Density/Consistency | |
| | TRACE (TR.) | 0 - <10% | VERY LOOSE | 0-4 |
| | LITTLE (LI.) | 10 - <20% | LOOSE | 4-10 |
| | SOME (SO.) | 20 - <35% | MEDIUM DENSE | 10-30 |
| AND | 35 - <50% | DENSE | 30-50 | |
| | | VERY DENSE | >50 | |
| | | VERY SOFT | <2 | |
| | | SOFT | 2-4 | |
| | | MEDIUM | 4-8 | |
| | | STIFF | 8-15 | |
| | | VERY STIFF | 15-30 | |
| | | HARD | >30 | |



195 Frances Avenue
 Cranston RI, 02910
 Phone: (401)-467-6454
 Fax: (401)-467-2398
cts.thielsch.com
Let's Build a Solid Foundation

Client Information:
 Tighe & Bond
 Portsmouth, NH
 Project Manager: Jessica DeBellis
 Assigned By: Jessica DeBellis
 Collected By: Alex DeMarco

Project Information:
Arnold Pond Pedestrian Bridge
West Sutton Road, Sutton MA
 Project Number: M-0944-051
 Summary Page: 1 of 1
 Report Date: 3/21/2024

LABORATORY TESTING DATA SHEET, Report No.: 7424-C-174

| Boring No. | Sample ID | Depth (ft) | Laboratory No. | Identification Tests | | | | | | | | | | Proctor / CBR / Permeability Tests | | | | | | | Laboratory Log and Soil Description | |
|------------|-----------|------------|----------------|----------------------------|-------|------|-------|----------|--------|---------|--------|-------|---|---|--------------------|-------------------------|-----------------------------------|------------|------------|---------------------|---|--|
| | | | | As Rcvd Moisture Content % | LL % | PL % | OD LL | Gravel % | Sand % | Fines % | Org. % | pH | 9 _d MAX (pcf) W _{opt} (%) | 9 _d MAX (pcf) W _{opt} (Corr.) | Dry unit wt. (pcf) | Test Moisture Content % | Target Test Setup as % of Proctor | CBR @ 0.1" | CBR @ 0.2" | Permeability cm/sec | | |
| | | | | D2216 | D4318 | | | D6913 | | | D2974 | D4792 | D1557 | | | | | | | | | |
| B1 | S3 | 4-6 | 24-S-935 | | | | | 54.6 | 35.6 | 9.8 | | | | | | | | | | | Brown poorly graded gravel with silt and sand | |
| B1 | S7 | 14-16 | 24-S-936 | | | | | 53.2 | 36.3 | 10.5 | | | | | | | | | | | Brown poorly graded gravel with silt and sand | |
| B2 | S5 | 8-10 | 24-S-937 | | | | | 38.9 | 52.2 | 8.9 | | | | | | | | | | | Brown poorly graded sand with silt and gravel | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |

Date Received: 3/15/2024

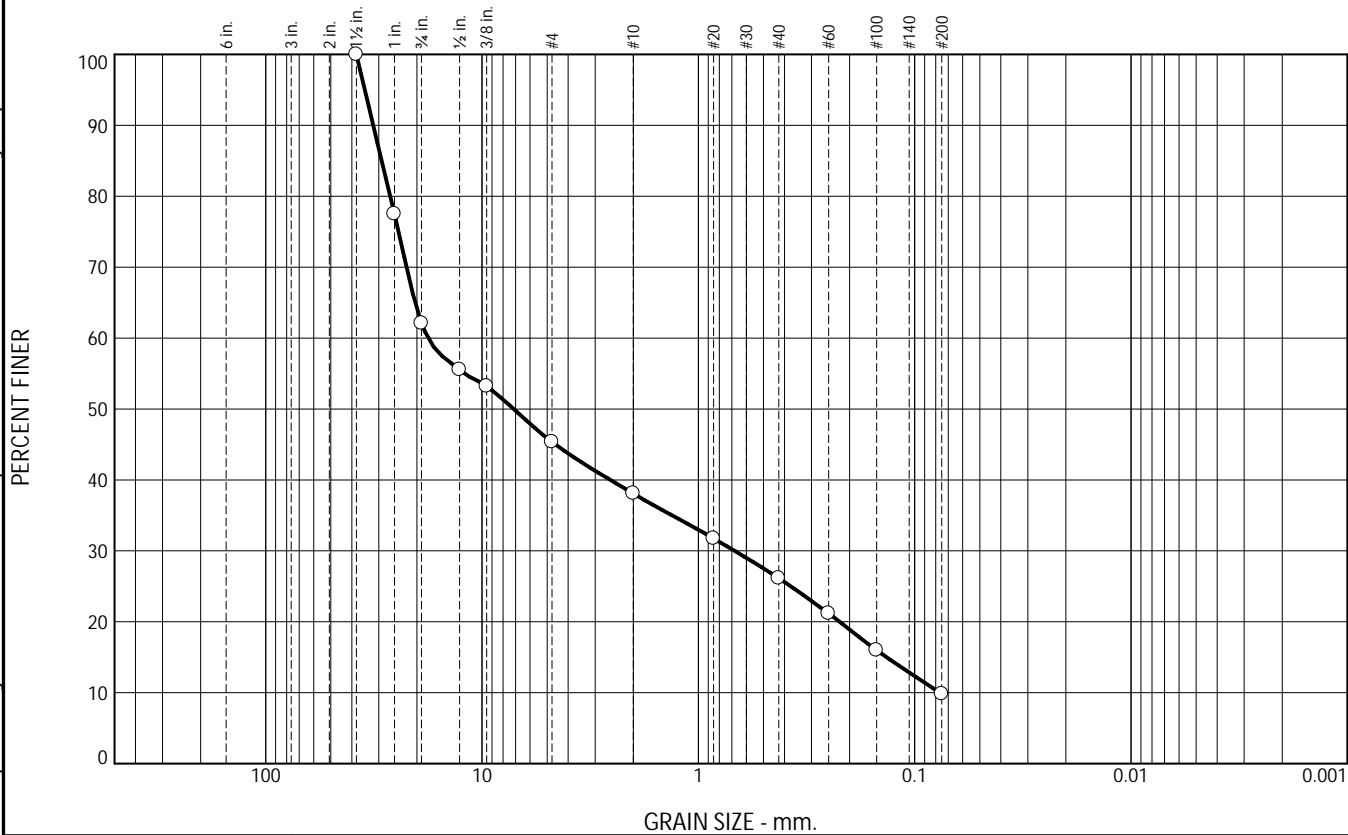
Reviewed By: 

Date Reviewed: 3/21/2024

This report only relates to items inspect and/or tested. No warranty, expressed or implied, is made.
 This report shall not be reproduced, except in full, without prior written approval from the Agency, as defined in ASTM E329.

These results are for the exclusive use of the client for whom they were obtained. This report only relates to items inspected and/or tested. No warranty, expressed or implied, is made.

Particle Size Distribution Report



| % +3" | % Gravel | | % Sand | | | % Fines | |
|-------|----------|------|--------|--------|------|---------|------|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 37.9 | 16.7 | 7.3 | 12.0 | 16.3 | 9.8 | |

| SIEVE SIZE OR DIAMETER | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---------------------------|------------------|-------------------|-----------------|
| 1 1/2" | 100.0 | | |
| 1" | 77.5 | | |
| 3/4" | 62.1 | | |
| 1/2" | 55.5 | | |
| 3/8" | 53.2 | | |
| #4 | 45.4 | | |
| #10 | 38.1 | | |
| #20 | 31.7 | | |
| #40 | 26.1 | | |
| #60 | 21.2 | | |
| #100 | 16.0 | | |
| #200 | 9.8 | | |

Soil Description

Brown poorly graded gravel with silt and sand

PL= NP Atterberg Limits LL= NV PI= NP

Coefficients
 D₉₀= 31.8410 D₈₅= 29.1051 D₆₀= 17.7420
 D₅₀= 7.1364 D₃₀= 0.6799 D₁₅= 0.1350
 D₁₀= 0.0766 C_u= 231.47 C_c= 0.34

Classification

USCS= GP-GM AASHTO= A-1-a

Remarks

* (no specification provided)

Source of Sample: Boring Depth: 4-6'
 Sample Number: B1 / S3

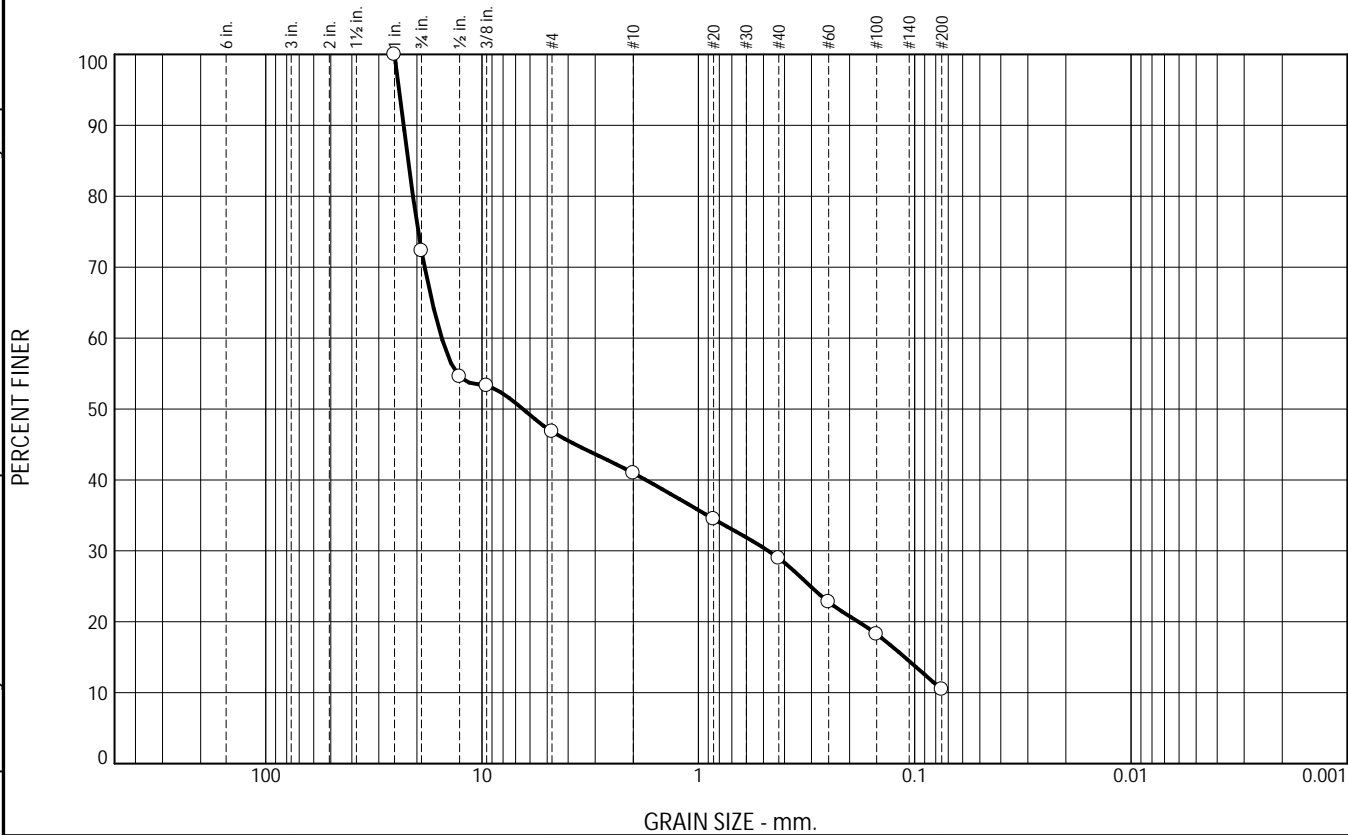
Date: 3.20.24

| | |
|--|---|
| Thielsch Engineering Inc. Cranston, RI | Client: Tighe & Bond Project: Arnold Pond Pedestrian Bridge West Sutton Road, Sutton MA Project No: M-0944-051 |
| Fig. 24-S-935 | |

Tested By: RB Checked By: Kris Roland

These results are for the exclusive use of the client for whom they were obtained. This report only relates to items inspected and/or tested. No warranty, expressed or implied, is made.

Particle Size Distribution Report



| % +3" | % Gravel | | % Sand | | | % Fines | |
|-------|----------|------|--------|--------|------|---------|------|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 27.7 | 25.5 | 5.8 | 12.0 | 18.5 | 10.5 | |

| SIEVE SIZE OR DIAMETER | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---------------------------|------------------|-------------------|-----------------|
| 1" | 100.0 | | |
| 3/4" | 72.3 | | |
| 1/2" | 54.6 | | |
| 3/8" | 53.3 | | |
| #4 | 46.8 | | |
| #10 | 41.0 | | |
| #20 | 34.5 | | |
| #40 | 29.0 | | |
| #60 | 22.8 | | |
| #100 | 18.2 | | |
| #200 | 10.5 | | |

Soil Description

Brown poorly graded gravel with silt and sand

Atterberg Limits
 PL= NP LL= NV PI= NP

Coefficients
 D₉₀= 23.0302 D₈₅= 21.9504 D₆₀= 15.3588
 D₅₀= 6.4726 D₃₀= 0.4758 D₁₅= 0.1112
 D₁₀= C_u= C_c=

Classification
 USCS= GP-GM AASHTO= A-1-a

Remarks

* (no specification provided)

Source of Sample: Boring Depth: 14-16'
 Sample Number: B1 / S7

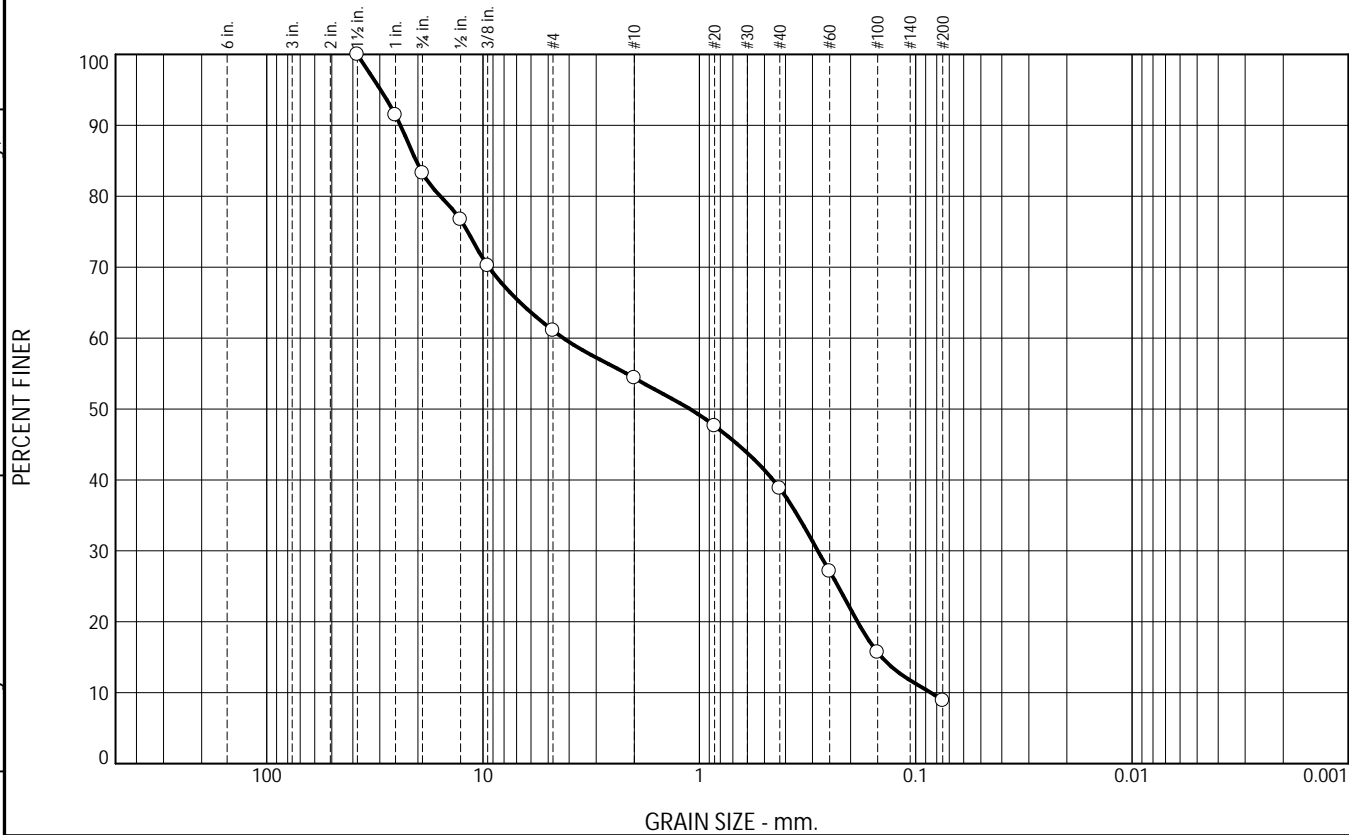
Date: 3.20.24

| | |
|--|---|
| Thielsch Engineering Inc. Cranston, RI | Client: Tighe & Bond Project: Arnold Pond Pedestrian Bridge West Sutton Road, Sutton MA Project No: M-0944-051 |
| Fig. 24-S-936 | |

Tested By: RB Checked By: Kris Roland

These results are for the exclusive use of the client for whom they were obtained. This report only relates to items inspected and/or tested. No warranty, expressed or implied, is made.

Particle Size Distribution Report



| % +3" | % Gravel | | % Sand | | | % Fines | |
|-------|----------|------|--------|--------|------|---------|------|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 16.8 | 22.1 | 6.7 | 15.6 | 29.9 | 8.9 | |

| SIEVE SIZE OR DIAMETER | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---------------------------|------------------|-------------------|-----------------|
| 1 1/2" | 100.0 | | |
| 1" | 91.5 | | |
| 3/4" | 83.2 | | |
| 1/2" | 76.7 | | |
| 3/8" | 70.2 | | |
| #4 | 61.1 | | |
| #10 | 54.4 | | |
| #20 | 47.6 | | |
| #40 | 38.8 | | |
| #60 | 27.1 | | |
| #100 | 15.7 | | |
| #200 | 8.9 | | |

* (no specification provided)

Soil Description

Brown poorly graded sand with silt and gravel

Atterberg Limits
 PL= NP LL= NV PI= NP

Coefficients
 D₉₀= 24.0587 D₈₅= 20.3981 D₆₀= 4.2552
 D₅₀= 1.1052 D₃₀= 0.2835 D₁₅= 0.1436
 D₁₀= 0.0850 C_u= 50.03 C_c= 0.22

Classification
 USCS= SP-SM AASHTO= A-1-b

Remarks

Source of Sample: Boring Depth: 8-10'
 Sample Number: B2 / S5

Date: 3.20.24

| | |
|--|---|
| Thielsch Engineering Inc. Cranston, RI | Client: Tighe & Bond Project: Arnold Pond Pedestrian Bridge West Sutton Road, Sutton MA Project No: M-0944-051 |
| Fig. 24-S-937 | |

Tested By: RB Checked By: Kris Roland

Section 00310

Attachment A

Town of Sutton Order of Conditions

Worcester South District Registry of Deeds Electronically Recorded Document

This is the first page of the document – Do not remove

Recording Information

| | |
|--|----------------------|
| Document Number | : 71726 |
| Document Type | : ORD |
| Recorded Date | : September 04, 2024 |
| Recorded Time | : 01:40:08 PM |
| Recorded Book and Page | : 70983 / 1 |
| Number of Pages(including cover sheet) | : 22 |
| Receipt Number | : 1594515 |
| Recording Fee | : \$105.00 |

Worcester South District Registry of Deeds
Kathryn A. Toomey, Register
90 Front St
Worcester, MA 01608
(508) 368-7000



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
 303-1005
 MassDEP File # _____
 eDEP Transaction # _____
SUTTON
 City/Town

A. General Information (cont.)

6. Property recorded at the Registry of Deeds for (attach additional information if more than one parcel):
Worcester
 a. County Worcester b. Certificate Number (if registered land) 0506
 c. Book 2490 d. Page 0506
7. Dates: 6/13/2024 8/7/2024 8/27/2024
 a. Date Notice of Intent Filed b. Date Public Hearing Closed c. Date of Issuance
8. Final Approved Plans and Other Documents (attach additional plan or document references as needed):
Schoolhouse Dam Removal Project
 a. Plan Title Tighe & Bond Christopher D. Haker, P.E., and Daniel R. Buttrick, P.E.
 b. Prepared By April 2024 1"=20'
 d. Final Revision Date e. Scale
- f. Additional Plan or Document Title _____ g. Date _____

B. Findings

1. Findings pursuant to the Massachusetts Wetlands Protection Act:
 Following the review of the above-referenced Notice of Intent and based on the information provided in this application and presented at the public hearing, this Commission finds that the areas in which work is proposed is significant to the following interests of the Wetlands Protection Act (the Act). Check all that apply:
- a. Public Water Supply b. Land Containing Shellfish c. Prevention of Pollution
 d. Private Water Supply e. Fisheries f. Protection of Wildlife Habitat
 g. Groundwater Supply h. Storm Damage Prevention i. Flood Control
2. This Commission hereby finds the project, as proposed, is: (check one of the following boxes)

Approved subject to:

- a. the following conditions which are necessary in accordance with the performance standards set forth in the wetlands regulations. This Commission orders that all work shall be performed in accordance with the Notice of Intent referenced above, the following General Conditions, and any other special conditions attached to this Order. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, these conditions shall control.



**Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands**

WPA Form 5 – Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

303-1005

MassDEP File #

eDEP Transaction #

SUTTON

City/Town

B. Findings (cont.)

Denied because:

- b. the proposed work cannot be conditioned to meet the performance standards set forth in the wetland regulations. Therefore, work on this project may not go forward unless and until a new Notice of Intent is submitted which provides measures which are adequate to protect the interests of the Act, and a final Order of Conditions is issued. **A description of the performance standards which the proposed work cannot meet is attached to this Order.**
- c. the information submitted by the applicant is not sufficient to describe the site, the work, or the effect of the work on the interests identified in the Wetlands Protection Act. Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides sufficient information and includes measures which are adequate to protect the Act's interests, and a final Order of Conditions is issued. **A description of the specific information which is lacking and why it is necessary is attached to this Order as per 310 CMR 10.05(6)(c).**
- 3. Buffer Zone Impacts: Shortest distance between limit of project disturbance and the wetland resource area specified in 310 CMR 10.02(1)(a) _____ a. linear feet

Inland Resource Area Impacts: Check all that apply below. (For Approvals Only)

| Resource Area | Proposed Alteration | Permitted Alteration | Proposed Replacement | Permitted Replacement |
|---|---|---|--------------------------|--------------------------|
| 4. <input checked="" type="checkbox"/> Bank | 200 a. linear feet | 200 b. linear feet | 50 c. linear feet | 50 d. linear feet |
| 5. <input type="checkbox"/> Bordering Vegetated Wetland | _____ a. square feet | _____ b. square feet | _____ c. square feet | _____ d. square feet |
| 6. <input checked="" type="checkbox"/> Land Under Waterbodies and Waterways | 36,500 a. square feet 850 e. c/y dredged | 36,500 b. square feet 850 f. c/y dredged | 11,150 c. square feet | 11,150 d. square feet |
| 7. <input checked="" type="checkbox"/> Bordering Land Subject to Flooding | 8,200 a. square feet | 8,200 b. square feet | 5,200 c. square feet | 5,200 d. square feet |
| Cubic Feet Flood Storage | 0 e. cubic feet | 0 f. cubic feet | 0 g. cubic feet | 0 h. cubic feet |
| 8. <input type="checkbox"/> Isolated Land Subject to Flooding | _____ a. square feet | _____ b. square feet | _____ e. cubic feet | _____ f. cubic feet |
| Cubic Feet Flood Storage | _____ c. cubic feet | _____ d. cubic feet | _____ e. cubic feet | _____ f. cubic feet |
| 9. <input checked="" type="checkbox"/> Riverfront Area | 7,650 a. total sq. feet | 7,650 b. total sq. feet | - | - |
| Sq ft within 100 ft | - c. square feet | - d. square feet | - e. square feet | - f. square feet |
| Sq ft between 100-200 ft | 7,650 g. square feet | 7,650 h. square feet | - i. square feet | - j. square feet |



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
 303-1005

MassDEP File # _____

eDEP Transaction # _____

SUTTON

City/Town

B. Findings (cont.)

Coastal Resource Area Impacts: Check all that apply below. (For Approvals Only)

| | Proposed Alteration | Permitted Alteration | Proposed Replacement | Permitted Replacement |
|--|---|-------------------------|-------------------------|--------------------------|
| 10. <input type="checkbox"/> Designated Port Areas | Indicate size under Land Under the Ocean, below | | | |
| 11. <input type="checkbox"/> Land Under the Ocean | _____ | _____ | | |
| | a. square feet | b. square feet | | |
| | _____ | _____ | | |
| | c. c/y dredged | d. c/y dredged | | |
| 12. <input type="checkbox"/> Barrier Beaches | Indicate size under Coastal Beaches and/or Coastal Dunes below | | | |
| 13. <input type="checkbox"/> Coastal Beaches | _____ | _____ | _____ cu yd | _____ cu yd |
| | a. square feet | b. square feet | c. nourishment | d. nourishment |
| 14. <input type="checkbox"/> Coastal Dunes | _____ | _____ | _____ cu yd | _____ cu yd |
| | a. square feet | b. square feet | c. nourishment | d. nourishment |
| 15. <input type="checkbox"/> Coastal Banks | _____ | _____ | | |
| | a. linear feet | b. linear feet | | |
| 16. <input type="checkbox"/> Rocky Intertidal Shores | _____ | _____ | | |
| | a. square feet | b. square feet | | |
| 17. <input type="checkbox"/> Salt Marshes | _____ | _____ | _____ | _____ |
| | a. square feet | b. square feet | c. square feet | d. square feet |
| 18. <input type="checkbox"/> Land Under Salt Ponds | _____ | _____ | | |
| | a. square feet | b. square feet | | |
| | _____ | _____ | | |
| | c. c/y dredged | d. c/y dredged | | |
| 19. <input type="checkbox"/> Land Containing Shellfish | _____ | _____ | _____ | _____ |
| | a. square feet | b. square feet | c. square feet | d. square feet |
| 20. <input type="checkbox"/> Fish Runs | Indicate size under Coastal Banks, Inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above | | | |
| | _____ | _____ | | |
| | a. c/y dredged | b. c/y dredged | | |
| 21. <input type="checkbox"/> Land Subject to Coastal Storm Flowage | _____ | _____ | | |
| | a. square feet | b. square feet | | |
| 22. <input type="checkbox"/> Riverfront Area | _____ | _____ | | |
| | a. total sq. feet | b. total sq. feet | | |
| Sq ft within 100 ft | _____ | _____ | _____ | _____ |
| | c. square feet | d. square feet | e. square feet | f. square feet |
| Sq ft between 100-200 ft | _____ | _____ | _____ | _____ |
| | g. square feet | h. square feet | i. square feet | j. square feet |



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B. Findings (cont.)

* #23. If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.5.c (BVW) or B.17.c (Salt Marsh) above, please enter the additional amount here.

23. Restoration/Enhancement *:

a. square feet of BVW

b. square feet of salt marsh

24. Stream Crossing(s):

0

1

a. number of new stream crossings

b. number of replacement stream crossings

C. General Conditions Under Massachusetts Wetlands Protection Act

The following conditions are only applicable to Approved projects.

1. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this Order.
2. The Order does not grant any property rights or any exclusive privileges; it does not authorize any injury to private property or invasion of private rights.
3. This Order does not relieve the permittee or any other person of the necessity of complying with all other applicable federal, state, or local statutes, ordinances, bylaws, or regulations.
4. The work authorized hereunder shall be completed within three years from the date of this Order unless either of the following apply:
 - a. The work is a maintenance dredging project as provided for in the Act; or
 - b. The time for completion has been extended to a specified date more than three years, but less than five years, from the date of issuance. If this Order is intended to be valid for more than three years, the extension date and the special circumstances warranting the extended time period are set forth as a special condition in this Order.
 - c. If the work is for a Test Project, this Order of Conditions shall be valid for no more than one year.
5. This Order may be extended by the issuing authority for one or more periods of up to three years each upon application to the issuing authority at least 30 days prior to the expiration date of the Order. An Order of Conditions for a Test Project may be extended for one additional year only upon written application by the applicant, subject to the provisions of 310 CMR 10.05(11)(f).
6. If this Order constitutes an Amended Order of Conditions, this Amended Order of Conditions does not extend the issuance date of the original Final Order of Conditions and the Order will expire on 8/27/2027 unless extended in writing by the Department.
7. Any fill used in connection with this project shall be clean fill. Any fill shall contain no trash, refuse, rubbish, or debris, including but not limited to lumber, bricks, plaster, wire, lath, paper, cardboard, pipe, tires, ashes, refrigerators, motor vehicles, or parts of any of the foregoing.



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C. General Conditions Under Massachusetts Wetlands Protection Act

8. This Order is not final until all administrative appeal periods from this Order have elapsed, or if such an appeal has been taken, until all proceedings before the Department have been completed.
9. No work shall be undertaken until the Order has become final and then has been recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land upon which the proposed work is to be done. In the case of the registered land, the Final Order shall also be noted on the Land Court Certificate of Title of the owner of the land upon which the proposed work is done. The recording information shall be submitted to the Conservation Commission on the form at the end of this Order, which form must be stamped by the Registry of Deeds, prior to the commencement of work.
10. A sign shall be displayed at the site not less than two square feet or more than three square feet in size bearing the words,

"Massachusetts Department of Environmental Protection" [or, "MassDEP"]
"File Number 303-1005 "
11. Where the Department of Environmental Protection is requested to issue a Superseding Order, the Conservation Commission shall be a party to all agency proceedings and hearings before MassDEP.
12. Upon completion of the work described herein, the applicant shall submit a Request for Certificate of Compliance (WPA Form 8A) to the Conservation Commission.
13. The work shall conform to the plans and special conditions referenced in this order.
14. Any change to the plans identified in Condition #13 above shall require the applicant to inquire of the Conservation Commission in writing whether the change is significant enough to require the filing of a new Notice of Intent.
15. The Agent or members of the Conservation Commission and the Department of Environmental Protection shall have the right to enter and inspect the area subject to this Order at reasonable hours to evaluate compliance with the conditions stated in this Order, and may require the submittal of any data deemed necessary by the Conservation Commission or Department for that evaluation.
16. This Order of Conditions shall apply to any successor in interest or successor in control of the property subject to this Order and to any contractor or other person performing work conditioned by this Order.



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C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

17. Prior to the start of work, and if the project involves work adjacent to a Bordering Vegetated Wetland, the boundary of the wetland in the vicinity of the proposed work area shall be marked by wooden stakes or flagging. Once in place, the wetland boundary markers shall be maintained until a Certificate of Compliance has been issued by the Conservation Commission.
18. All sedimentation barriers shall be maintained in good repair until all disturbed areas have been fully stabilized with vegetation or other means. At no time shall sediments be deposited in a wetland or water body. During construction, the applicant or his/her designee shall inspect the erosion controls on a daily basis and shall remove accumulated sediments as needed. The applicant shall immediately control any erosion problems that occur at the site and shall also immediately notify the Conservation Commission, which reserves the right to require additional erosion and/or damage prevention controls it may deem necessary. Sedimentation barriers shall serve as the limit of work unless another limit of work line has been approved by this Order.
19. The work associated with this Order (the "Project")
- (1) is subject to the Massachusetts Stormwater Standards
- (2) is NOT subject to the Massachusetts Stormwater Standards

If the work is subject to the Stormwater Standards, then the project is subject to the following conditions:

- a) All work, including site preparation, land disturbance, construction and redevelopment, shall be implemented in accordance with the construction period pollution prevention and erosion and sedimentation control plan and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Construction General Permit as required by Stormwater Condition 8. Construction period erosion, sedimentation and pollution control measures and best management practices (BMPs) shall remain in place until the site is fully stabilized.
- b) No stormwater runoff may be discharged to the post-construction stormwater BMPs unless and until a Registered Professional Engineer provides a Certification that:
- i. all construction period BMPs have been removed or will be removed by a date certain specified in the Certification. For any construction period BMPs intended to be converted to post construction operation for stormwater attenuation, recharge, and/or treatment, the conversion is allowed by the MassDEP Stormwater Handbook BMP specifications and that the BMP has been properly cleaned or prepared for post construction operation, including removal of all construction period sediment trapped in inlet and outlet control structures;
 - ii. as-built final construction BMP plans are included, signed and stamped by a Registered Professional Engineer, certifying the site is fully stabilized;
 - iii. any illicit discharges to the stormwater management system have been removed, as per the requirements of Stormwater Standard 10;



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C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

iv. all post-construction stormwater BMPs are installed in accordance with the plans (including all planting plans) approved by the issuing authority, and have been inspected to ensure that they are not damaged and that they are in proper working condition;

v. any vegetation associated with post-construction BMPs is suitably established to withstand erosion.

c) The landowner is responsible for BMP maintenance until the issuing authority is notified that another party has legally assumed responsibility for BMP maintenance. Prior to requesting a Certificate of Compliance, or Partial Certificate of Compliance, the responsible party (defined in General Condition 18(e)) shall execute and submit to the issuing authority an Operation and Maintenance Compliance Statement ("O&M Statement") for the Stormwater BMPs identifying the party responsible for implementing the stormwater BMP Operation and Maintenance Plan ("O&M Plan") and certifying the following:

i.) the O&M Plan is complete and will be implemented upon receipt of the Certificate of Compliance, and

ii.) the future responsible parties shall be notified in writing of their ongoing legal responsibility to operate and maintain the stormwater management BMPs and implement the Stormwater Pollution Prevention Plan.

d) Post-construction pollution prevention and source control shall be implemented in accordance with the long-term pollution prevention plan section of the approved Stormwater Report and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Multi-Sector General Permit.

e) Unless and until another party accepts responsibility, the landowner, or owner of any drainage easement, assumes responsibility for maintaining each BMP. To overcome this presumption, the landowner of the property must submit to the issuing authority a legally binding agreement of record, acceptable to the issuing authority, evidencing that another entity has accepted responsibility for maintaining the BMP, and that the proposed responsible party shall be treated as a permittee for purposes of implementing the requirements of Conditions 19(f) through 19(k) with respect to that BMP. Any failure of the proposed responsible party to implement the requirements of Conditions 19(f) through 19(k) with respect to that BMP shall be a violation of the Order of Conditions or Certificate of Compliance. In the case of stormwater BMPs that are serving more than one lot, the legally binding agreement shall also identify the lots that will be serviced by the stormwater BMPs. A plan and easement deed that grants the responsible party access to perform the required operation and maintenance must be submitted along with the legally binding agreement.

f) The responsible party shall operate and maintain all stormwater BMPs in accordance with the design plans, the O&M Plan, and the requirements of the Massachusetts Stormwater Handbook.



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C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

- g) The responsible party shall:
1. Maintain an operation and maintenance log for the last three (3) consecutive calendar years of inspections, repairs, maintenance and/or replacement of the stormwater management system or any part thereof, and disposal (for disposal the log shall indicate the type of material and the disposal location);
 2. Make the maintenance log available to MassDEP and the Conservation Commission ("Commission") upon request; and
 3. Allow members and agents of the MassDEP and the Commission to enter and inspect the site to evaluate and ensure that the responsible party is in compliance with the requirements for each BMP established in the O&M Plan approved by the issuing authority.
- h) All sediment or other contaminants removed from stormwater BMPs shall be disposed of in accordance with all applicable federal, state, and local laws and regulations.
- i) Illicit discharges to the stormwater management system as defined in 310 CMR 10.04 are prohibited.
- j) The stormwater management system approved in the Order of Conditions shall not be changed without the prior written approval of the issuing authority.
- k) Areas designated as qualifying pervious areas for the purpose of the Low Impact Site Design Credit (as defined in the MassDEP Stormwater Handbook, Volume 3, Chapter 1, Low Impact Development Site Design Credits) shall not be altered without the prior written approval of the issuing authority.
- l) Access for maintenance, repair, and/or replacement of BMPs shall not be withheld. Any fencing constructed around stormwater BMPs shall include access gates and shall be at least six inches above grade to allow for wildlife passage.

Special Conditions (if you need more space for additional conditions, please attach a text document):

20. For Test Projects subject to 310 CMR 10.05(11), the applicant shall also implement the monitoring plan and the restoration plan submitted with the Notice of Intent. If the conservation commission or Department determines that the Test Project threatens the public health, safety or the environment, the applicant shall implement the removal plan submitted with the Notice of Intent or modify the project as directed by the conservation commission or the Department.



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D. Findings Under Municipal Wetlands Bylaw or Ordinance

1. Is a municipal wetlands bylaw or ordinance applicable? Yes No
2. The Sutton Conservation Commission hereby finds (check one that applies):
 - a. that the proposed work cannot be conditioned to meet the standards set forth in a municipal ordinance or bylaw, specifically:

| | |
|---------------------------------|-------------|
| 1. Municipal Ordinance or Bylaw | 2. Citation |
|---------------------------------|-------------|

Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides measures which are adequate to meet these standards, and a final Order of Conditions is issued.

- b. that the following additional conditions are necessary to comply with a municipal ordinance or bylaw:

| | |
|---------------------------------|-------------------|
| <u>Wetlands Protection</u> | <u>Article 12</u> |
| 1. Municipal Ordinance or Bylaw | 2. Citation |
3. The Commission orders that all work shall be performed in accordance with the following conditions and with the Notice of Intent referenced above. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, the conditions shall control.
The special conditions relating to municipal ordinance or bylaw are as follows (if you need more space for additional conditions, attach a text document):

See attached Findings of Fact and Special Conditions (pp.10a-10h)

Sutton Conservation Commission



Order of Conditions-Special Conditions
under Article 12, the
Sutton Wetlands Protection Bylaw

| | |
|-------------------------|---|
| <u>Applicant Name:</u> | Caleb Slater / Massachusetts Division of Fisheries and Wildlife |
| <u>Owner Name:</u> | Same |
| <u>Project Address:</u> | 187 West Sutton Road |
| <u>Map, Parcel:</u> | Map 22, Parcel 40 |

Findings of Fact

Caleb Slater / Massachusetts Division of Fisheries and Wildlife (Applicant) submitted a Notice of Intent (NOI) for the above-referenced property (Property) via Tighe & Bond Inc., (Daniel Buttrick representing). The application was received on June 21, 2024. The public hearing was opened June 26, 2024, and closed on August 7, 2024. Voting Conservation Commission (Commission) members included William Wence (Chair), James Marran, Timothy Thompson, Robin Jacques, and Jared Duval. Michael McGovern (Vice-Chair) was absent. The final vote was to APPROVE WITH STANDARD SPECIAL CONDITIONS for the proposed project, 5-0. Motion: T. Thompson. Second: R. Jacques.

Background

The project is located within Merrill Ponds Wildlife Management Area (WMA), a 235-acre parcel located southeast along W. Sutton Road. The WMA contains manmade impoundments consisting of open waterbodies, vegetated wetlands, and upland forests. Within the WMA impoundments, there are several dams between Welsh Pond, Putnam Pond, Schoolhouse Pond, Adams Pond, and Arnold Pond, constructed beginning in 1921.

Schoolhouse Pond dam is an earthen embankment dam with a public road (Eight Lots Road) running along its crest and is in Poor condition based on the Office of Dam Safety's rating guidelines (see the

Special Conditions for: 187 West Sutton Road Map: 22 Lot: 40

(DEP File # 303-1005)

“Section 2 Existing Conditions” of the Notice of Intent by Tighe & Bond, Inc., dated June 2024, for more details).

An Environmental Impact Report (EIR) was completed to include all dam removal projects within the WMA and is dated July 14, 2017.

Current Proposal

The current proposal is to remove and replace the existing CMP culvert running through the dam with a four-sided pre-cast box culvert, and the stoplog outlet structure that retains the pond will be demolished. As the impoundment area drains after stoplog removal, timber mats will be installed to excavate a stream channel, building mounds of excavated material along the way (See “Section 3 Project Description” of the Notice of Intent by Tighe & Bond, Inc., dated June 2024, for more details).

The Dam removal gives opportunity for stream connectivity, increasing habitat diversity, and improving the value of the local ecosystem.

Wetland Resource Areas

Resource Areas under M.G.L. 131, §40, 310CMR 10.00 and covered under Article 12 present on or in close vicinity to the site:

- Bank
- Land Under Waterbodies and Waterways
- Bordering Land Subject to Flooding
- Riverfront Area
- Bordering Vegetated Wetland w/ 100' Buffer Zone (BZ).

Resource Areas covered under Article 12 only present on-site:

- 100' Adjacent Upland Resource Area (AURA) associated with the Bank and BVW and 200' AURA associated with Riverfront Area.

In addition to the Presumptions of Significance (Presumptions) for Resource Area stated above in WPA Form 5- Order of Conditions also covered by Article 12, the following Presumptions under Article 12 are found to be applicable to the Resource Areas found at the subject Property:

- Protection of Recreational Activities
- Protection of Aesthetics
- Protection of Aquatic Life Habitat

Proposed Impacts

Proposed impacts are 200 linear feet of Bank, 36,500sf altered and 850 cubic yards dredged of Land Under Waterbodies and Waterways, 8,250sf of Bordering Land Subject to Flooding, and 7,650sf of Riverfront Area.

Approval

The plan was approved under the provisions of 310CMR 10.00 and under the Bylaw in that **no significant adverse impact** to the Resource Areas and Public Interests in M.G.L. c.131, §40, 310CMR 10.00, and Article 12 will occur if:

- a. The site plan is strictly followed;
- b. The stated construction sequence is strictly adhered to;
- c. Any other site-specific special conditions outlined below are strictly adhered to.

Further, as designed and approved, there will be no significant adverse impacts to the Public Interests identified in the Massachusetts Wetlands Protection Act (M.G.L. c.131, §40), its Regulations (310 CMR 10.00) and the Sutton Bylaw (Article 12).

Plans

The approved plan of record is titled "Schoolhouse Pond Dam Removal Project" consisting of thirteen (13) sheets by Tighe & Bond, Inc., by Christopher D. Haker, P.E. and Daniel R. Buttrick, P.E. with a final revision date of April 2024.

Pre Construction

General

1. All General Conditions found in WPA Form 5- Order of Conditions are considered part of these Special Conditions under Article 12.
2. The **Findings of Fact** are incorporated as a Special Condition and given equal status as a Special Condition(s) of this Order.
3. All work shall be performed in accordance with the site plan set referenced above. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, the conditions shall control.
4. **Violation of any condition stated herein may result in Enforcement Action or revocation of the Order.**
5. **Work may be immediately halted** on the site if a Conservation Commissioner, an Agent of the Commission, or DEP determines that any of the work is not in compliance with this Order of Conditions or Special Order of Conditions.
6. In accordance with WPA Form 5, the following must occur in association with this Order:
 - a. The Sutton Conservation Commission ('Commission') must be notified that the Order has been recorded with the Registry of Deeds or the Land Court for the district in which the land is located *not later than 10 days from the mailing date of this Order.*

- b. No activity shall commence until the Order has been recorded and the 10-day appeal period has passed.
 - c. **This document shall be included in all construction contracts, subcontracts, and specifications dealing with the work proposed and shall supersede any conflicting contract requirements.**
7. The Applicant shall supply:
 - a. **Name(s), address, and telephone number(s) of the person(s) responsible on site for compliance with this Order.**
8. The Project Supervisor must:
 - a. **Be given a copy of the Order Of Conditions**
 - b. **Keep a copy of this Order and the Approved Plan on site at all times, while work is being conducted.**
 - c. Be made aware that they are responsible for compliance with this Order and may be held jointly responsible for any violations and the penalties under law for said violations.
9. Construction schedule/ project sequencing:
 - a. **The Applicant shall submit to the Commission a schedule of major events in the Project (i.e. construction schedule);**
 - b. If changes in the construction schedule occur, said changes shall be noted and a revised schedule forwarded to the Commission;
 - c. The purpose of the construction schedule is to keep the Commission apprised of progress, benchmarks, and therefore when site inspections may be appropriate.
10. The Conservation Commission will be notified *at least* one week prior to construction to allow for a **pre-construction site visit/meeting**. The following people shall be present for the pre-construction meeting:
 - a. Applicant or Applicant's Representative(s) from the Conservation Commission Public Hearings;
 - b. Applicant's Construction Supervisor(s) (person or persons responsible for overall compliance with this Order);
 - c. Applicant's Contractor(s), as applicable;
 - d. Consultant of the Commission;
 - e. Conservation Commissioners.

If different contractors will be used for different phases of the project, or if contractors change during the time the Order is valid, the Applicant shall contact the Commission and schedule additional pre-construction site visit/meetings as the project progresses.

Erosion and Sedimentation Control Measures

11. Stockpiling of additional sedimentation and erosion control devices:
 - a. An adequate stock of sedimentation and erosion control devices shall be kept on site at all times for emergency use, or normal repair and maintenance;
 - b. An area for storage of said controls shall be designated on-site;
 - c. Additional sedimentation and erosion controls shall be covered and protected from the elements, as necessary.

12. Erosion and Sedimentation control measures shall:
 - a. Be installed in accordance with the plan cited in this Order.
 - b. Be installed prior to construction activities in a sequence appropriate to the construction schedule (e.g. at the beginning of a new phase of construction);
 - c. Be appropriate and effective for the location and shall **exclude the use of haybales. 100% biodegradable straw wattles and/or 100% biodegradable compost sox are acceptable; photodegradable or oxo-(bio)degradable plastics are not considered biodegradable for the purposes of this requirement;**
 - d. Biodegradable erosion or sedimentation controls may be left on-site to decompose naturally;
 - e. When straw wattles or compost sox are used, and burlap sheathing is not available, the mesh or aperture size should be as large as possible to avoid wildlife entrapment and should have a loose weave, wildlife-safe design with movable joints between the horizontal and vertical joints between the horizontal and vertical twines, allowing the twines to move independently and thus reducing the potential for wildlife entanglement;
 - f. Silt fence may be employed to reinforce straw wattles or compost sox in steep areas, but the Applicant shall avoid the use of silt fences reinforced with metal or plastic mesh.
 - g. Prior to commencement of any work the construction and placement of all **erosion and sedimentation controls are to be certified, in writing, to the Commission, by a qualified professional (e.g. PWS, P.E., CPESC, RS).** A Sutton Conservation Commissioner or the Commission's designated professional representative shall confirm the certification in the field.

During Construction

13. **All site contractors working on the Project must be given a copy of the Order Of Conditions and Plans and have it in their possession at the site at all times (e.g. in their vehicle, on-site, and not elsewhere), while work is being conducted, and be made available upon request.**

14. **Any change in these Conditions, plans or Project scope shall be made in writing, however minor;**

15. Site inspections by the Commission:
 - a. The Commission shall have the right to request and receive any additional data or documentation that it deems necessary for that evaluation;
 - b. Work shall halt on the site if the Commissioner, Consultant, or DEP determines that any of the work is not in compliance with this Order of Conditions;
 - c. If work is halted, work shall not resume until the Commission is satisfied that the corrective action(s) will comply with the WPA, Regulations, and Bylaw.

16. In case of emergencies, problems, or the need to discuss site conditions with the Commission, call the Conservation office at (508) 865-8728, or the Conservation Consultant at (508) 997-0268:

17. The Applicant shall maintain and stabilize all exposed slopes or disturbed surfaces likely to contribute to erosion and sedimentation. Slopes shall be stabilized immediately upon completion of grading as the project progresses.

Staging Area/Construction Equipment Cleanup

18. The general contractor shall designate a **construction staging area** that will not require cutting or clearing of vegetation beyond that approved by this Order. It shall be located within the permanent limit of disturbance.

19. The Applicant is prohibited from discharging the following within a Resource Area, Buffer Zone, or an area leading to a stormwater conveyance system:
 - a. Wastewater from washout of concrete;
 - b. Stucco, paint, form release oils, curing compounds and other construction materials;
 - c. Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance;
 - d. Soaps, solvents, or detergents used in vehicle and equipment washing;
 - e. Toxic or hazardous substances from a spill or other release.

Any deposit of one or more of the above materials into an AURA or Resource Area shall be immediately removed.

20. Petroleum hydrocarbons (diesel, gas, etc.), pesticides, herbicides, and other chemicals shall not be stored in a Resource Area or AURA. Any such materials must be properly stored and protected from the weather in accordance with manufacturer's specifications.

Erosion and Sedimentation Control

21. All Conditions related to Erosion and Sediment Control in the *Pre-Construction* section of this Order shall pertain to this section.

22. The Applicant shall take all measures to prevent erosion and sedimentation of wetland resource areas.

23. Erosion and sedimentation control devices may be modified based upon experience at the site. All such devices shall be inspected, cleaned, or replaced as needed during construction;
24. Soils shall be stabilized immediately post-construction, and the site in general shall be maintained in good repair.
25. PUMPING: Should pumping be necessary, efforts shall be made to avoid and/or minimize the amount of sediment laden water from discharging into a Resource Area. The BMP used shall be determined by the contractor and approved by the Conservation Commission prior to construction of said BMP.

Specific to this Application

26. The Applicant is allowed suppression and eradication of invasive plant species **in-perpetuity**.
27. The Commission must receive a plan containing a turbidity curtain detail associated with this project.

Post Construction

28. Continued maintenance of all disturbed areas, in a manner which assures permanent stabilization and precludes any soil erosion shall be the responsibility of the Applicant/Owner/Assign of this Property. This is an in-perpetuity Condition.

Conditions related to Certificate of Compliance

29. On or about the yearly anniversary of the issuance of this Order, a representative of the Conservation Commission shall perform a site inspection to assess compliance with the Order until such a time that a Certificate of Compliance is issued.
30. Upon completion of construction and final soil stabilization, the Applicant/Owner/Assign shall submit the following to the Conservation Commission to request a Certificate of Compliance (COC):
 - a. A Completed Request for a Certificate of Compliance form (WPA Form 8A or other form if required by the Conservation Commission at the time of request);
 - b. A letter from a Registered Professional Engineer certifying compliance of the Property with this Order of Conditions, and detailing any deviations that exist, and their potential effect on the project. A statement that the work is in "substantial compliance" with no detailing of the deviations shall not be accepted;
 - c. An as-built plan.

31. Upon receipt of the request for a Certificate of Compliance (WPA Form 8B), the Commission will either hold a site visit with a quorum of the Commission present or designate an Agent of the Commission to perform said inspection. The Certificate of Compliance shall be issued in accordance with the choices found on Form 8B, with additional comments attached as deemed necessary to ensure compliance with the Order.
32. Any change of successor or successor in control ('Successor') of this project shall be submitted in writing to the Commission. The request shall include all changes, however minor, to the design plans cited in this Order. Prior to any work commencing by the Successor the Commission shall determine if proposed changes to the project require the filing of a new Notice of Intent or a Request for Amendment to the Order of Conditions. A pre-construction conference shall be scheduled at the regularly held Commission meetings for the Commission to review the project with any new parties (i.e. change of ownership or controlling interest and/or engineer and/or general contractor).
33. The Applicant shall furnish the Commission with a copy of the recorded Certificate of Compliance as performed with the Registry of Deeds in accordance with WPA Form 8B.
34. The Applicant must furnish to the Commission or its Agent(s), within a reasonable time, any information the Commission may request to determine whether cause exists for modifying, revoking, and reissuing, or terminating this Order or to determine compliance with this Order.
35. Should it come to the Commission's attention that any or all of this Order was created in reliance of false information, this Order shall become invalid and the Order revoked.
36. Invalidation of a portion of this permit does not necessarily render the whole Order invalid. The Commission's intent is that the Order is to remain in effect to the extent possible; in the event that any part of this permit is invalidated, the Commission will advise the Applicant as to the effect of such invalidation.



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E. Signatures

This Order is valid for three years, unless otherwise specified as a special condition pursuant to General Conditions #4, from the date of issuance.

8-27-24
1. Date of Issuance

Please indicate the number of members who will sign this form. This Order must be signed by a majority of the Conservation Commission.

5
2. Number of Signers

The Order must be mailed by certified mail (return receipt requested) or hand delivered to the applicant. A copy also must be mailed or hand delivered at the same time to the appropriate Department of Environmental Protection Regional Office, if not filing electronically, and the property owner, if different from applicant.

Sutton

William Wence
Signature

William Wence - Chair
Printed Name

Michael McGovern
Signature

Michael McGovern - Vice Chair
Printed Name

Robin Jacques
Signature

Robin Jacques - Clerk
Printed Name

James Marran
Signature

James Marran - Member
Printed Name

Timothy Thompson
Signature

Timothy Thompson - Member
Printed Name

Jared Duval
Signature

Jared Duval - Alternate
Printed Name

Signature

Printed Name

Signature

Printed Name

by hand delivery on

by certified mail, return receipt requested, on

Date

8-27-24
Date



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

303-1005

MassDEP File #

eDEP Transaction #

SUTTON

City/Town

F. Appeals

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land subject to this Order, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate MassDEP Regional Office to issue a Superseding Order of Conditions. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and a completed Request for Departmental Action Fee Transmittal Form, as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

Any appellants seeking to appeal the Department's Superseding Order associated with this appeal will be required to demonstrate prior participation in the review of this project. Previous participation in the permit proceeding means the submission of written information to the Conservation Commission prior to the close of the public hearing, requesting a Superseding Order, or providing written information to the Department prior to issuance of a Superseding Order.

The request shall state clearly and concisely the objections to the Order which is being appealed and how the Order does not contribute to the protection of the interests identified in the Massachusetts Wetlands Protection Act (M.G.L. c. 131, § 40), and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal ordinance or bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.

Section 00310

Attachment B

401 Water Quality Certificate



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

100 Cambridge Street 9th Floor Boston, MA 02114 • 617-292-5500

Maura T. Healey
Governor

Kimberley Driscoll
Lieutenant Governor

Rebecca L. Tepper
Secretary

Bonnie Heiple
Commissioner

June 11, 2024

Caleb Slater
Massachusetts Division of Fisheries
and Wildlife
One Rabbit Hill Road
Westborough, MA 01581

DEP WQC APPLICATION # 24-WW26-0009-APP
EEA # 15642
NAE-2023-01981
401 WQC Application Completion: 6/6/24

RE: COMBINED PERMIT – 401 WATER QUALITY CERTIFICATION
Application for: BRP WW 26
401 WATER QUALITY CERTIFICATION FOR DREDGING & FILL/EXCAVATION

AT: Schoolhouse Pond Dam, Merrill Ponds Wildlife Management Area – Sutton
Blackstone River Basin

Dear Dr. Slater:

The Department of Environmental Protection (“MassDEP”) has reviewed your application for a Combined Permit 401 Water Quality Certification for Dredging and Fill/Excavation (“Combined 401 WQC”), as referenced above and is basing its certification upon an evaluation of the information contained in the application which is relevant to water quality considerations. In accordance with the provisions of Section 401 of the Federal Clean Water Act (33 U.S.C. § 1251 *et seq.*), MGL c. 21, §§ 26-53, and 314 CMR 9.00, MassDEP has determined there is reasonable assurance the project or activity, as conditioned herein, will be conducted in a manner which will not violate applicable water quality standards (314 CMR 4.00) and other appropriate requirements of state law.

The waters of Schoolhouse Pond, which is an impoundment along Singletary Brook, are unlisted in the Massachusetts Surface Water Quality Standards, and therefore, considered Class B. Such waters are intended “as habitat for fish, other aquatic life and wildlife, and for primary and secondary contact recreation.” Antidegradation provisions of these Standards require that “existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.”

The above-referenced project includes the removal of Schoolhouse Pond Dam, the replacement of the culvert within the dam, and the creation of a pilot stream channel through the current impoundment. Once completed, this ecological restoration project is expected to restore aquatic and riparian habitat connectivity and enhance riverine function.

Approximately 650 cubic yards (“CY”) of sediment will be mechanically dredged to create the pilot channel. This sediment will be placed adjacent to the new channel in microtopographic relief areas and then seeded with a native seed mix. In addition, approximately 200 CY of sediment is expected to mobilize during future storm events and settle in depositional areas downstream. Approximately 11,000 square feet of land under the High Water Mark will be impacted temporarily by the placement of construction mats and coffer dams which will be removed upon completion of the project. Approximately 6.46 acres of land under water (“LUW”) is expected to convert to bordering vegetated wetland (“BVW”) after the dam is removed and the impoundment has drained. The work is shown on the attached plans.

Sediment Chemistry Results: Sediment samples upstream of the dam, within the impoundment, and downstream of the dam were collected for analysis. The results of the chemical analysis were compared to MassDEP’s *Interim Policy for Sampling, Analysis, Handling and Tracking Requirements for Dredged Sediment Reuse and Disposal* (COMM-94-007). All of the results were either non-detect or below the Reportable Concentration (“RC”) S-1 criteria of the Massachusetts Contingency Plan (“MCP”), except for one location which slightly exceeded the threshold for arsenic. However, the area in the impoundment where this exceedance occurred is outside of the future stream channel. Furthermore, clean sediment from the dredged channel will be placed on top of it, seeded with a native seed mix, and stabilized by vegetation.

Public Notice: The Combined Permit Application public notice was published in the *Millbury-Sutton Chronicle* on February 29, 2024. No comments were received by MassDEP during the 21-day public comment period pursuant to 314 CMR 9.05(3)(e), which ended on March 21, 2024.

Section 61 Findings: Pursuant to M.G.L. Chapter 30, Sections 61 to 62H inclusive [the Massachusetts Environmental Policy Act (“MEPA”)], the project, as referenced in the Combined Permit Application, DEP Application # 24-WW26-0009-APP, was required to file an Expanded Environmental Notification Form (“EENF”). MassWildlife (the “Proponent”) filed the EENF for the construction of the project under EEA # 15642 and noticed the EENF in the Environmental Monitor (the “Monitor”) on February 8, 2017. In the Certificate issued on March 31, 2017, the Secretary of Energy and Environmental Affairs (the “Secretary”) determined that “this project requires the preparation of a Single Environmental Impact Report (Single EIR).” Further, the Proponent requested that the Secretary allow a Single EIR to be prepared in lieu of the usual two-stage Draft and Final EIR process pursuant to Section 11.06(8) of the MEPA regulations. The Secretary granted that request. Accordingly, the Proponent filed the Single EIR and noticed such in the Monitor on June 7, 2017. In the Certificate issued on July 14, 2017, the Secretary determined that the “Single EIR adequately and properly complies with MEPA and its

implementing regulations” and that the Project “may proceed to permitting.” MassDEP has reviewed the findings in both the EENF and Single EIR Certificates and confirms that based on the avoidance, minimization, and mitigation measures undertaken by the Proponent, in conjunction with the requirements set forth in this Combined 401 WQC, all outstanding issues have been addressed satisfactorily.

Therefore, based on information currently in the record, MassDEP grants a Combined 401 WQC for this project subject to the following conditions to maintain or attain water quality, to minimize any damage to the environment that may result from the project, and to ensure compliance with appropriate provisions of state law. MassDEP certifies that there is reasonable assurance the project or activity, as conditioned herein, will be conducted in a manner which will not violate applicable water quality standards (314 CMR 4.00) and other appropriate requirements of state law.

1. The contractor shall take all steps necessary to ensure that the proposed activities will be conducted in a manner that will avoid violations of the antidegradation provisions of the Massachusetts Surface Water Quality Standards, 314 CMR 4.00, that protect all waters, including wetlands. Pursuant to 314 CMR 9.01(3), this condition is necessary to ensure that any discharge from the project complies with the Massachusetts Surface Water Quality Standards, as provided in 314 CMR 4.00, to protect the public health and restore and maintain the chemical, physical, and biological integrity of the water resources of the Commonwealth.
2. Prior to the start of work, or for any portion of the work thereafter, MassDEP shall be notified of any change(s) in the proposed project or plans that may affect waters or wetlands. MassDEP will determine whether the change(s) requires a revision to this Combined 401 WQC. Pursuant to 314 CMR 9.06(1), 9.07(1) and 9.09(2), this condition is necessary to protect the public health and restore and maintain the chemical, physical, and biological integrity of the water resources of the Commonwealth.
3. Dredging and filling/excavation in accordance with this Combined 401 WQC may begin following the 21-day appeal period and once all other permits have been received. Pursuant to 314 CMR 9.10, this condition is necessary to ensure that due process is provided to certain persons deemed to be aggrieved by the Combined 401 WQC.
4. All work shall be performed in accordance with the following documents and plans [Pursuant to 314 CMR 9.05(1), this condition is necessary as these documents outline how the execution of the project will meet the criteria of 314 CMR 9.06 and 9.07 thereby protecting water quality and preventing degradation to wetlands and waters of the Commonwealth]:
 - Application for Combined Permit, DEP Application # 24-WW26-0009-APP, dated February 7, 2024, as revised through June 6, 2024, with attachments.

- Plan entitled “Massachusetts Division of Fisheries and Wildlife, Schoolhouse Pond Dam Removal Project, Sutton, Massachusetts,” consisting of 13 sheets, various scales, dated January 2024, as revised through May 2024, prepared by Tighe & Bond, Inc., not signed or stamped, and attached to this Combined 401 WQC.
 - Document entitled “Dam Removal Monitoring Plan – Schoolhouse Pond Dam,” consisting of 6 pages, dated March 1, 2024, as revised through May 30, 2024, prepared by Tighe & Bond, Inc.
5. MassDEP shall be notified, attention Derek Standish [617-875-3843 derek.standish@mass.gov], one week prior to the start of in-water work so that MassDEP staff may inspect the work for compliance with the terms and conditions of this Combined 401 WQC. Pursuant to 314 CMR 9.05(4), this condition is necessary to ensure that construction practices are implemented in such a manner as to prevent degradation to wetlands and waters of the Commonwealth.
 6. The term of this Combined 401 WQC remains in effect for the same duration as the federal permit that requires it. Pursuant to 314 CMR 9.00, this condition is necessary to ensure that any dredging is conducted in a timely manner and complies with the Massachusetts Surface Water Quality Standards, as provided in 314 CMR 4.00, to protect the public health and restore and maintain the chemical, physical, and biological integrity of wetlands and waters of the Commonwealth.
 7. During the project period, there shall be no discharge or spillage of fuel, oil, or other pollutants, including sediments, onto any part of the site. The applicant shall take all reasonable precautions to prevent the release of pollutants by ignorance, accident, or vandalism. Pursuant to 314 CMR 9.06(1) and 9.07(1), this condition is necessary to ensure that construction practices are implemented in such a manner as to prevent degradation to wetlands and waters of the Commonwealth.
 8. No later than four weeks after issuance of this Combined 401 WQC, the applicant shall submit a notification procedure outlining the reporting process to MassDEP for incidents relating to dredging activities that impact surrounding resource areas and habitats including, but not limited to, observed dead or distressed fish or other aquatic organisms, observed oily sheen on the surface of the water, a sediment spill, a turbidity plume beyond the deployed Best Management Practices (“BMPs”), and a barge or equipment accident/spill. If at any time during implementation of the project such an incident occurs, the applicant shall immediately notify MassDEP and all site related activities impacting the water shall cease until the source of the problem is identified and adequate mitigating measures are deployed to the satisfaction of MassDEP. Pursuant to 314 CMR 9.07(3), this condition is necessary to ensure that construction is conducted in a manner that minimizes short-term, long-term, and cumulative impacts on the aquatic ecosystem and provides protection to human health.

9. Future maintenance dredging is not authorized under this Combined 401 WQC. Pursuant to 314 CMR 9.04(5), the project does not qualify for the routine maintenance exemption. This condition is necessary to ensure that the chemical, physical and biological integrity of wetlands and waters of the Commonwealth are protected.
10. Flow to the downstream channel (Singletary Brook) shall be maintained throughout construction of the project. Pursuant to 314 CMR 9.07(1)(c), this condition is necessary to ensure that construction will be conducted in a manner that will not reduce or alter the habitat functions of the affected wetlands and waters of the Commonwealth.
11. All equipment/machinery shall be stored above the High Water Mark (“HWM”) and outside any wetland resource areas when not in use. Pursuant to 314 CMR 9.06(1)(c)4.c. and 9.07(1)(b)4.c., this condition is necessary to avoid and minimize adverse construction impacts to wetlands and waters of the Commonwealth.
12. All sedimentation barriers shall be maintained in good repair until all disturbed areas have been fully stabilized with vegetation or other means. At no time shall sediments be deposited in a wetland or water body, except as described in the documents and plans cited in Condition # 4. During construction, the applicant or his/her designee shall inspect the erosion controls on a daily basis and shall remove accumulated sediments as needed. The applicant shall immediately control any erosion problems that occur at the site and shall also immediately notify MassDEP, which reserves the right to require additional erosion and/or damage prevention controls it may deem necessary. Sedimentation barriers shall serve as the limit of work unless another limit of work line has been approved by MassDEP pursuant to this Combined 401 WQC. Pursuant to 314 CMR 9.06(1)(c)4.c. and 9.07(1)(b)4.c., this condition is necessary to avoid and minimize adverse construction impacts to wetlands and waters of the Commonwealth.
13. No later than 21 days prior to commencement of dredging activity, a dredged material dewatering plan shall be submitted to MassDEP for review and written approval. At a minimum, the dewatering plan shall include, but not be limited to, the type of containment, method of dewatering (i.e., mechanical or by gravity), method of collecting the dewatered effluent, and method of disposal. Pursuant to 314 CMR 9.07(1), this condition is necessary to adequately minimize and contain runoff water and material from the dredged material dewatering process to protect the water resource area thereby ensuring that water quality is not degraded, and biological resources are not negatively impacted by potential discharges.
14. MassDEP shall be notified in writing of the name and location of the upland licensed facility accepting the dredged material for disposal or reuse as daily cover material. If the licensed facility is located out of state, documentation shall be provided to MassDEP that the dredged material disposal/reuse has been approved and will be

accepted by the receiving state in accordance with 314 CMR 9.07(13)(b). The dredged material shall not be transported to the facility without the concurrence of MassDEP. Pursuant to 314 CMR 9.07(5) and 314 CMR 9.07(13), this condition is necessary to ensure that dredged material disposal will not adversely affect any wetlands or waters in the receiving area.

15. A Material Shipping Record (“MSR”) shall be used to track the dredged material to the licensed upland facility. A fully executed copy of the MSR shall be provided to MassDEP within 30 days of final shipment to the reuse location or facility. Pursuant to 314 CMR 9.07(5), this condition is necessary to maintain a record of the dredged material for reference and to ensure accountability in its transportation. This assists in the protection of health, safety, public welfare, and the environment from any potential hazards during transportation. Finally, it attests to the dredged material conforming with permitting and regulatory requirements for acceptance at the receiving location.
16. BMPs shall be implemented during transportation of the dredged material to the licensed receiving facility. At a minimum, when transported upon public roadways, all dredged material shall have no free liquid as determined by the Paint Filter Test or other suitably analogous methodology acceptable to MassDEP, and a tarpaulin or other means shall be used to cover the dredged material during transport. Pursuant to 314 CMR 9.07(5), this condition is necessary to protect off site water quality during transportation. These practices help to avoid fugitive dust and siltation into wetlands and waters of the Commonwealth.
17. Within 30 days of the completion of dredging, photographs of the affected areas depicting post-dredge conditions shall be taken and submitted to Derek Standish [derek.standish@mass.gov] at MassDEP. Pursuant to 314 CMR 9.07(1), this condition is necessary to ensure that construction practices are implemented in such a manner as to prevent degradation to wetlands and waters of the Commonwealth.

Failure to comply with this Combined 401 WQC is grounds for enforcement, including civil and criminal penalties, under M.G.L. c. 21, § 42, 314 CMR 9.00, M.G.L. c. 21A § 16, 310 CMR 5.00, or other possible actions/penalties as authorized by the General Laws of the Commonwealth.

This Combined 401 WQC does not relieve the applicant of the obligation to comply with other appropriate state or federal statutes or regulations. Any changes made to the project as described in the previously submitted Combined Permit Application or supplemental documents will require further notification to and, if an amendment is required, approval by MassDEP.

NOTICE OF APPEAL RIGHTS

Certain persons shall have a right to request an adjudicatory hearing concerning Combined 401 WQCs by MassDEP when an application is required:

- a. the applicant or property owner;
- b. any person aggrieved by the decision who has submitted written comments during the public comment period;
- c. any ten persons of the Commonwealth pursuant to M.G.L. c. 30A where a group member has submitted written comments during the public comment period; or
- d. any governmental body or private organization with a mandate to protect the environment, which has submitted written comments during the public comment period.

Any person aggrieved, any ten persons of the Commonwealth, or a governmental body or private organization with a mandate to protect the environment may appeal without having submitted written comments during the public comment period only when the claim is based on new substantive issues arising from material changes to the scope or impact of the activity and not apparent at the time of public notice. To request an adjudicatory hearing pursuant to M.G.L. c. 30A, § 10, a Notice of Claim must be made in writing, provided that the request is made by certified mail or hand delivery to MassDEP, with the appropriate filing fee specified within 310 CMR 4.10 along with a DEP Fee Transmittal Form within 21 days from the date of issuance of this Combined 401 WQC.

Department of Environmental Protection
Case Administrator
Office of Appeals and Dispute Resolution
100 Cambridge Street, Suite 900
Boston, MA 02114

A copy of the request shall at the same time be sent by certified mail or hand delivery to the issuing office of the Wetlands Program at:

Department of Environmental Protection
Wetlands Program
100 Cambridge Street, Suite 900
Boston, MA 02114

A Notice of Claim for Adjudicatory Hearing shall comply with MassDEP's Rules for Adjudicatory Proceedings, 310 CMR 1.01(6), and shall contain the following information pursuant to 314 CMR 9.10(3):

- a. the Combined Permit Application Number;
- b. the complete name of the applicant and address of the project;

- c. the complete name, address, and fax and telephone numbers of the party filing the request, and, if represented by counsel or other representative, the name, fax and telephone numbers, and address of the attorney;
- d. if claiming to be a party aggrieved, the specific facts that demonstrate that the party satisfies the definition of “aggrieved person” found at 314 CMR 9.02;
- e. a clear and concise statement that an adjudicatory hearing is being requested;
- f. a clear and concise statement of (1) the facts which are grounds for the proceedings, (2) the objections to this Combined 401 WQC, including specifically the manner in which it is alleged to be inconsistent with the MassDEP’s Water Quality Regulations, 314 CMR 9.00, and (3) the relief sought through the adjudicatory hearing, including specifically the changes desired in the final written Combined 401 WQC; and
- g. a statement that a copy of the request has been sent by certified mail or hand delivery to the applicant, the owner (if different from the applicant), the conservation commission of the city or town where the activity will occur, the Department of Conservation and Recreation (when the certificate concerns projects in Areas of Critical Environmental Concern), the public or private water supplier where the project is located (when the certificate concerns projects in Outstanding Resource Waters), and any other entity with responsibility for the resource where the project is located.


The hearing request along with a DEP Fee Transmittal Form and a valid check or money order payable to the Commonwealth of Massachusetts in the amount of one hundred dollars (\$100) must be mailed to:

Commonwealth of Massachusetts
Department of Environmental Protection
Commonwealth Master Lockbox
PO Box 4062
Boston, MA 02211

The request will be dismissed if the filing fee is not paid unless the appellant is exempt or granted a waiver. The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority. MassDEP may waive the adjudicatory hearing filing fee pursuant to 310 CMR 4.06(2) for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file an affidavit setting forth the facts believed to support the claim of undue financial hardship together with the hearing request as provided above.

Should you have any questions relative to this Combined 401 WQC, please contact Derek Standish at (617) 875-3843 [derek.standish@mass.gov].

Sincerely,



Lisa Rhodes
Wetlands Program Chief

ecc:Sutton Conservation Commission, 4 Uxbridge Road, Sutton, MA 01590
Lucia Isobel Arthen-Long, Tighe & Bond, Inc., 53 Southampton Road, Westfield, MA 01085
Judith Schmitz, MassDEP – CERO, 8 New Bond Street, Worcester, MA 01606
Roberta K. Budnick and Paul M. Maniccia, Department of the Army, New England District, Corps of Engineers, 696 Virginia Road, Concord, MA 01742-2751
Edward Reiner and Rachel Croy, EPA, 5 Post Office Square, Suite 100, Boston, MA 02109

attachments: Communication for Non-English Speaking Parties document
Plans of Record



重要 महत्वपूर्ण σημαντικός
Important
կարևոր quan trọng مهم



Communication for Non-English-Speaking Parties

This document is important and should be translated immediately.

If you need this document translated, please contact MassDEP's Director of Environmental Justice at the telephone number listed below.

Español Spanish

Este documento es importante y debe ser traducido inmediatamente. Si necesita traducir este documento, póngase en contacto con el Director de Justicia Ambiental de MassDEP (*MassDEP's Director of Environmental Justice*) en el número de teléfono que figura más abajo.

Português Portuguese

Este documento é importante e deve ser traduzido imediatamente. Se você precisar traduzir este documento, entre em contato com o Diretor de Justiça Ambiental do MassDEP no número de telefone listado abaixo.

繁體中文 Chinese Traditional

本文檔很重要，需要即刻進行翻譯。
如需對本文檔進行翻譯，請透過如下列示電話號碼與 MassDEP 的環境司法總監聯絡。

简体中文 Chinese Simplified

这份文件非常重要，需要立即翻译。
如果您需要翻译这份文件，请通过下方电话与 MassDEP 环境司法主任联系。

Ayisyen Kreyòl Haitian Creole

Dokiman sa a enpòtan epi yo ta dwe tradui l imedyatman. Si w bezwen tradui dokiman sa a, tanpri kontakte Direktè. Jistis Anviwònmanal MassDEP a nan nimewo telefòn ki endike anba a.

Việt Vietnamese

Tài liệu này và quan trọng và phải được dịch ngay. Nếu quý vị cần bản dịch của tài liệu này, vui lòng liên hệ với Giám Đốc Phòng Công Lý Môi Trường của MassDEP theo số điện thoại được liệt kê bên dưới.

ប្រទេសកម្ពុជា Khmer/Cambodian

ឯកសារនេះមានសារៈសំខាន់
ហើយគួរត្រូវបានបកប្រែភ្លាមៗ។
ប្រសិនបើអ្នកត្រូវការអោយឯកសារនេះបកប្រែ
សូមទាក់ទងនាយកផ្នែកយុត្តិធម៌បរិស្ថានរបស់
MassDEPតាមរយៈលេខទូរស័ព្ទដែលបានរាយដូចខា
ងក្រោម។

Kriolu Kabuverdianu Cape Verdean

Es dokumentu sta important i tenki ser tradusidu imediatamenti. Se nho ta presisa ke es dokumentu sta tradisidu, por favor kontata O Diretor di Justisia di Environman di DEP ku es numero di telefoni menxionadu di baixo.

Contact Deneen Simpson 857-406-0738

**Massachusetts Department of Environmental Protection
100 Cambridge Street 9th Floor Boston, MA 02114**

TTY# MassRelay Service 1-800-439-2370 • <https://www.mass.gov/environmental-justice>
(Version revised 8.2.2023) 310 CMR 1.03(5)(a)

Русский Russian

Это чрезвычайно важный документ, и он должен быть немедленно переведен. Если вам нужен перевод этого документа, обратитесь к директору Департамента экологического правосудия MassDEP (MassDEP's Director of Environmental Justice) по телефону, указанному ниже.

العربية Arabic

هذه الوثيقة مهمة وتجب ترجمتها على الفور.

إذا كنت بحاجة إلى ترجمة هذه الوثيقة، فيرجى الاتصال بمدير العدالة البيئية في MassDEP على رقم الهاتف المذكور أدناه.

한국어 Korean

이 문서는 중대하므로 즉시 번역되어야 합니다. 본 문서 번역이 필요하신 경우, 매사추세츠 환경보호부의 "환경정의" 담당자 분께 문의하십시오. 전화번호는 아래와 같습니다.

հայերեն Armenian

Այս փաստաթուղթը կարևոր է, և պետք է անհապաղ թարգմանել այն:
Եթե Ձեզ անհրաժեշտ է թարգմանել այս փաստաթուղթը, դիմեք Մասաչուսեթսի շրջակա միջավայրի պահպանության նախարարության (MassDEP) Բնապահպանական հարցերով արդարադատության ղեկավարին (Director of Environmental Justice)՝ ստորև նշված հեռախոսահամարով

فارسی Farsi Persian

این نوشتار بسیار مهمی است و باید فوراً ترجمه شود. اگر نیاز به ترجمه این نوشتار دارید لطفاً با مدیر عدالت محیط زیستی MassDEP در شماره تلفن ذکر شده زیر تماس بگیرید.

Français French

Ce document est important et doit être traduit immédiatement. Si vous avez besoin d'une traduction de ce document, veuillez contacter le directeur de la justice environnementale du MassDEP au numéro de téléphone indiqué ci-dessous.

Deutsch German

Dieses Dokument ist wichtig und muss sofort übersetzt werden. Wenn Sie eine Übersetzung dieses Dokuments benötigen, wenden Sie sich bitte an MassDEP's Director of Environmental Justice (Direktor für Umweltgerechtigkeit in Massachusetts) unter der unten angegebenen Telefonnummer.

Ελληνική Greek

Το έγγραφο αυτό είναι πολύ σημαντικό και πρέπει να μεταφραστεί αμέσως. Αν χρειάζεστε μετάφραση του εγγράφου αυτού, παρακαλώ επικοινωνήστε με τον Διευθυντή του Τμήματος Περιβαλλοντικής Δικαιοσύνης της Μασαχουσέτης στον αριθμό τηλεφώνου που αναγράφεται παρακάτω

Italiano Italian

Questo documento è importante e deve essere tradotto immediatamente. Se hai bisogno di tradurre questo documento, contatta il Direttore della Giustizia Ambientale di MassDEP al numero di telefono sotto indicato.

Język Polski Polish

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हिन्दी Hindi

यह दस्तावेज महत्वपूर्ण है और इसका अनुवाद तुरंत किया जाना चाहिए। यदि आपको इस दस्तावेज का अनुवाद कराने की जरूरत है, तो कृपया नीचे दिए गए टेलीफोन नंबर पर MassDEP के पर्यावरणीय न्याय निदेशक से संपर्क करें।

Contact Deneen Simpson 857-406-0738

Massachusetts Department of Environmental Protection
100 Cambridge Street 9th Floor Boston, MA 02114

TTY# MassRelay Service 1-800-439-2370 • <https://www.mass.gov/environmental-justice>

(Version revised 8.2.2023) 310 CMR 1.03(5)(a)

MASSACHUSETTS DIVISION OF FISHERIES AND WILDLIFE

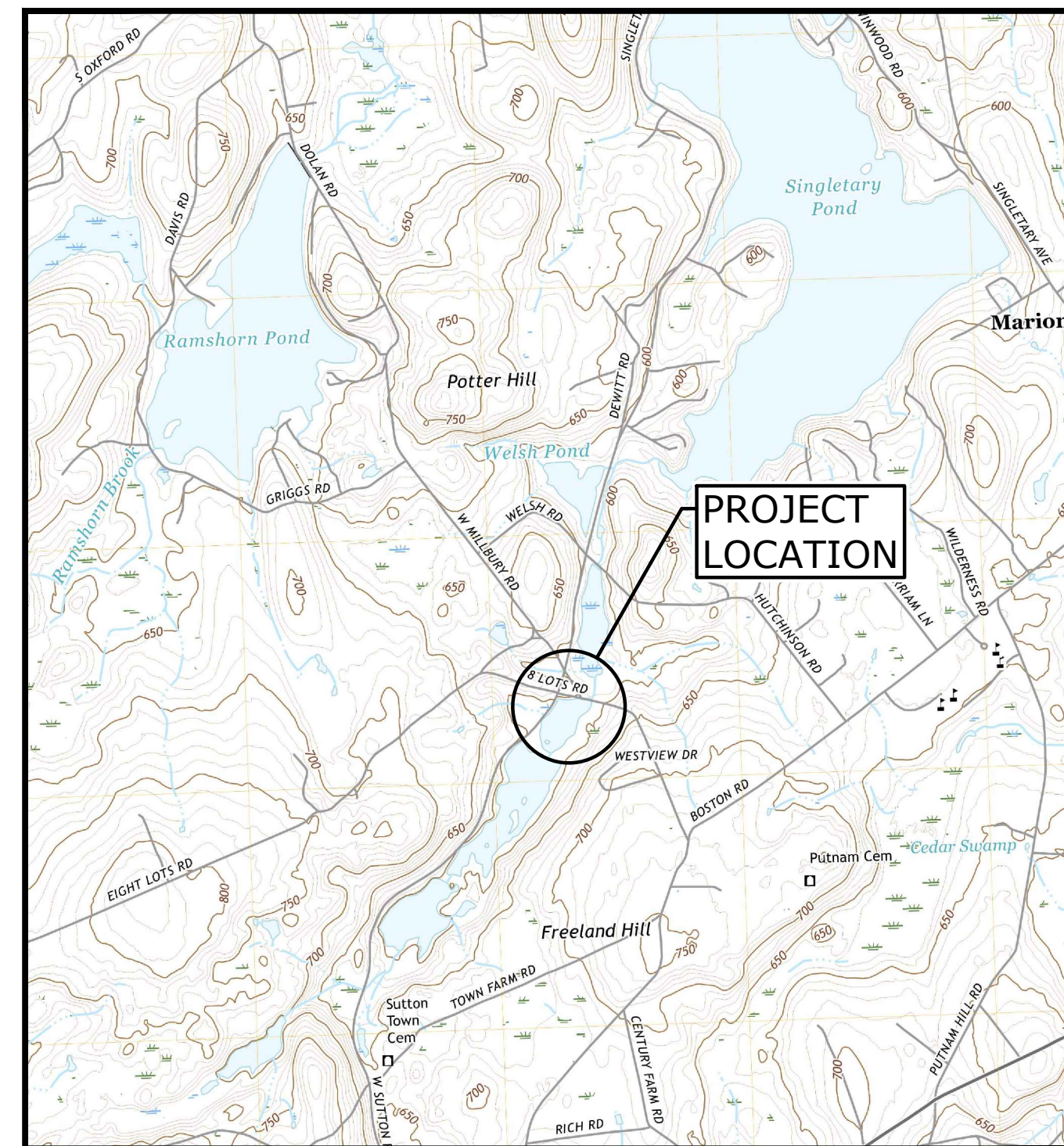
SCHOOLHOUSE POND DAM REMOVAL

PROJECT

SUTTON, MASSACHUSETTS

JANUARY 2024

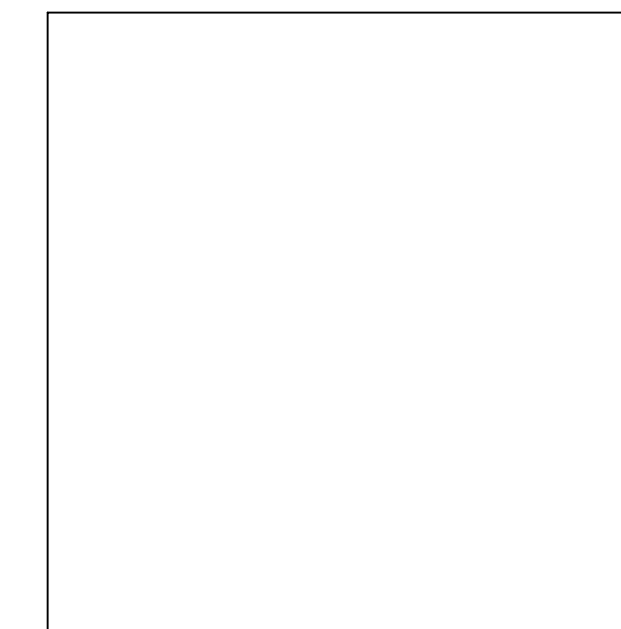
| LIST OF DRAWINGS | | |
|------------------|-------------|---|
| SHEET NO. | DRAWING NO. | DRAWING TITLE |
| GENERAL | | |
| 1 | G-001 | COVER SHEET |
| 2 | G-002 | GENERAL NOTES, ABBREVIATIONS, AND LEGEND |
| CIVIL | | |
| 3 | C-101 | EXISTING CONDITIONS PLAN |
| 4 | C-102 | DEMOLITION, EROSION, SEDIMENT, AND WATER CONTROL PLAN |
| 5 | C-103 | PROPOSED CONDITIONS PLAN |
| 6 | C-104 | SCHOOLHOUSE CHANNEL CONTROL PLAN 1 OF 3 |
| 7 | C-105 | SCHOOLHOUSE CHANNEL CONTROL PLAN 2 OF 3 |
| 8 | C-106 | SCHOOLHOUSE CHANNEL CONTROL PLAN 3 OF 3 |
| 9 | C-201 | CULVERT PLAN AND DETAILS |
| 10 | C-202 | MISCELLANEOUS DETAILS |
| 11 | C-203 | EROSION, SEDIMENT, AND WATER CONTROL DETAILS |
| 12 | C-204 | BOULDER RIFFLE DETAILS |
| 13 | C-205 | TRAFFIC MANAGEMENT PLAN |



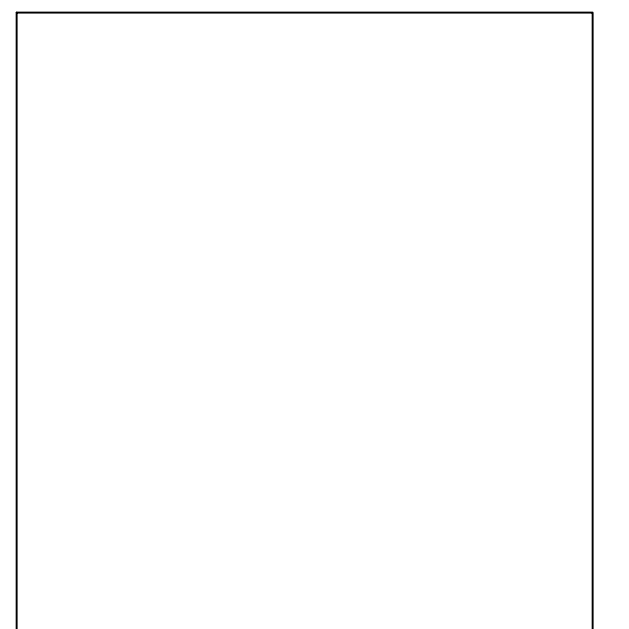
LOCATION MAP
SCALE: 1" = 2000

PREPARED BY:

Tighe&Bond



CHRISTOPHER D. HAKER, PE



DANIEL R. BUTTRICK, PE

PREPARED FOR:

MASSACHUSETTS DIVISION OF FISHERIES & WILDLIFE
CALEB SLATER, PhD, CHIEF OF HATCHERIES

PERMIT SET

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COMPLETE SET 13 SHEETS

EROSION AND SEDIMENTATION CONTROL NOTES:

- E1. TEMPORARY SEDIMENT AND EROSION CONTROL BY THE CONTRACTOR SHALL BE PERFORMED IN ACCORDANCE WITH THE SPECIFICATIONS LISTED BELOW.
- E2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING ALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES NECESSARY TO EXECUTE AND COMPLETE THE WORK OF THE CONTRACT, IN COMPLIANCE WITH THE TERMS AND CONDITIONS CONTAINED IN THE CONTRACT AND PROJECT PERMITS. CONTROLS SHOWN ON THE CONTRACT DRAWINGS AND MENTIONED IN THE TECHNICAL SPECIFICATIONS SHALL BE CONSIDERED MINIMUM REQUIREMENTS. THE CONTRACTOR SHALL EMPLOY WHATEVER SUPPLEMENTARY MEASURES NECESSARY TO PROTECT WETLANDS, WATERS, AND ADJACENT AREAS FROM DISTURBANCE OR DISCHARGE OF SEDIMENTS.
- E3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING SEDIMENT AND EROSION CONTROLS TO MEET THE CONDITIONS OF ALL APPLICABLE PERMITS AND REGULATIONS. SUCH CONTROLS SHALL BE INSTALLED WHEREVER THE POTENTIAL EXISTS FOR THE DISTURBANCE OF LAND OR THE TRANSPORT OF SEDIMENT.
- E4. EROSION AND SEDIMENTATION CONTROLS SHALL CONSIST OF COMPOST FILTER TUBES INSTALLED PER DETAILS PROVIDED ON SHEET C-203.
- E5. COMPOST FILTER TUBES SHALL BE INSTALLED PRIOR TO COMMENCEMENT OF CLEARING AND GRUBBING ACTIVITIES. LOCATION OF COMPOST FILTER TUBES TO BE ADJUSTED UPON COMPLETION OF CLEARING AND GRUBBING BUT PRIOR TO COMMENCEMENT OF GRADING ACTIVITIES.
- E6. ALL EROSION AND SEDIMENTATION CONTROLS SHALL BE MAINTAINED IN GOOD CONDITION AND PROPER WORKING ORDER. NECESSARY REPAIRS SHALL BE MADE IMMEDIATELY.
- E7. ALL EROSION AND SEDIMENTATION CONTROLS SHALL BE PROPERLY DISPOSED OFF-SITE UPON COMPLETION OF WORK, SITE STABILIZATION AND/OR AUTHORIZATION FROM THE OWNER.
- E8. MAINTAIN AN ADDITIONAL SUPPLY OF EROSION CONTROL MEASURES ONSITE THROUGHOUT THE CONSTRUCTION PERIOD.
- E9. SILT TRAPPED AT BARRIERS SHALL BE REMOVED AND DISPOSED OF IN UPLAND AREAS OUTSIDE BUFFER ZONES. MATERIALS DEPOSITED IN ANY TEMPORARY SETTLING BASIN SHALL BE REMOVED AT THE COMPLETION OF THE PROJECT. ALL DISTURBED AREAS SHALL BE RESTORED.
- E10. INSTALL EROSION CONTROLS AT THE EDGE OF PROPOSED WORK. EROSION CONTROLS SHALL ACT AS LIMIT OF WORK LINE TO HELP ENSURE THAT EQUIPMENT DOES NOT DISTURB ADJACENT PROPERTIES.
- E11. ADDITIONAL EROSION CONTROLS MAY BE REQUIRED TO PREVENT SEDIMENTS FROM DISCHARGING TO ADJACENT PROPERTIES OR INTO EXISTING STORM DRAIN SYSTEMS.
- E12. STABILIZE THE AREAS OF CONSTRUCTION ACTIVITIES AT THE CLOSE OF EACH CONSTRUCTION DAY. CHECK EROSION CONTROLS AT THIS TIME AND MAINTAIN OR REINFORCE IF NECESSARY.
- E13. PROTECT NEW WORK FROM FLOODING. PROPERLY SLOPE GRADING IN THE AREAS SURROUNDING ALL EXCAVATIONS TO PREVENT WATER FROM RUNNING INTO THE EXCAVATED AREA OR TO ADJACENT PROPERTIES. UPON COMPLETION OF THE WORK, RESTORE ALL AREAS IN A SATISFACTORY MANNER DETERMINED BY THE OWNER.
- E14. ALL SILT-LADEN WATER MUST BE SETTLED OR FILTERED TO REMOVE ALL SEDIMENTS IN A SEDIMENTATION BASIN OR FILTER BAG LOCATED DOWNSTREAM, PRIOR TO RELEASE TO A WATERWAY OR EXISTING DRAINAGE SYSTEM.
- E15. DEWATER AS NECESSARY TO KEEP CONSTRUCTION AREAS FREE OF WATER, DISCHARGE WATER FROM DEWATERING TO THE APPROPRIATE LOCATION AND WITHOUT SEDIMENT.
- E16. AT THE END OF EACH WORK DAY, ANY SEDIMENTS TRACKED ONTO PUBLIC RIGHT-OF-WAYS BEYOND THE PROJECT LIMITS SHALL BE SWEEPED AWAY.

BEST MANAGEMENT PRACTICES

INSPECTION AND MAINTENANCE

- SEDIMENT, EROSION CONTROLS, AND BEST MANAGEMENT PRACTICES (BMPS) SHALL BE INSTALLED PRIOR TO COMMENCING CONSTRUCTION AT THE SITE. NO WORK WHICH SHALL DISTURB THE SITE OR CREATE THE POTENTIAL FOR SEDIMENT RELEASE SHALL COMMENCE UNTIL THE SEDIMENT AND EROSION CONTROLS HAVE BEEN INSPECTED AND APPROVED BY THE OWNER, ENGINEER, AND REGULATORY AGENCIES. ALL CONTROLS AND BMPS SHALL BE SUBJECT TO INSPECTION BY THE OWNER, THEIR REPRESENTATIVE, AND REGULATORY AGENCIES AT ANYTIME THEREAFTER.
- PERIODIC INSPECTION, MAINTENANCE, AND CLEANING OF TEMPORARY EROSION OF SEDIMENT CONTROL MEASURES AND BEST MANAGEMENT PRACTICES (BMPS) SHALL BE REQUIRED. ALL CONTROLS AND BMPS SHALL BE INSPECTED EVERY 7 DAYS AND WITHIN 24 HOURS OF RAINFALL EVENTS OF 0.5 INCHES OR GREATER. ROUTINE INSPECTION AND MAINTENANCE WILL REDUCE THE CHANCE OF POLLUTING STORMWATER BY FINDING AND CORRECTING PROBLEMS BEFORE THE NEXT RAIN EVENT. THE FOCUS OF THE INSPECTION WILL BE TO DETERMINE:
 1. WHETHER OR NOT THE MEASURE WAS INSTALLED / PERFORMED CORRECTLY;
 2. WHETHER OR NOT THERE HAS BEEN ANY DAMAGE TO THE MEASURE SINCE IT WAS INSTALLED OR PERFORMED; AND
 3. WHAT SHOULD BE DONE TO CORRECT ANY PROBLEMS WITH THE MEASURE. EACH MEASURE IS TO BE OBSERVED TO DETERMINE IF IT IS STILL EFFECTIVE.
 IN SOME CASES, SPECIFIC MEASUREMENTS MAY BE TAKEN TO DETERMINE IF MAINTENANCE OF THE MEASURES IS REQUIRED.

SITE MANAGER

- PRIOR TO CONSTRUCTION, A SITE MANAGER WILL BE DESIGNATED BY THE CONTRACTOR TO BE RESPONSIBLE FOR INSTALLATION, MONITORING, INSPECTION, AND CORRECTION OF EROSION AND SEDIMENT CONTROL MEASURES.

SITE CLEARING

- DURING SITE CLEARING, EXISTING VEGETATION WITHIN THE OVERALL LIMITS OF CLEARING AND GRUBBING SHALL BE REMOVED, EXCEPT AS OTHERWISE DIRECTED. PRIOR TO ANY SITE CLEARING ACTIVITIES, SEDIMENT CONTROL BARRIERS SHALL BE PLACED ALONG THE OUTER LIMIT OF DISTURBANCE. CLEARING IS TO BE LIMITED TO THOSE AREAS OF PROPOSED WORK. DISTURBED AREAS ARE TO BE KEPT TO A MINIMUM. NO TREE WITH A BREAST HEIGHT DIAMETER OF GREATER THAN 6 INCHES SHALL BE CLEARED FROM AREAS OUTSIDE THE LIMITS OF CLEARING AND GRUBBING WITHOUT PRIOR APPROVAL FROM THE OWNER.

EROSION CONTROL BARRIERS

- COMPOST FILTER TUBE BARRIERS ARE TO BE PLACED TO TRAP SEDIMENT TRANSPORTED BY RUNOFF BEFORE IT REACHES THE DRAINAGE FEATURES, WATERBODIES, OR WETLANDS, IN ADDITION TO AREAS WHERE HIGH RUNOFF VELOCITIES OR HIGH SEDIMENT LOADS ARE EXPECTED. THE COMPOST FILTER TUBES ARE TO BE REPLACED AS DETERMINED BY PERIODIC FIELD INSPECTIONS.

DUST CONTROL

- STANDARD DUST CONTROL MEASURES, INCLUDING SPRAYING AND MISTING SHALL BE USED AS NECESSARY. CALCIUM CHLORIDE SHALL NOT BE ALLOWED ON THIS PROJECT.

STAGING AREAS

- THE CONTRACTOR SHALL COORDINATE LAYDOWN STAGING AREAS IN WHICH TO STORE EQUIPMENT AND MATERIALS WITH THE OWNER.
- STAGING AREAS SHALL BE SURROUNDED WITH COMPOST FILTER TUBE EROSION BARRIERS ON THE DOWNHILL SIDE.
- DURING AND AFTER CONSTRUCTION, ALL PAVED ROAD AND DRIVEWAY SURFACES ARE TO BE SCRAPPED AND BROOMED FREE OF EXCAVATED MATERIALS ON A DAILY BASIS, UNLESS APPROVED BY THE OWNER.

STOCKPILED MATERIALS

- STOCKPILES OF SOIL CREATED DURING CONSTRUCTION ACTIVITIES ARE TO BE SURROUNDED WITH AN EROSION CONTROL BARRIER AROUND THE PERIMETER OF THE STOCKPILE. STOCKPILES OF ERODIBLE MATERIAL ARE TO BE COVERED PRIOR TO INCLEMENT WEATHER WITH A MINIMUM OF 20 MIL POLYETHYLENE SHEETING. STOCKPILES LEFT UNDISTURBED LONGER THAN 14 DAYS SHALL BE SEEDED OR COVERED.

EQUIPMENT FUELING

- EQUIPMENT FUELING AND OTHER ACTIVITIES INVOLVING PETROLEUM, OIL, OR OTHER POTENTIALLY HAZARDOUS SUBSTANCES ARE TO BE PERFORMED AT PRE-APPROVED, DESIGNATED AREAS WITH APPROPRIATE SPILL PREVENTION AND CONTROL MEASURES. PORTABLE SECONDARY CONTAINMENT IS TO BE USED, AND SORBENT MATERIALS ARE TO BE PLACED AROUND THE PERIMETER OF THE FUELING AREA.

CONSTRUCTION DEWATERING

- CONSTRUCTION DEWATERING SHALL BE REQUIRED DURING PORTIONS OF CONSTRUCTION WHICH REQUIRE EXCAVATION OR OTHER ACTIVITIES WHERE GROUNDWATER MAY INTERFERE WITH THE WORK.
- CONSTRUCTION DEWATERING DISCHARGE TO A SURFACE WATER BODY SHALL BE PRE-TREATED FOR SEDIMENT REMOVAL BY PASSING THROUGH AN APPROPRIATELY SIZED FILTER SOCK, SILT BAG, FRACTIONATION / SEDIMENTATION TANK, OR SEDIMENT TRAP PRIOR TO DISCHARGE, AS NECESSARY.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING DEWATERING TECHNIQUES AND MAINTAINING DEWATERING PROCEDURES THROUGHOUT THE DURATION OF THE PROJECT.

OUTLET PROTECTION

- APPROPRIATE OUTLET PROTECTION, CONSISTING OF RIPRAP CHANNEL LINING, A LEVEL SPREADER, OR OTHER SUCH MEASURE SHALL BE PROVIDED AT THE OUTLET OF ANY DEWATERING CONDUIT OR STORMWATER CULVERT OR CHANNEL OUTFALL TO REDUCE VELOCITIES AND ENHANCE SEDIMENTATION PRIOR TO DISCHARGE.

LIMITS OF WORK

- THE CONTRACTOR SHALL LINE THE UPGRADIENT BOUNDARY OF WORK AREAS WITH ORANGE SAFETY FENCING BEFORE THE START OF SITE CLEARING ACTIVITIES.

SURFACE WATER CONTROL

- THE CONTRACTOR MUST MAINTAIN THE FLOWAGE OF SURFACE WATER THROUGH THE WORK AREA IN ACCORDANCE WITH THE SPECIFICATIONS. ALL COFFERDAMS SHALL CONSIST OF NON-ERODIBLE MATERIAL. THE CONTRACTOR SHALL SUBMIT A WATER CONTROL PLAN THAT WILL ADDRESS EMERGENCY MEASURES TO IMPLEMENT IN THE EVENT A STORM OCCURS DURING CONSTRUCTION.

TEMPORARY STABILIZATION

- WHEN NECESSARY, TEMPORARY SLOPE PROTECTION SHALL BE PROVIDED BY INSTALLING SEDIMENT TRAP BARRIERS AT THE TOE OF FILLS OR CUT SLOPES. IF ADDITIONAL STABILIZATION IS NEEDED, THEN THE CONTRACTOR SHALL INSTALL MULCH LOGS, MATTING, SUCH AS STRAW, JUTE, WOOD FIBER, OR BIODEGRADABLE MESH. A TACKIFIER SHALL BE USED ON LOOSE MATERIALS USED FOR TEMPORARY EROSION CONTROL.
- IN THE EVENT THAT DISTURBED AREAS AT THE SITE ARE TO BE LEFT UN-WORKED FOR MORE THAN TWO WEEKS, THE AREAS SHALL BE MULCHED WITH STRAW AT A RATE OF 100 LBS. PER 1,000 S.F. TO HELP CONTROL EROSION. 100% BIODEGRADABLE EROSION CONTROL BLANKETS OR TWO INCHES OF WOOD CHIP MULCH MAY ALSO BE USED AS TEMPORARY COVER.
- IN THE EVENT THAT DISTURBED AREAS AT THE SITE ARE TO BE LEFT UN-WORKED FOR MORE THAN ONE MONTH, THE AREAS SHALL BE TOPSOILED AND SEEDED AS PER THE SPECIFICATIONS AND AT NO ADDITIONAL COST TO THE OWNER.
- LEAVE THE SURFACE OF ALL EXCAVATIONS AND FILLS IN A FIRM AND STABLE CONDITION AT THE END OF EACH DAY. ROLL OR OTHERWISE TREAT THE SURFACE AS NEEDED.

SITE RESTORATION

- STABILIZATION OF DISTURBED AREAS OR NEW SOIL FILLS SHALL BE IMPLEMENTED WITHIN 14 DAYS AFTER GRADING OR CONSTRUCTION ACTIVITIES HAVE PERMANENTLY CEASED. APPROPRIATE VEGETATIVE SOIL STABILIZATION IS TO BE USED TO MINIMIZE EROSION. TEMPORARY AND PERMANENT VEGETATIVE COVER IS TO BE ESTABLISHED IN ACCORDANCE WITH THE PROJECT PLANS AND SPECIFICATIONS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORATION OF PREVIOUSLY VEGETATED UPLAND AREAS DISTURBED BY CONSTRUCTION ACTIVITIES. RESTORATION OF UPLAND AREAS CONSIST OF REPLACEMENT OF TOPSOIL OR PLACEMENT OF IMPORTED LOAM AS NEEDED SUCH THAT A MINIMUM OF 4 INCHES OF SUITABLE MATERIAL IS PRESENT AND APPROPRIATELY LIMED, FERTILIZED, GRADED, AND SCARIFIED. FIELDS DISTURBED OR COMPACTED BY CONSTRUCTION ACTIVITIES SHALL BE PLOWED TO LOOSEN THE SOIL, HARROWED TO PROVIDE AN EVEN SURFACE, AND APPROPRIATELY PREPARED FOR PLANTING.
- DISTURBED UPLAND AREAS SHALL THEN BE HYDROSEEDED WITH AN APPROVED SEED MIX AT THE RATE RECOMMENDED BY THE MANUFACTURER. SEEDING RATE SHALL BE DOUBLED FOR DORMANT SEEDING. SEED MIX SHALL BE DRY SITE RESTORATION SEED MIX UNLESS OTHERWISE NOTED OR AS APPROVED BY THE ENGINEER.
- 100% BIODEGRADABLE EROSION CONTROL BLANKETS MUST BE USED FOR STABILIZATION OF SLOPES IN EXCESS OF 3H:1V AND MAY BE USED IN LIEU OF HYDROSEEDING AT THE CONTRACTOR'S DISCRETION TO PROVIDE ADDITIONAL EROSION PROTECTION.
- FINAL STABILIZATION SHALL BE CONSIDERED COMPLETE WHEN ALL SOIL-DISTURBING ACTIVITIES HAVE BEEN COMPLETED AND A UNIFORM, PERENNIAL VEGETATIVE COVER WITH A DENSITY OF EIGHTY PERCENT HAS BEEN ESTABLISHED OR EQUIVALENT STABILIZATION MEASURES (SUCH AS THE USE OF MULCHES OR EROSION CONTROL MATTING) HAVE BEEN EMPLOYED ON ALL UNPAVED AREAS AND AREAS NOT COVERED BY PERMANENT STRUCTURES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF ALL VEGETATED SURFACES, INCLUDING WATERING, FERTILIZING, REPAIRING EROSION, INVASIVE PLANT REMOVAL, AND RE-SEEDING UNTIL ESTABLISHMENT CONDITIONS ARE MET AND UNTIL THE END OF THE CONTRACTUAL MAINTENANCE PERIOD.

THE NEW ENGLAND EROSION CONTROL/RESTORATION MIX FOR DRY SITES:

COMMON NAME
 CREEPING RED FESCUE
 CANADA WILD RYE
 ANNUAL RYEGRASS
 PERENNIAL RYEGRASS
 BLUE GRAMA
 LITTLE BLUESTEM
 INDIAN GRASS
 ROUGH BENTGRASS/TICKLEGRASS
 UPLAND BENTGRASS

BOTANICAL NAME
Festuca rubra
Elymus canadensis
Lolium multiflorum
Lolium perenne
Bouteloua gracilis
Schizachyrium scoparium
Sorghastrum nutans
Agrostis scabia
Agrostis perennans

THE NEW ENGLAND WETLAND SEED MIX:

COMMON NAME
 FOX SEDGE
 BLUNT BROOM SEDGE
 BLUE VERVAIN
 LURID SEDGE
 FOWL BLUEGRASS
 TICKSEED SUNFLOWER/BUR MARI GOLD
 HOP SEDGE
 GREEN BULRUSH
 CREEPING SPIKE RUSH
 SOFT RUSH
 FRINGED SEDGE
 SWAMP MILKWEED
 SWAMP ASTER
 RATTLESNAKE GRASS
 SQUARE STEMMED MONKEY FLOWER
 SPOTTED JOE PYE WEED
 BLUE FLAG

BOTANICAL NAME
Carex vulpinoidea
Carex scoparia
Verbena hastata
Carex lurida
Poa palustris
Bidens aristosa
Carex lupulina
Scirpus atrovirens
Eleocharis palustris
Juncus effusus
Carex crinita
Asclepias incarnata
Aster puniceus
Glyceria canadensis
Mimulus ringens
Eupatorium maculatum
Iris versicolor

GENERAL NOTES:

1. THE EXISTING CONDITIONS PLAN IS BASED ON A PLAN TITLED "TOPOGRAPHIC SURVEY SUTTON DAM PROJECT, SUTTON, MA, PREPARED FOR TIGHE & BOND" BY BRENNAN CONSULTING, ENGINEERING, TRANSPORTATION, SURVEYING, DATED NOVEMBER 17, 2016.
2. THE HORIZONTAL DATUM SHOWN REFERENCES THE NORTH AMERICAN HORIZONTAL DATUM OF 1983 (NAD83).
3. THE VERTICAL DATUM SHOWN REFERENCES THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
4. WATERS OF THE UNITED STATES (WOTUS) WERE DELINEATED BY TIGHE & BOND, IN OCTOBER 2022.
5. SCHOOLHOUSE POND CONTOURS REPRESENT TOP OF SEDIMENT BASED UPON A BATHYMETRIC SURVEY CONDUCTED BY CR ENVIRONMENTAL DURING THE WEEK OF OCTOBER 14, 2016.
6. THE 100-YEAR FLOODING LIMIT WAS ESTABLISHED BASED ON MODELING BY TIGHE & BOND USING SCS TR-55 METHODS AS OUTLINED IN 310 CMR 10.57 (2)(a)(3).

ABBREVIATIONS

VW VEGETATED WETLAND
 CMP CORRUGATED METAL PIPE
 ELEV,EL ELEVATION
 EOW EDGE OF WATER
 OHW ORDINARY HIGH WATER MARK
 TBM TEMPORARY BENCHMARK
 TYP TYPICAL
 UP UTILITY POLE

LEGEND

Last Saved: 8/23/2023 10:11am By: A.Gordon
 Project: On: 03/2024 - 10/2024
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 Path: C:\Users\A.Gordon\OneDrive\Documents\Projects\Schoolhouse Dam\Drawings\AucC\AD\STTYM-0944-039-06-G-002-401-404.dwg

PERMIT SET

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Schoolhouse Dam Removal Project

Massachusetts Division of Fisheries and Wildlife

Sutton, Massachusetts

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| DATE: | 3/2023 | |
| FILE: | M-0944-039-06-G-002-401-404.dwg | |
| DRAWN BY: | GNM,LPT | |
| CHECKED BY: | DH,DRB | |
| APPROVED BY: | CDH | |

GENERAL NOTES, ABBREVIATIONS, AND LEGEND

SCALE: NO SCALE



TBM = SPIKE IN U.P. #11-50
BY CULVERT ON 8 LOT ROAD
ELEV = 596.17

TBM = SPIKE IN U.P. #90-2
CORNER OF
WEST MILLBURY ROAD
ELEV = 599.76

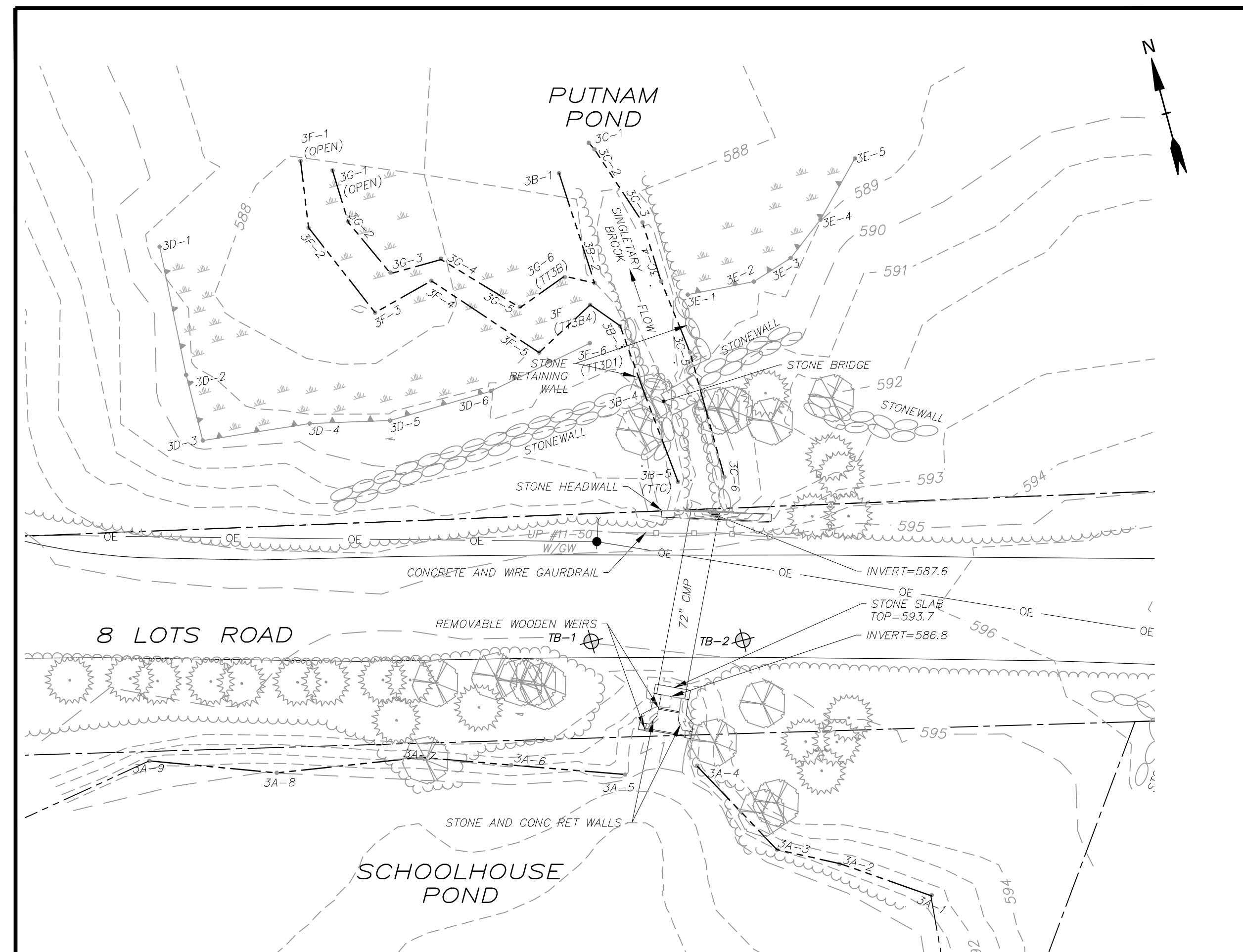
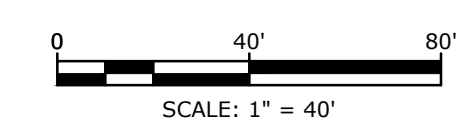
TBM #1
TIE IN UP#90-2
ELEV.=599.76

TBM #2
TIE IN UP#11-50
ELEV.=596.17

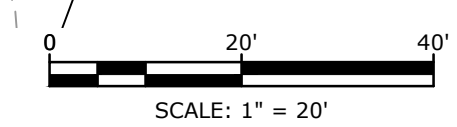
SEE SCHOOLHOUSE DAM AND CULVERT
INSET THIS SHEET



OVERVIEW OF PROJECT
1"=40'



SCHOOLHOUSE DAM AND CULVERT INSET
1"=20'



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**Schoolhouse
Dam Removal
Project**

Massachusetts
Division of
Fisheries and
Wildlife

Sutton,
Massachusetts

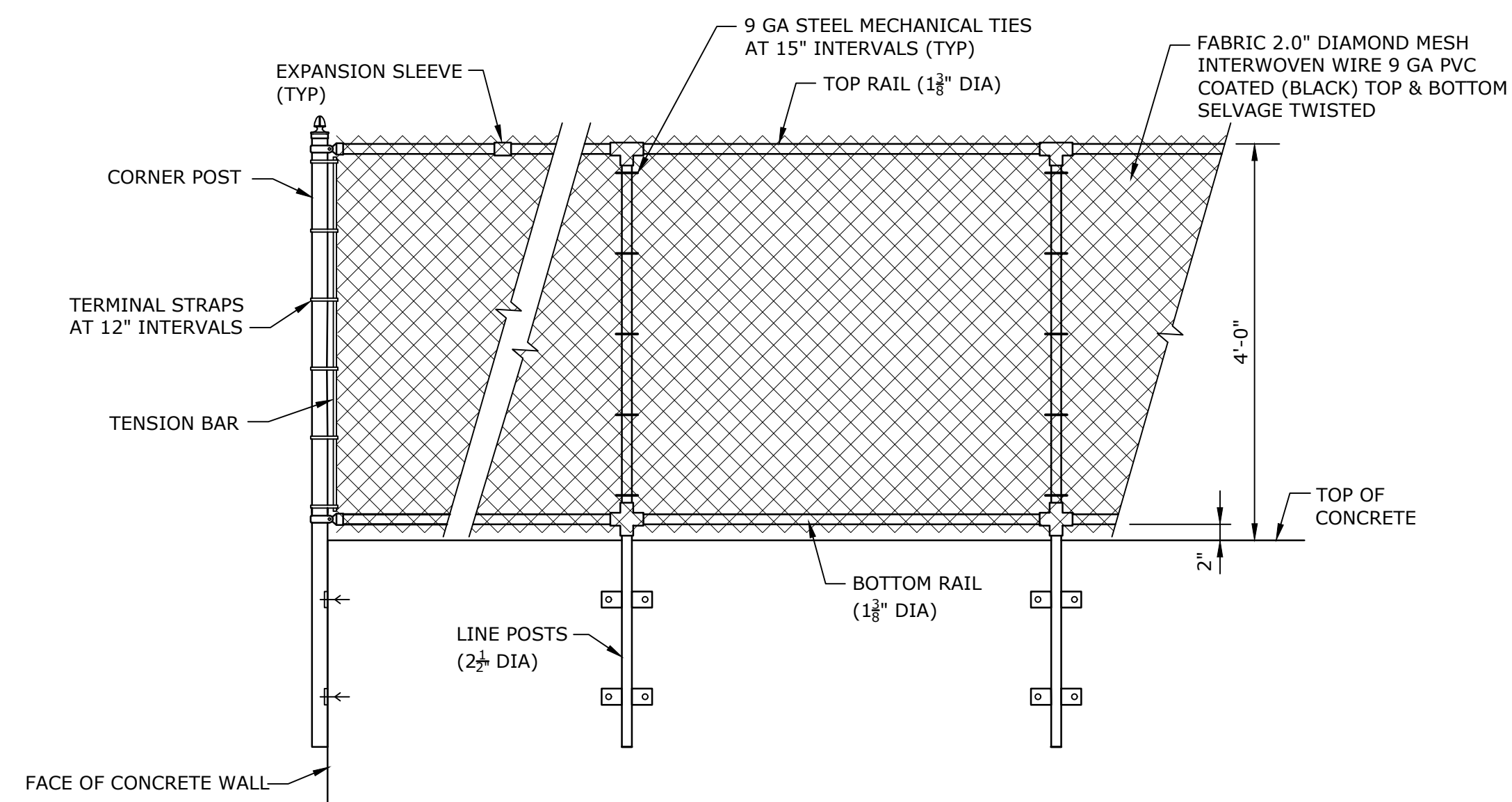
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DATE: 3/2023
FILE: M-0944-039-06-C-101.dwg
DRAWN BY: GNM,LPT
CHECKED BY: DH,DRB
APPROVED BY: CDH

EXISTING CONDITIONS
PLAN

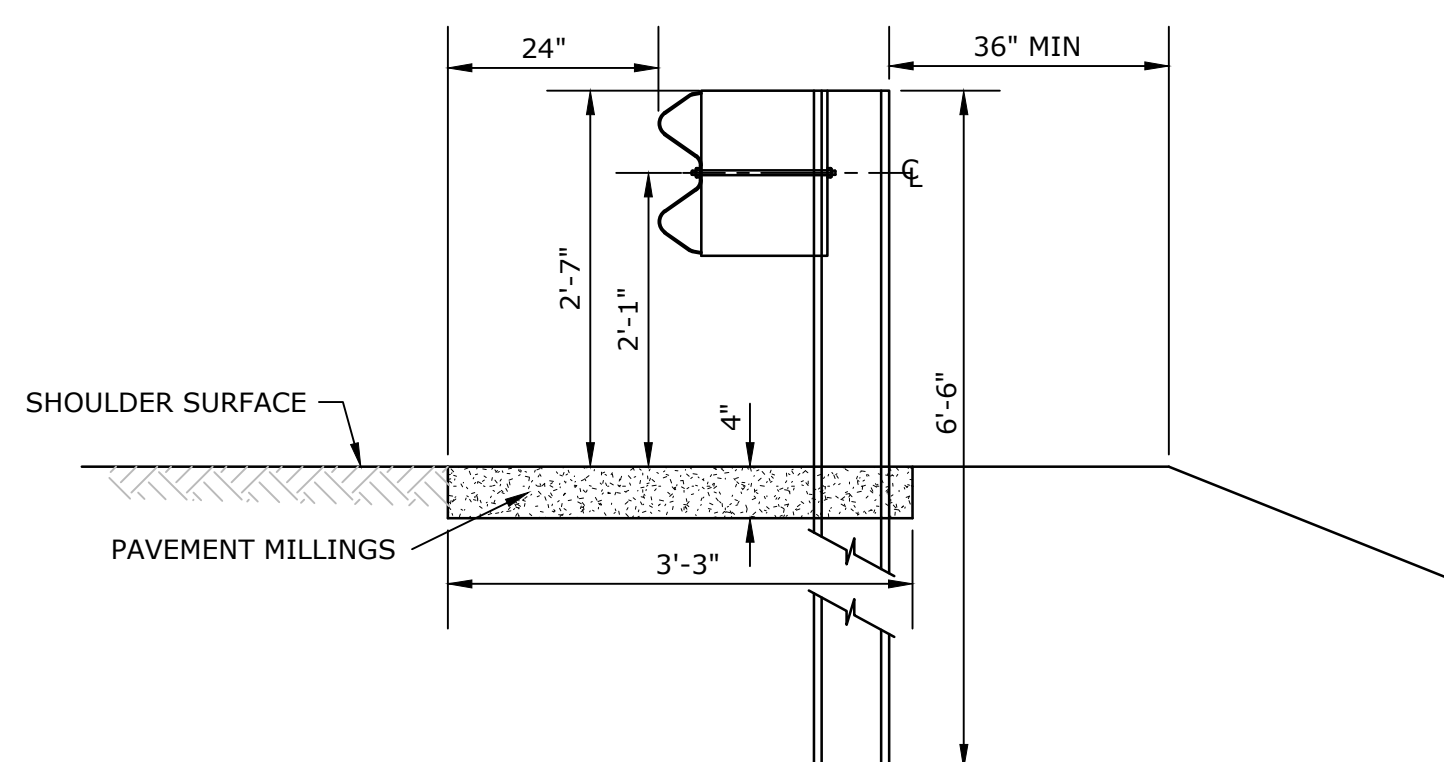
SCALE: AS SHOWN

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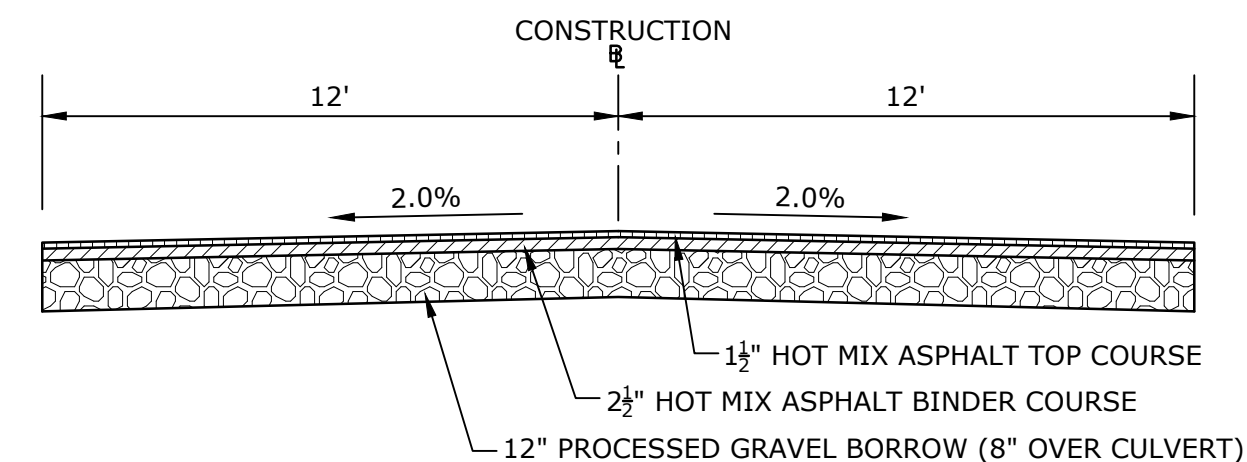
- NOTES:**
1. COORDINATED ANCHOR INSTALLATION WITH PRECASTER. IF ANCHORS WERE POST-INSTALLED, LOCATED REINFORCING STEEL PRIOR TO DRILLING.
 2. ALL COMPONENTS ARE GALVANIZED AND PVC COATED BLACK.

CHAIN-LINK FENCE
NO SCALE



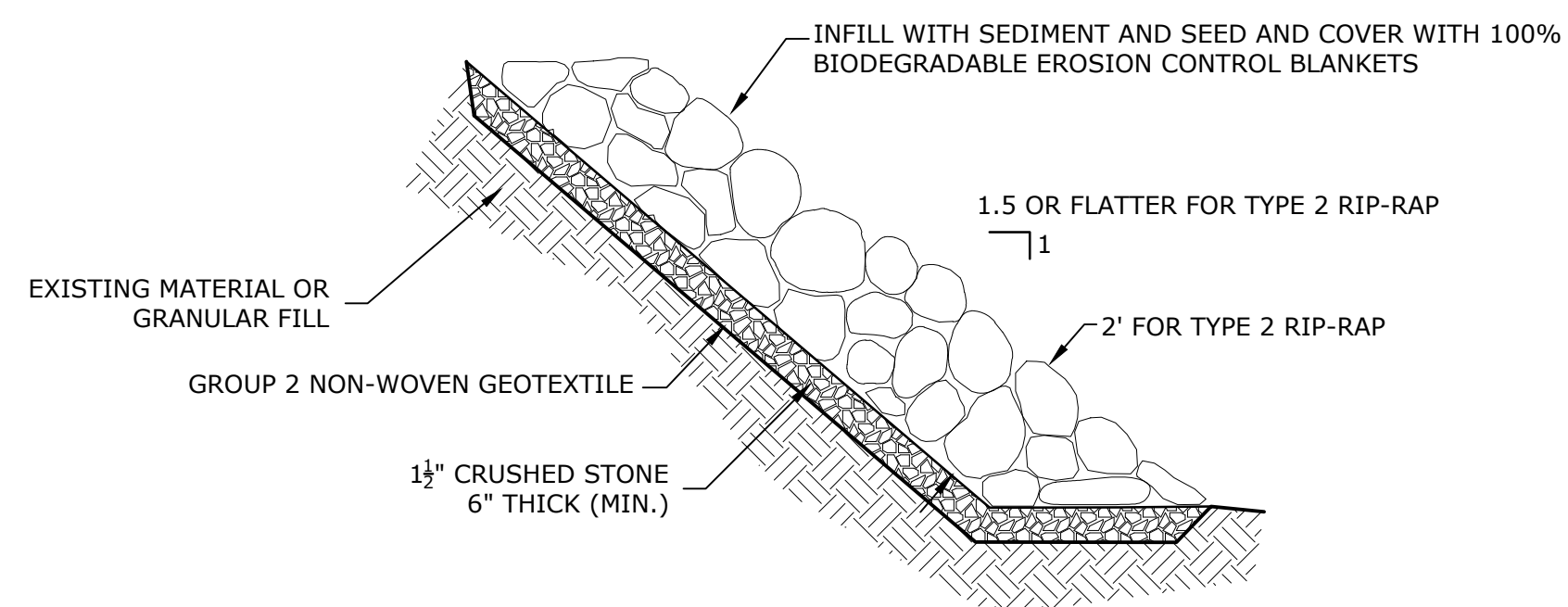
STEEL W BEAM HIGHWAY GUARD RAIL
NO SCALE

- NOTES:**
1. POST AND OFFSET BRACKETS TO BE FABRICATED FROM W6x9.
 2. POST AND BRACKET HOLES TO BE 3/4" DIAMETER.
 3. BACK-UP PLATE TO BE USED ON POSTS WHERE NO SPLICE OCCURS.
 4. MAXIMUM POST SPACING IS 12'-6" CENTER TO CENTER.
 5. WHEN THE MAXIMUM POST SPACING IS EXCEEDED, NESTED UP GUARDRAIL WITH 25' RAIL SEGMENT.
 6. PROVIDED A TL2 RATED TERMINAL END SECTION AT EACH W RAIL TERMINUS REGARDLESS OF WHETHER AN EXISTING SYSTEM IS PRESENT.
 7. W RAIL TO BE GALVANIZED THEN POWDERED COATED DARK BROWN.



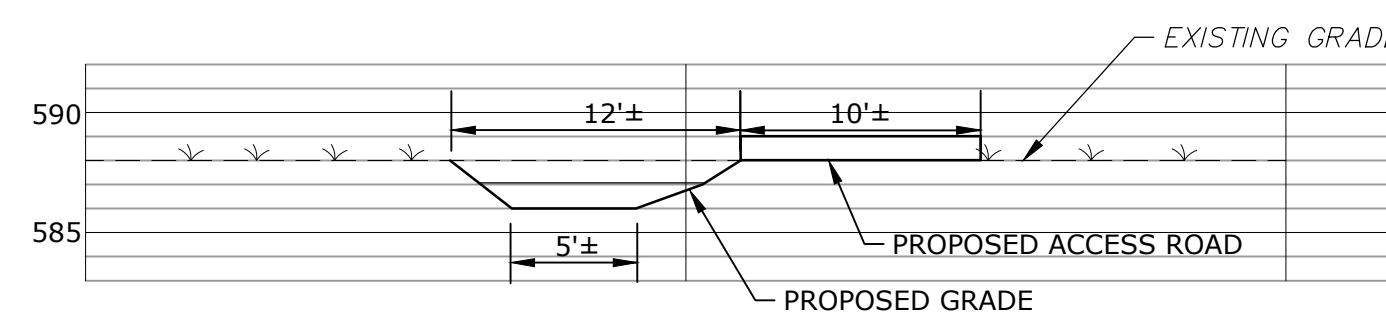
ROADWAY CROSS SECTION
NO SCALE

- * TOLERANCE FOR CONSTRUCTION ±.5%
- NOTES:**
1. ROAD SECTION SHOWN SHALL BE CONSIDERED TYPICAL. FIELD MODIFICATIONS TO MATCH EXISTING CONDITIONS ARE ANTICIPATED.
 2. TACK COAT APPLIED AT 0.05 GAL/SY BETWEEN LIFTS.

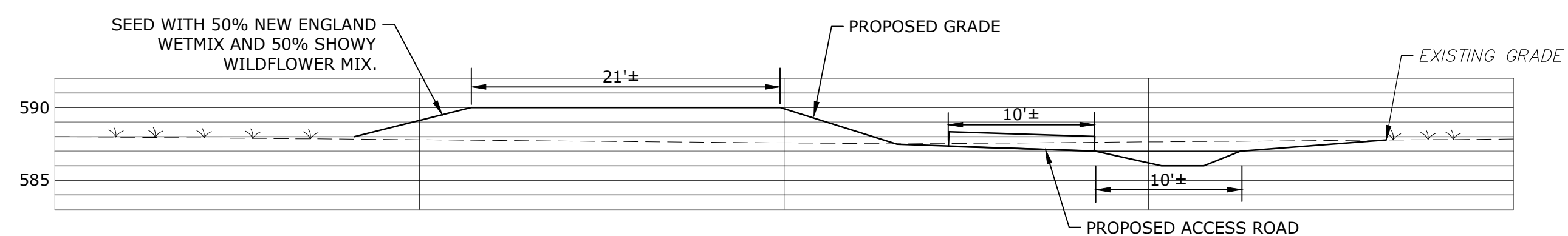


RIP-RAP INSTALLATION/SLOPE PROTECTION
NO SCALE

- NOTES:**
1. ALL RIP-RAP TO BE UNDERLAID WITH CRUSHED STONE AND GEOTEXTILE AS SHOWN.



SCHOOLHOUSE POND CHANNEL SECTION A
SCALE: 1"=8'±



SCHOOLHOUSE POND CHANNEL SECTION B
SCALE: 1"=8'±

PERMIT SET

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Schoolhouse Dam Removal Project

Massachusetts Division of Fisheries and Wildlife

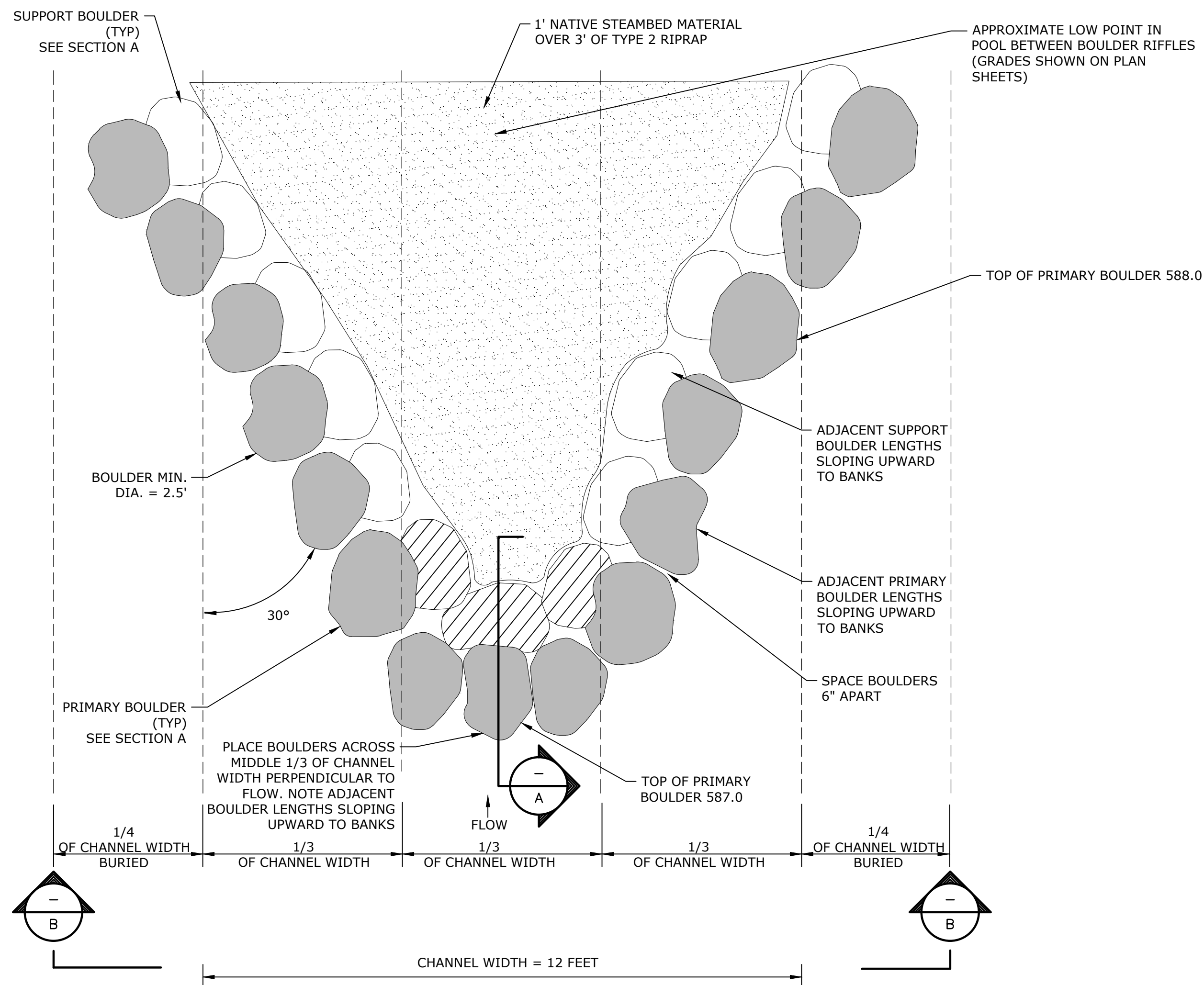
Sutton, Massachusetts

| MARK | DATE | DESCRIPTION |
|------|--------|-------------|
| A | 4/2023 | Permit Set |

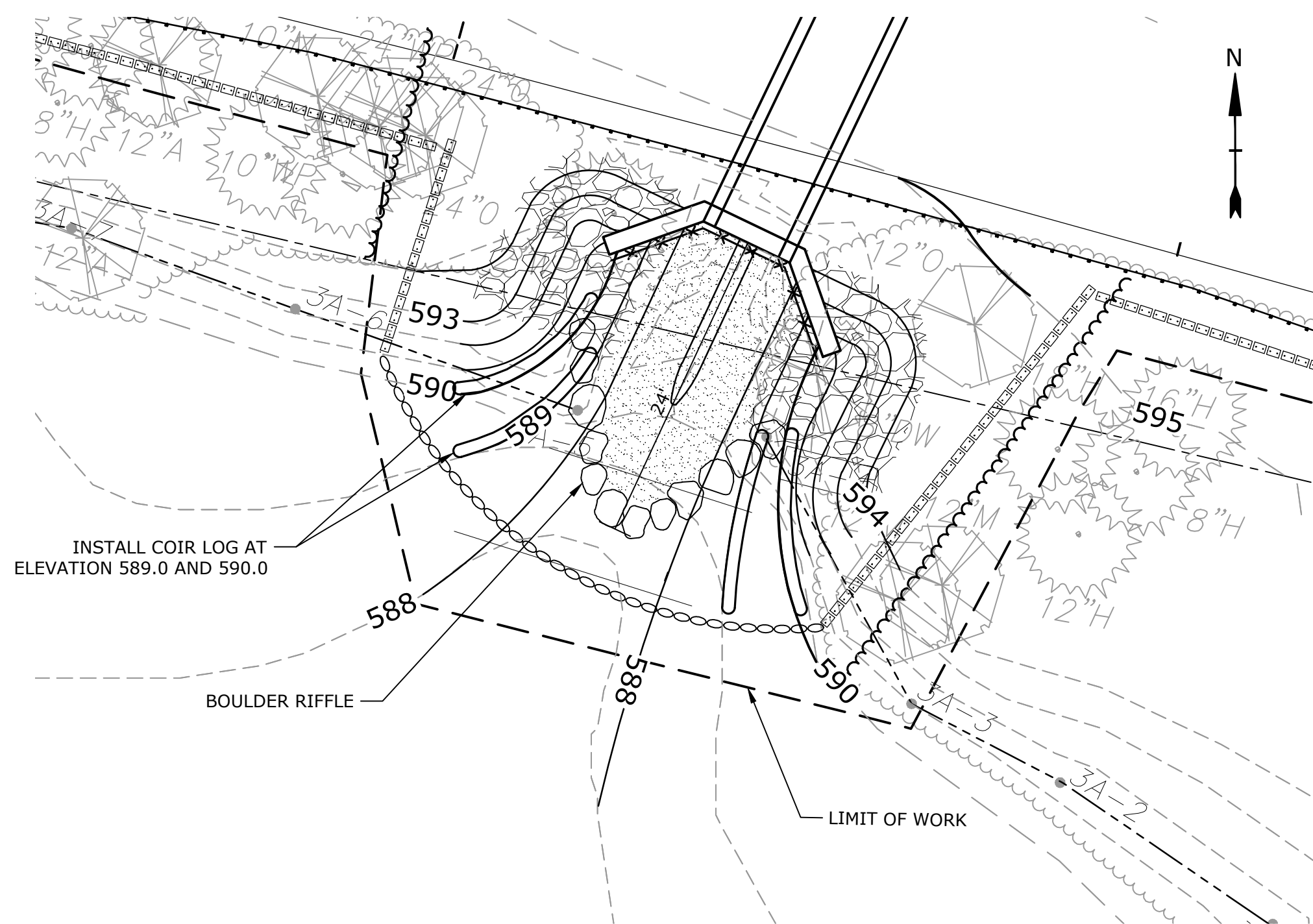
| | |
|--------------|-------------------------|
| PROJECT NO: | M-0944-039 |
| DATE: | 3/2023 |
| FILE: | M-0944-039-06-C-202.dwg |
| DRAWN BY: | GNM,LPT |
| CHECKED BY: | DH,DRB |
| APPROVED BY: | CDH |

MISCELLANEOUS DETAILS

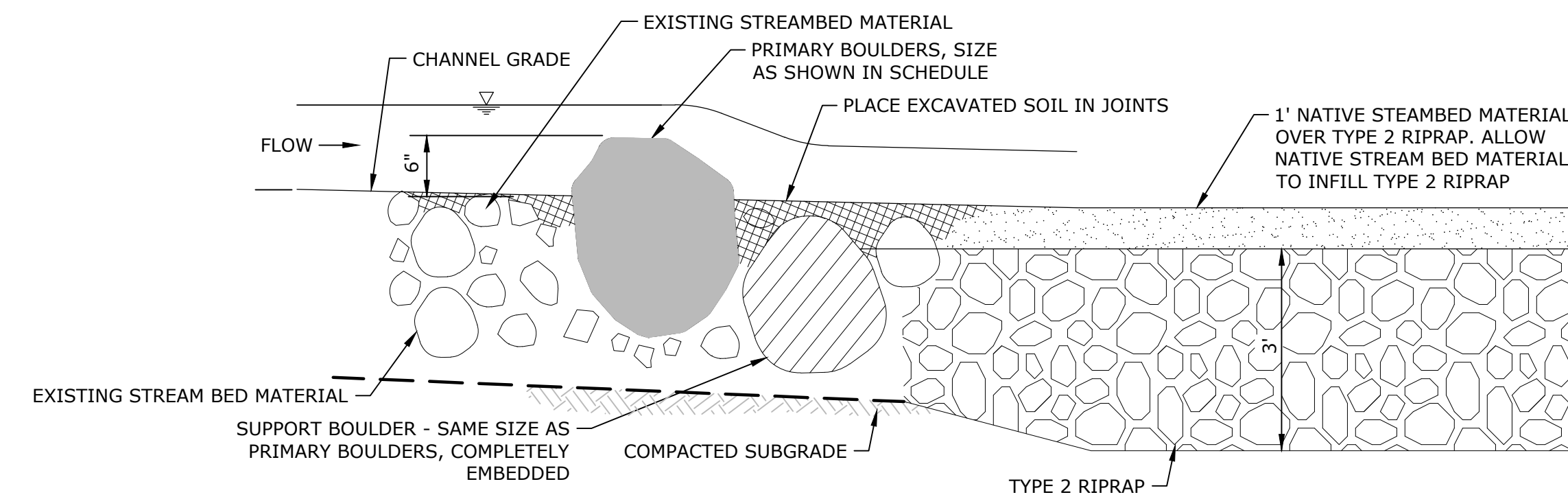
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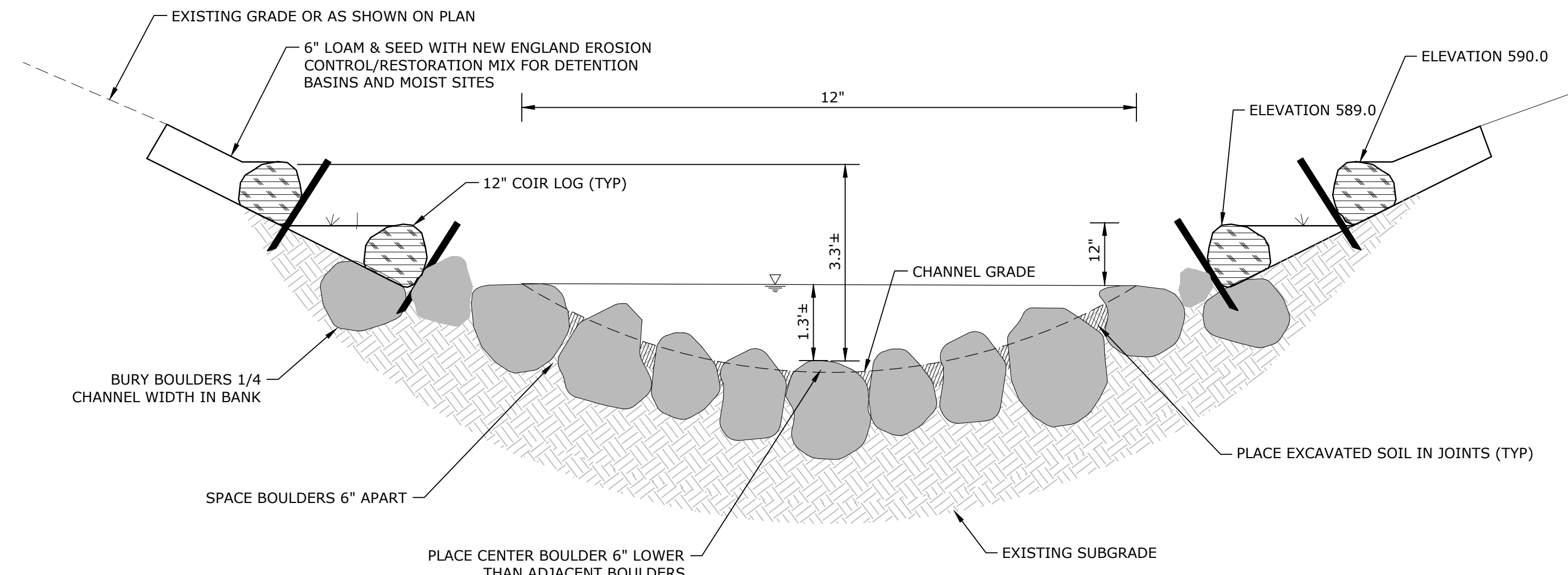
PLAN VIEW
BOULDER RIFFLE DETAIL
NO SCALE



PLAN VIEW
BOULDER RIFFLE DETAIL
1" = 10'



SECTION A
PROFILE VIEW



CROSS SECTION VIEW
SECTION B

- STREAM CHANNEL RESTORATION NOTES:**
1. USE WEATHERED SUBANGULAR OR ROUNDED COBBLES AND BOULDERS FOR STREAM CHANNELS AND BOULDER RIFFLES.
 2. ALIGN LONG AXIS OF BOULDER PARALLEL TO STREAM FLOW.
 3. PLACE EXCAVATED SOIL OVER COBBLES AND BOULDERS AND MECHANICALLY WORK SMALLER MATERIAL INTO VOIDS UNTIL VOIDS ARE FILLED.
 4. PROVIDE SUDDEN VERTICAL UNDULATIONS IN COBBLE BOTTOM OF APPROXIMATELY 6 INCHES AT INTERMEDIATE POINTS BETWEEN BOULDER RIFFLES BOULDERS TO FORM SMALL POOLS.

PERMIT SET
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Schoolhouse Dam Removal Project

Massachusetts Division of Fisheries and Wildlife

Sutton, Massachusetts

| MARK | DATE | DESCRIPTION |
|------|--------|-------------|
| A | 4/2023 | Permit Set |

PROJECT NO: M-0944-039
DATE: 3/2023
FILE: M-0944-039-06-C-204.dwg
DRAWN BY: GNM,LPT
CHECKED BY: DH,DRB
APPROVED BY: CDH

BOULDER RIFFLE DETAILS

SCALE: AS SHOWN

C-204
SHEET 12 OF 13

Last Saved: 3/27/2024 2:26pm By: Dhammerberg
 Plotted On: Jun 06, 2024 4:26pm By: Dhammerberg
 Tighe & Bond | W:\projects\2024\Schoolhouse Dam\Drawings\AutoCAD\Sheet\0944-039-06-C-204.dwg

Section 00310

Attachment C

Section 404 General Permit Pre-Construction Authorization



DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD MA 01742-2751

June 17, 2024

Regulatory Division
File Number: NAE-2023-01981

Caleb Slater
Massachusetts Division of Fish and Game
Division of Fisheries and Wildlife
1 Rabbit Hill Road
Westborough, MA 01581
Sent by email: caleb.slater@state.ma.us

Dear Mr. Slater:

The U.S. Army Corps of Engineers (USACE) has completed its review of your preconstruction notification to remove Schoolhouse Pond Dam, replace the culvert within Eight Lots Road at Singletary Brook and Schoolhouse Pond, and restore the pond to a sinuous stream channel and wetland area. Up to 650 cubic yards of fill material will be permanently discharged into 0.6128-acre below the ordinary high water mark (OHW) of Schoolhouse Pond for grading, culvert replacement, bank armoring, channel adjustment, and creation of upland mounds. Up to 0.2525-acre below the OHW mark will be temporarily impacted by the placement of construction mats. Once water levels of Schoolhouse Pond are lowered, a new stream channel for Singletary Brook will be constructed within the Schoolhouse Pond basin at up to two feet below existing grades. As material is excavated for the channel, it will be placed on either side of the channel to form topographical relief. Temporary cofferdams will be installed upstream and downstream of the limits of work within Singletary Brook in order to create a dry work area. The brook will be diverted through a pipe around the culvert replacement and dam removal work area. The existing culvert which conveys Singletary Brook will be removed completely and replaced with a 39.5-foot long, 6-foot wide, four-sided pre-cast concrete box culvert. It will be embedded with cobbles and native sediment. Inlet banks will be armored with stone, which will be infilled with sediment and seeded.

This project is located at Latitude 42.1421° N., Longitude 71.7906° W., 187 Sutton Road, Massachusetts. The work is shown on the enclosed plan sheets 1 - 13, dated April 2023.

Based on the information that you have provided, we verify that your project as described above is authorized under Regional General Permit (RGP) # 10, Aquatic Habitat Restoration, Enhancement, and Establishment Activities of the June 2, 2023, federal permit known as the Massachusetts General Permits (GPs). The GPs are available at <https://www.nae.usace.army.mil/Missions/Regulatory/State-General->

Permits/Massachusetts-General-Permit.

Please review the enclosed RGP carefully, in particular the general conditions, and ensure that you and all personnel performing work authorized by the RGP are fully aware of and comply with its terms and conditions. A copy of the RGP and the verification letter shall be available at the work site as required by General Condition 17.

You must complete and return the enclosed Compliance Certification Form within one month following the completion of the authorized work.

This authorization expires on June 1, 2028. You must commence or have under contract to commence the work authorized herein by June 1, 2028, and complete the work by June 1, 2029. If not, you must contact this office to determine the need for further authorization and we recommend you contact us *before* the work authorized herein expires. Please contact us immediately if you change the plans or construction methods for work within our jurisdiction as we must approve any changes before you undertake them. Performing work within our jurisdiction that is not specifically authorized by this determination or failing to comply with all terms and conditions of the RGP may subject you to the enforcement provisions of our regulations.

This authorization does not obviate the need to obtain other federal, state, or local authorizations required by law. Applicants are responsible for applying for and obtaining any other approvals.

We continually strive to improve our customer service. To better serve you, we would appreciate your completing our Customer Service Survey located at <https://regulatory.ops.usace.army.mil/customer-service-survey>.

Please contact Roberta Budnik of my staff at Roberta.k.budnik@usace.army.mil or (978) 318-8766 if you have any questions.

Sincerely,

Paul Maniccia
Chief, Massachusetts Section
Regulatory Division

Enclosures

cc:

Dan Buttrick, Tighe & Bond, Inc (agent)

Ed Reiner, EPA

Rachel Croy, EPA

DEP CERO

Alice Smith, DEP

MassDEP-WRP

Sutton ConCom

drbuttrick@tighebond.com

reiner.ed@epa.gov

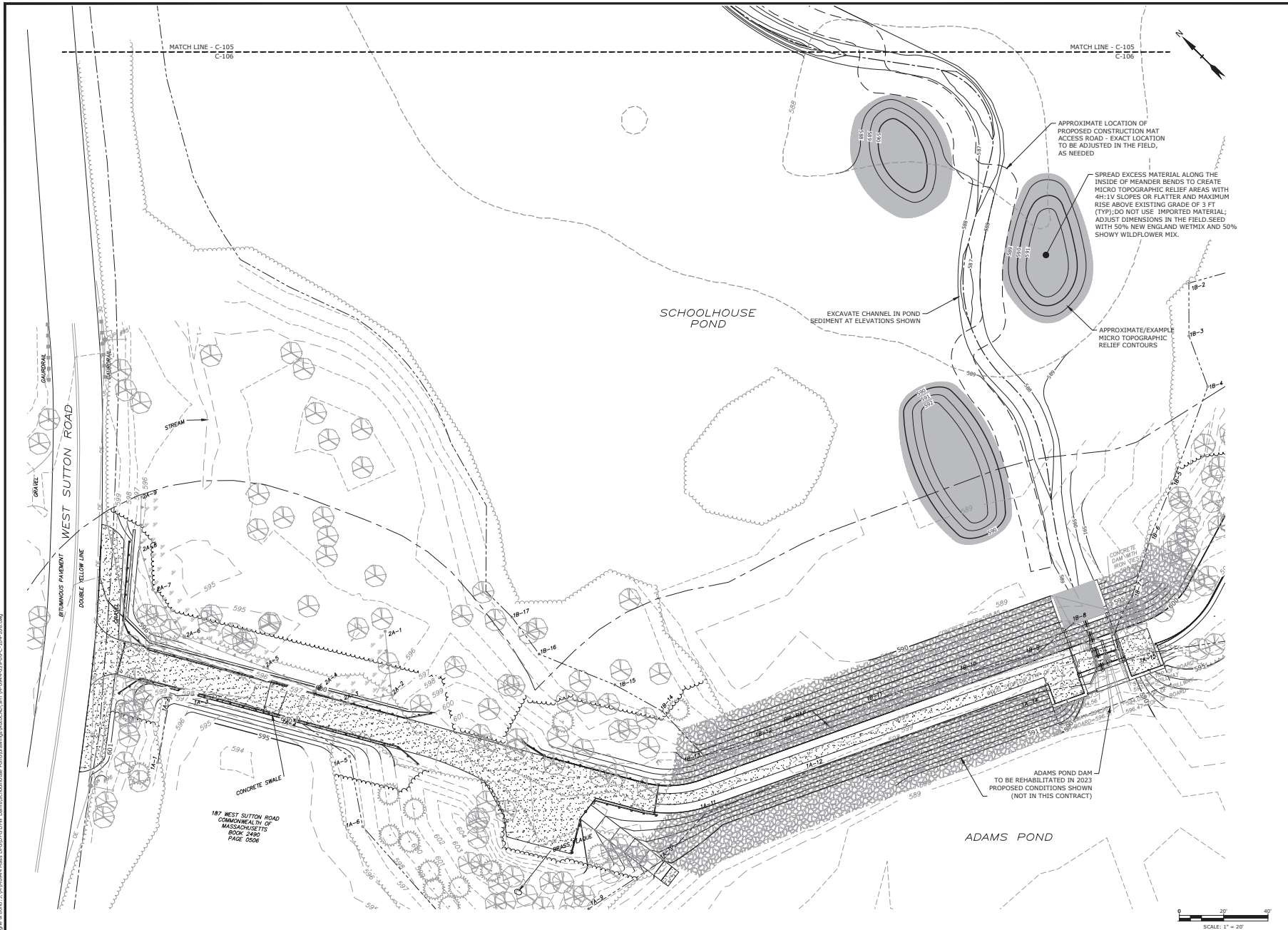
croy.rachel@epa.gov

zero_noi@mass.gov

alice.smith@mass.gov

dep.waterways@mass.gov

w.bien@town.sutton.ma.us



PERMIT SET

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Schoolhouse Dam Removal Project

Massachusetts Division of Fisheries and Wildlife

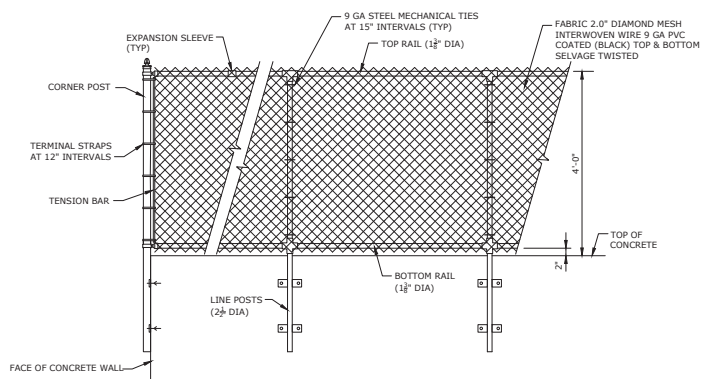
Sutton, Massachusetts

| | | |
|--------------|-----------------------------|-------------|
| MARK | DATE | DESCRIPTION |
| A | 3/2023 | Permit Set |
| PROJECT NO: | M-0944-039 | |
| DATE: | 3/2023 | |
| FILE: | M-0944-039-06-C-104-106.dwg | |
| DRAWN BY: | GML/LFT | |
| CHECKED BY: | DLC/CMB | |
| APPROVED BY: | CDH | |

SCHOOLHOUSE CHANNEL CONTROL PLAN 3 OF 3

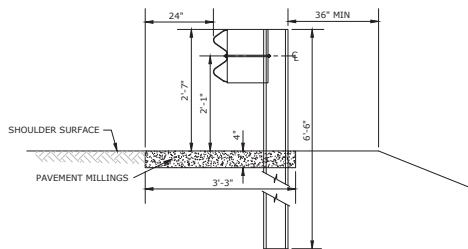
SCALE: 1" = 20'

C-106
SHEET 8 OF 13



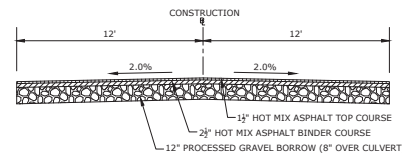
- NOTES:**
- COORDINATED ANCHOR INSTALLATION WITH PRECASTER, IF ANCHORS WERE POST-INSTALLED, LOCATED REINFORCING STEEL PRIOR TO DRILLING.
 - ALL COMPONENTS ARE GALVANIZED AND PVC COATED BLACK.

CHAIN-LINK FENCE
NO SCALE



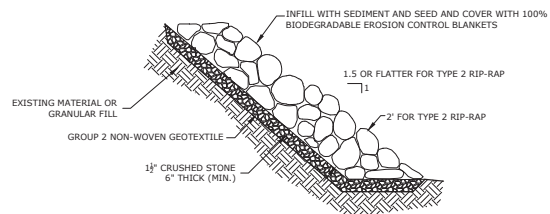
STEEL W BEAM HIGHWAY GUARD RAIL
NO SCALE

- NOTES:**
- POST AND OFFSET BRACKETS TO BE FABRICATED FROM W6x9.
 - POST AND BRACKET HOLES TO BE 3/4\"/>



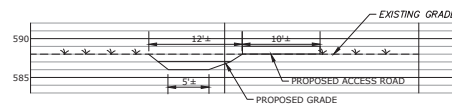
ROADWAY CROSS SECTION
NO SCALE

- * TOLERANCE FOR CONSTRUCTION ± 5%
- NOTES:**
- ROAD SECTION SHOWN SHALL BE CONSIDERED TYPICAL. FIELD MODIFICATIONS TO MATCH EXISTING CONDITIONS ARE ANTICIPATED.
 - TACK COAT APPLIED AT 0.05 GAL/SY BETWEEN LIFTS.

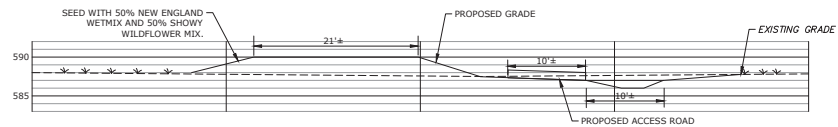


RIP-RAP INSTALLATION/SLOPE PROTECTION
NO SCALE

- NOTES:**
- ALL RIP-RAP TO BE UNDERLAID WITH CRUSHED STONE AND GEOTEXTILE AS SHOWN.



SCHOOLHOUSE POND CHANNEL SECTION A
SCALE: 1"=8' #



SCHOOLHOUSE POND CHANNEL SECTION B
SCALE: 1"=8' #

PERMIT SET
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Schoolhouse Dam Removal Project

Massachusetts Division of Fisheries and Wildlife

Sutton, Massachusetts

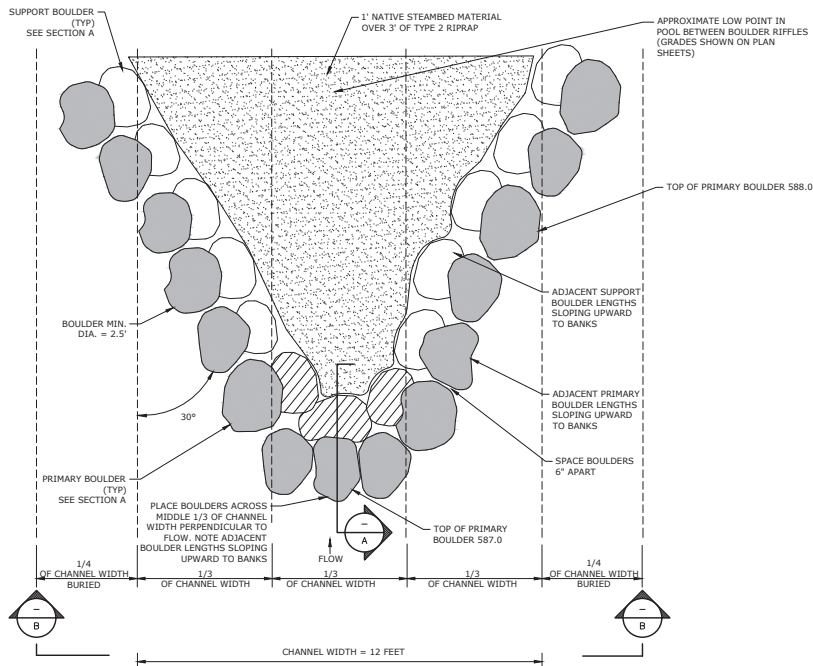
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|--------------|-------------------------|-------------|
| MARK | DATE | DESCRIPTION |
| A | 3/2023 | Permit Set |
| PROJECT NO: | M-0944-039 | |
| DATE: | 3/2023 | |
| FILE: | M-0944-039-06-C-202.dwg | |
| DRAWN BY: | GRIPLFT | |
| CHECKED BY: | DRLCDB | |
| APPROVED BY: | CDH | |

MISCELLANEOUS DETAILS

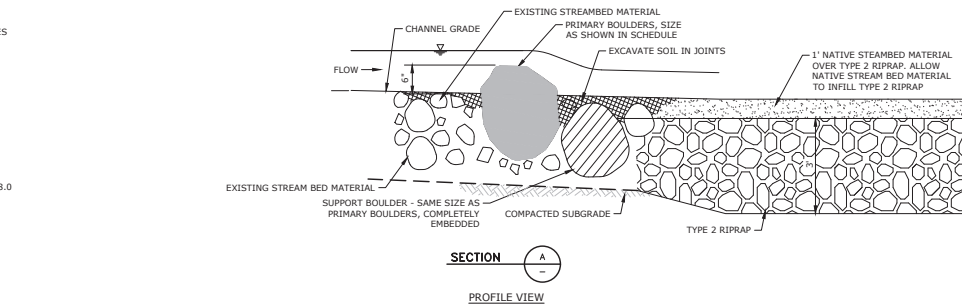
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C-202
SHEET 10 OF 13

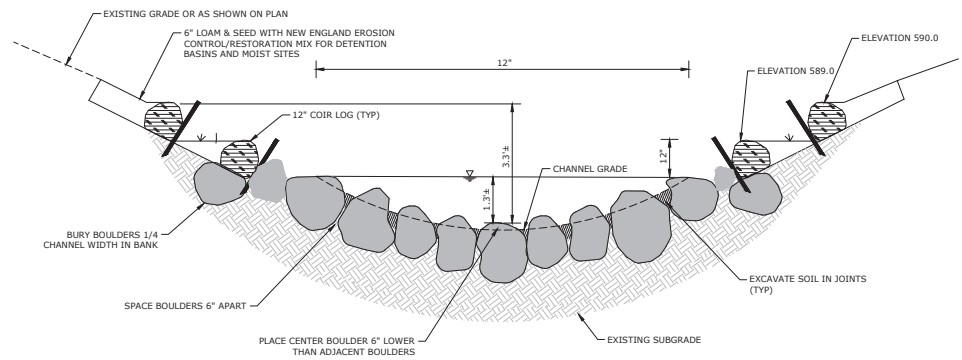
User: gregory.a.williams | 3/20/23 11:22am | PLT | 241mm x 354mm | 2023
 Title: NAE-2023-01981 | MassWildlife | 10 of 13 | 11/15/2023 | 11:22am | gregory.a.williams | 241mm x 354mm | 2023



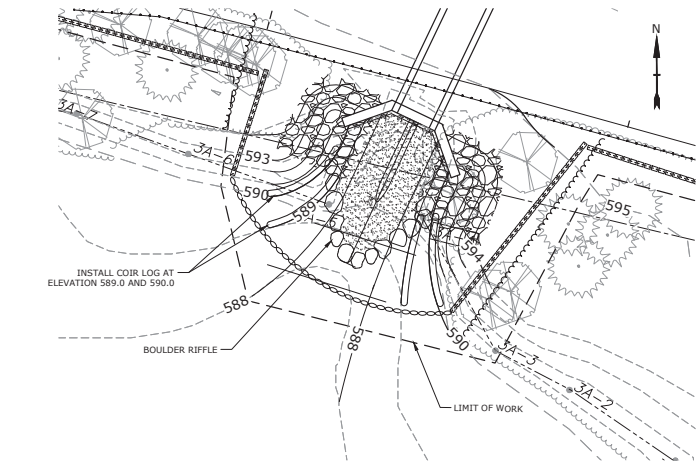
**PLAN VIEW
BOULDER RIFFLE DETAIL
NO SCALE**



**SECTION A-A
PROFILE VIEW**



**CROSS SECTION VIEW
SECTION B-B**



**PLAN VIEW
BOULDER RIFFLE DETAIL
1" = 10'**

- STREAM CHANNEL RESTORATION NOTES:**
1. USE WEATHERED SUBANGULAR OR ROUNDED COBBLES AND BOULDERS FOR STREAM CHANNELS AND BOULDER RIFFLES.
 2. ALIGN LONG AXIS OF BOULDER PARALLEL TO STREAM FLOW.
 3. PLACE EXCAVATED SOIL OVER COBBLES AND BOULDERS AND MECHANICALLY WORK SMALLER MATERIAL INTO VOIDS UNTIL VOIDS ARE FILLED.
 4. PROVIDE SUDDEN VERTICAL UNDULATIONS IN COBBLE BOTTOM OF APPROXIMATELY 6 INCHES AT INTERMEDIATE POINTS BETWEEN BOULDER RIFFLES BOULDERS TO FORM SMALL POOLS.

PERMIT SET
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Schoolhouse Dam Removal Project

Massachusetts Division of Fisheries and Wildlife

Sutton, Massachusetts

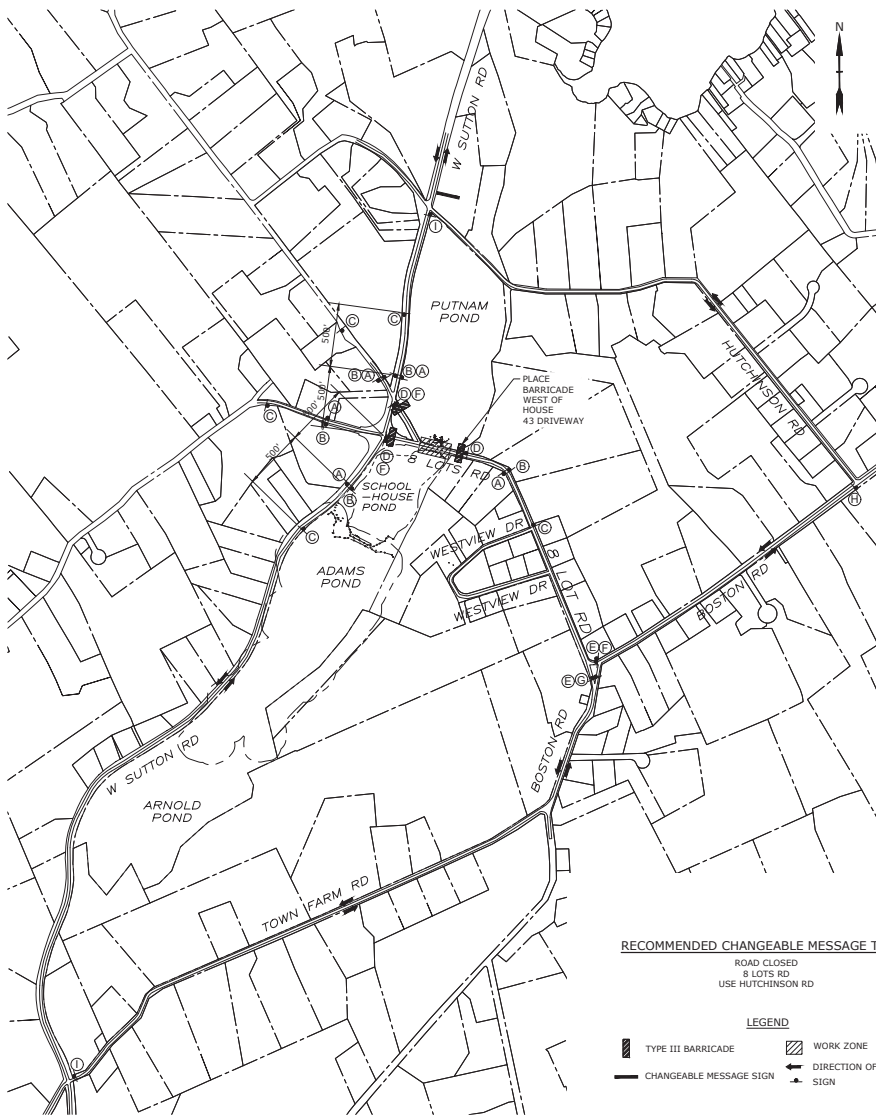
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| A | 3/2023 | Permit Set |
| PROJECT NO: M-0944-039 | | |
| DATE: 3/2023 | | |
| FILE: M-0944-039-06-C-204.dwg | | |
| DRAWN BY: CHL/JFT | | |
| CHECKED BY: CHL/CMB | | |
| APPROVED BY: CHL | | |

BOULDER RIFFLE DETAILS

SCALE: AS SHOWN

C-204
SHEET 12 OF 13

DATE: 03/23/2023 11:20AM BY: CHL/JFT
 USER: CHL/JFT PROJECT: M-0944-039-06-C-204.dwg
 PLOT: 3/23/2023 11:20AM BY: CHL/JFT

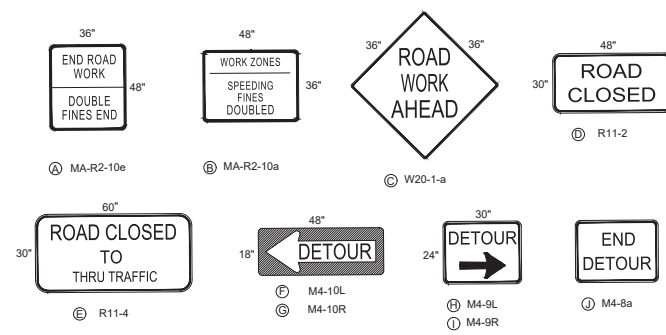


NOTES:

1. COORDINATE LANE AND ROAD CLOSURES WITH TOWN OF SUTTON POLICE, FIRE, HIGHWAY, AND SCHOOL DEPARTMENTS.
2. ALL TEMPORARY TRAFFIC CONTROL WORK SHALL CONFORM TO THE LATEST EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND ALL REVISIONS, UNLESS SUPERCEDED BY THESE PLANS.
3. ALL SIGN LEGENDS, BORDERS, AND MOUNTING SHALL BE IN ACCORDANCE WITH THE MUTCD.
4. TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER TRAFFIC CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE START OF ANY WORK.
5. TEMPORARY CONSTRUCTION SIGNING, BARRICADES, AND ALL OTHER NECESSARY WORK ZONE TRAFFIC CONTROL DEVICES SHALL BE REMOVED FROM THE ROADWAY OR COVERED WHEN THEY ARE NOT REQUIRED FOR CONTROL OF TRAFFIC.
6. SIGNS AND SIGN SUPPORTS LOCATED ON OR NEAR THE TRAVELED WAY, CHANNELIZING DEVICES, BARRIERS, AND CRASH ATTENUATORS MUST PASS THE CRITERIA SET FORTH IN NCHRP REPORT 350, "RECOMMENDED PROCEDURES FOR THE SAFETY PERFORMANCE EVALUATION OF HIGHWAY FEATURES" AND/OR "MANUAL FOR ASSESSING SAFETY HARDWARE" (MASH).
7. CONTRACTORS SHALL NOTIFY EACH ABUTTER AT LEAST 24 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OF ACCESS, SUCH AS EXISTING PAVEMENT EXCAVATION, PAVING, AND SIMILAR OPERATIONS.
8. THE ADVISORY SPEED LIMIT, IF REQUIRED, SHALL BE DETERMINED BY THE ENGINEER.
9. DISTANCES ARE A GUIDE AND MAY BE ADJUSTED IN THE FIELD BY THE ENGINEER.
10. MINIMUM LANE WIDTH IS TO BE 10 FEET UNLESS OTHERWISE SHOWN. MINIMUM LANE WIDTH TO BE MEASURED FROM THE EDGE OF DRUMS OR MEDIAN BARRIER.
11. ALL SIGNS SHALL BE MOUNTED ON THEIR OWN STANDARD SIGN SUPPORTS.
12. SEE MASSDOT TRAFFIC MANAGEMENT PLANS AND DETAIL DRAWINGS (CURRENT ISSUE) FIGURES D-1 (DETOUR - ADVANCE SIGNING) & D-2 (DETOUR) FOR TYPICAL DETOUR SETUP. SEE ALSO FIGURES TLR-5 (TWO LANE ROAD - ONE LANE ALTERNATING TRAFFIC) AND INT-2 (SINGLE LANE APPROACH - ONE QUADRANT CLOSURE) FOR WORK IN OR ADJACENT TO THE ROADWAY WHERE THE ROAD IS NOT CLOSED.

| SIGN SUMMARY | | | | | | |
|--------------|-------------|-----------------------------|---------|---------|------------|-------|
| SYMBOL CODE | DESCRIPTION | SIZE | AREA | NO. | TOTAL AREA | |
| (A) | MA-R2-10e | END ROAD WORK | 36"x48" | 12 SF | 5 | 60 SF |
| (B) | MA-R2-10a | WORK ZONE | 48"x36" | 12 SF | 5 | 60 SF |
| (C) | W20-1-a | ROAD WORK AHEAD | 36"x36" | 9 SF | 5 | 45 SF |
| (D) | R11-2 | ROAD CLOSED | 48"x30" | 10 SF | 3 | 30 SF |
| (E) | R11-4 | ROAD CLOSED TO THRU TRAFFIC | 60"x30" | 12.5 SF | 2 | 25 SF |
| (F) | M4-10L | DETOUR | 48"x18" | 6 SF | 3 | 18 SF |
| (G) | M4-10R | DETOUR | 48"x18" | 6 SF | 1 | 6 SF |
| (H) | M4-9L | DETOUR | 30"x24" | 5 SF | 1 | 5 SF |
| (I) | M4-9R | DETOUR | 30"x24" | 5 SF | 2 | 10 SF |
| TOTAL = | | | | | 259 SF | |

SIGN LEGENDS



RECOMMENDED CHANGEABLE MESSAGE TEXT
 ROAD CLOSED
 8 LOTS RD
 USE HUTCHINSON RD



DETOUR PLAN AND ADVANCED WARNING SIGNAGE
 NO SCALE

PERMIT SET

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Schoolhouse Dam Removal Project

Massachusetts
 Division of
 Fisheries and
 Wildlife

Sutton,
 Massachusetts

| | |
|--------------|-------------------------|
| PROJECT NO: | M-0944-039 |
| DATE: | 3/2023 |
| FILE: | M-0944-039-06-C-205.dwg |
| DRAWN BY: | GR/LPT |
| CHECKED BY: | DL/CMB |
| APPROVED BY: | CDH |

TRAFFIC MANAGEMENT PLAN

SCALE: AS SHOWN

C-205
 SHEET 13 OF 13

Date: 03/27/2023 11:20am Plt: D:\admin\p003
 User: K. Moore J:\M\0944-Mass-Wildlife\01981-Singletary\06-C-205.dwg
 Plot: 03/27/2023 11:20am Plt: D:\admin\p003
 User: K. Moore J:\M\0944-Mass-Wildlife\01981-Singletary\06-C-205.dwg



**US Army Corps
of Engineers**®
New England District

COMPLIANCE CERTIFICATION FORM

(Minimum Notice: Permittee must sign and return notification
within one month of the completion of work.)

Permit Number: NAE-2023-01981

Project Manager: Roberta Budnik

Name of Permittee: Massachusetts Div. of Fish and Game, Div. of Fisheries and
Wildlife

Permit Issuance Date: June 17, 2023

Please sign this certification and return it to our office upon completion of the activity.

```

*****
* E-MAIL TO: cenae-r-ma@usace.army.mil; or *
* * *
* MAIL TO: Massachusetts Section *
* Regulatory Division *
* U.S. Army Corps of Engineers, New England District *
* 696 Virginia Road *
* Concord, MA 01742-2751 *
*****

```

Please note that your permitted activity is subject to a compliance inspection by an U.S. Army Corps of Engineers representative. If you fail to comply with this permit you are subject to permit suspension, modification, or revocation.

I hereby certify that the work authorized by the above referenced permit was completed in accordance with the terms and conditions of the above referenced permit, and any required mitigation was completed in accordance with the permit conditions.

Signature of Permittee

Date

Printed Name

Date of Work Completion

() _____
Telephone Number

() _____
Telephone Number

GP 10. AQUATIC HABITAT RESTORATION, ENHANCEMENT, AND ESTABLISHMENT ACTIVITIES
(Authorities: §10 and §404)

Activities for the restoration, enhancement and establishment of non-tidal and tidal wetlands and riparian areas, including invasive, non-native or nuisance species control; the restoration and enhancement of non-tidal streams and other non-tidal open waters; the relocation of non-tidal waters, including non-tidal streams & associated wetlands for reestablishment of a natural stream morphology and reconnection of the floodplain; the restoration and enhancement of shellfish, finfish and wildlife; and the rehabilitation or enhancement of tidal streams, tidal wetlands and tidal open waters; provided those activities result in net increases in aquatic resource functions and services. See GP 9 for bank and shoreline stabilization. See GP 20 for living shorelines.

Not authorized under GP 10 (IP required): Stream channelization activities and artificial reefs.

Self-Verification Eligible

1. In tidal and non-tidal waters excluding tidal vegetated shallows, the combined permanent and temporary impacts are ≤5,000 SF.
2. Eelgrass (vegetated shallows) planting and transplanting ≤100 SF in tidal waters.

Pre-Construction Notification Required

1. In tidal and non-tidal waters excluding tidal vegetated shallows, the combined permanent and temporary impacts are >5,000 SF.
2. Eelgrass (vegetated shallows) planting and transplanting >100 SF in tidal waters.
3. Permanent water impoundments, dam removal, fish ladders, or tide gates.
4. Stream relocation, impoundment, or loss of streambed occurs.
5. Runneling projects with the purpose of restoring saltmarsh by removing excess water that ponds on the saltmarsh surface.
6. The conversion of: (a) a stream or natural wetlands to another aquatic habitat type (e.g., stream to wetland or vice versa, wetland to pond, etc.) or uplands, (b) one wetland type to another (e.g., forested wetland to an emergent wetland).
7. Activities in the Connecticut River from the Turners Falls Dam to the MA/CT border, or Merrimack River from the Essex Dam to the mouth, involving permanent or temporary impacts unless they are performed <5 feet waterward from OHW or HTL and in the dry. This is to protect endangered species.
8. Activities on USACE properties & USACE-controlled easements.
9. Activities that are not eligible for SV and do not require an IP.

Notes:

1. Changes in wetland plant communities that occur when wetland hydrology is more fully restored during wetland rehabilitation activities are not considered a conversion to another aquatic habitat type.
2. See RGL 18-01 for guidance on removal of obsolete dams and other structures from rivers and streams. <https://www.usace.army.mil/missions/civil-works/regulatory-program-and-permits/guidance-letters/>
3. An ecological reference site may be used for a design basis of the restoration activity. The reference site should possess characteristics of an intact aquatic habitat or riparian area that exists in the region. The reference site shall represent the target habitat type of the proposed activity. A reference site may be required at the discretion of USACE.

SECTION IV. GENERAL CONDITIONS:

To qualify for GP authorization, the applicant must comply with the following general conditions, as applicable, in addition to authorization-specific conditions imposed by the division or district engineer.

1. Other Permits
2. Federal Jurisdictional Boundaries
3. Single and Complete Projects
4. Use of Multiple General Permits
5. Suitable Material
6. Tribal Rights & Burial Sites
7. Avoidance, Minimization, and Compensatory Mitigation
8. Water Quality & Stormwater Management
9. Coastal Zone Management
10. Federal Threatened and Endangered Species
11. Essential Fish Habitat
12. National Lands
13. Wild and Scenic Rivers
14. Historic Properties
15. USACE Property and Federal Projects (§408)
16. Navigation
17. Permit/Authorization Letter On-Site
18. Storage of Seasonal Structures
19. Pile Driving and Pile Removal in Navigable Waters
20. Time of Year Restrictions
21. Heavy Equipment in Wetlands
22. Temporary Fill & Construction Mats
23. Restoration of Wetland Areas
24. Bank Stabilization
25. Soil Erosion and Sediment Controls
26. Aquatic Life Movements and Management of Water Flows
27. Spawning, Breeding, and Migratory Areas
28. Vernal Pools
29. Invasive Species
30. Fills Within 100-Year Floodplains
31. Stream Work and Crossings & Wetland Crossings
32. Utility Line Installation and Removal
33. Water Supply Intakes
34. Coral Reefs
35. Blasting
36. Inspections
37. Maintenance
38. Property Rights
39. Transfer of GP Verifications
40. Modification, Suspension, and Revocation
41. Special Conditions
42. False or Incomplete Information
43. Abandonment
44. Enforcement Cases
45. Previously Authorized Activities
46. Duration of Authorization

1. Other Permits. Authorization under these GPs does not obviate the need for the permittee to obtain other Federal, State, or local permits, approvals, or authorizations required by law. Permittees are responsible for obtaining all required permits, approvals, or authorizations. Activities that are not regulated by the State, but subject to USACE jurisdiction, may still be eligible for these GPs.

2. Federal Jurisdictional Boundaries.

a. Applicability of these GPs shall be evaluated with reference to Federal jurisdictional boundaries. Activities shall be evaluated with reference to “waters of the U.S.” under the CWA (33 CFR 328) and “navigable waters of the U.S.” under §10 of the Rivers and Harbors Act of 1899 (33 CFR 329).

Permittees are responsible for ensuring that the boundaries used satisfy the Federal criteria defined at 33 CFR 328-329. These sections prescribe the policy, practice, and procedures to be used in determining the extent of the USACE jurisdiction. Note: Waters of the U.S. includes all waters pursuant to 33 CFR 328.3(a), and adjacent wetlands as the term is defined in 33 CFR 328.3(c).

b. Wetlands shall be delineated in accordance with the USACE Wetlands Delineation Manual and the most recent Northcentral/Northeast Regional Supplement. Wetland delineation and jurisdiction information is located at: www.nae.usace.army.mil/missions/regulatory/jurisdiction-and-wetlands and maps are located at www.nae.usace.army.mil/missions/regulatory/state-general-permits/massachusetts-general-permit.

c. Vegetated shallows shall be delineated when present on the project site. Vegetated shallow survey guidance and maps are located at: www.nae.usace.army.mil/missions/regulatory/state-general-permits/massachusetts-general-permit.

d. Natural rocky habitats shall be delineated when present on the project site. The definition of natural rocky habitats is in Section VII of the MA GP. Natural rocky habitat survey guidance and maps are located at: www.nae.usace.army.mil/missions/regulatory/state-general-permits/massachusetts-general-permit.

3. Single and Complete Projects. The MA GP shall not be used for piecemeal work and shall be applied to single and complete projects. The term “single and complete project” is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers.

a. For non-linear projects, a single and complete project must have independent utility. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed, even if the other phases were not built, can be considered as separate single and complete projects with independent utility.

b. Unless USACE determines the activity has independent utility, all components of a single project and/or all planned phases of a multi-phased project (e.g., subdivisions should include all work such as roads, utilities, and lot development) shall be evaluated as one single and complete project.

c. For linear projects such as power lines or pipelines with multiple crossings, a “single and complete project” is all crossings of a single water of the U.S. (i.e., single waterbody) at a specific location. For linear projects crossing a single waterbody several times at separate and distant locations, each crossing is considered a single and complete project. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately. If any crossing requires a PCN review or an individual permit review, then the entire linear project shall be reviewed as one project under PCN or the individual permit procedures.

4. Use of Multiple General Permits. The use of more than one GP for a single and complete project is prohibited, except when the acreage loss of waters of the U.S. authorized by the GPs does not exceed the acreage limit of the GPs with the highest specified acreage limit. For example, if a road crossing over waters is constructed under GP 23, with an associated utility line

crossing authorized by GP 6, if the maximum acreage loss of waters of the U.S. for the total project is ≥ 1 acre it shall be evaluated as an IP.

5. Suitable Material & Discharge of Pollutants. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). All activities involving any discharge into waters of the U.S. authorized under these GPs shall be consistent with applicable water quality standards, effluent limitations, standards of performance, prohibitions, and pretreatment standards and management practices established pursuant to the CWA (33 U.S.C. 1251), and applicable state and local laws. If applicable water quality standards, limitations, etc., are revised or modified during the term of this GP, the authorized work shall be modified to conform with these standards within six months from the effective date of such revision or modification, or within a longer period of time deemed reasonable by the District Engineer in consultation with the Regional Administrator of the EPA. Unless monitoring data indicates otherwise, applicants may presume that their activity complies with state water quality standards provided they are in compliance with the Section 401 WQC (Applicable only to the Section 404 activity).

6. Tribal Rights & Burial Sites

- a. For all SV and PCN applications, prospective permittees shall follow the guidance set forth in Appendix A, Guidance for NHPA Section 106 Compliance in Massachusetts.
- b. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.
- c. Many tribal resources are not listed on the National Register of Historic Places (NRHP) and may require identification and evaluation in collaboration with the identifying tribe and by qualified professionals. The Tribal Historic Preservation Officer (THPO) and State Historic Preservation Officer (SHPO) may be able to assist with locating information on:
 - i. Previously identified tribal resources; and
 - ii. Areas with potential for the presence of tribal resources.
- d. Discovery of Previously Unknown Remains and Artifacts: If any previously unidentified human remains, cultural deposits, or artifacts are discovered while accomplishing the activity authorized by this permit, you must immediately notify the USACE of what you have found, and to the maximum extent practicable, cease work and avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The USACE will initiate the appropriate the Federal, Tribal, and state coordination required to determine if the items or remains are eligible for listing in the NRHP and warrant a recovery effort or can be avoided.
- e. Burial Sites: Burial sites, marked or unmarked, are subject to state law (Massachusetts Unmarked Burial Law). Native American burial sites on federal or tribal land are subject to the provisions of Native American Graves Protection and Repatriation Act (NAGPRA). Regulated activities may not result in disturbance or removal of human remains until disposition of the remains has been determined by the appropriate authority under these laws, and the work is authorized by the USACE. Regulated activities which result in an inadvertent discovery of human remains must stop immediately, and the USACE, as well as the appropriate state and tribal authority, must be notified. Regulated work at inadvertent discovery sites requires compliance with state law or NAGPRA, as appropriate, prior to re-starting work.

7. Avoidance, Minimization, and Compensatory Mitigation. To qualify under the MA GP, activities must comply with Section V Mitigation Standards and the following as applicable:

- a. Avoid and Minimize: Activities must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the U.S. to the maximum extent practicable at the project site. Avoidance and minimization are required to the extent necessary to ensure that the adverse effects to the aquatic environment (both area and function) are no more than minimal.

b. Compensatory mitigation for unavoidable impacts to waters of the U.S., including direct, indirect, secondary, and temporal loss, will generally be required for permanent impacts that exceed the thresholds identified in Section V, and may be required for temporary impacts, to offset unavoidable impacts which remain after all appropriate and practicable avoidance and minimization has been achieved and to ensure that the adverse effects to the aquatic environment are no more than minimal. Proactive restoration projects or temporary impact work with no secondary effects may generally be excluded from this requirement.

c. Mitigation proposals shall follow the guidelines found in the Compensatory Mitigation for Losses of Aquatic Resources; Final Rule April 10, 2008; 33 CFR 332. Prospective permittees may purchase mitigation credits in-lieu of permittee-responsible mitigation as compensation for unavoidable impacts to waters of the U.S. in the Commonwealth of Massachusetts.

8. Water Quality & Stormwater Management. The 401 WQC requirement applies to all activities listed under GPs 1-25, unless determined otherwise by MassDEP. Permittees shall also satisfy stormwater management requirements in Massachusetts.

a. General 401 WQC: MassDEP issued a WQC on April 21, 2023 which conditionally certifies all activities in GPs 1 – 24 eligible for SV and PCN so long as the activity is described in 314 CMR 9.03, and is not an activity described in 314 CMR 9.04, and so long as the activity meets all other requirements, terms and conditions of the WQC. The MassDEP WQC also conditionally certifies activities described in GP 25 so long as the activity meets all other conditions of the WQC.

Emergency projects described in GP 25 must obtain an emergency certification or otherwise be authorized pursuant to 310 CMR 10.06, qualify under a Severe Weather Emergency Declaration pursuant to 310 CMR 10.06(8) issued by the MassDEP, or meet the requirements of 9.12(2) or (3) in order to be certified under the WQC. Prospective permittees may refer to the following link to determine if their activity is eligible: <https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/>. The General 401 WQC is located here, and it provides detailed information regarding what activities are certified and the conditions for certification. Activities listed in 314 CMR 9.03 that are not exempt from the Wetland Protection Act must have a valid Final Order of Conditions (OOC) or Final Restoration Order of Conditions pursuant to 310 CMR 10.00 to be eligible under the General 401 WQC.

b. Individual 401 WQC: Prospective permittees shall contact MassDEP and apply for an individual 401 WQC if their activity does not qualify for a General 401 WQC as outlined above. MassDEP may issue, waive, or deny the individual 401 WQC on a case-by-case basis. All activities listed in 314 CMR 9.04 must obtain an individual 401 WQC from MassDEP to be eligible under these GPs. When an Individual 401 WQC is required for *PCN activities*, the prospective permittee shall submit their Individual 401 WQC application concurrently to MassDEP and USACE to comply with 40 CFR 121.

c. The prospective permittee is responsible for determining the appropriate 401 WQC requirement and submitting this information to the USACE at the time of their PCN application or when completing their SVN. Prospective permittees that are unsure of whether their activity has been certified should contact MassDEP for a determination.

d. As applicable, all activities shall be compliant with the Massachusetts Stormwater Handbook. The Stormwater Handbook can be accessed on the NAE Regulatory website here: <https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/>.

e. No work requiring authorization under Section 404 of the CWA may be performed unless (1) the prospective permittee qualifies for coverage under the April 21, 2023 General 401 WQC, (2) the prospective permittee receives an individual Section 401 WQC from the MassDEP, or (3) the MassDEP waives individual Section 401 WQC.

9. Coastal Zone Management. The permittee must obtain CZM consistency concurrence when an activity is located in the coastal zone in order to be eligible under the MA GP. This requirement

shall be satisfied by acquiring one of the following from the Massachusetts Office of Coastal Zone Management (MA CZM):

- a. General CZM Federal Consistency Concurrence (General Concurrence): MA CZM has granted General Concurrence for all SV and PCN activities for GPs 1-25. The prospective permittee must obtain all applicable permits and approvals before construction of the authorized activity begins (e.g., before work begins on site). For SVs, General Concurrence is automatically granted and no further action is required from the prospective permittee. For PCNs, the USACE will coordinate with MA CZM to acquire General Concurrence as part of the PCN application review.
- b. Individual CZM Federal Consistency Concurrence (Individual Concurrence): In certain cases, MA CZM may elevate any GP activity 1-25 and require Individual Concurrence. The prospective permittee must contact MA CZM and follow the procedures to obtain Individual Concurrence as determined appropriate by MA CZM.
- c. Permittees must obtain CZM consistency concurrence as outlined above before commencing work authorized under these GPs.

10. Federal Threatened and Endangered Species

- a. No activity is authorized under any GP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify designated critical habitat or critical habitat proposed for such designation. No activity is authorized under any GP which “may affect” a listed species or critical habitat, unless ESA section 7 consultation addressing the consequences of the proposed activity on listed species or critical habitat has been completed. See 50 CFR 402.02 for the definition of “effects of the action” for the purposes of ESA section 7 consultation, as well as 50 CFR 402.17, which provides further explanation under ESA section 7 regarding “activities that are reasonably certain to occur” and “consequences caused by the proposed action.”
- b. Other Federal agencies should follow their own procedures for complying with the requirements of the ESA (see 33 CFR 330.4(f)(1)). If a PCN is required for the proposed activity, the Federal permittee must provide USACE with the appropriate documentation to demonstrate compliance with those requirements. The USACE will verify that the appropriate documentation has been submitted. If the appropriate documentation has not been submitted, additional ESA section 7 consultation may be necessary for the activity and the respective federal agency would be responsible for fulfilling its obligation under section 7 of the ESA.
- c. USFWS ESA-Listed Species: Non-federal applicants shall use the USFWS website, Information for Planning and Consultation (IPAC), to determine if their activity is located within the ESA-listed species range. The IPAC website can be accessed on the NAE Regulatory website: <https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/>. Applicants shall ensure they have an updated, valid species list before construction begins. This may require applicants to update their species list in IPAC before the start of construction. Note: Applicants should refer to the NAE Regulatory Website at the link above to determine if they have been designated as a non-federal representative. Applicants shall complete Section 7 consultation according to the guidance document located on the NAE Regulatory Website. After completing the Rangewide Determination Key and reaching the outcome “may affect, not likely to adversely affect”, you may be required to wait up to 15 days before that outcome is final and compliance under Section 7 of the ESA is fulfilled.
 - i. Self-Verification Criteria: The activity is SV-eligible if:
 - 1) The activity is not located within the ESA-listed species range;
 - 2) Another (lead) Federal agency has completed Section 7 consultation; or
 - 3) The activity is located within the ESA-listed species range and USACE has designated the applicant as a non-federal representative under 50 CFR 402.08 of the ESA for all

species within the project's action area. As the non-federal representative, the applicant shall complete consultation through IPAC and reach the outcome of "no effect" or "not likely to adversely affect".

ii. *Pre-Construction Notification Criteria*: The activity requires a PCN if:

- 1) The activity is located within the ESA-listed species range and USACE has NOT designated the applicant as a non-federal representative under 50 CFR 402.08 of the ESA for all species within the project's action area;
- 2) The activity is located in designated or proposed critical habitat; or
- 3) The activity is located within the ESA-listed species range and completion of the IPAC determination key has resulted in the outcome of "may affect" or "may affect, likely to adversely affect"; or
- 4) A PCN is required elsewhere in this document.

d. NOAA-Listed Species: Non-federal applicants shall refer to the Section 7 Mapper for federally listed species to determine if any species are mapped as present. When NOAA-listed species are present, the applicant shall generate a species report through the mapper and submit this document as part of their PCN or SVN submission. The NOAA Fisheries' Section 7 Mapper can be accessed here on the NAE Regulatory website here: <https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/>.

e. Authorization of an activity by an GP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the FWS or the NMFS, the Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word "harm" in the definition of "take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

11. Essential Fish Habitat (EFH).

a. SV eligible activities have been determined to result in no more than minimal adverse effects, provided the permittee complies with all terms and conditions of the MA GP as applicable to the activity. NMFS has granted General Concurrence [50 CFR 600.920(g)] for all SV eligible activities. These activities do not require project specific EFH consultation.

b. For PCN required activities, the applicant is required to describe and identify potential adverse effects to EFH and should refer to NOAA Fisheries' EFH Mapper (<http://www.fisheries.noaa.gov/resource/map/essential-fish-habitat-mapper>) and Omnibus Essential Fish Habitat Amendment 2 Volume 2: EFH and HAPC Designation Alternatives and Environmental Impacts (https://www.habitat.noaa.gov/application/efhmapper/oa2_efh_hapc.pdf). If an activity is located within EFH, the PCN application must contain:

1. A description of the action located in EFH.
2. An analysis of the potential adverse effects of the action on EFH and the managed Species.
3. Conclusions regarding the effects of the action on EFH.
4. Proposed mitigation, if applicable (refer to the mitigation thresholds located in Section V).

c. Federal agencies shall follow their own procedures for complying with the EFH requirements of the Magnuson-Stevens Fishery Conservation and Management Act. For activities requiring a PCN, the applicant is responsible for furnishing documentation that demonstrates consultation for EFH has been completed.

d. For PCN activities, no work may commence until EFH consultation as required by the Magnuson-Stevens Act has been completed.

12. National Lands. Activities that impinge upon the value of any National Wildlife Refuge, National Forest, National Marine Sanctuary, National Historic Landmarks or any other area administered by the National Park Service, U. S. Fish and Wildlife Service (USFWS) or U.S. Forest Service (USFS) require a PCN or Individual Permit. Federal land managers seeking authorization for activities located in the above listed National Lands may proceed under SV, unless a PCN is required elsewhere in this document.

13. Wild and Scenic Rivers. The following activities in designated river or study river segments in the National Wild and Scenic River (WSR) System require a PCN unless the Federal agency with direct management responsibility for such river, in Massachusetts this is generally the National Park Service, has determined in writing to the proponent that the proposed work will not adversely affect the WSR designation or study status:

- a. Activities that occur in WSR segments, in and 0.25 miles up or downstream of WSR segments, or in tributaries within 0.25 miles of WSR segments;
- b. Activities that occur in wetlands within 0.25 miles of WSR segments;
- c. Activities that have the potential to alter free-flowing characteristics in WSR segments.

No GP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.

As of May 10, 2023, affected rivers in Massachusetts include: the Taunton River (40 miles), Sudbury River (16.6 miles), Assabet River (4.4 miles), Concord River (8 miles), Nashua River (27 miles), Squannacook River (16.3 miles), Nissitissit River (4.7 miles), and the Westfield River, including West Branch, Middle Branch, Gendale Brook, East Branch, Drowned Land Brook, Center Brook, Windsor Jambs Brook, Shaker Mill Brook, Depot Brook, Savery Brook, Watson Brook, Center Pond Brook (78.1 miles). The most up to date list of designated and study rivers and their descriptions may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service). Information on these rivers is also available at: <http://www.rivers.gov/>.

14. Historic Properties

- a. For all SV and PCN applications, permittees shall follow the guidance set forth in Appendix A, Guidance for NHPA Section 106 Compliance in Massachusetts.
- b. No undertaking authorized by these GPs shall cause effects¹ (defined in 36 CFR Part 800 and 33 CFR Part 325, Appendix C, and its Interim Guidance) on properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places (NRHP)², including previously unknown historic properties within the permit area, unless the USACE or another Federal action agency has satisfied the consultation requirements of Section 106 of the National Historic Preservation Act (Section 106). If another Federal agency is determined the lead federal agency for compliance with Section 106, applicant must obtain the appropriate documentation and provide this information to the USACE to demonstrate compliance with Section 106. The applicant shall not begin the activity until the USACE notifies them in writing that the documentation provided satisfies Section 106 requirements.

¹ Effect means the alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register of Historic Properties.

² See the NAE Regulatory website, National Register of Historic Places link here: <https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/>.

- c. Many historic properties are not listed on the NRHP and may require identification and evaluation by qualified historic preservation and/or archaeological consultants. The State Historic Preservation Officer (SHPO), Massachusetts Board of Underwater Archaeological Resources (BUAR), local historical societies, certified local governments, general public, and NRHP may also be able to assist with locating information on:
- i. Previously identified historic properties; and
 - ii. Areas with potential for the presence of historic properties.
- d. Discovery of Previously Unknown Remains and Artifacts: If any previously unidentified human remains, cultural deposits, or artifacts are discovered while accomplishing the activity authorized by this permit, you must immediately notify the USACE of what you have found, and to the maximum extent practicable, cease work and avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The USACE will initiate the Federal, State and tribal coordination required to determine if the items or remains warrant a recovery effort and/or if the site is eligible for listing in the National Register of Historic Places.
- e. Section 110k: Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C. § 306113) prevents the USACE from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106, has intentionally significantly adversely effected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the USACE, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the USACE is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties effected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or effects historic properties on tribal lands or effects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.
- f. Underwater Archaeological Resources: Under Massachusetts General Law Ch. 6, s.'s 179-180, and Ch. 91, s. 63, the BUAR has statutory jurisdiction within state waters and is the sole trustee of the Commonwealth's underwater heritage, charged with the responsibility of encouraging the discovery and reporting, as well as the preservation and protection, of underwater archaeological resources. Underwater archaeological resources located within the waters of the Commonwealth of Massachusetts are property of the Commonwealth, which holds title to these resources and retains regulatory authority over their use. Under Massachusetts General Law, no person, organization or corporation may "remove, displace, damage, or destroy" any underwater archaeological resources located within the Commonwealth's submerged lands except through consultation with the BUAR and in conformity with the permits it issues. <https://www.mass.gov/orgs/board-of-underwater-archaeological-resources>.

15. USACE Property and Federal Projects. (33 USC §408)

- a. USACE projects and property can be found at: <https://www.nae.usace.army.mil/Missions/Civil-Works/>.
- b. In addition to any authorization under these GPs, prospective permittee shall contact the USACE Real Estate Division (<https://www.nae.usace.army.mil/Missions/Real-Estate-Division/>) at (978) 318-8585 for work occurring on or potentially affecting USACE properties and/or USACE-controlled easements. Work may not commence on USACE properties and/or USACE-controlled easements until they have received any required USACE real estate documents evidencing site-specific permission to work.
- c. Any proposed temporary or permanent occupation or alteration of a Federal project (including, but not limited to, a levee, dike, floodwall, channel, anchorage, breakwater, seawall, bulkhead, jetty, wharf, pier, or other work built or maintained but not necessarily owned by the United States),

is not eligible for SV and requires a PCN. This includes all proposed structures and work in, over, or under a USACE federal navigation project (FNP) or in the FNP's buffer zone. The buffer zone is an area that extends from the horizontal limits of the FNP to a distance of three times the FNP's authorized depth. The activity also requires review and approval by the USACE pursuant to 33 USC 408 (Section 408 Permission). The prospective permittee may reach out to the POCs located here: <https://www.nae.usace.army.mil/Missions/Section-408/>.

d. Any structure or work constructed in a FNP or its buffer zone shall be subject to removal at the owner's expense prior to any future USACE dredging or the performance of periodic hydrographic surveys.

e. Where a Section 408 permission is required, written verification for the PCN will not be issued prior to the decision on the Section 408 permission request.

16. Navigation

a. No activity may cause more than a minimal adverse effect on navigation.

b. Any safety lights and signals prescribed by the U.S. Coast Guard, must be installed, and maintained at the permittee's expense on authorized facilities in navigable waters of the U.S.

c. There shall be no unreasonable interference with navigation by the existence or use of the activity authorized herein, and no attempt shall be made by the permittee to prevent the full and free use by the public of all navigable waters at or adjacent to the activity authorized herein.

d. The permittee understands and agrees that if future U.S. operations require the removal, relocation, or other alteration of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from USACE, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the U.S. No claim shall be made against the U.S. on account of any such removal or alteration.

17. Permit/Authorization Letter On-Site. For PCNs, the permittee shall ensure that a copy of these GPs and the accompanying authorization letter are at the work site (and the project office) whenever work is being performed, and that all personnel with operational control of the site ensure that all appropriate personnel performing work are fully aware of its terms and conditions. The entire permit authorization shall be made a part of any and all contracts and sub-contracts for work that affects areas of USACE jurisdiction at the site of the work authorized by these GPs. This shall be achieved by including the entire permit authorization in the specifications for work. The term "entire permit authorization" means these GPs, including GCs and the authorization letter (including its drawings, plans, appendices, special conditions, and other attachments), and any permit modifications. If the authorization letter is issued after the construction specifications, but before receipt of bids or quotes, the entire permit authorization shall be included as an addendum to the specifications. If the authorization letter is issued after receipt of bids or quotes, the entire permit authorization shall be included in the contract or sub-contract as a change order. Although the permittee may assign various aspects of the work to different contractors or sub-contractors, all contractors and sub-contractors shall be obligated by contract to comply with all environmental protection provisions contained within the entire authorization letter, and no contract or sub-contract shall require or allow unauthorized work in areas of USACE jurisdiction. For SVs, the permittee shall ensure that a complete and signed copy of the SVN is present on site during construction and is made available for review at any time by USACE and other Federal, State, & Local regulatory agencies. A complete and signed copy of the SVN must be submitted to USACE Regulatory within 30 days of initiating construction of the authorized activity, unless stated otherwise in the applicable GP.

18. Storage of Seasonal Structures. Coastal structures such as pier sections, floats, etc., that

are removed from the waterway for a portion of the year (often referred to as seasonal structures) shall be stored in an upland location, located above MHW and not in tidal wetlands. These seasonal structures may be stored on the fixed, pile-supported portion of the structure that is seaward of MHW. This is intended to prevent structures from being stored on the marsh substrate and the substrate seaward of MHW.

19. Pile Driving and Pile Removal in Navigable Waters.

- a. Derelict, degraded or abandoned piles and sheet piles in navigable waters of the U.S., except for those inside existing work footprints for piers, must be completely removed, cut and/or driven to 3 feet below the substrate to prevent interference with navigation, and existing creosote piles that are affected by project activities shall be completely removed if practicable. In areas of fine-grained substrates, piles must be removed by the direct, vibratory or clamshell pull method¹ to minimize sedimentation and turbidity impacts and prevent interference with navigation from cut piles. Removed piles shall be disposed of in an upland location landward of MHW or OHW and not in wetlands, tidal wetlands or mudflats.
- b. A PCN is required for the installation or removal of structures with jetting techniques.
- c. A PCN is required for the installation of >12 inch-diameter piles of any material type or steel piles of any size in tidal waters, unless they are installed in the dry. If piles are not installed in the dry:
 - i. Impact pile driving shall commence with an initial set of three strikes by the hammer at 40% energy, followed by a one-minute wait period, then two subsequent 3-strike sets at 40% energy, with one minute waiting periods, before initiating continuous impact driving.
 - ii. Vibratory pile driving shall be initiated for 15 seconds at reduced energy followed by a one-minute waiting period. This sequence of 15 seconds of reduced energy driving, one-minute waiting period shall be repeated two more times, followed immediately by pile-driving at full rate and energy.
 - iii. In addition to using a soft start at the beginning of the workday for pile driving as described in 19c(i-ii), a soft start must also be used at any time following a cessation of pile driving for a period of 30 minutes or longer.
- d. Bubble curtains may be used to reduce sound pressure levels during vibratory or impact hammer pile driving.

20. Time-of-Year (TOY) Restrictions. Activities that include in-water work must comply with the TOY Restrictions below to be SV eligible, otherwise a PCN is required. PCN submittals shall contain written justification for deviation from the TOY Restrictions. The term “in-water work” does not include conditions where the work site is “in-the-dry” (e.g., intertidal areas exposed at low tide). The term “in-the-dry” includes work contained within a cofferdam so long as the cofferdam is installed and subsequently removed outside the TOY Restriction. The TOY restrictions stated in Appendix B of the MA DMF Technical Report TR-47² can apply instead for activities in tidal waters if (1) TOYs are provided for a specific waterbody where the activity is proposed and (2) the TOYs are less restrictive than below. The activity must also not require a PCN elsewhere in this document to be SV eligible.

¹ Direct Pull: Each piling is wrapped with a choker cable or chain that is attached at the top to a crane. The crane then pulls the piling directly upward, removing the piling from the sediment. Vibratory Pull: The vibratory hammer is a large mechanical device (5-16 tons) that is suspended from a crane by a cable. The vibrating hammer loosens the piling while the crane pulls up. Clamshell Pull: This can remove intact, broken or damaged pilings. The clamshell bucket is a hinged steel apparatus that operates like a set of steel jaws. The bucket is lowered from a crane and the jaws grasp the piling stub as the crane pulls up. The size of the clamshell bucket is minimized to reduce turbidity during piling removal.

² The MA DMF Technical Report TR-47: <https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/>

TOY Restriction (No work)

Non-tidal Waters

Defer to TR-47

Tidal Waters

January 15 – November 15

Alternate work windows proposed under a PCN will generally be coordinated with the USFWS and NMFS. Resulting written verifications may include species-specific work allowed windows.

21. Heavy Equipment in Wetlands. Operating heavy equipment (drill rigs, fixed cranes, etc.) within wetlands shall be minimized, and such equipment shall not be stored, maintained, or repaired in wetlands, to the maximum extent practicable. Where construction requires heavy equipment operation in wetlands, the equipment shall:

- i. Have low ground pressure (typically ≤ 3 psi);
- ii. Be placed on swamp/construction/timber mats (herein referred to as “construction mats” or “mats”) that are adequate to support the equipment in such a way as to minimize disturbance of wetland soil and vegetation. See GC 22 for information on the placement of construction mats; or
- iii. Be operated on adequately dry or frozen wetlands such that shear pressure does not cause subsidence of the wetlands immediately beneath the equipment and upheaval of adjacent wetlands. Construction mats are to be placed in the wetland from the upland or from equipment positioned on mats if working within a wetland. Dragging construction mats into position is prohibited. Other support structures that are capable of safely supporting equipment may be used with written USACE authorization.

22. Temporary Fill, Work & Construction Mats.

a. Construction mats in non-tidal waters: Temporary construction mats shall be in place ≤ 1 year and for one growing season or less to be SV eligible. A PCN is required if construction mats are in place > 1 year or for more than one growing season. Construction mats can be placed in an area of any size in non-tidal waters. The activity may occur in segments to ensure the requirements for SV above are met, otherwise a PCN is required.

b. Construction mats in tidal waters: Temporary construction mats placed in an area $< 5,000$ SF in tidal waters are SV eligible, provided those mats are in place ≤ 6 months. Temporary construction mats placed in an area $\geq 5,000$ SF or in place > 6 months in tidal waters require a PCN.

c. Management of construction mats: At a minimum, construction mats shall be managed in accordance with the following construction mat best management practices (BMPs):

1. Mats shall be in good condition to ensure proper installation, use, and removal.
2. As feasible, mats shall be placed in a location that will minimize the amount of mats needed for the wetland crossing(s).
3. Inspect mats prior to their re-use and remove any plant debris. Mats are to be thoroughly cleaned before re-use to prevent the spread of invasive plant species.
4. Impacts to wetland areas shall be minimized during installation, use, and removal of the mats.
5. Adequate erosion & sediment controls shall be installed at approaches to mats to promote a smooth transition to, and minimize sediment tracking onto, the mats.
6. In most cases, mats should be placed along the travel area so that the individual boards are resting perpendicular to the direction of traffic. No gaps should exist between mats. Place mats far enough on either side of the resource area to rest on firm ground.

d. A PCN is required for temporary fills in place > 2 years. All temporary fills and disturbed soils shall be stabilized to prevent the material from eroding into waters of the U.S. where it is not authorized. Work shall include phased or staged development to ensure only areas under active development are exposed and to allow for stabilization practices as soon as practicable. Temporary fill must be placed in a manner that will prevent it from being eroded by expected high flows.

- e. Activities that require unconfined temporary fill and are authorized for discharge into waters of the U.S. shall consist of material that minimizes effects to water quality.
- f. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable when temporary structures, work, and discharges of dredged or fill material, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Materials shall be placed in a location and manner that does not adversely impact surface or subsurface water flow into or out of the wetland. Temporary fill authorized for discharge into wetlands shall be placed on geotextile fabric or other appropriate material laid on the pre-construction wetland grade where practicable to minimize impacts and to facilitate restoration to the original grade. Construction mats are excluded from this requirement.
- g. Construction debris and deteriorated materials shall not be located in waters of the U.S.
- h. Temporary fills, construction mats, and corduroy roads shall be entirely removed as soon as they are no longer needed to construct the authorized activity and the disturbed areas be restored to pre-construction contours and conditions.
- i. Construction equipment, such as temporary barges in tidal waters, shall provide clearance above the substrate to avoid grounding onto the substrate during all tides.

23. Restoration of Wetland Areas.

- a. Upon completion of construction, all disturbed wetland areas shall be stabilized with a wetland seed mix or plant plugs containing only plant species native to New England, and be appropriate for site conditions, including salinity and frequency of inundation, and shall not contain any species listed in the “Invasive and Other Unacceptable Plant Species” Appendix K of the New England District “Compensatory Mitigation Standard Operating Procedures” found at <https://www.nae.usace.army.mil/Missions/Regulatory/Mitigation.aspx>.
- b. The introduction or spread of invasive plant species in disturbed areas shall be prevented and controlled. Equipment shall be thoroughly cleaned before and after project construction to prevent the spread of invasive species. This includes, but is not limited to, tire treads and construction mats.
- c. In areas of authorized temporary disturbance, if trees are cut in USACE jurisdiction, they shall be cut at or above ground level and not uprooted in order to prevent disruption of any kind to the wetland soil structure and to allow stump sprouts to revegetate the work area, unless otherwise authorized.
- d. Wetland areas where permanent disturbance is not authorized shall be restored to their original condition and elevation, which under no circumstances shall be higher than the pre-construction elevation. Original condition means careful protection and/or removal of existing soil and vegetation, and replacement back to the original location such that the original soil layering and vegetation schemes are approximately the same, unless otherwise authorized.

24. Bank Stabilization.

- a. Projects involving construction or reconstruction/maintenance of bank stabilization within USACE jurisdiction shall be designed to minimize environmental effects, effects to neighboring properties, scour, conversion of natural shoreline to hard armoring, etc. to the maximum extent practicable.
- b. Projects involving the construction of new bank stabilization within USACE jurisdiction shall use bioengineering techniques and natural materials in the project design to the maximum extent practicable. Use of hard structures shall be eliminated or minimized unless the prospective permittee can demonstrate that use of bioengineering techniques is not practicable due to site conditions.
- c. Where possible, bank stabilization projects shall optimize the natural function of the shoreline, including self-sustaining stability to attenuate flood flows, fishery, wildlife habitat and water quality protection, while protecting upland infrastructure from storm events that can cause erosion as well as impacts to public and private property.
- d. No material shall be placed in excess of the minimum needed for erosion protection.
- e. No material shall be placed in a manner that will be eroded by normal or expected high flows (properly anchored native trees and treetops may be used in low energy areas).

- f. Native plants appropriate for current site conditions, including salinity, must be used for bioengineering or vegetative bank stabilization.
- g. The activity must be properly maintained, which may require repairing it after severe storms or erosion events.

25. Soil Erosion and Sediment Controls.

- a. Appropriate soil erosion and sediment controls¹ (hereinafter referred to as “controls”) must be installed prior to earth disturbance and maintained in effective operating condition during construction. Biodegradable wildlife friendly erosion controls should be used whenever practicable to minimize effects to water quality.
- b. Activities in streams (rivers, streams, brooks, etc.) and tidal waters that are capable of producing sedimentation or turbidity should be done during periods of low-flow or no-flow, when the stream or tide is waterward of the work area. Controls may also be used to obtain dry work conditions (e.g., coffer dam, turbidity curtain). The prospective permittee must demonstrate in the project plans where the controls are proposed and how these controls would avoid and/or minimize turbidity or sedimentation.
- c. A PCN is required for controls that encroach: i) >25% of the stream width measured from OHW in non-tidal diadromous streams from March 15 to June 30; or ii) >25% of the waterway width measured from MHW in tidal waters from Feb. 1 to June 30, or >50% of the waterway width measured from MHW in tidal waters from July 1 to Jan. 14. This is to protect upstream fish passage. Proponents must also maintain downstream fish passage throughout the project.
- d. No dewatering shall occur with direct discharge to waters or wetlands. Excess water in isolated work areas shall be pumped or directed to a sedimentation basin, tank or other dewatering structures in an upland area adequately separated from waters or wetlands. Suspended solids shall be removed prior to discharge back into waters or wetlands from these dewatering structures. All discharge points back into waters and wetlands shall use appropriate energy dissipaters and erosion and sedimentation control BMPs.
- e. Temporary controls shall be removed upon completion of work, but not until all exposed soil and other fills, as well as any work waterward of OHW or the HTL, are permanently stabilized at the earliest practicable date. Sediment and debris collected by these devices shall be removed and placed at an upland location in a manner that will prevent its later erosion into a waterway or wetland. Controls may be left in place if they are biodegradable and flows and aquatic life movements are not disrupted.

26. Aquatic Life Movements and Management of Water Flows.

- a. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity’s primary purpose is to impound water. All permanent and temporary crossings of waterbodies and wetlands shall be:
 - i. Suitably spanned, bridged, culverted, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species; and
 - ii. Properly aligned and constructed to prevent bank erosion or streambed scour both adjacent to and inside the crossing.

¹ Appropriate soil erosion, sediment and turbidity controls include cofferdams, bypass pumping around barriers immediately up and downstream of the work footprint (i.e., dam and pump), installation of sediment control barriers (i.e., silt fence, vegetated filter strips, geotextile silt fences, filter tubes, erosion control mixes, hay bales or other devices) downhill of all exposed areas, stream fords, retention of existing vegetated buffers, application of temporary mulching during construction, phased construction, and permanent seeding and stabilization, etc.

- b. To avoid adverse impacts on aquatic organisms, the low flow channel/thalweg shall remain unobstructed during periods of low flow, except when necessary to perform the authorized work.
- c. For work in tidal waters, in-stream controls (e.g., cofferdams) should be installed in such a way as to not obstruct fish passage.
- d. Riprap and other stream bed materials shall be installed in a manner that avoids organism entrapment in rock voids or water displaced to subterranean flow with crushed stone and riprap.
- e. To the maximum extent practicable, the preconstruction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings, except as provided below. The activity must be constructed to withstand expected high flows. The activity shall not restrict or impede the passage of normal or high flows unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

27. Spawning, Breeding, and Migratory Areas.

- a. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized under these GPs.
- b. Activities in waters of the U.S. that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.
- c. The applicant is responsible for obtaining any “take” permits required under the USFWS’s regulations governing compliance with the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act. The applicant should contact the appropriate local office of the USFWS to determine if such “take” permits are required for a particular activity.
- d. Information on spawning habitat for species managed under the Magnuson-Stevens Fishery Conservation and Management Act (i.e., EFH for spawning adults) can be obtained from NAE Regulatory website, Essential Fish Habitat section, at: <https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/>.
- e. Information regarding diadromous fish habitat can be obtained from the following DMF website at: <https://www.mass.gov/info-details/massgis-data-diadromous-fish>.

28. Vernal Pools.

- a. A PCN is required if a discharge of dredged or fill material is proposed within a vernal pool depression that is also a water of the U.S.
- b. Vernal pools must be identified on the plans that show aquatic resource delineations.
- c. Adverse impacts to vernal pools shall be avoided & minimized to the maximum extent practicable.

29. Invasive Species.

- a. The introduction, spread or the increased risk of invasion of invasive plant or animal species on the project site, into new or disturbed areas, or areas adjacent to the project site caused by the site work shall be avoided. Construction mats shall be thoroughly cleaned before reuse to avoid spread of invasive species.
- b. Unless otherwise directed by USACE, all applications for PCN non-tidal projects proposing fill in USACE jurisdiction shall include an Invasive Species Control Plan. Additional information can be found at: <https://www.nae.usace.army.mil/Missions/Regulatory/Invasive-Species/>, <https://www.nae.usace.army.mil/Missions/Regulatory/Mitigation/>.

30. Fills Within 100-Year Floodplains. The activity shall comply with applicable Federal Emergency Management Agency (FEMA) approved, Massachusetts Emergency Management

Agency (MEMA) approved and/or local floodplain management requirements. Applicants should contact FEMA and/or MEMA regarding floodplain management requirements.

31. Stream Work and Crossings & Wetland Crossings.

- a. When feasible, all temporary and permanent crossings of waterbodies and wetlands (hereinafter referred to as “crossings”) shall conform to the “Massachusetts River and Stream Crossing Standards” located at: <https://www.mass.gov/doc/massachusetts-river-and-stream-crossing-standards/download> or <https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/>. Projects that do not conform to these guidelines shall be reviewed under PCN or IP procedures.
- b. Crossings shall be suitably culverted, bridged, or otherwise designed to withstand and to prevent the restriction of high flows, to maintain existing low flows, maintain water quality, and not obstruct the movement of aquatic life indigenous to the waterbody beyond the duration of construction.
- c. Crossings shall be installed in such a manner as to preserve hydraulic capacity and flow, sediment transport, and organism passage at its present level, between the wetlands on either side of the road. The applicant shall take necessary measures to correct any wetland damage resulting from deficiencies in hydraulic capacity, sediment transport and organism passage.
- d. Stream crossings shall utilize a natural mixed grain-size streambed material composition that matches upstream and downstream substrates to create a stable streambed. Substrate should function appropriately during normal and high flows without washing out. If natural streambed material is not utilized, a PCN is required.
- e. Activities involving open trench excavation in flowing waters require a PCN. Work should not occur in flowing waters (requires using management techniques such as temporary flume pipes, culverts, cofferdams, etc.). Normal flows should be maintained within the stream boundary’s confines when practicable. Projects utilizing these management techniques must meet all applicable terms and conditions of the GP, including the GCs in Section IV.

32. Utility Line Installation and Removal

- a. Subsurface utility lines must be installed at a sufficient depth to avoid damage from anchors, dredging, etc., and to prevent exposure from erosion and stream adjustment.
- b. When utility lines are installed via horizontal directional drilling, a frac-out contingency plan shall be present on site for the duration of construction. As necessary, the applicant shall immediately contain, control, recover, and remove drilling fluids released into the environment.
- c. Abandoned or inactive utility lines must be removed and faulty lines (e.g., leaking hazardous substances, petroleum products, etc.) must be removed or repaired. A written verification from the USACE is required if they are to remain in place, e.g., to protect sensitive areas or ensure safety.
- d. Utility lines shall not adversely alter existing hydrology, and trenches cannot be constructed or backfilled in such a manner as to drain waters of the U.S. (e.g., backfilling with extensive gravel layers, creating a French drain effect). In wetland areas, structures such as ditch plugs, cut-off walls, clay blocks, bentonite, or other suitable material shall be used within utility trenches to ensure that the trench through which the utility line is installed does not drain waters of the U.S. including wetlands.
- e. Stockpiling of tree debris, to the extent where it has the effect of fill material, shall not occur in waters of the U.S. Tree debris shall be removed from waters of the U.S. and placed in uplands without causing additional disturbance to aquatic resources. Failure to meet this condition could change the bottom elevation of the wetland and be considered a discharge of fill material, and depending on the area of alteration, may require a PCN or IP.

33. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

34. Coral Reefs. Impacts to coral reefs are not authorized under these GPs. Coral reefs consist of the skeletal deposit, usually of calcareous or siliceous materials, produced by the vital activities of anthozoan polyps or other invertebrate organisms present in growing portions of the reef.

35. Blasting. Blasting in waters of the U.S. associated with work such as dredging, trenching, pile installation, etc. is not authorized under these GPs.

36. Inspections. The permittee shall allow USACE to make periodic inspections at any time deemed necessary to ensure that the work is being or has been performed in accordance with the terms and conditions of this permit. To facilitate these inspections, for activities requiring a PCN, the permittee shall complete and return the Certificate of Compliance when it is provided with a PCN verification letter. For SV-eligible activities, the permittee shall complete and submit the SVN to USACE within 30 days of initiating project construction, at which point, USACE may opt to inspect the activity to verify compliance with the terms and conditions of the GP. Post-construction engineering drawings may be required by USACE for completed work. This includes post-dredging survey drawings for any dredging work.

37. Maintenance. The permittee shall maintain the activity authorized by these GPs in good condition and in conformance with the terms and conditions of this permit. Some maintenance activities may not be subject to federal regulation under Section 404 in accordance with 33 CFR 323.4(a)(2). This condition is not applicable to maintenance of dredging projects. Prospective permittees should contact USACE to inquire about maintenance of dredging projects, and its eligibility under these GPs. Maintenance dredging is subject to the review thresholds in GP #7 as well as any conditions included in a written USACE authorization. Maintenance dredging includes only those areas and depths previously authorized and dredged.

38. Property Rights. Per 33 CFR 320.4(g)(6), these GPs do not convey any property rights, either in real estate or material, or any exclusive privileges, nor do they authorize any injury to property or invasion of rights or any infringement of Federal, State, or local laws or regulations.

39. Transfer of GP Verifications. When the work authorized by these GPs is still in existence at the time the property is transferred, the terms and conditions of these GPs, including any special conditions, will continue to be binding on the entity or individual who received the GP authorizations, as well as the new owner(s) of the property. If the permittee sells the property associated with a GP authorization, the applicant may transfer the GP authorization to the new owner by submitting a letter to USACE to validate the transfer. A copy of the GP authorization letter must be attached to the letter, and the letter must include the following statement: "The terms and conditions of these general permits, including any special conditions, will continue to be binding on the new owner(s) of the property." This letter shall be signed by both the seller and new property owner(s).

40. Modification, Suspension, and Revocation. These GPs and any individual authorization issued thereof may be either modified, suspended, or revoked in whole or in part pursuant to the policies and procedures of 33 CFR 325.7; and any such action shall not be the basis for any claim for damages against the U.S.

41. Special Conditions. The USACE may impose other special conditions on a project authorized pursuant to these GPs that are determined necessary to minimize adverse navigational and/or environmental effects or based on any other factor of the public interest. Failure to comply with all conditions of the authorization, including special conditions, constitutes a permit violation and may subject the applicant to criminal, civil, or administrative penalties or restoration.

42. False or Incomplete Information. If USACE makes a determination regarding the eligibility of a project under these GPs, and subsequently discovers that it has relied on false, incomplete, or inaccurate information provided by the applicant, the authorization will not be valid, and the U.S. Government may institute appropriate legal proceedings.

43. Abandonment. If the permittee decides to abandon the activity authorized under these GPs, unless such abandonment is merely the transfer of property to a third party, he/she/they may be required to restore the area to the satisfaction of USACE.

44. Enforcement cases. These GPs do not apply to any existing or proposed activity in USACE jurisdiction associated with an on-going USACE or EPA enforcement action, until such time as the enforcement action is resolved or USACE or EPA determines that the activity may proceed independently without compromising the enforcement action.

45. Previously Authorized Activities.

- a. Completed projects that received prior authorization from USACE (SV or PCN), shall remain authorized in accordance with the original terms and conditions of those authorizations, including their terms, GCs, and any special conditions provided in a written verification.
- b. Activities authorized pursuant to 33 CFR 330.3 (activities occurring before certain dates) are not affected by these GPs.

46. Duration of Authorization.

These GPs expire on June 1, 2028. Activities authorized under these GPs will remain authorized until the GPs expire, unless discretionary authority has been exercised on a case-by-case basis to modify, suspend, or revoke the authorization in accordance with 33 CFR 325.2(e)(2). Activities authorized under GPs 1-25 that have either commenced (i.e., are under construction) or are under contract to commence in reliance upon this authorization will have until June 1, 2029 to complete the work. If requested by USACE, the permittee shall furnish documentation that demonstrates the project was under construction or under contract to commence by June 1, 2028. If work is not completed before June 1, 2029, the permittee must contact USACE. The USACE may issue a new authorization provided the project meets the terms and conditions of the MA GPs in effect at the time. Activities completed under the SV or PCN authorizations of these GPs will continue to be authorized after their expiration date.



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

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June 11, 2024

Caleb Slater
Massachusetts Division of Fisheries
and Wildlife
One Rabbit Hill Road
Westborough, MA 01581

DEP WQC APPLICATION # 24-WW26-0009-APP
EEA # 15642
NAE-2023-01981
401 WQC Application Completion: 6/6/24

RE: COMBINED PERMIT – 401 WATER QUALITY CERTIFICATION
Application for: BRP WW 26
401 WATER QUALITY CERTIFICATION FOR DREDGING & FILL/EXCAVATION

AT: Schoolhouse Pond Dam, Merrill Ponds Wildlife Management Area – Sutton
Blackstone River Basin

Dear Dr. Slater:

The Department of Environmental Protection (“MassDEP”) has reviewed your application for a Combined Permit 401 Water Quality Certification for Dredging and Fill/Excavation (“Combined 401 WQC”), as referenced above and is basing its certification upon an evaluation of the information contained in the application which is relevant to water quality considerations. In accordance with the provisions of Section 401 of the Federal Clean Water Act (33 U.S.C. § 1251 *et seq.*), MGL c. 21, §§ 26-53, and 314 CMR 9.00, MassDEP has determined there is reasonable assurance the project or activity, as conditioned herein, will be conducted in a manner which will not violate applicable water quality standards (314 CMR 4.00) and other appropriate requirements of state law.

The waters of Schoolhouse Pond, which is an impoundment along Singletary Brook, are unlisted in the Massachusetts Surface Water Quality Standards, and therefore, considered Class B. Such waters are intended “as habitat for fish, other aquatic life and wildlife, and for primary and secondary contact recreation.” Antidegradation provisions of these Standards require that “existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.”

The above-referenced project includes the removal of Schoolhouse Pond Dam, the replacement of the culvert within the dam, and the creation of a pilot stream channel through the current impoundment. Once completed, this ecological restoration project is expected to restore aquatic and riparian habitat connectivity and enhance riverine function.

Approximately 650 cubic yards (“CY”) of sediment will be mechanically dredged to create the pilot channel. This sediment will be placed adjacent to the new channel in microtopographic relief areas and then seeded with a native seed mix. In addition, approximately 200 CY of sediment is expected to mobilize during future storm events and settle in depositional areas downstream. Approximately 11,000 square feet of land under the High Water Mark will be impacted temporarily by the placement of construction mats and coffer dams which will be removed upon completion of the project. Approximately 6.46 acres of land under water (“LUW”) is expected to convert to bordering vegetated wetland (“BVW”) after the dam is removed and the impoundment has drained. The work is shown on the attached plans.

Sediment Chemistry Results: Sediment samples upstream of the dam, within the impoundment, and downstream of the dam were collected for analysis. The results of the chemical analysis were compared to MassDEP’s *Interim Policy for Sampling, Analysis, Handling and Tracking Requirements for Dredged Sediment Reuse and Disposal* (COMM-94-007). All of the results were either non-detect or below the Reportable Concentration (“RC”) S-1 criteria of the Massachusetts Contingency Plan (“MCP”), except for one location which slightly exceeded the threshold for arsenic. However, the area in the impoundment where this exceedance occurred is outside of the future stream channel. Furthermore, clean sediment from the dredged channel will be placed on top of it, seeded with a native seed mix, and stabilized by vegetation.

Public Notice: The Combined Permit Application public notice was published in the *Millbury-Sutton Chronicle* on February 29, 2024. No comments were received by MassDEP during the 21-day public comment period pursuant to 314 CMR 9.05(3)(e), which ended on March 21, 2024.

Section 61 Findings: Pursuant to M.G.L. Chapter 30, Sections 61 to 62H inclusive [the Massachusetts Environmental Policy Act (“MEPA”)], the project, as referenced in the Combined Permit Application, DEP Application # 24-WW26-0009-APP, was required to file an Expanded Environmental Notification Form (“EENF”). MassWildlife (the “Proponent”) filed the EENF for the construction of the project under EEA # 15642 and noticed the EENF in the Environmental Monitor (the “Monitor”) on February 8, 2017. In the Certificate issued on March 31, 2017, the Secretary of Energy and Environmental Affairs (the “Secretary”) determined that “this project requires the preparation of a Single Environmental Impact Report (Single EIR).” Further, the Proponent requested that the Secretary allow a Single EIR to be prepared in lieu of the usual two-stage Draft and Final EIR process pursuant to Section 11.06(8) of the MEPA regulations. The Secretary granted that request. Accordingly, the Proponent filed the Single EIR and noticed such in the Monitor on June 7, 2017. In the Certificate issued on July 14, 2017, the Secretary determined that the “Single EIR adequately and properly complies with MEPA and its

implementing regulations” and that the Project “may proceed to permitting.” MassDEP has reviewed the findings in both the EENF and Single EIR Certificates and confirms that based on the avoidance, minimization, and mitigation measures undertaken by the Proponent, in conjunction with the requirements set forth in this Combined 401 WQC, all outstanding issues have been addressed satisfactorily.

Therefore, based on information currently in the record, MassDEP grants a Combined 401 WQC for this project subject to the following conditions to maintain or attain water quality, to minimize any damage to the environment that may result from the project, and to ensure compliance with appropriate provisions of state law. MassDEP certifies that there is reasonable assurance the project or activity, as conditioned herein, will be conducted in a manner which will not violate applicable water quality standards (314 CMR 4.00) and other appropriate requirements of state law.

1. The contractor shall take all steps necessary to ensure that the proposed activities will be conducted in a manner that will avoid violations of the antidegradation provisions of the Massachusetts Surface Water Quality Standards, 314 CMR 4.00, that protect all waters, including wetlands. Pursuant to 314 CMR 9.01(3), this condition is necessary to ensure that any discharge from the project complies with the Massachusetts Surface Water Quality Standards, as provided in 314 CMR 4.00, to protect the public health and restore and maintain the chemical, physical, and biological integrity of the water resources of the Commonwealth.
2. Prior to the start of work, or for any portion of the work thereafter, MassDEP shall be notified of any change(s) in the proposed project or plans that may affect waters or wetlands. MassDEP will determine whether the change(s) requires a revision to this Combined 401 WQC. Pursuant to 314 CMR 9.06(1), 9.07(1) and 9.09(2), this condition is necessary to protect the public health and restore and maintain the chemical, physical, and biological integrity of the water resources of the Commonwealth.
3. Dredging and filling/excavation in accordance with this Combined 401 WQC may begin following the 21-day appeal period and once all other permits have been received. Pursuant to 314 CMR 9.10, this condition is necessary to ensure that due process is provided to certain persons deemed to be aggrieved by the Combined 401 WQC.
4. All work shall be performed in accordance with the following documents and plans [Pursuant to 314 CMR 9.05(1), this condition is necessary as these documents outline how the execution of the project will meet the criteria of 314 CMR 9.06 and 9.07 thereby protecting water quality and preventing degradation to wetlands and waters of the Commonwealth]:
 - Application for Combined Permit, DEP Application # 24-WW26-0009-APP, dated February 7, 2024, as revised through June 6, 2024, with attachments.

- Plan entitled “Massachusetts Division of Fisheries and Wildlife, Schoolhouse Pond Dam Removal Project, Sutton, Massachusetts,” consisting of 13 sheets, various scales, dated January 2024, as revised through May 2024, prepared by Tighe & Bond, Inc., not signed or stamped, and attached to this Combined 401 WQC.
 - Document entitled “Dam Removal Monitoring Plan – Schoolhouse Pond Dam,” consisting of 6 pages, dated March 1, 2024, as revised through May 30, 2024, prepared by Tighe & Bond, Inc.
5. MassDEP shall be notified, attention Derek Standish [617-875-3843 derek.standish@mass.gov], one week prior to the start of in-water work so that MassDEP staff may inspect the work for compliance with the terms and conditions of this Combined 401 WQC. Pursuant to 314 CMR 9.05(4), this condition is necessary to ensure that construction practices are implemented in such a manner as to prevent degradation to wetlands and waters of the Commonwealth.
 6. The term of this Combined 401 WQC remains in effect for the same duration as the federal permit that requires it. Pursuant to 314 CMR 9.00, this condition is necessary to ensure that any dredging is conducted in a timely manner and complies with the Massachusetts Surface Water Quality Standards, as provided in 314 CMR 4.00, to protect the public health and restore and maintain the chemical, physical, and biological integrity of wetlands and waters of the Commonwealth.
 7. During the project period, there shall be no discharge or spillage of fuel, oil, or other pollutants, including sediments, onto any part of the site. The applicant shall take all reasonable precautions to prevent the release of pollutants by ignorance, accident, or vandalism. Pursuant to 314 CMR 9.06(1) and 9.07(1), this condition is necessary to ensure that construction practices are implemented in such a manner as to prevent degradation to wetlands and waters of the Commonwealth.
 8. No later than four weeks after issuance of this Combined 401 WQC, the applicant shall submit a notification procedure outlining the reporting process to MassDEP for incidents relating to dredging activities that impact surrounding resource areas and habitats including, but not limited to, observed dead or distressed fish or other aquatic organisms, observed oily sheen on the surface of the water, a sediment spill, a turbidity plume beyond the deployed Best Management Practices (“BMPs”), and a barge or equipment accident/spill. If at any time during implementation of the project such an incident occurs, the applicant shall immediately notify MassDEP and all site related activities impacting the water shall cease until the source of the problem is identified and adequate mitigating measures are deployed to the satisfaction of MassDEP. Pursuant to 314 CMR 9.07(3), this condition is necessary to ensure that construction is conducted in a manner that minimizes short-term, long-term, and cumulative impacts on the aquatic ecosystem and provides protection to human health.

9. Future maintenance dredging is not authorized under this Combined 401 WQC. Pursuant to 314 CMR 9.04(5), the project does not qualify for the routine maintenance exemption. This condition is necessary to ensure that the chemical, physical and biological integrity of wetlands and waters of the Commonwealth are protected.
10. Flow to the downstream channel (Singletary Brook) shall be maintained throughout construction of the project. Pursuant to 314 CMR 9.07(1)(c), this condition is necessary to ensure that construction will be conducted in a manner that will not reduce or alter the habitat functions of the affected wetlands and waters of the Commonwealth.
11. All equipment/machinery shall be stored above the High Water Mark (“HWM”) and outside any wetland resource areas when not in use. Pursuant to 314 CMR 9.06(1)(c)4.c. and 9.07(1)(b)4.c., this condition is necessary to avoid and minimize adverse construction impacts to wetlands and waters of the Commonwealth.
12. All sedimentation barriers shall be maintained in good repair until all disturbed areas have been fully stabilized with vegetation or other means. At no time shall sediments be deposited in a wetland or water body, except as described in the documents and plans cited in Condition # 4. During construction, the applicant or his/her designee shall inspect the erosion controls on a daily basis and shall remove accumulated sediments as needed. The applicant shall immediately control any erosion problems that occur at the site and shall also immediately notify MassDEP, which reserves the right to require additional erosion and/or damage prevention controls it may deem necessary. Sedimentation barriers shall serve as the limit of work unless another limit of work line has been approved by MassDEP pursuant to this Combined 401 WQC. Pursuant to 314 CMR 9.06(1)(c)4.c. and 9.07(1)(b)4.c., this condition is necessary to avoid and minimize adverse construction impacts to wetlands and waters of the Commonwealth.
13. No later than 21 days prior to commencement of dredging activity, a dredged material dewatering plan shall be submitted to MassDEP for review and written approval. At a minimum, the dewatering plan shall include, but not be limited to, the type of containment, method of dewatering (i.e., mechanical or by gravity), method of collecting the dewatered effluent, and method of disposal. Pursuant to 314 CMR 9.07(1), this condition is necessary to adequately minimize and contain runoff water and material from the dredged material dewatering process to protect the water resource area thereby ensuring that water quality is not degraded, and biological resources are not negatively impacted by potential discharges.
14. MassDEP shall be notified in writing of the name and location of the upland licensed facility accepting the dredged material for disposal or reuse as daily cover material. If the licensed facility is located out of state, documentation shall be provided to MassDEP that the dredged material disposal/reuse has been approved and will be

accepted by the receiving state in accordance with 314 CMR 9.07(13)(b). The dredged material shall not be transported to the facility without the concurrence of MassDEP. Pursuant to 314 CMR 9.07(5) and 314 CMR 9.07(13), this condition is necessary to ensure that dredged material disposal will not adversely affect any wetlands or waters in the receiving area.

15. A Material Shipping Record (“MSR”) shall be used to track the dredged material to the licensed upland facility. A fully executed copy of the MSR shall be provided to MassDEP within 30 days of final shipment to the reuse location or facility. Pursuant to 314 CMR 9.07(5), this condition is necessary to maintain a record of the dredged material for reference and to ensure accountability in its transportation. This assists in the protection of health, safety, public welfare, and the environment from any potential hazards during transportation. Finally, it attests to the dredged material conforming with permitting and regulatory requirements for acceptance at the receiving location.
16. BMPs shall be implemented during transportation of the dredged material to the licensed receiving facility. At a minimum, when transported upon public roadways, all dredged material shall have no free liquid as determined by the Paint Filter Test or other suitably analogous methodology acceptable to MassDEP, and a tarpaulin or other means shall be used to cover the dredged material during transport. Pursuant to 314 CMR 9.07(5), this condition is necessary to protect off site water quality during transportation. These practices help to avoid fugitive dust and siltation into wetlands and waters of the Commonwealth.
17. Within 30 days of the completion of dredging, photographs of the affected areas depicting post-dredge conditions shall be taken and submitted to Derek Standish [derek.standish@mass.gov] at MassDEP. Pursuant to 314 CMR 9.07(1), this condition is necessary to ensure that construction practices are implemented in such a manner as to prevent degradation to wetlands and waters of the Commonwealth.

Failure to comply with this Combined 401 WQC is grounds for enforcement, including civil and criminal penalties, under M.G.L. c. 21, § 42, 314 CMR 9.00, M.G.L. c. 21A § 16, 310 CMR 5.00, or other possible actions/penalties as authorized by the General Laws of the Commonwealth.

This Combined 401 WQC does not relieve the applicant of the obligation to comply with other appropriate state or federal statutes or regulations. Any changes made to the project as described in the previously submitted Combined Permit Application or supplemental documents will require further notification to and, if an amendment is required, approval by MassDEP.

NOTICE OF APPEAL RIGHTS

Certain persons shall have a right to request an adjudicatory hearing concerning Combined 401 WQCs by MassDEP when an application is required:

- a. the applicant or property owner;
- b. any person aggrieved by the decision who has submitted written comments during the public comment period;
- c. any ten persons of the Commonwealth pursuant to M.G.L. c. 30A where a group member has submitted written comments during the public comment period; or
- d. any governmental body or private organization with a mandate to protect the environment, which has submitted written comments during the public comment period.

Any person aggrieved, any ten persons of the Commonwealth, or a governmental body or private organization with a mandate to protect the environment may appeal without having submitted written comments during the public comment period only when the claim is based on new substantive issues arising from material changes to the scope or impact of the activity and not apparent at the time of public notice. To request an adjudicatory hearing pursuant to M.G.L. c. 30A, § 10, a Notice of Claim must be made in writing, provided that the request is made by certified mail or hand delivery to MassDEP, with the appropriate filing fee specified within 310 CMR 4.10 along with a DEP Fee Transmittal Form within 21 days from the date of issuance of this Combined 401 WQC.

Department of Environmental Protection
Case Administrator
Office of Appeals and Dispute Resolution
100 Cambridge Street, Suite 900
Boston, MA 02114

A copy of the request shall at the same time be sent by certified mail or hand delivery to the issuing office of the Wetlands Program at:

Department of Environmental Protection
Wetlands Program
100 Cambridge Street, Suite 900
Boston, MA 02114

A Notice of Claim for Adjudicatory Hearing shall comply with MassDEP's Rules for Adjudicatory Proceedings, 310 CMR 1.01(6), and shall contain the following information pursuant to 314 CMR 9.10(3):

- a. the Combined Permit Application Number;
- b. the complete name of the applicant and address of the project;

- c. the complete name, address, and fax and telephone numbers of the party filing the request, and, if represented by counsel or other representative, the name, fax and telephone numbers, and address of the attorney;
- d. if claiming to be a party aggrieved, the specific facts that demonstrate that the party satisfies the definition of “aggrieved person” found at 314 CMR 9.02;
- e. a clear and concise statement that an adjudicatory hearing is being requested;
- f. a clear and concise statement of (1) the facts which are grounds for the proceedings, (2) the objections to this Combined 401 WQC, including specifically the manner in which it is alleged to be inconsistent with the MassDEP’s Water Quality Regulations, 314 CMR 9.00, and (3) the relief sought through the adjudicatory hearing, including specifically the changes desired in the final written Combined 401 WQC; and
- g. a statement that a copy of the request has been sent by certified mail or hand delivery to the applicant, the owner (if different from the applicant), the conservation commission of the city or town where the activity will occur, the Department of Conservation and Recreation (when the certificate concerns projects in Areas of Critical Environmental Concern), the public or private water supplier where the project is located (when the certificate concerns projects in Outstanding Resource Waters), and any other entity with responsibility for the resource where the project is located.

The hearing request along with a DEP Fee Transmittal Form and a valid check or money order payable to the Commonwealth of Massachusetts in the amount of one hundred dollars (\$100) must be mailed to:

Commonwealth of Massachusetts
Department of Environmental Protection
Commonwealth Master Lockbox
PO Box 4062
Boston, MA 02211

The request will be dismissed if the filing fee is not paid unless the appellant is exempt or granted a waiver. The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority. MassDEP may waive the adjudicatory hearing filing fee pursuant to 310 CMR 4.06(2) for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file an affidavit setting forth the facts believed to support the claim of undue financial hardship together with the hearing request as provided above.

Should you have any questions relative to this Combined 401 WQC, please contact Derek Standish at (617) 875-3843 [derek.standish@mass.gov].

Sincerely,



Lisa Rhodes
Wetlands Program Chief

ecc:Sutton Conservation Commission, 4 Uxbridge Road, Sutton, MA 01590
Lucia Isobel Arthen-Long, Tighe & Bond, Inc., 53 Southampton Road, Westfield, MA 01085
Judith Schmitz, MassDEP – CERO, 8 New Bond Street, Worcester, MA 01606
Roberta K. Budnick and Paul M. Maniccia, Department of the Army, New England District, Corps of Engineers, 696 Virginia Road, Concord, MA 01742-2751
Edward Reiner and Rachel Croy, EPA, 5 Post Office Square, Suite 100, Boston, MA 02109

attachments: Communication for Non-English Speaking Parties document
Plans of Record



重要 महत्वपूर्ण σημαντικός
Important
կարևոր quan trọng مهم



Communication for Non-English-Speaking Parties

This document is important and should be translated immediately.

If you need this document translated, please contact MassDEP's Director of Environmental Justice at the telephone number listed below.

Español Spanish

Este documento es importante y debe ser traducido inmediatamente. Si necesita traducir este documento, póngase en contacto con el Director de Justicia Ambiental de MassDEP (*MassDEP's Director of Environmental Justice*) en el número de teléfono que figura más abajo.

Português Portuguese

Este documento é importante e deve ser traduzido imediatamente. Se você precisar traduzir este documento, entre em contato com o Diretor de Justiça Ambiental do MassDEP no número de telefone listado abaixo.

繁體中文 Chinese Traditional

本文檔很重要，需要即刻進行翻譯。
如需對本文檔進行翻譯，請透過如下列示電話號碼與 MassDEP 的環境司法總監聯絡。

简体中文 Chinese Simplified

这份文件非常重要，需要立即翻译。
如果您需要翻译这份文件，请通过下方电话与 MassDEP 环境司法主任联系。

Ayisyen Kreyòl Haitian Creole

Dokiman sa a enpòtan epi yo ta dwe tradui l imedyatman. Si w bezwen tradui dokiman sa a, tanpri kontakte Direktè. Jistis Anviwònmanal MassDEP a nan nimewo telefòn ki endike anba a.

Việt Vietnamese

Tài liệu này và quan trọng và phải được dịch ngay. Nếu quý vị cần bản dịch của tài liệu này, vui lòng liên hệ với Giám Đốc Phòng Công Lý Môi Trường của MassDEP theo số điện thoại được liệt kê bên dưới.

ប្រទេសកម្ពុជា Khmer/Cambodian

ឯកសារនេះមានសារៈសំខាន់
ហើយគួរត្រូវបានបកប្រែភ្លាមៗ។
ប្រសិនបើអ្នកត្រូវការអោយឯកសារនេះបកប្រែ
សូមទាក់ទងនាយកផ្នែកយុត្តិធម៌បរិស្ថានរបស់
MassDEPតាមរយៈលេខទូរស័ព្ទដែលបានរាយដូចខា
ងក្រោម។

Kriolu Kabuverdianu Cape Verdean

Es dokumentu sta important i tenki ser tradusidu imediatamenti. Se nho ta presisa ke es dokumentu sta tradisidu, por favor kontata O Diretor di Justisia di Environman di DEP ku es numero di telefoni menxionadu di baixo.

Contact Deneen Simpson 857-406-0738

**Massachusetts Department of Environmental Protection
100 Cambridge Street 9th Floor Boston, MA 02114**

TTY# MassRelay Service 1-800-439-2370 • <https://www.mass.gov/environmental-justice>
(Version revised 8.2.2023) 310 CMR 1.03(5)(a)

Русский Russian

Это чрезвычайно важный документ, и он должен быть немедленно переведен. Если вам нужен перевод этого документа, обратитесь к директору Департамента экологического правосудия MassDEP (MassDEP's Director of Environmental Justice) по телефону, указанному ниже.

العربية Arabic

هذه الوثيقة مهمة وتجب ترجمتها على الفور.

إذا كنت بحاجة إلى ترجمة هذه الوثيقة، فيرجى الاتصال بمدير العدالة البيئية في MassDEP على رقم الهاتف المذكور أدناه.

한국어 Korean

이 문서는 중대하므로 즉시 번역되어야 합니다. 본 문서 번역이 필요하신 경우, 매사추세츠 환경보호부의 "환경정의" 담당자 분께 문의하십시오. 전화번호는 아래와 같습니다.

հայերեն Armenian

Այս փաստաթուղթը կարևոր է, և պետք է անհապաղ թարգմանել այն:
Եթե Ձեզ անհրաժեշտ է թարգմանել այս փաստաթուղթը, դիմեք Մասաչուսեթսի շրջակա միջավայրի պահպանության նախարարության (MassDEP) Բնապահպանական հարցերով արդարադատության ղեկավարին (Director of Environmental Justice)՝ ստորև նշված հեռախոսահամարով

فارسی Farsi Persian

این نوشتار بسیار مهمی است و باید فوراً ترجمه شود. اگر نیاز به ترجمه این نوشتار دارید لطفاً با مدیر عدالت محیط زیستی MassDEP در شماره تلفن ذکر شده زیر تماس بگیرید.

Français French

Ce document est important et doit être traduit immédiatement. Si vous avez besoin d'une traduction de ce document, veuillez contacter le directeur de la justice environnementale du MassDEP au numéro de téléphone indiqué ci-dessous.

Deutsch German

Dieses Dokument ist wichtig und muss sofort übersetzt werden. Wenn Sie eine Übersetzung dieses Dokuments benötigen, wenden Sie sich bitte an MassDEP's Director of Environmental Justice (Direktor für Umweltgerechtigkeit in Massachusetts) unter der unten angegebenen Telefonnummer.

Ελληνική Greek

Το έγγραφο αυτό είναι πολύ σημαντικό και πρέπει να μεταφραστεί αμέσως. Αν χρειάζεστε μετάφραση του εγγράφου αυτού, παρακαλώ επικοινωνήστε με τον Διευθυντή του Τμήματος Περιβαλλοντικής Δικαιοσύνης της Μασαχουσέτης στον αριθμό τηλεφώνου που αναγράφεται παρακάτω

Italiano Italian

Questo documento è importante e deve essere tradotto immediatamente. Se hai bisogno di tradurre questo documento, contatta il Direttore della Giustizia Ambientale di MassDEP al numero di telefono sotto indicato.

Język Polski Polish

Ten dokument jest ważny i powinien zostać niezwłocznie przetłumaczony. Jeśli potrzebne jest tłumaczenie tego dokumentu, należy skontaktować się z dyrektorem ds. sprawiedliwości środowiskowej MassDEP pod numerem telefonu podanym poniżej.

हिन्दी Hindi

यह दस्तावेज महत्वपूर्ण है और इसका अनुवाद तुरंत किया जाना चाहिए। यदि आपको इस दस्तावेज का अनुवाद कराने की जरूरत है, तो कृपया नीचे दिए गए टेलीफोन नंबर पर MassDEP के पर्यावरणीय न्याय निदेशक से संपर्क करें।

Contact Deneen Simpson 857-406-0738

Massachusetts Department of Environmental Protection
100 Cambridge Street 9th Floor Boston, MA 02114

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(Version revised 8.2.2023) 310 CMR 1.03(5)(a)

MASSACHUSETTS DIVISION OF FISHERIES AND WILDLIFE

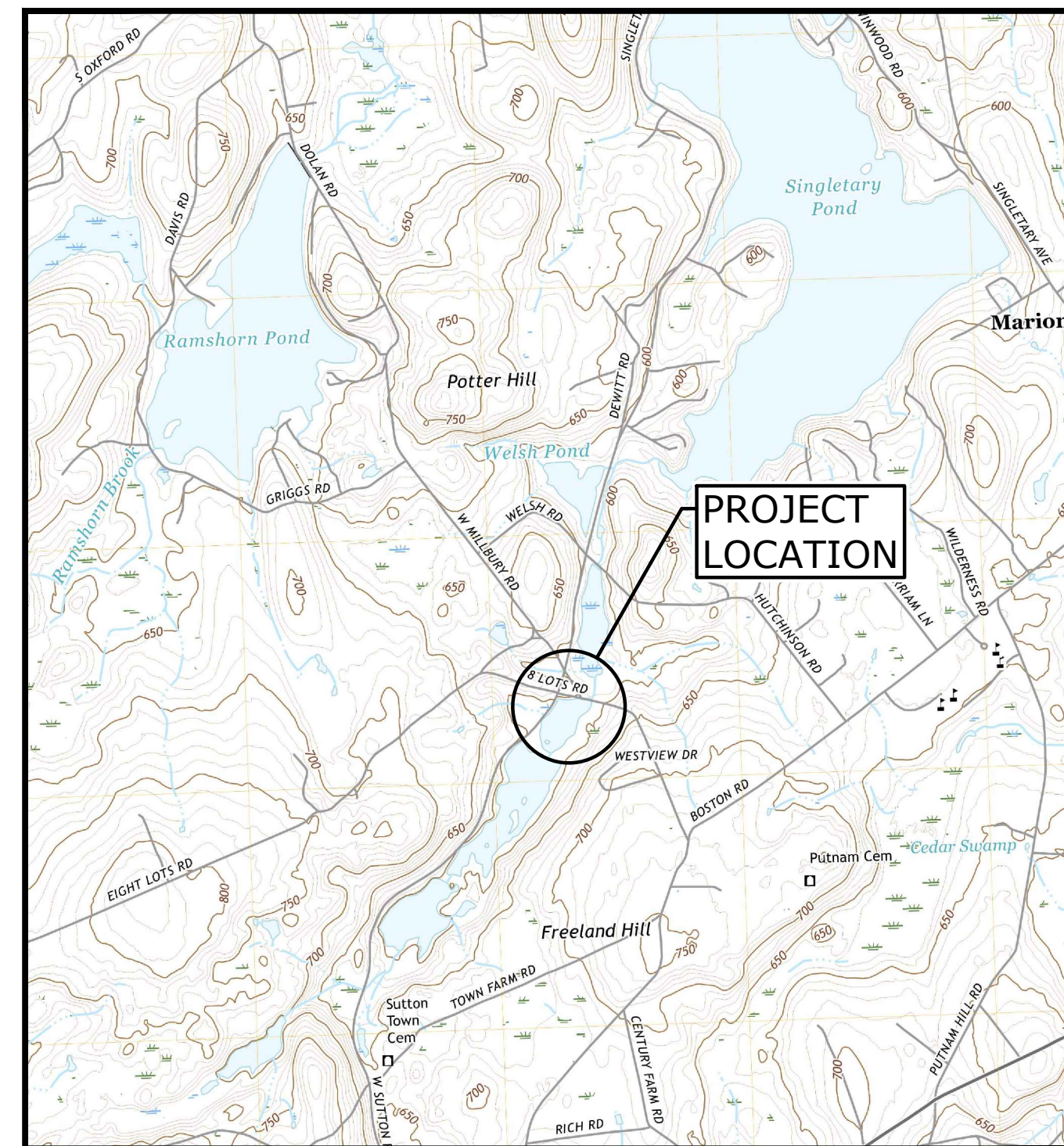
SCHOOLHOUSE POND DAM REMOVAL

PROJECT

SUTTON, MASSACHUSETTS

JANUARY 2024

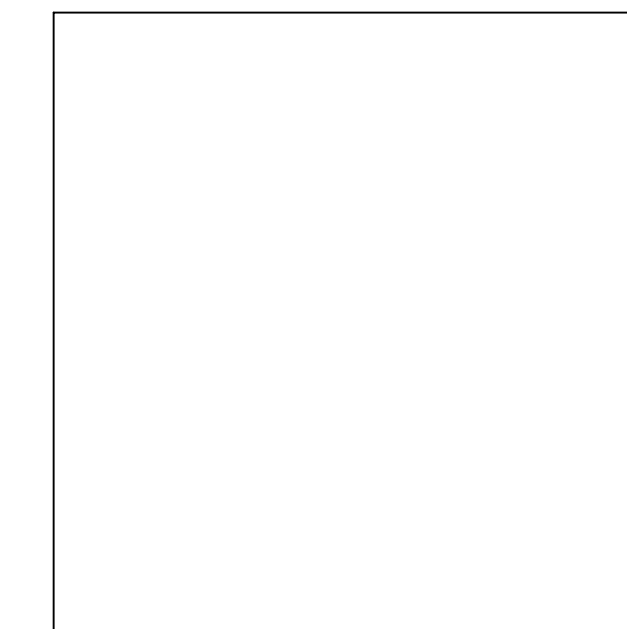
| LIST OF DRAWINGS | | |
|------------------|-------------|---|
| SHEET NO. | DRAWING NO. | DRAWING TITLE |
| GENERAL | | |
| 1 | G-001 | COVER SHEET |
| 2 | G-002 | GENERAL NOTES, ABBREVIATIONS, AND LEGEND |
| CIVIL | | |
| 3 | C-101 | EXISTING CONDITIONS PLAN |
| 4 | C-102 | DEMOLITION, EROSION, SEDIMENT, AND WATER CONTROL PLAN |
| 5 | C-103 | PROPOSED CONDITIONS PLAN |
| 6 | C-104 | SCHOOLHOUSE CHANNEL CONTROL PLAN 1 OF 3 |
| 7 | C-105 | SCHOOLHOUSE CHANNEL CONTROL PLAN 2 OF 3 |
| 8 | C-106 | SCHOOLHOUSE CHANNEL CONTROL PLAN 3 OF 3 |
| 9 | C-201 | CULVERT PLAN AND DETAILS |
| 10 | C-202 | MISCELLANEOUS DETAILS |
| 11 | C-203 | EROSION, SEDIMENT, AND WATER CONTROL DETAILS |
| 12 | C-204 | BOULDER RIFFLE DETAILS |
| 13 | C-205 | TRAFFIC MANAGEMENT PLAN |



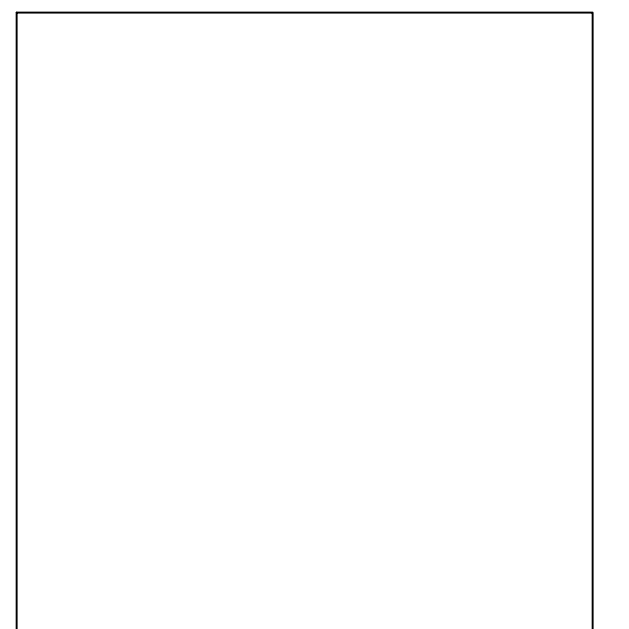
LOCATION MAP
SCALE: 1" = 2000

PREPARED BY:

Tighe & Bond



CHRISTOPHER D. HAKER, PE



DANIEL R. BUTTRICK, PE

PREPARED FOR:

MASSACHUSETTS DIVISION OF FISHERIES & WILDLIFE
CALEB SLATER, PhD, CHIEF OF HATCHERIES

PERMIT SET

THIS DOCUMENT IS INCOMPLETE AND IS RELEASED TEMPORARILY FOR PROGRESS REVIEW ONLY. IT IS NOT INTENDED FOR CONSTRUCTION OR BIDDING PURPOSES.

COMPLETE SET 13 SHEETS



TBM = SPIKE IN U.P. #11-50
BY CULVERT ON 8 LOT ROAD
ELEV = 596.17

TBM = SPIKE IN U.P. #90-2
CORNER OF
WEST MILLBURY ROAD
ELEV = 599.76

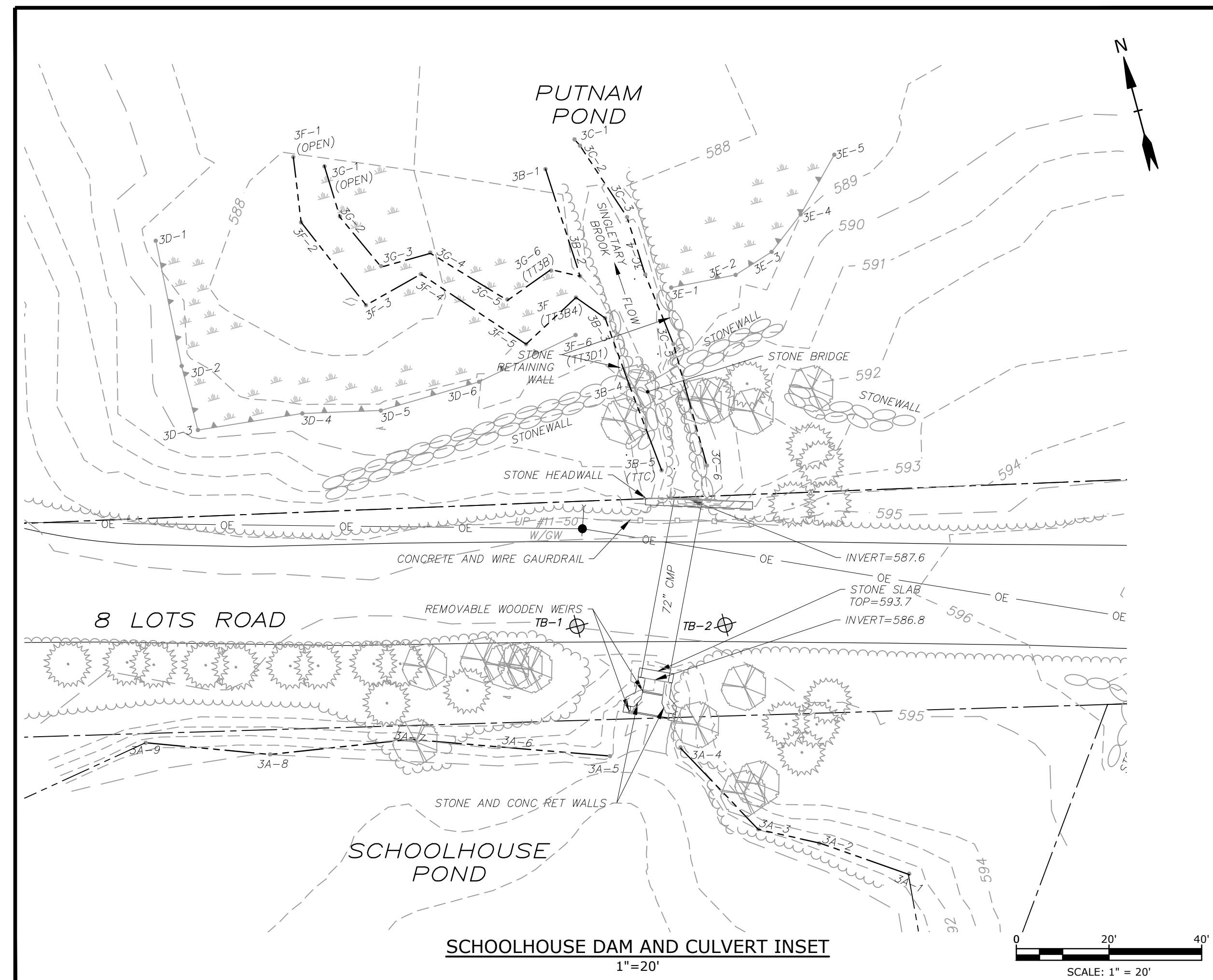
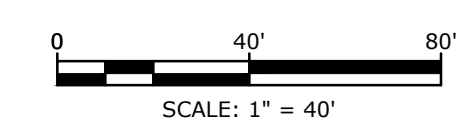
TBM #1
TIE IN UP#90-2
ELEV.=599.76

TBM #2
TIE IN UP#11-50
ELEV.=596.17

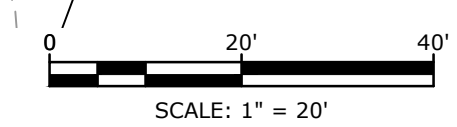
SEE SCHOOLHOUSE DAM AND CULVERT
INSET THIS SHEET



OVERVIEW OF PROJECT
1"=40'



SCHOOLHOUSE DAM AND CULVERT INSET
1"=20'



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CONSTRUCTION OR BIDDING PURPOSES.

**Schoolhouse
Dam Removal
Project**

Massachusetts
Division of
Fisheries and
Wildlife

Sutton,
Massachusetts

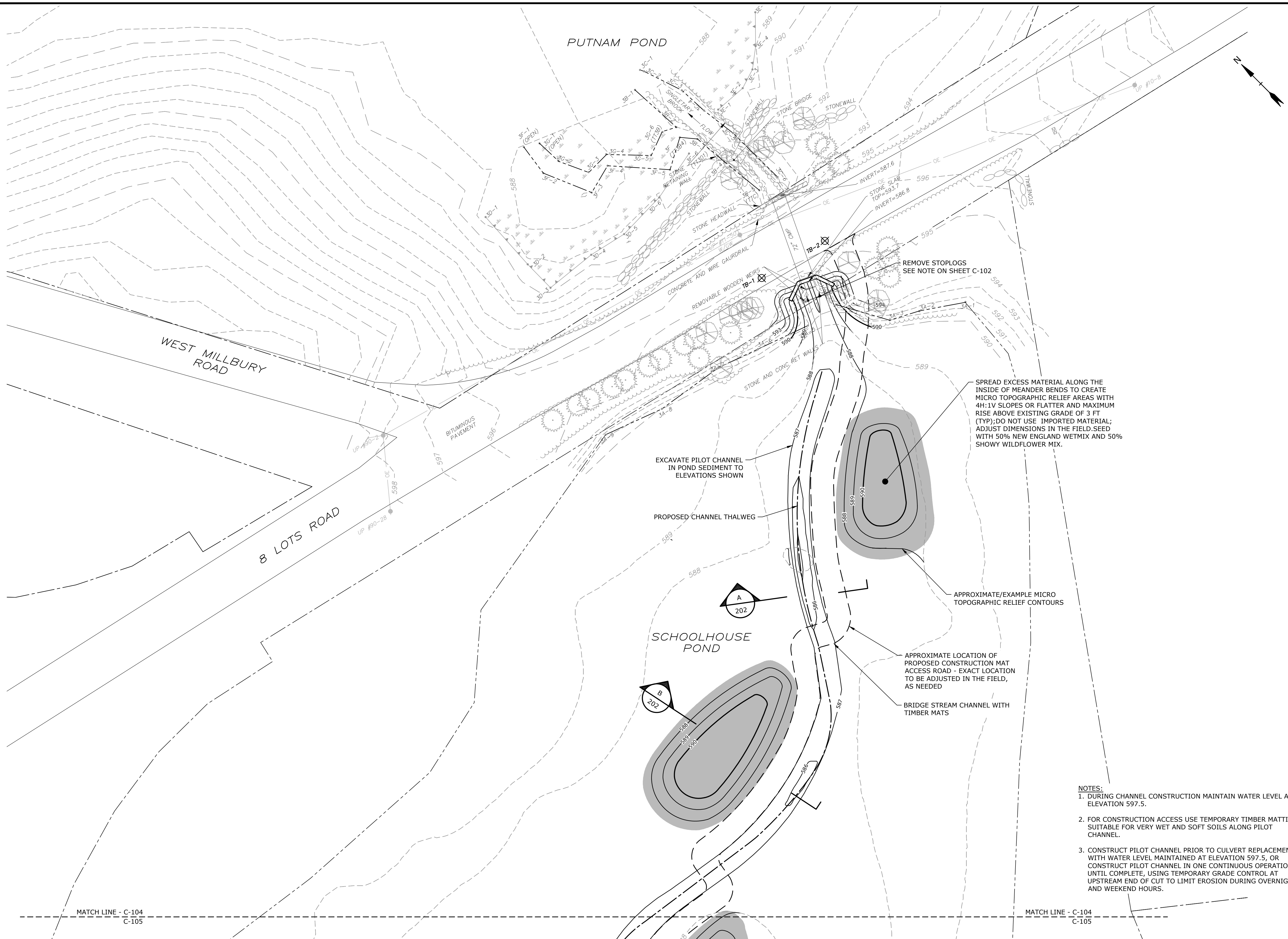
| MARK | DATE | DESCRIPTION |
|------|--------|-------------|
| A | 4/2023 | Permit Set |

PROJECT NO: M-0944-039
DATE: 3/2023
FILE: M-0944-039-06-C-101.dwg
DRAWN BY: GNM,LPT
CHECKED BY: DH,DRB
APPROVED BY: CDH

EXISTING CONDITIONS
PLAN

SCALE: AS SHOWN

Last Saved: 8/23/2023 4:58pm By: GORDON
 Project: On Jan 03, 2024 4:58pm By: GORDON
 Title: Schoolhouse Pond Drawings AutoCAD SHITTY-0944-039-06-C-101.dwg
 User: GORDON



PERMIT SET
 THIS DOCUMENT IS INCOMPLETE AND IS RELEASED TEMPORARILY FOR PROGRESS REVIEW ONLY. IT IS NOT INTENDED FOR CONSTRUCTION OR BIDDING PURPOSES.

Schoolhouse Dam Removal Project

Massachusetts Division of Fisheries and Wildlife

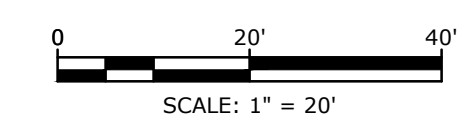
Sutton, Massachusetts

- NOTES:**
- DURING CHANNEL CONSTRUCTION MAINTAIN WATER LEVEL AT ELEVATION 597.5.
 - FOR CONSTRUCTION ACCESS USE TEMPORARY TIMBER MATTING SUITABLE FOR VERY WET AND SOFT SOILS ALONG PILOT CHANNEL.
 - CONSTRUCT PILOT CHANNEL PRIOR TO CULVERT REPLACEMENT WITH WATER LEVEL MAINTAINED AT ELEVATION 597.5, OR CONSTRUCT PILOT CHANNEL IN ONE CONTINUOUS OPERATION UNTIL COMPLETE, USING TEMPORARY GRADE CONTROL AT UPSTREAM END OF CUT TO LIMIT EROSION DURING OVERNIGHT AND WEEKEND HOURS.

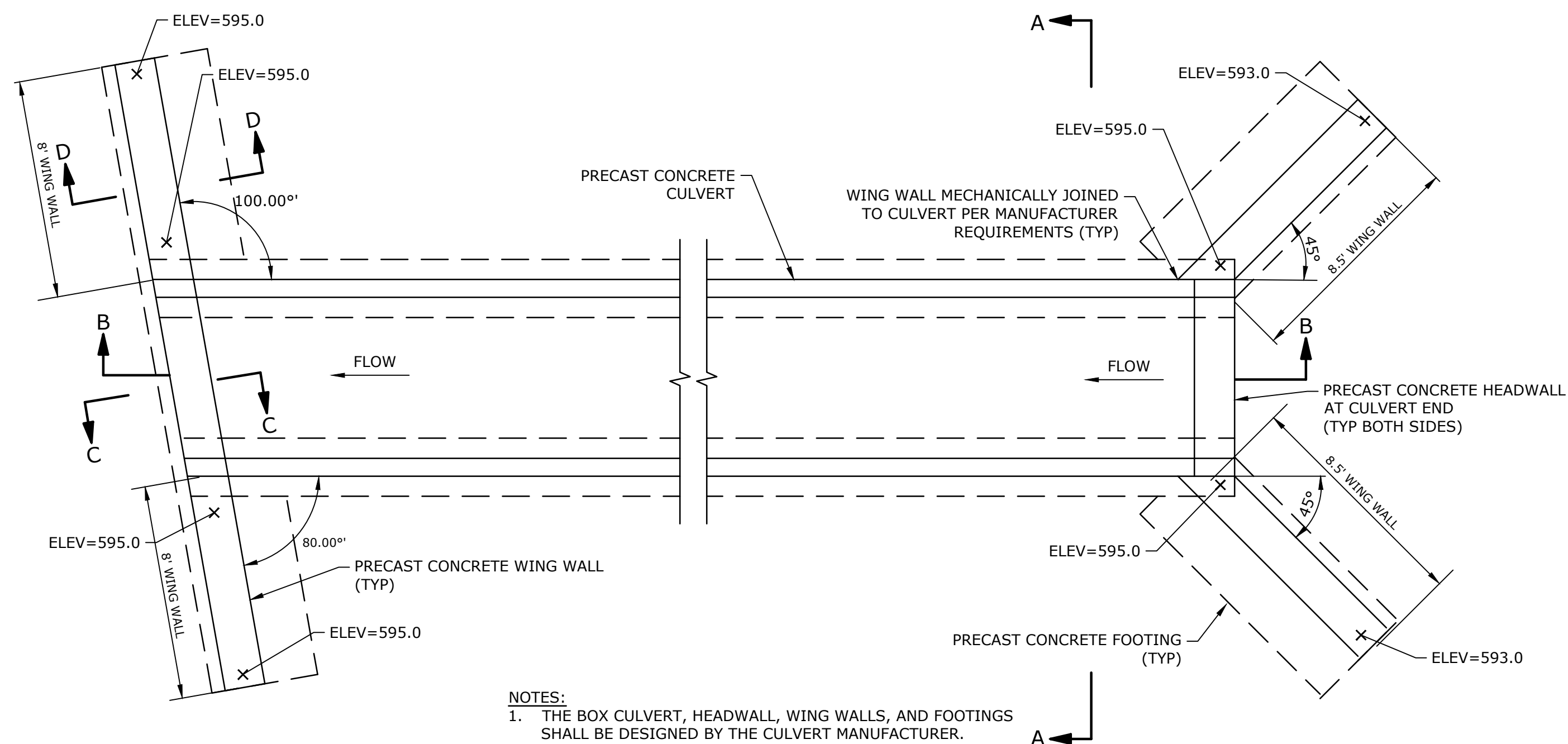
| MARK | DATE | DESCRIPTION |
|-----------------------------------|--------|-------------|
| A | 4/2023 | Permit Set |
| PROJECT NO: M-0944-039 | | |
| DATE: 3/2023 | | |
| FILE: M-0944-039-06-C-104-106.dwg | | |
| DRAWN BY: GNM,LPT | | |
| CHECKED BY: DH,DRB | | |
| APPROVED BY: CDH | | |

SCHOOLHOUSE CHANNEL CONTROL PLAN 1 OF 3

SCALE: 1" = 20'

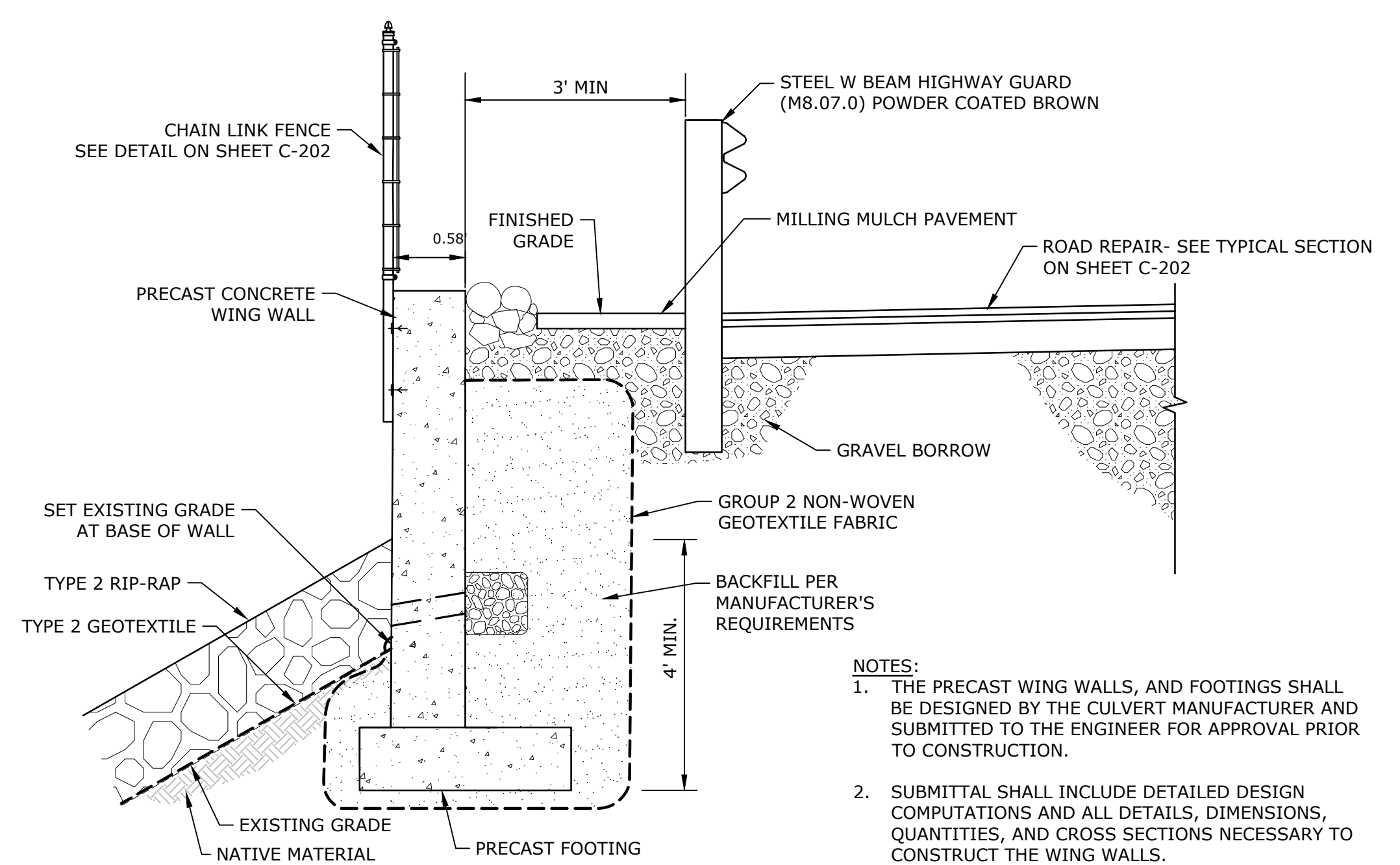


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 File: C:\Users\jgordon\OneDrive\Documents\Autocad\SHIT\M-0944-039-06-C-104-106.dwg



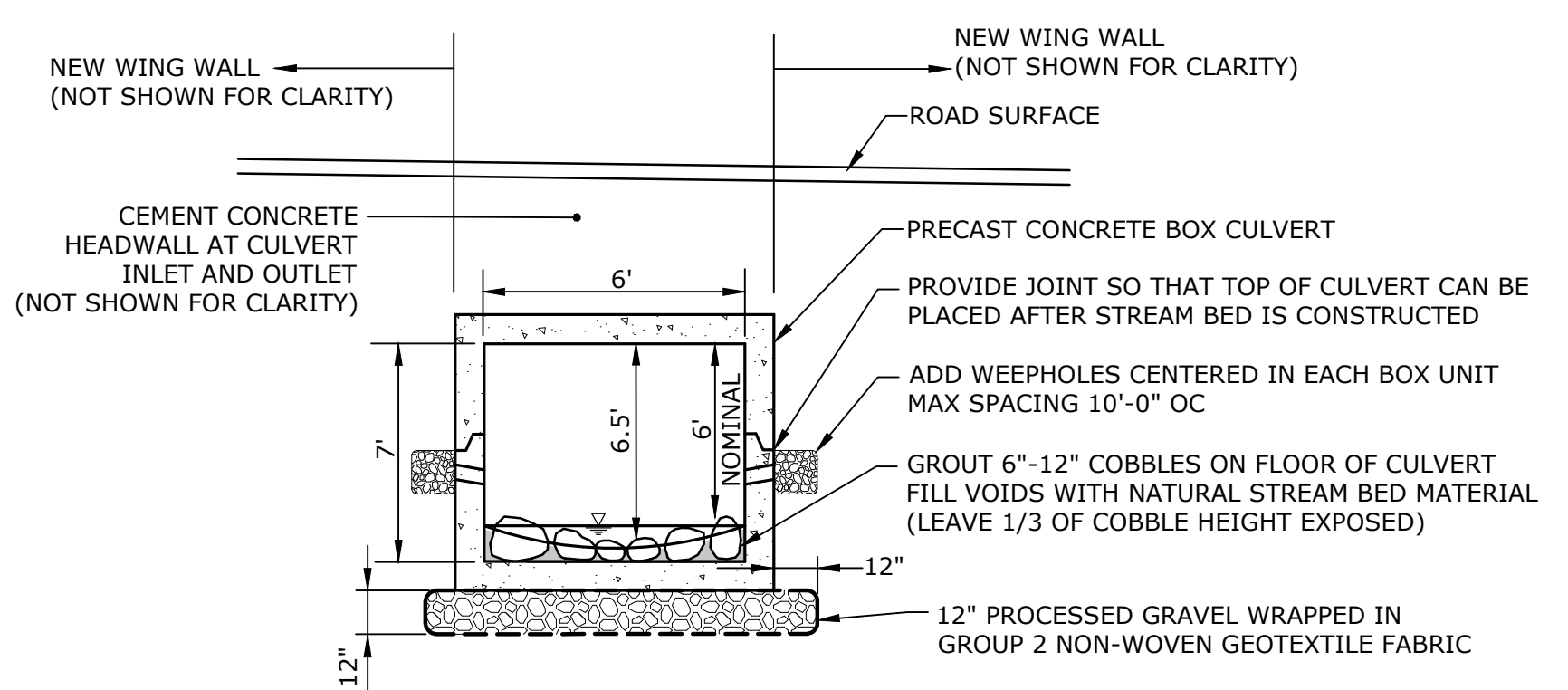
NOTES:
1. THE BOX CULVERT, HEADWALL, WING WALLS, AND FOOTINGS SHALL BE DESIGNED BY THE CULVERT MANUFACTURER.

CULVERT PLAN
NO SCALE

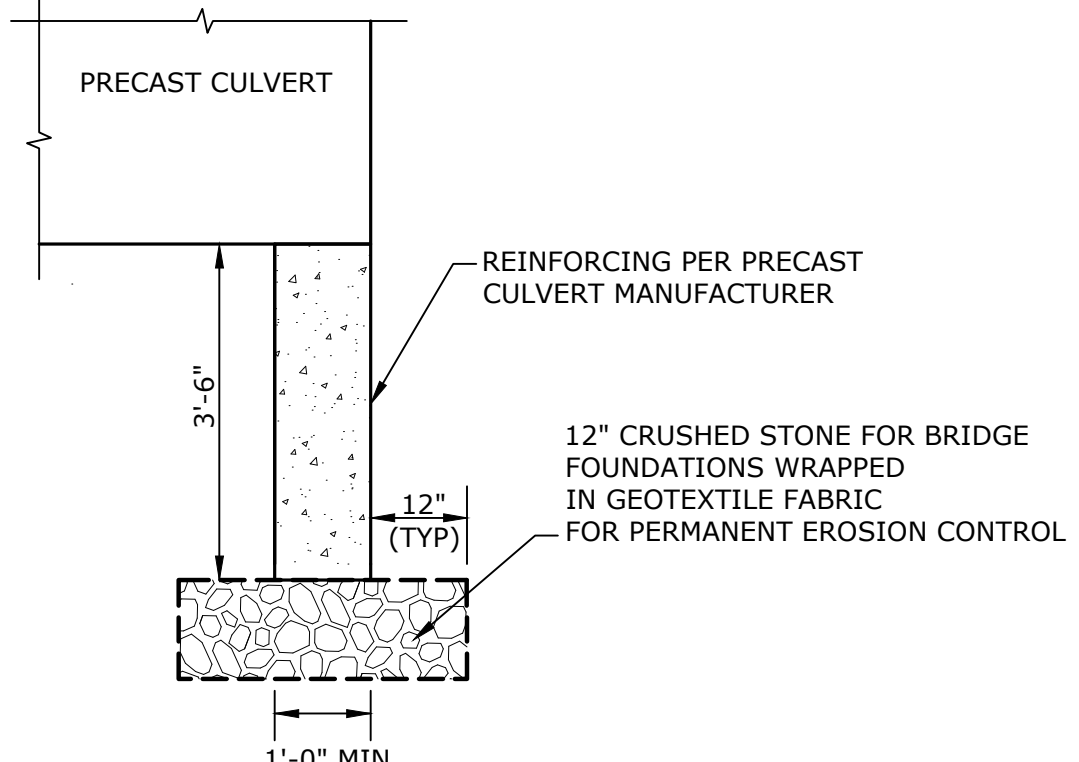


NOTES:
1. THE PRECAST WING WALLS, AND FOOTINGS SHALL BE DESIGNED BY THE CULVERT MANUFACTURER AND SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.
2. SUBMITTAL SHALL INCLUDE DETAILED DESIGN COMPUTATIONS AND ALL DETAILS, DIMENSIONS, QUANTITIES, AND CROSS SECTIONS NECESSARY TO CONSTRUCT THE WING WALLS.
3. DESIGN DRAWINGS AND CALCULATIONS SHALL BE PREPARED, STAMPED, AND SIGNED BY A REGISTERED PROFESSIONAL ENGINEER IN THE COMMONWEALTH OF MASSACHUSETTS.

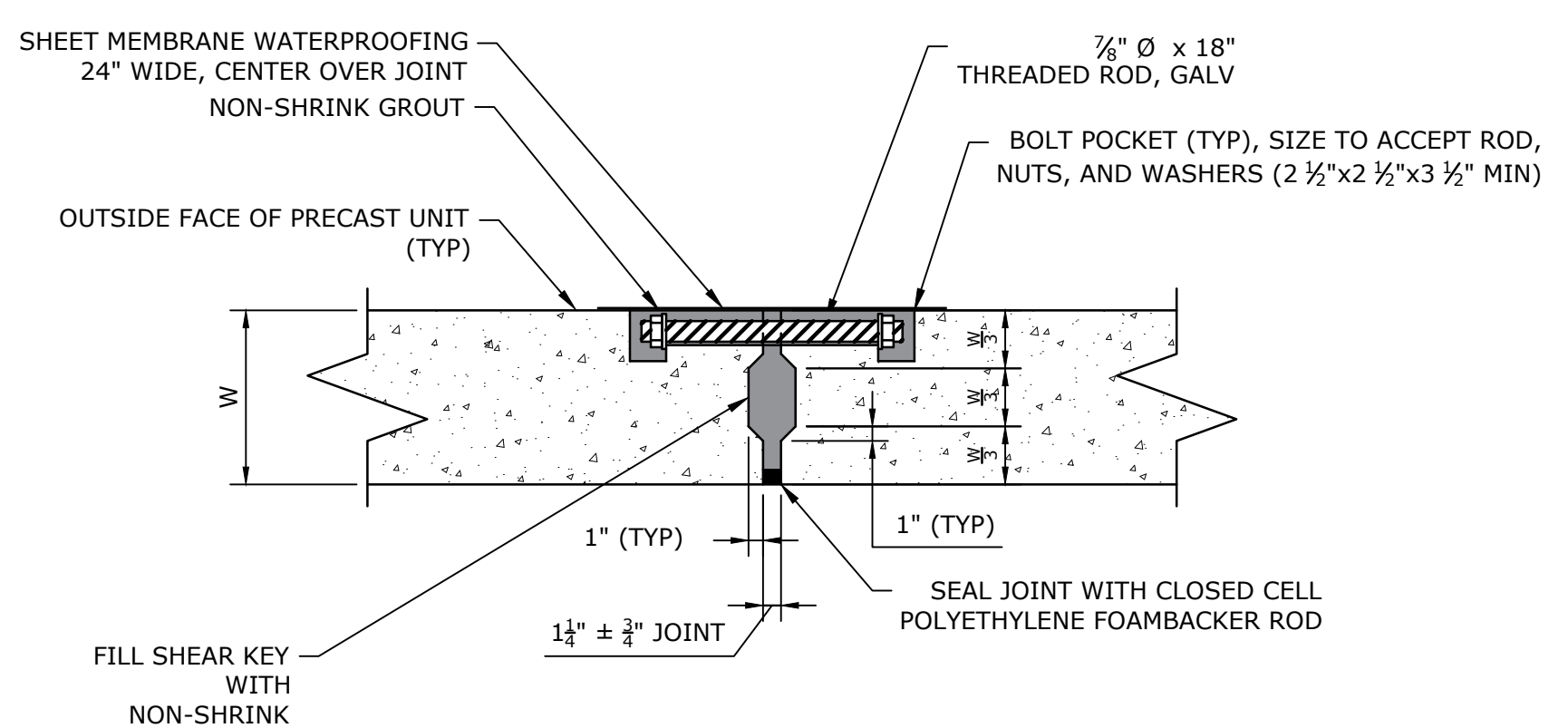
SECTION D
NO SCALE



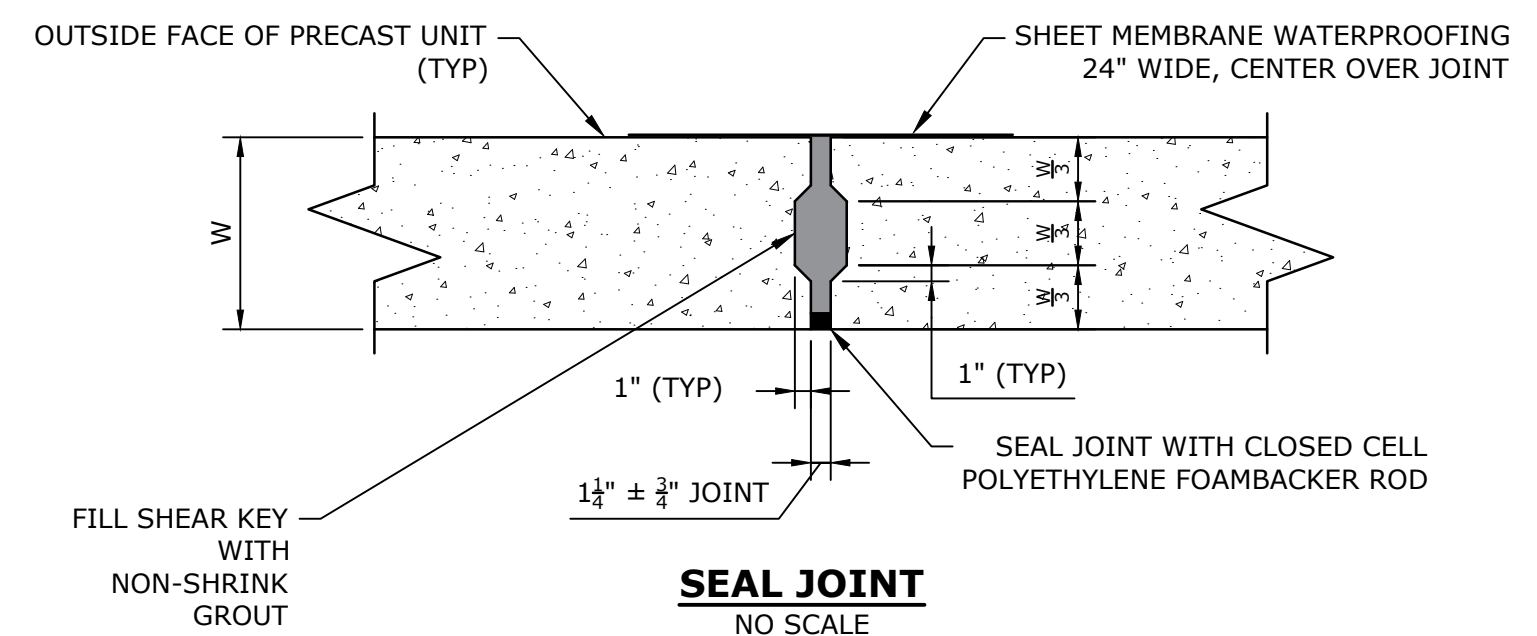
SECTION A
NO SCALE



SECTION C
NO SCALE

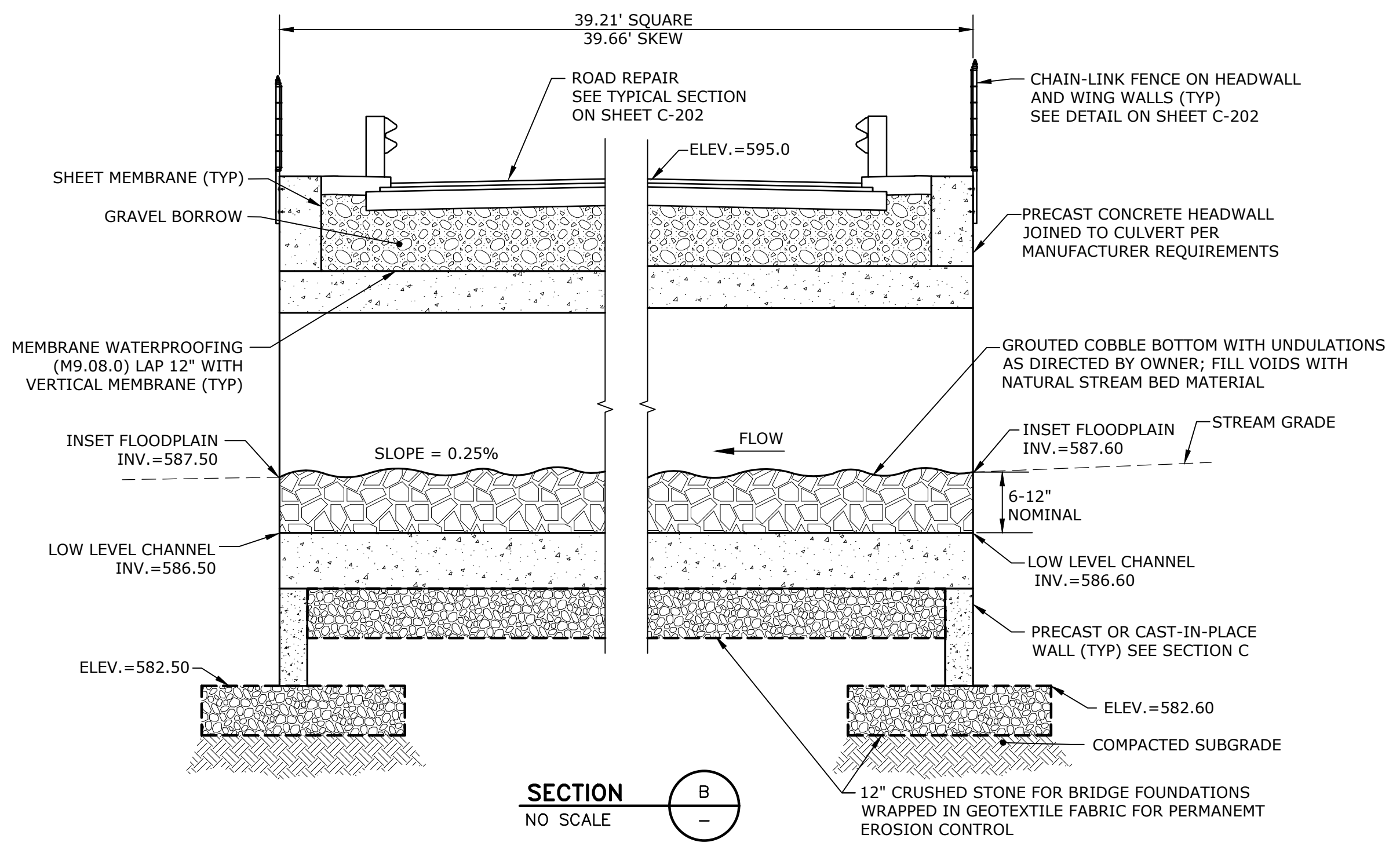


MECHANICAL JOINT
NO SCALE



SEAL JOINT
NO SCALE

NOTES:
1. PROVIDE A MINIMUM OF 8 MECHANICAL CONNECTORS BETWEEN EACH BOX CULVERT UNIT (2 ON EACH SIDE) AND 2 MECHANICAL CONNECTORS BETWEEN WINGWALL UNITS.
2. ALL BOLT POCKETS SHALL BE FILLED WITH NON-SHRINK GROUT (M4.04.0).
3. SHEET MEMBRANE SHALL BE PLACED IN 2-FOOT WIDE STRIPS, CENTERED OVER THE SIDES OF EACH JOINT.
4. BOTTOM OF PRECAST BOX SHALL HAVE THREADED ROD ON INSIDE FACE OF STRUCTURE AND MEMBRANE NEED NOT BE PLACED.



SECTION B
NO SCALE

PERMIT SET
THIS DOCUMENT IS INCOMPLETE AND IS RELEASED TEMPORARILY FOR PROGRESS REVIEW ONLY. IT IS NOT INTENDED FOR CONSTRUCTION OR BIDDING PURPOSES.

Schoolhouse Dam Removal Project

Massachusetts Division of Fisheries and Wildlife

Sutton, Massachusetts

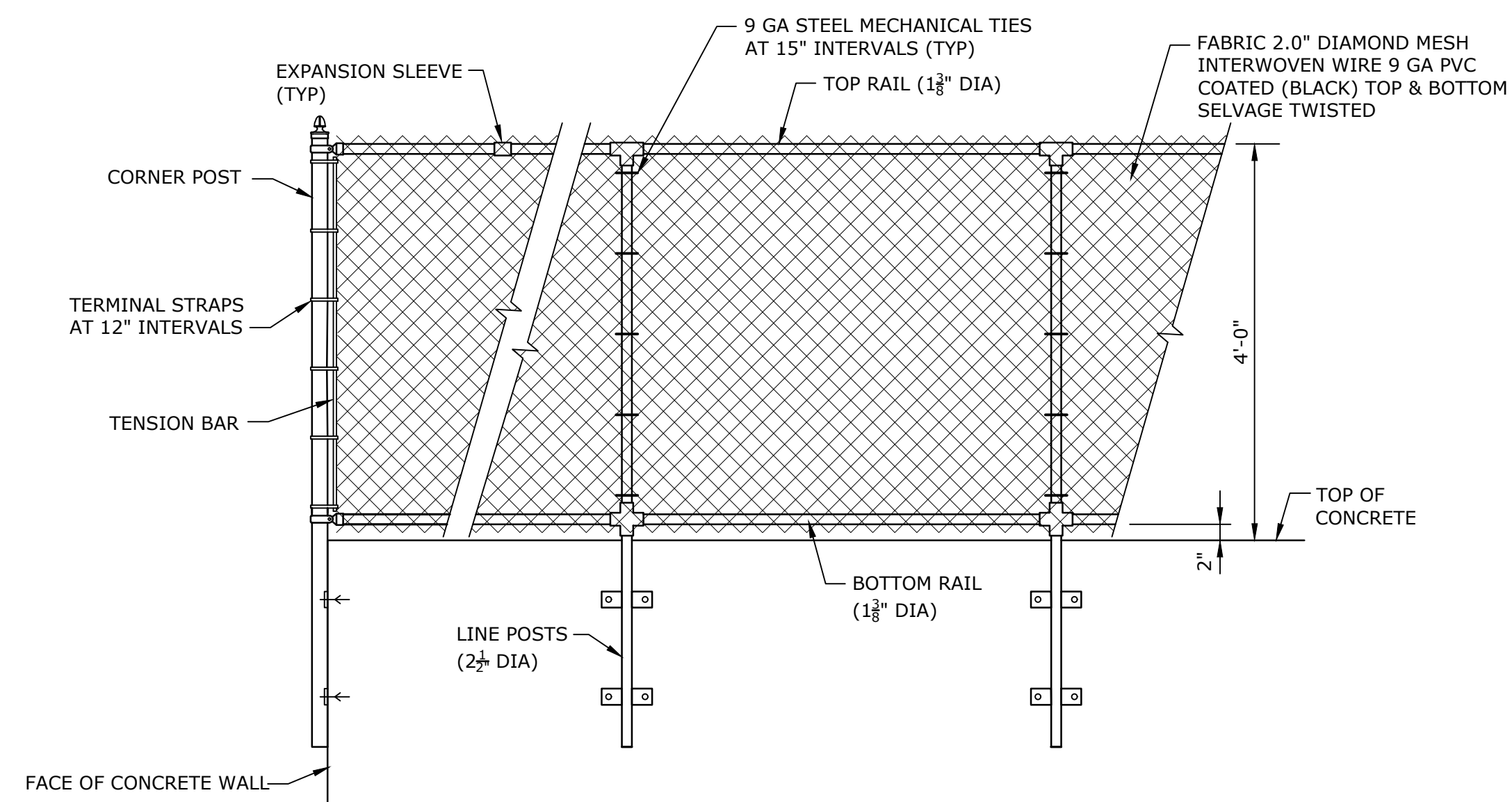
| MARK | DATE | DESCRIPTION |
|------|--------|-------------|
| A | 4/2023 | Permit Set |

| | |
|--------------|-------------------------|
| PROJECT NO: | M-0944-039 |
| DATE: | 3/2023 |
| FILE: | M-0944-039-06-C-201.dwg |
| DRAWN BY: | GNM,LPT |
| CHECKED BY: | DH,DRB |
| APPROVED BY: | CDH |

CULVERT PLAN AND DETAILS

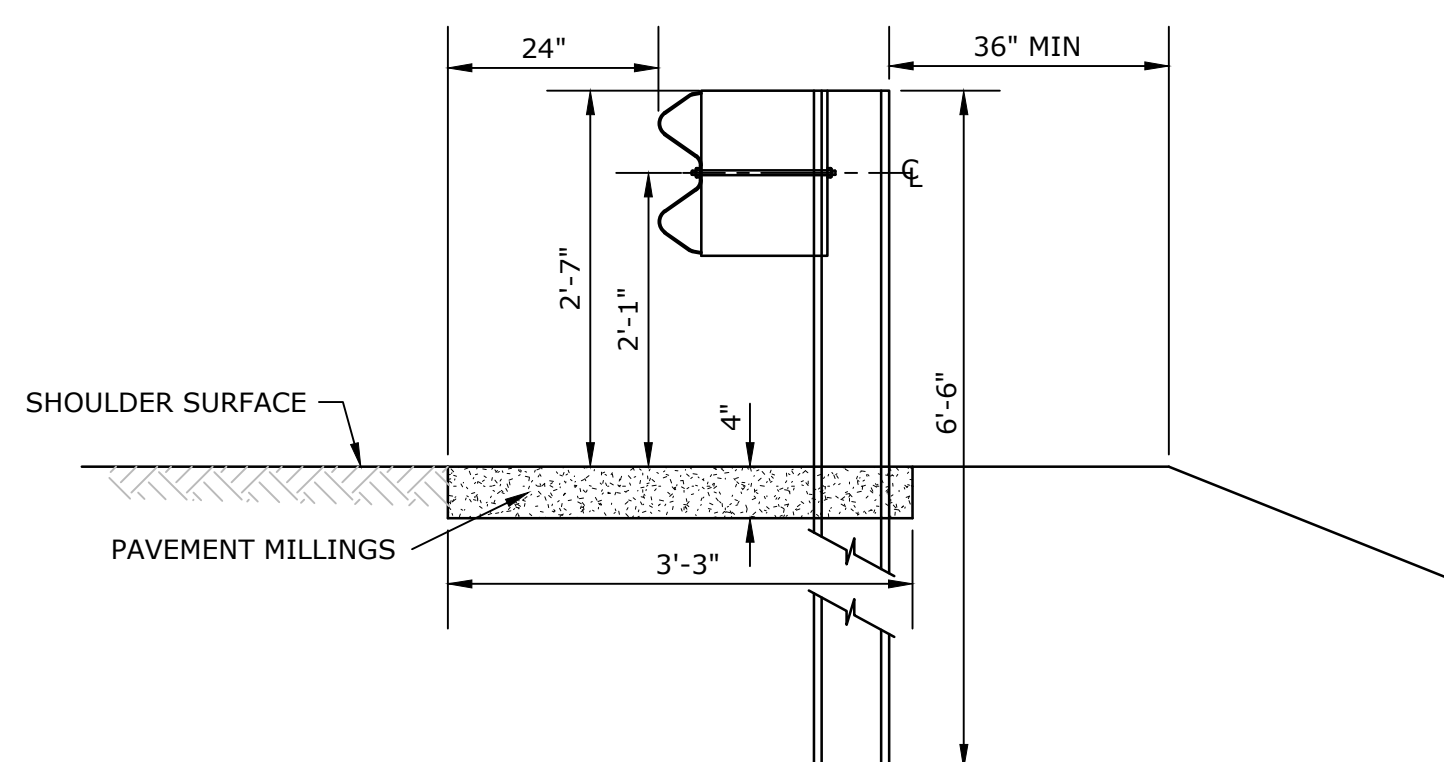
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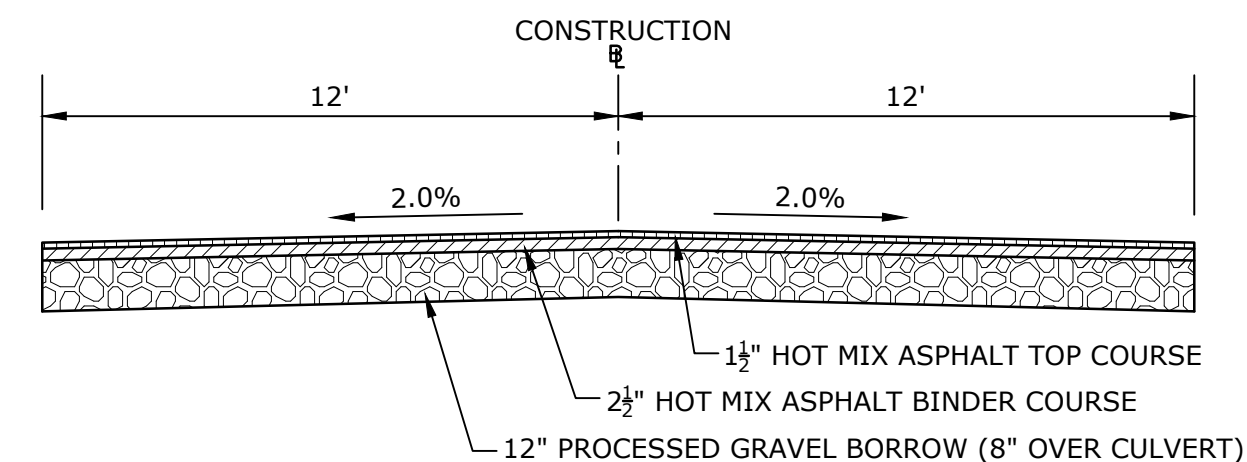
- NOTES:**
1. COORDINATED ANCHOR INSTALLATION WITH PRECASTER. IF ANCHORS WERE POST-INSTALLED, LOCATED REINFORCING STEEL PRIOR TO DRILLING.
 2. ALL COMPONENTS ARE GALVANIZED AND PVC COATED BLACK.

CHAIN-LINK FENCE
NO SCALE



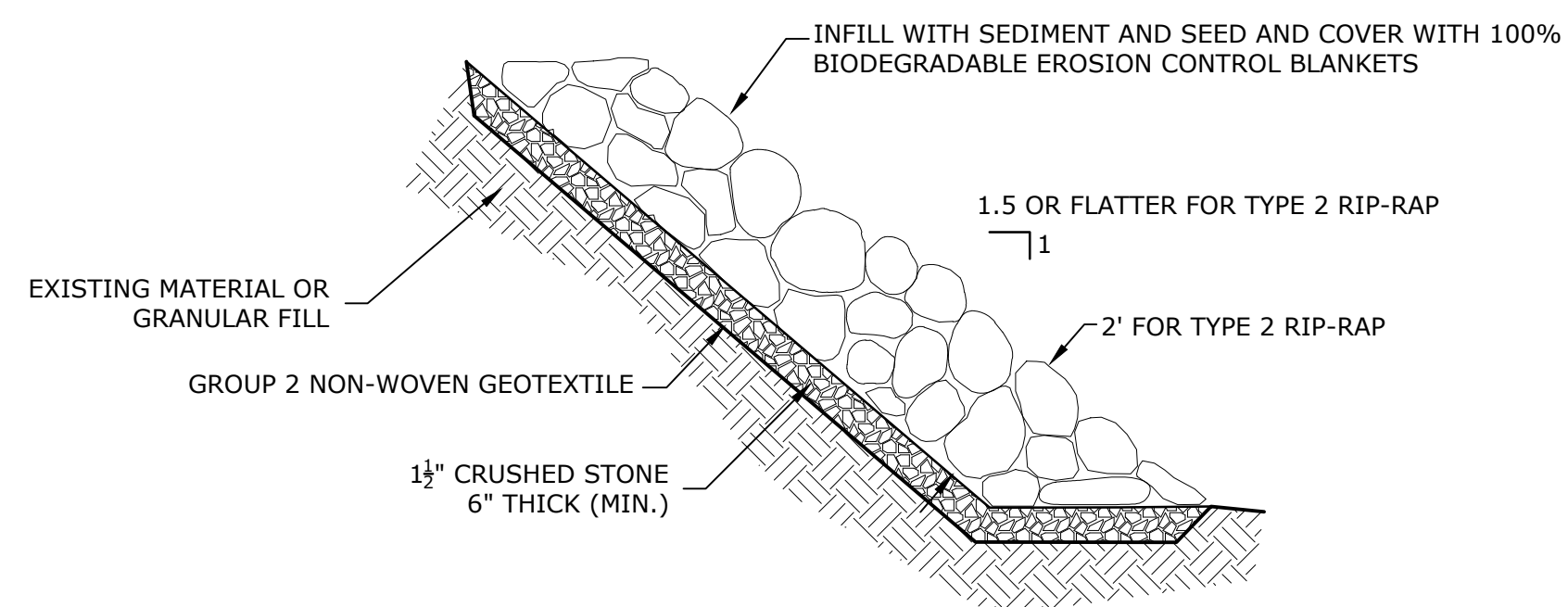
STEEL W BEAM HIGHWAY GUARD RAIL
NO SCALE

- NOTES:**
1. POST AND OFFSET BRACKETS TO BE FABRICATED FROM W6x9.
 2. POST AND BRACKET HOLES TO BE 3/4\"/>



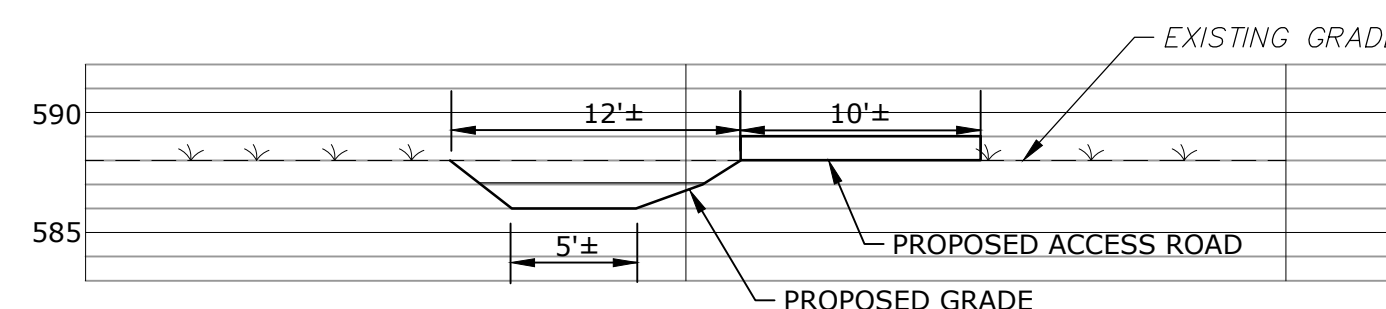
ROADWAY CROSS SECTION
NO SCALE

- * TOLERANCE FOR CONSTRUCTION ±.5%
- NOTES:**
1. ROAD SECTION SHOWN SHALL BE CONSIDERED TYPICAL. FIELD MODIFICATIONS TO MATCH EXISTING CONDITIONS ARE ANTICIPATED.
 2. TACK COAT APPLIED AT 0.05 GAL/SY BETWEEN LIFTS.

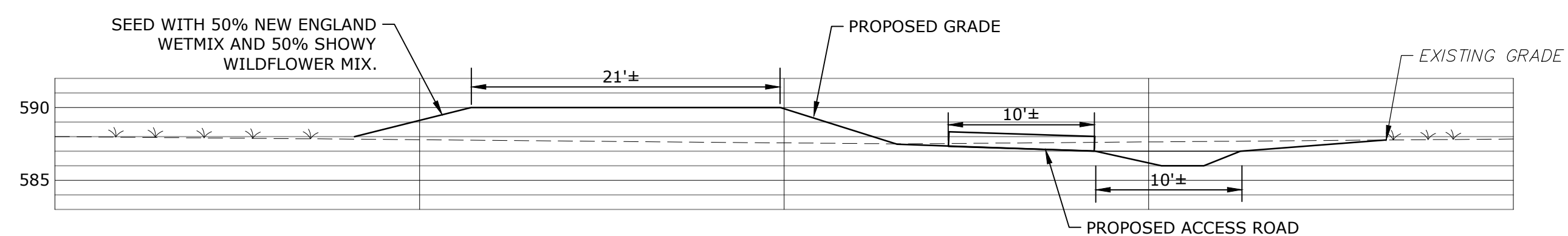


RIP-RAP INSTALLATION/SLOPE PROTECTION
NO SCALE

- NOTES:**
1. ALL RIP-RAP TO BE UNDERLAID WITH CRUSHED STONE AND GEOTEXTILE AS SHOWN.



SCHOOLHOUSE POND CHANNEL SECTION A
SCALE: 1"=8'±



SCHOOLHOUSE POND CHANNEL SECTION B
SCALE: 1"=8'±

PERMIT SET

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Schoolhouse Dam Removal Project

Massachusetts Division of Fisheries and Wildlife

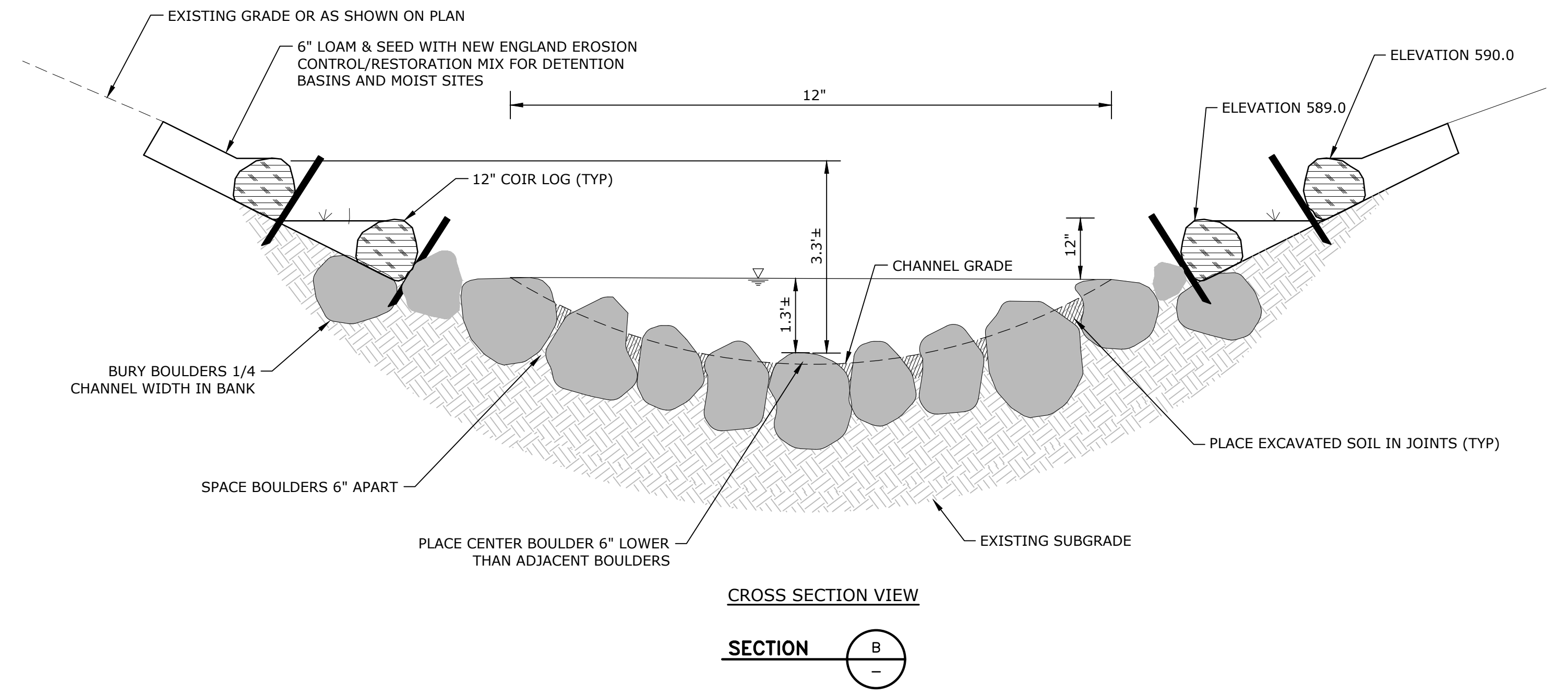
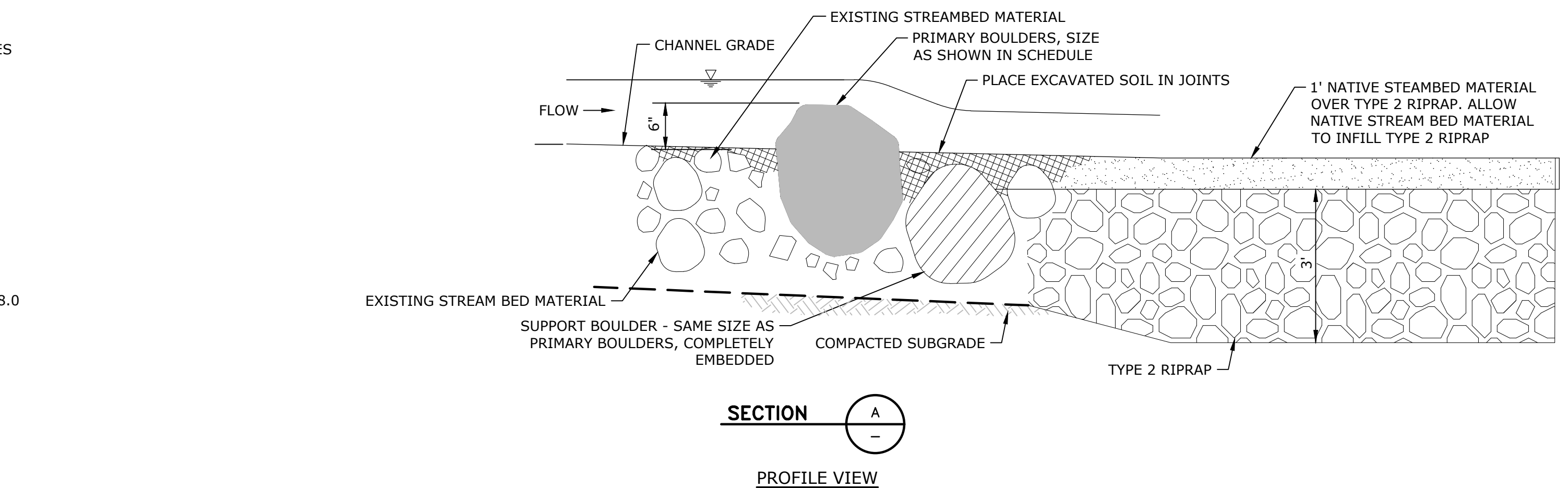
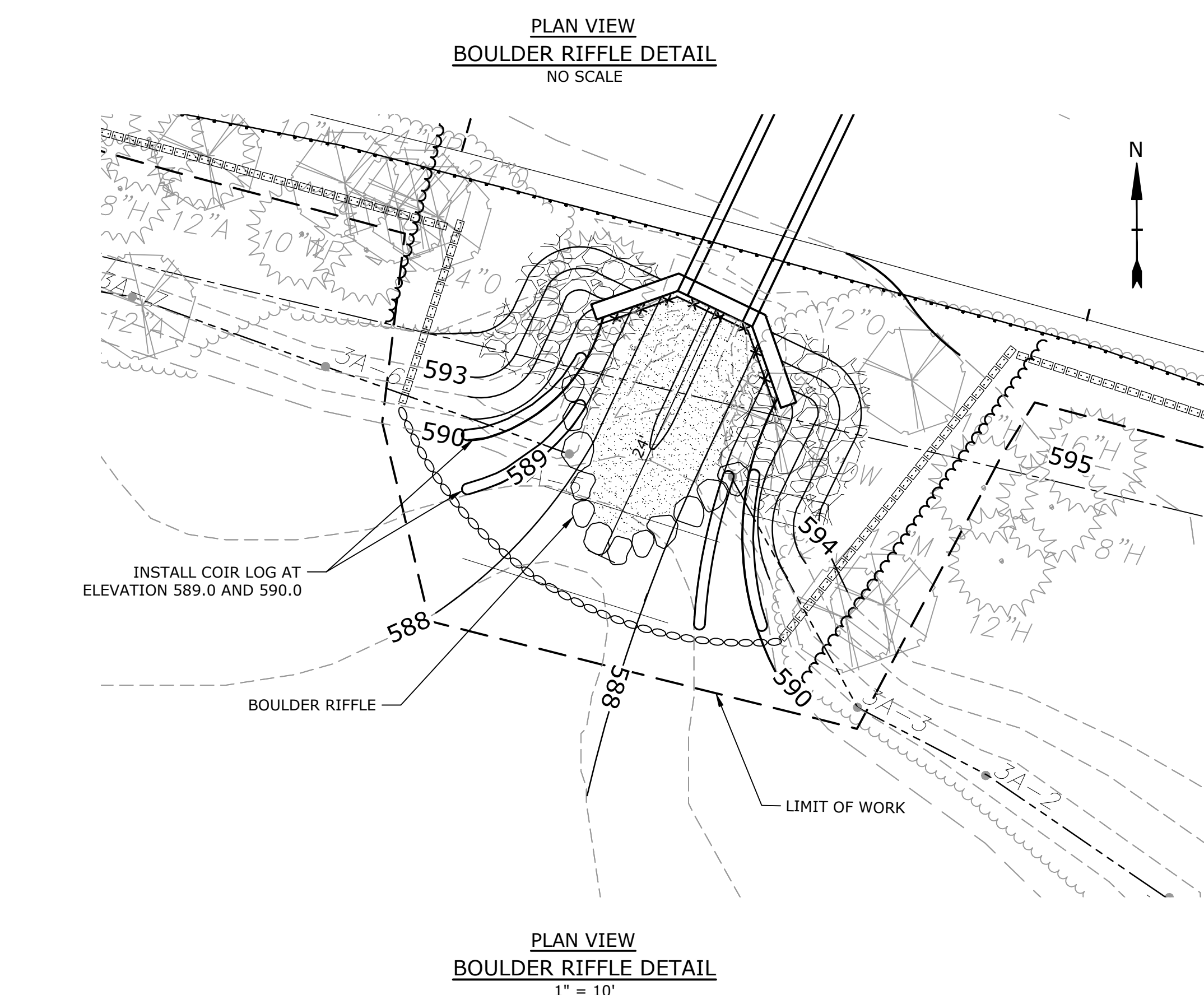
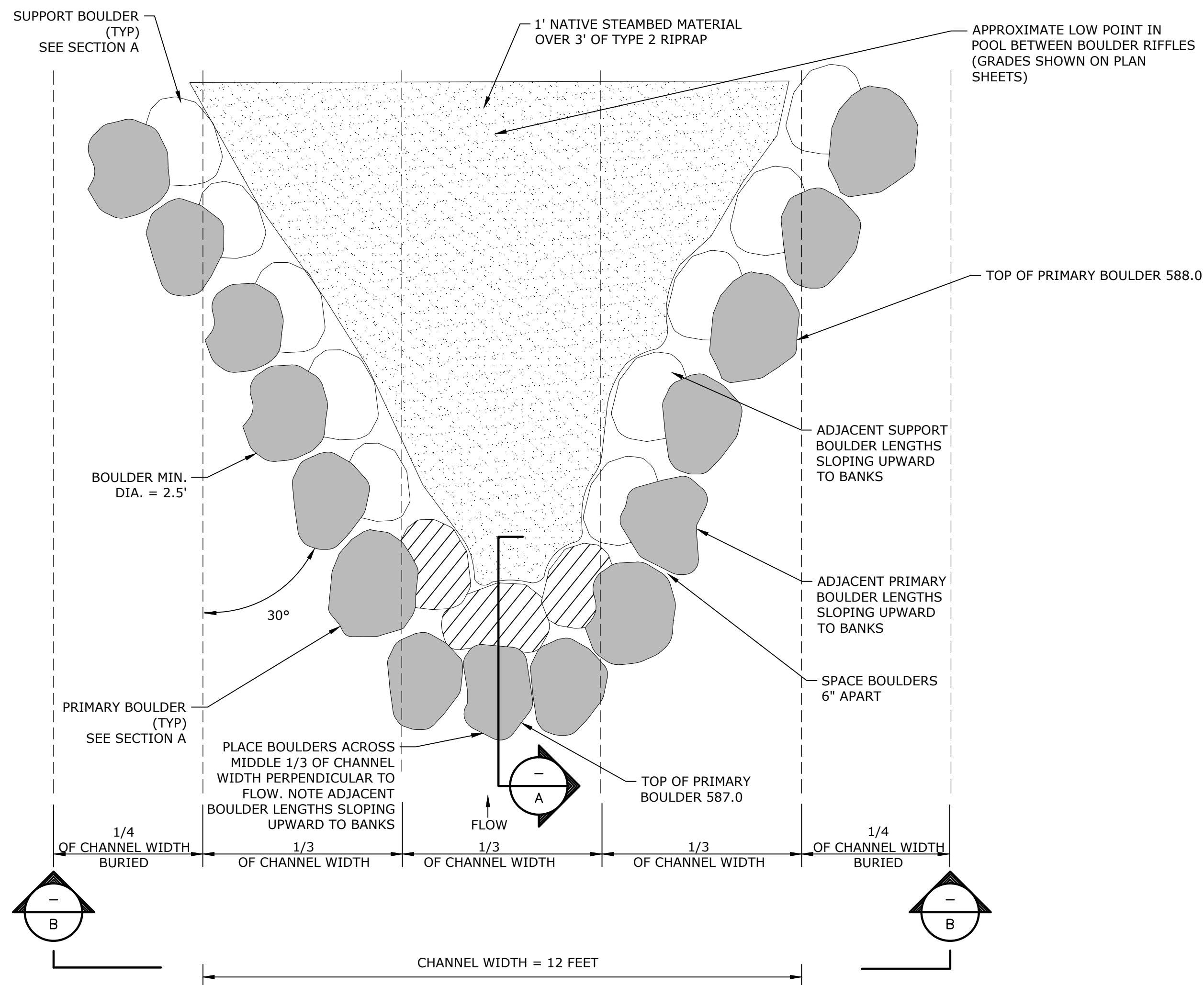
Sutton, Massachusetts

| MARK | DATE | DESCRIPTION |
|------|--------|-------------|
| A | 4/2023 | Permit Set |

| | |
|--------------|-------------------------|
| PROJECT NO: | M-0944-039 |
| DATE: | 3/2023 |
| FILE: | M-0944-039-06-C-202.dwg |
| DRAWN BY: | GNM,LPT |
| CHECKED BY: | DH,DRB |
| APPROVED BY: | CDH |

MISCELLANEOUS DETAILS

SCALE: AS SHOWN



- STREAM CHANNEL RESTORATION NOTES:**
1. USE WEATHERED SUBANGULAR OR ROUNDED COBBLES AND BOULDERS FOR STREAM CHANNELS AND BOULDER RIFFLES.
 2. ALIGN LONG AXIS OF BOULDER PARALLEL TO STREAM FLOW.
 3. PLACE EXCAVATED SOIL OVER COBBLES AND BOULDERS AND MECHANICALLY WORK SMALLER MATERIAL INTO VOIDS UNTIL VOIDS ARE FILLED.
 4. PROVIDE SUDDEN VERTICAL UNDULATIONS IN COBBLE BOTTOM OF APPROXIMATELY 6 INCHES AT INTERMEDIATE POINTS BETWEEN BOULDER RIFFLES BOULDERS TO FORM SMALL POOLS.

PERMIT SET
THIS DOCUMENT IS INCOMPLETE AND IS RELEASED TEMPORARILY FOR PROGRESS REVIEW ONLY. IT IS NOT INTENDED FOR CONSTRUCTION OR BIDDING PURPOSES.

Schoolhouse Dam Removal Project

Massachusetts Division of Fisheries and Wildlife
Sutton, Massachusetts

| MARK | DATE | DESCRIPTION |
|------|--------|-------------|
| A | 4/2023 | Permit Set |

PROJECT NO: M-0944-039
DATE: 3/2023
FILE: M-0944-039-06-C-204.dwg
DRAWN BY: GNM,LPT
CHECKED BY: DH,DRB
APPROVED BY: CDH

BOULDER RIFFLE DETAILS
SCALE: AS SHOWN
C-204
SHEET 12 OF 13

Last Saved: 3/27/2024 2:26pm By: Dhammerberg
 Project: On Jun 06, 2024 2:26pm By: Dhammerberg
 Tighe & Bond, Weymouth, MA
 Mass: D:\GIS\DRG\DRW_Dams\Schoolhouse Dam\Schoolhouse Pond\Drawings\AutoCAD\Sheet\0944-039-06-C-204.dwg

Section 00310

Attachment D

MGL Chapter 253 Dam Safety Permit

Worcester South District Registry of Deeds Electronically Recorded Document

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Recording Information

| | |
|--|----------------------|
| Document Number | : 71736 |
| Document Type | : PER |
| Recorded Date | : September 04, 2024 |
| Recorded Time | : 01:43:44 PM |
| Recorded Book and Page | : 70983 / 58 |
| Number of Pages(including cover sheet) | : 6 |
| Receipt Number | : 1594519 |
| Recording Fee | : \$105.00 |

Worcester South District Registry of Deeds
Kathryn A. Toomey, Register
90 Front St
Worcester, MA 01608
(508) 368-7000



Certified Mail No. 9589 0710 5270 0474 6303 04
Return Receipt Requested

M.G.L. Chapter 253
Dam Safety Permit
Permit No. 239 - 2024 - 435

Applicant

Daniel R. Buttrick, PE
Tighe & Bond, Inc.
53 Southampton Road
Westfield, MA 01085

On behalf of:
Massachusetts Division of Fisheries and Wildlife
c/o Caleb Slater
1 Rabbit Hill Road
Westborough, MA 01581

Re: Schoolhouse Pond Dam Removal Project
National Dam ID: MA02885
Registry Location: Southern Worcester County, Deed Book 2490, Page 506
Owner: Massachusetts Division of Fisheries and Wildlife
Dam Location: Sutton

Date: August 27, 2024

Dear Mr. Buttrick:

Reference is made to the Ch. 253 Permit Application dated July 2, 2024 provided by Tighe & Bond, Inc. (T&B) submitted for Department of Conservation and Recreation (DCR) Office of Dam Safety (ODS) regulatory review of the above-referenced dam removal project.

Permission is hereby granted under M.G.L. Chapter 253, as amended, to perform work indicated on the drawings titled "Massachusetts Division of Fisheries and Wildlife, Schoolhouse Pond Dam Removal Project, Sutton, Massachusetts" dated May 2024 and as described in supporting documentation provided by T&B. This permit is for the removal of Schoolhouse Pond Dam only and does not address associated stream restoration work.

COMMONWEALTH OF MASSACHUSETTS · EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS

Department of Conservation and Recreation
180 Beaman Street
West Boylston, MA 01583
508-792-7423 508-792-7805 Fax
www.mass.gov/dcr



Maura T. Healey
Governor

Kimberley Driscoll
Lt. Governor

Rebecca L. Tepper, Secretary
Executive Office of Energy & Environmental Affairs

Brian Arrigo, Commissioner
Department of Conservation & Recreation

Permission is granted subject to the following conditions:

- (a) At least 21 days before the start of construction, the dam owner shall provide the DCR/ODS - Permits Section a completed **DAM SAFETY IMPROVEMENTS – NOTICE OF CONSTRUCTION** (form attached) with a construction schedule and proof of recording of the Ch. 253 Permit at the Registry of Deeds in the county where the dam lies. If the Notice of Construction provided to ODS lacks a construction schedule, proof of recording of the permit, or an explanation of why permit recording is not possible, ODS will return the Notice of Construction to the dam owner indicating the Notice of Construction is incomplete and informing the owner that construction shall not commence until ODS has received a complete Notice of Construction with the required attachments.
- (b) For all features of the project, the Dam Engineer (T&B) shall notify ODS of any design change from the original design submitted with the permit application due to regulatory requirements, changes in field conditions or any other unanticipated occurrence. This notification shall be a formal submittal to ODS which includes all relevant revised plans, computations and data (survey, geotechnical, etc.) supporting the design change(s). This submittal shall be forwarded to ODS by registered mail, return receipt requested, and will require an amendment to the permit. Review time may vary based upon the complexity of the design change(s), however, ODS will generally issue the permit amendment within five (5) business days of receipt of a complete design revision submittal.
- (c) The Dam Engineer must report to ODS any unforeseen incidents that occur at the work site during project work. Unforeseen incidents include, but are not limited to, significant uncontrolled seepage into the work area, significant earth support failures or slope failures. The report must explain in detail what occurred, corrective measures taken to mitigate the occurrence and any impacts the occurrence may have had on the project. If the incident results in a design change, ODS must be provided revised design documents (refer to Condition (b), above).
- (d) The following shall be prepared by the contractor, approved by the Dam Engineer, and submitted to ODS prior to construction:
 - Cofferdam designs. The cofferdams shall be carefully designed to resist anticipated forces without failing and to ensure that seepage around, under, or through the cofferdams is manageable;
 - A water control and diversion plan describing methods to be employed to allow work to be performed “in the dry” and to manage both the water level in Schoolhouse Pond and outflow from Schoolhouse Pond while construction is in progress; and
 - A flood response plan. While construction is underway, weather forecasts, stream flows and water levels shall be monitored to allow adequate time to respond to rising water levels at the construction site. If high water levels are expected, equipment and materials shall be removed from the work area and personnel

evacuated. Sufficient materials and equipment required for flood response shall be maintained in a safe location at, or near, the construction site.

- (e) A sufficient level of construction oversight shall be provided by the Dam Engineer to ensure the work conforms to: the project plans and specifications; the Ch. 253 Permit conditions; and generally-accepted dam construction practices as determined by the U.S. Army Corps of Engineers, the U.S. Bureau of Reclamation and/or the U.S. Natural Resources Conservation Service.

Guidance, procedures, checklists, worksheets, and references to aid in construction quality assurance are available in the United States Department of Agriculture Natural Resources Conservation Service National Engineering Handbook Part 645- Construction Inspection and can be accessed at this

link: <https://directives.sc.egov.usda.gov/viewerFS.aspx?hid=31701> .

- (f) The Dam Engineer shall invite ODS to the preconstruction meeting, another project meeting at 50% completion and the final inspection meeting. ODS reserves the right to make site visits and inspections at any time during the permit period. ODS requests the following items be addressed at the pre-construction meeting:
- Identification of the
 - resident engineer (Owner's representative overseeing the project);
 - contractor's qualified site superintendent; and
 - Dam Engineer's representative overseeing the project.
 - Provide emergency contact information for the contractor and resident engineer;
 - Presentation of the resident engineer's weekly work schedule and discussion of the level of construction oversight to be provided by the resident engineer;
 - Water control features anticipated and the process for the Dam Engineer to either develop or approve the overall control and diversion of water plan. Flood emergency warning and response procedures must be identified;
 - Level of Dam Engineer construction oversight including: identification of any critical construction items to be overseen by the Dam Engineer; procedures for the Dam Engineer's review and approval of shop drawings and other submittals; documentation of Dam Engineer's approval of any design modifications; procedures for coordinating and scheduling the Dam Engineer's inspection of critical construction elements;
 - Anticipated schedule of construction meetings and required attendees. It is expected that while construction is ongoing, weekly construction meetings will be held and attended by the Dam Engineer, the resident engineer, the contractor's superintendent and other appropriate participants; and
 - Presentation of the initial construction schedule with identification and discussion of major items.

ODS shall be provided a copy of the preconstruction meeting minutes.

- (g) The Dam Engineer shall provide ODS written documentation that he/she has reviewed and approved all pertinent submittals or samples concerning critical project dam features. This documentation may be in the form of a submittal log which may be submitted as part of the “as-built” report, described below.
- (h) Upon completion of work the Applicant shall submit to ODS a **DAM SAFETY CERTIFICATE OF COMPLETION** (form attached). With this certificate of completion submit one bound (utilizing plastic comb bindings) as-built report with 11”x17” record drawings signed and stamped by a registered professional civil engineer with contractor’s signature attesting that all work was performed according to the plans and specifications. The as-built report shall include documentation of submittals reviewed and approved by the Dam Engineer, copies of any materials or construction testing reports and color photos of construction phases and appurtenant installations. Photograph numbers, location and direction in which each photo was taken must be identified. An electronic copy (as a .pdf) of the as-built report and record drawings shall be provided to ODS via email, .ftp site or on a USB flash drive.
- (i) Upon completion of work, the Dam Engineer shall submit an **APPLICATION TO CHANGE HAZARD CLASSIFICATION OF DAM** with supporting documentation demonstrating how the dam in its as-built condition will perform (i.e., maximum impoundment level and storage volume resulting from the 50-year design storm and/or water surface profiles demonstrating the breached embankment will not re-impound water and/or demonstration that the structure meets the definition of a “culvert” as defined in 302 CMR 10.03). Refer to the ODS website for the application form and description of required information. Refer to 302CMR10.00 for the jurisdictional criteria for a dam. Submittal of the application form and supporting documentation is required prior to ODS issuance of a Certificate of Approval for the completed project.
- (j) The Certificate of Completion, as-built report and Application to Change Hazard Classification of Dam shall be provided to ODS within 90 days of substantial completion of work unless ODS agrees to later submission of these documents. Submission of these documents is required prior to ODS issuing a Certificate of Approval.

Any permit issued by DCR shall be subject to revocation by order of the Commissioner if the permittee fails to conform to 302 CMR 10.00, Dam Safety Rules and Regulations, provisions of this permit, or any other applicable laws and regulations.

This permit does not release the applicant from the requirements of any other regulatory authority. Such authorizations and/or notifications include, but are not limited to:

Local Conservation Commission;
Massachusetts Department of Environmental Protection (DEP);
Massachusetts Department of Fish and Game (DFG);
Massachusetts Executive Office of Environmental Affairs (EOEA), MEPA Unit; and

U.S. Army Corps of Engineers.

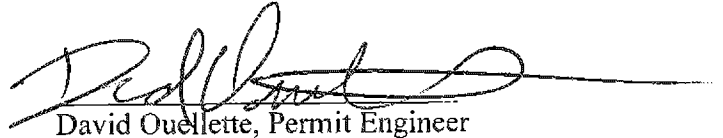
This permit must be recorded by the applicant at the Registry of Deeds in the county where the dam lies. Recording must be done prior to the commencement of construction and a copy of the recorded permit filed with the Office of Dam Safety.

This permit remains valid for two (2) years from the date of issue: **August 27, 2024.**

Permit expiration date: **August 27, 2026.**



William Salomaa, Director
DCR, Office of Dam Safety



David Ouellette, Permit Engineer
DCR, Office of Dam Safety

Attachments: Dam Safety Improvements – Notice of Construction form
Dam Safety Certificate of Completion form
Application to Change Hazard Classification of Dam

ARNOLD POND DAM REMOVAL

GEOTECHNICAL DATA, PERMITS AND APPROVALS

Section 00300

Attachment A

Boring Logs and Soil Testing Data

SECTION 00300

GEOTECHNICAL DATA

PART 1 GENERAL

1.1 SUMMARY

- A. For the preparation of Bidding Documents for the Arnold Pond Dam Removal Project, Engineer has relied upon the following reports and tests of subsurface and latent physical conditions of the site. The location of all bore holes is shown on the Drawings.
1. Soil boring data (attached)
 - a. The subsurface data are not guaranteed as to accuracy or completeness, nor are they a part of the Contract Documents.
 - b. Bidders are cautioned that the subsurface data have been utilized for general design purposes only. No explicit or implicit representation is made as to the nature of the materials which may be encountered below the surface of the ground.
 - c. The making available of this subsurface data to Bidders is not intended to relieve them from their responsibility to familiarize themselves with the subsurface and other site conditions.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

J:\M\M0944 Mass DFG\DFG DFW Dams\Arnold Pond Dam\Design\Specifications\Div 0\00300.docx

Project: Arnold Pond Dam Removal - Pedestrian Bridge
 Location: West Sutton, MA
 Client: Mass Wildlife

Boring No. B-1
 Page 1 of 1
 File No. M-0944-051
 Checked by: M. Trovato

Drilling Co.: Soil X Corp.

Foreman: Mike Tisdale
 T&B Rep.: A. DeMarco
 Date Start: 03/04/24 Date End: 03/04/24
 Location: See Exploration Location Plan
 GS. Elev. 606' Datum: NAVD88

| Casing | Sampler |
|------------------------|-------------|
| Note 2 | Split Spoon |
| -- | 1-3/8"/2" |
| -- | 140# |
| -- | 30" |
| ATV S11 B-57 Track Rig | |

| Groundwater Readings | | | | |
|----------------------|------|-------|--------|-----------------|
| Date | Time | Depth | Casing | Sta. Time |
| 3/4/2024 | | 9' | N/A | During Drilling |
| | | | | |
| | | | | |

| Depth (ft.) | Core Rate (min/ft) | Sample No. / Rec. (in) | Sample Depth (ft.) | Blows Per 6" | Sample Description | General Stratigraphy | Notes |
|-------------|--------------------|------------------------|--------------------|--------------|---|----------------------|-------|
| 5 | | S1 / 11 | 0-2 | 4-8 | S1: Medium dense, brown, fine to coarse SAND, little Gravel, trace organics, dry | FILL | 1 |
| | | | | 15-6 | | | |
| | | S2 / 10 | 2-4 | 9-7 | S2: Medium dense, brown, fine to coarse SAND, little Gravel, trace Silt, dry | | |
| | | | | 6-4 | | | |
| | | S3 / 15 | 4-6 | 8-8 | S3: Medium dense, brown, GRAVEL and fine to coarse SAND, trace Silt, trace Organics, dry | | |
| 10 | | | | 8-11 | | | |
| | | S4 / 14 | 6-8 | 14-10 | S4: Medium dense, brown, fine to coarse SAND, little Gravel, little Silt, trace Organics, dry | | |
| | | | | 8-9 | | | |
| | | S5 / 6 | 8-10 | 13-17 | S5: Dense, brown, fine to coarse SAND, little Gravel, little Silt, wet | | |
| | | | | 18-11 | | | |
| 15 | | S6 / 0 | 10-12 | 9-5 | S6: No recovery | | 2 |
| | | | | 3-5 | | | |
| | | S7A / 8 | 14-14.7 | 31-37 | S7A: Very dense, grey, GRAVEL and fine to coarse SAND, little Silt, wet | 14.7' | |
| | | S7B / 3 | 14.7-16 | 14-8 | S7B: Very dense, dark brown, fibrous PEAT, wet | 14.9' PEAT | |
| 20 | | | | | | GLACIAL TILL | |
| | | S8 / 4 | 19-21 | 31-14 | S8: Dense, grey, GRAVEL and fine to medium SAND, little Silt, wet | | |
| | | | | 18-42 | | | |
| | | | | | | | |
| 25 | | | | | | | |
| | | S9 / 10 | 24-25.9 | 33-20 | S9: Dense, grey, fine to coarse SAND, little Gravel, little Silt, moist | | |
| | | | | 19-50/5 | | | |
| 30 | | | | | | | |
| | | S10 / 0 | 29 | 50/0 | S10: SPT refusal - no sample recovered Note: Rock core attempted 29 to 31 feet - no recovery due to core barrel jamming. | | 31' |
| | | | | | End of Boring - 31 feet. | | |

| | | | | | | |
|--|-------------------------|-----------|----------------------------|-------|------------|-------|
| Notes: 1. Automatic hammer used for SPT and driving casing. 2. Hollow stem auger to 10 ft bgs, then switched to flush-joint casing. Hollow stem auger with 4.25-inch I.D. and 7.625-inch flight O.D. 3. Boring grouted upon completion. | Proportions Used | | Density/Consistency | | | |
| | TRACE (TR.) | 0 - <10% | VERY LOOSE | 0-4 | VERY SOFT | <2 |
| | LITTLE (LI.) | 10 - <20% | LOOSE | 4-10 | SOFT | 2-4 |
| | SOME (SO.) | 20 - <35% | MEDIUM DENSE | 10-30 | MEDIUM | 4-8 |
| AND | 35 - <50% | DENSE | 30-50 | STIFF | 8-15 | |
| | | | VERY DENSE | >50 | VERY STIFF | 15-30 |
| | | | | | HARD | >30 |

Project: Arnold Pond Dam Removal - Pedestrian Bridge
 Location: West Sutton, MA
 Client: Mass Wildlife

Boring No. B-2
 Page 1 of 1
 File No. M-0944-051
 Checked by: M. Trovato

Drilling Co.: Soil X Corp.

Foreman: Mike Tisdale
 T&B Rep.: A. DeMarco
 Date Start: 03/04/24 Date End: 03/04/24
 Location: See Exploration Location Plan
 GS. Elev. 606' Datum: NAVD88

| Casing | Sampler |
|------------------------|-------------|
| Note 2 | Split Spoon |
| -- | 1-3/8"/2" |
| -- | 140# |
| -- | 30" |
| ATV S11 B-57 Track Rig | |

Groundwater Readings

| Date | Time | Depth | Casing | Sta. Time |
|----------|------|-------|--------|-----------------|
| 3/4/2024 | | 9' | N/A | During Drilling |
| | | | | |
| | | | | |

| Depth (ft.) | Core Rate (min/ft) | Sample No. / Rec. (in) | Sample Depth (ft.) | Blows Per 6" | Sample Description | General Stratigraphy | Notes | |
|-------------|--------------------|------------------------|--------------------|--------------|--|----------------------|-------|--|
| 5 | | S1 / 12 | 0-2 | 3-14 | S1: Medium dense, brown, fine to coarse SAND, some Gravel, trace Silt, trace organics, dry | FILL | 1 | |
| | | | | 9-6 | | | | |
| | | S2 / 6 | 2-4 | 4-6 | S2: Medium dense, brown, fine to coarse SAND and GRAVEL, trace Silt, dry | | | |
| | | | | 8-8 | | | | |
| | | S3 / 13 | 4-6 | 3-3 | S3: Loose, tan, fine to coarse SAND, little Gravel, little Silt, dry | | | |
| 10 | | | | 6-8 | | | | |
| | | S4 / 13 | 6-8 | 7-6 | S4: Medium dense, tan, fine to coarse SAND, little Gravel, little Silt, dry | | | |
| | | | | 8-10 | | | | |
| | | S5 / 13 | 8-10 | 8-8 | S5: Medium dense, brown, fine to coarse SAND and GRAVEL, trace Silt, wet | | | |
| | | | | 6-3 | | | | |
| 15 | | S6 / 0 | 10-12 | 12-10 | S6: No recovery | | 2 | |
| | | | | 6-5 | | | | |
| | | | | | | | | |
| | | S7 / 4 | 14-14.3 | 50/4 | S7: Rock fragments | 14' | | |
| | | | | | | | | |
| 20 | | | | | | GLACIAL TILL | | |
| | | S8 / 4 | 19-19.3 | 50/4 | S8: Rock fragments | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 25 | | | | | | | | |
| | | S9 / 0 | 24 | 50/0 | S9: SPT refusal - no sample recovered | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 30 | | | | | | 29' | | |
| | | S10 / 0 | 29 | 50/0 | S10: SPT refusal - no sample recovered End of Boring - 29 feet. | | 3 | |
| | | | | | | | | |

| | | | | |
|---|------------------|------------|---------------------|-------|
| Notes: 1. Automatic hammer used for SPT and driving casing. 2. Hollow stem auger to 10 ft then switched to flush-joint casing. Hollow stem auger had 4.25-inch I.D. and 7.625-inch flight O.D. 3. Boring grouted upon completion | Proportions Used | | Density/Consistency | |
| | TRACE (TR.) | 0 - <10% | VERY LOOSE | 0-4 |
| | LITTLE (LI.) | 10 - <20% | LOOSE | 4-10 |
| | SOME (SO.) | 20 - <35% | MEDIUM DENSE | 10-30 |
| AND | 35 - <50% | DENSE | 30-50 | |
| | | VERY DENSE | >50 | |
| | | VERY SOFT | <2 | |
| | | SOFT | 2-4 | |
| | | MEDIUM | 4-8 | |
| | | STIFF | 8-15 | |
| | | VERY STIFF | 15-30 | |
| | | HARD | >30 | |



195 Frances Avenue
 Cranston RI, 02910
 Phone: (401)-467-6454
 Fax: (401)-467-2398
cts.thielsch.com
Let's Build a Solid Foundation

Client Information:
 Tighe & Bond
 Portsmouth, NH
 Project Manager: Jessica DeBellis
 Assigned By: Jessica DeBellis
 Collected By: Alex DeMarco

Project Information:
Arnold Pond Pedestrian Bridge
West Sutton Road, Sutton MA
 Project Number: M-0944-051
 Summary Page: 1 of 1
 Report Date: 3/21/2024

LABORATORY TESTING DATA SHEET, Report No.: 7424-C-174

| Boring No. | Sample ID | Depth (ft) | Laboratory No. | Identification Tests | | | | | | | | | | Proctor / CBR / Permeability Tests | | | | | | | Laboratory Log and Soil Description | | |
|------------|-----------|------------|----------------|----------------------------|-------|------|-------|----------|--------|---------|--------|-------|---|---|--------------------|-------------------------|-----------------------------------|------------|------------|---------------------|-------------------------------------|---|--|
| | | | | As Rcvd Moisture Content % | LL % | PL % | OD LL | Gravel % | Sand % | Fines % | Org. % | pH | 9 _d MAX (pcf) W _{opt} (%) | 9 _d MAX (pcf) W _{opt} (Corr.) | Dry unit wt. (pcf) | Test Moisture Content % | Target Test Setup as % of Proctor | CBR @ 0.1" | CBR @ 0.2" | Permeability cm/sec | | | |
| | | | | D2216 | D4318 | | | D6913 | | | D2974 | D4792 | | D1557 | | | | | | | | | |
| B1 | S3 | 4-6 | 24-S-935 | | | | | 54.6 | 35.6 | 9.8 | | | | | | | | | | | | Brown poorly graded gravel with silt and sand | |
| B1 | S7 | 14-16 | 24-S-936 | | | | | 53.2 | 36.3 | 10.5 | | | | | | | | | | | | Brown poorly graded gravel with silt and sand | |
| B2 | S5 | 8-10 | 24-S-937 | | | | | 38.9 | 52.2 | 8.9 | | | | | | | | | | | | Brown poorly graded sand with silt and gravel | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | | | | | | | |

Date Received: 3/15/2024

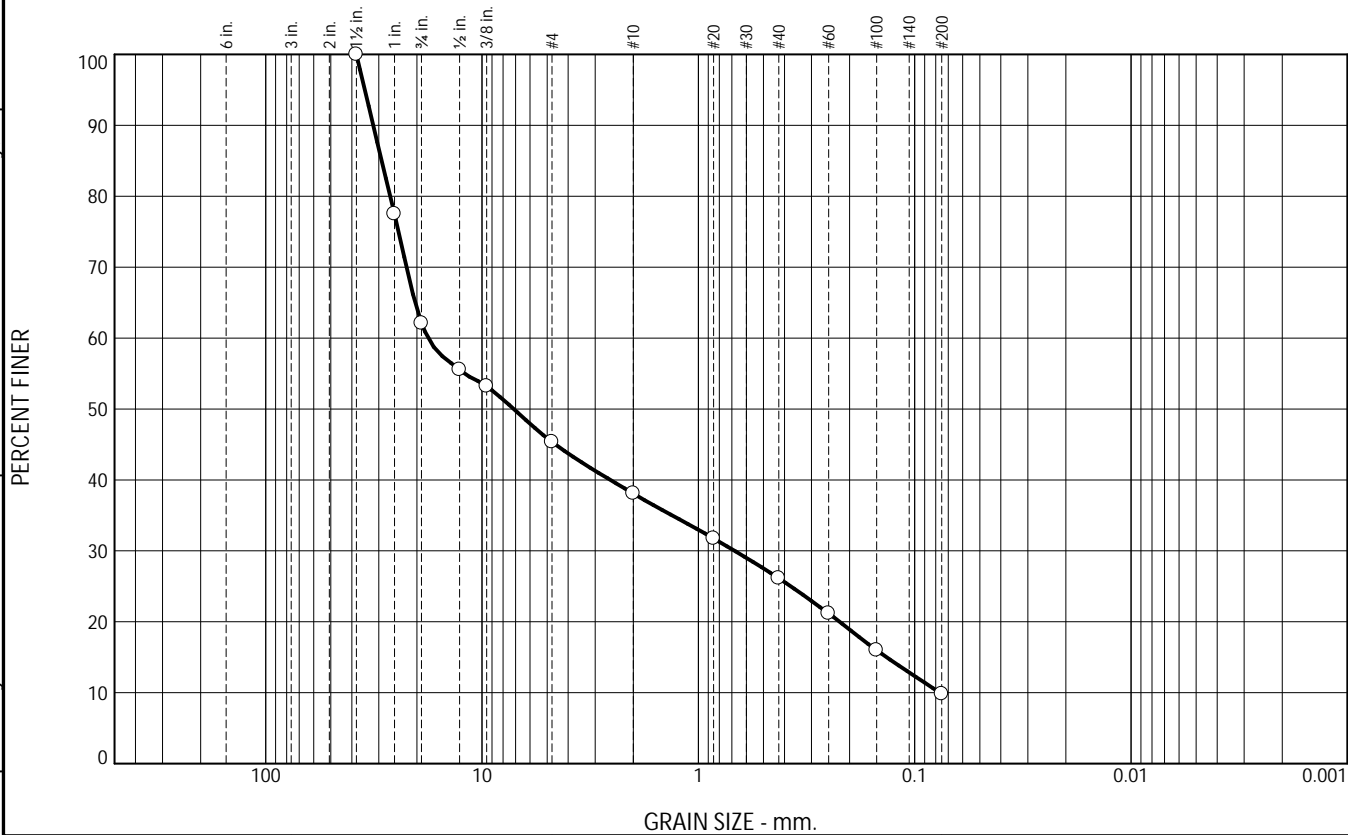
Reviewed By: 

Date Reviewed: 3/21/2024

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These results are for the exclusive use of the client for whom they were obtained. This report only relates to items inspected and/or tested. No warranty, expressed or implied, is made.

Particle Size Distribution Report



| % +3" | % Gravel | | % Sand | | | % Fines | |
|-------|----------|------|--------|--------|------|---------|------|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 37.9 | 16.7 | 7.3 | 12.0 | 16.3 | 9.8 | |

| SIEVE SIZE OR DIAMETER | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---------------------------|------------------|-------------------|-----------------|
| 1 1/2" | 100.0 | | |
| 1" | 77.5 | | |
| 3/4" | 62.1 | | |
| 1/2" | 55.5 | | |
| 3/8" | 53.2 | | |
| #4 | 45.4 | | |
| #10 | 38.1 | | |
| #20 | 31.7 | | |
| #40 | 26.1 | | |
| #60 | 21.2 | | |
| #100 | 16.0 | | |
| #200 | 9.8 | | |

Soil Description

Brown poorly graded gravel with silt and sand

PL= NP Atterberg Limits LL= NV PI= NP
 D₉₀= 31.8410 D₈₅= 29.1051 D₆₀= 17.7420
 D₅₀= 7.1364 D₃₀= 0.6799 D₁₅= 0.1350
 D₁₀= 0.0766 C_u= 231.47 C_c= 0.34

Coefficients

Classification

USCS= GP-GM AASHTO= A-1-a

Remarks

* (no specification provided)

Source of Sample: Boring Depth: 4-6'
 Sample Number: B1 / S3

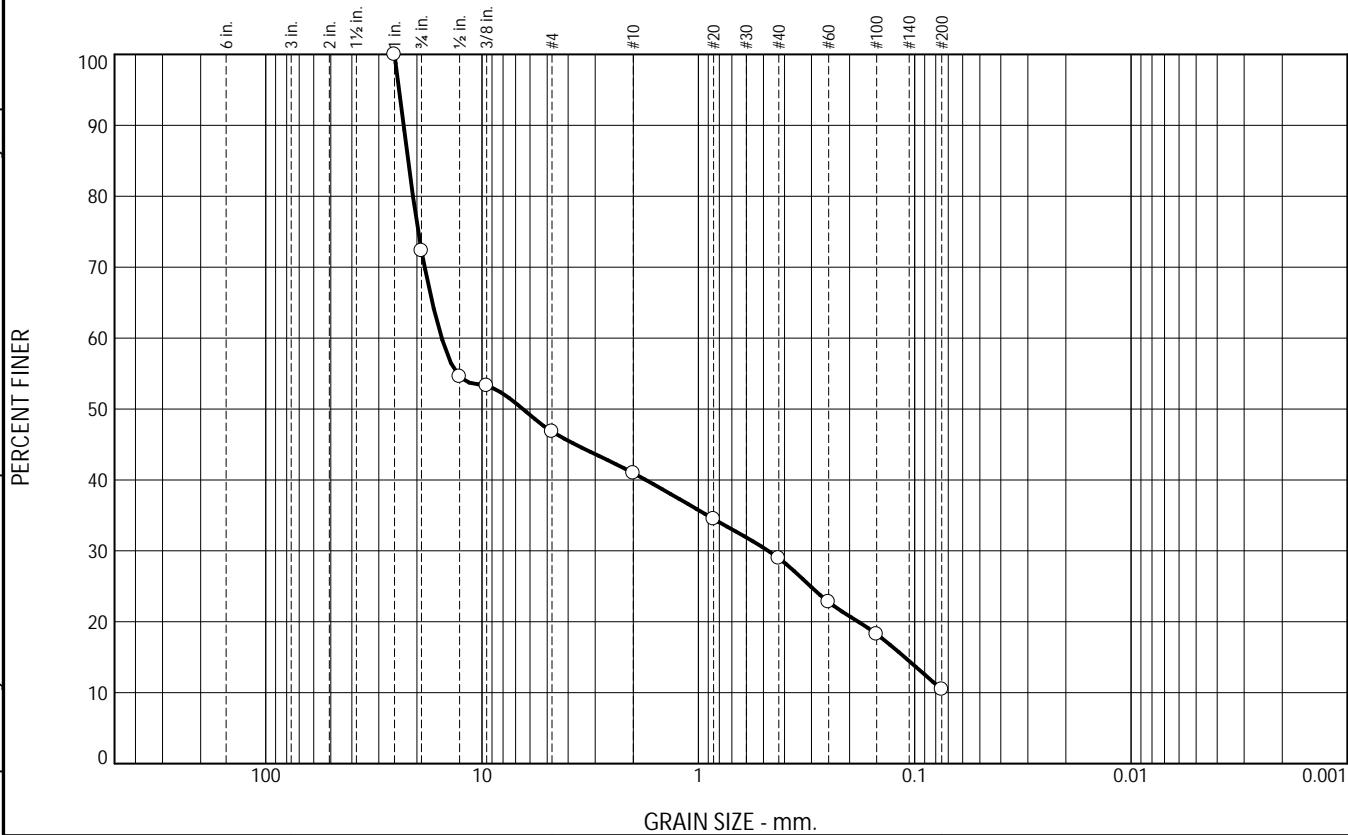
Date: 3.20.24

| | |
|--|---|
| Thielsch Engineering Inc. Cranston, RI | Client: Tighe & Bond Project: Arnold Pond Pedestrian Bridge West Sutton Road, Sutton MA Project No: M-0944-051 |
| Fig. 24-S-935 | |

Tested By: RB Checked By: Kris Roland

These results are for the exclusive use of the client for whom they were obtained. This report only relates to items inspected and/or tested. No warranty, expressed or implied, is made.

Particle Size Distribution Report



| % +3" | % Gravel | | % Sand | | | % Fines | |
|-------|----------|------|--------|--------|------|---------|------|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 27.7 | 25.5 | 5.8 | 12.0 | 18.5 | 10.5 | |

| SIEVE SIZE OR DIAMETER | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---------------------------|------------------|-------------------|-----------------|
| 1" | 100.0 | | |
| 3/4" | 72.3 | | |
| 1/2" | 54.6 | | |
| 3/8" | 53.3 | | |
| #4 | 46.8 | | |
| #10 | 41.0 | | |
| #20 | 34.5 | | |
| #40 | 29.0 | | |
| #60 | 22.8 | | |
| #100 | 18.2 | | |
| #200 | 10.5 | | |

Soil Description

Brown poorly graded gravel with silt and sand

Atterberg Limits
 PL= NP LL= NV PI= NP

Coefficients
 D₉₀= 23.0302 D₈₅= 21.9504 D₆₀= 15.3588
 D₅₀= 6.4726 D₃₀= 0.4758 D₁₅= 0.1112
 D₁₀= C_u= C_c=

Classification
 USCS= GP-GM AASHTO= A-1-a

Remarks

* (no specification provided)

Source of Sample: Boring Depth: 14-16'
 Sample Number: B1 / S7

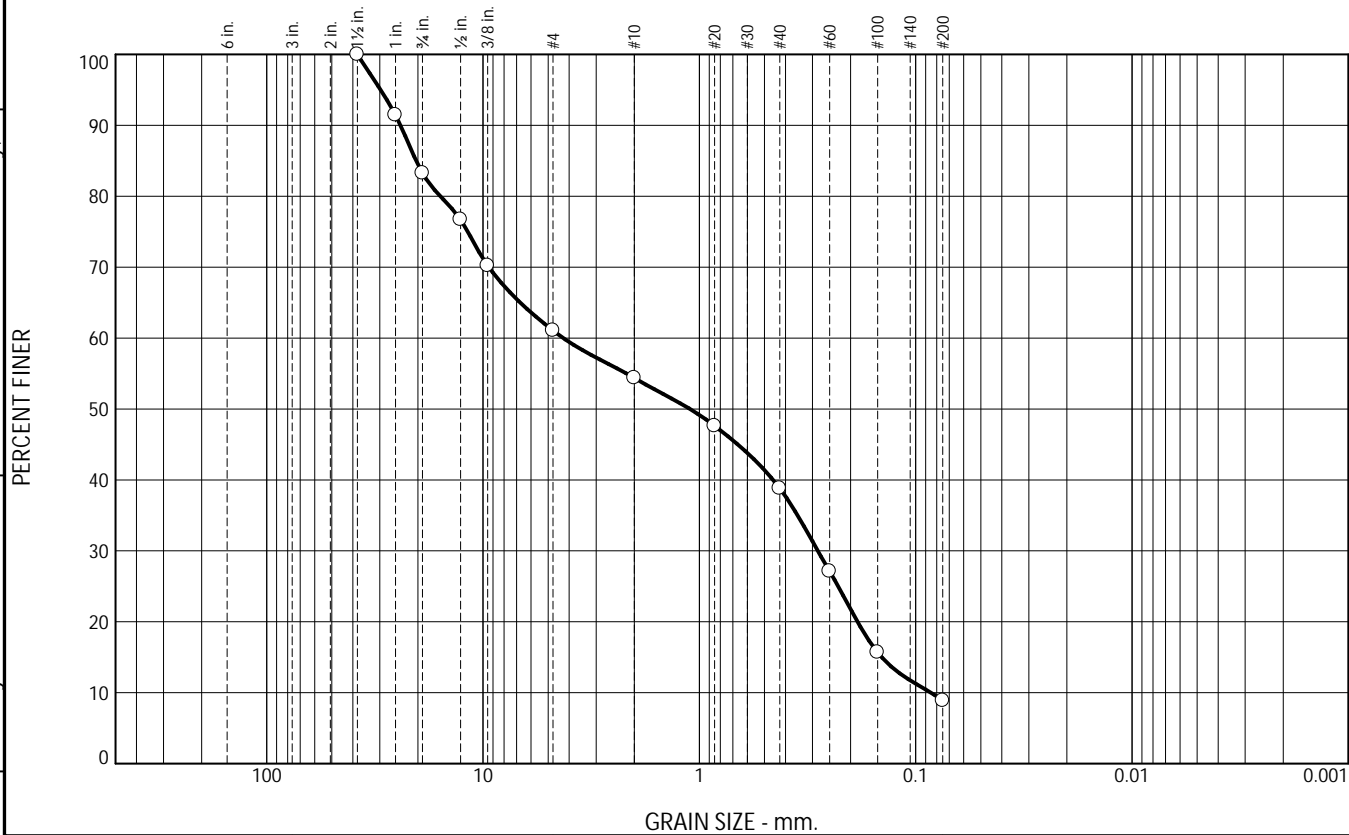
Date: 3.20.24

| | |
|--|---|
| Thielsch Engineering Inc. Cranston, RI | Client: Tighe & Bond Project: Arnold Pond Pedestrian Bridge West Sutton Road, Sutton MA Project No: M-0944-051 |
| Fig. 24-S-936 | |

Tested By: RB Checked By: Kris Roland

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Particle Size Distribution Report



| % +3" | % Gravel | | % Sand | | | % Fines | |
|-------|----------|------|--------|--------|------|---------|------|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 16.8 | 22.1 | 6.7 | 15.6 | 29.9 | 8.9 | |

| SIEVE SIZE OR DIAMETER | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---------------------------|------------------|-------------------|-----------------|
| 1 1/2" | 100.0 | | |
| 1" | 91.5 | | |
| 3/4" | 83.2 | | |
| 1/2" | 76.7 | | |
| 3/8" | 70.2 | | |
| #4 | 61.1 | | |
| #10 | 54.4 | | |
| #20 | 47.6 | | |
| #40 | 38.8 | | |
| #60 | 27.1 | | |
| #100 | 15.7 | | |
| #200 | 8.9 | | |

* (no specification provided)

Soil Description

Brown poorly graded sand with silt and gravel

Atterberg Limits
 PL= NP LL= NV PI= NP

Coefficients
 D₉₀= 24.0587 D₈₅= 20.3981 D₆₀= 4.2552
 D₅₀= 1.1052 D₃₀= 0.2835 D₁₅= 0.1436
 D₁₀= 0.0850 C_u= 50.03 C_c= 0.22

Classification
 USCS= SP-SM AASHTO= A-1-b

Remarks

Source of Sample: Boring Depth: 8-10'
 Sample Number: B2 / S5

Date: 3.20.24

| | |
|--|---|
| Thielsch Engineering Inc. Cranston, RI | Client: Tighe & Bond Project: Arnold Pond Pedestrian Bridge West Sutton Road, Sutton MA Project No: M-0944-051 |
| Fig. 24-S-937 | |

Tested By: RB Checked By: Kris Roland

Section 00310

Attachment A

Town of Sutton Order of Conditions

Worcester South District Registry of Deeds Electronically Recorded Document

This is the first page of the document – Do not remove

Recording Information

| | |
|--|----------------------|
| Document Number | : 71790 |
| Document Type | : ORD |
| Recorded Date | : September 04, 2024 |
| Recorded Time | : 02:25:20 PM |
| Recorded Book and Page | : 70983 / 355 |
| Number of Pages(including cover sheet) | : 22 |
| Receipt Number | : 1594559 |
| Recording Fee | : \$105.00 |

Worcester South District Registry of Deeds
Kathryn A. Toomey, Register
90 Front St
Worcester, MA 01608
(508) 368-7000



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
 303-1004
 MassDEP File #
 eDEP Transaction #
SUTTON
 City/Town

A. General Information

Please note:
 this form has been modified with added space to accommodate the Registry of Deeds Requirements

Important:
 When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



1. From: Sutton
 Conservation Commission

2. This issuance is for (check one):
 a. Order of Conditions b. Amended Order of Conditions

3. To: Applicant:

| | | |
|---|---------------|--------------|
| <u>Caleb</u> | <u>Slater</u> | |
| a. First Name | b. Last Name | |
| <u>Massachusetts Division of Fisheries and Wildlife</u> | | |
| c. Organization | | |
| <u>1 Rabbit Hill Road</u> | | |
| d. Mailing Address | | |
| <u>Westborough</u> | <u>MA</u> | <u>01581</u> |
| e. City/Town | f. State | g. Zip Code |

4. Property Owner (if different from applicant):

| | | |
|--------------------|--------------|-------------|
| <u></u> | <u></u> | |
| a. First Name | b. Last Name | |
| <u></u> | | |
| c. Organization | | |
| <u></u> | | |
| d. Mailing Address | | |
| <u></u> | <u></u> | <u></u> |
| e. City/Town | f. State | g. Zip Code |

5. Project Location:

| | | |
|-----------------------------------|----------------------|----------------------|
| <u>187 West Sutton Road</u> | <u>Sutton</u> | |
| a. Street Address | b. City/Town | |
| <u>22</u> | <u>40</u> | |
| c. Assessors Map/Plat Number | d. Parcel/Lot Number | |
| Latitude and Longitude, if known: | <u>42d8m52.7274s</u> | <u>-71d47m25.26s</u> |
| | d. Latitude | e. Longitude |



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
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eDEP Transaction #
SUTTON
City/Town

A. General Information (cont.)

6. Property recorded at the Registry of Deeds for (attach additional information if more than one parcel):
Worcester
- | | |
|-----------|--|
| a. County | b. Certificate Number (if registered land) |
| 2490 | 0506 |
| c. Book | d. Page |
7. Dates: 6/13/2024 8/7/2024 8/27/2024
 a. Date Notice of Intent Filed b. Date Public Hearing Closed c. Date of Issuance
8. Final Approved Plans and Other Documents (attach additional plan or document references as needed):
Arnold Pond Dam Removal Project
- | | |
|------------------------|---|
| a. Plan Title | Christopher D. Haker, P.E. and Daniel R. Buttrick, P.E. |
| b. Prepared By | Tighe & Bond, Inc. |
| June 2024 | 1"=20' |
| d. Final Revision Date | e. Scale |
- | | |
|--------------------------------------|---------|
| f. Additional Plan or Document Title | g. Date |
|--------------------------------------|---------|

B. Findings

1. Findings pursuant to the Massachusetts Wetlands Protection Act:

Following the review of the above-referenced Notice of Intent and based on the information provided in this application and presented at the public hearing, this Commission finds that the areas in which work is proposed is significant to the following interests of the Wetlands Protection Act (the Act). Check all that apply:

- | | | |
|---|--|---|
| a. <input checked="" type="checkbox"/> Public Water Supply | b. <input type="checkbox"/> Land Containing Shellfish | c. <input checked="" type="checkbox"/> Prevention of Pollution |
| d. <input checked="" type="checkbox"/> Private Water Supply | e. <input checked="" type="checkbox"/> Fisheries | f. <input checked="" type="checkbox"/> Protection of Wildlife Habitat |
| g. <input checked="" type="checkbox"/> Groundwater Supply | h. <input checked="" type="checkbox"/> Storm Damage Prevention | i. <input checked="" type="checkbox"/> Flood Control |

2. This Commission hereby finds the project, as proposed, is: (check one of the following boxes)

Approved subject to:

- a. the following conditions which are necessary in accordance with the performance standards set forth in the wetlands regulations. This Commission orders that all work shall be performed in accordance with the Notice of Intent referenced above, the following General Conditions, and any other special conditions attached to this Order. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, these conditions shall control.



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
 303-1004
 MassDEP File # _____
 eDEP Transaction # _____
SUTTON
 City/Town _____

B. Findings (cont.)

Denied because:

- b. the proposed work cannot be conditioned to meet the performance standards set forth in the wetland regulations. Therefore, work on this project may not go forward unless and until a new Notice of Intent is submitted which provides measures which are adequate to protect the interests of the Act, and a final Order of Conditions is issued. **A description of the performance standards which the proposed work cannot meet is attached to this Order.**
- c. the information submitted by the applicant is not sufficient to describe the site, the work, or the effect of the work on the interests identified in the Wetlands Protection Act. Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides sufficient information and includes measures which are adequate to protect the Act's interests, and a final Order of Conditions is issued. **A description of the specific information which is lacking and why it is necessary is attached to this Order as per 310 CMR 10.05(6)(c).**
- 3. Buffer Zone Impacts: Shortest distance between limit of project disturbance and the wetland resource area specified in 310 CMR 10.02(1)(a) _____ a. linear feet

Inland Resource Area Impacts: Check all that apply below. (For Approvals Only)

| Resource Area | Proposed Alteration | Permitted Alteration | Proposed Replacement | Permitted Replacement |
|---|--|--|--|--|
| 4. <input checked="" type="checkbox"/> Bank | 500 a. linear feet | 500 b. linear feet | 0 c. linear feet | 0 d. linear feet |
| 5. <input type="checkbox"/> Bordering Vegetated Wetland | _____ a. square feet | _____ b. square feet | _____ c. square feet | _____ d. square feet |
| 6. <input checked="" type="checkbox"/> Land Under Waterbodies and Waterways | 12,300 a. square feet 200 e. c/y dredged | 12,300 b. square feet 200 f. c/y dredged | 8,900 c. square feet | 8,900 d. square feet |
| 7. <input checked="" type="checkbox"/> Bordering Land Subject to Flooding | 1,800 a. square feet 2,025 e. cubic feet | 1,800 b. square feet 2,025 f. cubic feet | 1,800 c. square feet 2,025 g. cubic feet | 1,800 d. square feet 2,025 h. cubic feet |
| 8. <input type="checkbox"/> Isolated Land Subject to Flooding | _____ a. square feet _____ c. cubic feet | _____ b. square feet _____ d. cubic feet | _____ e. cubic feet | _____ f. cubic feet |
| 9. <input type="checkbox"/> Riverfront Area | _____ a. total sq. feet _____ c. square feet _____ e. square feet | _____ b. total sq. feet _____ d. square feet _____ h. square feet | _____ e. square feet _____ i. square feet | _____ f. square feet _____ j. square feet |



**Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands**

WPA Form 5 – Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

303-1004

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SUTTON

City/Town

B. Findings (cont.)

Coastal Resource Area Impacts: Check all that apply below. (For Approvals Only)

| | Proposed Alteration | Permitted Alteration | Proposed Replacement | Permitted Replacement |
|--|---|-------------------------|-------------------------|--------------------------|
| 10. <input type="checkbox"/> Designated Port Areas | Indicate size under Land Under the Ocean, below | | | |
| 11. <input type="checkbox"/> Land Under the Ocean | _____ | _____ | | |
| | a. square feet | b. square feet | | |
| | _____ | _____ | | |
| | c. c/y dredged | d. c/y dredged | | |
| 12. <input type="checkbox"/> Barrier Beaches | Indicate size under Coastal Beaches and/or Coastal Dunes below | | | |
| 13. <input type="checkbox"/> Coastal Beaches | _____ | _____ | _____ cu yd | _____ cu yd |
| | a. square feet | b. square feet | c. nourishment | d. nourishment |
| 14. <input type="checkbox"/> Coastal Dunes | _____ | _____ | _____ cu yd | _____ cu yd |
| | a. square feet | b. square feet | c. nourishment | d. nourishment |
| 15. <input type="checkbox"/> Coastal Banks | _____ | _____ | | |
| | a. linear feet | b. linear feet | | |
| 16. <input type="checkbox"/> Rocky Intertidal Shores | _____ | _____ | | |
| | a. square feet | b. square feet | | |
| 17. <input type="checkbox"/> Salt Marshes | _____ | _____ | _____ | _____ |
| | a. square feet | b. square feet | c. square feet | d. square feet |
| 18. <input type="checkbox"/> Land Under Salt Ponds | _____ | _____ | | |
| | a. square feet | b. square feet | | |
| | _____ | _____ | | |
| | c. c/y dredged | d. c/y dredged | | |
| 19. <input type="checkbox"/> Land Containing Shellfish | _____ | _____ | _____ | _____ |
| | a. square feet | b. square feet | c. square feet | d. square feet |
| 20. <input type="checkbox"/> Fish Runs | Indicate size under Coastal Banks, Inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above | | | |
| | _____ | _____ | | |
| | a. c/y dredged | b. c/y dredged | | |
| 21. <input type="checkbox"/> Land Subject to Coastal Storm Flowage | _____ | _____ | | |
| | a. square feet | b. square feet | | |
| 22. <input type="checkbox"/> Riverfront Area | _____ | _____ | | |
| | a. total sq. feet | b. total sq. feet | | |
| Sq ft within 100 ft | _____ | _____ | _____ | _____ |
| | c. square feet | d. square feet | e. square feet | f. square feet |
| Sq ft between 100-200 ft | _____ | _____ | _____ | _____ |
| | g. square feet | h. square feet | i. square feet | j. square feet |



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B. Findings (cont.)

* #23. If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.5.c (BWV) or B.17.c (Salt Marsh) above, please enter the additional amount here.

23. Restoration/Enhancement *:

a. square feet of BWV

b. square feet of salt marsh

24. Stream Crossing(s):

a. number of new stream crossings

b. number of replacement stream crossings

C. General Conditions Under Massachusetts Wetlands Protection Act

The following conditions are only applicable to Approved projects.

1. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this Order.
2. The Order does not grant any property rights or any exclusive privileges; it does not authorize any injury to private property or invasion of private rights.
3. This Order does not relieve the permittee or any other person of the necessity of complying with all other applicable federal, state, or local statutes, ordinances, bylaws, or regulations.
4. The work authorized hereunder shall be completed within three years from the date of this Order unless either of the following apply:
 - a. The work is a maintenance dredging project as provided for in the Act; or
 - b. The time for completion has been extended to a specified date more than three years, but less than five years, from the date of issuance. If this Order is intended to be valid for more than three years, the extension date and the special circumstances warranting the extended time period are set forth as a special condition in this Order.
 - c. If the work is for a Test Project, this Order of Conditions shall be valid for no more than one year.
5. This Order may be extended by the issuing authority for one or more periods of up to three years each upon application to the issuing authority at least 30 days prior to the expiration date of the Order. An Order of Conditions for a Test Project may be extended for one additional year only upon written application by the applicant, subject to the provisions of 310 CMR 10.05(11)(f).
6. If this Order constitutes an Amended Order of Conditions, this Amended Order of Conditions does not extend the issuance date of the original Final Order of Conditions and the Order will expire on 8/27/2027 unless extended in writing by the Department.
7. Any fill used in connection with this project shall be clean fill. Any fill shall contain no trash, refuse, rubbish, or debris, including but not limited to lumber, bricks, plaster, wire, lath, paper, cardboard, pipe, tires, ashes, refrigerators, motor vehicles, or parts of any of the foregoing.



Massachusetts Department of Environmental Protection
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WPA Form 5 – Order of Conditions
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

303-1004

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SUTTON

City/Town

C. General Conditions Under Massachusetts Wetlands Protection Act

8. This Order is not final until all administrative appeal periods from this Order have elapsed, or if such an appeal has been taken, until all proceedings before the Department have been completed.
9. No work shall be undertaken until the Order has become final and then has been recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land upon which the proposed work is to be done. In the case of the registered land, the Final Order shall also be noted on the Land Court Certificate of Title of the owner of the land upon which the proposed work is done. The recording information shall be submitted to the Conservation Commission on the form at the end of this Order, which form must be stamped by the Registry of Deeds, prior to the commencement of work.
10. A sign shall be displayed at the site not less than two square feet or more than three square feet in size bearing the words,

"Massachusetts Department of Environmental Protection" [or, "MassDEP"]
 "File Number 303-1004 "
11. Where the Department of Environmental Protection is requested to issue a Superseding Order, the Conservation Commission shall be a party to all agency proceedings and hearings before MassDEP.
12. Upon completion of the work described herein, the applicant shall submit a Request for Certificate of Compliance (WPA Form 8A) to the Conservation Commission.
13. The work shall conform to the plans and special conditions referenced in this order.
14. Any change to the plans identified in Condition #13 above shall require the applicant to inquire of the Conservation Commission in writing whether the change is significant enough to require the filing of a new Notice of Intent.
15. The Agent or members of the Conservation Commission and the Department of Environmental Protection shall have the right to enter and inspect the area subject to this Order at reasonable hours to evaluate compliance with the conditions stated in this Order, and may require the submittal of any data deemed necessary by the Conservation Commission or Department for that evaluation.
16. This Order of Conditions shall apply to any successor in interest or successor in control of the property subject to this Order and to any contractor or other person performing work conditioned by this Order.



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Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

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C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

17. Prior to the start of work, and if the project involves work adjacent to a Bordering Vegetated Wetland, the boundary of the wetland in the vicinity of the proposed work area shall be marked by wooden stakes or flagging. Once in place, the wetland boundary markers shall be maintained until a Certificate of Compliance has been issued by the Conservation Commission.
18. All sedimentation barriers shall be maintained in good repair until all disturbed areas have been fully stabilized with vegetation or other means. At no time shall sediments be deposited in a wetland or water body. During construction, the applicant or his/her designee shall inspect the erosion controls on a daily basis and shall remove accumulated sediments as needed. The applicant shall immediately control any erosion problems that occur at the site and shall also immediately notify the Conservation Commission, which reserves the right to require additional erosion and/or damage prevention controls it may deem necessary. Sedimentation barriers shall serve as the limit of work unless another limit of work line has been approved by this Order.
19. The work associated with this Order (the "Project")
- (1) is subject to the Massachusetts Stormwater Standards
- (2) is NOT subject to the Massachusetts Stormwater Standards

If the work is subject to the Stormwater Standards, then the project is subject to the following conditions:

- a) All work, including site preparation, land disturbance, construction and redevelopment, shall be implemented in accordance with the construction period pollution prevention and erosion and sedimentation control plan and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Construction General Permit as required by Stormwater Condition 8. Construction period erosion, sedimentation and pollution control measures and best management practices (BMPs) shall remain in place until the site is fully stabilized.
- b) No stormwater runoff may be discharged to the post-construction stormwater BMPs unless and until a Registered Professional Engineer provides a Certification that:
- i.* all construction period BMPs have been removed or will be removed by a date certain specified in the Certification. For any construction period BMPs intended to be converted to post construction operation for stormwater attenuation, recharge, and/or treatment, the conversion is allowed by the MassDEP Stormwater Handbook BMP specifications and that the BMP has been properly cleaned or prepared for post construction operation, including removal of all construction period sediment trapped in inlet and outlet control structures;
 - ii.* as-built final construction BMP plans are included, signed and stamped by a Registered Professional Engineer, certifying the site is fully stabilized;
 - iii.* any illicit discharges to the stormwater management system have been removed, as per the requirements of Stormwater Standard 10;



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C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

- iv.* all post-construction stormwater BMPs are installed in accordance with the plans (including all planting plans) approved by the issuing authority, and have been inspected to ensure that they are not damaged and that they are in proper working condition;
- v.* any vegetation associated with post-construction BMPs is suitably established to withstand erosion.
- c)* The landowner is responsible for BMP maintenance until the issuing authority is notified that another party has legally assumed responsibility for BMP maintenance. Prior to requesting a Certificate of Compliance, or Partial Certificate of Compliance, the responsible party (defined in General Condition 18(e)) shall execute and submit to the issuing authority an Operation and Maintenance Compliance Statement ("O&M Statement") for the Stormwater BMPs identifying the party responsible for implementing the stormwater BMP Operation and Maintenance Plan ("O&M Plan") and certifying the following:
- i.)* the O&M Plan is complete and will be implemented upon receipt of the Certificate of Compliance, and
 - ii.)* the future responsible parties shall be notified in writing of their ongoing legal responsibility to operate and maintain the stormwater management BMPs and implement the Stormwater Pollution Prevention Plan.
- d)* Post-construction pollution prevention and source control shall be implemented in accordance with the long-term pollution prevention plan section of the approved Stormwater Report and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Multi-Sector General Permit.
- e)* Unless and until another party accepts responsibility, the landowner, or owner of any drainage easement, assumes responsibility for maintaining each BMP. To overcome this presumption, the landowner of the property must submit to the issuing authority a legally binding agreement of record, acceptable to the issuing authority, evidencing that another entity has accepted responsibility for maintaining the BMP, and that the proposed responsible party shall be treated as a permittee for purposes of implementing the requirements of Conditions 19(f) through 19(k) with respect to that BMP. Any failure of the proposed responsible party to implement the requirements of Conditions 19(f) through 19(k) with respect to that BMP shall be a violation of the Order of Conditions or Certificate of Compliance. In the case of stormwater BMPs that are serving more than one lot, the legally binding agreement shall also identify the lots that will be serviced by the stormwater BMPs. A plan and easement deed that grants the responsible party access to perform the required operation and maintenance must be submitted along with the legally binding agreement.
- f)* The responsible party shall operate and maintain all stormwater BMPs in accordance with the design plans, the O&M Plan, and the requirements of the Massachusetts Stormwater Handbook.



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C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

- g) The responsible party shall:
1. Maintain an operation and maintenance log for the last three (3) consecutive calendar years of inspections, repairs, maintenance and/or replacement of the stormwater management system or any part thereof, and disposal (for disposal the log shall indicate the type of material and the disposal location);
 2. Make the maintenance log available to MassDEP and the Conservation Commission ("Commission") upon request; and
 3. Allow members and agents of the MassDEP and the Commission to enter and inspect the site to evaluate and ensure that the responsible party is in compliance with the requirements for each BMP established in the O&M Plan approved by the issuing authority.
- h) All sediment or other contaminants removed from stormwater BMPs shall be disposed of in accordance with all applicable federal, state, and local laws and regulations.
- i) Illicit discharges to the stormwater management system as defined in 310 CMR 10.04 are prohibited.
- j) The stormwater management system approved in the Order of Conditions shall not be changed without the prior written approval of the issuing authority.
- k) Areas designated as qualifying pervious areas for the purpose of the Low Impact Site Design Credit (as defined in the MassDEP Stormwater Handbook, Volume 3, Chapter 1, Low Impact Development Site Design Credits) shall not be altered without the prior written approval of the issuing authority.
- l) Access for maintenance, repair, and/or replacement of BMPs shall not be withheld. Any fencing constructed around stormwater BMPs shall include access gates and shall be at least six inches above grade to allow for wildlife passage.

Special Conditions (if you need more space for additional conditions, please attach a text document):

20. For Test Projects subject to 310 CMR 10.05(11), the applicant shall also implement the monitoring plan and the restoration plan submitted with the Notice of Intent. If the conservation commission or Department determines that the Test Project threatens the public health, safety or the environment, the applicant shall implement the removal plan submitted with the Notice of Intent or modify the project as directed by the conservation commission or the Department.



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D. Findings Under Municipal Wetlands Bylaw or Ordinance

1. Is a municipal wetlands bylaw or ordinance applicable? Yes No
2. The Sutton Conservation Commission hereby finds (check one that applies):
 - a. that the proposed work cannot be conditioned to meet the standards set forth in a municipal ordinance or bylaw, specifically:

| | |
|---------------------------------|-------------|
| 1. Municipal Ordinance or Bylaw | 2. Citation |
|---------------------------------|-------------|

Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides measures which are adequate to meet these standards, and a final Order of Conditions is issued.
 - b. that the following additional conditions are necessary to comply with a municipal ordinance or bylaw:

| | |
|---------------------------------|-------------|
| Wetlands Protection | Article 12 |
| 1. Municipal Ordinance or Bylaw | 2. Citation |
3. The Commission orders that all work shall be performed in accordance with the following conditions and with the Notice of Intent referenced above. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, the conditions shall control.
The special conditions relating to municipal ordinance or bylaw are as follows (if you need more space for additional conditions, attach a text document):

See attached Findings of Fact and Special Conditions (pp.10a-10h)

on



Order of Conditions-Special Conditions
under Article 12, the
Sutton Wetlands Protection Bylaw

| | |
|-------------------------|---|
| <u>Applicant Name:</u> | Caleb Slater / Massachusetts Division of Fisheries and Wildlife |
| <u>Owner Name:</u> | Same |
| <u>Project Address:</u> | 187 West Sutton Road |
| <u>Map, Parcel:</u> | Map 22, Parcel 40 |

Findings of Fact

Caleb Slater / Massachusetts Division of Fisheries and Wildlife (Applicant) submitted a Notice of Intent (NOI) for the above-referenced property (Property) via Tighe & Bond Inc., (Daniel Buttrick representing). The application was received on June 21, 2024. The public hearing was opened June 26, 2024, and closed on August 7, 2024. Voting Conservation Commission (Commission) members included William Wence (Chair), James Marran, Timothy Thompson, Robin Jacques, and Jared Duval. Michael McGovern (Vice-Chair) was absent. The final vote was to APPROVE WITH STANDARD SPECIAL CONDITIONS for the proposed project, 5-0. Motion: T. Thompson. Second: R. Jacques.

Background

The project is located within Merrill Ponds Wildlife Management Area (WMA), a 235-acre parcel located southeast along W. Sutton Road. The WMA contains manmade impoundments consisting of open waterbodies, vegetated wetlands, and upland forests. Within the WMA impoundments, there are several dams between Welsh Pond, Putnam Pond, Schoolhouse Pond, Adams Pond, and Arnold Pond, constructed beginning in 1921.

Arnold Pond dam is an earthen embankment dam with stone masonry walls on the up and downstream sides. This dam is approximately 300 feet long and its crest ranges from 15 to 20 feet wide and contains trees and other vegetation.

Special Conditions for: 187 West Sutton Road Map: 22 Lot: 40

(DEP File # 303-1004)

An Environmental Impact Report (EIR) was completed to include all dam removal projects within the MWA and is dated July 14, 2017.

This project takes place within NHESP Priority Habitats of Rare Species, prompting a letter from the Massachusetts Division of Fisheries & Wildlife, stating that the project as proposed will not result in prohibited Take of state-listed rare species.

Current Proposal

The current proposal is to remove the full vertical extent of a portion of the Arnold Pond dam, which is currently rated in "Poor" condition. Additionally, a channel will be created through the embankment and a new pedestrian bridge will be built (See "Section 3 Project Description" of the Notice of Intent by Tighe & Bond, Inc., dated June 2024 for more details).

The Dam removal gives an opportunity to improve habitat diversity, and stream connectivity along Singletary Brook.

Wetland Resource Areas

Resource Areas under M.G.L. 131, §40, 310CMR 10.00 and covered under Article 12 present on or in close vicinity to the site:

- Bank
- Land Under Waterbodies and Waterways
- Bordering Land Subject to Flooding

Resource Areas covered under Article 12 only present on-site:

- Adjacent Upland Resource Area (AURA)
- Waterbodies less than ¼ acre foot in size

In addition to the Presumptions of Significance (Presumptions) for Resource Area stated above in WPA Form 5- Order of Conditions also covered by Article 12, the following Presumptions under Article 12 are found to be applicable to the Resource Areas found at the subject Property:

- Protection of Recreational Activities
- Protection of Aesthetics
- Protection of Aquatic Life Habitat

Proposed Impacts

Special Conditions for: 187 West Sutton Road Map: 22 Lot: 40

(DEP File # 303-1004)

Proposed impacts are 500 linear feet of Bank, 12,300sf altered and 200 cubic yards dredged of Land Under Waterbodies and Waterways, and 1,800sf of Bordering Land Subject to Flooding with 2,025 cubic feet of flood storage lost.

Approval

The plan was approved under the provisions of 310CMR 10.00 and under the Bylaw in that **no significant adverse impact** to the Resource Areas and Public Interests in M.G.L. c.131, §40, 310CMR 10.00, and Article 12 will occur if:

- a. The site plan is strictly followed;
- b. The stated construction sequence is strictly adhered to;
- c. Any other site-specific special conditions outlined below are strictly adhered to.

Further, as designed and approved, there will be no significant adverse impacts to the Public Interests identified in the Massachusetts Wetlands Protection Act (M.G.L. c.131, §40), its Regulations (310 CMR 10.00) and the Sutton Bylaw (Article 12).

Plans

The approved plan of record is titled "Arnold Pond Dam Removal Project" consisting of nine (9) sheets by Tighe & Bond, Inc., by Christopher D. Haker, P.E. and Daniel R. Buttrick, P.E. with a final revision date of June 2024.

Pre Construction

General

1. All General Conditions found in WPA Form 5- Order of Conditions are considered part of these Special Conditions under Article 12.
2. The **Findings of Fact** are incorporated as a Special Condition and given equal status as a Special Condition(s) of this Order.
3. All work shall be performed in accordance with the site plan set referenced above. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, the conditions shall control.
4. **Violation of any condition stated herein may result in Enforcement Action or revocation of the Order.**
5. **Work may be immediately halted** on the site if a Conservation Commissioner, an Agent of the Commission, or DEP determines that any of the work is not in compliance with this Order of Conditions or Special Order of Conditions.
6. In accordance with WPA Form 5, the following must occur in association with this Order:

- a. The Sutton Conservation Commission ('Commission') must be notified that the Order has been recorded with the Registry of Deeds or the Land Court for the district in which the land is located *not later than 10 days from the mailing date of this Order*.
 - b. No activity shall commence until the Order has been recorded and the 10-day appeal period has passed.
 - c. **This document shall be included in all construction contracts, subcontracts, and specifications dealing with the work proposed and shall supersede any conflicting contract requirements.**
7. The Applicant shall supply:
- a. **Name(s), address, and telephone number(s) of the person(s) responsible on site for compliance with this Order.**
8. The Project Supervisor must:
- a. **Be given a copy of the Order Of Conditions**
 - b. **Keep a copy of this Order and the Approved Plan on site at all times, while work is being conducted.**
 - c. Be made aware that they are responsible for compliance with this Order and may be held jointly responsible for any violations and the penalties under law for said violations.
9. Construction schedule/ project sequencing:
- a. **The Applicant shall submit to the Commission a schedule of major events in the Project (i.e. construction schedule);**
 - b. If changes in the construction schedule occur, said changes shall be noted and a revised schedule forwarded to the Commission;
 - c. The purpose of the construction schedule is to keep the Commission apprised of progress, benchmarks, and therefore when site inspections may be appropriate.
10. The Conservation Commission will be notified *at least* one week prior to construction to allow for a **pre-construction site visit/meeting**. The following people shall be present for the pre-construction meeting:
- a. Applicant or Applicant's Representative(s) from the Conservation Commission Public Hearings;
 - b. Applicant's Construction Supervisor(s) (person or persons responsible for overall compliance with this Order);
 - c. Applicant's Contractor(s), as applicable;
 - d. Consultant of the Commission;
 - e. Conservation Commissioners.

If different contractors will be used for different phases of the project, or if contractors change during the time the Order is valid, the Applicant shall contact the Commission and schedule additional pre-construction site visit/meetings as the project progresses.

Erosion and Sedimentation Control Measures

11. Stockpiling of additional sedimentation and erosion control devices:
 - a. An adequate stock of sedimentation and erosion control devices shall be kept on site at all times for emergency use, or normal repair and maintenance;
 - b. An area for storage of said controls shall be designated on-site;
 - c. Additional sedimentation and erosion controls shall be covered and protected from the elements, as necessary.

12. Erosion and Sedimentation control measures shall:
 - a. Be installed in accordance with the plan cited in this Order.
 - b. Be installed prior to construction activities in a sequence appropriate to the construction schedule (e.g. at the beginning of a new phase of construction);
 - c. Be appropriate and effective for the location and shall **exclude the use of haybales. 100% biodegradable straw wattles and/or 100% biodegradable compost sox are acceptable; photodegradable or oxo-(bio)degradable plastics are not considered biodegradable for the purposes of this requirement;**
 - d. Biodegradable erosion or sedimentation controls may be left on-site to decompose naturally;
 - e. When straw wattles or compost sox are used, and burlap sheathing is not available, the mesh or aperture size should be as large as possible to avoid wildlife entrapment and should have a loose weave, wildlife-safe design with movable joints between the horizontal and vertical joints between the horizontal and vertical twines, allowing the twines to move independently and thus reducing the potential for wildlife entanglement;
 - f. Silt fence may be employed to reinforce straw wattles or compost sox in steep areas, but the Applicant shall avoid the use of silt fences reinforced with metal or plastic mesh.
 - g. Prior to commencement of any work the construction and placement of all **erosion and sedimentation controls are to be certified, in writing, to the Commission, by a qualified professional (e.g. PWS, P.E., CPESC, RS).** A Sutton Conservation Commissioner or the Commission's designated professional representative shall confirm the certification in the field.

During Construction

13. **All site contractors working on the Project must be given a copy of the Order Of Conditions and Plans and have it in their possession *at the site* at all times (e.g. in their vehicle, on-site, and not elsewhere), while work is being conducted, and be made available upon request.**

14. **Any change in these Conditions, plans or Project scope shall be made in writing, however minor;**

15. Site inspections by the Commission:
 - a. The Commission shall have the right to request and receive any additional data or documentation that it deems necessary for that evaluation;
 - b. Work shall halt on the site if the Commissioner, Consultant, or DEP determines that any of the work is not in compliance with this Order of Conditions;
 - c. If work is halted, work shall not resume until the Commission is satisfied that the corrective action(s) will comply with the WPA, Regulations, and Bylaw.
16. In case of emergencies, problems, or the need to discuss site conditions with the Commission, call the Conservation office at (508) 865-8728, or the Conservation Consultant at (508) 997-0268:
17. The Applicant shall maintain and stabilize all exposed slopes or disturbed surfaces likely to contribute to erosion and sedimentation. Slopes shall be stabilized immediately upon completion of grading as the project progresses.

Staging Area/Construction Equipment Cleanup

18. The general contractor shall designate a **construction staging area** that will not require cutting or clearing of vegetation beyond that approved by this Order. It shall be located within the permanent limit of disturbance.
19. The Applicant is prohibited from discharging the following within a Resource Area, Buffer Zone, or an area leading to a stormwater conveyance system:
 - a. Wastewater from washout of concrete;
 - b. Stucco, paint, form release oils, curing compounds and other construction materials;
 - c. Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance;
 - d. Soaps, solvents, or detergents used in vehicle and equipment washing;
 - e. Toxic or hazardous substances from a spill or other release.

Any deposit of one or more of the above materials into an AURA or Resource Area shall be immediately removed.

20. Petroleum hydrocarbons (diesel, gas, etc.), pesticides, herbicides, and other chemicals shall not be stored in a Resource Area or AURA. Any such materials must be properly stored and protected from the weather in accordance with manufacturer's specifications.

Erosion and Sedimentation Control

21. All Conditions related to Erosion and Sediment Control in the *Pre-Construction* section of this Order shall pertain to this section.

22. The Applicant shall take all measures to prevent erosion and sedimentation of wetland resource areas.
23. Erosion and sedimentation control devices may be modified based upon experience at the site. All such devices shall be inspected, cleaned, or replaced as needed during construction;
24. Soils shall be stabilized immediately post-construction, and the site in general shall be maintained in good repair.
25. PUMPING: Should pumping be necessary, efforts shall be made to avoid and/or minimize the amount of sediment laden water from discharging into a Resource Area. The BMP used shall be determined by the contractor and approved by the Conservation Commission prior to construction of said BMP.

Specific to this Application

26. The Applicant is allowed suppression and eradication of invasive plant species **in-perpetuity**.
27. The Commission must receive a plan containing a turbidity curtain detail associated with this project.

Post Construction

28. Continued maintenance of all disturbed areas, in a manner which assures permanent stabilization and precludes any soil erosion shall be the responsibility of the Applicant/Owner/Assign of this Property. This is an in-perpetuity Condition.
29. Replace dead shrubs among the 25 plants installed in Sp.Cond. 27, as necessary. This is an in-perpetuity condition.
30. Any plantings installed within jurisdictional areas must be native species. This is an in-perpetuity condition.
31. Rooftop infiltration chambers shall be maintained in good working order. This is an in-perpetuity condition.

Conditions related to Certificate of Compliance

32. On or about the yearly anniversary of the issuance of this Order, a representative of the Conservation Commission shall perform a site inspection to assess compliance with the Order until such a time that a Certificate of Compliance is issued.

33. Upon completion of construction and final soil stabilization, the Applicant/Owner/Assign shall submit the following to the Conservation Commission to request a Certificate of Compliance (COC):
- a. A Completed Request for a Certificate of Compliance form (WPA Form 8A or other form if required by the Conservation Commission at the time of request);
 - b. A letter from a Registered Professional Engineer certifying compliance of the Property with this Order of Conditions, and detailing any deviations that exist, and their potential effect on the project. A statement that the work is in "substantial compliance" with no detailing of the deviations shall not be accepted;
 - c. An as-built plan.
34. Upon receipt of the request for a Certificate of Compliance (WPA Form 8B), the Commission will either hold a site visit with a quorum of the Commission present or designate an Agent of the Commission to perform said inspection. The Certificate of Compliance shall be issued in accordance with the choices found on Form 8B, with additional comments attached as deemed necessary to ensure compliance with the Order.
35. Any change of successor or successor in control ('Successor') of this project shall be submitted in writing to the Commission. The request shall include all changes, however minor, to the design plans cited in this Order. Prior to any work commencing by the Successor the Commission shall determine if proposed changes to the project require the filing of a new Notice of Intent or a Request for Amendment to the Order of Conditions. A pre-construction conference shall be scheduled at the regularly held Commission meetings for the Commission to review the project with any new parties (i.e. change of ownership or controlling interest and/or engineer and/or general contractor).
36. The Applicant shall furnish the Commission with a copy of the recorded Certificate of Compliance as performed with the Registry of Deeds in accordance with WPA Form 8B.
37. The Applicant must furnish to the Commission or its Agent(s), within a reasonable time, any information the Commission may request to determine whether cause exists for modifying, revoking, and reissuing, or terminating this Order or to determine compliance with this Order.
38. Should it come to the Commission's attention that any or all of this Order was created in reliance of false information, this Order shall become invalid and the Order revoked.
39. Invalidation of a portion of this permit does not necessarily render the whole Order invalid. The Commission's intent is that the Order is to remain in effect to the extent possible; in the event that any part of this permit is invalidated, the Commission will advise the Applicant as to the effect of such invalidation.



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E. Signatures

This Order is valid for three years, unless otherwise specified as a special condition pursuant to General Conditions #4, from the date of issuance.

Please indicate the number of members who will sign this form.

This Order must be signed by a majority of the Conservation Commission.

The Order must be mailed by certified mail (return receipt requested) or hand delivered to the applicant. A copy also must be mailed or hand delivered at the same time to the appropriate Department of Environmental Protection Regional Office, if not filing electronically, and the property owner, if different from applicant.

8-27-24
1. Date of Issuance

5
2. Number of Signers

Sutton

William Wence
Signature

William Wence - Chair

Printed Name

Michael McGovern
Signature

Michael McGovern - Vice Chair

Printed Name

Robin Jacques
Signature

Robin Jacques - Clerk

Printed Name

James Marran
Signature

James Marran - Member

Printed Name

Timothy Thompson
Signature

Timothy Thompson - Member

Printed Name

Jared Duval
Signature

Jared Duval - Alternate

Printed Name

Signature

Printed Name

Signature

Printed Name

by hand delivery on _____
Date

by certified mail, return receipt requested, on 8-27-24
Date



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 5 – Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

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F. Appeals

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land subject to this Order, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate MassDEP Regional Office to issue a Superseding Order of Conditions. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and a completed Request for Departmental Action Fee Transmittal Form, as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

Any appellants seeking to appeal the Department's Superseding Order associated with this appeal will be required to demonstrate prior participation in the review of this project. Previous participation in the permit proceeding means the submission of written information to the Conservation Commission prior to the close of the public hearing, requesting a Superseding Order, or providing written information to the Department prior to issuance of a Superseding Order.

The request shall state clearly and concisely the objections to the Order which is being appealed and how the Order does not contribute to the protection of the interests identified in the Massachusetts Wetlands Protection Act (M.G.L. c. 131, § 40), and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal ordinance or bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.

Section 00310

Attachment B

401 Water Quality Certificate



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

100 Cambridge Street 9th Floor Boston, MA 02114 • 617-292-5500

Maura T. Healey
Governor

Kimberley Driscoll
Lieutenant Governor

Rebecca L. Tepper
Secretary

Bonnie Heiple
Commissioner

July 15, 2024

Caleb Slater
Massachusetts Division of Fisheries
and Wildlife
One Rabbit Hill Road
Westborough, MA 01581

DEP WQC APPLICATION # 24-WW26-0011-APP
EEA # 15642
NHESP # 24-17323
NAE-2024-01159
401 WQC Application Completion: 4/10/24

RE: COMBINED PERMIT – 401 WATER QUALITY CERTIFICATION
Application for: BRP WW 26
401 WATER QUALITY CERTIFICATION FOR DREDGING & FILL/EXCAVATION

AT: Arnold Pond Dam, Merrill Ponds Wildlife Management Area – Sutton
Blackstone River Basin

Dear Dr. Slater:

The Department of Environmental Protection (“MassDEP”) has reviewed your application for a Combined Permit 401 Water Quality Certification for Dredging and Fill/Excavation (“Combined 401 WQC”), as referenced above and is basing its certification upon an evaluation of the information contained in the application which is relevant to water quality considerations. In accordance with the provisions of Section 401 of the Federal Clean Water Act (33 U.S.C. § 1251 *et seq.*), MGL c. 21, §§ 26-53, and 314 CMR 9.00, MassDEP has determined there is reasonable assurance the project or activity, as conditioned herein, will be conducted in a manner which will not violate applicable water quality standards (314 CMR 4.00) and other appropriate requirements of state law.

The waters of Arnold Pond, which is an impoundment along Singletary Brook, are unlisted in the Massachusetts Surface Water Quality Standards, and therefore, considered Class B. Such waters are intended “as habitat for fish, other aquatic life and wildlife, and for primary and secondary contact recreation.” Antidegradation provisions of these Standards require that “existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.”

The above-referenced project includes the removal of Arnold Pond Dam and the installation of a pedestrian bridge over the newly created channel through the former dam. Once completed, this ecological restoration project is expected to restore aquatic and riparian habitat connectivity and enhance riverine function.

Approximately 150 cubic yards (“CY”) of sediment will be mechanically dredged during the dam removal process. This sediment will be beneficially reused to grade and shape the former dam embankment. Any excess will be transported off site to an approved facility. In addition, approximately 200 CY of sediment is expected to mobilize during future storm events and settle in depositional areas downstream. Approximately 12,300 square feet of land under the High Water Mark will be impacted temporarily by the dewatering of the work areas, and the placement of construction mats and coffer dams, which will be removed upon completion of the project. Approximately 171,852 square feet of land under water (“LUW”) will be lost after the dam is removed and the impoundment has drained. However, approximately 46,000 square feet of that area is expected to convert to bordering vegetated wetland (“BVW”). The work is shown on the attached plans.

Sediment Chemistry Results: Sediment samples upstream of the impoundment, within the impoundment, and downstream of the dam were collected for analysis. The results of the chemical analysis were compared to MassDEP’s *Interim Policy for Sampling, Analysis, Handling and Tracking Requirements for Dredged Sediment Reuse and Disposal* (COMM-94-007). All of the results were either non-detect or below the Reportable Concentration (“RC”) S-1 criteria of the Massachusetts Contingency Plan (“MCP”).

Rare Species and Wildlife Habitat: Adams Pond, which is immediately downstream of the project site, is located within the Priority Habitat of Rare Species and Estimated Habitats of Rare Wildlife as indicated in the Massachusetts Natural Heritage Atlas, 15th Edition. According to the letter dated April 6, 2024, from Jesse Leddick, Massachusetts Natural Heritage and Endangered Species Program (“NHESP”) to Isobel Arthen-Long, Tighe & Bond, Inc., the proposed project “will not result in a prohibited Take of state-listed rare species.”

Public Notice: The Combined Permit Application public notice was published in *The Worcester Telegram & Gazette* on February 23, 2024. No comments were received by MassDEP during the 21-day public comment period pursuant to 314 CMR 9.05(3)(e), which ended on March 15, 2024.

Section 61 Findings: Pursuant to M.G.L. Chapter 30, Sections 61 to 62H inclusive [the Massachusetts Environmental Policy Act (“MEPA”)], the project, as referenced in the Combined Permit Application, DEP Application # 24-WW26-0011-APP, was required to file an Expanded Environmental Notification Form (“EENF”). MassWildlife (the “Proponent”) filed the EENF for the construction of the project under EEA # 15642 and noticed the EENF in the Environmental Monitor (the “Monitor”) on February 8, 2017. In the Certificate issued on March 31, 2017, the Secretary of Energy and Environmental Affairs (the “Secretary”) determined that “this project requires the preparation of a Single

Environmental Impact Report (Single EIR).” Further, the Proponent requested that the Secretary allow a Single EIR to be prepared in lieu of the usual two-stage Draft and Final EIR process pursuant to Section 11.06(8) of the MEPA regulations. The Secretary granted that request. Accordingly, the Proponent filed the Single EIR and noticed such in the Monitor on June 7, 2017. In the Certificate issued on July 14, 2017, the Secretary determined that the “Single EIR adequately and properly complies with MEPA and its implementing regulations” and that the Project “may proceed to permitting.” MassDEP has reviewed the findings in both the EENF and Single EIR Certificates and confirms that based on the avoidance, minimization, and mitigation measures undertaken by the Proponent, in conjunction with the requirements set forth in this Combined 401 WQC, all outstanding issues have been addressed satisfactorily.

Therefore, based on information currently in the record, MassDEP grants a Combined 401 WQC for this project subject to the following conditions to maintain or attain water quality, to minimize any damage to the environment that may result from the project, and to ensure compliance with appropriate provisions of state law. MassDEP certifies that there is reasonable assurance the project or activity, as conditioned herein, will be conducted in a manner which will not violate applicable water quality standards (314 CMR 4.00) and other appropriate requirements of state law.

1. The contractor shall take all steps necessary to ensure that the proposed activities will be conducted in a manner that will avoid violations of the antidegradation provisions of the Massachusetts Surface Water Quality Standards, 314 CMR 4.00, that protect all waters, including wetlands. Pursuant to 314 CMR 9.01(3), this condition is necessary to ensure that any discharge from the project complies with the Massachusetts Surface Water Quality Standards, as provided in 314 CMR 4.00, to protect the public health and restore and maintain the chemical, physical, and biological integrity of the water resources of the Commonwealth.
2. Prior to the start of work, or for any portion of the work thereafter, MassDEP shall be notified of any change(s) in the proposed project or plans that may affect waters or wetlands. MassDEP will determine whether the change(s) requires a revision to this Combined 401 WQC. Pursuant to 314 CMR 9.06(1), 9.07(1) and 9.09(2), this condition is necessary to protect the public health and restore and maintain the chemical, physical, and biological integrity of the water resources of the Commonwealth.
3. Dredging and filling/excavation in accordance with this Combined 401 WQC may begin following the 21-day appeal period and once all other permits have been received. Pursuant to 314 CMR 9.10, this condition is necessary to ensure that due process is provided to certain persons deemed to be aggrieved by the Combined 401 WQC.

4. All work shall be performed in accordance with the following documents and plans [Pursuant to 314 CMR 9.05(1), this condition is necessary as these documents outline how the execution of the project will meet the criteria of 314 CMR 9.06 and 9.07 thereby protecting water quality and preventing degradation to wetlands and waters of the Commonwealth]:
 - Application for Combined Permit, DEP Application # 24-WW26-0011-APP, dated February 8, 2024, as revised through April 10, 2024, with attachments.
 - Plan entitled “Massachusetts Division of Fisheries and Wildlife, Arnold Pond Dam Removal Project, Sutton, Massachusetts,” consisting of 9 sheets, various scales, dated December 2023, prepared by Tighe & Bond, Inc., not signed or stamped, and attached to this Combined 401 WQC.
 - Document entitled “Dam Removal Monitoring Plan – Arnold Pond Dam,” consisting of 5 pages, dated March 1, 2024, prepared by Tighe & Bond, Inc.
 - Letter from Jesse Leddick, NHESP, to Isobel Arthen-Long, Tighe & Bond, Inc., dated April 6, 2024, consisting of 2 pages.
5. MassDEP shall be notified, attention Derek Standish [617-875-3843 derek.standish@mass.gov], one week prior to the start of in-water work so that MassDEP staff may inspect the work for compliance with the terms and conditions of this Combined 401 WQC. Pursuant to 314 CMR 9.05(4), this condition is necessary to ensure that construction practices are implemented in such a manner as to prevent degradation to wetlands and waters of the Commonwealth.
6. The term of this Combined 401 WQC remains in effect for the same duration as the federal permit that requires it. Pursuant to 314 CMR 9.00, this condition is necessary to ensure that any dredging is conducted in a timely manner and complies with the Massachusetts Surface Water Quality Standards, as provided in 314 CMR 4.00, to protect the public health and restore and maintain the chemical, physical, and biological integrity of wetlands and waters of the Commonwealth.
7. During the project period, there shall be no discharge or spillage of fuel, oil, or other pollutants, including sediments, onto any part of the site. The applicant shall take all reasonable precautions to prevent the release of pollutants by ignorance, accident, or vandalism. Pursuant to 314 CMR 9.06(1) and 9.07(1), this condition is necessary to ensure that construction practices are implemented in such a manner as to prevent degradation to wetlands and waters of the Commonwealth.
8. No later than four weeks after issuance of this Combined 401 WQC, the applicant shall submit a notification procedure outlining the reporting process to MassDEP for incidents relating to dredging activities that impact surrounding resource areas and habitats including, but not limited to, observed dead or distressed fish or other aquatic organisms, observed oily sheen on the surface of the water, a sediment spill,

a turbidity plume beyond the deployed Best Management Practices (“BMPs”), and a barge or equipment accident/spill. If at any time during implementation of the project such an incident occurs, the applicant shall immediately notify MassDEP and all site related activities impacting the water shall cease until the source of the problem is identified and adequate mitigating measures are deployed to the satisfaction of MassDEP. Pursuant to 314 CMR 9.07(3), this condition is necessary to ensure that construction is conducted in a manner that minimizes short-term, long-term, and cumulative impacts on the aquatic ecosystem and provides protection to human health.

9. Future maintenance dredging is not authorized under this Combined 401 WQC. Pursuant to 314 CMR 9.04(5), the project does not qualify for the routine maintenance exemption. This condition is necessary to ensure that the chemical, physical and biological integrity of wetlands and waters of the Commonwealth are protected.
10. Flow to the downstream channel (Singletary Brook) shall be maintained throughout construction of the project. Pursuant to 314 CMR 9.07(1)(c), this condition is necessary to ensure that construction will be conducted in a manner that will not reduce or alter the habitat functions of the affected wetlands and waters of the Commonwealth.
11. All equipment/machinery shall be stored above the High Water Mark (“HWM”) and outside any wetland resource areas when not in use. Pursuant to 314 CMR 9.06(1)(c)4.c. and 9.07(1)(b)4.c., this condition is necessary to avoid and minimize adverse construction impacts to wetlands and waters of the Commonwealth.
12. All sedimentation barriers shall be maintained in good repair until all disturbed areas have been fully stabilized with vegetation or other means. At no time shall sediments be deposited in a wetland or water body, except as described in the documents and plans cited in Condition # 4. During construction, the applicant or his/her designee shall inspect the erosion controls on a daily basis and shall remove accumulated sediments as needed. The applicant shall immediately control any erosion problems that occur at the site and shall also immediately notify MassDEP, which reserves the right to require additional erosion and/or damage prevention controls it may deem necessary. Sedimentation barriers shall serve as the limit of work unless another limit of work line has been approved by MassDEP pursuant to this Combined 401 WQC. Pursuant to 314 CMR 9.06(1)(c)4.c. and 9.07(1)(b)4.c., this condition is necessary to avoid and minimize adverse construction impacts to wetlands and waters of the Commonwealth.
13. No later than 21 days prior to commencement of dredging activity, a dredged material dewatering plan shall be submitted to MassDEP for review and written approval. At a minimum, the dewatering plan shall include, but not be limited to, the type of containment, method of dewatering (i.e., mechanical or by gravity), method of collecting the dewatered effluent, and method of disposal. Pursuant to 314 CMR

9.07(1), this condition is necessary to adequately minimize and contain runoff water and material from the dredged material dewatering process to protect the water resource area thereby ensuring that water quality is not degraded, and biological resources are not negatively impacted by potential discharges.

14. MassDEP shall be notified in writing of the name and location of the upland licensed facility accepting the dredged material for disposal or reuse as daily cover material. If the licensed facility is located out of state, documentation shall be provided to MassDEP that the dredged material disposal/reuse has been approved and will be accepted by the receiving state in accordance with 314 CMR 9.07(13)(b). The dredged material shall not be transported to the facility without the concurrence of MassDEP. Pursuant to 314 CMR 9.07(5) and 314 CMR 9.07(13), this condition is necessary to ensure that dredged material disposal will not adversely affect any wetlands or waters in the receiving area.
15. A Material Shipping Record (“MSR”) shall be used to track the dredged material to the licensed upland facility. A fully executed copy of the MSR shall be provided to MassDEP within 30 days of final shipment to the reuse location or facility. Pursuant to 314 CMR 9.07(5), this condition is necessary to maintain a record of the dredged material for reference and to ensure accountability in its transportation. This assists in the protection of health, safety, public welfare, and the environment from any potential hazards during transportation. Finally, it attests to the dredged material conforming with permitting and regulatory requirements for acceptance at the receiving location.
16. BMPs shall be implemented during transportation of the dredged material to the licensed receiving facility. At a minimum, when transported upon public roadways, all dredged material shall have no free liquid as determined by the Paint Filter Test or other suitably analogous methodology acceptable to MassDEP, and a tarpaulin or other means shall be used to cover the dredged material during transport. Pursuant to 314 CMR 9.07(5), this condition is necessary to protect off site water quality during transportation. These practices help to avoid fugitive dust and siltation into wetlands and waters of the Commonwealth.
17. Within 30 days of the completion of dredging, photographs of the affected areas depicting post-dredge conditions shall be taken and submitted to Derek Standish [derek.standish@mass.gov] at MassDEP. Pursuant to 314 CMR 9.07(1), this condition is necessary to ensure that construction practices are implemented in such a manner as to prevent degradation to wetlands and waters of the Commonwealth.
18. Copies of the monitoring reports described in the Dam Removal Monitoring Plan cited in Condition # 4 shall be submitted to Derek Standish [derek.standish@mass.gov] at MassDEP once a year for 2 years following the removal of the dam. Pursuant to 314 CMR 9.01(3), this condition is necessary to protect the public health and restore and maintain the chemical, physical, and biological integrity of the water resources of the Commonwealth.

Failure to comply with this Combined 401 WQC is grounds for enforcement, including civil and criminal penalties, under M.G.L. c. 21, § 42, 314 CMR 9.00, M.G.L. c. 21A § 16, 310 CMR 5.00, or other possible actions/penalties as authorized by the General Laws of the Commonwealth.

This Combined 401 WQC does not relieve the applicant of the obligation to comply with other appropriate state or federal statutes or regulations. Any changes made to the project as described in the previously submitted Combined Permit Application or supplemental documents will require further notification to and, if an amendment is required, approval by MassDEP.

NOTICE OF APPEAL RIGHTS

Certain persons shall have a right to request an adjudicatory hearing concerning Combined 401 WQCs by MassDEP when an application is required:

- a. the applicant or property owner;
- b. any person aggrieved by the decision who has submitted written comments during the public comment period;
- c. any ten persons of the Commonwealth pursuant to M.G.L. c. 30A where a group member has submitted written comments during the public comment period; or
- d. any governmental body or private organization with a mandate to protect the environment, which has submitted written comments during the public comment period.

Any person aggrieved, any ten persons of the Commonwealth, or a governmental body or private organization with a mandate to protect the environment may appeal without having submitted written comments during the public comment period only when the claim is based on new substantive issues arising from material changes to the scope or impact of the activity and not apparent at the time of public notice. To request an adjudicatory hearing pursuant to M.G.L. c. 30A, § 10, a Notice of Claim must be made in writing, provided that the request is made by certified mail or hand delivery to MassDEP, with the appropriate filing fee specified within 310 CMR 4.10 along with a DEP Fee Transmittal Form within 21 days from the date of issuance of this Combined 401 WQC.

Department of Environmental Protection
Case Administrator
Office of Appeals and Dispute Resolution
100 Cambridge Street, Suite 900
Boston, MA 02114

A copy of the request shall at the same time be sent by certified mail or hand delivery to the issuing office of the Wetlands Program at:

Department of Environmental Protection
Wetlands Program
100 Cambridge Street, Suite 900
Boston, MA 02114

A Notice of Claim for Adjudicatory Hearing shall comply with MassDEP's Rules for Adjudicatory Proceedings, 314 CMR 1.01(6), and shall contain the following information pursuant to 314 CMR 9.10(3):

- a. the Combined Permit Application Number;
- b. the complete name of the applicant and address of the project;
- c. the complete name, address, and fax and telephone numbers of the party filing the request, and, if represented by counsel or other representative, the name, fax and telephone numbers, and address of the attorney;
- d. if claiming to be a party aggrieved, the specific facts that demonstrate that the party satisfies the definition of "aggrieved person" found at 314 CMR 9.02;
- e. a clear and concise statement that an adjudicatory hearing is being requested;
- f. a clear and concise statement of (1) the facts which are grounds for the proceedings, (2) the objections to this Combined 401 WQC, including specifically the manner in which it is alleged to be inconsistent with the MassDEP's Water Quality Regulations, 314 CMR 9.00, and (3) the relief sought through the adjudicatory hearing, including specifically the changes desired in the final written Combined 401 WQC; and
- g. a statement that a copy of the request has been sent by certified mail or hand delivery to the applicant, the owner (if different from the applicant), the conservation commission of the city or town where the activity will occur, the Department of Conservation and Recreation (when the certificate concerns projects in Areas of Critical Environmental Concern), the public or private water supplier where the project is located (when the certificate concerns projects in Outstanding Resource Waters), and any other entity with responsibility for the resource where the project is located.

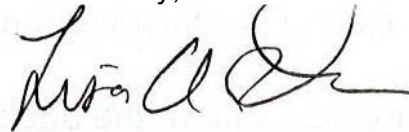
The hearing request along with a DEP Fee Transmittal Form and a valid check or money order payable to the Commonwealth of Massachusetts in the amount of one hundred dollars (\$100) must be mailed to:

Commonwealth of Massachusetts
Department of Environmental Protection
Commonwealth Master Lockbox
PO Box 4062
Boston, MA 02211

The request will be dismissed if the filing fee is not paid unless the appellant is exempt or granted a waiver. The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority. MassDEP may waive the adjudicatory hearing filing fee pursuant to 310 CMR 4.06(2) for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file an affidavit setting forth the facts believed to support the claim of undue financial hardship together with the hearing request as provided above.

Should you have any questions relative to this Combined 401 WQC, please contact Derek Standish at (617) 875-3843 [derek.standish@mass.gov].

Sincerely,

A handwritten signature in black ink, appearing to read "Lisa Rhodes", written in a cursive style.

Lisa Rhodes
Wetlands Program Chief

ecc:Sutton Conservation Commission, 4 Uxbridge Road, Sutton, MA 01590
Lucia Isobel Arthen-Long, Tighe & Bond, Inc., 53 Southampton Road, Westfield, MA 01085
Judith Schmitz, MassDEP – CERO, 8 New Bond Street, Worcester, MA 01606
Chrissy Hopps, MassDEP – Waterways, 100 Cambridge Street, Suite 900, Boston, MA 02114
Melany Cheeseman, Natural Heritage and Endangered Species Program, One Rabbit Hill Road,
Westborough, MA 01581
Ethan M. Hobbs and Paul M. Maniccia, Department of the Army, New England District, Corps of
Engineers, 696 Virginia Road, Concord, MA 01742-2751
Edward Reiner and Rachel Croy, EPA, 5 Post Office Square, Suite 100, Boston, MA 02109

attachments: Communication for Non-English Speaking Parties document
Plans of Record

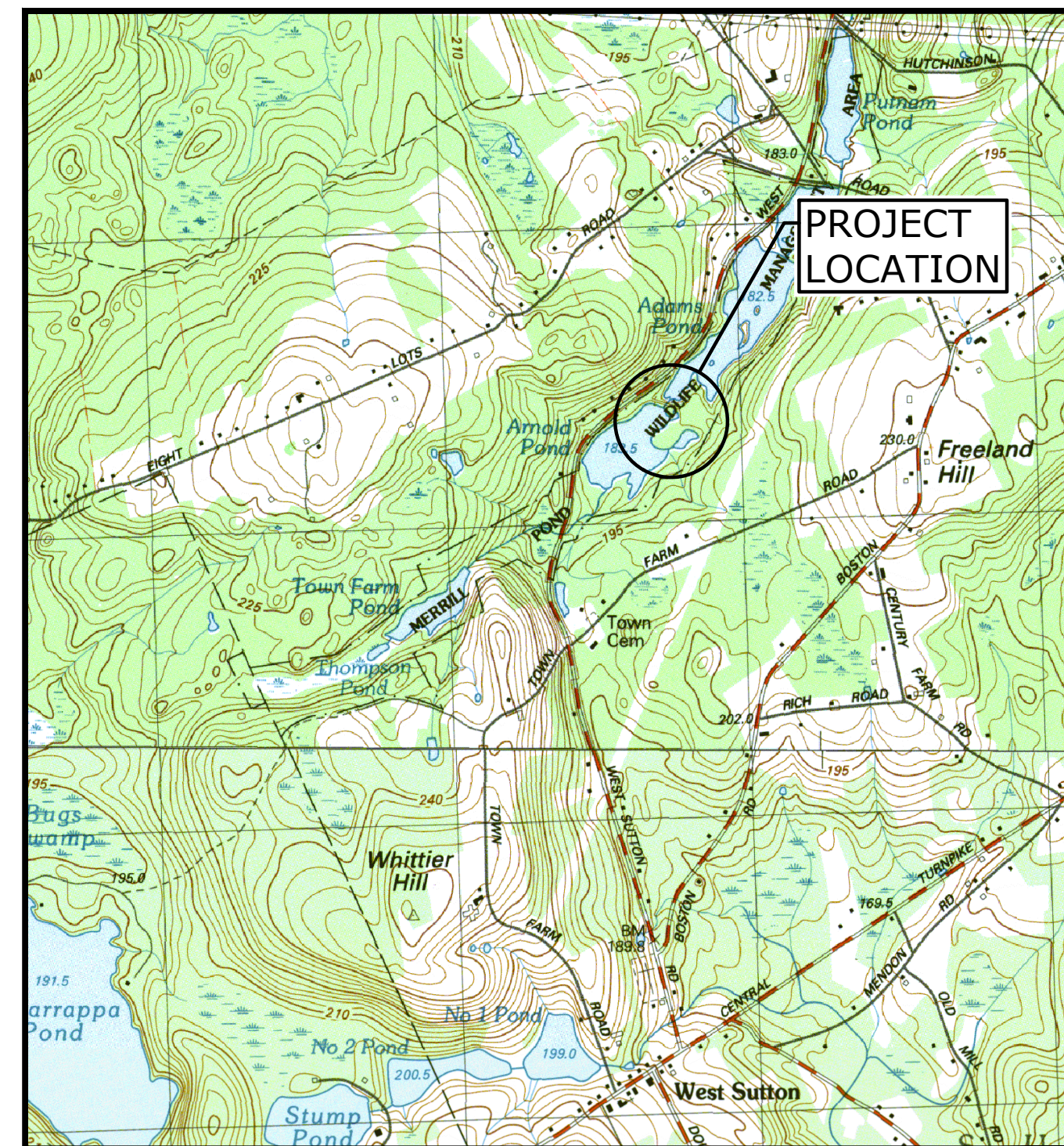
MASSACHUSETTS DIVISION OF FISHERIES AND WILDLIFE

ARNOLD POND DAM REMOVAL PROJECT

SUTTON, MASSACHUSETTS

DECEMBER 2023

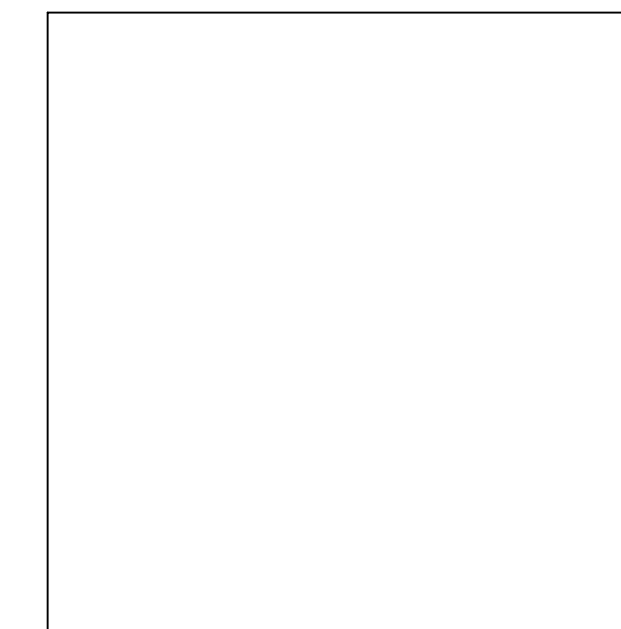
| INDEX OF SHEETS | | |
|-----------------|--------------|--|
| SHEET | SHEET NUMBER | SHEET TITLE |
| GENERAL | | |
| 1 | G-001 | COVER SHEET |
| 2 | G-002 | GENERAL NOTES, ABBREVIATIONS, AND LEGEND |
| CIVIL | | |
| 3 | C-101 | EXISTING CONDITIONS PLAN |
| 4 | C-102 | SITE PREPARATION AND DEMOLITION PLAN |
| 5 | C-103 | PROPOSED CONDITIONS PLAN |
| 6 | C-201 | EROSION, SEDIMENT, AND WATER CONTROL DETAILS |
| 7 | C-202 | MISCELLANEOUS DETAILS |
| STRUCTURAL | | |
| 8 | S-201 | PEDESTRIAN BRIDGE PLAN AND PROFILE VIEW |
| 9 | S-202 | PEDESTRIAN BRIDGE AND ABUTMENT DETAILS |



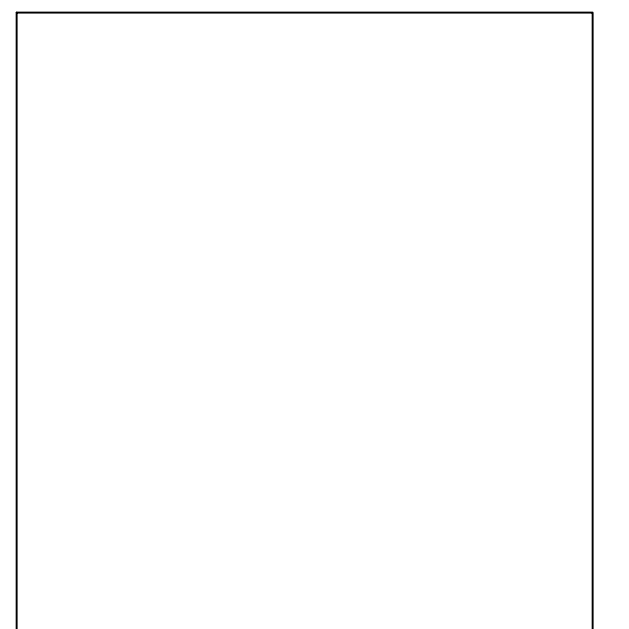
LOCATION MAP
SCALE: 1" = 2000'

PREPARED BY:

Tighe&Bond



CHRISTOPHER D. HAKER, PE



DANIEL R. BUTTRICK, PE

PREPARED FOR:

MASSACHUSETTS DIVISION OF FISHERIES & WILDLIFE
CALEB SLATER, PhD, CHIEF OF HATCHERIES

PERMIT SET - 401 / 404
JURISDICTIONAL AREAS

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COMPLETE SET 9 SHEETS



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**Arnold Pond
Dam Removal
Project**

Massachusetts
Division of
Fisheries and
Wildlife

Sutton,
Massachusetts

| MARK | DATE | DESCRIPTION |
|----------------------|-------------------------------|-------------|
| PROJECT NO: | M944-051 | |
| DATE: | 12/2023 | |
| FILE: | C-101 EXISTING CONDITIONS PLA | |
| DRAWN BY: | CH | |
| DESIGNED/CHECKED BY: | DRB | |
| APPROVED BY: | CDH | |

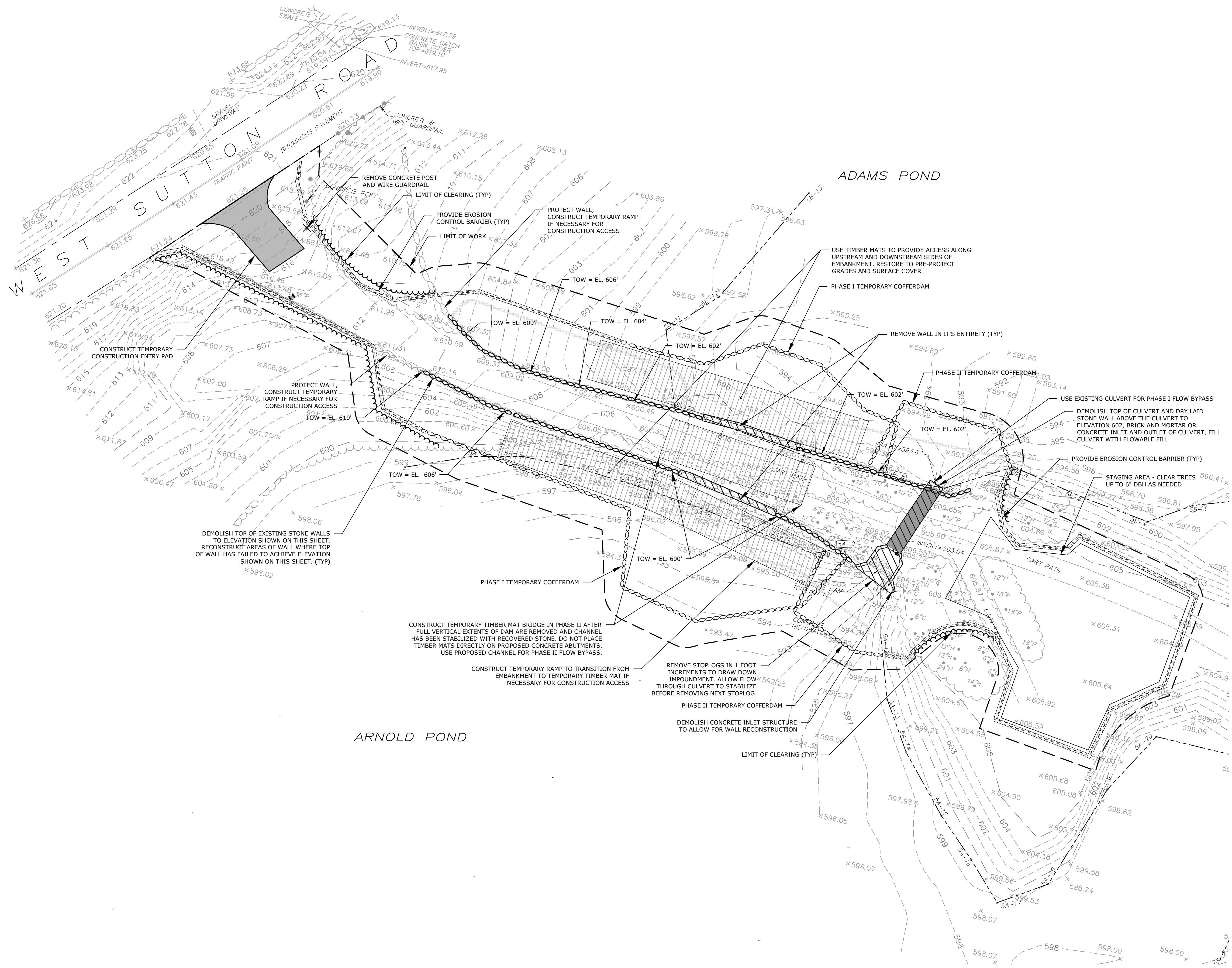
**EXISTING CONDITIONS
PLAN**

SCALE: 1" = 20'

C-101
SHEET 3 OF 9

OVERVIEW OF PROJECT
1" = 20'



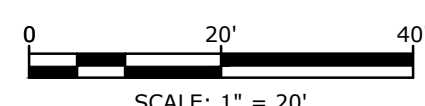


ARNOLD POND

ADAMS POND

OVERVIEW OF PROJECT
1" = 20'

NOTE
1. DEMOLISH FULL VERTICLE EXTENT OF DAM.
2. COFFERDAM, WATER CONTROL, ACCESS ROAD USE AND PHASING TO BE DETERMINED BY CONTRACTOR AND LIMITED TO AREAS SHOWN.



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**Arnold Pond
Dam Removal
Project**

Massachusetts
Division of
Fisheries and
Wildlife

Sutton,
Massachusetts

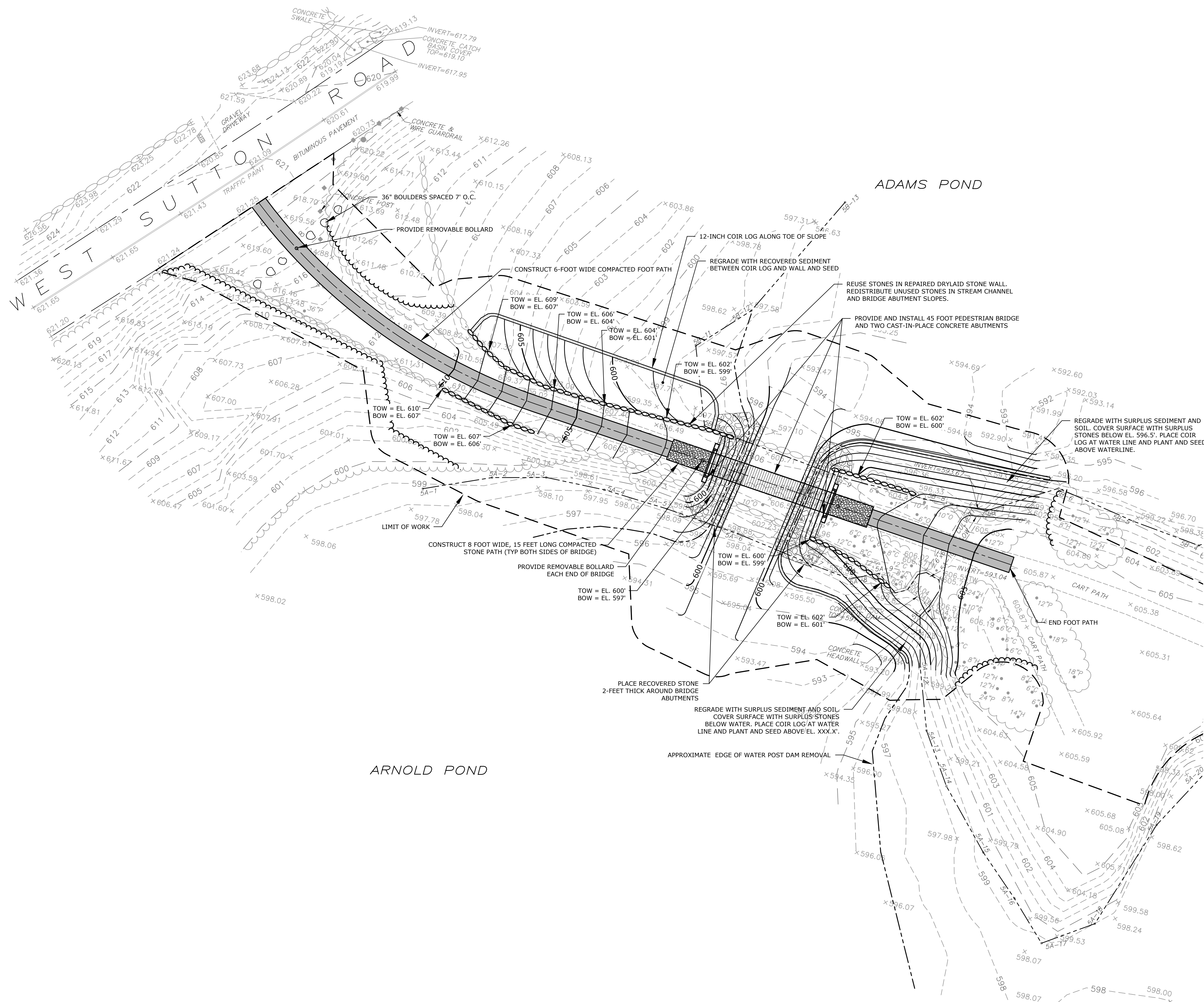
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|----------------------|-------------------------------|-------------|
| PROJECT NO: | M944-051 | |
| DATE: | 12/2023 | |
| FILE: | C-102 SITE PREPARATION AND DE | |
| DRAWN BY: | CMH | |
| DESIGNED/CHECKED BY: | DRH,DRB | |
| APPROVED BY: | CDH | |

**SITE PREPARATION AND
DEMOLITION PLAN**

SCALE: 1" = 20'

C-102
SHEET 4 OF 9

LAST Saved: 1/22/2024 12:25pm By: Cheseth
 Plotted On: Jan 29, 2024 11:53am
 Tighe & Bond: \\mnp044\mass\DRG\DRG.DWG Damns\Arnold Pond Dam Drawings - Figures\AutoCAD\Sheet\401_404 Permits\102 SITE PREPARATION AND DEMOLITION PLAN.dwg



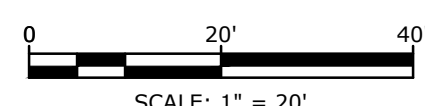
ARNOLD POND

ADAMS POND

WEST SUTTON ROAD

OVERVIEW OF PROJECT
1" = 20'

NOTES
1. DISTURBED VEGETATED AREAS SHALL BE RESTORED WITH NEW ENGLAND RESOTRATION MIX FOR DRY SITES AND 100% BIODEGRADABLE EROSION CONTROL BLANKETS EXCEPT WHERE NOTED OTHERWISE.



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JURISDICTIONAL
AREAS**

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**Arnold Pond
Dam Removal
Project**

Massachusetts
Division of
Fisheries and
Wildlife

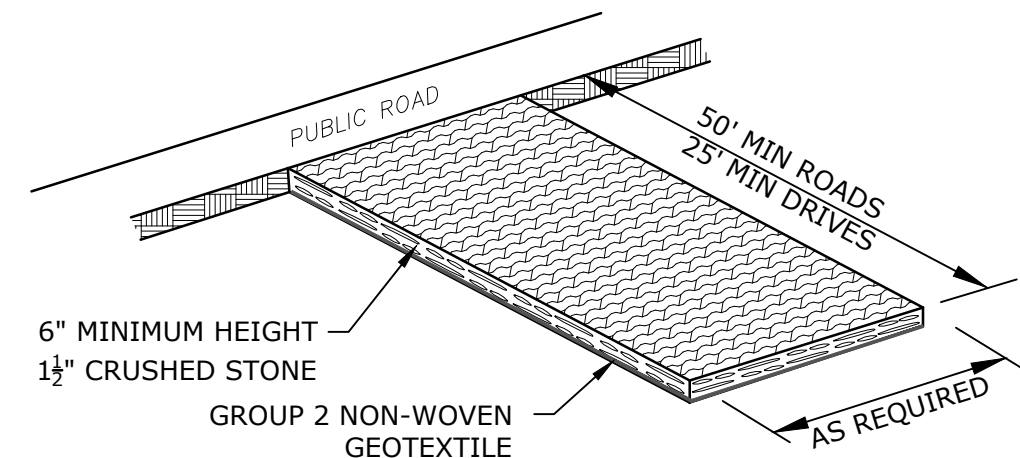
Sutton,
Massachusetts

| MARK | DATE | DESCRIPTION |
|----------------------|-------------------------------|-------------|
| PROJECT NO: | M944-051 | |
| DATE: | 12/2023 | |
| FILE: | C-103 PROPOSED CONDITIONS PLA | |
| DRAWN BY: | CMH | |
| DESIGNED/CHECKED BY: | DRH,DRB | |
| APPROVED BY: | CDH | |

**PROPOSED CONDITIONS
PLAN**

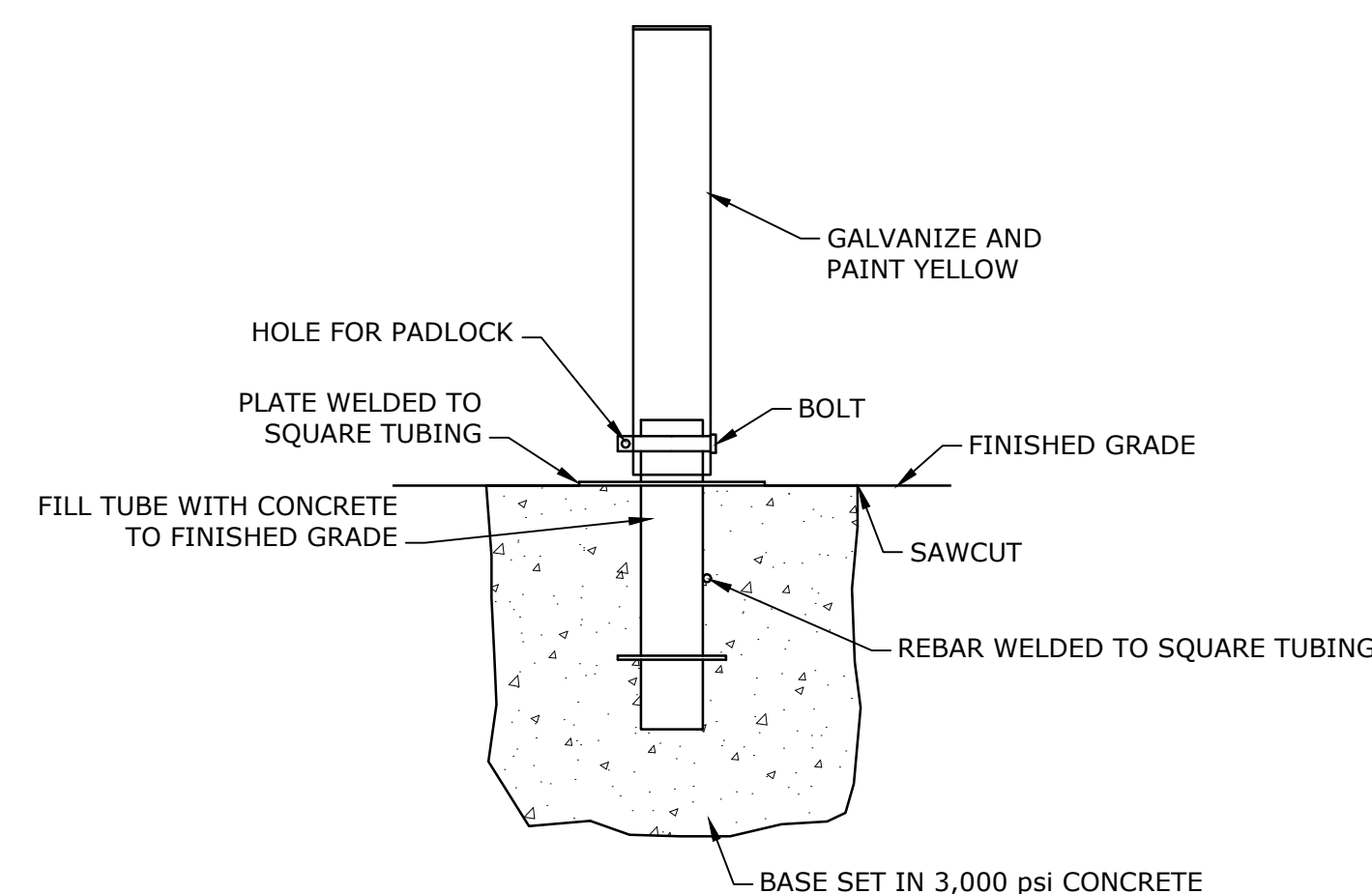
SCALE: 1" = 20'

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 Plotted On: Jan 29, 2024 12:26pm
 Tighe & Bond 23 Winslow St. Lowell, MA 01854
 Figures: Arnold Pond Dam Drawings - Figures\AutoCAD\Sheet\401_404 Permi\C-103 PROPOSED CONDITIONS PLAN.dwg



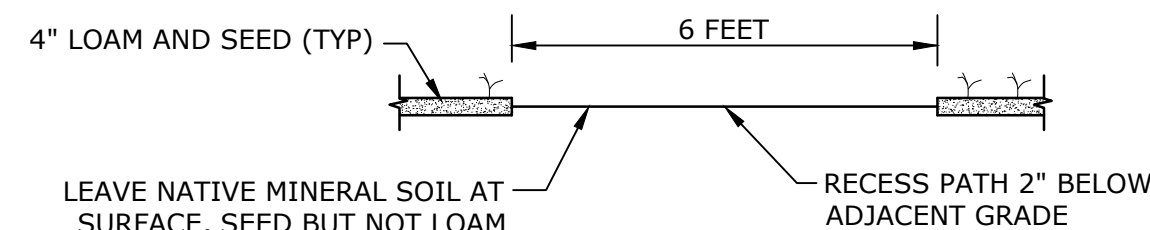
NOTES:
1. REMOVE FOLLOWING CONSTRUCTION.

TEMPORARY CONSTRUCTION ENTRY PAD
NO SCALE

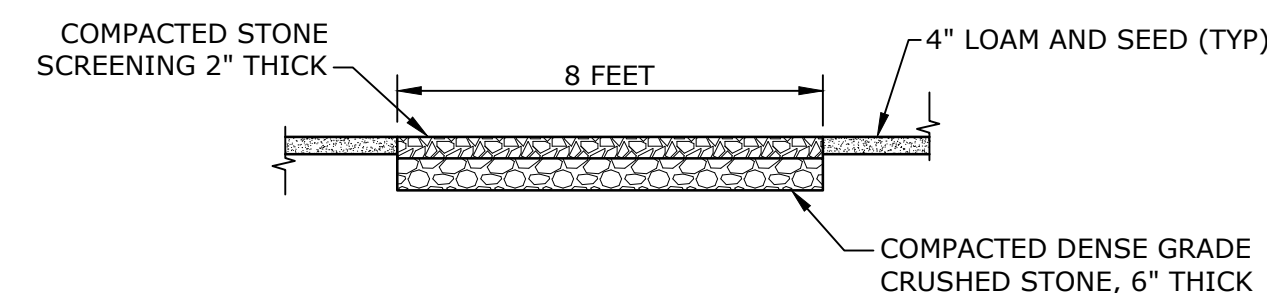


REMOVABLE BOLLARD DETAIL
NO SCALE

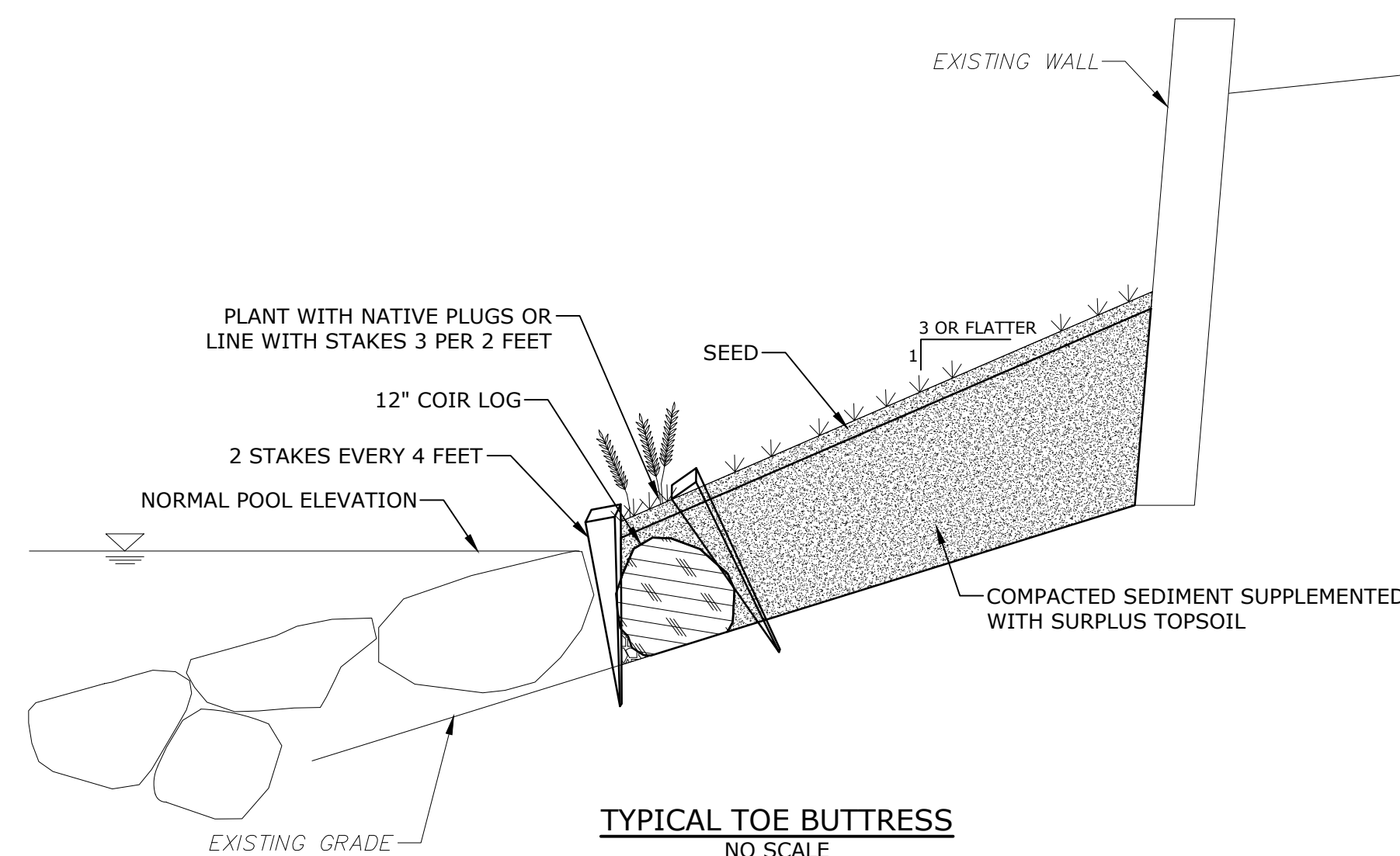
NOTES:
1. ALIGN BOLLARD PIPE AND GROUND INSERT SO EYES ARE LOCATED AT BACK AND FRONT OF BOLLARD, NOT PROTRUDING INTO THE TRAVEL WAY.
2. BOLLARD SHALL BE INSTALLED PER MANUFACTURER SPECIFICATIONS.



COMPACTED FOOT PATH
NO SCALE



COMPACTED STONE FOOT PATH
NO SCALE



TYPICAL TOE BUTTRESS
NO SCALE

**PERMIT SET
401 / 404
JURISDICTIONAL
AREAS**

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**Arnold Pond
Dam Removal
Project**

Massachusetts
Division of
Fisheries and
Wildlife

Sutton,
Massachusetts

| MARK | DATE | DESCRIPTION |
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MISCELLANEOUS DETAILS

SCALE: AS SHOWN



重要 महत्वपूर्ण σημαντικός
Important
կարևոր quan trọng مهم



Communication for Non-English-Speaking Parties

This document is important and should be translated immediately.

If you need this document translated, please contact MassDEP's Director of Environmental Justice at the telephone number listed below.

Español Spanish

Este documento es importante y debe ser traducido inmediatamente. Si necesita traducir este documento, póngase en contacto con el Director de Justicia Ambiental de MassDEP (*MassDEP's Director of Environmental Justice*) en el número de teléfono que figura más abajo.

Português Portuguese

Este documento é importante e deve ser traduzido imediatamente. Se você precisar traduzir este documento, entre em contato com o Diretor de Justiça Ambiental do MassDEP no número de telefone listado abaixo.

繁體中文 Chinese Traditional

本文檔很重要，需要即刻進行翻譯。
如需對本文檔進行翻譯，請透過如下列示電話號碼與 MassDEP 的環境司法總監聯絡。

简体中文 Chinese Simplified

这份文件非常重要，需要立即翻译。
如果您需要翻译这份文件，请通过下方电话与 MassDEP 环境司法主任联系。

Ayisyen Kreyòl Haitian Creole

Dokiman sa a enpòtan epi yo ta dwe tradui l imedyatman. Si w bezwen tradui dokiman sa a, tanpri kontakte Direktè. Jistis Anviwònmanal MassDEP a nan nimewo telefòn ki endike anba a.

Việt Vietnamese

Tài liệu này và quan trọng và phải được dịch ngay. Nếu quý vị cần bản dịch của tài liệu này, vui lòng liên hệ với Giám Đốc Phòng Công Lý Môi Trường của MassDEP theo số điện thoại được liệt kê bên dưới.

ប្រទេសកម្ពុជា Khmer/Cambodian

ឯកសារនេះមានសារៈសំខាន់
ហើយគួរត្រូវបានបកប្រែភ្លាមៗ។
ប្រសិនបើអ្នកត្រូវការអោយឯកសារនេះបកប្រែ
សូមទាក់ទងនាយកផ្នែកយុត្តិធម៌បរិស្ថានរបស់
MassDEPតាមរយៈលេខទូរស័ព្ទដែលបានរាយដូចខា
ងក្រោម។

Kriolu Kabuverdianu Cape Verdean

Es dokumentu sta important i tenki ser tradusidu imediatamenti. Se nho ta presisa ke es dokumentu sta tradisidu, por favor kontata O Diretor di Justisia di Environman di DEP ku es numero di telefoni menxionadu di baixo.

Contact Deneen Simpson 857-406-0738

**Massachusetts Department of Environmental Protection
100 Cambridge Street 9th Floor Boston, MA 02114**

TTY# MassRelay Service 1-800-439-2370 • <https://www.mass.gov/environmental-justice>
(Version revised 8.2.2023) 310 CMR 1.03(5)(a)

Русский Russian

Это чрезвычайно важный документ, и он должен быть немедленно переведен. Если вам нужен перевод этого документа, обратитесь к директору Департамента экологического правосудия MassDEP (MassDEP's Director of Environmental Justice) по телефону, указанному ниже.

العربية Arabic

هذه الوثيقة مهمة وتجب ترجمتها على الفور.

إذا كنت بحاجة إلى ترجمة هذه الوثيقة، فيرجى الاتصال بمدير العدالة البيئية في MassDEP على رقم الهاتف المذكور أدناه.

한국어 Korean

이 문서는 중대하므로 즉시 번역되어야 합니다. 본 문서 번역이 필요하신 경우, 매사추세츠 환경보호부의 "환경정의" 담당자 분께 문의하십시오. 전화번호는 아래와 같습니다.

հայերեն Armenian

Այս փաստաթուղթը կարևոր է, և պետք է անհապաղ թարգմանել այն:
Եթե Ձեզ անհրաժեշտ է թարգմանել այս փաստաթուղթը, դիմեք Մասաչուսեթսի շրջակա միջավայրի պահպանության նախարարության (MassDEP) Բնապահպանական հարցերով արդարադատության ղեկավարին (Director of Environmental Justice)՝ ստորև նշված հեռախոսահամարով

فارسی Farsi Persian

این نوشتار بسیار مهمی است و باید فوراً ترجمه شود. اگر نیاز به ترجمه این نوشتار دارید لطفاً با مدیر عدالت محیط زیستی MassDEP در شماره تلفن ذکر شده زیر تماس بگیرید.

Français French

Ce document est important et doit être traduit immédiatement. Si vous avez besoin d'une traduction de ce document, veuillez contacter le directeur de la justice environnementale du MassDEP au numéro de téléphone indiqué ci-dessous.

Deutsch German

Dieses Dokument ist wichtig und muss sofort übersetzt werden. Wenn Sie eine Übersetzung dieses Dokuments benötigen, wenden Sie sich bitte an MassDEP's Director of Environmental Justice (Direktor für Umweltgerechtigkeit in Massachusetts) unter der unten angegebenen Telefonnummer.

Ελληνική Greek

Το έγγραφο αυτό είναι πολύ σημαντικό και πρέπει να μεταφραστεί αμέσως. Αν χρειάζεστε μετάφραση του εγγράφου αυτού, παρακαλώ επικοινωνήστε με τον Διευθυντή του Τμήματος Περιβαλλοντικής Δικαιοσύνης της Μασαχουσέτης στον αριθμό τηλεφώνου που αναγράφεται παρακάτω

Italiano Italian

Questo documento è importante e deve essere tradotto immediatamente. Se hai bisogno di tradurre questo documento, contatta il Direttore della Giustizia Ambientale di MassDEP al numero di telefono sotto indicato.

Język Polski Polish

Ten dokument jest ważny i powinien zostać niezwłocznie przetłumaczony. Jeśli potrzebne jest tłumaczenie tego dokumentu, należy skontaktować się z dyrektorem ds. sprawiedliwości środowiskowej MassDEP pod numerem telefonu podanym poniżej.

हिन्दी Hindi

यह दस्तावेज महत्वपूर्ण है और इसका अनुवाद तुरंत किया जाना चाहिए। यदि आपको इस दस्तावेज का अनुवाद कराने की जरूरत है, तो कृपया नीचे दिए गए टेलीफोन नंबर पर MassDEP के पर्यावरणीय न्याय निदेशक से संपर्क करें।

Contact Deneen Simpson 857-406-0738

Massachusetts Department of Environmental Protection
100 Cambridge Street 9th Floor Boston, MA 02114

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Section 00310

Attachment C

Section 404 General Permit Pre-Construction Authorization



DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD MA 01742-2751

September 5, 2024

Regulatory Division
File Number: NAE-2024-01159

Caleb Slater
Massachusetts Dept. of Fish and Wildlife
1 Rabbit Hill Road
Westborough, MA 01581
Caleb.slater@state.ma.us

Dear Caleb Slater:

The U.S. Army Corps of Engineers (USACE) has reviewed your application to remove the full vertical extent of a portion of the Arnold Pond dam and the installation of a pedestrian footbridge to maintain public access. The proposed project will implement a phased approach to remove the full vertical extent of a portion of the dam to create a channel through the embankment and span this channel with a new pedestrian bridge. During Phase I, cofferdams will be placed upstream and downstream of the embankment to the west of the existing culvert, with the culvert acting as the Phase I flow bypass. Following the removal of vertical extents of the dam, flows will be diverted through the new stream channel and Phase II cofferdams will be placed to allow the decommissioning of the existing culvert. The proposed activity of grading below OHWM will result in 400 cubic yards of added fill and 200 cubic yards of excavated fill. This project is located in Arnold Pond and Adams Pond just off of West Sutton Road in Sutton, Massachusetts, 01590 (Latitude: 42.135422, Longitude: -71.797718). The work is shown on the enclosed plans titled "Arnold Pond Dam Removal Project," on 9 sheets, and dated "December 2023."

Based on the information that you have provided, we verify that the activity is authorized under General Permit # 10, 23, and 24 of the June 2, 2023, federal permit known as the Massachusetts General Permits (GPs). The GPs are available at <https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit>.

Please review the enclosed GPs carefully, in particular the general conditions beginning on page 35, and ensure that you and all personnel performing work authorized by the GPs are fully aware of and comply with its terms and conditions. A copy of the GPs and this verification letter shall be available at the work site as required by General Condition 17. You must perform this work in compliance with the following special condition(s):

You must complete and return the enclosed Certificate of Compliance within one

month following the completion of the authorized work.

This authorization expires on June 1, 2028. You must commence or have under contract to commence the work authorized herein by June 1, 2028, and complete the work by June 1, 2029. If not, you must contact this office to determine the need for further authorization and we recommend you contact us *before* the work authorized herein expires. Please contact us immediately if you change the plans or construction methods for work within our jurisdiction as we must approve any changes before you undertake them. Performing work within our jurisdiction that is not specifically authorized by this determination or failing to comply with the special condition(s) provided above or all the terms and conditions of the GPs may subject you to the enforcement provisions of our regulations.

This authorization does not obviate the need to obtain other federal, state, or local authorizations required by law. Applicants are responsible for applying for and obtaining any other approvals.

We continually strive to improve our customer service. To better serve you, we would appreciate your completing our Customer Service Survey located at <https://regulatory.ops.usace.army.mil/customer-service-survey>.

Please contact Ethan Hobbs of my staff at (978) 318-8006 or ethan.m.hobbs@usace.army.mil if you have any questions.

Sincerely,

Paul Maniccia

Paul Maniccia
Chief, Permits & Enforcement Section
Regulatory Division

Enclosures

1. Project Plans
2. Work Start Notification

cc:

Dan Buttrick, Tighe & Bond Inc., Westfield, MA, DRButtrick@tighebond.com

Ed Reiner, U.S. EPA, Region 1, Boston, MA, reiner.ed@epa.gov

Rachel Croy, U.S. EPA, Region 1, Boston, MA, croy.rachel@epa.gov

DEP CERO, Wetlands and Waterways, Worcester, MA; zero_noi@mass.gov
David Robinson, MA Board of Underwater Archaeological Resources (BUAR);
david.s.robinson@mass.gov
Sutton Conservation Commission, w.bien@town.sutton.ma.us

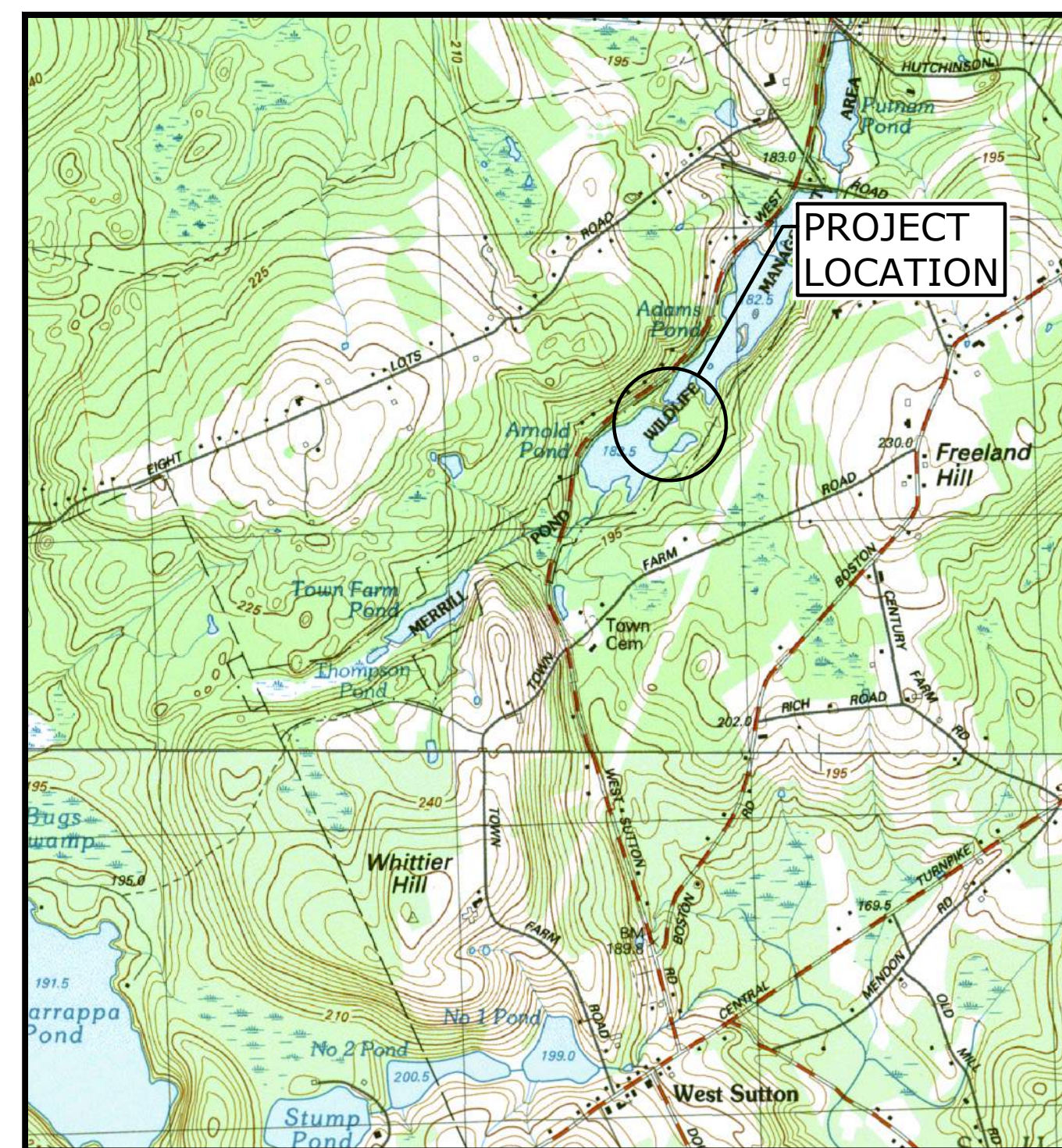
MASSACHUSETTS DIVISION OF FISHERIES AND WILDLIFE

ARNOLD POND DAM REMOVAL PROJECT

SUTTON, MASSACHUSETTS

DECEMBER 2023

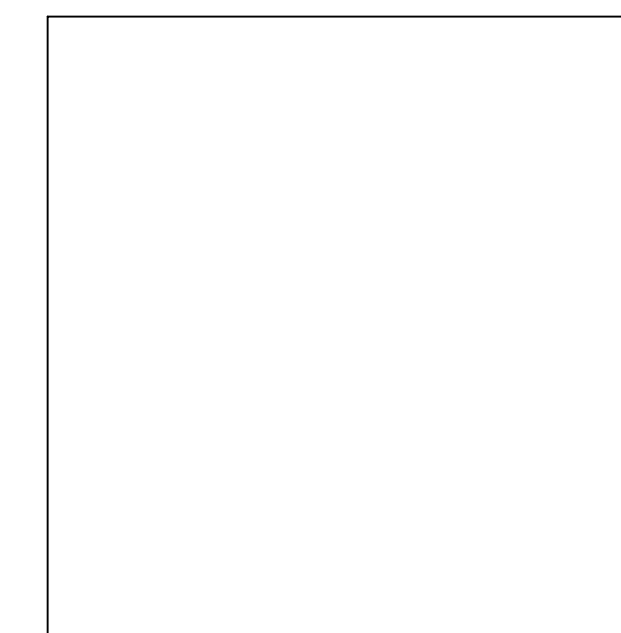
| INDEX OF SHEETS | | |
|-----------------|--------------|--|
| SHEET | SHEET NUMBER | SHEET TITLE |
| GENERAL | | |
| 1 | G-001 | COVER SHEET |
| 2 | G-002 | GENERAL NOTES, ABBREVIATIONS, AND LEGEND |
| CIVIL | | |
| 3 | C-101 | EXISTING CONDITIONS PLAN |
| 4 | C-102 | SITE PREPARATION AND DEMOLITION PLAN |
| 5 | C-103 | PROPOSED CONDITIONS PLAN |
| 6 | C-201 | EROSION, SEDIMENT, AND WATER CONTROL DETAILS |
| 7 | C-202 | MISCELLANEOUS DETAILS |
| STRUCTURAL | | |
| 8 | S-201 | PEDESTRIAN BRIDGE PLAN AND PROFILE VIEW |
| 9 | S-202 | PEDESTRIAN BRIDGE AND ABUTMENT DETAILS |



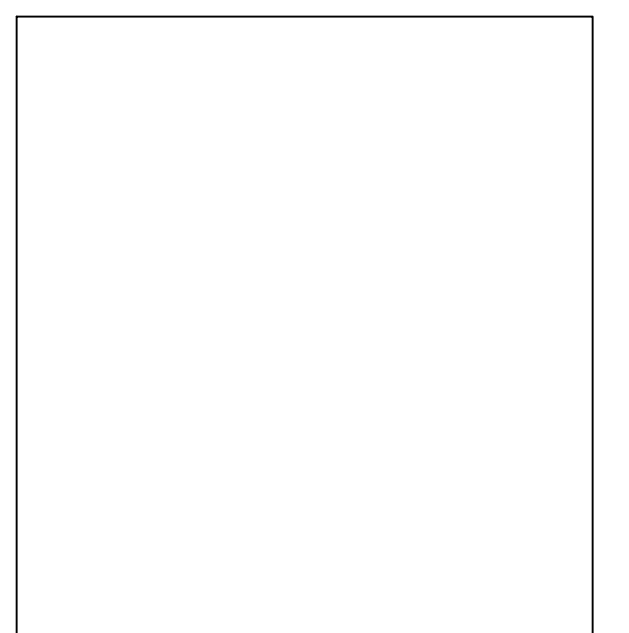
LOCATION MAP
SCALE: 1" = 2000'

PREPARED BY:

Tighe&Bond



CHRISTOPHER D. HAKER, PE



DANIEL R. BUTTRICK, PE

PREPARED FOR:

MASSACHUSETTS DIVISION OF FISHERIES & WILDLIFE
CALEB SLATER, PhD, CHIEF OF HATCHERIES

PERMIT SET - 401 / 404
JURISDICTIONAL AREAS

THIS DOCUMENT IS INCOMPLETE AND IS RELEASED
TEMPORARILY FOR PROGRESS REVIEW ONLY. IT IS NOT
INTENDED FOR CONSTRUCTION OR BIDDING PURPOSES.

COMPLETE SET 9 SHEETS

EROSION AND SEDIMENTATION CONTROL NOTES:

- E1. TEMPORARY SEDIMENT AND EROSION CONTROL BY THE CONTRACTOR SHALL BE PERFORMED IN ACCORDANCE WITH THE SPECIFICATIONS LISTED BELOW.
- E2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING ALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES NECESSARY TO EXECUTE AND COMPLETE THE WORK OF THE CONTRACT, IN COMPLIANCE WITH THE TERMS AND CONDITIONS CONTAINED IN THE CONTRACT AND PROJECT PERMITS. CONTROLS SHOWN ON THE CONTRACT DRAWINGS AND MENTIONED IN THE TECHNICAL SPECIFICATIONS SHALL BE CONSIDERED MINIMUM REQUIREMENTS. THE CONTRACTOR SHALL EMPLOY WHATEVER SUPPLEMENTARY MEASURES NECESSARY TO PROTECT WETLANDS, WATERS, AND ADJACENT AREAS FROM DISTURBANCE OR DISCHARGE OF SEDIMENTS.
- E3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING SEDIMENT AND EROSION CONTROLS TO MEET THE CONDITIONS OF ALL APPLICABLE PERMITS AND REGULATIONS. SUCH CONTROLS SHALL BE INSTALLED WHEREVER THE POTENTIAL EXISTS FOR THE DISTURBANCE OF LAND OR THE TRANSPORT OF SEDIMENT.
- E4. EROSION AND SEDIMENTATION PERIMETER CONTROLS SHALL CONSIST OF 100% BIODEGRADABLE COMPOST FILTER TUBES INSTALLED PER DETAILS PROVIDED ON SHEET C-201. PLASTIC MESH MATERIALS SHALL NOT BE PERMITTED.
- E5. COMPOST FILTER TUBES SHALL BE INSTALLED PRIOR TO COMMENCEMENT OF CLEARING AND GRUBBING ACTIVITIES. LOCATION OF COMPOST FILTER TUBES TO BE ADJUSTED UPON COMPLETION OF CLEARING AND GRUBBING BUT PRIOR TO COMMENCEMENT OF GRADING ACTIVITIES.
- E6. ALL EROSION AND SEDIMENTATION CONTROLS SHALL BE MAINTAINED IN GOOD CONDITION AND PROPER WORKING ORDER. NECESSARY REPAIRS SHALL BE MADE IMMEDIATELY.
- E7. ALL EROSION AND SEDIMENTATION CONTROLS SHALL BE PROPERLY DISPOSED OFF-SITE UPON COMPLETION OF WORK, SITE STABILIZATION AND/OR AUTHORIZATION FROM THE OWNER.
- E8. MAINTAIN AN ADDITIONAL SUPPLY OF EROSION CONTROL MEASURES ONSITE THROUGHOUT THE CONSTRUCTION PERIOD.
- E9. SILT TRAPPED AT BARRIERS SHALL BE REMOVED AND DISPOSED OF IN UPLAND AREAS OUTSIDE BUFFER ZONES. MATERIALS DEPOSITED IN ANY TEMPORARY SETTLING BASIN SHALL BE REMOVED AT THE COMPLETION OF THE PROJECT. ALL DISTURBED AREAS SHALL BE RESTORED.
- E10. INSTALL EROSION CONTROLS AT THE EDGE OF PROPOSED WORK. EROSION CONTROLS SHALL ACT AS LIMIT OF WORK LINE TO HELP ENSURE THAT EQUIPMENT DOES NOT DISTURB ADJACENT PROPERTIES.
- E11. ADDITIONAL EROSION CONTROLS MAY BE REQUIRED TO PREVENT SEDIMENTS FROM DISCHARGING TO ADJACENT PROPERTIES OR INTO EXISTING STORM DRAIN SYSTEMS.
- E12. STABILIZE THE AREAS OF CONSTRUCTION ACTIVITIES AT THE CLOSE OF EACH CONSTRUCTION DAY. CHECK EROSION CONTROLS AT THIS TIME AND MAINTAIN OR REINFORCE IF NECESSARY.
- E13. PROTECT NEW WORK FROM FLOODING. PROPERLY SLOPE GRADING IN THE AREAS SURROUNDING ALL EXCAVATIONS TO PREVENT WATER FROM RUNNING INTO THE EXCAVATED AREA OR TO ADJACENT PROPERTIES. UPON COMPLETION OF THE WORK, RESTORE ALL AREAS IN A SATISFACTORY MANNER DETERMINED BY THE OWNER.
- E14. ALL SILT-LADEN WATER MUST BE SETTLED OR FILTERED TO REMOVE ALL SEDIMENTS IN A SEDIMENTATION BASIN OR FILTER BAG LOCATED DOWNSTREAM, PRIOR TO RELEASE TO A WATERWAY OR EXISTING DRAINAGE SYSTEM.
- E15. DEWATER AS NECESSARY TO KEEP CONSTRUCTION AREAS FREE OF WATER, DISCHARGE WATER FROM DEWATERING TO THE APPROPRIATE LOCATION AND WITHOUT SEDIMENT.
- E16. AT THE END OF EACH WORK DAY, ANY SEDIMENTS TRACKED ONTO PUBLIC RIGHT-OF-WAYS BEYOND THE PROJECT LIMITS SHALL BE SWEEPED AWAY.

BEST MANAGEMENT PRACTICES

INSPECTION AND MAINTENANCE

- SEDIMENT, EROSION CONTROLS, AND BEST MANAGEMENT PRACTICES (BMPS) SHALL BE INSTALLED PRIOR TO COMMENCING CONSTRUCTION AT THE SITE. NO WORK WHICH SHALL DISTURB THE SITE OR CREATE THE POTENTIAL FOR SEDIMENT RELEASE SHALL COMMENCE UNTIL THE SEDIMENT AND EROSION CONTROLS HAVE BEEN INSPECTED AND APPROVED BY THE OWNER, ENGINEER, AND REGULATORY AGENCIES. ALL CONTROLS AND BMPS SHALL BE SUBJECT TO INSPECTION BY THE OWNER, THEIR REPRESENTATIVE, AND REGULATORY AGENCIES AT ANYTIME THEREAFTER.
- PERIODIC INSPECTION, MAINTENANCE, AND CLEANING OF TEMPORARY EROSION OF SEDIMENT CONTROL MEASURES AND BEST MANAGEMENT PRACTICES (BMPS) SHALL BE REQUIRED. ALL CONTROLS AND BMPS SHALL BE INSPECTED EVERY 7 DAYS AND WITHIN 24 HOURS OF RAINFALL EVENTS OF 0.5 INCHES OR GREATER. ROUTINE INSPECTION AND MAINTENANCE WILL REDUCE THE CHANCE OF POLLUTING STORMWATER BY FINDING AND CORRECTING PROBLEMS BEFORE THE NEXT RAIN EVENT. THE FOCUS OF THE INSPECTION WILL BE TO DETERMINE:
 1. WHETHER OR NOT THE MEASURE WAS INSTALLED / PERFORMED CORRECTLY;
 2. WHETHER OR NOT THERE HAS BEEN ANY DAMAGE TO THE MEASURE SINCE IT WAS INSTALLED OR PERFORMED; AND
 3. WHAT SHOULD BE DONE TO CORRECT ANY PROBLEMS WITH THE MEASURE. EACH MEASURE IS TO BE OBSERVED TO DETERMINE IF IT IS STILL EFFECTIVE.
 IN SOME CASES, SPECIFIC MEASUREMENTS MAY BE TAKEN TO DETERMINE IF MAINTENANCE OF THE MEASURES IS REQUIRED.

SITE MANAGER

- PRIOR TO CONSTRUCTION, A SITE MANAGER WILL BE DESIGNATED BY THE CONTRACTOR TO BE RESPONSIBLE FOR INSTALLATION, MONITORING, INSPECTION, AND CORRECTION OF EROSION AND SEDIMENT CONTROL MEASURES.

SITE CLEARING

- DURING SITE CLEARING, EXISTING VEGETATION WITHIN THE OVERALL LIMITS OF CLEARING AND GRUBBING SHALL BE REMOVED, EXCEPT AS OTHERWISE DIRECTED. PRIOR TO ANY SITE CLEARING ACTIVITIES, SEDIMENT CONTROL BARRIERS SHALL BE PLACED ALONG THE OUTER LIMIT OF DISTURBANCE. CLEARING IS TO BE LIMITED TO THOSE AREAS OF PROPOSED WORK. DISTURBED AREAS ARE TO BE KEPT TO A MINIMUM. NO TREE SHALL BE CLEARED FROM AREAS OUTSIDE THE LIMITS OF CLEARING AND GRUBBING WITHOUT PRIOR APPROVAL FROM THE OWNER.

EROSION CONTROL BARRIERS

- COMPOST FILTER TUBE BARRIERS ARE TO BE PLACED TO TRAP SEDIMENT TRANSPORTED BY RUNOFF BEFORE IT REACHES THE DRAINAGE FEATURES, WATERBODIES, OR WETLANDS, IN ADDITION TO AREAS WHERE HIGH RUNOFF VELOCITIES OR HIGH SEDIMENT LOADS ARE EXPECTED. THE COMPOST FILTER TUBES ARE TO BE REPLACED AS DETERMINED BY PERIODIC FIELD INSPECTIONS.

DUST CONTROL

- STANDARD DUST CONTROL MEASURES, INCLUDING SPRAYING AND MISTING SHALL BE USED AS NECESSARY. CALCIUM CHLORIDE SHALL NOT BE ALLOWED ON THIS PROJECT.

STAGING AREAS

- THE CONTRACTOR SHALL COORDINATE LAYDOWN STAGING AREAS IN WHICH TO STORE EQUIPMENT AND MATERIALS WITH THE OWNER.
- STAGING AREAS SHALL BE SURROUNDED WITH COMPOST FILTER TUBE EROSION BARRIERS ON THE DOWNHILL SIDE.
- DURING AND AFTER CONSTRUCTION, ALL PAVED ROAD AND DRIVEWAY SURFACES ARE TO BE SCRAPPED AND BROOMED FREE OF EXCAVATED MATERIALS ON A DAILY BASIS, UNLESS APPROVED BY THE OWNER.

STOCKPILED MATERIALS

- STOCKPILES OF SOIL CREATED DURING CONSTRUCTION ACTIVITIES ARE TO BE SURROUNDED WITH AN EROSION CONTROL BARRIER AROUND THE PERIMETER OF THE STOCKPILE.
- STOCKPILES OF ERODIBLE MATERIAL ARE TO BE COVERED PRIOR TO INCLEMENT WEATHER WITH A MINIMUM OF 20 MIL POLYETHYLENE SHEETING. STOCKPILES LEFT UNDISTURBED LONGER THAN 14 DAYS SHALL BE SEEDED OR COVERED.

EQUIPMENT FUELING

- EQUIPMENT FUELING AND OTHER ACTIVITIES INVOLVING PETROLEUM, OIL, OR OTHER POTENTIALLY HAZARDOUS SUBSTANCES ARE TO BE PERFORMED AT PRE-APPROVED, DESIGNATED AREAS WITH APPROPRIATE SPILL PREVENTION AND CONTROL MEASURES. PORTABLE SECONDARY CONTAINMENT IS TO BE USED, AND SORBENT MATERIALS ARE TO BE PLACED AROUND THE PERIMETER OF THE FUELING AREA.

CONSTRUCTION DEWATERING

- CONSTRUCTION DEWATERING SHALL BE REQUIRED DURING PORTIONS OF CONSTRUCTION WHICH REQUIRE EXCAVATION OR OTHER ACTIVITIES WHERE GROUNDWATER MAY INTERFERE WITH THE WORK.
- CONSTRUCTION DEWATERING DISCHARGE TO A SURFACE WATER BODY SHALL BE PRE-TREATED FOR SEDIMENT REMOVAL BY PASSING THROUGH AN APPROPRIATELY SIZED FILTER SOCK, SILT BAG, FRACTIONATION / SEDIMENTATION TANK, OR SEDIMENT TRAP PRIOR TO DISCHARGE, AS NECESSARY.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING DEWATERING TECHNIQUES AND MAINTAINING DEWATERING PROCEDURES THROUGHOUT THE DURATION OF THE PROJECT.

OUTLET PROTECTION

- APPROPRIATE OUTLET PROTECTION, CONSISTING OF RIPRAP CHANNEL LINING, A LEVEL SPREADER, OR OTHER SUCH MEASURE SHALL BE PROVIDED AT THE OUTLET OF ANY DEWATERING CONDUIT OR STORMWATER CULVERT OR CHANNEL OUTFALL TO REDUCE VELOCITIES AND ENHANCE SEDIMENTATION PRIOR TO DISCHARGE.

LIMITS OF WORK

- THE CONTRACTOR SHALL LINE THE UPGRADIENT BOUNDARY OF WORK AREAS WITH ORANGE SAFETY FENCING BEFORE THE START OF SITE CLEARING ACTIVITIES.

SURFACE WATER CONTROL

- THE CONTRACTOR MUST MAINTAIN THE FLOWAGE OF SURFACE WATER THROUGH THE WORK AREA IN ACCORDANCE WITH THE SPECIFICATIONS. ALL COFFERDAMS SHALL CONSIST OF NON-ERODIBLE MATERIAL. THE CONTRACTOR SHALL SUBMIT A WATER CONTROL PLAN THAT WILL ADDRESS EMERGENCY MEASURES TO IMPLEMENT IN THE EVENT A STORM OCCURS DURING CONSTRUCTION.

TEMPORARY STABILIZATION

- WHEN NECESSARY, TEMPORARY SLOPE PROTECTION SHALL BE PROVIDED BY INSTALLING SEDIMENT TRAP BARRIERS AT THE TOE OF FILLS OR CUT SLOPES. IF ADDITIONAL STABILIZATION IS NEEDED, THEN THE CONTRACTOR SHALL INSTALL MULCH LOGS, MATTING, SUCH AS STRAW, JUTE, WOOD FIBER, OR BIODEGRADABLE MESH. A TACKIFIER SHALL BE USED ON LOOSE MATERIALS USED FOR TEMPORARY EROSION CONTROL.
- IN THE EVENT THAT DISTURBED AREAS AT THE SITE ARE TO BE LEFT UN-WORKED FOR MORE THAN TWO WEEKS, THE AREAS SHALL BE MULCHED WITH STRAW AT A RATE OF 100 LBS. PER 1,000 S.F. TO HELP CONTROL EROSION. 100% BIODEGRADABLE EROSION CONTROL BLANKETS OR TWO INCHES OF WOOD CHIP MULCH MAY ALSO BE USED AS TEMPORARY COVER.
- IN THE EVENT THAT DISTURBED AREAS AT THE SITE ARE TO BE LEFT UN-WORKED FOR MORE THAN ONE MONTH, THE AREAS SHALL BE TOPSOILED AND SEEDED AS PER THE SPECIFICATIONS AND AT NO ADDITIONAL COST TO THE OWNER.
- LEAVE THE SURFACE OF ALL EXCAVATIONS AND FILLS IN A FIRM AND STABLE CONDITION AT THE END OF EACH DAY. ROLL OR OTHERWISE TREAT THE SURFACE AS NEEDED.

SITE RESTORATION

- STABILIZATION OF DISTURBED AREAS OR NEW SOIL FILLS SHALL BE IMPLEMENTED WITHIN 14 DAYS AFTER GRADING OR CONSTRUCTION ACTIVITIES HAVE PERMANENTLY CEASED. APPROPRIATE VEGETATIVE SOIL STABILIZATION IS TO BE USED TO MINIMIZE EROSION. TEMPORARY AND PERMANENT VEGETATIVE COVER IS TO BE ESTABLISHED IN ACCORDANCE WITH THE PROJECT PLANS AND SPECIFICATIONS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORATION OF PREVIOUSLY VEGETATED UPLAND AREAS DISTURBED BY CONSTRUCTION ACTIVITIES. RESTORATION OF UPLAND AREAS CONSIST OF REPLACEMENT OF TOPSOIL OR PLACEMENT OF IMPORTED LOAM AS NEEDED SUCH THAT A MINIMUM OF 4 INCHES OF SUITABLE MATERIAL IS PRESENT AND APPROPRIATELY LIMED, FERTILIZED, GRADED, AND SCARIFIED. FIELDS DISTURBED OR COMPACTED BY CONSTRUCTION ACTIVITIES SHALL BE PLOWED TO LOOSEN THE SOIL, HARROWED TO PROVIDE AN EVEN SURFACE, AND APPROPRIATELY PREPARED FOR PLANTING.
- DISTURBED UPLAND AREAS SHALL THEN BE HYDROSEEDED WITH AN APPROVED SEED MIX AT THE RATE RECOMMENDED BY THE MANUFACTURER. SEEDING RATE SHALL BE DOUBLED FOR DORMANT SEEDING. SEED MIX SHALL BE THE FOLLOWING UNLESS OTHERWISE NOTED OR AS APPROVED BY THE ENGINEER.

DRY AREAS:

THE NEW ENGLAND EROSION CONTROL/RESTORATION MIX FOR DRY SITES:

| COMMON NAME | BOTANICAL NAME |
|-----------------------------|--------------------------------|
| CREeping RED FESCUE | <i>Festuca rubra</i> |
| CANADA WILD RYE | <i>Elymus canadensis</i> |
| ANNUAL RYEGRASS | <i>Lolium multiflorum</i> |
| PERENNIAL RYEGRASS | <i>Lolium perenne</i> |
| BLUE GRAMA | <i>Bouteloua gracilis</i> |
| LITTLE BLUESTEM | <i>Schizachyrium scoparium</i> |
| INDIAN GRASS | <i>Sorghastrum nutans</i> |
| ROUGH BENTGRASS/TICKLEGRASS | <i>Agrostis scabra</i> |
| UPLAND BENTGRASS | <i>Agrostis perennans</i> |

DAMP, WET, OR WETLAND AREAS:

THE NEW ENGLAND WETLAND SEED MIX:

| COMMON NAME | BOTANICAL NAME |
|----------------------------------|-----------------------------|
| FOX SEDGE | <i>Carex vulpinoidea</i> |
| BLUNT BROOM SEDGE | <i>Carex scoparia</i> |
| BLUE VERVAIN | <i>Verbena hastata</i> |
| LURID SEDGE | <i>Carex lurida</i> |
| FOWL BLUEGRASS | <i>Poa palustris</i> |
| TICKSEED SUNFLOWER/BUR MARI GOLD | <i>Bidens aristata</i> |
| HOP SEDGE | <i>Carex lupulina</i> |
| GREEN BULRUSH | <i>Scirpus atrovirens</i> |
| CREeping SPIKE RUSH | <i>Eleocharis palustris</i> |
| SOFT RUSH | <i>Juncus effusus</i> |
| FRINGED SEDGE | <i>Carex crinita</i> |
| SWAMP MILKWEED | <i>Asclepias incarnata</i> |
| SWAMP ASTER | <i>Aster puniceus</i> |
| RATTLESNAKE GRASS | <i>Glyceria canadensis</i> |
| SQUARE STEMMED MONKEY FLOWER | <i>Mimulus ringens</i> |
| SPOTTED JOE PYE WEED | <i>Eupatorium maculatum</i> |
| BLUE FLAG | <i>Iris versicolor</i> |

- 100% BIODEGRADABLE EROSION CONTROL BLANKETS MUST BE USED FOR STABILIZATION OF SLOPES IN EXCESS OF 3H:1V AND MAY BE USED IN LIEU OF HYDROSEEDED AT THE CONTRACTOR'S DISCRETION TO PROVIDE ADDITIONAL EROSION PROTECTION.
- FINAL STABILIZATION SHALL BE CONSIDERED COMPLETE WHEN ALL SOIL-DISTURBING ACTIVITIES HAVE BEEN COMPLETED AND A UNIFORM, PERENNIAL VEGETATIVE COVER WITH A DENSITY OF EIGHTY PERCENT HAS BEEN ESTABLISHED OR EQUIVALENT STABILIZATION MEASURES (SUCH AS THE USE OF MULCHES OR EROSION CONTROL MATTING) HAVE BEEN EMPLOYED ON ALL UNPAVED AREAS AND AREAS NOT COVERED BY PERMANENT STRUCTURES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF ALL VEGETATED SURFACES, INCLUDING WATERING, FERTILIZING, REPAIRING EROSION, INVASIVE PLANT REMOVAL, AND RE-SEEDING UNTIL ESTABLISHMENT CONDITIONS ARE MET AND UNTIL THE END OF THE CONTRACTUAL MAINTENANCE PERIOD.
- WORK AREA SHALL BE FREE OF INVASIVE PLANT GROWTH AT FINAL COMPLETION AND END OF 1 YEAR WARRANTY PERIOD.

GENERAL NOTES:

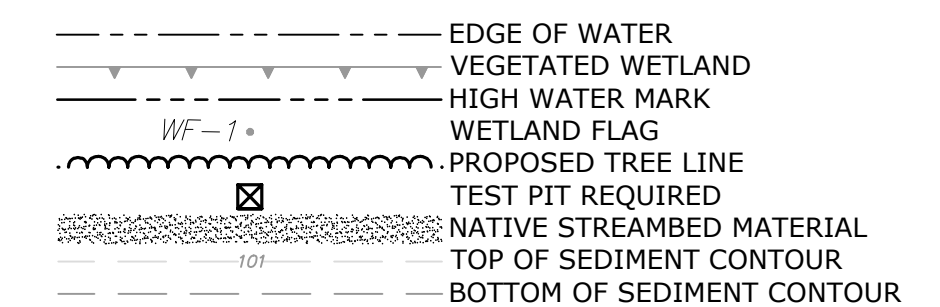
1. THE EXISTING CONDITIONS PLAN IS BASED ON FIELD SURVEY PERFORMED BY BRENNAN CONSULTING IN OCTOBER-NOVEMBER, 2016.
2. THE HORIZONTAL DATUM SHOWN REFERENCES THE NORTH AMERICAN HORIZONTAL DATUM OF 1983 (NAD83).
3. THE VERTICAL DATUM SHOWN REFERENCES THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
4. JURISDICTIONAL WETLAND RESOURCE AREAS WERE DELINEATED BY TIGHE & BOND, IN OCTOBER 2022.
5. THE 100-YEAR FLOODING LIMIT WAS ESTABLISHED BASED ON MODELING BY TIGHE & BOND USING SCS TR-55 METHODS AS OUTLINED IN 310 CMR 10.57 (2)(a)(3).

ABBREVIATIONS

| | |
|----------|------------------------------------|
| BLSF | BORDERING LAND SUBJECT TO FLOODING |
| BOW | BOTTOM OF WALL |
| BVV | BORDERING VEGETATED WETLANDS |
| CMP | CORRUGATED METAL PIPE |
| DBH | DIAMETER AT BREST HEIGHT |
| ELEV, EL | ELEVATION |
| EOW | EDGE OF WATER |
| OHW | ORDINARY HIGH WATER MARK |
| TBM | TEMPORARY BENCHMARK |
| TOW | TOP OF WALL |
| TYP | TYPICAL |
| UP | UTILITY POLE |

LEGEND

| | |
|--|------------------------------------|
| | DEMOLISH |
| | UTILITY POLE |
| | SIGN |
| | MAILBOX |
| | OVERHEAD ELECTRIC LINE |
| | PROPOSED CULVERT LINE |
| | DRAIN STRUCTURE |
| | PROPERTY LINE |
| | EDGE OF PAVEMENT |
| | GUARDRAIL |
| | STONE WALL |
| | TREE LINE |
| | PROPOSED CHAIN LINK FENCE |
| | BORING |
| | LIMIT OF WORK |
| | EROSION AND SEDIMENT CONTROLS |
| | COFFERDAM |
| | STONE MASONRY WALL |
| | TREE TO BE REMOVED |
| | PROPOSED RIP-RAP |
| | MINOR CONTOUR |
| | MAJOR CONTOUR |
| | PROPOSED MINOR CONTOUR |
| | PROPOSED MAJOR CONTOUR |
| | TREE TRUNK LOCATION, DBH, AND TYPE |



PERMIT SET 401 / 404 JURISDICTIONAL AREAS

THIS DOCUMENT IS INCOMPLETE AND IS RELEASED TEMPORARILY FOR PROGRESS REVIEW ONLY. IT IS NOT INTENDED FOR BIDDING OR CONSTRUCTION PURPOSES.

Arnold Pond Dam Removal Project

Massachusetts Division of Fisheries and Wildlife

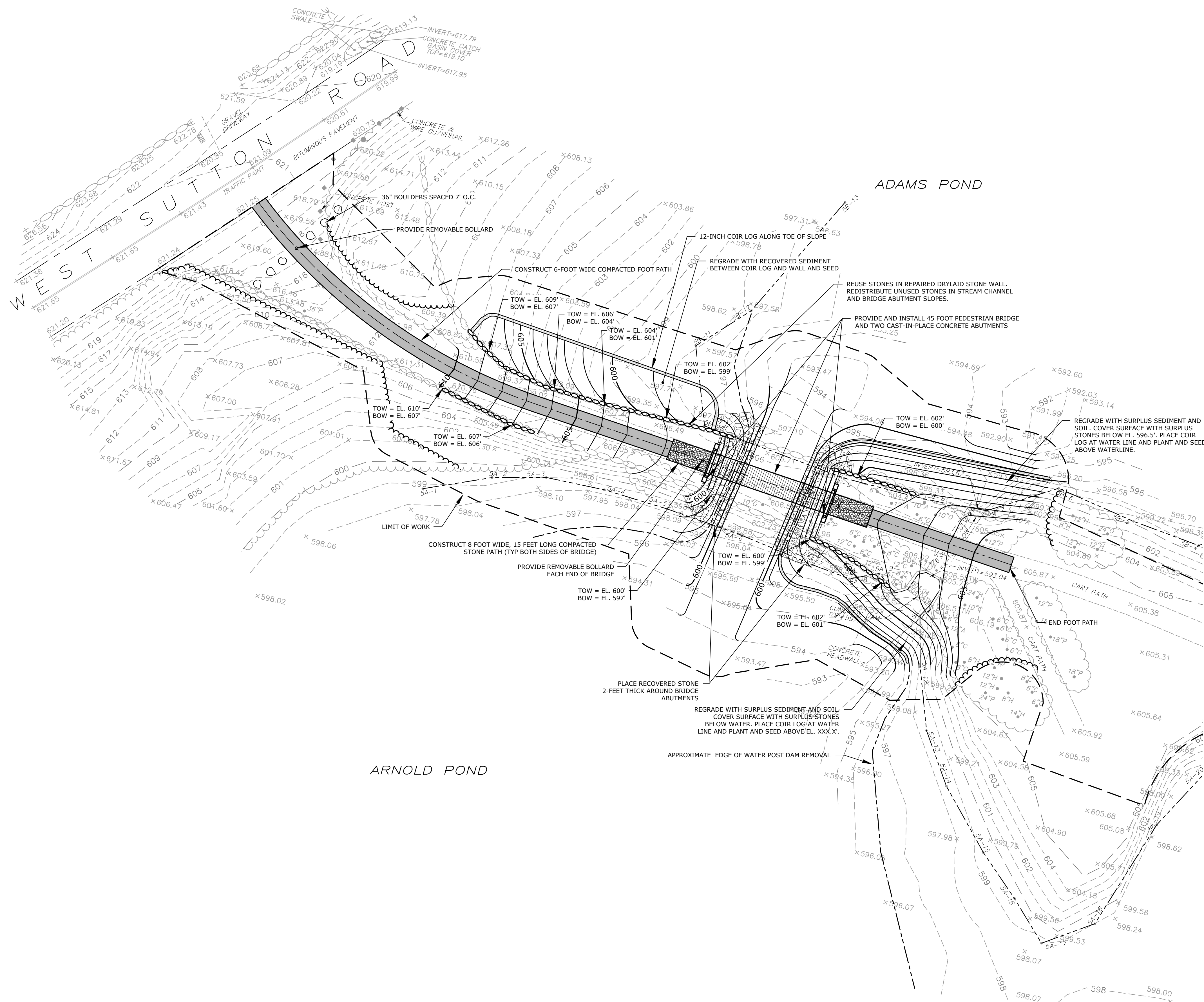
Sutton,
Massachusetts

| MARK | DATE | DESCRIPTION |
|----------------------|-------------------------------|-------------|
| PROJECT NO: | M944-051 | |
| DATE: | 12/2023 | |
| FILE: | G-002 GENERAL NOTES, ABBREVIA | |
| DRAWN BY: | CMH | |
| DESIGNED/CHECKED BY: | DRB | |
| APPROVED BY: | CDH | |

GENERAL NOTES, ABBREVIATIONS, AND LEGEND

SCALE: NO SCALE

G-002
SHEET 2 OF 9



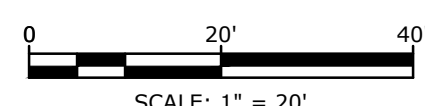
ARNOLD POND

ADAMS POND

WEST SUTTON ROAD

OVERVIEW OF PROJECT
1" = 20'

NOTES
1. DISTURBED VEGETATED AREAS SHALL BE RESTORED WITH NEW ENGLAND RESOTRATION MIX FOR DRY SITES AND 100% BIODEGRADABLE EROSION CONTROL BLANKETS EXCEPT WHERE NOTED OTHERWISE.



**PERMIT SET
401 / 404
JURISDICTIONAL
AREAS**

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**Arnold Pond
Dam Removal
Project**

Massachusetts
Division of
Fisheries and
Wildlife

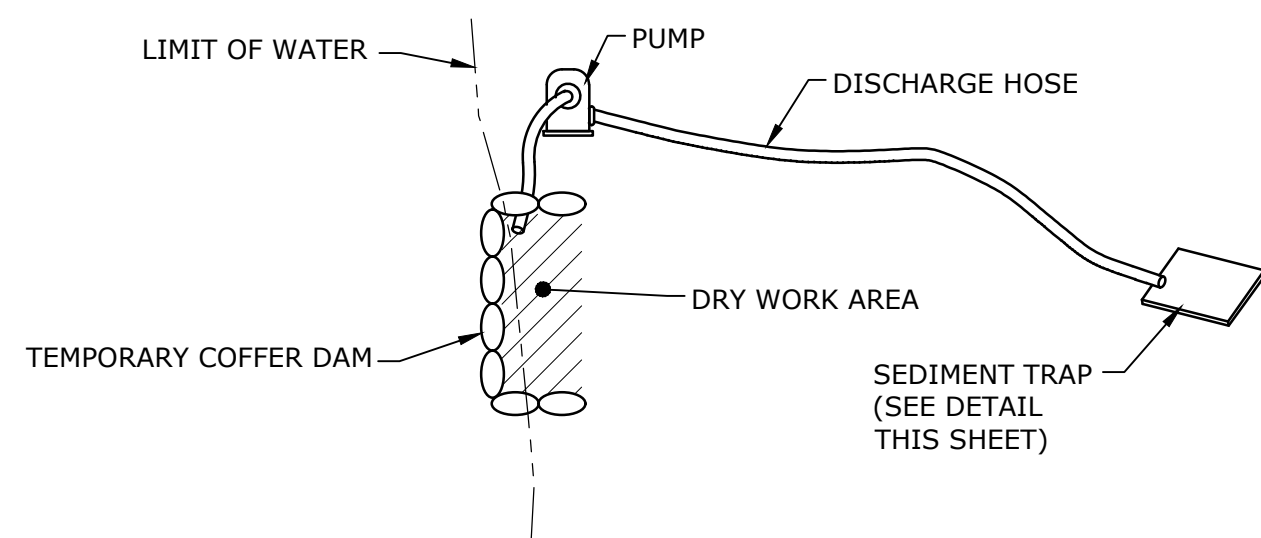
Sutton,
Massachusetts

| MARK | DATE | DESCRIPTION |
|----------------------|-------------------------------|-------------|
| PROJECT NO: | M944-051 | |
| DATE: | 12/2023 | |
| FILE: | C-103 PROPOSED CONDITIONS PLA | |
| DRAWN BY: | CMH | |
| DESIGNED/CHECKED BY: | DRH,DRB | |
| APPROVED BY: | CDH | |

**PROPOSED CONDITIONS
PLAN**

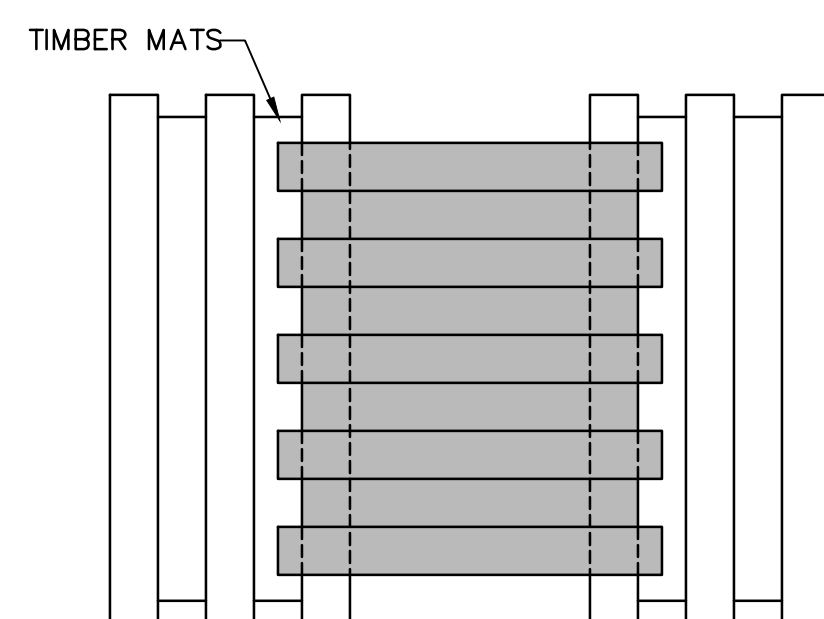
SCALE: 1" = 20'

Last Saved: 1/22/2024 12:26pm By: Cheseth
 Plotted On: Jan 29, 2024 12:26pm
 Tighe & Bond 23 Winslow St. Mass 01904
 Dams\Arnold Pond Dam Drawings - Figures\AutoCAD\Sheet\401_404 Permi\C-103 PROPOSED CONDITIONS PLAN.dwg



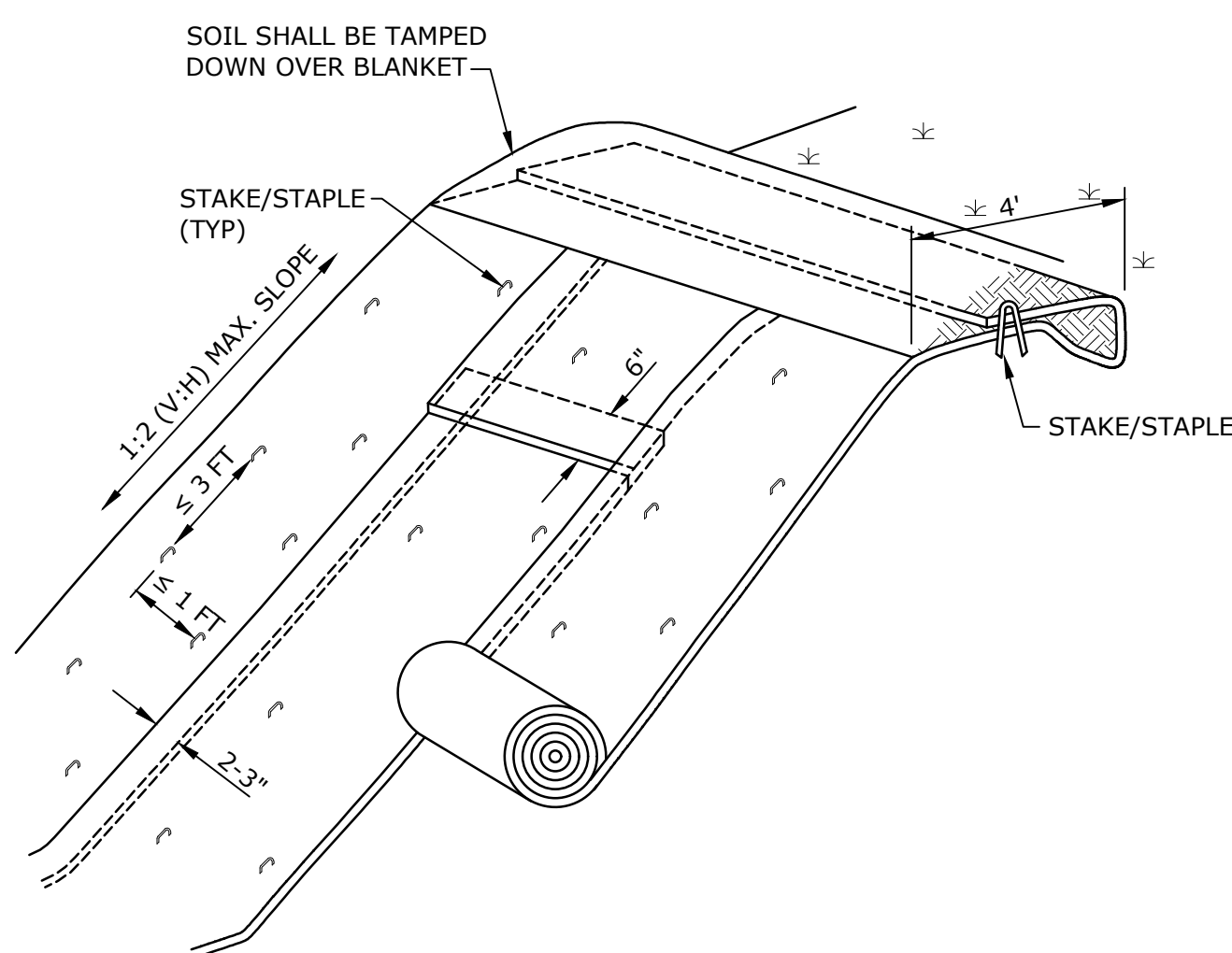
- NOTES:**
1. DEWATERING EQUIPMENT SHALL REMAIN WITHIN THE PERMANENTLY IMPACTED AREAS AND SHALL DISCHARGE OUTSIDE OF THE WETLAND BOUNDARY.
 2. DISCHARGE HOSE SHALL NOT CROSS THE STREAM AT ANY LOCATION.

COFFERDAM AND DEWATERING
NO SCALE



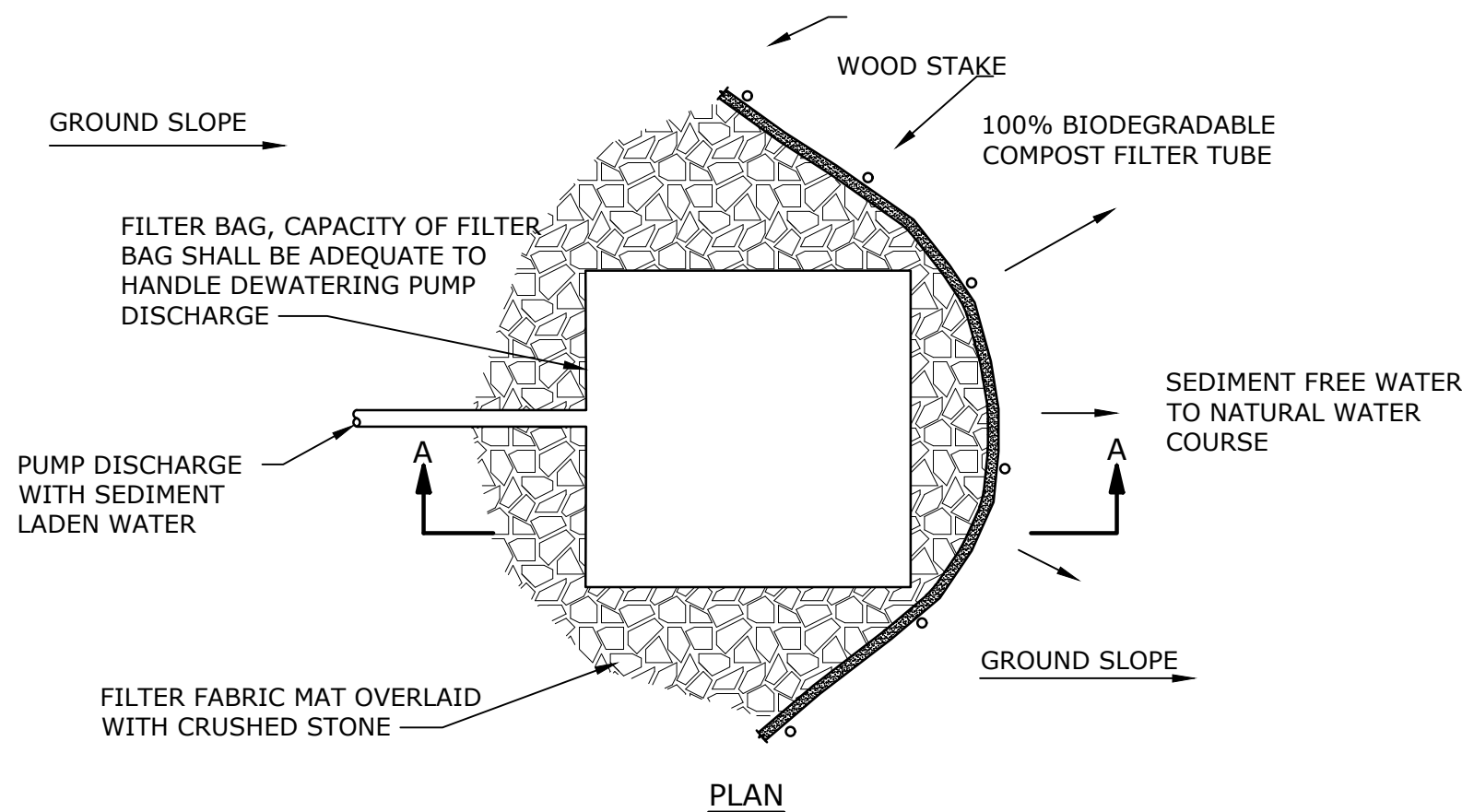
TYPICAL TIMBER MATS IN WETLANDS AREA
NO SCALE

- NOTES:**
1. TIMBER MATS SHALL BE PLACED CLOSELY TOGETHER SO THERE ARE NO GAPS BETWEEN EACH MAT SECTION.
 2. ADDITIONAL MEASURES MAY BE REQUIRED.
 3. USE TIMBER MATS FOR TEMPORARY ACCESS, WHERE WORK WILL BE CONTINUOUS, IN WET OR SOFT AREAS.
 4. BRIDGE EXCESSIVELY WET AREAS WITH MATS.

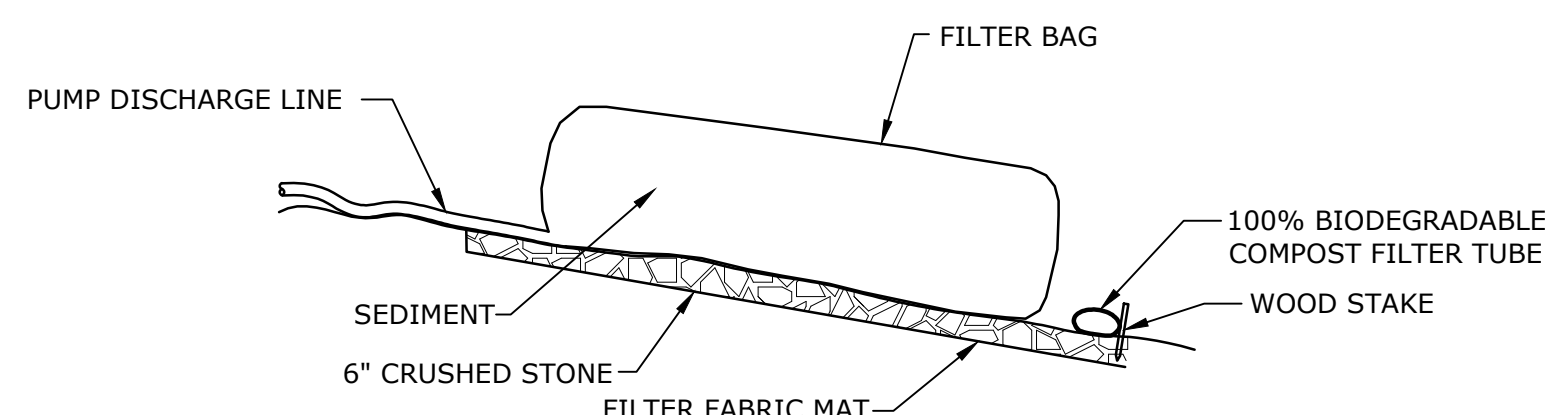


EROSION CONTROL BLANKET
NO SCALE

- NOTES:**
1. EROSION CONTROL BLANKET SHALL BE 100% BIODEGRADABLE.
 2. EROSION CONTROL BLANKET SHALL BE INSTALLED VERTICALLY DOWNSLOPE.
 3. STAKES/STAPLES SHALL BE PLACED NO MORE THAN 3 FT APART VERTICALLY, AND 1 FT APART HORIZONTALLY.
 4. SLOPE SURFACE SHALL BE FREE OF STICKS, ROCKS, AND OTHER OBSTRUCTIONS.
 5. BLANKETS SHALL BE ROLLED OUT LOOSELY AND STAKED/STAPLED TO MAINTAIN DIRECT SOIL CONTACT. DO NOT STRETCH THE BLANKETS.

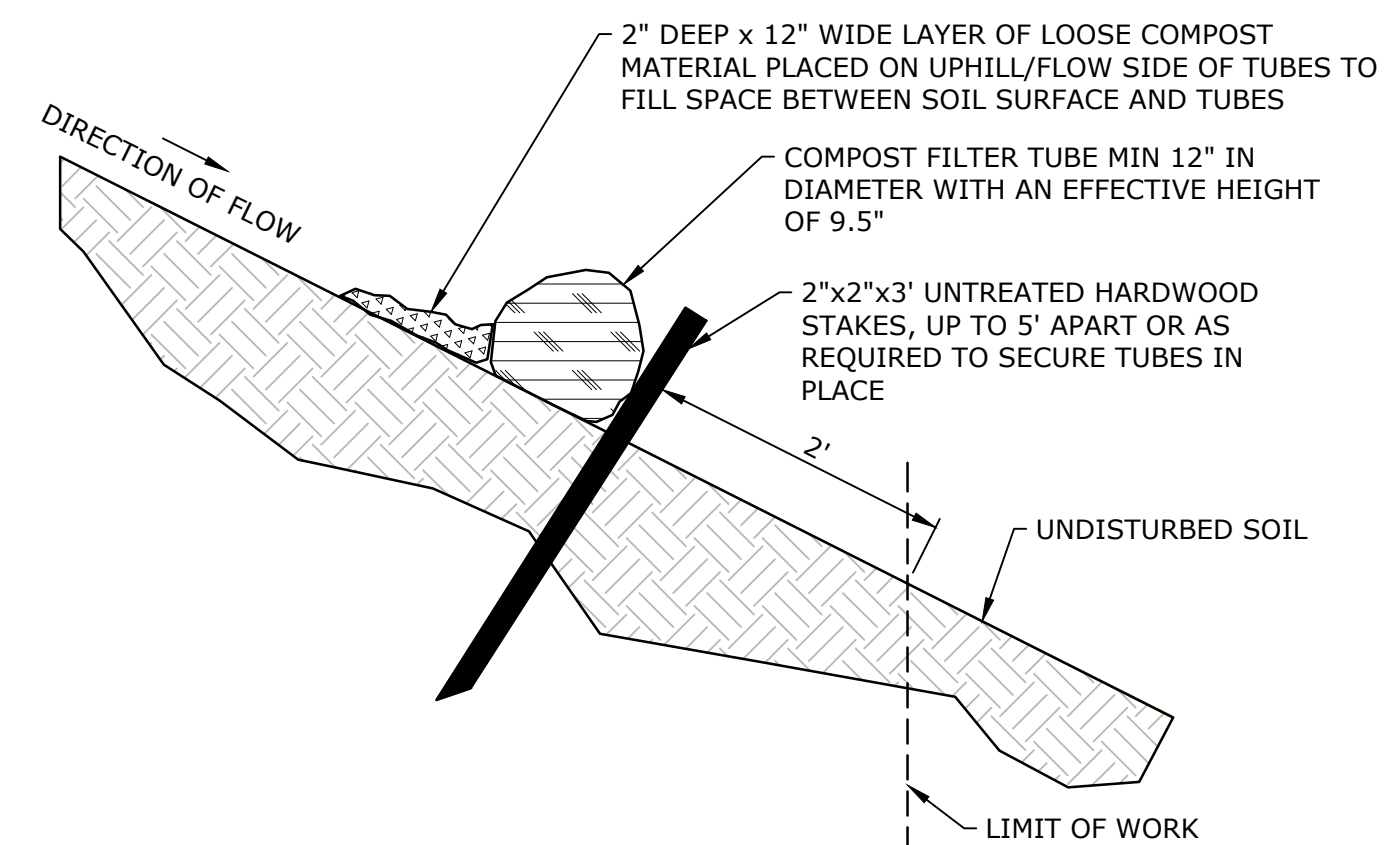


PLAN



SECTION A-A

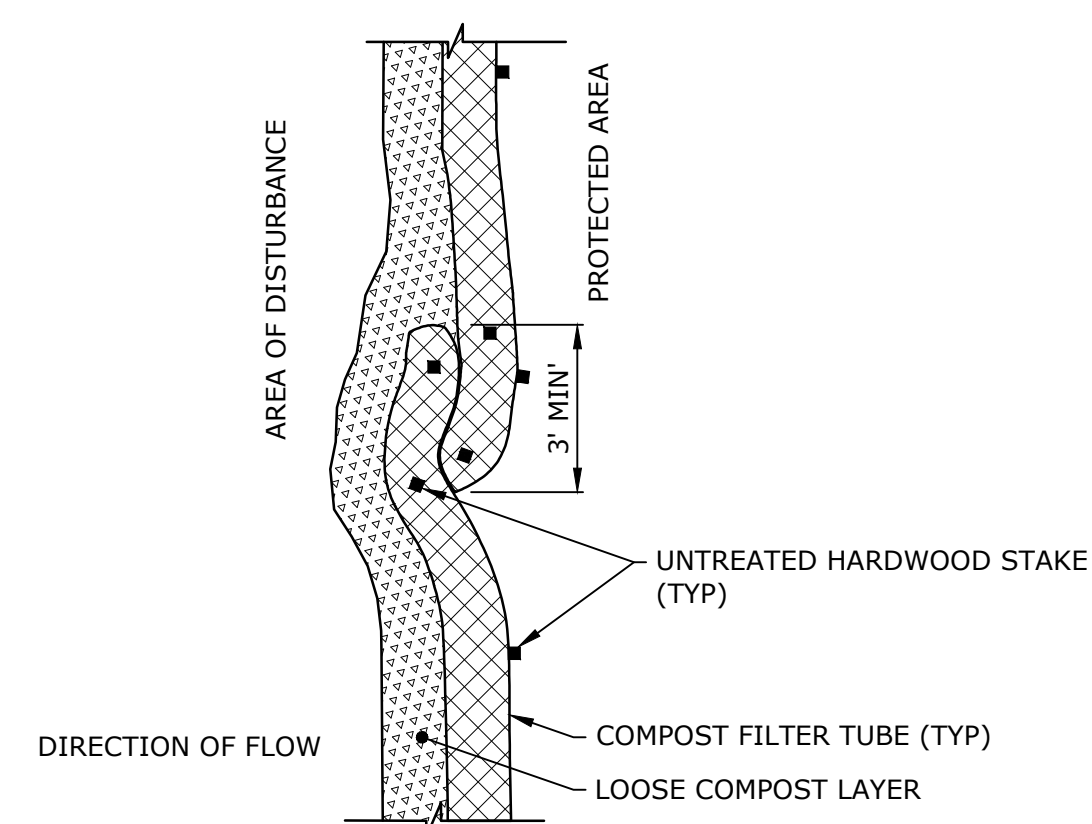
SEDIMENT TRAP
NO SCALE



SECTION VIEW

NOTES:

1. TUBES FOR COMPOST FILTERS SHALL BE JUTE MESH OR APPROVED BIODEGRADABLE MATERIAL. ADDITIONAL TUBES SHALL BE USED AT THE DIRECTION OF THE ENGINEER.
2. TAMP TUBES IN PLACE TO ENSURE GOOD CONTACT WITH SOIL SURFACE. IT IS NOT NECESSARY TO TRENCH TUBES INTO EXISTING GRADE.
3. WHEN STAKING IS NOT POSSIBLE, SUCH AS WHEN TUBES MUST BE PLACED ON PAVEMENT, HEAVY CONCRETE OR CINDER BLOCKS CAN BE USED BEHIND TUBES UP TO 5' APART OR AS REQUIRED TO SECURE TUBES IN PLACE.



PLAN VIEW - JOIN DETAIL

**EROSION CONTROL BARRIER
COMPOST FILTER TUBE**
NO SCALE

NOTES:

1. PROVIDE 3' MINIMUM OVERLAP AT ENDS OF TUBES TO JOIN IN A CONTINUOUS BARRIER AND MINIMIZE UNIMPEDED FLOW.
2. STAKE JOINING TUBES SNUGLY AGAINST EACH OTHER TO PREVENT UNFILTERED FLOW BETWEEN THEM.
3. SECURE ENDS OF TUBES WITH STAKES SPACED 18" APART THROUGH TOPS OF TUBES.

GENERAL COMPOST FILTER TUBE NOTES:

1. PROVIDE A MINIMUM TUBE DIAMETER OF 12" FOR SLOPES UP TO 50' IN LENGTH WITH A SLOPE RATIO OF 3H:1V OR STEEPER. LONGER SLOPES OF 3H:1V MAY REQUIRE LARGER TUBE DIAMETER OR ADDITIONAL COURSING OF FILTER TUBES TO CREATE A FILTER BERM. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR SITUATIONS WITH LONGER SLOPES OR STEEPER SLOPES.
2. INSTALL TUBES ALONG CONTOURS AND PERPENDICULAR TO SHEET OR CONCENTRATED FLOW.
3. DO NOT INSTALL IN PERENNIAL, EPHEMERAL OR INTERMITTENT STREAMS.
4. CONFIGURE TUBES AROUND EXISTING SITE FEATURES TO MINIMIZE SITE DISTURBANCE AND MAXIMIZE CAPTURE AREA OF STORMWATER RUN-OFF.
5. TUBES CAN BE PLACED DIRECTLY ON EXISTING PAVEMENT WHEN NECESSARY.
6. PLACING TUBES AGAINST THE UPHILL SIDE OF WELL-ANCHORED, STATIONARY FEATURES SUCH AS EXISTING TREES, CAN PROVIDE ADDITIONAL BRACING.
7. CURVE ENDS UPHILL TO PREVENT DIVERSION OF UNFILTERED RUN-OFF.
8. STRAW WATTLES WITH A 100% BIODEGRADABLE MESH MAY BE SUBSTITUTED IN AREAS INACCESSIBLE FOR FILTER TUBE INSTALLATION EQUIPMENT.

**PERMIT SET
401 / 404
JURISDICTIONAL
AREAS**

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**Arnold Pond
Dam Removal
Project**

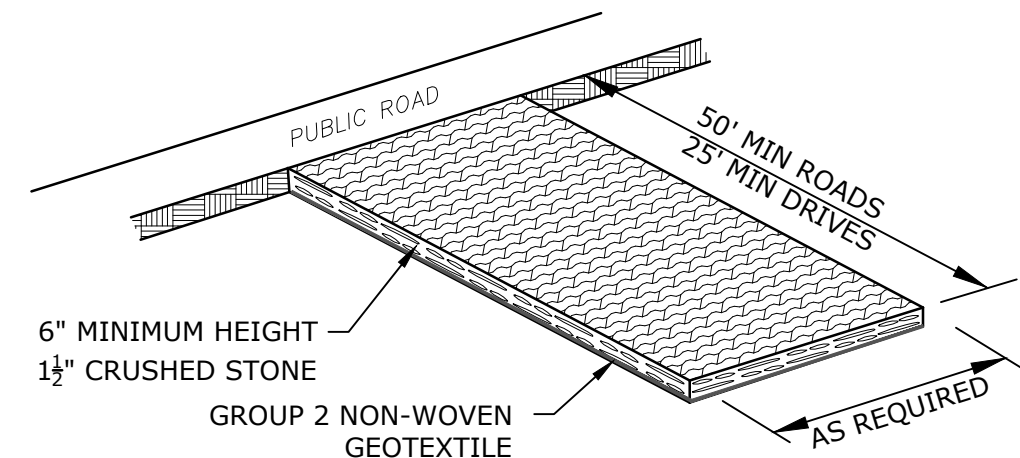
Massachusetts
Division of
Fisheries and
Wildlife

Sutton,
Massachusetts

| MARK | DATE | DESCRIPTION |
|----------------------|------------------------------|-------------|
| PROJECT NO: | M944-051 | |
| DATE: | 12/2023 | |
| FILE: | C-201 EROSION, SEDIMENT, AND | |
| DRAWN BY: | CMH | |
| DESIGNED/CHECKED BY: | DRH,DRB | |
| APPROVED BY: | CDH | |

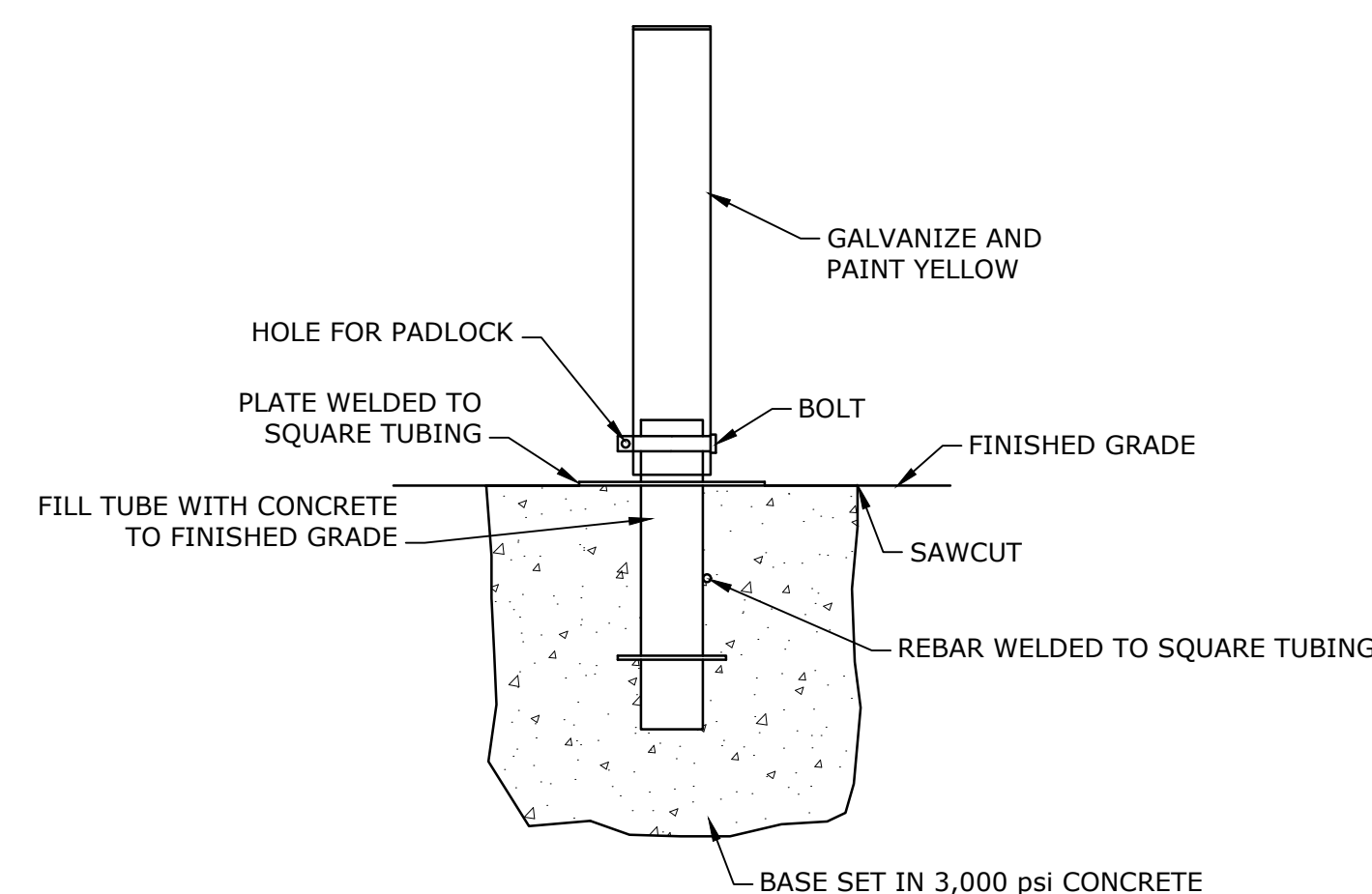
**EROSION, SEDIMENT, AND
WATER CONTROL DETAILS**

SCALE: AS SHOWN



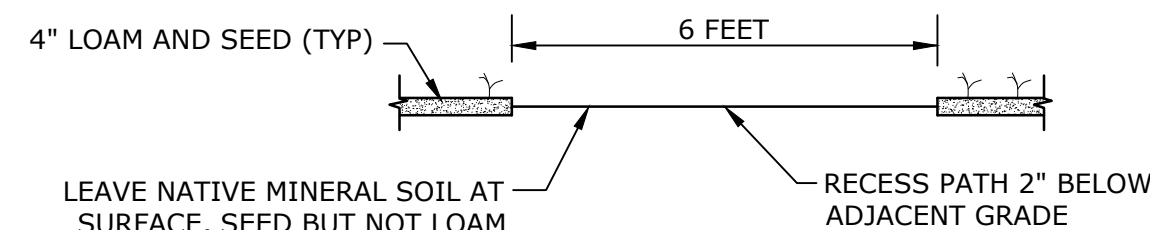
NOTES:
1. REMOVE FOLLOWING CONSTRUCTION.

TEMPORARY CONSTRUCTION ENTRY PAD
NO SCALE

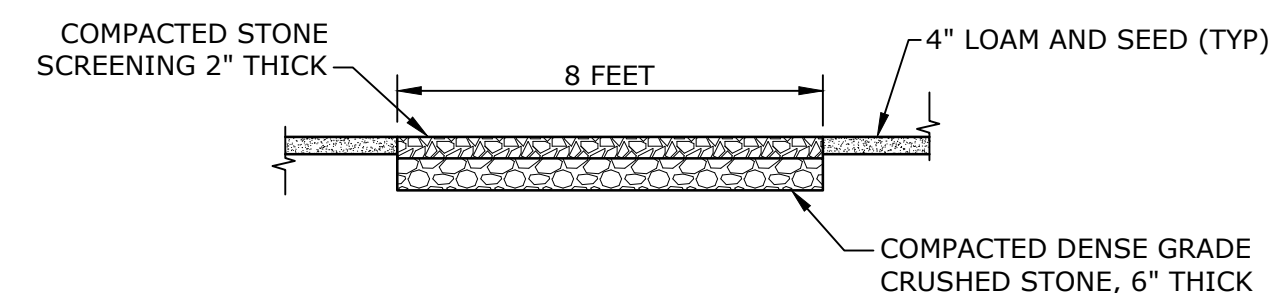


REMOVABLE BOLLARD DETAIL
NO SCALE

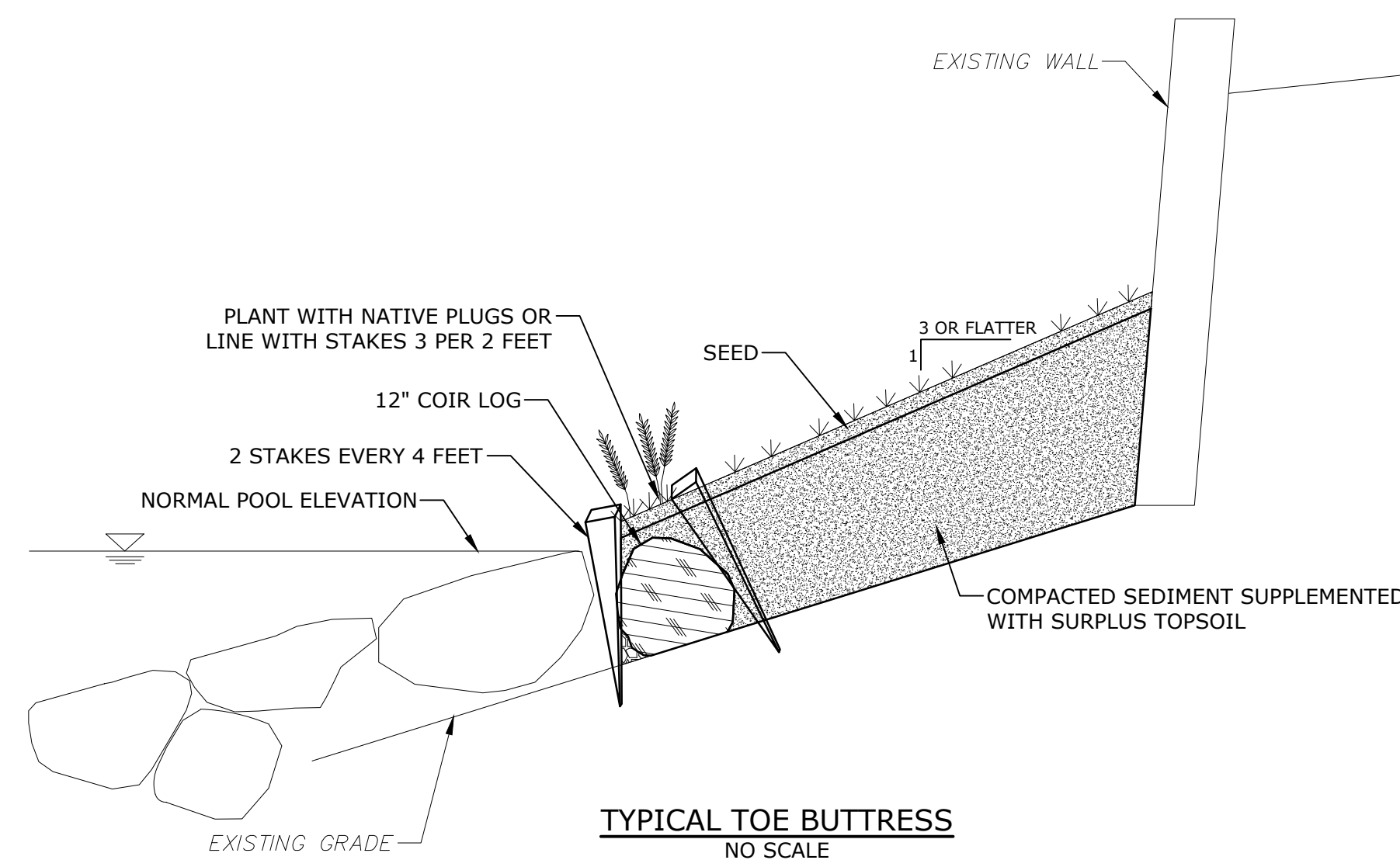
NOTES:
1. ALIGN BOLLARD PIPE AND GROUND INSERT SO EYES ARE LOCATED AT BACK AND FRONT OF BOLLARD, NOT PROTRUDING INTO THE TRAVEL WAY.
2. BOLLARD SHALL BE INSTALLED PER MANUFACTURER SPECIFICATIONS.



COMPACTED FOOT PATH
NO SCALE



COMPACTED STONE FOOT PATH
NO SCALE



TYPICAL TOE BUTTRESS
NO SCALE

**PERMIT SET
401 / 404
JURISDICTIONAL
AREAS**

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**Arnold Pond
Dam Removal
Project**

Massachusetts
Division of
Fisheries and
Wildlife

Sutton,
Massachusetts

| MARK | DATE | DESCRIPTION |
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MISCELLANEOUS DETAILS

SCALE: AS SHOWN



**US Army Corps
of Engineers**®
New England District

WORK-START NOTIFICATION FORM
(Minimum Notice: Two weeks before work begins)

EMAIL TO: [ENTER_PM_NAME]@usace.army.mil and cenae-r@usace.army.mil; or

MAIL TO: [ENTER PM NAME]
Regulatory Division
U.S. Army Corps of Engineers, New England District
696 Virginia Road
Concord, Massachusetts 01742-2751

Also, if the work is in the Massachusetts Coastal Zone (<https://www.mass.gov/service-details/czm-regions-coastal-communities-and-coastal-zone-boundary>), email this form to robert.boeri@mass.gov or mail it to: The Massachusetts Office of Coastal Zone Management, Project Review Coordinator, Suite 800, 251 Causeway Street, Boston, MA 02114.

Corps of Engineers Permit No. XXXXX was issued to XXXXX. This work is located in [WATERWAY] and authorized

The people (e.g., contractor) listed below will do the work, and they understand the permit's conditions and limitations.

PLEASE PRINT OR TYPE

Name of Person/Firm: _____

Business Address: _____

Phone & email: () _____ () _____

Proposed Work Dates: **Start:** _____ **Finish:** _____

Permittee/Agent Signature: _____ **Date:** _____

Printed Name: _____ **Title:** _____

Date Permit Issued: _____ **Date Permit Expires:** _____

FOR USE BY THE CORPS OF ENGINEERS

PM: _____ **Submittals Required:** _____

Inspection Recommendation: _____

Section 00310

Attachment D

MGL Chapter 253 Dam Safety Permit

Worcester South District Registry of Deeds Electronically Recorded Document

This is the first page of the document – Do not remove

Recording Information

| | |
|--|----------------------|
| Document Number | : 71745 |
| Document Type | : PER |
| Recorded Date | : September 04, 2024 |
| Recorded Time | : 01:53:16 PM |
| Recorded Book and Page | : 70983 / 104 |
| Number of Pages(including cover sheet) | : 6 |
| Receipt Number | : 1594526 |
| Recording Fee | : \$105.00 |

Worcester South District Registry of Deeds
Kathryn A. Toomey, Register
90 Front St
Worcester, MA 01608
(508) 368-7000



Certified Mail No. 9589 0710 5270 0474 6302 98
Return Receipt Requested

M.G.L. Chapter 253
Dam Safety Permit
Permit No. 239 - 2024 - 434

Applicant

Daniel R. Buttrick, PE
Tighe & Bond, Inc.
53 Southampton Road
Westfield, MA 01085

On behalf of:
Massachusetts Division of Fisheries and Wildlife
c/o Caleb Slater
1 Rabbit Hill Road
Westborough, MA 01581

Re: Arnold Pond Dam Removal Project
National Dam ID: MA00941
Registry Location: Southern Worcester County, Deed Book 2490, Page 506
Owner: Massachusetts Division of Fisheries and Wildlife
Dam Location: Sutton

Date: August 27, 2024

Dear Mr. Buttrick:

Reference is made to the Ch. 253 Permit Application dated July 2, 2024 provided by Tighe & Bond, Inc. (T&B) submitted for Department of Conservation and Recreation (DCR) Office of Dam Safety (ODS) regulatory review of the above-referenced dam removal project.

Permission is hereby granted under M.G.L. Chapter 253, as amended, to perform work indicated on the drawings titled "**Massachusetts Division of Fisheries and Wildlife, Arnold Pond Dam Removal Project, Sutton, Massachusetts**" dated June 2024 and as described in supporting documentation provided by T&B. This permit is for the breaching of Arnold Pond Dam only and does not address associated stream restoration or pedestrian bridge construction work.

COMMONWEALTH OF MASSACHUSETTS · EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS

Department of Conservation and Recreation
180 Beaman Street
West Boylston, MA 01583
508-792-7423 508-792-7805 Fax
www.mass.gov/dcr



Maura T. Healey
Governor

Kimberley Driscoll
Lt. Governor

Rebecca L. Tepper, Secretary
Executive Office of Energy & Environmental Affairs

Brian Arrigo, Commissioner
Department of Conservation & Recreation

Permission is granted subject to the following conditions:

- (a) At least 21 days before the start of construction, the dam owner shall provide the DCR/ODS - Permits Section a completed **DAM SAFETY IMPROVEMENTS – NOTICE OF CONSTRUCTION** (form attached) with a construction schedule and proof of recording of the Ch. 253 Permit at the Registry of Deeds in the county where the dam lies. If the Notice of Construction provided to ODS lacks a construction schedule, proof of recording of the permit, or an explanation of why permit recording is not possible, ODS will return the Notice of Construction to the dam owner indicating the Notice of Construction is incomplete and informing the owner that construction shall not commence until ODS has received a complete Notice of Construction with the required attachments.
- (b) For all features of the project, the Dam Engineer (T&B) shall notify ODS of any design change from the original design submitted with the permit application due to regulatory requirements, changes in field conditions or any other unanticipated occurrence. This notification shall be a formal submittal to ODS which includes all relevant revised plans, computations and data (survey, geotechnical, etc.) supporting the design change(s). This submittal shall be forwarded to ODS by registered mail, return receipt requested, and will require an amendment to the permit. Review time may vary based upon the complexity of the design change(s), however, ODS will generally issue the permit amendment within five (5) business days of receipt of a complete design revision submittal.
- (c) The Dam Engineer must report to ODS any unforeseen incidents that occur at the work site during project work. Unforeseen incidents include, but are not limited to, significant uncontrolled seepage into the work area, significant earth support failures or slope failures. The report must explain in detail what occurred, corrective measures taken to mitigate the occurrence and any impacts the occurrence may have had on the project. If the incident results in a design change, ODS must be provided revised design documents (refer to Condition (b), above).
- (d) The following shall be prepared by the contractor, approved by the Dam Engineer, and submitted to ODS prior to construction:
- Cofferdam designs. The cofferdams shall be carefully designed to resist anticipated forces without failing and to ensure that seepage around, under, or through the cofferdams is manageable;
 - A water control and diversion plan describing methods to be employed to allow work to be performed “in the dry” and to manage both the water level in Arnold Pond and outflow from Arnold Pond while construction is in progress; and
 - A flood response plan. While construction is underway, weather forecasts, stream flows and water levels shall be monitored to allow adequate time to respond to rising water levels at the construction site. If high water levels are expected, equipment and materials shall be removed from the work area and personnel

evacuated. Sufficient materials and equipment required for flood response shall be maintained in a safe location at, or near, the construction site.

- (e) A sufficient level of construction oversight shall be provided by the Dam Engineer to ensure the work conforms to: the project plans and specifications; the Ch. 253 Permit conditions; and generally-accepted dam construction practices as determined by the U.S. Army Corps of Engineers, the U.S. Bureau of Reclamation and/or the U.S. Natural Resources Conservation Service.

Guidance, procedures, checklists, worksheets, and references to aid in construction quality assurance are available in the United States Department of Agriculture Natural Resources Conservation Service National Engineering Handbook Part 645- Construction Inspection and can be accessed at this

link: <https://directives.sc.egov.usda.gov/viewerFS.aspx?hid=31701> .

- (f) The Dam Engineer shall invite ODS to the preconstruction meeting, another project meeting at 50% completion and the final inspection meeting. ODS reserves the right to make site visits and inspections at any time during the permit period. ODS requests the following items be addressed at the pre-construction meeting:
- Identification of the
 - resident engineer (Owner's representative overseeing the project);
 - contractor's qualified site superintendent; and
 - Dam Engineer's representative overseeing the project.
 - Provide emergency contact information for the contractor and resident engineer;
 - Presentation of the resident engineer's weekly work schedule and discussion of the level of construction oversight to be provided by the resident engineer;
 - Water control features anticipated and the process for the Dam Engineer to either develop or approve the overall control and diversion of water plan. Flood emergency warning and response procedures must be identified;
 - Level of Dam Engineer construction oversight including: identification of any critical construction items to be overseen by the Dam Engineer; procedures for the Dam Engineer's review and approval of shop drawings and other submittals; documentation of Dam Engineer's approval of any design modifications; procedures for coordinating and scheduling the Dam Engineer's inspection of critical construction elements;
 - Anticipated schedule of construction meetings and required attendees. It is expected that while construction is ongoing, weekly construction meetings will be held and attended by the Dam Engineer, the resident engineer, the contractor's superintendent and other appropriate participants; and
 - Presentation of the initial construction schedule with identification and discussion of major items.

ODS shall be provided a copy of the preconstruction meeting minutes.

- (g) The Dam Engineer shall provide ODS written documentation that he/she has reviewed and approved all pertinent submittals or samples concerning critical project dam features. This documentation may be in the form of a submittal log which may be submitted as part of the “as-built” report, described below.
- (h) Upon completion of work the Applicant shall submit to ODS a **DAM SAFETY CERTIFICATE OF COMPLETION** (form attached). With this certificate of completion submit one bound (utilizing plastic comb bindings) as-built report with 11”x17” record drawings signed and stamped by a registered professional civil engineer with contractor’s signature attesting that all work was performed according to the plans and specifications. The as-built report shall include documentation of submittals reviewed and approved by the Dam Engineer, copies of any materials or construction testing reports and color photos of construction phases and appurtenant installations. Photograph numbers, location and direction in which each photo was taken must be identified. An electronic copy (as a .pdf) of the as-built report and record drawings shall be provided to ODS via email, .ftp site or on a USB flash drive.
- (i) Upon completion of work, the Dam Engineer shall submit an **APPLICATION TO CHANGE HAZARD CLASSIFICATION OF DAM** with supporting documentation demonstrating how the dam in its as-built condition will perform (i.e., maximum impoundment level and storage volume resulting from the 50-year design storm and/or water surface profiles demonstrating the breached embankment will not re-impound water). Refer to the ODS website for the application form and description of required information. Refer to 302CMR10.00 for the jurisdictional criteria for a dam. Submittal of the application form and supporting documentation is required prior to ODS issuance of a Certificate of Approval for the completed project.
- (j) The Certificate of Completion, as-built report and Application to Change Hazard Classification of Dam shall be provided to ODS within 90 days of substantial completion of work unless ODS agrees to later submission of these documents. Submission of these documents is required prior to ODS issuing a Certificate of Approval.

Any permit issued by DCR shall be subject to revocation by order of the Commissioner if the permittee fails to conform to 302 CMR 10.00, Dam Safety Rules and Regulations, provisions of this permit, or any other applicable laws and regulations.

This permit does not release the applicant from the requirements of any other regulatory authority. Such authorizations and/or notifications include, but are not limited to:

Local Conservation Commission;
Massachusetts Department of Environmental Protection (DEP);
Massachusetts Department of Fish and Game (DFG);
Massachusetts Executive Office of Environmental Affairs (EOEA), MEPA Unit; and
U.S. Army Corps of Engineers.

This permit must be recorded by the applicant at the Registry of Deeds in the county where the dam lies. Recording must be done prior to the commencement of construction and a copy of the recorded permit filed with the Office of Dam Safety.

This permit remains valid for two (2) years from the date of issue: **August 27, 2024.**

Permit expiration date: **August 27, 2026.**



William C. Salomaa
William Salomaa, Director
DCR, Office of Dam Safety



David Ouellette
David Ouellette, Permit Engineer
DCR, Office of Dam Safety

Attachments: Dam Safety Improvements – Notice of Construction form
Dam Safety Certificate of Completion form
Application to Change Hazard Classification of Dam

SALMON BROOK DAM REMOVAL

PERMITS AND APPROVALS

Section 00310

Attachment A

401 Water Quality Certificate



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

100 Cambridge Street 9th Floor Boston, MA 02114 • 617-292-5500

Maura T. Healey
Governor

Kimberley Driscoll
Lieutenant Governor

Rebecca L. Tepper
Secretary

Bonnie Heiple
Commissioner

July 22, 2024

Caleb Slater
Massachusetts Division of Fisheries
and Wildlife
One Rabbit Hill Road
Westborough, MA 01581

DEP WQC APPLICATION # 24-WW26-0023-APP
NAE-2023-00176
NHESP # 24-17287
401 WQC Application Completion: 7/8/24

RE: COMBINED PERMIT – 401 WATER QUALITY CERTIFICATION
Application for: BRP WW 26
401 WATER QUALITY CERTIFICATION FOR DREDGING & FILL/EXCAVATION

AT: Salmon Brook Dam, Quaboag Wildlife Management Area – Brookfield
Chicopee River Basin

Dear Dr. Slater:

The Department of Environmental Protection (“MassDEP”) has reviewed your application for a Combined Permit 401 Water Quality Certification for Dredging and Fill/Excavation (“Combined 401 WQC”), as referenced above and is basing its certification upon an evaluation of the information contained in the application which is relevant to water quality considerations. In accordance with the provisions of Section 401 of the Federal Clean Water Act (33 U.S.C. § 1251 *et seq.*), MGL c. 21, §§ 26-53, and 314 CMR 9.00, MassDEP has determined there is reasonable assurance the project or activity, as conditioned herein, will be conducted in a manner which will not violate applicable water quality standards (314 CMR 4.00) and other appropriate requirements of state law.

The waters of Salmon Brook and Salmon Brook Pond, which is a man-made impoundment along Salmon Brook, are unlisted in the Massachusetts Surface Water Quality Standards, and therefore, considered Class B. Such waters are intended “as habitat for fish, other aquatic life and wildlife, and for primary and secondary contact recreation.” Antidegradation provisions of these Standards require that “existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.”

The above-referenced project includes the removal of Salmon Brook Dam, an unnamed dam, and a collapsed stone culvert. Once completed, this ecological restoration project is expected to restore aquatic and riparian habitat connectivity and enhance riverine function.

Approximately 650 cubic yards (“CY”) of material will be dredged during the removal of both dams. The sediment will be placed in an upland location adjacent to Salmon Brook, seeded with a native seed mix, and planted with trees. In addition, approximately 1,300 CY of sediment is expected to mobilize during future storm events and settle in depositional areas downstream. Approximately 2,800 square feet of land under water (“LUW”) will be impacted temporarily by the placement of construction mats, which will be removed upon completion of the project. In addition, approximately 6,400 square feet of bordering vegetated wetland (“BVW”) will be excavated and 900 square feet of BVW will be cleared during the construction activities, but it will be restored in place upon completion of the project. Once the dams and culvert are removed and the impoundments associated with them have drained, approximately 410,000 square feet of LUW will be lost. However, approximately 172,600 square feet of that area is expected to convert to BVW. The work is shown on the attached plans.

Sediment Chemistry Results: Sediment samples upstream of the impoundments, within the impoundments, and downstream of the dams and culvert were collected for analysis. The results of the chemical analysis were compared to MassDEP’s *Interim Policy for Sampling, Analysis, Handling and Tracking Requirements for Dredged Sediment Reuse and Disposal* (COMM-94-007). All of the results were either non-detect or below the Reportable Concentration (“RC”) S-1 criteria of the Massachusetts Contingency Plan (“MCP”).

Rare Species and Wildlife Habitat: Salmon Brook and Salmon Brook Pond are not located in the Priority Habitat of Rare Species and Estimated Habitats of Rare Wildlife as indicated in the Massachusetts Natural Heritage Atlas, 15th Edition. However, Quaboag River, into which Salmon Brook flows, is located within mapped Priority Habitat. According to the electronic mail dated June 17, 2024, from Misty-Anne Marold, Massachusetts Natural Heritage and Endangered Species Program (“NHESP”) to Daniel R. Buttrick, Tighe & Bond, Inc., the “NHESP does not anticipate that the removal of Salmon Brook Dam will result in impacts to state-listed species.”

Public Notice: The Combined Permit Application public notice was published in *The Quaboag Current* on March 15, 2024. No comments were received by MassDEP during the 21-day public comment period pursuant to 314 CMR 9.05(3)(e), which ended on April 5, 2024.

Therefore, based on information currently in the record, MassDEP grants a Combined 401 WQC for this project subject to the following conditions to maintain or attain water quality, to minimize any damage to the environment that may result from the project, and to ensure compliance with appropriate provisions of state law. MassDEP certifies that there is reasonable assurance the project or activity, as conditioned herein, will be conducted in a manner which

will not violate applicable water quality standards (314 CMR 4.00) and other appropriate requirements of state law.

1. The contractor shall take all steps necessary to ensure that the proposed activities will be conducted in a manner that will avoid violations of the antidegradation provisions of the Massachusetts Surface Water Quality Standards, 314 CMR 4.00, that protect all waters, including wetlands. Pursuant to 314 CMR 9.01(3), this condition is necessary to ensure that any discharge from the project complies with the Massachusetts Surface Water Quality Standards, as provided in 314 CMR 4.00, to protect the public health and restore and maintain the chemical, physical, and biological integrity of the water resources of the Commonwealth.
2. Prior to the start of work, or for any portion of the work thereafter, MassDEP shall be notified of any change(s) in the proposed project or plans that may affect waters or wetlands. MassDEP will determine whether the change(s) requires a revision to this Combined 401 WQC. Pursuant to 314 CMR 9.06(1), 9.07(1) and 9.09(2), this condition is necessary to protect the public health and restore and maintain the chemical, physical, and biological integrity of the water resources of the Commonwealth.
3. Dredging and filling/excavation in accordance with this Combined 401 WQC may begin following the 21-day appeal period and once all other permits have been received. Pursuant to 314 CMR 9.10, this condition is necessary to ensure that due process is provided to certain persons deemed to be aggrieved by the Combined 401 WQC.
4. All work shall be performed in accordance with the following documents and plans [Pursuant to 314 CMR 9.05(1), this condition is necessary as these documents outline how the execution of the project will meet the criteria of 314 CMR 9.06 and 9.07 thereby protecting water quality and preventing degradation to wetlands and waters of the Commonwealth]:
 - Application for Combined Permit, DEP Application # 24-WW26-0023-APP, dated March 13, 2024, as revised through July 8, 2024, with attachments.
 - Plan entitled “Massachusetts Division of Fisheries and Wildlife, Salmon Brook Dam Removal Project, Brookfield, Massachusetts,” consisting of 7 sheets, various scales, dated December 2023, prepared by Tighe & Bond, Inc., not signed or stamped, and attached to this Combined 401 WQC.
 - Document entitled “Dam Removal Monitoring Plan – Salmon Brook Dam,” consisting of 5 pages, dated March 1, 2024, prepared by Tighe & Bond, Inc.
 - Electronic mail from Misty-Anne Marold, NHESP, to Daniel R. Buttrick, Tighe & Bond, Inc., dated June 17, 2024, consisting of 2 pages.

5. MassDEP shall be notified, attention Derek Standish [617-875-3843 derek.standish@mass.gov], one week prior to the start of in-water work so that MassDEP staff may inspect the work for compliance with the terms and conditions of this Combined 401 WQC. Pursuant to 314 CMR 9.05(4), this condition is necessary to ensure that construction practices are implemented in such a manner as to prevent degradation to wetlands and waters of the Commonwealth.
6. The term of this Combined 401 WQC remains in effect for the same duration as the federal permit that requires it. Pursuant to 314 CMR 9.00, this condition is necessary to ensure that any dredging is conducted in a timely manner and complies with the Massachusetts Surface Water Quality Standards, as provided in 314 CMR 4.00, to protect the public health and restore and maintain the chemical, physical, and biological integrity of wetlands and waters of the Commonwealth.
7. During the project period, there shall be no discharge or spillage of fuel, oil, or other pollutants, including sediments, onto any part of the site. The applicant shall take all reasonable precautions to prevent the release of pollutants by ignorance, accident, or vandalism. Pursuant to 314 CMR 9.06(1) and 9.07(1), this condition is necessary to ensure that construction practices are implemented in such a manner as to prevent degradation to wetlands and waters of the Commonwealth.
8. No later than four weeks after issuance of this Combined 401 WQC, the applicant shall submit a notification procedure outlining the reporting process to MassDEP for incidents relating to dredging activities that impact surrounding resource areas and habitats including, but not limited to, observed dead or distressed fish or other aquatic organisms, observed oily sheen on the surface of the water, a sediment spill, a turbidity plume beyond the deployed Best Management Practices (“BMPs”), and a barge or equipment accident/spill. If at any time during implementation of the project such an incident occurs, the applicant shall immediately notify MassDEP and all site related activities impacting the water shall cease until the source of the problem is identified and adequate mitigating measures are deployed to the satisfaction of MassDEP. Pursuant to 314 CMR 9.07(3), this condition is necessary to ensure that construction is conducted in a manner that minimizes short-term, long-term, and cumulative impacts on the aquatic ecosystem and provides protection to human health.
9. Future maintenance dredging is not authorized under this Combined 401 WQC. Pursuant to 314 CMR 9.04(5), the project does not qualify for the routine maintenance exemption. This condition is necessary to ensure that the chemical, physical and biological integrity of wetlands and waters of the Commonwealth are protected.
10. Flow to the downstream channel (Salmon Brook) shall be maintained throughout construction of the project. Pursuant to 314 CMR 9.07(1)(c), this condition is necessary to ensure that construction will be conducted in a manner that will not

reduce or alter the habitat functions of the affected wetlands and waters of the Commonwealth.

11. All equipment/machinery shall be stored above the High Water Mark (“HWM”) and outside any wetland resource areas when not in use. Pursuant to 314 CMR 9.06(1)(c)4.c. and 9.07(1)(b)4.c., this condition is necessary to avoid and minimize adverse construction impacts to wetlands and waters of the Commonwealth.
12. All sedimentation barriers shall be maintained in good repair until all disturbed areas have been fully stabilized with vegetation or other means. At no time shall sediments be deposited in a wetland or water body, except as described in the documents and plans cited in Condition # 4. During construction, the applicant or his/her designee shall inspect the erosion controls on a daily basis and shall remove accumulated sediments as needed. The applicant shall immediately control any erosion problems that occur at the site and shall also immediately notify MassDEP, which reserves the right to require additional erosion and/or damage prevention controls it may deem necessary. Sedimentation barriers shall serve as the limit of work unless another limit of work line has been approved by MassDEP pursuant to this Combined 401 WQC. Pursuant to 314 CMR 9.06(1)(c)4.c. and 9.07(1)(b)4.c., this condition is necessary to avoid and minimize adverse construction impacts to wetlands and waters of the Commonwealth.
13. No later than four weeks after the issuance of this Combined 401 WQC, Jason Carmignani [jason.carmignani@mass.gov] at the NHESP, shall be contacted to conduct a survey of the Eastern Pearlshell mussel. This survey must be completed prior to the commencement of any dredging activities. Pursuant to 314 CMR 9.07(3)(d), this condition is necessary to protect water quality by ensuring that the project proponent is using planning and construction practices that will maintain the aquatic resource functions and values in accordance with recommendations made by the Massachusetts Division of Fisheries and Wildlife.
14. No later than 21 days prior to commencement of dredging activity, a dredged material dewatering plan shall be submitted to MassDEP for review and written approval. At a minimum, the dewatering plan shall include, but not be limited to, the type of containment, method of dewatering (i.e., mechanical or by gravity), method of collecting the dewatered effluent, and method of disposal. Pursuant to 314 CMR 9.07(1), this condition is necessary to adequately minimize and contain runoff water and material from the dredged material dewatering process to protect the water resource area thereby ensuring that water quality is not degraded, and biological resources are not negatively impacted by potential discharges.
15. No later than 21 days prior to commencement of dredging activity, a construction phase water control plan shall be submitted to MassDEP for review and written approval. Pursuant to 314 CMR 9.07(1)(b)4.c., this condition is necessary to avoid and minimize adverse construction impacts to wetlands and waters of the Commonwealth.

16. MassDEP shall be notified in writing of the name and location of the upland licensed facility accepting the dredged material for disposal or reuse as daily cover material. If the licensed facility is located out of state, documentation shall be provided to MassDEP that the dredged material disposal/reuse has been approved and will be accepted by the receiving state in accordance with 314 CMR 9.07(13)(b). The dredged material shall not be transported to the facility without the concurrence of MassDEP. Pursuant to 314 CMR 9.07(5) and 314 CMR 9.07(13), this condition is necessary to ensure that dredged material disposal will not adversely affect any wetlands or waters in the receiving area.
17. A Material Shipping Record (“MSR”) shall be used to track the dredged material to the licensed upland facility. A fully executed copy of the MSR shall be provided to MassDEP within 30 days of final shipment to the reuse location or facility. Pursuant to 314 CMR 9.07(5), this condition is necessary to maintain a record of the dredged material for reference and to ensure accountability in its transportation. This assists in the protection of health, safety, public welfare, and the environment from any potential hazards during transportation. Finally, it attests to the dredged material conforming with permitting and regulatory requirements for acceptance at the receiving location.
18. BMPs shall be implemented during transportation of the dredged material to the licensed receiving facility. At a minimum, when transported upon public roadways, all dredged material shall have no free liquid as determined by the Paint Filter Test or other suitably analogous methodology acceptable to MassDEP, and a tarpaulin or other means shall be used to cover the dredged material during transport. Pursuant to 314 CMR 9.07(5), this condition is necessary to protect off site water quality during transportation. These practices help to avoid fugitive dust and siltation into wetlands and waters of the Commonwealth.
19. Within 30 days of the completion of dredging, photographs of the affected areas depicting post-dredge conditions shall be taken and submitted to Derek Standish [derek.standish@mass.gov] at MassDEP. Pursuant to 314 CMR 9.07(1), this condition is necessary to ensure that construction practices are implemented in such a manner as to prevent degradation to wetlands and waters of the Commonwealth.
20. Copies of the monitoring reports described in the Dam Removal Monitoring Plan cited in Condition # 4 shall be submitted to Derek Standish [derek.standish@mass.gov] at MassDEP once a year for 2 years following the removal of the dam. Pursuant to 314 CMR 9.01(3), this condition is necessary to protect the public health and restore and maintain the chemical, physical, and biological integrity of the water resources of the Commonwealth.

Failure to comply with this Combined 401 WQC is grounds for enforcement, including civil and criminal penalties, under M.G.L. c. 21, § 42, 314 CMR 9.00, M.G.L. c. 21A § 16, 310 CMR 5.00, or other possible actions/penalties as authorized by the General Laws of the Commonwealth.

This Combined 401 WQC does not relieve the applicant of the obligation to comply with other appropriate state or federal statutes or regulations. Any changes made to the project as described in the previously submitted Combined Permit Application or supplemental documents will require further notification to and, if an amendment is required, approval by MassDEP.

NOTICE OF APPEAL RIGHTS

Certain persons shall have a right to request an adjudicatory hearing concerning Combined 401 WQCs by MassDEP when an application is required:

- a. the applicant or property owner;
- b. any person aggrieved by the decision who has submitted written comments during the public comment period;
- c. any ten persons of the Commonwealth pursuant to M.G.L. c. 30A where a group member has submitted written comments during the public comment period; or
- d. any governmental body or private organization with a mandate to protect the environment, which has submitted written comments during the public comment period.

Any person aggrieved, any ten persons of the Commonwealth, or a governmental body or private organization with a mandate to protect the environment may appeal without having submitted written comments during the public comment period only when the claim is based on new substantive issues arising from material changes to the scope or impact of the activity and not apparent at the time of public notice. To request an adjudicatory hearing pursuant to M.G.L. c. 30A, § 10, a Notice of Claim must be made in writing, provided that the request is made by certified mail or hand delivery to MassDEP, with the appropriate filing fee specified within 310 CMR 4.10 along with a DEP Fee Transmittal Form within 21 days from the date of issuance of this Combined 401 WQC.

Department of Environmental Protection
Case Administrator
Office of Appeals and Dispute Resolution
100 Cambridge Street, Suite 900
Boston, MA 02114

A copy of the request shall at the same time be sent by certified mail or hand delivery to the issuing office of the Wetlands Program at:

Department of Environmental Protection
Wetlands Program
100 Cambridge Street, Suite 900
Boston, MA 02114

A Notice of Claim for Adjudicatory Hearing shall comply with MassDEP's Rules for Adjudicatory Proceedings, 310 CMR 1.01(6), and shall contain the following information pursuant to 314 CMR 9.10(3):

- a. the Combined Permit Application Number;
- b. the complete name of the applicant and address of the project;
- c. the complete name, address, and fax and telephone numbers of the party filing the request, and, if represented by counsel or other representative, the name, fax and telephone numbers, and address of the attorney;
- d. if claiming to be a party aggrieved, the specific facts that demonstrate that the party satisfies the definition of "aggrieved person" found at 314 CMR 9.02;
- e. a clear and concise statement that an adjudicatory hearing is being requested;
- f. a clear and concise statement of (1) the facts which are grounds for the proceedings, (2) the objections to this Combined 401 WQC, including specifically the manner in which it is alleged to be inconsistent with the MassDEP's Water Quality Regulations, 314 CMR 9.00, and (3) the relief sought through the adjudicatory hearing, including specifically the changes desired in the final written Combined 401 WQC; and
- g. a statement that a copy of the request has been sent by certified mail or hand delivery to the applicant, the owner (if different from the applicant), the conservation commission of the city or town where the activity will occur, the Department of Conservation and Recreation (when the certificate concerns projects in Areas of Critical Environmental Concern), the public or private water supplier where the project is located (when the certificate concerns projects in Outstanding Resource Waters), and any other entity with responsibility for the resource where the project is located.

The hearing request along with a DEP Fee Transmittal Form and a valid check or money order payable to the Commonwealth of Massachusetts in the amount of one hundred dollars (\$100) must be mailed to:

Commonwealth of Massachusetts
Department of Environmental Protection
Commonwealth Master Lockbox
PO Box 4062
Boston, MA 02211

The request will be dismissed if the filing fee is not paid unless the appellant is exempt or granted a waiver. The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority. MassDEP may waive the adjudicatory hearing filing fee

pursuant to 310 CMR 4.06(2) for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file an affidavit setting forth the facts believed to support the claim of undue financial hardship together with the hearing request as provided above.

Should you have any questions relative to this Combined 401 WQC, please contact Derek Standish at (617) 875-3843 [derek.standish@mass.gov].

Sincerely,



Lisa Rhodes
Wetlands Program Chief

ecc:Brookfield Conservation Commission, 6 Central Street, Brookfield, MA 01506
Daniel R. Buttrick and Lucia Isobel Arthen-Long, Tighe & Bond, Inc., 53 Southampton Road,
Westfield, MA 01085
Judith Schmitz, MassDEP – CERO, 8 New Bond Street, Worcester, MA 01606
Misty-Anne Marold and Jason Carmignani, Natural Heritage and Endangered Species Program, One
Rabbit Hill Road, Westborough, MA 01581
Abigail E. Thrall, Samantha S. Coungeris, and Paul M. Maniccia, Department of the Army, New
England District, Corps of Engineers, 696 Virginia Road, Concord, MA 01742-2751
Edward Reiner and Rachel Croy, EPA, 5 Post Office Square, Suite 100, Boston, MA 02109

attachments: Communication for Non-English Speaking Parties document
Plans of Record



重要 महत्वपूर्ण σημαντικός
Important
կարևոր quan trọng مهم



Communication for Non-English-Speaking Parties

This document is important and should be translated immediately.

If you need this document translated, please contact MassDEP's Director of Environmental Justice at the telephone number listed below.

Español Spanish

Este documento es importante y debe ser traducido inmediatamente. Si necesita traducir este documento, póngase en contacto con el Director de Justicia Ambiental de MassDEP (*MassDEP's Director of Environmental Justice*) en el número de teléfono que figura más abajo.

Português Portuguese

Este documento é importante e deve ser traduzido imediatamente. Se você precisar traduzir este documento, entre em contato com o Diretor de Justiça Ambiental do MassDEP no número de telefone listado abaixo.

繁體中文 Chinese Traditional

本文檔很重要，需要即刻進行翻譯。
如需對本文檔進行翻譯，請透過如下列示電話號碼與 MassDEP 的環境司法總監聯絡。

简体中文 Chinese Simplified

这份文件非常重要，需要立即翻译。
如果您需要翻译这份文件，请通过下方电话与 MassDEP 环境司法主任联系。

Ayisyen Kreyòl Haitian Creole

Dokiman sa a enpòtan epi yo ta dwe tradui l imedyatman. Si w bezwen tradui dokiman sa a, tanpri kontakte Direktè. Jistis Anviwònmanal MassDEP a nan nimewo telefòn ki endike anba a.

Việt Vietnamese

Tài liệu này và quan trọng và phải được dịch ngay. Nếu quý vị cần bản dịch của tài liệu này, vui lòng liên hệ với Giám Đốc Phòng Công Lý Môi Trường của MassDEP theo số điện thoại được liệt kê bên dưới.

ប្រទេសកម្ពុជា Khmer/Cambodian

ឯកសារនេះមានសារៈសំខាន់
ហើយគួរត្រូវបានបកប្រែភ្លាមៗ។
ប្រសិនបើអ្នកត្រូវការអោយឯកសារនេះបកប្រែ
សូមទាក់ទងនាយកផ្នែកយុត្តិធម៌បរិស្ថានរបស់
MassDEPតាមរយៈលេខទូរស័ព្ទដែលបានរាយដូចខា
ងក្រោម។

Kriolu Kabuverdianu Cape Verdean

Es dokumentu sta important i tenki ser tradusidu imediatamenti. Se nho ta presisa ke es dokumentu sta tradisidu, por favor kontata O Diretor di Justisia di Environman di DEP ku es numero di telefoni menxionadu di baixo.

Contact Deneen Simpson 857-406-0738

**Massachusetts Department of Environmental Protection
100 Cambridge Street 9th Floor Boston, MA 02114**

TTY# MassRelay Service 1-800-439-2370 • <https://www.mass.gov/environmental-justice>
(Version revised 8.2.2023) 310 CMR 1.03(5)(a)

Русский Russian

Это чрезвычайно важный документ, и он должен быть немедленно переведен. Если вам нужен перевод этого документа, обратитесь к директору Департамента экологического правосудия MassDEP (MassDEP's Director of Environmental Justice) по телефону, указанному ниже.

العربية Arabic

هذه الوثيقة مهمة وتجب ترجمتها على الفور.

إذا كنت بحاجة إلى ترجمة هذه الوثيقة، فيرجى الاتصال بمدير العدالة البيئية في MassDEP على رقم الهاتف المذكور أدناه.

한국어 Korean

이 문서는 중대하므로 즉시 번역되어야 합니다. 본 문서 번역이 필요하신 경우, 매사추세츠 환경보호부의 "환경정의" 담당자 분께 문의하십시오. 전화번호는 아래와 같습니다.

հայերեն Armenian

Այս փաստաթուղթը կարևոր է, և պետք է անհապաղ թարգմանել այն:
Եթե Ձեզ անհրաժեշտ է թարգմանել այս փաստաթուղթը, դիմեք Մասաչուսեթսի շրջակա միջավայրի պահպանության նախարարության (MassDEP) Բնապահպանական հարցերով արդարադատության ղեկավարին (Director of Environmental Justice)՝ ստորև նշված հեռախոսահամարով

فارسی Farsi Persian

این نوشتار بسیار مهمی است و باید فوراً ترجمه شود. اگر نیاز به ترجمه این نوشتار دارید لطفاً با مدیر عدالت محیط زیستی MassDEP در شماره تلفن ذکر شده زیر تماس بگیرید.

Français French

Ce document est important et doit être traduit immédiatement. Si vous avez besoin d'une traduction de ce document, veuillez contacter le directeur de la justice environnementale du MassDEP au numéro de téléphone indiqué ci-dessous.

Deutsch German

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Ελληνική Greek

Το έγγραφο αυτό είναι πολύ σημαντικό και πρέπει να μεταφραστεί αμέσως. Αν χρειάζεστε μετάφραση του εγγράφου αυτού, παρακαλώ επικοινωνήστε με τον Διευθυντή του Τμήματος Περιβαλλοντικής Δικαιοσύνης της Μασαχουσέτης στον αριθμό τηλεφώνου που αναγράφεται παρακάτω

Italiano Italian

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Język Polski Polish

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हिन्दी Hindi

यह दस्तावेज महत्वपूर्ण है और इसका अनुवाद तुरंत किया जाना चाहिए। यदि आपको इस दस्तावेज का अनुवाद कराने की जरूरत है, तो कृपया नीचे दिए गए टेलीफोन नंबर पर MassDEP के पर्यावरणीय न्याय निदेशक से संपर्क करें।

Contact Deneen Simpson 857-406-0738

Massachusetts Department of Environmental Protection
100 Cambridge Street 9th Floor Boston, MA 02114

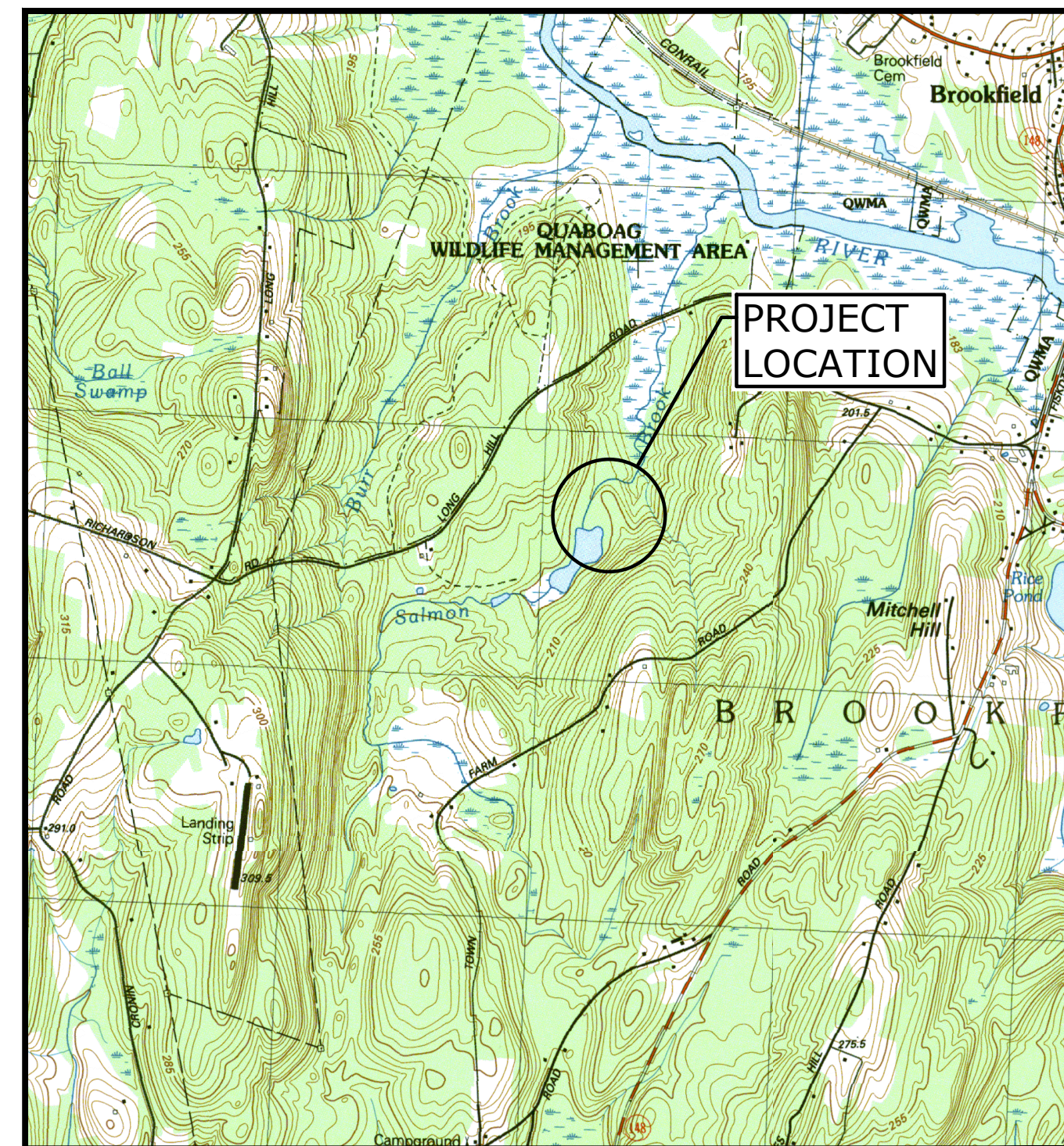
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(Version revised 8.2.2023) 310 CMR 1.03(5)(a)

MASSACHUSETTS DIVISION OF FISHERIES AND WILDLIFE SALMON BROOK DAM REMOVAL PROJECT

BROOKFIELD, MASSACHUSETTS
DECEMBER 2023

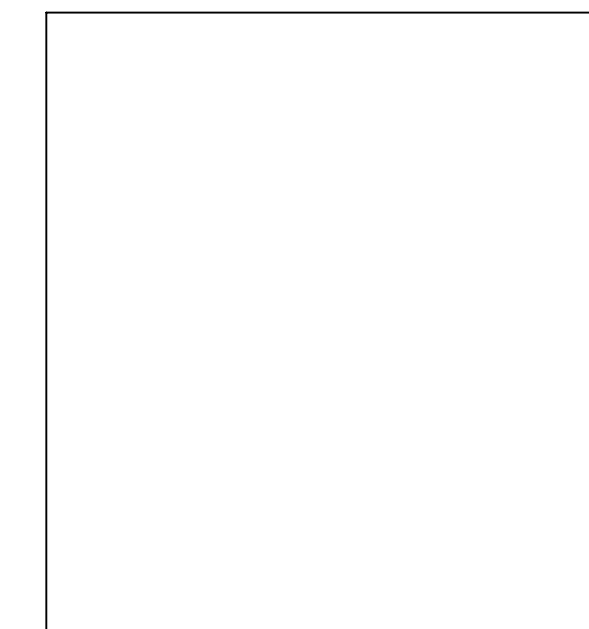
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|------------------|-------------|--|
| SHEET NO. | DRAWING NO. | DRAWING TITLE |
| GENERAL | | |
| 1 | G-001 | COVER SHEET |
| 2 | G-002 | GENERAL NOTES, ABBREVIATIONS, AND LEGEND |
| CIVIL | | |
| 3 | C-101 | CONSTRUCTION ACCESS, SITE PREPARATION, AND DEMOLITION PLAN |
| 4 | C-102 | EXISTING CONDITIONS PLAN |
| 5 | C-103 | PROPOSED CONDITIONS AND SITE RESTORATION PLAN |
| 6 | C-104 | CULVERT REMOVAL PLAN |
| 7 | C-201 | EROSION, SEDIMENT, AND WATER CONTROL DETAILS |



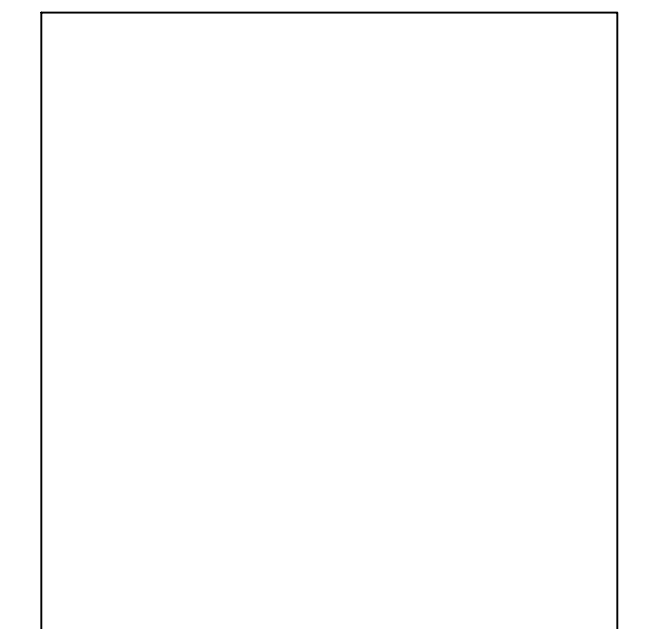
LOCATION MAP
SCALE: 1" = 2000'

PREPARED BY:

Tighe & Bond



CHRISTOPHER D. HAKER, PE



DANIEL R. BUTTRICK, PE

PREPARED FOR:

MASSACHUSETTS DIVISION OF FISHERIES AND WILDLIFE
CALEB SLATER, PhD, CHIEF OF HATCHERIES

**PERMIT SET - 401 / 404
JURISDICTIONAL AREAS**

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COMPLETE SET 7 SHEETS

EROSION AND SEDIMENTATION CONTROL NOTES:

- E1. TEMPORARY SEDIMENT AND EROSION CONTROL BY THE CONTRACTOR SHALL BE PERFORMED IN ACCORDANCE WITH THE SPECIFICATIONS LISTED BELOW.
- E2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING ALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES NECESSARY TO EXECUTE AND COMPLETE THE WORK OF THE CONTRACT, IN COMPLIANCE WITH THE TERMS AND CONDITIONS CONTAINED IN THE CONTRACT AND PROJECT PERMITS. CONTROLS SHOWN ON THE CONTRACT DRAWINGS AND MENTIONED IN THE TECHNICAL SPECIFICATIONS SHALL BE CONSIDERED MINIMUM REQUIREMENTS. THE CONTRACTOR SHALL EMPLOY WHATEVER SUPPLEMENTARY MEASURES NECESSARY TO PROTECT WETLANDS, WATERS, AND ADJACENT AREAS FROM DISTURBANCE OR DISCHARGE OF SEDIMENTS.
- E3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING SEDIMENT AND EROSION CONTROLS TO MEET THE CONDITIONS OF ALL APPLICABLE PERMITS AND REGULATIONS. SUCH CONTROLS SHALL BE INSTALLED WHEREVER THE POTENTIAL EXISTS FOR THE DISTURBANCE OF LAND OR THE TRANSPORT OF SEDIMENT.
- E4. EROSION AND SEDIMENTATION PERIMETER CONTROLS SHALL CONSIST OF 100% BIODEGRADABLE COMPOST FILTER TUBES INSTALLED PER DETAILS PROVIDED ON SHEET C-201. PLASTIC MESH MATERIALS SHALL NOT BE PERMITTED.
- E5. COMPOST FILTER TUBES SHALL BE INSTALLED PRIOR TO COMMENCEMENT OF CLEARING AND GRUBBING ACTIVITIES. LOCATION OF COMPOST FILTER TUBES TO BE ADJUSTED UPON COMPLETION OF CLEARING AND GRUBBING BUT PRIOR TO COMMENCEMENT OF GRADING ACTIVITIES.
- E6. ALL EROSION AND SEDIMENTATION CONTROLS SHALL BE MAINTAINED IN GOOD CONDITION AND PROPER WORKING ORDER. NECESSARY REPAIRS SHALL BE MADE IMMEDIATELY.
- E7. ALL EROSION AND SEDIMENTATION CONTROLS SHALL BE PROPERLY DISPOSED OFF-SITE UPON COMPLETION OF WORK, SITE STABILIZATION AND/OR AUTHORIZATION FROM THE OWNER.
- E8. MAINTAIN AN ADDITIONAL SUPPLY OF EROSION CONTROL MEASURES ONSITE THROUGHOUT THE CONSTRUCTION PERIOD.
- E9. SILT TRAPPED AT BARRIERS SHALL BE REMOVED AND DISPOSED OF IN UPLAND AREAS OUTSIDE BUFFER ZONES. MATERIALS DEPOSITED IN ANY TEMPORARY SETTLING BASIN SHALL BE REMOVED AT THE COMPLETION OF THE PROJECT. ALL DISTURBED AREAS SHALL BE RESTORED.
- E10. INSTALL EROSION CONTROLS AT THE EDGE OF PROPOSED WORK. EROSION CONTROLS SHALL ACT AS LIMIT OF WORK LINE TO HELP ENSURE THAT EQUIPMENT DOES NOT DISTURB ADJACENT PROPERTIES.
- E11. ADDITIONAL EROSION CONTROLS MAY BE REQUIRED TO PREVENT SEDIMENTS FROM DISCHARGING TO ADJACENT PROPERTIES OR INTO EXISTING STORM DRAIN SYSTEMS.
- E12. STABILIZE THE AREAS OF CONSTRUCTION ACTIVITIES AT THE CLOSE OF EACH CONSTRUCTION DAY. CHECK EROSION CONTROLS AT THIS TIME AND MAINTAIN OR REINFORCE IF NECESSARY.
- E13. PROTECT NEW WORK FROM FLOODING. PROPERLY SLOPE GRADING IN THE AREAS SURROUNDING ALL EXCAVATIONS TO PREVENT WATER FROM RUNNING INTO THE EXCAVATED AREA OR TO ADJACENT PROPERTIES. UPON COMPLETION OF THE WORK, RESTORE ALL AREAS IN A SATISFACTORY MANNER DETERMINED BY THE OWNER.
- E14. ALL SILT-LADEN WATER MUST BE SETTLED OR FILTERED TO REMOVE ALL SEDIMENTS IN A SEDIMENTATION BASIN OR FILTER BAG LOCATED DOWNSTREAM, PRIOR TO RELEASE TO A WATERWAY OR EXISTING DRAINAGE SYSTEM.
- E15. DEWATER AS NECESSARY TO KEEP CONSTRUCTION AREAS FREE OF WATER, DISCHARGE WATER FROM DEWATERING TO THE APPROPRIATE LOCATION AND WITHOUT SEDIMENT.
- E16. AT THE END OF EACH WORK DAY, ANY SEDIMENTS TRACKED ONTO PUBLIC RIGHT-OF-WAYS BEYOND THE PROJECT LIMITS SHALL BE SWEEPED AWAY.

BEST MANAGEMENT PRACTICES

INSPECTION AND MAINTENANCE

- SEDIMENT, EROSION CONTROLS, AND BEST MANAGEMENT PRACTICES (BMPS) SHALL BE INSTALLED PRIOR TO COMMENCING CONSTRUCTION AT THE SITE. NO WORK WHICH SHALL DISTURB THE SITE OR CREATE THE POTENTIAL FOR SEDIMENT RELEASE SHALL COMMENCE UNTIL THE SEDIMENT AND EROSION CONTROLS HAVE BEEN INSPECTED AND APPROVED BY THE OWNER, ENGINEER, AND REGULATORY AGENCIES. ALL CONTROLS AND BMPS SHALL BE SUBJECT TO INSPECTION BY THE OWNER, THEIR REPRESENTATIVE, AND REGULATORY AGENCIES AT ANYTIME THEREAFTER.
- PERIODIC INSPECTION, MAINTENANCE, AND CLEANING OF TEMPORARY EROSION OF SEDIMENT CONTROL MEASURES AND BEST MANAGEMENT PRACTICES (BMPS) SHALL BE REQUIRED. ALL CONTROLS AND BMPS SHALL BE INSPECTED EVERY 7 DAYS AND WITHIN 24 HOURS OF RAINFALL EVENTS OF 0.5 INCHES OR GREATER. ROUTINE INSPECTION AND MAINTENANCE WILL REDUCE THE CHANCE OF POLLUTING STORMWATER BY FINDING AND CORRECTING PROBLEMS BEFORE THE NEXT RAIN EVENT. THE FOCUS OF THE INSPECTION WILL BE TO DETERMINE:
 1. WHETHER OR NOT THE MEASURE WAS INSTALLED / PERFORMED CORRECTLY;
 2. WHETHER OR NOT THERE HAS BEEN ANY DAMAGE TO THE MEASURE SINCE IT WAS INSTALLED OR PERFORMED; AND
 3. WHAT SHOULD BE DONE TO CORRECT ANY PROBLEMS WITH THE MEASURE. EACH MEASURE IS TO BE OBSERVED TO DETERMINE IF IT IS STILL EFFECTIVE.
 IN SOME CASES, SPECIFIC MEASUREMENTS MAY BE TAKEN TO DETERMINE IF MAINTENANCE OF THE MEASURES IS REQUIRED.

SITE MANAGER

- PRIOR TO CONSTRUCTION, A SITE MANAGER WILL BE DESIGNATED BY THE CONTRACTOR TO BE RESPONSIBLE FOR INSTALLATION, MONITORING, INSPECTION, AND CORRECTION OF EROSION AND SEDIMENT CONTROL MEASURES.

SITE CLEARING

- DURING SITE CLEARING, EXISTING VEGETATION WITHIN THE OVERALL LIMITS OF CLEARING AND GRUBBING SHALL BE REMOVED, EXCEPT AS OTHERWISE DIRECTED. PRIOR TO ANY SITE CLEARING ACTIVITIES, SEDIMENT CONTROL BARRIERS SHALL BE PLACED ALONG THE OUTER LIMIT OF DISTURBANCE. CLEARING IS TO BE LIMITED TO THOSE AREAS OF PROPOSED WORK. DISTURBED AREAS ARE TO BE KEPT TO A MINIMUM. NO VEGETATION SHALL BE CLEARED FROM AREAS OUTSIDE THE LIMITS OF CLEARING AND GRUBBING WITHOUT PRIOR APPROVAL FROM THE OWNER.

EROSION CONTROL BARRIERS

- COMPOST FILTER TUBE BARRIERS ARE TO BE PLACED TO TRAP SEDIMENT TRANSPORTED BY RUNOFF BEFORE IT REACHES THE DRAINAGE FEATURES, WATERBODIES, OR WETLANDS, IN ADDITION TO AREAS WHERE HIGH RUNOFF VELOCITIES OR HIGH SEDIMENT LOADS ARE EXPECTED. THE COMPOST FILTER TUBES ARE TO BE REPLACED AS DETERMINED BY PERIODIC FIELD INSPECTIONS.

DUST CONTROL

- STANDARD DUST CONTROL MEASURES, INCLUDING SPRAYING AND MISTING SHALL BE USED AS NECESSARY. CALCIUM CHLORIDE SHALL NOT BE ALLOWED ON THIS PROJECT.

STAGING AREAS

- THE CONTRACTOR SHALL COORDINATE LAYDOWN STAGING AREAS IN WHICH TO STORE EQUIPMENT AND MATERIALS WITH THE OWNER.
- STAGING AREAS SHALL BE SURROUNDED WITH COMPOST FILTER TUBE EROSION BARRIERS ON THE DOWNHILL SIDE.
- DURING AND AFTER CONSTRUCTION, ALL PAVED ROAD AND DRIVEWAY SURFACES ARE TO BE SCRAPED AND BROOMED FREE OF EXCAVATED MATERIALS ON A DAILY BASIS, UNLESS APPROVED BY THE OWNER.

STOCKPILED MATERIALS

- STOCKPILES OF SOIL CREATED DURING CONSTRUCTION ACTIVITIES ARE TO BE SURROUNDED WITH AN EROSION CONTROL BARRIER AROUND THE PERIMETER OF THE STOCKPILE. STOCKPILES OF ERODIBLE MATERIAL ARE TO BE COVERED PRIOR TO INCLEMENT WEATHER WITH A MINIMUM OF 20 MIL POLYETHYLENE SHEETING. STOCKPILES LEFT UNDISTURBED LONGER THAN 14 DAYS SHALL BE SEEDED OR COVERED.
- STOCKPILES OF MATERIALS FOR SPECIAL DISPOSAL SHALL ALSO BE UNDERLAID WITH 20 MIL (MIN) POLYETHYLENE SHEETING.

EQUIPMENT FUELING

- EQUIPMENT FUELING AND OTHER ACTIVITIES INVOLVING PETROLEUM, OIL, OR OTHER POTENTIALLY HAZARDOUS SUBSTANCES ARE TO BE PERFORMED AT PRE-APPROVED, DESIGNATED AREAS WITH APPROPRIATE SPILL PREVENTION AND CONTROL MEASURES. PORTABLE SECONDARY CONTAINMENT IS TO BE USED, AND SORBENT MATERIALS ARE TO BE PLACED AROUND THE PERIMETER OF THE FUELING AREA.

CONSTRUCTION DEWATERING

- CONSTRUCTION DEWATERING SHALL BE REQUIRED DURING PORTIONS OF CONSTRUCTION WHICH REQUIRE EXCAVATION OR OTHER ACTIVITIES WHERE GROUNDWATER MAY INTERFERE WITH THE WORK.
- CONSTRUCTION DEWATERING DISCHARGE TO A SURFACE WATER BODY SHALL BE PRE-TREATED FOR SEDIMENT REMOVAL BY PASSING THROUGH AN APPROPRIATELY SIZED FILTER SOCK, SILT BAG, FRACTIONATION / SEDIMENTATION TANK, OR SEDIMENT TRAP PRIOR TO DISCHARGE, AS NECESSARY.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING DEWATERING TECHNIQUES AND MAINTAINING DEWATERING PROCEDURES THROUGHOUT THE DURATION OF THE PROJECT.

OUTLET PROTECTION

- APPROPRIATE OUTLET PROTECTION, CONSISTING OF RIPRAP CHANNEL LINING, A LEVEL SPREADER, OR OTHER SUCH MEASURE SHALL BE PROVIDED AT THE OUTLET OF ANY DEWATERING CONDUIT OR STORMWATER CULVERT OR CHANNEL OUTFALL TO REDUCE VELOCITIES AND ENHANCE SEDIMENTATION PRIOR TO DISCHARGE.

LIMITS OF WORK

- THE CONTRACTOR SHALL LINE THE UPGRADIENT BOUNDARY OF WORK AREAS WITH ORANGE SAFETY FENCING BEFORE THE START OF SITE CLEARING ACTIVITIES.

SURFACE WATER CONTROL

- THE CONTRACTOR MUST MAINTAIN THE FLOWAGE OF SURFACE WATER THROUGH THE WORK AREA IN ACCORDANCE WITH THE SPECIFICATIONS. ALL COFFERDAMS SHALL CONSIST OF NON-ERODIBLE MATERIAL HOWEVER WORK MAY BE DONE IN THE WET. THE CONTRACTOR SHALL SUBMIT A WATER CONTROL PLAN THAT WILL ADDRESS PROCEDURES THAT WILL BE USED IN A CONTROLLED MANNER AND EMERGENCY MEASURES TO IMPLEMENT IN THE EVENT A STORM OCCURS DURING CONSTRUCTION.

TEMPORARY STABILIZATION

- WHEN NECESSARY, TEMPORARY SLOPE PROTECTION SHALL BE PROVIDED BY INSTALLING SEDIMENT TRAP BARRIERS AT THE TOE OF FILLS OR CUT SLOPES. IF ADDITIONAL STABILIZATION IS NEEDED, THEN THE CONTRACTOR SHALL INSTALL MULCH LOGS, MATTING, SUCH AS STRAW, JUTE, WOOD FIBER, OR BIODEGRADABLE MESH. A TACKIFIER SHALL BE USED ON LOOSE MATERIALS USED FOR TEMPORARY EROSION CONTROL.
- IN THE EVENT THAT DISTURBED AREAS AT THE SITE ARE TO BE LEFT UN-WORKED FOR MORE THAN TWO WEEKS, THE AREAS SHALL BE MULCHED WITH STRAW AT A RATE OF 100 LBS. PER 1,000 S.F. TO HELP CONTROL EROSION. 100% BIODEGRADABLE EROSION CONTROL BLANKETS OR TWO INCHES OF WOOD CHIP MULCH MAY ALSO BE USED AS TEMPORARY COVER.
- IN THE EVENT THAT DISTURBED AREAS AT THE SITE ARE TO BE LEFT UN-WORKED FOR MORE THAN ONE MONTH, THE AREAS SHALL BE TOPSOILED AND SEEDED AS PER THE SPECIFICATIONS AND AT NO ADDITIONAL COST TO THE OWNER.
- LEAVE THE SURFACE OF ALL EXCAVATIONS AND FILLS IN A FIRM AND STABLE CONDITION AT THE END OF EACH DAY. ROLL OR OTHERWISE TREAT THE SURFACE AS NEEDED.

SITE RESTORATION

- STABILIZATION OF DISTURBED AREAS OR NEW SOIL FILLS SHALL BE IMPLEMENTED WITHIN 14 DAYS AFTER GRADING OR CONSTRUCTION ACTIVITIES HAVE PERMANENTLY CEASED. APPROPRIATE VEGETATIVE SOIL STABILIZATION IS TO BE USED TO MINIMIZE EROSION. TEMPORARY AND PERMANENT VEGETATIVE COVER IS TO BE ESTABLISHED IN ACCORDANCE WITH THE PROJECT PLANS AND SPECIFICATIONS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORATION OF PREVIOUSLY VEGETATED UPLAND AREAS DISTURBED BY CONSTRUCTION ACTIVITIES. RESTORATION OF UPLAND AREAS CONSIST OF REPLACEMENT OF TOPSOIL OR PLACEMENT OF IMPORTED LOAM AS NEEDED SUCH THAT A MINIMUM OF 4 INCHES OF SUITABLE MATERIAL IS PRESENT AND APPROPRIATELY LIMED, FERTILIZED, GRADED, AND SCARIFIED. FIELDS DISTURBED OR COMPACTED BY CONSTRUCTION ACTIVITIES SHALL BE PLOWED TO LOOSEN THE SOIL, HARROWED TO PROVIDE AN EVEN SURFACE, AND APPROPRIATELY PREPARED FOR PLANTING.
- DISTURBED UPLAND AREAS SHALL THEN BE HYDROSEEDED WITH AN APPROVED SEED MIX AT THE RATE RECOMMENDED BY THE MANUFACTURER. SEEDING RATE SHALL BE DOUBLED FOR DORMANT SEEDING. SEED MIX SHALL BE THE FOLLOWING UNLESS OTHERWISE NOTED OR AS APPROVED BY THE ENGINEER.

DRY AREAS:

THE NEW ENGLAND EROSION CONTROL/RESTORATION MIX FOR DRY SITES:

| | |
|-----------------------------|--------------------------------|
| COMMON NAME | BOTANICAL NAME |
| CREeping RED FESCUE | <i>Festuca rubra</i> |
| CANADA WILD RYE | <i>Elymus canadensis</i> |
| ANNUAL RYEGRASS | <i>Lolium multiflorum</i> |
| PERENNIAL RYEGRASS | <i>Lolium perenne</i> |
| BLUE GRAMA | <i>Bouteloua gracilis</i> |
| LITTLE BLUESTEM | <i>Schizachyrium scoparium</i> |
| INDIAN GRASS | <i>Sorghastrum nutans</i> |
| ROUGH BENTGRASS/TICKLEGRASS | <i>Agrostis scabia</i> |
| UPLAND BENTGRASS | <i>Agrostis perennans</i> |

DAMP, WET, OR WETLAND ARES:

THE NEW ENGLAND WETLAND SEED MIX:

| | |
|---------------------------------|-----------------------------|
| COMMON NAME | BOTANICAL NAME |
| FOX SEDGE | <i>Carex vulpinoidea</i> |
| BLUNT BROOM SEDGE | <i>Carex scoparia</i> |
| BLUE Vervain | <i>Verbena hastata</i> |
| LURID SEDGE | <i>Carex lurida</i> |
| FOWL BLUEGRASS | <i>Poa palustris</i> |
| TICKSEED SUNFLOWER/BUR MARIGOLD | <i>Bidens aristosa</i> |
| HOP SEDGE | <i>Carex lupulina</i> |
| GREEN BULRUSH | <i>Scirpus atrovirens</i> |
| CREeping SPIKE RUSH | <i>Eleocharis palustris</i> |
| SOFT RUSH | <i>Juncus effusus</i> |
| FRINGED SEDGE | <i>Carex crinita</i> |
| SWAMP MILKWEED | <i>Asclepias incarnata</i> |
| SWAMP ASTER | <i>Aster puniceus</i> |
| RATTLESNAKE GRASS | <i>Glyceria canadensis</i> |
| SQUARE STEMMED MONKEY FLOWER | <i>Mimulus ringens</i> |
| SPOTTED JOE PEE WEED | <i>Eupatorium maculatum</i> |
| BLUE FLAG | <i>Iris versicolor</i> |

- 100% BIODEGRADABLE EROSION CONTROL BLANKETS MUST BE USED FOR STABILIZATION OF SLOPES IN EXCESS OF 3H:1V AND MAY BE USED IN LIEU OF HYDROSEEDING AT THE CONTRACTOR'S DISCRETION TO PROVIDE ADDITIONAL EROSION PROTECTION.
- FINAL STABILIZATION SHALL BE CONSIDERED COMPLETE WHEN ALL SOIL-DISTURBING ACTIVITIES HAVE BEEN COMPLETED AND A UNIFORM, PERENNIAL VEGETATIVE COVER WITH A DENSITY OF EIGHTY PERCENT HAS BEEN ESTABLISHED OR EQUIVALENT STABILIZATION MEASURES (SUCH AS THE USE OF MULCHES OR EROSION CONTROL MATTING) HAVE BEEN EMPLOYED ON ALL UNPAVED AREAS AND AREAS NOT COVERED BY PERMANENT STRUCTURES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF ALL VEGETATED SURFACES, INCLUDING WATERING, FERTILIZING, REPAIRING EROSION, INVASIVE PLANT REMOVAL, AND RE-SEEDING UNTIL ESTABLISHMENT CONDITIONS ARE MET AND UNTIL THE END OF THE CONTRACTUAL MAINTENANCE PERIOD.
- WORK AREA SHALL BE FREE OF INVASIVE PLANT GROWTH AT FINAL COMPLETION AND END OF 1 YEAR WARRANTEE PERIOD.

GENERAL NOTES:

1. THE EXISTING CONDITIONS PLAN IS BASED ON LIGHT DETECTION AND RANGING (LIDAR) TERRAIN AND ELEVATION DATA COLLECTED FROM 2013 TO 2014 BY THE U.S. GEOLOGICAL SURVEY, AND SITE VISITS.
2. THE HORIZONTAL DATUM SHOWN REFERENCES THE NORTH AMERICAN HORIZONTAL DATUM OF 1983 (NAD83).
3. THE VERTICAL DATUM SHOWN REFERENCES THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
4. WETLAND RESOURCE AREAS SUBJECT TO LOCAL AND STATE JURISDICTION, ALONG WITH WATERS OF THE UNITED STATES (WOTUS) WERE DELINEATED BY TIGHE & BOND, IN AUGUST 2023.
5. THE 100-YEAR FLOODING LIMIT WAS ESTABLISHED BASED ON MODELING BY TIGHE & BOND USING SCS TR-55 METHODS AS OUTLINED IN 310 CMR 10.57 (2)(a)(3).

ABBREVIATIONS

| | |
|----------|---------------------------|
| CMP | CORRUGATED METAL PIPE |
| DBH | DIAMETER AT BREAST HEIGHT |
| ELEV, EL | ELEVATION |
| EOW | EDGE OF WATER |
| OHW | ORDINARY HIGH WATER MARK |
| TBM | TEMPORARY BENCHMARK |
| TOW | TOP OF WALL |
| BOW | BOTTOM OF WALL |
| TYP | TYPICAL |
| UP | UTILITY POLE |
| VW | VEGETATED WETLAND |

LEGEND

| | | | |
|--|------------------------------------|--|----------------------------|
| | REMOVE OR DEMOLISH | | VEGETATED WETLAND |
| | UTILITY POLE | | HIGH WATER MARK |
| | SIGN | | WETLAND FLAG |
| | MAILBOX | | PROPOSED TREE LINE |
| | OVERHEAD ELECTRIC LINE | | TEST PIT REQUIRED |
| | PROPOSED CULTURE LINE | | NATIVE STREAMBED MATERIAL |
| | DRAIN STRUCTURE | | TOP OF SEDIMENT CONTOUR |
| | PROPERTY LINE | | BOTTOM OF SEDIMENT CONTOUR |
| | TOWN LINE | | POSSIBLE CHANNEL CONTOUR |
| | EDGE OF PAVEMENT | | |
| | EXISTING GUARDRAIL | | |
| | STONE WALL | | |
| | TREE LINE | | |
| | PROPOSED CHAIN LINK FENCE | | |
| | BORING | | |
| | LIMIT OF WORK | | |
| | EROSION AND SEDIMENT CONTROLS | | |
| | COFFERDAM | | |
| | STONE MASONRY WALL | | |
| | TREE TO BE REMOVED | | |
| | PROPOSED RIP-RAP | | |
| | EXISTING MINOR CONTOUR | | |
| | EXISTING MAJOR CONTOUR | | |
| | PROPOSED MINOR CONTOUR | | |
| | PROPOSED MAJOR CONTOUR | | |
| | TREE TRUNK LOCATION, DBH, AND TYPE | | |

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Salmon Brook Dam Removal Project

Massachusetts Division of Fisheries and Wildlife

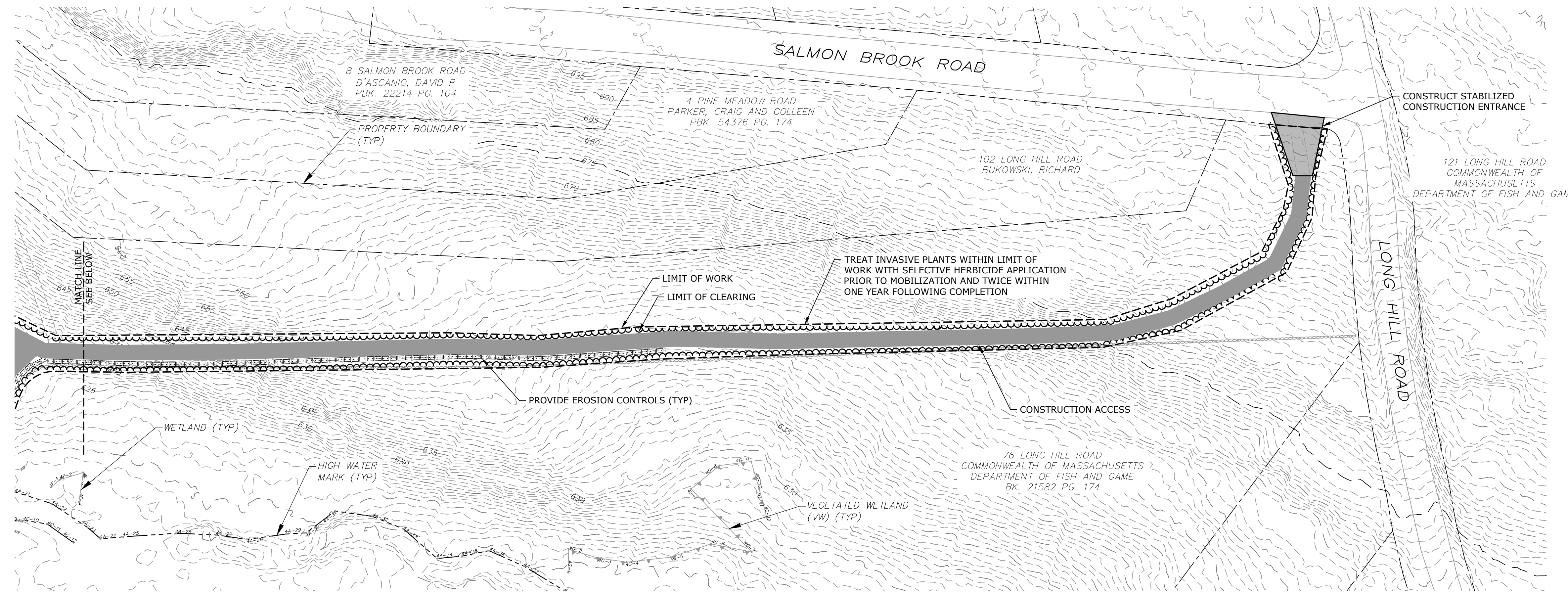
Brookfield,
Massachusetts

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| DATE: | 12/2023 | |
| FILE: | GENERAL NOTES.dwg | |
| DRAWN BY: | CMH/ARG | |
| DESIGNED/CHECKED BY: | DRB/DRH | |
| APPROVED BY: | CDH | |

GENERAL NOTES, ABBREVIATIONS, AND LEGEND

SCALE: NO SCALE

G-002
SHEET 2 OF XX



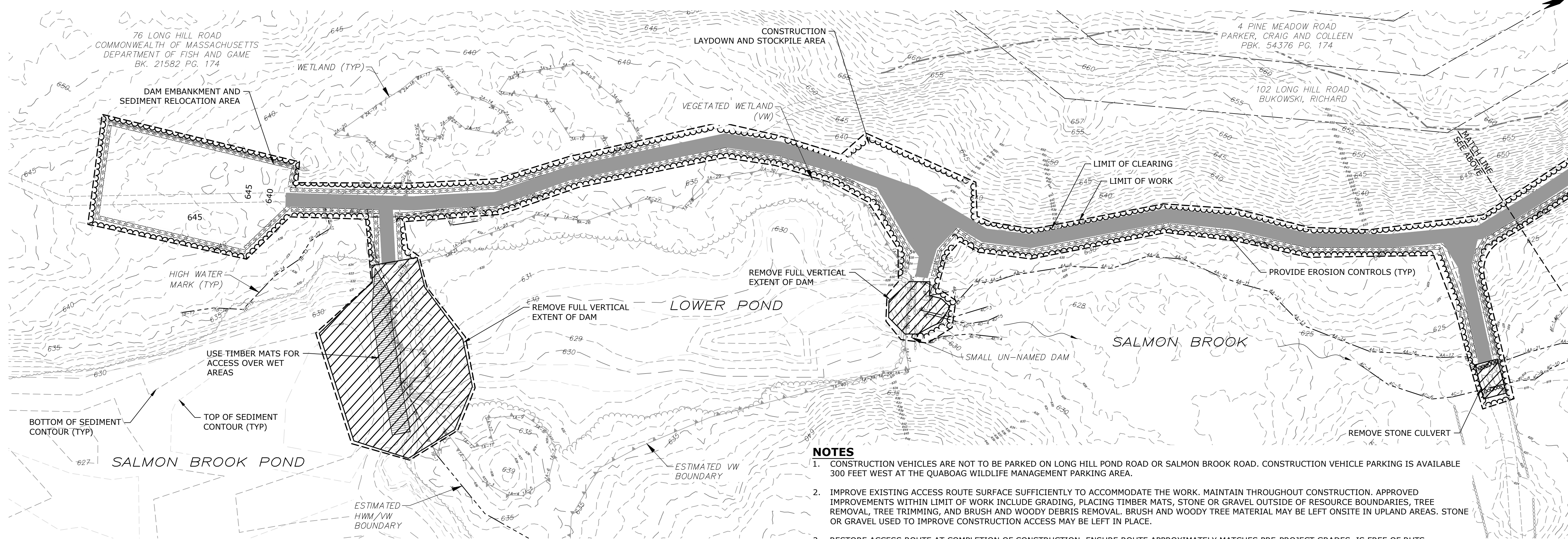
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**Salmon Brook
Dam Removal
Project**

Massachusetts
Division of
Fisheries and
Wildlife

Brookfield,
Massachusetts



NOTES

1. CONSTRUCTION VEHICLES ARE NOT TO BE PARKED ON LONG HILL POND ROAD OR SALMON BROOK ROAD. CONSTRUCTION VEHICLE PARKING IS AVAILABLE 300 FEET WEST AT THE QUABOAG WILDLIFE MANAGEMENT PARKING AREA.
2. IMPROVE EXISTING ACCESS ROUTE SURFACE SUFFICIENTLY TO ACCOMMODATE THE WORK. MAINTAIN THROUGHOUT CONSTRUCTION. APPROVED IMPROVEMENTS WITHIN LIMIT OF WORK INCLUDE GRADING, PLACING TIMBER MATS, STONE OR GRAVEL OUTSIDE OF RESOURCE BOUNDARIES, TREE REMOVAL, TREE TRIMMING, AND BRUSH AND WOODY DEBRIS REMOVAL. BRUSH AND WOODY TREE MATERIAL MAY BE LEFT ONSITE IN UPLAND AREAS. STONE OR GRAVEL USED TO IMPROVE CONSTRUCTION ACCESS MAY BE LEFT IN PLACE.
3. RESTORE ACCESS ROUTE AT COMPLETION OF CONSTRUCTION. ENSURE ROUTE APPROXIMATELY MATCHES PRE-PROJECT GRADES, IS FREE OF RUTS, PRE-EXISTING CROSS CULVERTS WERE NOT DAMAGED OR ARE REPLACED, IS STABLE FROM EROSION, AND IS IN GOOD CONDITION AT COMPLETION OR WORK.

ACCESS PLAN
1"=50'

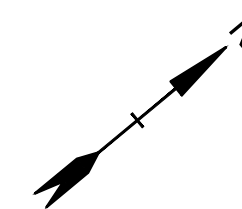
SCALE: 1" = 50'

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 Tighe & Bond 23\1109244 Mass Design DWP Dennis\Salmon Brook Dam (10401821) Brookfield\Drawings\AutoCAD\Sheet\401_404 Permits\ACCESS AND DEMOLITION.dwg

| MARK | DATE | DESCRIPTION |
|----------------------|---------------------------|-------------|
| PROJECT NO: | M0944-051 | |
| DATE: | 12/2023 | |
| FILE: | ACCESS AND DEMOLITION.dwg | |
| DRAWN BY: | CMH/ARG | |
| DESIGNED/CHECKED BY: | DRB/DRH | |
| APPROVED BY: | CDH | |

**CONSTRUCTION ACCESS,
SITE PREPARATION, AND
DEMOLITION PLAN**

SCALE: 1" = 50'



**PERMIT SET
401 / 404
JURISDICTIONAL
AREA**

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**Salmon Brook
Dam Removal
Project**

Massachusetts
Division of
Fisheries and
Wildlife

Brookfield,
Massachusetts

| MARK | DATE | DESCRIPTION |
|----------------------|-------------------------------|-------------|
| PROJECT NO: | M0944-051 | |
| DATE: | 12/2023 | |
| FILE: | C-102 EXISTING CONDITIONS.dwg | |
| DRAWN BY: | CMH/ARG | |
| DESIGNED/CHECKED BY: | DRB/DRH | |
| APPROVED BY: | CDH | |

**EXISTING CONDITIONS
PLAN**

SCALE: 1" = 50'



C-102
SHEET 4 OF XX

Last Saved: 1/24/2024 11:21:21am By: Cheseth
 Plotted On: Jan 29, 2024 11:21:21am
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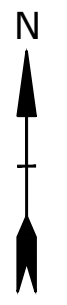


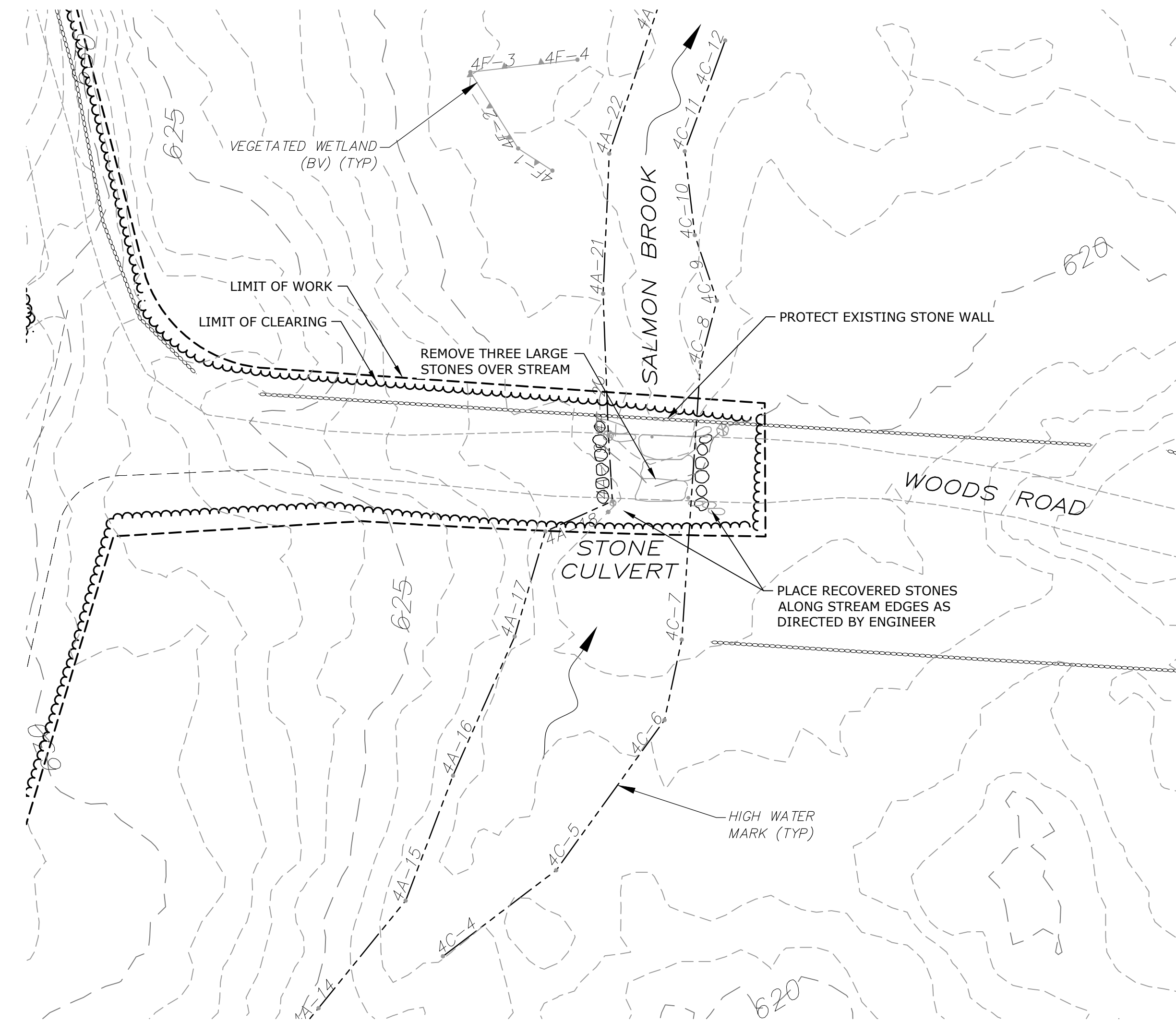
PHOTO NO. 1
EXISTING STONE WALL TO BE PROTECTED AND
TO REMAIN INTACT



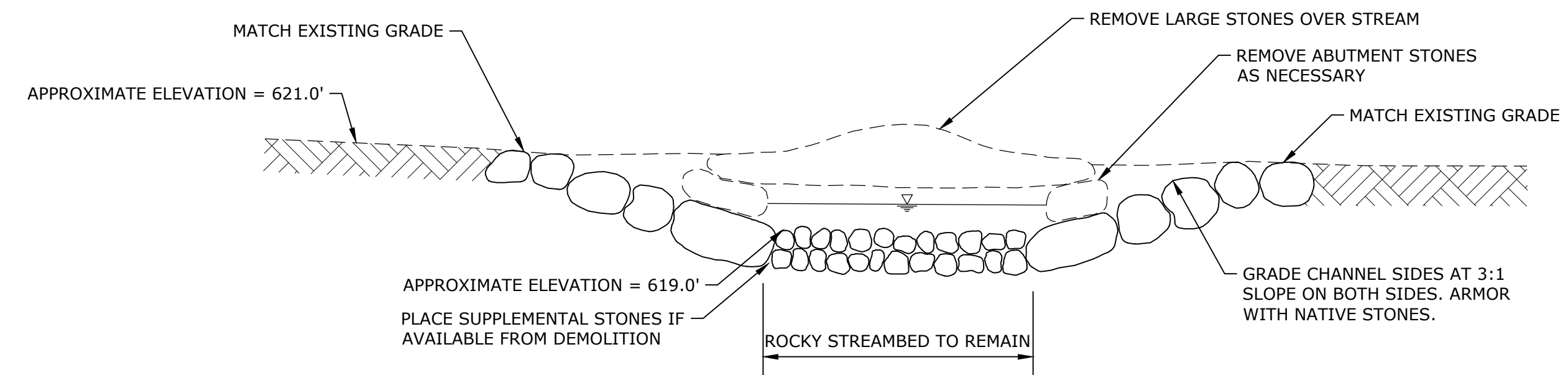
PHOTO NO. 2
STONES OVER STREAM TO BE REMOVED



PHOTO NO. 3
BOULDERS OVER STREAM TO BE REMOVED



STONE CULVERT REMOVAL SITE PLAN
1"=20'



STREAMBED RESTORATION PLAN
NO SCALE

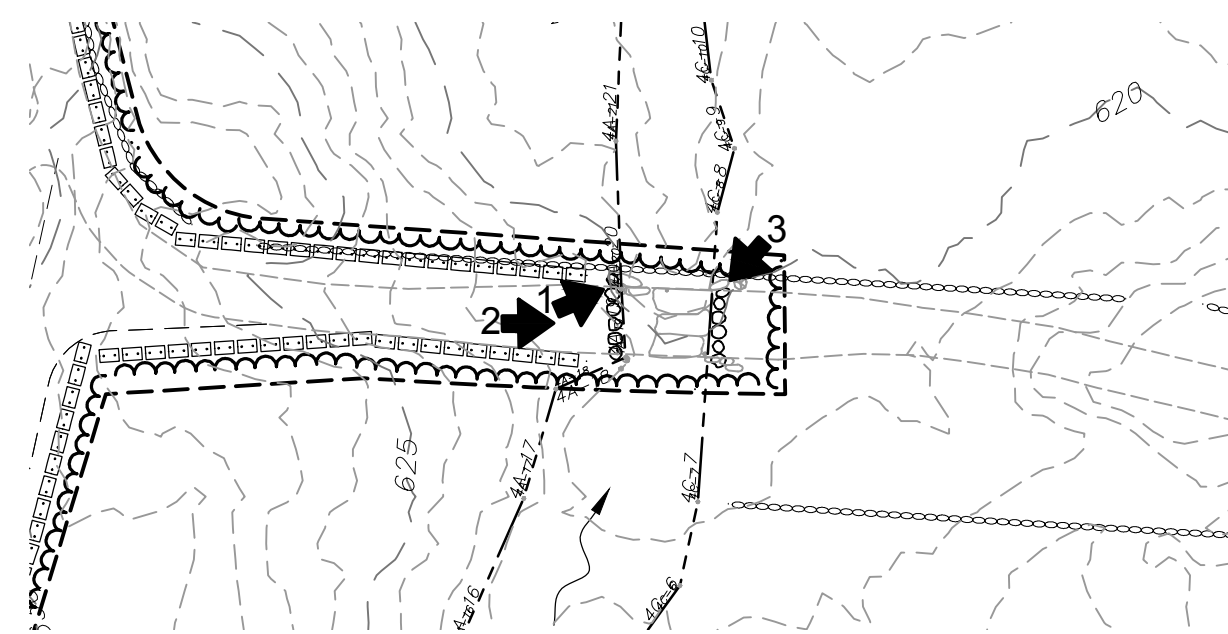
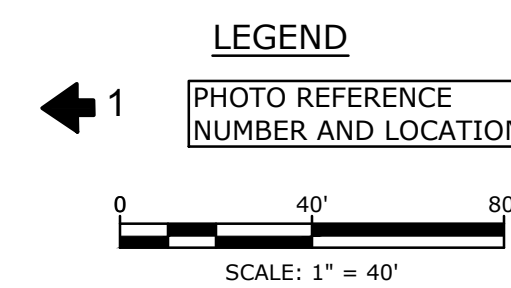


PHOTO LOCATION PLAN
1"=40'



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**Salmon Brook
Dam Removal
Project**

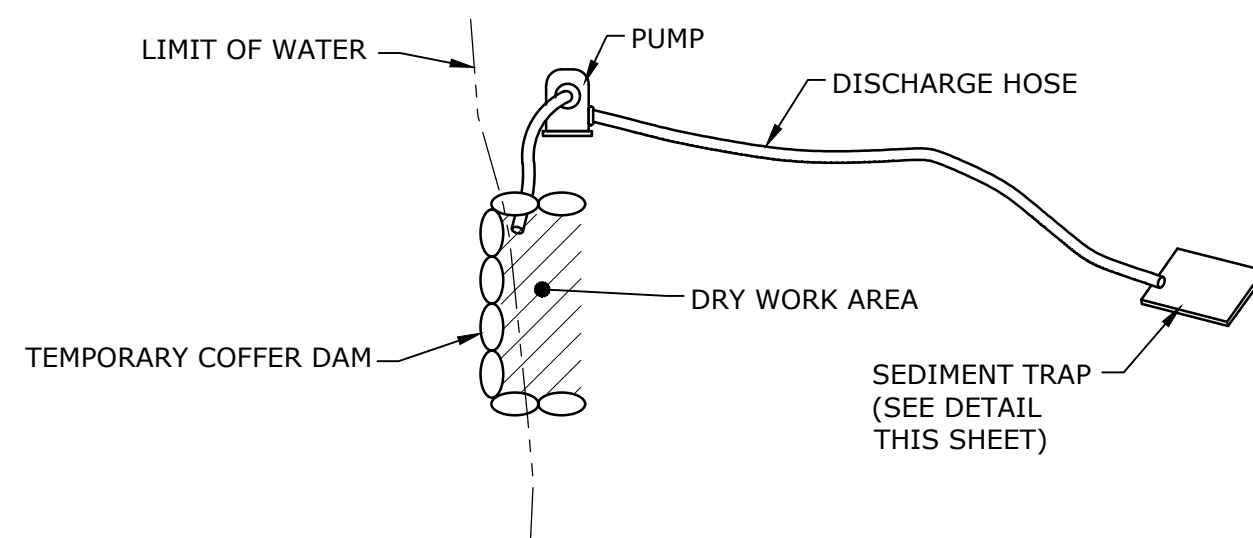
Massachusetts
Division of
Fisheries and
Wildlife

Brookfield,
Massachusetts

| MARK | DATE | DESCRIPTION |
|----------------------|-------------------------------|-------------|
| PROJECT NO: | M0944-051 | |
| DATE: | 12/2023 | |
| FILE: | C-103 PROPOSED CONDITIONS.dwg | |
| DRAWN BY: | CMH | |
| DESIGNED/CHECKED BY: | DRB | |
| APPROVED BY: | CDH | |

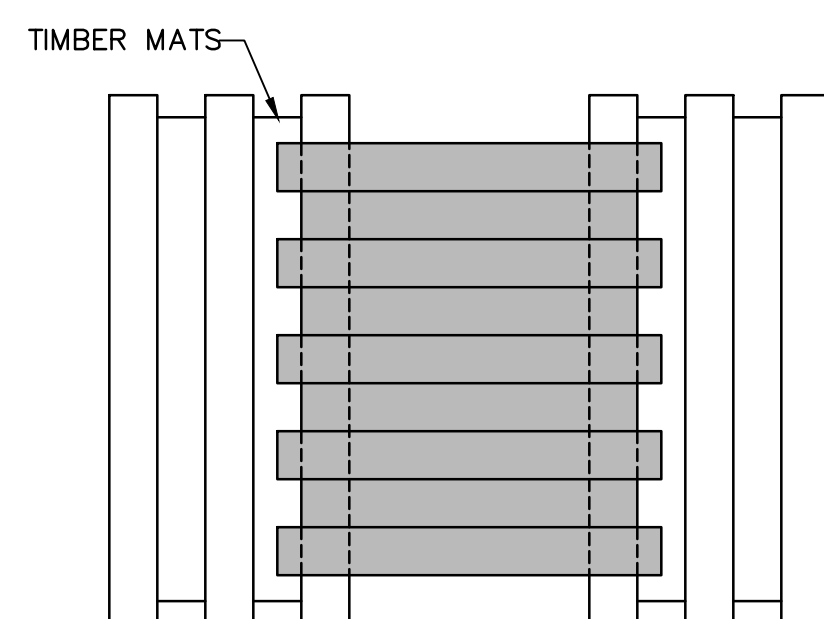
CULVERT REMOVAL PLAN

SCALE: AS SHOWN



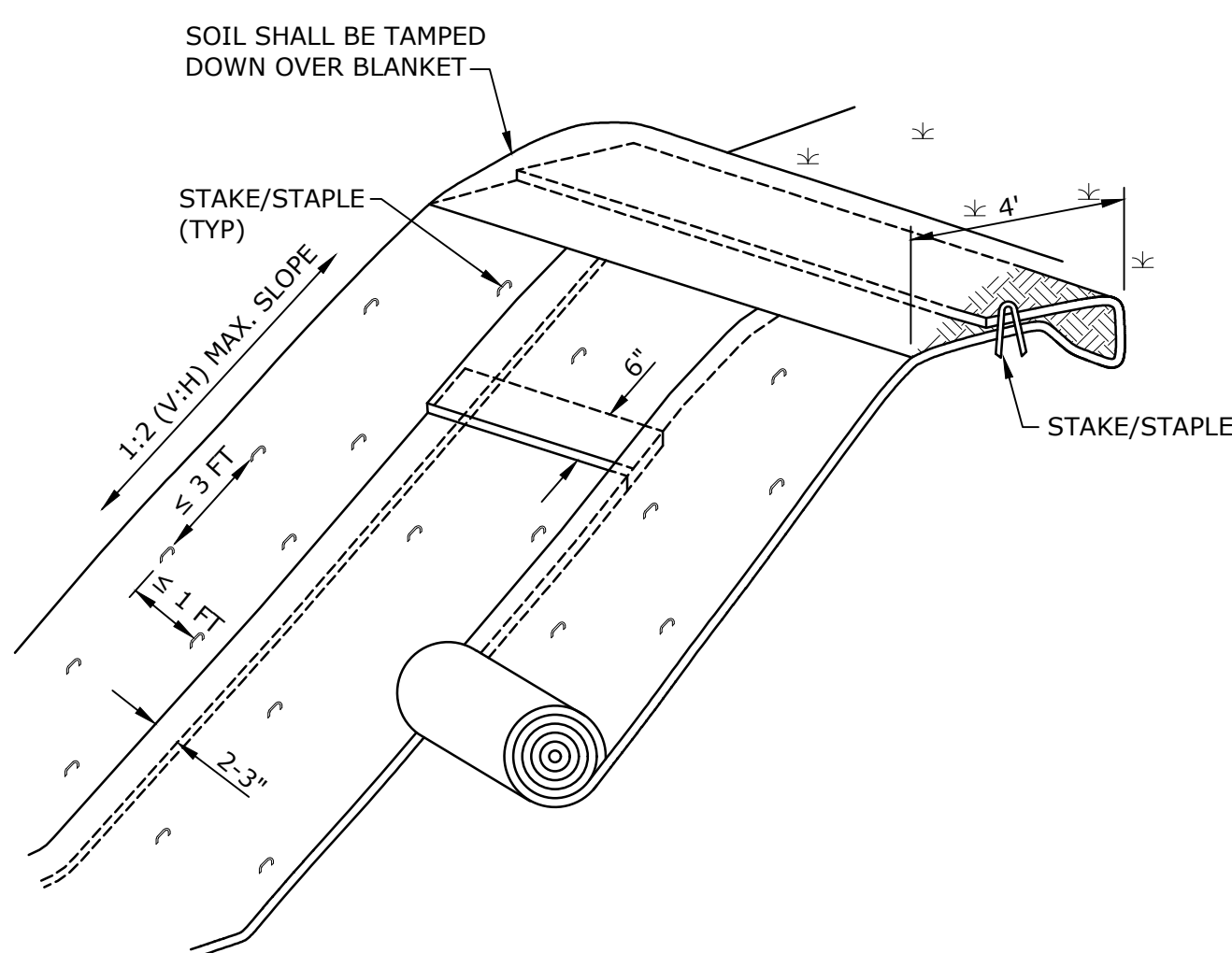
- NOTES:**
1. DEWATERING EQUIPMENT SHALL REMAIN WITHIN THE PERMANENTLY IMPACTED AREAS AND SHALL DISCHARGE OUTSIDE OF THE WETLAND BOUNDARY.
 2. DISCHARGE HOSE SHALL NOT CROSS THE STREAM AT ANY LOCATION.

COFFERDAM AND DEWATERING
NO SCALE



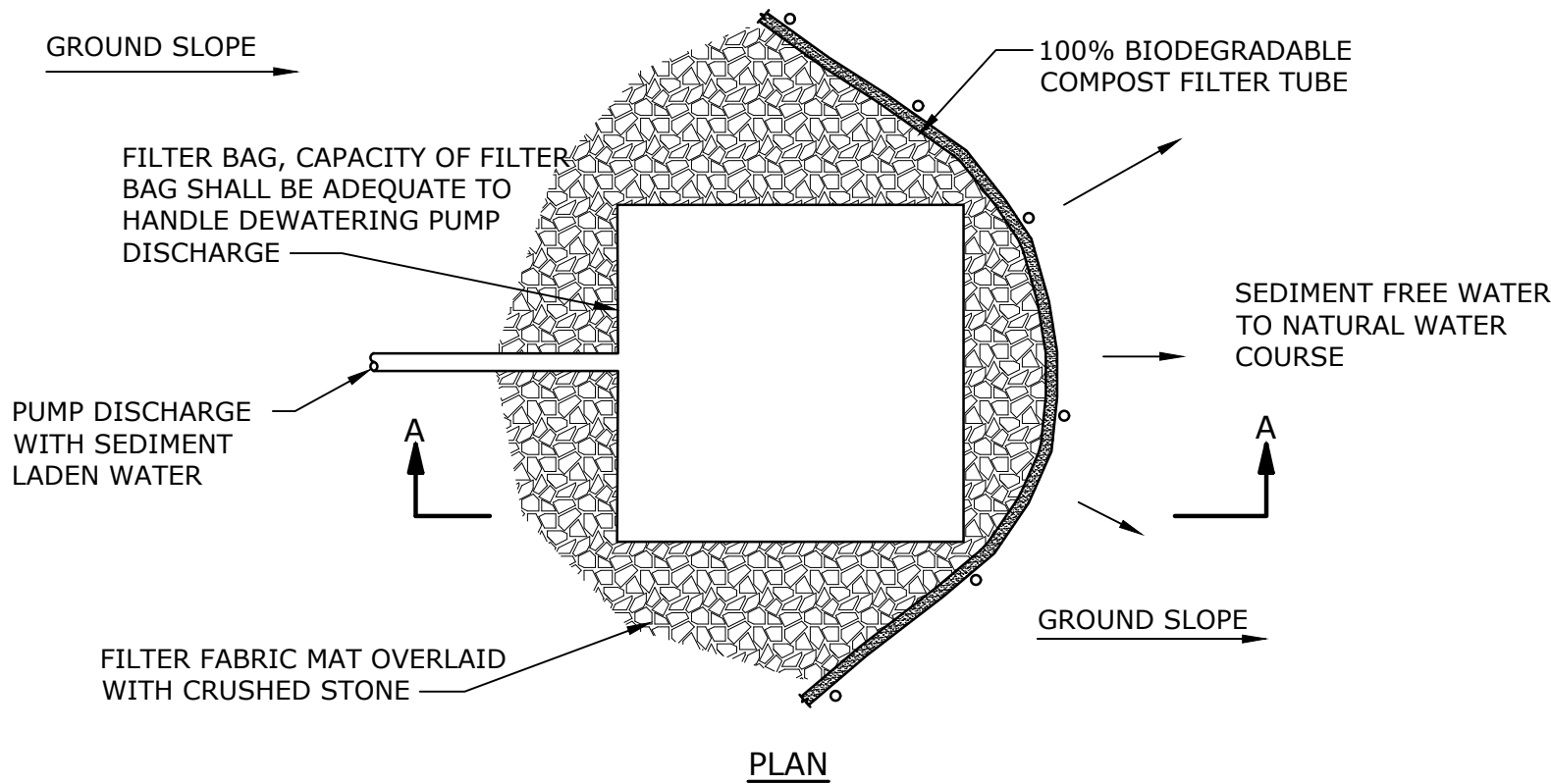
TYPICAL TIMBER MATS IN WETLANDS AREA
NO SCALE

- NOTES:**
1. TIMBER MATS SHALL BE PLACED CLOSELY TOGETHER SO THERE ARE NO GAPS BETWEEN EACH MAT SECTION.
 2. ADDITIONAL MEASURES MAY BE REQUIRED.
 3. USE TIMBER MATS FOR TEMPORARY ACCESS, WHERE WORK WILL BE CONTINUOUS, IN WET OR SOFT AREAS.
 4. BRIDGE EXCESSIVELY WET AREAS WITH MATS.

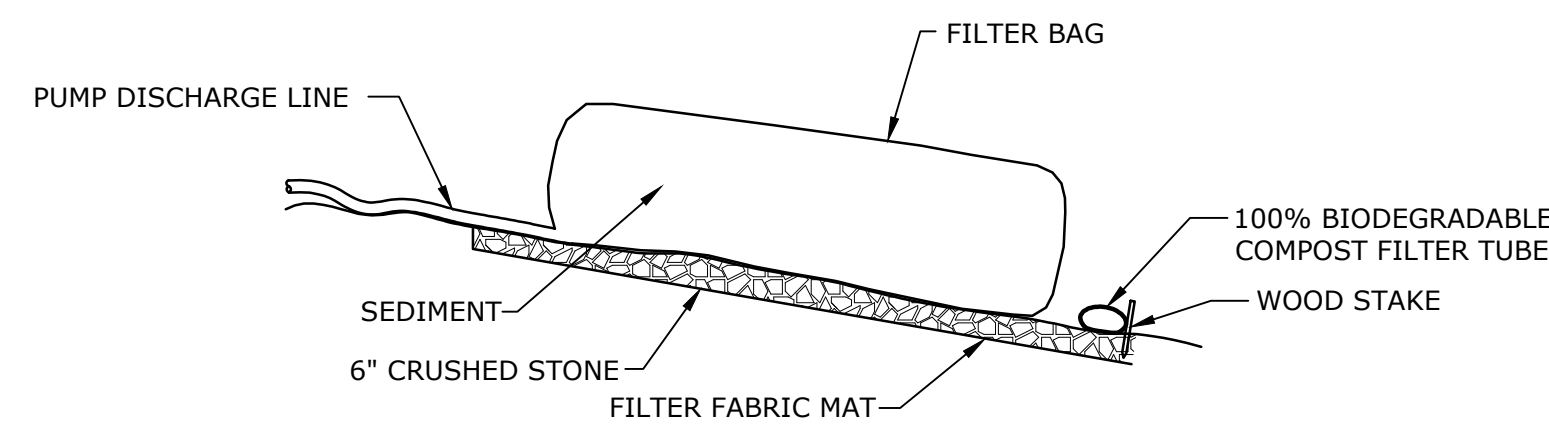


EROSION CONTROL BLANKET
NO SCALE

- NOTES:**
1. EROSION CONTROL BLANKET SHALL BE 100% BIODEGRADABLE.
 2. EROSION CONTROL BLANKET SHALL BE INSTALLED VERTICALLY DOWNSLOPE.
 3. STAKES/STAPLES SHALL BE PLACED NO MORE THAN 3 FT APART VERTICALLY, AND 1 FT APART HORIZONTALLY.
 4. SLOPE SURFACE SHALL BE FREE OF STICKS, ROCKS, AND OTHER OBSTRUCTIONS.
 5. BLANKETS SHALL BE ROLLED OUT LOOSELY AND STAKED/STAPLED TO MAINTAIN DIRECT SOIL CONTACT. DO NOT STRETCH THE BLANKETS.

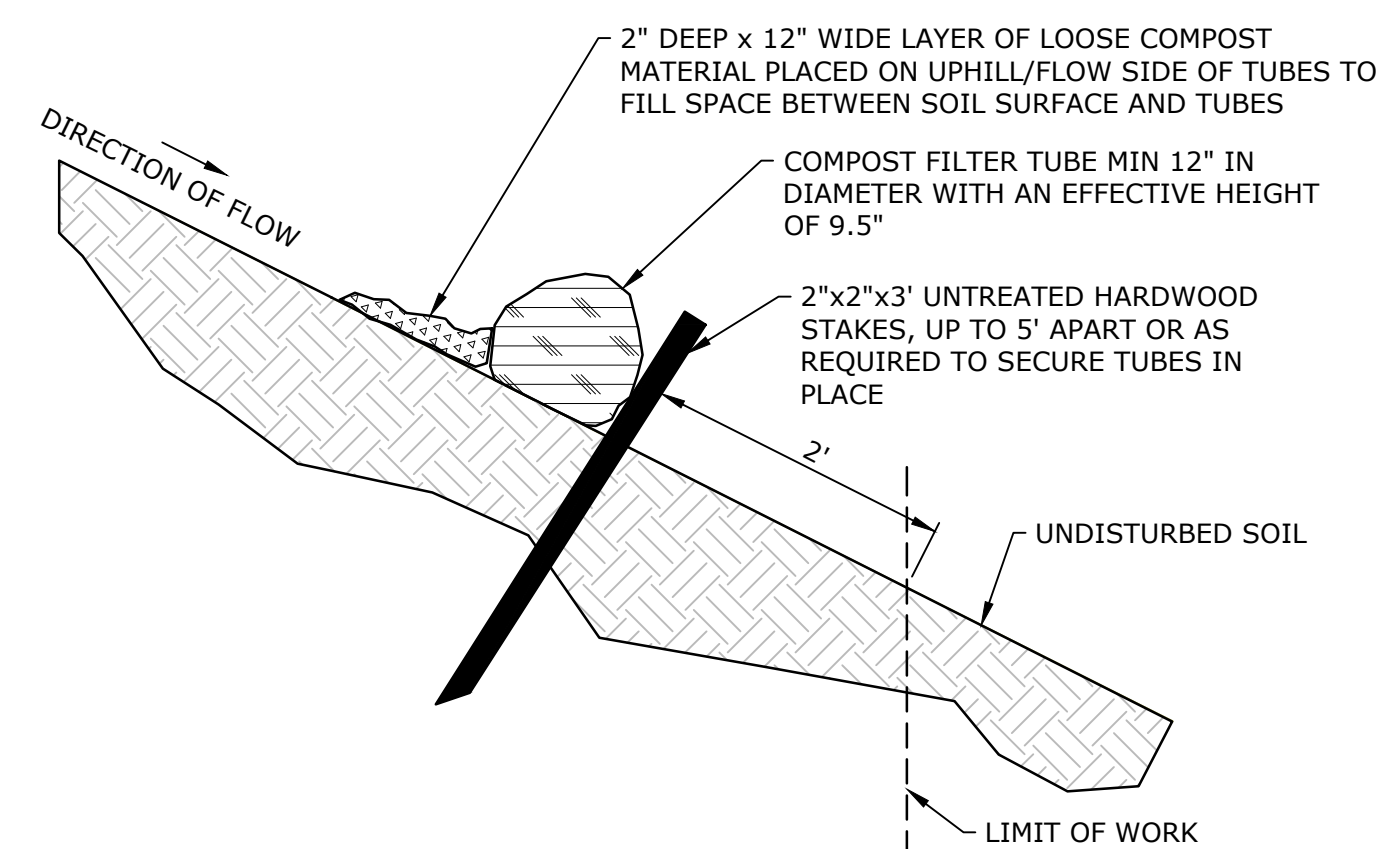


PLAN



SECTION A-A

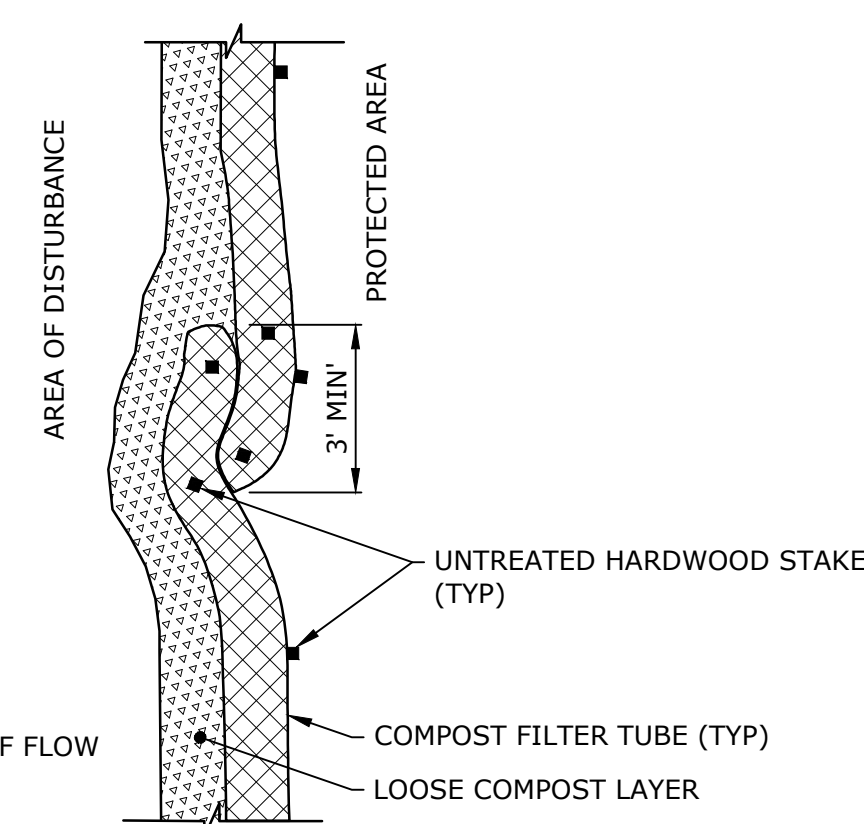
SEDIMENT TRAP
NO SCALE



SECTION VIEW

NOTES:

1. TUBES FOR COMPOST FILTERS SHALL BE JUTE MESH OR APPROVED BIODEGRADABLE MATERIAL. ADDITIONAL TUBES SHALL BE USED AT THE DIRECTION OF THE ENGINEER.
2. TAMP TUBES IN PLACE TO ENSURE GOOD CONTACT WITH SOIL SURFACE. IT IS NOT NECESSARY TO TRENCH TUBES INTO EXISTING GRADE.
3. WHEN STAKING IS NOT POSSIBLE, SUCH AS WHEN TUBES MUST BE PLACED ON PAVEMENT, HEAVY CONCRETE OR CINDER BLOCKS CAN BE USED BEHIND TUBES UP TO 5' APART OR AS REQUIRED TO SECURE TUBES IN PLACE.



PLAN VIEW - JOIN DETAIL

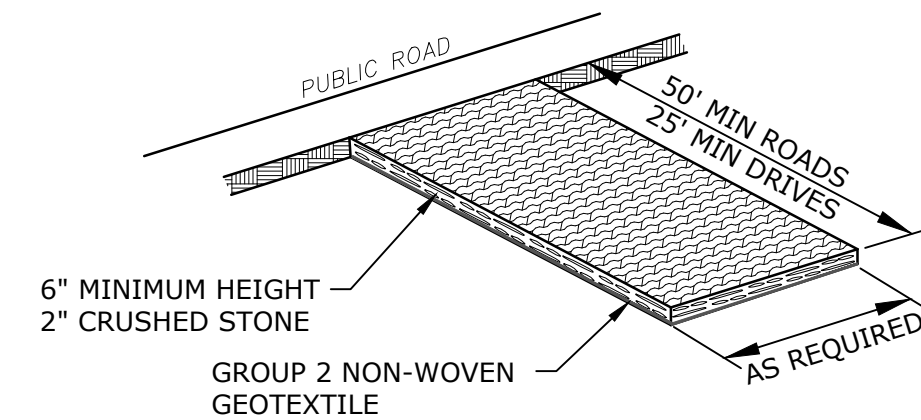
**EROSION CONTROL BARRIER
COMPOST FILTER TUBE**
NO SCALE

NOTES:

1. PROVIDE 3' MINIMUM OVERLAP AT ENDS OF TUBES TO JOIN IN A CONTINUOUS BARRIER AND MINIMIZE UNIMPEDED FLOW.
2. STAKE JOINING TUBES SNUGLY AGAINST EACH OTHER TO PREVENT UNFILTERED FLOW BETWEEN THEM.
3. SECURE ENDS OF TUBES WITH STAKES SPACED 18" APART THROUGH TOPS OF TUBES.

GENERAL COMPOST FILTER TUBE NOTES:

1. PROVIDE A MINIMUM TUBE DIAMETER OF 12" FOR SLOPES UP TO 50' IN LENGTH WITH A SLOPE RATIO OF 3H:1V OR STEEPER. LONGER SLOPES OF 3H:1V MAY REQUIRE LARGER TUBE DIAMETER OR ADDITIONAL COURSING OF FILTER TUBES TO CREATE A FILTER BERM. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR SITUATIONS WITH LONGER SLOPES OR STEEPER SLOPES.
2. INSTALL TUBES ALONG CONTOURS AND PERPENDICULAR TO SHEET OR CONCENTRATED FLOW.
3. DO NOT INSTALL IN PERENNIAL, EPHEMERAL OR INTERMITTENT STREAMS.
4. CONFIGURE TUBES AROUND EXISTING SITE FEATURES TO MINIMIZE SITE DISTURBANCE AND MAXIMIZE CAPTURE AREA OF STORMWATER RUN-OFF.
5. TUBES CAN BE PLACED DIRECTLY ON EXISTING PAVEMENT WHEN NECESSARY.
6. PLACING TUBES AGAINST THE UPHILL SIDE OF WELL-ANCHORED, STATIONARY FEATURES SUCH AS EXISTING TREES, CAN PROVIDE ADDITIONAL BRACING.
7. CURVE ENDS UPHILL TO PREVENT DIVERSION OF UNFILTERED RUN-OFF.
8. STRAW WATTLES WITH A 100% BIODEGRADABLE MESH MAY BE SUBSTITUTED IN AREAS INACCESSIBLE FOR FILTER TUBE INSTALLATION EQUIPMENT.



NOTES:

1. REMOVE FOLLOWING CONSTRUCTION.

TEMPORARY CONSTRUCTION ENTRY PAD
NO SCALE

**PERMIT SET
401 / 404
JURISDICTIONAL
AREA**

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**Salmon Brook
Dam Removal
Project**

Massachusetts
Division of
Fisheries and
Wildlife

Brookfield,
Massachusetts

| MARK | DATE | DESCRIPTION |
|----------------------|-----------------------------------|-------------|
| PROJECT NO: | M0944-051 | |
| DATE: | 12/2023 | |
| FILE: | C-201 EROSION CONTROL DETAILS.dwg | |
| DRAWN BY: | CMH/ARG | |
| DESIGNED/CHECKED BY: | DRB/DRH | |
| APPROVED BY: | CDH | |

**EROSION, SEDIMENT, AND
WATER CONTROL DETAILS**

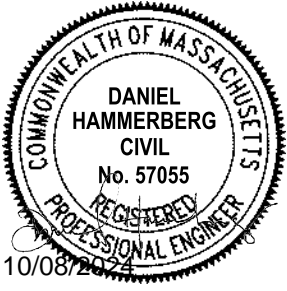
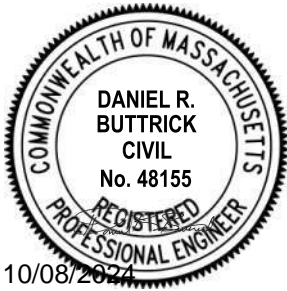
SCALE: AS SHOWN

Schoolhouse Pond Dam Removal Project

Technical Specifications

Commonwealth of Massachusetts
Department of Fish and Game
Division of Fisheries and Wildlife

October 2024



Tighe & Bond
53 Southampton Road
Westfield, MA 01085

Schoolhouse Pond Dam Removal Project
Commonwealth of Massachusetts Department of Fish and Game
Division of Fisheries and Wildlife
Sutton, MA
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Schoolhouse Pond Dam Removal Project
Commonwealth of Massachusetts Department of Fish and Game
Division of Fisheries and Wildlife
Sutton, MA
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03485 Precast Concrete Structures

Division 07 - Thermal And Moisture Protection

07130 Sheet Membrane Waterproofing

J:\M\M0944 MASS DFG\DFG DFW DAMS\SCHOOLHOUSE POND\DESIGN\SPECIFICATIONS_TOC.DOCX

END OF SECTION

DIVISION 01

GENERAL REQUIREMENTS

SECTION 01110

SUMMARY OF WORK

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Work of the Contract is shown and described in Drawings and Project Manual entitled:

Schoolhouse Pond Dam Removal Project
Massachusetts Division of Fisheries and Wildlife
Town of Sutton
October 2024

Tighe & Bond, Inc.
Consulting Engineers
Westfield, Massachusetts

2. The Work includes the following major items:
 - a. Mobilization and site preparation, including clearing and grubbing;
 - b. Install erosion controls at project area and turbidity curtain at Welsh Pond;
 - c. Lower impoundment level, and install water controls;
 - d. Excavate pilot channel through Schoolhouse Pond;
 - e. Removal of concrete outlet structures and existing corrugated metal culvert while maintaining stream flow;
 - f. Installation of precast box culvert, headwalls and wingwalls;
 - g. Installation of boulder riffle and riprap slope;
 - h. Replacement of bituminous concrete paving
 - i. Installation of highway guardrails;
 - j. Site restoration including loam and seed.

1.2 SUBMITTALS

A. Informational Submittals

1. Submit copies of permits or approvals required for the Work, prior to initiating the Work.

1.3 PROJECT/SITE CONDITIONS

A. Permits

1. Obtain the permits and approvals listed below:
 - a. National Pollution Discharge Elimination System (NPDES) Stormwater Permit

- b. Permits and licenses of a temporary nature necessary to perform the Work.
 - c. Permits for disposal of construction wastes including disposal of cleared and grubbed materials.
 - d. Other permits or licenses required for the Contractor's operations or required elsewhere in the Contract Documents and not included herein.
2. Comply with the permits and approvals listed below:
 - a. Town of Sutton Conservation Commission Order of Conditions. A copy of the Order of Conditions is included.
 - b. Section 401 Water Quality Certification from the Massachusetts Department of Environmental Protection. A copy of the Water Quality Certification is included.
 - c. Section 404 General Permit Pre-Construction Notification from the Army Corps of Engineers. A copy of the Permit is included.
 - d. M.G.L Chapter 253 Dam Safety Permit. A copy of the Permit is included.
 3. Obtain required time extensions to permits obtained by the Contractor, if construction authorized by permits has not been completed by the expiration date noted on these permits.
 4. Obtain permits and approvals from appropriate jurisdictional agencies and property owners for use of premises not furnished by the Owner, and for all off-site areas.
 5. Submit copies of permits prior to performance of Work authorized by permits.
- B. Existing Conditions
1. Use of Premises and Off-site Work
 - a. The Work shall occur on the Owner's property and Town property. Keep to the limits of work shown on the Drawings.
 - b. Land available for staging and is shown on the Drawings.
 - c. Coordinate closely with the Town of Sutton for closure and use of roadways.
 - d. Obtain permits and approvals for use of any land and access thereto that is deemed necessary for the Work, where such land is not available for use by the Owner, including land for temporary construction facilities, access and egress, or for storage of materials. Confine apparatus and storage to such additional areas.
 - e. Obtain permits and written approvals from appropriate jurisdictional agencies for the use of premises not available for use by the Owner, including all offsite staging areas, borrow pits and waste areas. Submit copies of all permits and approvals to the Owner prior to using areas.
 - f. Provide for the disposal of waste materials off-site in accordance with all applicable laws.

- g. Adhere to the limits of Work and traffic control plans as indicated, to minimize obstruction to traffic and inconvenience to the Owner, general public, and residents in the vicinity of the Work, and to protect people and property.
- h. Maintain functioning gutters, stormwater systems, drainage ditches, and culverts.
- i. Maintain public access to businesses and residences including driveways and parking lots at all times during the Work.

PART 2 PRODUCTS

2.1 MATERIALS FURNISHED BY OWNER

- A. The Owner will not furnish any materials, labor or equipment under this Contract.

PART 3 EXECUTION – NOT USED

END OF SECTION

J:\M\M0944 Mass DFG\DFG DFW Dams\Schoolhouse Pond\Design\Specifications\01110 - Summary of Work.docx

SECTION 01140

WORK RESTRICTIONS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Work Schedule
 - 2. Construction Constraints
 - 3. Vehicle Access
 - 4. Available Work Area
 - 5. Site Usage Plan
- B. Related Requirements
 - 1. Section 01310 - Coordination
 - 2. Section 01325 - Scheduling of Construction

1.2 SUBMITTALS

- A. Incorporate the requirements of this Section in the project schedule submitted under Section 01325.
- B. Action Submittals
 - 1. Submit site usage plan within thirty (30) days of the Notice to Proceed.

1.3 WORK SCHEDULE

- A. Conduct the Work during daylight hours on Monday through Friday, and within the time between 7:00 a.m. and 5:00 p.m. No work is to be done on Owner's holidays, Saturdays, Sundays or outside of the work hours described above unless approved in advance by the Owner or Engineer.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 AVAILABLE WORK AREA

- A. Limits of construction are defined on the Drawings. No work will be permitted to be performed outside these boundaries.

3.2 SITE USAGE PLAN

- A. Locations of available staging areas are shown on the Drawings.
- B. Submit a site usage plan showing all proposed staging areas, locations of all office and storage trailers, and material laydown areas. The site usage plan should be a drawing showing the proposed locations and shall include on-site traffic modifications and temporary utilities as may be applicable.

END OF SECTION

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SECTION 01290

APPLICATION AND CERTIFICATES FOR PAYMENT

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Definition and description of measurement and payment to be used for the Work
 - 2. Payment procedures
 - 3. Payment requests for stored materials
- B. Related Requirements
 - 1. Section 01295 - Schedule of Values

1.2 GENERAL

- A. The following paragraphs describe payment procedures for the work to be done under the respective items in the Bid Form.
- B. Each lump sum and unit price will be deemed to include an amount considered by the Contractor to be adequate to cover the Contractor's overhead and profit for each separately identified item.
- C. Except as provided for in Section 01295, no separate measurement or payment will be made for Work called for in Division 0 or Division 1 of the Contract Specifications, unless specifically covered under the Bid items listed below. All costs associated with this Work will be considered incidental to the Contract Bid price.
- D. Division 2 through Division 7 Work will be measured and paid for at the Contractor's unit Bid price or lump sum Bid price as indicated on the Bid form. Those payable Work items, and related prices as Bid, will be the basis for all compensation to the Contractor for Work performed under this Contract. Work not specifically included as a Bid item, but which is required to properly and satisfactorily complete the Work is considered ancillary and incidental to the Bid item Work, and payment for such Work is considered to be included in the values as Bid for payable items. Compensation for all unit Bid price Work will be made based on the measured quantity of Work under the appropriate Bid items.

1.3 LUMP SUM ITEMS

- A. Each lump sum price stated in the Bid form shall constitute full compensation for all labor, equipment and materials necessary and required to complete the work specified under that particular item, and also all costs for doing related work as set forth in the Contract Documents or implied in carrying out their intent.
- B. Item 1 – Schoolhouse Pond Dam Removal
 - 1. Measurement
 - a. There will be no measurement of quantities for lump sum items. Periodic partial payments for this Work, included under the Agreement, shall be based on the percent completion of each work item listed in the Schedule

of Values provided under Section 01295 estimated by the Contractor and approved by the Engineer.

2. Payment

- a. The lump sum payment shall be full compensation for furnishing all labor, materials, tools, equipment, and services necessary for the construction of the Schoolhouse Pond Dam Removal Project, in its entirety as detailed in the Contract Documents.

1.4 UNIT PRICE ITEMS

- A. Each unit price stated in the Bid form shall constitute full compensation for all labor, equipment and materials necessary and required to complete the Work specified under that particular item, and also all costs for doing related work as set forth in the Contract Documents or implied in carrying out their intent.
- B. Payment of the unit price items will only be made for the actual quantity of Work performed in accordance with the Contract Documents.
- C. Item 1A - Monthly price adjustment for hot mix asphalt (HMA) mixtures

1. Measurement

- a. This Contract contains a price adjustment for bituminous concrete (hot mix asphalt) mixtures. The value provided in the Bid Form is an allowance for budgeting purposes only. The value is neither a limit nor a guarantee of payment. Payment to the Contractor for increases in the price of liquid asphalt, or credits due to the Owner for decreases in the price of liquid asphalt, will be determined in accordance with the following procedure.

- 1) The Base Price for liquid asphalt for this Project will be \$575.00 per ton.
- 2) The price adjustment shall be based on the variance in price for the liquid asphalt component only of hot mix asphalt from the Base Price to the Period Price. It shall not include transportation or other charges. The price adjustment shall occur on a monthly basis.
- 3) The Period Price shall be as published by the Massachusetts Department of Transportation for the calendar month in which the Work was completed.
- 4) The Contract price adjustment will be paid only for the liquid asphalt contained in the hot mix asphalt used for final paving.
- 5) For the aforementioned items subject to the Contract price adjustment, the liquid asphalt content of hot mix asphalt mixtures shall be calculated based on 5.5% (0.055) by weight of tonnage shown on plant slips regardless of percentages established in individual job mix formulas.
- 6) The price adjustment will be determined by multiplying the number of tons of hot mix asphalt paid during each one-month

period by the liquid asphalt content, times the variance in price between Base Price and Period Price of liquid asphalt.

- 7) The price adjustment will be paid only if the variance of the Period Price from the Base Price is 5 percent or more for a given month. The adjustment will be paid with no deduction of the 5 percent from either upward or downward adjustments.

- b. No price adjustments will be made for Work completed beyond the date of Final Completion.

D. Item 1B - Monthly price adjustment for diesel fuel

1. Measurement

- a. This Contract contains a price adjustment for diesel fuel. The value provided in the Bid Form is an allowance for budgeting purposes only. The value is neither a limit nor a guarantee of payment. Payment to the Contractor for increases in the price of diesel fuel, or credits due to the Owner for decreases in the price of diesel fuel, will be determined in accordance with the following procedure.

- 1) The Base Price for diesel fuel for this Project will be \$2.713 per gallon.
- 2) The price adjustment shall be based on the variance in price for diesel fuel from the Base Price to the Period Price and shall occur on a monthly basis.
- 3) The Period Price shall be as published by the Massachusetts Department of Transportation for the calendar month in which the Work was completed.
- 4) The price adjustment will be determined by multiplying the number of cubic yards of excavation and borrow (as defined in the next paragraph) paid during each one-month period (as indicated by the Schedule of Values described in Section 01295) by 0.29 gallons per cubic yard, and adding that to the tons of hot mix asphalt (as defined in the next paragraph) paid during each one-month period by 2.90 gallons per ton. The total number of gallons calculated shall then be multiplied by the variance in price between Base Price and Period Price of diesel fuel.
- 5) The total excavation and borrow quantity shall be assumed to total 2,000 cubic yards for the purposes of calculation of the amount of diesel fuel as described in the above paragraph. This quantity is not to be used for any other purpose. Hot mix asphalt included in Item 1A shall be used to calculate the amount of diesel fuel as described in the above paragraph.
- 6) The price adjustment will be paid only if the variance of the Period Price from the Base Price is 5 percent or more for a given month. The adjustment will be paid with no deduction of the 5 percent from either upward or downward adjustments.

- b. No price adjustments will be made for Work completed beyond the date of Final Completion.
- E. Item 1C - Monthly price adjustment for gasoline
- 1. Measurement
 - a. This Contract contains a price adjustment for gasoline. The value provided in the Bid Form is an allowance for budgeting purposes only. The value is neither a limit nor a guarantee of payment. Payment to the Contractor for increases in the price of gasoline, or credits due to the Owner for decreases in the price of gasoline, will be determined in accordance with the following procedure.
 - 1) The Base Price for gasoline for this Project will be \$2.666 per gallon.
 - 2) The price adjustment shall be based on the variance in price for gasoline from the Base Price to the Period Price and shall occur on a monthly basis.
 - 3) The Period Price shall be as published by the Massachusetts Department of Transportation for the calendar month in which the Work was completed.
 - 4) The price adjustment will be determined by multiplying the number of cubic yards of excavation and borrow (as defined in the next paragraph) paid during each one-month period by 0.15 gallons per cubic yard, multiplied by the variance in price between Base Price and Period Price of gasoline.
 - 5) The total excavation and borrow quantity shall be assumed to total 2,000 cubic yards for the purposes of calculation of the amount of gasoline as described in the above paragraph. This quantity is not to be used for any other purpose.
 - 6) The price adjustment will be paid only if the variance of the Period Price from the Base Price is 5 percent or more for a given month. The adjustment will be paid with no deduction of the 5 percent from either upward or downward adjustments.
 - b. No price adjustments will be made for Work completed beyond the date of Final Completion.

1.5 PAYMENT PROCEDURES

- A. Informal submittal: Unless otherwise directed by the Engineer:
 - 1. Make an informal submittal of request for payment by filling in, with erasable pencil, pertinent portions of EJCDC C-620, Contractor's Application for Payment, plus continuation sheet or sheets.
 - 2. Make this preliminary submittal to the Engineer at the last regular job meeting of each month.
 - 3. Revise the preliminary submittal as approved by the Engineer and incorporate the approved payments into the formal submittal.

- B. Formal submittal: Unless otherwise directed by the Engineer:
1. Make formal submittal of request for payment by filling in the agreed data, by typewriter or electronically on EJCDC C-620, Contractor's Application for Payment, plus continuation sheet or sheets.
 2. Sign and notarize the Application for Payment.
 3. Submit the original of the Application for Payment, plus six identical copies of the continuation sheet or sheets, to the Engineer.
 4. The Engineer will compare the formal submittal with the approved informal submittal and, if acceptable, will sign the Contractor's Application for Payment, and present the Application to the Owner.
 5. Provide a signed and notarized Certificate for Stored Materials and proof of storage in a dry, watertight, heated and insured warehouse facility.

1.6 PAYMENT REQUESTS FOR STORED MATERIALS

- A. Requests for payment for stored materials shall be accompanied by the attached "Certificate for Stored Materials" form. Payment for stored materials shall not exceed the value actually paid by the Contractor for the stored materials as evidenced by the accompanying bill of sale, invoice, or other documentation.
- B. Partial payment requests for materials stored or so-called "engineering costs" by equipment manufacturers will not be allowed. All such costs shall be distributed proportionately among the various items of equipment/hardware to be furnished.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

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CERTIFICATE FOR STORED MATERIALS

Tighe & Bond Project No.

We, _____, request payment for materials and/or equipment not incorporated in the work included under our firm's contract with _____ as listed below.

We hereby certify under penalty of perjury, that the materials not incorporated in the work have been delivered and are securely stored at the site or at _____ and that we have title to said materials free and clear of all Liens, as evidenced by the attached bill of sale, invoice, or other documentation.

We also certify that an inventory of said materials and/or equipment has been compiled for the purposes of this monthly partial payment request. This list of materials and/or equipment, including unit prices for said material not incorporated in the work for which payment is hereby requested, consisting of _____ pages and dated _____, is signed and attached hereto.

We acknowledge that payments made based on this request for materials and/or equipment not incorporated in the work does not relieve the contractor of its responsibility for furnishing all materials and equipment required for the satisfactory completion of the project pursuant to the contractual requirements.

We further certify that we can and will adequately protect said materials and/or equipment until they are incorporated in the work; that they meet the requirements of the specifications, and that they will be needed for incorporation in the work in the near future.

IN WITNESS WHEREOF, we, the said _____ h-
ereunto set our hand and seal this _____ day of _____, 20__.

Contractor's Firm Name

SIGNED, SEALED AND DELIVERED IN THE PRESENCE OF

By _____

Title _____

Notary Public

SCHEDULE OF STORED MATERIALS

Job No. _____
 Contract No. _____
 Contractor: _____
 Location: _____

Date _____
 Pay Estimate _____

| Item | Description | Supplier/Manufacturer | Quantity Stored and not Incorporated | Unit \$ | Certified Value |
|------|-------------|-----------------------|--|---------|-----------------|
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| | | | | | |

Signature: _____
 Contractor's Principal

Total Amount Due for Stored Materials _____

Title: _____

SECTION 01295

SCHEDULE OF VALUES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Schedule of Values

1.2 SUBMITTALS

- A. Action Submittals
 - 1. Submit 3 copies of the Schedule of Values for approval within 10 days after the Effective Date of the Agreement.

1.3 SCHEDULE OF VALUES

- A. Schedule of Values shall be a detailed breakdown of the lump sum Work items showing values allocated to the various elements of the Work.
- B. The format of the Schedule of Values shall be a breakdown by Specification Section and content and shall be submitted on EJCDC C-620, Contractor's Application for Payment. The Engineer may require additional detailed documentation to support the values in the form of executed purchase orders, subcontracts, or other agreements.
- C. The Engineer will determine the level of breakdown and detail required. The breakdown shall include materials, installation, and start-up for equipment and controls where applicable. The final document will be the basis of payment requests for the duration of the Contract. No progress payment will be made until the Schedule of Values is approved by the Engineer.
- D. Regardless of other items included, the Schedule of Values shall include a work item or items for excavation and borrow for the purpose of estimating price adjustments for diesel fuel and gasoline as described in Section 01290.
- E. An unbalanced Schedule of Values providing overpayment on items of work performed first will not be accepted.
- F. At the Contractor's option, items for mobilization and demobilization may be included in the Schedule of Values. The combined value shall not exceed 5 percent of the Contract Price, and the values for mobilization and demobilization shall be equal. Payment for mobilization will be included in the first payment request after the Contractor has initiated full-time construction activity. Payment for demobilization will be included in the first payment request after Substantial Completion has been reached and all equipment has been removed from the Site.
- G. At the Contractor's option, an item for bonds and insurance may be included in the Schedule of Values. If included, requests for payment including values for bonds and insurance shall be accompanied by matching invoices.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

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SECTION 01310
COORDINATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Project Management
 - 2. Coordination
 - 3. Project Meetings
- B. Related Requirements
 - 1. Section 01140 - Work Restrictions
 - 2. Section 01325 - Scheduling of Construction

1.2 SUBMITTALS

- A. Incorporate the requirements of this Section, as well as Work which may impact the existing system operation, or the operations of any adjacent utility, in the project schedule submitted under Section 01325.
- B. A resume for the full-time superintendent proposal for approval by the Owner and Engineer.
- C. Informational Submittals
 - 1. At the pre-construction conference, supply to the Owner the cell phone number of a responsible person who may be contacted during off-hours for emergencies 24 hours a day, seven days a week.
 - 2. Prepare a contact list of phone numbers, including cell phone numbers, and emails for all Project personnel and submit to the Engineer within one week after the pre-construction conference. Include Contractor, Owner, Engineer, and Town personnel including police, fire, and ambulance.

1.3 PROJECT MANAGEMENT

- A. Retain a full-time Superintendent, satisfactory to the Owner and Engineer. The Superintendent shall not be changed except with the consent of the Owner and Engineer. The Superintendent shall be in full charge of the Work.
- B. Complete the Work in a continuous uninterrupted operation. Use sufficient personnel and adequate equipment to complete the Work within the Contract Time.

1.4 COORDINATION

- A. Coordinate with appropriate utility companies, as well as with the Owner, where the Work crosses or is adjacent to existing utilities.

1.5 PROJECT MEETINGS

- A. Pre-Construction Conference

1. The Contractor shall be prepared to discuss the following subjects at the Pre-Construction Conference. Documentation for these items is required to be submitted within the time frames included in individual specification sections.
 - a. Project scheduling
 - b. Sequencing of critical path Work items
 - c. Shop Drawing procedures
 - d. Project changes and clarification procedures
 - e. Use of sites, access to Work areas, office and storage areas, security and temporary facilities
 - f. Contractor safety plan and representative
 - g. Progress payments and procedures
 - h. Required documentation
 - i. Project personnel contact list

B. Progress Meetings

1. Progress meetings will be held every two (2) weeks and at other times as requested by the Owner or as required by the Progress of the Work.
2. The Contractor's Superintendent shall attend all progress meetings.
3. At a minimum, progress meetings will review Work progress, schedule, Shop Drawing submission schedule, Applications for Payment, and other matters needing discussion and resolution.
4. Review the schedule with all parties to be affected by upcoming work.
5. Review the monthly construction report required under Section 01325.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 GENERAL

- A. Notify DIGSAFE at 1-888-344-7233 at least 72 hours prior to any digging, trenching, rock removal, demolition, borings, backfill, grading, landscaping, or any other earth moving operations.

3.2 COORDINATION WITH THE TOWN OF SUTTON

- A. Notify the Owner, Engineer, and Town of Sutton in writing, a minimum of two (2) weeks in advance of commencing Work on site. Work on site shall not occur until necessary permits are obtained.
- B. Coordinate with the Town of Sutton Police, Fire, Highway, and School departments regarding road closure schedules and durations.

3.3 SEQUENCE OF CONSTRUCTION

- A. Provide a detailed construction schedule as required in Section 01325.

END OF SECTION

SECTION 01320

CONSTRUCTION PHOTOGRAPHS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Photographs taken at specified intervals before, during and after construction.

1.2 SUBMITTALS

A. Informational Submittals

1. Submit electronic files of each photograph on a CD or USB flash drive.

PART 2 PRODUCTS

2.1 CONSTRUCTION PHOTOGRAPHS

A. Electronic files shall be in .jpg format.

PART 3 EXECUTION

3.1 PRE-CONSTRUCTION PHOTOGRAPHY

- A. Prior to the commencement of any Work under this Contract, take photographs at each location at fifty (50) foot intervals along the entire length of the dam. The photographs will serve as a record of the original conditions where construction activities will occur.
- B. The area to be photographed shall include, but not be limited to, the area within and adjacent to the proposed construction, including roadways, utilities, driveways, landscaping, trees, structures and buildings.
- C. Provide a minimum of thirty (30) preconstruction photographs, or more as required to document the preconstruction condition of the Site and adjacent properties.

3.2 PROGRESS PHOTOGRAPHY

- A. Take construction photographs at least weekly or before future activities will prevent capturing the work completed within active work areas throughout the life of the Contract. The photographs shall be indicative of the work that is currently in progress. A minimum of ten (10) photographs shall be taken at each scheduled interval at each location where work is in progress.
- B. Take post construction photographs at locations in sufficient quantity to document final conditions of the dam. Provide a minimum of thirty (30) post construction photographs taken at the same locations as the preconstruction photograph.

END OF SECTION

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SECTION 01325

SCHEDULING OF CONSTRUCTION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Progress Schedule
 - 2. Cash Flow Projections
- B. Related Requirements
 - 1. Section 01140 - Work Restrictions
 - 2. Section 01310 - Coordination

1.2 REFERENCES

- A. The Use of CPM in Construction - A Manual for General Contractors and the Construction Industry, an Associated General Contractors (AGC) of America publication.
- B. The Contractor shall complete all Work no later than December 30, 2025

1.3 PROGRESS SCHEDULE

- A. Graphically show the order and interdependence of activities, sequence of Work, how the start of a given activity depends on completion of preceding activities, and how completion of an activity may restrain the start of subsequent activities.
- B. The Work shall be planned by the Contractor and his Project field superintendent in coordination with all Subcontractors and Suppliers whose Work is shown on the Progress Schedule.
- C. Include, at a minimum, the following activities on the Progress Schedule:
 - 1. Project mobilization
 - 2. Submittal and approval of Shop Drawings
 - 3. Procurement of equipment and critical materials
 - 4. Roadway shutdown timing and duration as coordinated with Town departments
 - 5. Installation of equipment and critical materials
 - 6. Final inspecting and testing
 - 7. Punchlist
 - 8. Final cleanup
 - 9. Other activities that may be critical to the Progress Schedule
 - 10. All activities of the Owner and the Engineer which affect progress and/or affect required dates for completion of the Work

- D. Take into consideration Shop Drawing submittal and approval time, the delivery times of equipment and materials, Subcontractors' Work, availability and abilities of workmen, weather conditions, any restrictions in operations at the Work site, and all other items that may affect completion of the Work within the Contract Time.
- E. The Progress Schedule shall reflect the requirements and constraints outlined in Section 01310, Coordination.
- F. The Progress Schedule shall reflect Work restrictions outlined in Section 01140.
- G. Show information in such detail that duration times of activities will range from one to 15 days. The selection and number of activities shall be subject to the approval of the Owner and Engineer.
- H. The Progress Schedule should show a description of each activity, and activity duration in calendar days.

1.4 CASH FLOW PROJECTIONS

- A. If requested by the owner, with the progress schedule, show projected pay application quantities on a monthly basis.

1.5 SUBMITTALS

A. Informational Submittals

1. Submit four prints of the preliminary Progress Schedule prepared in accordance with the requirements of this section. Progress schedule must be submitted within 10 days after the Effective Date of the Agreement. Progress Schedule must be approved by the Owner and Engineer before the first progress payment will be made.
2. Revised analyses - Within 10 days after receipt of the review comments, submit four prints of the Progress Schedule revised in accordance with those comments.
3. Periodic reports - On the first progress meeting of each month, submit four prints of the updated Progress Schedule, as well as a report of construction activities in the prior month.
4. Before initiating the Work, submit an estimated monthly rate of Contractor payments for the project. If the payment schedule deviates from the original projection, submit a revised rate of expenditure schedule.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

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SECTION 01330

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Action Submittals
 - 2. Informational Submittals

1.2 DEFINITIONS

- A. Action Submittals – includes written and graphic information submitted by Contractor that requires Engineer’s approval.
- B. Informational Submittals – includes information submitted by Contractor that does not require Engineer’s approval. The Engineer will acknowledge receipt of such documents and provide comments when the submittals lack the detail required by the Contract Documents.

1.3 ACTION SUBMITTALS

- A. Shop Drawings
 - 1. 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 drawings, schedule information, piece part drawings, actual shop work manufacturing instructions, special wiring diagrams, coordination drawings, individual system or equipment inspection and test reports including performance curves and certification, as applicable to the Work.
 - 2. Shop Drawings shall be of standardized sizes to enable the Owner to maintain a permanent record of the submissions. Approved standard size drawings shall be
 - a. 24 inches by 36 inches
 - b. 22 inches by 34 inches
 - c. 11 inches by 17 inches
 - d. 8.5 inches by 11 inches
 - 3. Submit Shop Drawings at the proper time to prevent delays in delivery of materials. Coordinate submittals for related or interdependent equipment.
 - 4. Advise the Engineer in writing of any deviations from the requirements of the Contract Documents.
 - 5. Check all Shop Drawings regarding measurements, size of members, materials, and details to determine if they conform to the Contract Documents. Shop Drawings found to be inaccurate, not in compliance, or otherwise in error shall be returned to the Subcontractors or Suppliers for correction before submission to the Engineer. Drawings that are current shall be marked with the date, name, and approval stamp of the Contractor.

6. All details on Shop Drawings submitted for approval shall show clearly the relation of the various parts to the main members and lines of the structure, and where correct fabrication of the work depends upon field measurements, such measurements shall be made and noted on the Shop Drawings before being submitted for approval.
 7. Detailed installation drawings shall be drawn to scale and fully dimensioned.
 8. No material or equipment shall be purchased or fabricated until the required Shop Drawings have been submitted and approved. Materials and equipment and the work involved in their installation or incorporation into the Work shall then be as shown in and represented by the Shop Drawings.
 9. Until the necessary approval has been given, do not proceed with any portion of the work, the design or details of which are dependent upon the design or details of work, materials, equipment or other features for which approval is required.
 10. If submitted equipment requires modifications to the structures, piping, layout, or other details shown on the Drawings, details of the proposed modifications must also be submitted for approval. If such equipment and modifications are approved, perform all Work necessary to make such modifications at no additional cost to the Owner.
- B. Product Data: Product data as specified in individual Sections, include, but are not necessarily limited to, standard prepared data for manufactured products (catalog data), such as the manufacturer's product specification and installation instructions, availability of colors and patterns, manufacturer's printed statements of compliances and applicability, roughing-in diagrams and templates, catalog cuts, product photographs, standard wiring diagrams, printed performance curves and operational-range diagrams, production or quality control inspection and test reports and certifications, mill reports, product operating and maintenance instructions and recommended spare-parts listing, and printed product warranties, as applicable to the Work.
- C. Samples and color selection charts: Provide sample, when requested by individual Specification to establish conformance with the Specifications, and as necessary to define color, texture and pattern selections available.
- D. Product Substitutions: In accordance with Section 01630.
- E. Schedule of Values: In accordance with Section 01295.
- F. Site Usage Plan: In accordance with Section 01140.

1.4 INFORMATIONAL SUBMITTALS

- A. Schedule of Submittals
1. Submit a preliminary Schedule of Submittals within 10 days of the Effective Date of the Agreement.
- B. Schedule of Manufacturers and Suppliers
1. Submit a schedule of manufacturers and Suppliers within 7 days after Notice to Proceed including the names and addresses of the manufacturers and Suppliers of materials and equipment to be incorporated into the Work.
- C. Schedule of Major Products

1. Submit a schedule of major products within 30 days after Notice to Proceed including a complete list of major products proposed for use, with specification section number, name of manufacturer, trade name, and model number of each product.
- D. Product Listing and Manufacturers Qualifications
1. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation and reference standards. Specifically identify the products, the anticipated schedule for delivery and storage, and the estimated value thereof for materials which the Contractor intends to request approval for off-site storage.
- E. Certificates of Compliance
1. General:
 - a. Submit sworn certificates from the manufacturer or material supplier that the materials and fabrications provided under the Specification section conform with the Contract Documents.
 - b. Certificates shall be signed by an officer of the manufacturer's corporation and witnessed by a Notary Public.
 2. Welding: Submit in accordance with individual Specification sections.
 3. Installer: Prepare written statements on manufacturer's letterhead certifying that installer complies with requirements as specified in individual Specification sections.
 4. Material Test: Prepared by qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.
 5. Certificates of Successful Testing or Inspection: Submit when testing or inspection is required by Laws and Regulations or governing agency, or when specified in individual Specification sections.
 6. Manufacturer's Certificate of Compliance: In accordance with individual Specification sections.
- F. Application for Payment
1. Submit applications for payment in accordance with Section 01290, Application and Certificate for Payment.
- G. Construction Photography: Provide preconstruction, progress, and post-construction photography in accordance with Sections 01320.
- H. Contract Closeout Submittals: In accordance with Section 01770.
- I. Contractor Design Data
1. Written and graphic information
 2. List of assumptions
 3. List of performance and design criteria
 4. Summary of loads or load diagram

5. Calculations
 6. List of applicable codes and regulations
 7. Name and version of software
 8. Information requested in individual Specification section
- J. Manufacturer's Instructions: Written or published information that documents manufacturer's recommendations, guidelines, and procedures in accordance with individual Specification sections.
- K. Schedules - Submit construction progress schedules and schedule updates in accordance with Section 01325.
- L. Statement of Qualifications: Submit evidence of qualification, certification, or registration as required in Contract Documents to verify qualifications of professional land surveyor, engineer, materials testing laboratory, specialty subcontractor, trade, specialist, consultant, installer, and other professionals.
- M. Submittals Required by Laws, Regulations, and Governing Agencies
1. Submit promptly notifications, reports, certifications, payrolls, and other required information as may be required, directly to the applicable federal, state, or local governing agency or their representative.
 2. Transmit to Engineer for Owner's records, one copy of correspondence and transmittals (including enclosures and attachments) between Contractor and governing agency.
- N. Test and Inspection Reports
1. Submit test and inspection reports as required by individual Specification sections.
 2. Test and inspection reports shall contain signature of person responsible for test or report.
 3. Reports shall include identification of product and Specification, project name, date and time of test, type of test, location, test results, corrective action required if report indicates test is not in compliance with Contract Documents, interpretation of test results, and other information as required in individual Specification sections.
- O. Equipment Data: Submit information on equipment to be used in the performance of the Work as required by individual Specification sections.
- P. Submittals stamped by another Professional Engineer: When specified in individual Specification sections, prepare and submit calculations and/or drawings stamped by a Professional Engineer licensed in the State where the work is being performed.
- Q. Work Plans: When specified in individual Specification sections, prepare and submit copies of all work plans needed to demonstrate to the Owner that Contractor has adequately thought-out the means and methods of construction and their interface with existing facilities.
- R. Erosion Control Plan: When specified in Contract Documents or required by local ordinances or regulations, prepare and submit copies of erosion control plans.

- S. Traffic Control Plan: When specified in Contract Documents or required by local ordinances or regulations, prepare and submit copies of traffic control plans.

1.5 PROCEDURES

A. Coordination

1. Prepare and submit documentation in advance of fabrication and product manufacturer, so that the installation will not be delayed, other related work can be properly coordinated, and there is adequate time for review and resubmission, if required.
2. Provide no less than 30 days for review of submittals from the time received by the Engineer. For submittals of major equipment, that require more than 30 days to review, due to complexity and detail or those requiring review by multiple engineering disciplines, Engineer will notify Contractor of the circumstances and identify the anticipated date when the submittal will be returned.
3. Re-submittals will be subject to same review time.
4. No extension of time will be authorized due to failure to provide approvable submittals sufficiently in advance of the Work.

B. Review Shop Drawings, product data, and samples prior to submission and verify and determine:

1. Field measurements
2. Conformance with the Contract Documents. Advise the Engineer in writing of any deviations from the requirements of the Contract Documents.
3. Delete or strike out information that is not applicable to the Work.

C. Upload the electronic submittal files via Procore. Access to Procore will be provided by the Engineer. Files must be in .pdf format. The submittals will be returned in electronic .pdf format via Procore.

D. Numbering: Submissions shall be accompanied by a transmittal form referencing the project name and applicable Specification section. Submittals shall be numbered sequentially, with the applicable Specification section and a hyphen preceding the number. (*e.g.* Submittal number 11330-01). Resubmittals shall bear the same transmittal number with a revision number commencing with "1" (*e.g.* Submittal number 11330-01-1).

E. Provide a copy of the Submittal Certification Form (copy attached at the end of this section) which shall be attached to every copy of each submittal. Apply the Contractor's stamp and initials or signature certifying that the submission has been thoroughly reviewed for completeness, compliance with the Contract Documents, coordination with adjacent construction and dimensional compatibility. Items submitted without the stamp or that are incomplete will be returned by the Engineer for rework and resubmission.

F. Provide a copy of the PE Certification Form (copy attached at the end of this section) which shall be attached to every copy of each submittal stamped by another Professional Engineer. Items submitted without the completed certification form will be returned by the Engineer for resubmission.

- G. Distribute copies of reviewed submittals along with the Engineer's transmittal to concerned parties with instructions to promptly report any inability to comply with the provisions or integrate the requirements with interfacing work.
- H. Partial and Incomplete Submittals
 - 1. Shop Drawings shall be submitted as a complete package by Specification section, unless otherwise reviewed and approved by the Engineer. It is the intent that all information, materials, and samples associated with each Specification section be included as a single submittal for the Engineer's review.
 - 2. Engineer will return entire submittals if preliminary review deems it incomplete including:
 - a. Missing or incomplete Submittal Certification Form
 - b. Insufficient number of copies
 - c. Missing content
 - 3. Partial submittals may be considered, at Engineer's option, only when necessary to expedite the Project.
 - 4. Partial submittals shall be clearly identified as such on the transmittal to identify missing components.
- I. Submittals not required by the Specification will be returned without review or action code.
- J. Resubmission
 - 1. Make corrections and modifications required by the Engineer and resubmit until approved.
 - 2. Clearly identify changes made to submittals and indicate other changes that have been made other than those requested by the Engineer.
 - 3. A maximum of two re-submissions of each shop drawing will be reviewed, checked and commented upon without charge to the Contractor (total of 3 submittals). Any additional submissions which are required by the Engineer to fulfill the stipulations of the Contract Documents will be charged to the Contractor.
- K. Distribution
 - 1. Distribute approved Shop Drawings and approved product data to the Project Site and elsewhere as required to communicate the information to Suppliers, Subcontractors, and field personnel.

1.6 ENGINEER'S REVIEW

- A. The Engineer will review submittals for design, general methods of construction and detailing. The Engineer's review and approval of submittals shall not be construed as a complete check nor does it relieve the Contractor from responsibility for any departures or deviations from the requirements of the Contract Documents unless he has, in writing, called the Engineer's attention to such deviations at the time of submission. It will not extend to means, methods, technique, sequences, or procedures

of construction (except where specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto.

- B. The Engineer's review of the submittals shall not relieve the Contractor from the responsibility for proper fitting of the Work, or the responsibility of furnishing any work required by the Contract Documents which may not be indicated on the submittals. The Contractor shall be solely responsible for any quantities shown on the submittals.
- C. If the Contractor considers any correction indicated on the submittals to constitute a change to the Contract Documents, the Contractor shall provide written notice to the Engineer at least 7 working days prior to release for manufacture.
- D. When the submittals 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.
- E. Action submittals as defined in paragraph 1.2 will be reviewed and returned under one of the following codes:
 - 1. Approved (Action Code 1) is assigned when there are no notations or comments on the submittal. Equipment or materials may be released for manufacture, provided that it complies with requirements of the Contract Documents.
 - 2. Approved as Noted (Action Code 2) is assigned when there are notations or comments on the submittal, but the equipment or materials may still be released for manufacture. All notations and comments must be incorporated in the final product. Resubmission is not necessary.
 - 3. Revise and Resubmit (Action Code 3) is assigned when there are notations and comments requiring a resubmittal of the package. Work cannot proceed until the submittal is revised and resubmitted for review.
 - 4. Not Approved (Action Code 4) is assigned when the submittal contains non-specified items or does not meet the requirements of the Contract Documents. It may also be assigned when there is a significant amount of missing material required for the Engineer to perform a complete review. The entire package must be resubmitted, revised to bring the submittal into conformance. It may be necessary to resubmit using a different manufacturer/vendor to meet the requirements of the Contract Documents.
- F. Informational submittals as defined in paragraph 1.2 do not require approval by the Engineer. Such submittals will be returned under one of the following codes:
 - 1. Receipt Acknowledged (Action Code 5) is assigned when the submittal is provided for documentation purposes and is acknowledged as received. Comments may be noted using this action code.
 - 2. Revise and Resubmit (Action Code 6) is assigned when there are notations and comments requiring a resubmittal of the package.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

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SUBMITTAL CERTIFICATION FORM

PROJECT: _____
ENGINEER: _____ ENGINEER'S PROJECT NO.: _____
CONTRACTOR: _____ CONTRACTOR'S PROJECT
NO.: _____

TRANSMITTAL NO.: _____ SUBMITTAL NO.: _____
SPECIFICATION NO.: _____ DRAWING NO: _____
DESCRIPTION: _____
MANUFACTURER: _____

The above referenced submittal has been reviewed by the undersigned and I/we certify that the materials and/or equipment meets or exceeds the project specification requirements; that field measurements, dimensions, quantities, specified performance criteria, installation requirements, materials, catalog numbers and related materials have been verified; that all materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the work has been determined and verified; that review includes all information related to the contractor's sole responsibility for means, methods, techniques, sequences, and procedures of construction and safety; and item has been coordinated with the overall project with:

- NO DEVIATIONS

- A COMPLETE LIST OF DEVIATIONS AS FOLLOWS:

SUBMITTED BY: _____ DATE: _____

| |
|----------------------------|
| GENERAL CONTRACTOR'S STAMP |
|----------------------------|

PE CERTIFICATION FORM

The undersigned hereby certifies that he/she is a Professional Engineer registered in the Commonwealth of Massachusetts and that he/she has been employed by

_____ to design
(Name of Contractor)

(Insert PE Responsibilities)

In accordance with Specification section _____ for the

(Name of Project)

The undersigned further certifies that he/she has performed the said design in conformance with all applicable local, state and federal codes, rules and regulations; and, that his/her signature and PE stamp have been affixed to all calculations and drawings used in, and resulting from, the design.

The undersigned hereby agrees to make all original design drawings and calculations available to the

(Insert Name of Owner)

or Owner's representative within seven days following written request therefor by the Owner.

PE Name

Contractor's Name

Signature

Signature

Title

Title

Address

Address

SECTION 01420

REFERENCES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Standards referenced in the Contract Documents.

1.2 GENERAL

- A. Comply with the requirements of standards referenced in the Contract Documents.

1.3 ABBREVIATIONS

A. Abbreviations used in the Specifications are defined as follows:

1. AA – Aluminum Association
2. AABC – Associated Air Balance Council
3. AASHTO – American Association of State Highway and Transportation Officials
4. ACI - American Concrete Institute
5. ACOE - U.S. Army Corps of Engineers
6. ADA – Americans with Disabilities Act
7. ADC – Air Diffusion Council
8. AFBMA – Antifriction Bearing Manufacturers Association
9. AGA – American Gas Association
10. AGC – Associated General Contractors of America
11. AGMA - American Gear Manufacturer Association
12. AI – Asphalt Institute
13. AIA – American Institute of Architects
14. AISC – American Institute of Steel Construction
15. AISI - American Iron and Steel Institute
16. AITC - American Institute of Timber Construction
17. AMCA – Air Movement and Control Association
18. ANSI – American National Standards Institute
19. APA – American Plywood Association
20. API – American Petroleum Institute
21. ARI – Air Conditioning and Refrigeration Institute

22. ASCE – American Society of Civil Engineers
23. ASHRAE – American Society of Heating, Refrigeration and Air Conditioning Engineers
24. ASME – American Society of Mechanical Engineers
25. ASPA – American Sod Producers Association
26. ASTM – American Society for Testing and Materials
27. AWG – American Wire Gauge
28. AWI - Architectural Woodwork Institute
29. AWPA – American Wood Preservers’ Association
30. AWS – American Welding Society
31. AWWA – American Water Works Association
32. BIA – Brick Institute of America
33. CDA – Copper Development Association
34. CLFMI – Chain Link Fence Manufacturer’s Institute
35. CPM - Critical Path Method
36. CPVC – Chlorinated Polyvinyl Chloride
37. CRSI – Concrete Reinforcing Steel Institute
38. CI – Cast Iron
39. DEP - Massachusetts Department of Environmental Protection
40. DHI – Door and Hardware Institute
41. DI – Ductile Iron
42. EJCDC – Engineers’ Joint Contract Documents Committee
43. EJMA – Expansion Joint Manufacturers Association
44. EPDM – Ethylene Propylene Diene Monomer
45. EPT – Electrical Plastic Tubing
46. EVT – Equiviscous Temperature
47. FGMA - Flat Glass Marketing Association
48. FM – Factory Mutual
49. FS – Federal Specifications
50. GA – Gypsum Association
51. GFCI – Ground Fault Circuit Interrupter
52. GPR - Ground Penetrating Radar
53. GPS – Global Positioning System

54. HVAC – Heating, Ventilating and Air Conditioning
55. IBC – International Building Code
56. IBR – Institute of Boiler and Radiator Manufacturers
57. ICBO – International Conference of Building Officials
58. ICS – Industrial Control and Systems
59. IEEE – Institute of Electrical and Electronics Engineers
60. IMI – International Masonry Institute
61. ISA – Instrument Society of America
62. JIC – Joint Industrial Council
63. LCD – Liquid Crystal Display
64. MADEP – Massachusetts Department of Environmental Protection
65. MBMA – Metal Building Manufacturer’s Association
66. MEC – Massachusetts Electric Code
67. MFMA Maple Flooring Manufacturers Association
68. MGL – Massachusetts General Law
69. ML/SFA – Metal Lath/Steel Framing Association
70. MSS – Manufacturer’s Standardization Society
71. NAAMM – National Association of Architectural Metal Manufacturers
72. NAVD – North American Vertical Datum
73. NCMA – National Concrete Masonry Association
74. NEBB – National Environmental Balancing Bureau
75. NEC – National Electrical Code
76. NECA – National Electrical Contractors Association
77. NEMA – National Electrical Manufacturers Association
78. NFPA – National Fire Protection Association
79. NRCA – National Roofing Contractors Association
80. NRS – Non-rising Stem
81. NSF – National Sanitation Foundation
82. NSWMA – National Solid Waste Management Association
83. NWMA – National Woodwork Manufacturers Association
84. O&M – Operation and Maintenance
85. OSHA – Occupational Safety and Health Administration

86. PCA – Portland Cement Association
87. PCI – Precast/Prestressed Concrete Institute
88. PDOP – Positional Dilution of Precision
89. PLC – Programmable Logic Controller
90. PS – Product Standard
91. PVC – Polyvinyl Chloride
92. QA/QC – Quality Assurance/Quality Control
93. RCP – Reinforced Concrete Pipe
94. RCSHSB – Red Cedar Shingle and Handsplit Shake Bureau
95. RIS – Redwood Inspection Service
96. RTU – Remote Telemetry Unit
97. SCADA – Supervisory Control and Data Acquisition
98. SDI – Steel Deck Institute
99. SDS – Safety Data Sheets
100. SSPC – Steel Structures Painting Council
101. TCA – Tile Council of America
102. UL – Underwriter’s Laboratories
103. UPS – Uninterruptable Power Supply
104. USCS – Unified Soil Classification System
105. USDA – United States Department of Agriculture
106. WCLIB – West Coast Lumber Inspection Bureau
107. WOG – Water, Oil, Gas
108. WWPA – Western Wood Products Association

END OF SECTION

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SECTION 01450

QUALITY CONTROL

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Quality assurance and control of the Work
 - 2. Testing and inspection services
 - 3. Product test reports
 - 4. Manufacturer's field service
- B. Related Requirements
 - 1. Section 01451 - Independent Testing Services
 - 2. Testing requirements are described in various Sections of the Project Manual.

1.2 SUBMITTALS

- A. Informational Submittals
 - 1. Product test reports

1.3 QUALITY ASSURANCE

- A. Monitor quality control over Suppliers, products, services, site conditions, and workmanship to produce Work of specified quality.
- B. Comply fully with manufacturer's instructions. Should these instructions conflict with the Specifications, request clarification from the Owner before proceeding.
- C. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or requirements indicate higher standards or more precise workmanship.

1.4 TESTING SERVICES FURNISHED BY CONTRACTOR

- A. Furnish all testing services required for materials and equipment proposed to be used in the Work, and quality control tests made in the field including:
 - 1. Concrete materials and mix designs
 - 2. Concrete in place
 - 3. Modified proctor analyses for all borrow materials used on the Project
 - 4. Modified proctor analysis of all subgrade material to be compacted during surface preparation and fine grading and compaction work
 - 5. Sieve analyses for all borrow materials used on the Project
 - 6. Soil structure and nutrient analyses for all loam and topsoil used on the Project

7. Compaction tests performed during trench backfilling and compaction, rough grading and site preparation, fine grading and compaction of roadway and sidewalk subgrades, and placement of roadway and sidewalk subbase materials
 8. Design of asphalt mixtures
 9. Asphalt in place
 10. All other tests and engineering data as required in the Contract Documents.
- B. Testing agencies must meet the requirements of Section 01451.
 - C. An independent commercial testing laboratory, with current Massachusetts certification, shall perform all tests that require the services of a laboratory to determine compliance with the Contract Documents. Independent testing laboratory requirements are defined under Section 01451.
 - D. Secure and deliver the required number of samples to the laboratory as required by the Contract Documents.
 - E. Notify Owner and Engineer of time, location and material being sampled.
 - F. Schedule necessary testing laboratory services.
 - G. Furnish written reports of each test within 48 hours of completion of testing.
 - H. Notify the Engineer 48 hours prior to operations requiring inspections and laboratory testing services so the Engineer may witness testing. All failed test areas shall be re-worked and re-tested until passing results are obtained.
 - I. The Owner may hire its own independent testing laboratory for quality control tests made in the field or laboratory on materials and equipment during and after their incorporation in the Work. Cooperate with the Owner and independent testing laboratory and furnish samples of materials, design, mix, equipment, tools, storage, and assistance as requested.
 - J. Re-work all failed test areas until passing results are obtained. All re-tests required as a result of the Contractor's failure to perform the work in accordance with the Contract Documents shall be at the Contractor's expense.
- 1.5 CODE COMPLIANCE TESTING
- A. Provide inspections and tests required by codes or ordinances, or by a legally constituted authority having jurisdiction over the Work.
- 1.6 PRODUCT TEST REPORTS
- A. Submit 2 copies of product test reports where required by the Contract Documents.
- 1.7 SUPPLIERS' FIELD SERVICE
- A. Provide qualified field service and installation personnel from material and equipment Suppliers to observe site conditions, installation techniques, quality of workmanship, equipment start-up, adjustment, and performance test where required by the Contract Documents. Observations are to be reported and incorporated in the Work procedures.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

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SECTION 01451

INDEPENDENT TESTING SERVICES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Independent testing services including geotechnical, concrete, and testing
 - 2. Testing laboratory services
- B. Related Requirements
 - 1. Section 01450 - Quality Control
 - 2. Section 02315 - Excavation, Backfill, Compaction and Dewatering
 - 3. Section 02320 - Borrow Material
 - 4. Section 02740 - Bituminous Concrete Pavement
 - 5. Section 03485 – Precast Concrete Structures

1.2 REFERENCES

- A. General
 - 1. ASTM E329 – Standard Specifications for Agencies Engaged in the Testing and/or Inspection of Materials used in Construction
- B. Soil Testing
 - 1. American Association of State Highway and Transportation Officials (AASHTO)
- C. Concrete Testing
 - 1. Cement and Concrete Reference Laboratory (CCRL)

1.3 SUBMITTALS

- A. Informational Submittals
 - 1. Qualifications, experience, and certifications of each proposed testing service
 - 2. Certificate of calibration for testing equipment
 - 3. Inspection and test reports

1.4 QUALITY ASSURANCE

- A. General
 - 1. Comply with the requirements of Section 01450, Quality Control, for testing and inspection requirements.
 - 2. Testing services shall have the following general qualifications:
 - a. Minimum five years as a firm with the type of testing specified.

- b. Ability to provide timely field testing services to minimize the impact of the testing requirements on construction progress.
 - c. Certification to perform the specified services in the state in which the Work is to be performed.
3. Testing services proposed by the Contractor shall be subject to review by the Owner and Engineer. Any testing firm not acceptable to the Owner or Engineer will be rejected.
- B. All testing agencies and laboratories must meet the requirements of ASTM E329.
 - C. Testing company shall have been in business for a minimum of the last 5 years providing applicable testing services.
 - D. Testing equipment shall be calibrated at maximum 12 month intervals by devices of accuracy traceable to National Bureau of Standards. Submit copy of certificate of calibration made by accredited calibration agency.
 - E. Testing shall be in accordance with applicable codes and regulations referenced in individual Specification Sections, and with selected standards of the American Society for Testing and Materials.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 TESTING SERVICES – GENERAL

- A. Provide testing services meeting the following:
 - 1. Provide qualified personnel promptly on notice.
 - 2. Perform inspections required by the Contract Documents. Sample and test materials and observe methods of construction to determine compliance with applicable standards and with the requirements of the Contract Documents.
 - 3. Take specimens and samples for testing, as required in individual Specification Sections. Provide all sampling equipment and deliver all specimens and Samples.
 - 4. Promptly notify the Owner and the Engineer of irregularities or deficiencies in the Work which are observed during performance of services.
 - 5. Promptly submit 2 copies of reports of inspections and tests to the Owner, and one copy to the Engineer including:
 - a. Date issued
 - b. Project title and number
 - c. Testing laboratory or agency name and address
 - d. Name and signature of inspector
 - e. Date of inspection or sampling
 - f. Record of temperature and weather
 - g. Date of test

- h. Identification of product and Specification Section
 - i. Location of Project
 - j. Type of inspection or test
 - k. Results of tests and observations regarding compliance with Contract Documents
- B. Perform additional tests and services as required to assure compliance with the Contract Documents.
- C. Obtain Owner's approval of testing laboratory before performing testing services.
- D. Coordinate with testing laboratory.
- 3.2 GEOTECHNICAL TESTING
- A. Provide field testing and laboratory services for geotechnical soil testing required in Sections 02315 and 02320.
- 3.3 CONCRETE TESTING
- A. Provide qualified independent field and laboratory testing service to perform the concrete testing required in Division 3 of the specifications.
- B. The concrete testing laboratory shall have been inspected by the CCRL within the past five years.
- C. The testing laboratory shall be licensed by the Commonwealth of Massachusetts.
- D. Field testing technicians shall have a Grade 1 concrete field technician license as issued by the American Concrete Institute (ACI).
- 3.4 COORDINATION WITH TESTING LABORATORY
- A. Provide testing laboratory personnel access to site and manufacturer's operations.
- B. Provide laboratory with representative samples of materials to be tested in required quantities.
- C. Furnish labor and facilities:
- 1. To provide access to Work to be tested.
 - 2. To facilitate inspections and tests.
 - 3. For laboratory's exclusive use for storage and curing of test samples.
 - 4. to provide forms for preparing concrete test beams and cylinders.
- D. Notify laboratory sufficiently in advance of operations to allow for assignment of personnel and scheduling of tests.
- E. Arrange with laboratory and pay for additional inspections, samples, and tests required for Contractor's convenience.

END OF SECTION

SECTION 01510

TEMPORARY UTILITIES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Temporary electricity
 - 2. Temporary water service
 - 3. Temporary fuel oil

1.2 QUALITY ASSURANCE

- A. Maintain temporary utilities in proper and safe condition throughout the progress of the Work.

1.3 TEMPORARY ELECTRICITY

- A. Provide temporary electrical service capable of providing sufficient power throughout the site for both temporary power and temporary lighting throughout the project. Due to the potential risks of contamination from fuel spills, the use of all fuel-driven generator sets must be strictly controlled and monitored while on site.
- B. Pay all charges for temporary electricity.
- C. Refueling must be accomplished off-site when feasible and if fuel is transported to the site, it must be in approved containers with secondary containment. All gasoline driven pumps or diesel generators shall be underlain by sheets of polyethylene plastic and on-site refueling shall be accomplished by pumping or siphoning. Absorbent pads shall be available for immediate use in the event of an accidental spill. The Contractor shall be responsible for complete cleanup of any accidental spills.
- D. Portable power supplies shall conform to the noise requirements of Section 02315.
- E. Maintain and service the portable power unit(s) throughout the duration of the project.
- F. Provide a general power distribution system including all wires, cables, supports, protective devices, transformers, motor starters, etc., as required for a complete electrically protected and safe system to handle construction services.
- G. Provide a portable power supply capable of providing sufficient power at the site for both temporary power and lighting throughout the project. Due to the potential risks of contamination from fuel spills, the use of all fuel-driven generator sets must be strictly controlled and monitored while on site.
- H. Refueling must be accomplished off-site when feasible and if fuel is transported to the site, it must be in approved containers with secondary containment. All gasoline driven pumps or diesel generators shall be underlain by sheets of polyethylene plastic and on-site refueling shall be accomplished by pumping or siphoning. Absorbent pads shall be available for immediate use in the event of an accidental spill. The Contractor shall be responsible for complete cleanup of any accidental spills.
- I. Maintain and service the portable power unit(s) throughout the duration of the project.

- J. Provide a general power distribution system including all wires, cables, supports, protective devices, transformers, motor starters, etc., as required for a complete electrically protected and safe system to handle required construction services.

1.4 TEMPORARY WATER SERVICE

- A. Water for Construction Purposes

- 1. The Contractor shall provide water for construction and testing purposes.

1.5 TEMPORARY FUEL OIL

- A. Properly contain, label, and store all petroleum products off the ground with suitable secondary containment.
- B. Take all necessary precautions to avoid leakage and spillage of all petroleum products, including lubricating oils.
- C. In general, perform fueling and refueling of all equipment and vehicles off-site. In the event that on-site refueling is necessary and as approved by the Engineer, provide suitable secondary containment facilities to contain all potential spillage, including that resulting from over-filling.
- D. Inspect vehicles for leaks prior to entrance to the Work site. Vehicles with leaks are prohibited from entering the Work site. All vehicles, while on the work site, shall be underlain with polyethylene plastic sheets. Absorbent pads must be available on site for immediate use if needed.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

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SECTION 01520

CONSTRUCTION FACILITIES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Temporary sanitary and first-aid facilities

1.2 QUALITY ASSURANCE

- A. Maintain temporary construction facilities in proper and safe condition throughout the progress of the Work.

1.3 FIELD OFFICE

- A. A field office is not required.

1.4 TEMPORARY SANITARY AND FIRST AID FACILITIES

- A. Provide suitably enclosed chemical or self-contained toilets for the use of the labor force employed on the Work. Toilets shall be located near the Work sites and secluded from observation insofar as possible. Toilets shall be serviced weekly, kept clean and supplied throughout the course of the Work.
- B. Contractor shall enforce proper use of sanitary facilities.
- C. Provide a first aid station at the site.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

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SECTION 01550

TRAFFIC REGULATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Traffic requirements
 - 2. Traffic officers

1.2 PAYMENT PROCEDURES

- 1. Refer to Section 01290, Application and Certificate for Payment for procedures relating to payment for the Work.
- 2. Schedule, document and pay for traffic officers if they are required. Contractor will be reimbursed for payment of traffic officers only after invoices have been paid.
- 3. Owner will pay for traffic officers if they are required. Contractor is responsible for scheduling the traffic officers, with Owner's approval, and for providing all documentation.
- 4. Owner will deduct from monies due Contractor for the following abnormal and unreasonable expenses:
 - a. Contractor caused delays in the prosecution of work that result in hiring traffic officers for more hours than would have been required during normal prosecution of work.
 - b. Reconstruction and/or reinstallation of any portions of the work, as a result of improper initial installation or defective material, for which traffic officers are required.
 - c. Traffic officers required at a site where Contractor is not working or outside of Contractor's standard work day as a result of obstructions to traffic that remain in the traveled way.
 - d. All other incidents resulting from Contractor's operations requiring traffic officers that would not normally be encountered during the progress of a well-organized project employing proper construction methods.
 - e. When traffic officers are requested for the convenience of Contractor and are not otherwise considered necessary to the work.

1.3 REFERENCES

- A. Manual of Uniform Traffic Control Devices, U.S. Department of Transportation

1.4 TRAFFIC REQUIREMENTS

- A. Adhere to all applicable Sutton Town ordinances that relate to traffic control. Coordinate and meet with Town authorities to review applicable requirements and develop a traffic control plan consistent with referenced documents for approval by the Town authorities.

- B. Provide a traffic control plan to Engineer for approval showing traffic control signs, barrels, cones, traffic officers, including detour signs, meeting the approval of Engineer, Owner and local Police Departments in accordance with the Manual of Uniform Traffic Control Devices.
- C. Determine the location of each day's work and implement the approved traffic control plan. If the plan requires the use of traffic officers, notify the Police Department.
- D. Contractor shall have no claim of delay if he does not notify the Police Department of his scheduled location in time to arrange for traffic officers.
- E. Hand deliver written notice to individual houses affected by driveway and side road closings or detours a minimum 24 hours in advance. A recommended parking area outside the work limits shall be included in the notice.

1.5 TRAFFIC OFFICERS

- A. Uniformed traffic officers shall be required at locations deemed necessary by Owner, working in conjunction with local Police and Fire Departments, for the protection of the public.
- B. The Police Chief or his representative, in consultation with Owner's representative, will determine the number of officers required for the work.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

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SECTION 01560
TEMPORARY BARRIERS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Temporary concrete barrier
- B. Related Requirements
 - 1. Section 01720, Field Engineering

1.2 SUBMITTALS

- A. Informational Submittals
 - 1. Submit information regarding the proposed temporary barriers, including material of construction, plan layout, spacing of components, and anchorage.

1.3 TEMPORARY CONCRETE BARRIER

- A. Comply with the requirements of 520 CMR 14.00, and the local and/or regional permit required to be obtained as part of this regulation, for temporary fencing.
- B. Provide temporary barriers across the travel lane of 8 Lots Road at the limit of work as expressed in Section 01720 so that construction equipment and vehicle access is restricted over the work site.
- C. The Contractor will retain ownership of the temporary barriers after the completion of the Work.

1.4 SITE SECURITY

- A. Provide concrete temporary barriers to prevent unauthorized access to construction areas. The location of the temporary fence is shown on the drawings.
- B. Do not move the temporary barriers under any circumstances until the construction activities are complete.
- C. Remove the temporary concrete barriers after the completion of the Work.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Temporary barrier shall be a concrete jersey barrier.

PART 3 EXECUTION

3.1 BARRIER INSTALLATION

- A. Install temporary concrete barrier at locations specified on the contract drawings.

END OF SECTION

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Temporary Barriers.docx

SECTION 01570

TEMPORARY CONTROLS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Dust control
 - 2. Compost wattles
 - 3. Mulch
 - 4. Sediment trapping devices
 - 5. Temporary diversion piping
- B. Related Requirements
 - 1. Section 02922 – Hydroseeding and Mulching
 - 2. Section 01571 – Control of Water

1.2 SUBMITTALS

- A. Informational Submittals
 - 1. Storm Water Pollution Prevention Plan (SWPPP)
 - 2. Materials proposed for use in dust control
 - 3. Compost wattles, siltation fence, mulch, and sediment trapping devices

1.3 COMPLIANCE WITH EPA PHASE II STORMWATER PROGRAM

- A. The Project involves an overall disturbance of greater than 1 acre and is therefore under jurisdiction of the Environmental Protection Agency's (EPA) Phase II Stormwater Program. Comply with the program in accordance with EPA's 2022 Construction General Permit with subsequent revisions including the following:
 - 1. Prepare a SWPPP and maintain a copy on site throughout construction period. The SWPPP must be kept current and shall be amended according to the conditions described in the permit.
 - 2. Submit a Notice of Intent (NOI) 14 days prior to commencement of earth disturbing work.
 - 3. Post a sign or other notice of permit coverage.
 - 4. Comply with SWPPP including control of stormwater and non-stormwater discharges through use of structural and non-structural best management practices, inspections, maintenance and corrective action activities, spill prevention and emergency response.
 - 5. Submit a Notice of Termination following completion of all construction activities and having met permit requirements for termination.

PART 2 PRODUCTS**2.1 COMPOST WATTLES**

- A. Compost wattles required for siltation control shall consist of a 100% biodegradable sock/tube of cotton, burlap, jute, or similar material, containing a porous compost media designed to filter pollutants from stormwater. Nominal diameter shall be 12-inches and the effective height shall be 9.5-inches.

2.2 SEDIMENT TRAPPING DEVICES

- A. Sediment trapping devices shall be Siltsack®, Dandy Bag II®, or equal.

2.3 MULCH

- A. Hay mulch shall consist of mowed cured grass, clover, alfalfa, timothy, oats, or wheat. No salt hay shall be used.

2.4 TEMPORARY DIVERSION PIPING

- A. A temporary stream flow bypass shall be installed to hydraulically connect Schoolhouse Pond and Putnam Pond for the duration of the project. The requirements are outlined in Section 15701.

PART 3 EXECUTION**3.1 DUST CONTROL**

- A. Control dust during the Work. Use a mechanical street sweeper daily.
- B. Prevent dust from becoming a nuisance or hazard. During construction, excavated material and open or stripped areas are to be policed and controlled to prevent spreading of the material.
- C. Control dust during the work on-site using calcium chloride and/or water.
- D. During the Work on-site, all paved road and driveway surfaces shall be scraped and broomed free of excavated materials on a daily basis. The surfaces shall be hosed down or otherwise treated to eliminate active or potential dust conditions and the natural road or wearing surface shall be exposed.

3.2 DRAINAGE AND EROSION CONTROL

- A. Control erosion and siltation during the construction through mulching, compost wattles, diversion and control of storm water run-off, ponding areas and similar methods.
- B. Provide and maintain sediment trapping systems.
- C. Discharge surface runoff from any disturbances to the site into silt containment basins. Utilize siltation prevention measures including compost wattles before discharge to drainage systems.

3.3 COMPOST WATTLES

- A. Place and maintain compost wattles as shown on the drawings or as required by permit.
- B. Install compost wattles as shown on the drawings. Replace deteriorated wattles. Remove and dispose of the wattles following the successful growth of vegetation in the

areas disturbed by the construction. Wattles shall not be removed until their removal is approved by the Engineer.

- C. Perform work in accordance with Town of Sutton Conservation Commission Order of Conditions.

3.4 RESTORATION

- A. Provide erosion control, seed and mulch and netting for surface restoration of areas disturbed during construction activities.
- B. Provide temporary stabilization of disturbed areas that remain inactive greater than 14 consecutive days to minimize erosion. Methods to minimize erosion may include but are not limited to:
 - 1. Spreading straw and/or providing temporary planting stabilization.
 - 2. Installing jute netting.
 - 3. Preparing surfaces to increase the runoff flow path, reduce the runoff flow velocity, or create small storage pockets to retain surface flows. Methods of accomplishing this include using mechanical devices such as track equipment or sheep's foot rollers.
- C. Restore the ground surface in brush and/or woodland areas by machine spreading of existing stripped surface soils (loam and humus), liming, fertilizing, seeding and mulching, as well as installing jute netting where required by steep slopes.
- D. Salvage existing loam and topsoil and stockpile this material for re-spreading where originally removed. On backfilling, grading shall be returned to preconstruction contours and the stockpile of loam shall be spread over areas disturbed during construction activities.
- E. Place mulch on seeded areas. Use jute netting on areas having a slope greater than 3 horizontal to 1 vertical, to anchor the mulch until a satisfactory growth is obtained. If seeding is not possible because of the time of the year, apply mulch and netting to stabilize the area until such time as seed can be sown.
- F. Provide grading, refertilizing, reseeding, remulching and/or netting to maintain the restored areas until the Work is accepted by the Owner.
- G. Seed shall be as specified under Section 02920.

3.5 CLEANING

- A. Remove any sediment that builds up around the compost wattles. Replace and, or supplement erosion controls as necessary to ensure no discharges of turbid or sediment laden water.

END OF SECTION

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SECTION 01571

CONTROL OF WATER

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes requirements for the control of surface water, including
 - 1. Cofferdams
 - 2. Surface Water Diversion
 - 3. Flood Contingency Plan
- B. Related Requirements
 - 1. Section 01570 – Temporary Controls
 - 2. Section 02315 – Excavation, Backfill, Compaction and Dewatering
 - 3. Section 02670 – Construction in Wetlands

1.2 SUBMITTALS

- A. Informational Submittals
 - 1. The following may be separate documents or combined into one plan and should be signed and stamped by a Professional Engineer registered in the state where the work is performed.
 - a. Water Control Plan, including description of approach, plans, location, materials, size, methods, phasing, calculations, and specifications for the control of water, dewatering of/removal of water from enclosed areas.
 - b. Cofferdam designs, including materials, location, construction methods and details, design criteria planned, calculations demonstrating the adequacy of the system, etc.
 - c. Flood Contingency Plan, which shall include:
 - 1) Plans for monitoring for potential flooding conditions and responses to be undertaken if flooding is forecast or occurs.
 - 2) Methods to be implemented for protection of the Work and preventing potential discharges of sediment to the impoundment or downstream resource areas during flooding conditions.
 - 3) Ensure that structures, materials, and equipment will be anchored or restrained to prevent displacement or flotation or will be removed from the floodplain prior to a flood.
 - 4) Identify the storm events that will adversely affect construction activities.

- 5) Identify the name, address and telephone number of the person(s) responsible for implementing this plan, and contact information for the Contractor’s superintendent, project manager, local emergency services, and other parties that can be reachable 24/7 in the event of an emergency.

1.3 PROJECT CONDITIONS

A. Bathymetric Data

1. A bathymetric survey was performed by CR Environmental on October 14, 2026 and is included in the drawings. The Contractor is responsible for verifying water depths and sediment thickness as part of planning and design.

B. Estimated Flood Characteristics

1. Existing Conditions:

The following flood flow and elevation information for the existing conditions has been obtained from hydrologic and hydraulic modeling performed by Tighe & Bond. Note that the water controls used is likely to change the outflow and peak water surface elevation in Schoolhouse Pond. These changes shall be considered in the development of the water control plan.

| Flood Event | Inflow (cubic feet per second) | Outflow (cubic feet per second) | Peak Water Surface Elevation (feet, NAVD88) |
|----------------|--------------------------------|---------------------------------|---|
| 5-year flood | 69 | 36 | 592.5 |
| 10-year flood | 104 | 56 | 593.1 |
| 25-year flood | 163 | 91 | 594.0 |
| 50-year flood | 215 | 125 | 594.8 |
| 100-year flood | 272 | 141 | 595.2 |

C. Design Criteria

1. Provide a suitable water control system sized adequately to control water for normal flows and small rainfall events that will occur routinely during construction. Contractor shall be responsible for selection of the design elevation for design of the cofferdam and water control system.
2. No additional payment shall be made to the Contractor for any damages to the work caused by a flood event up to a 25-year flood; for off-site damages caused by a flood event up to the 100-year flood; or if the cofferdam fails unexpectedly during its design flood or a lesser flood.
3. The basis for determination of the flood return frequency shall be the measured or calculated flow at the site relative to the flow information presented in this section and not total rainfall or other factors.

PART 2 PRODUCTS

2.1 TEMPORARY COFFERDAM SYSTEM

- A. Provide an efficient temporary cofferdam system to allow safe execution of the work under this contract. Cofferdams constructed of uncontained fill material (e.g. earth, rock systems) will not be acceptable. Examples of acceptable systems are as follows:
 - 1. A steel frame with membrane system such as the one utilized by Portadam Inc., 107 Drivers Lane, Laurel Springs, NJ 08021, Tel. (609) 784-2208
 - 2. 4'x4' Supersacks constructed of polypropylene (filled with sand) and with lifting straps, provided a properly-installed waterproof membrane on the upstream side is included
 - 3. Water filled cofferdam, such as the one utilized by Water Structures Unlimited (Aquadam ®)
 - 4. Sheeting, appropriately braced
- B. The Contractor is solely responsible for the design and stability of cofferdams.

PART 3 EXECUTION

3.1 TEMPORARY COFFERDAM SYSTEM

- A. Furnish, install, and remove a safe temporary cofferdam system.
- B. Installation of rip-rap for slope protection or erosion repair may be performed up to one foot below the water line without a cofferdam, provided no placement or compaction of granular materials including low-permeability fill is required, and provided that the area is surrounded by a functioning turbidity curtain.
- C. The cofferdam shall be surrounded by a functioning turbidity curtain during placement and removal and at other times if necessary to prevent discharge of turbidity.

3.2 DEWATERING

- A. The areas within the cofferdam shall be dewatered and maintained in a dry condition to the extent required to construct the work in accordance with all applicable provisions in other sections of the specifications.

3.3 DIVERSION

- A. Maintain flow around the cofferdam in a manner that meets the following requirements:
 - 1. Maintain water levels to no lower than elevation 587.5, except following storms or following issuance of a drought advisory.
 - 2. Avoid impacts to upstream and downstream areas (eg, increased water levels or flow velocities) that may result from temporary flow constrictions as a result of cofferdams and diversions.
 - 3. Provide temporary scour protection and erosion controls at diversion inlets, discharges, and along diversion channels so that diversions do not cause scour, erosion, sedimentation, or cause unacceptable levels of turbidity.
 - 4. Inlets, channels, and outlets are monitored and maintained free of debris and obstructions.

3.4 MAINTENANCE

- A. Continuously monitor the cofferdam for evidence of movement, deterioration, and excessive seepage throughout use. The cofferdam shall be maintained in good working order as necessary for the safety of workers and the protection of the permanent work.

3.5 FLOODING

- A. Monitor weather and weather related events to anticipate if flood control activities are anticipated. If flooding is anticipated, suspend construction operations, remove equipment which could be damaged, and take such actions and perform such additional work as approved by the Engineer to protect the work and prepare the area for flooding.

END OF SECTION

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SECTION 01582

PROJECT IDENTIFICATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Project Identification Signs
 - 2. Informational Signs
- B. Related Requirements
 - 1. Section 01330, Submittal Procedures
 - 2. Section 01550, Traffic Regulation

1.2 SUBMITTALS

- A. Action Submittals
 - 1. Information on paints to be used for items under this section.
 - 2. Layout of each sign.

1.3 QUALITY ASSURANCE

- A. Employ the services of a professional painter who has successfully performed at least 5 emblems of similar size and character within the last 2 years to perform lettering and Owner's emblem.
- B. Finishes and painting shall resist weathering and fading for scheduled construction period.

1.4 MAINTENANCE

- A. Maintain signs and supports in a neat, clean condition; repair damages to structures, framing or sign.

PART 2 PRODUCTS

2.1 SYSTEM DESCRIPTION

- A. Project Identification Sign
 - 1. Do not erect or display advertising signs of any kind on site. At start of Work, furnish, erect, and maintain on site where directed by the Owner two signs, each 2 ft. by 3 ft. in size, bearing the following information:
 - a. Name of Project and Contract number
 - b. Name of Owner and emblem. The emblem will be furnished electronically by the Owner
 - c. Name of Consulting Engineer
 - d. Name and Address of Contractor

- e. Contact telephone number

B. Informational Signs

1. Provide six painted signs with painted lettering, or standard products:
 - a. Size of signs and lettering: To meet Federal Highway Administration "Standard Alphabets for Highway Signs."
 - b. Colors: As required by regulatory agencies, otherwise uniform colors throughout Project.
 - c. Furnish, erect, and maintain job instruction signs, including "DANGER," "KEEP OFF," as may be required to conduct the Work safely. Such signs shall be clean, maintained in good condition, and promptly removed when they have served their purpose.
2. Erect at construction locations to provide required information.
3. Provide and post one sign with permit number information as required by the Wetlands Protection Act Order of Conditions.

C. Traffic Control Signs

1. Traffic control signs shall be as specified in Section 01550 and as indicated on the Drawings.

2.2 MATERIALS

A. Sign Materials

1. Structure and Framing: May be new or used, wood or metal, in sound condition, structurally adequate to work, and suitable for specified finish.
2. Sign Surfaces: Exterior softwood plywood with medium density overlay, standard large sizes to minimize joints:
 - a. Thickness: As required by standards to span framing members, to provide even, smooth surface without waves or buckles.
3. Wrought Hardware: Galvanized.
4. Paint:
 - a. Apply a coat of white alkyd primer wood oil to entire woodwork of sign.
 - b. Apply 2 coats of white exterior latex paint to sign including framework.

- B. Sign layout shall be approved by the Owner prior to fabrication.

PART 3 EXECUTION

3.1 PREPARATION

A. Project Identification Sign

1. Paint exposed surface of supports, framing and surface material; one coat of primer and one coat of exterior white paint.
2. Paint graphics in styles, sizes, and colors selected.

3. Sign to be minimum of 48 inches by 96 inches.

3.2 ERECTION

A. Project Identification Sign

1. Erect Project signs at locations approved by the Owner in the vicinity of the culvert and closed roadway.
2. Maintain in good condition until completion of the Project.
 - a. Remove sign, framing, supports and foundations at completion of the Project.

END OF SECTION

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SECTION 01600

PRODUCT REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Products and Materials
 - 2. Product Delivery Requirements
 - 3. Packaging, Handling and Storage Requirements
 - 4. Inspection of Offsite Work

1.2 QUALITY ASSURANCE

- A. Review all contract Drawings and Specifications with respect to specific system characteristics, applicability of materials and equipment for the intended purposes, sizes, orientation, and interface with other systems, both existing and proposed, and certify that the materials and equipment proposed will perform as specified prior to submitting shop drawings.
- B. Provide sworn certificates as to quality and quantity of materials where specified or requested by the Engineer.
- C. Obtain concurrence of the Engineer prior to processing, fabricating, or delivering material or equipment.

1.3 PRODUCTS AND MATERIALS

- A. Furnish products of qualified manufacturers suitable for intended use. Furnish products of each type by a single manufacturer unless specified otherwise.
- B. Use only new and first quality material in the Work. Material shall conform to the requirements of these Specifications and be approved by the Engineer. If, after trial, it is found that sources of supply that have been approved do not furnish a uniform product, or if the product from any source proves unacceptable at any time, the Contractor shall furnish approved materials from other approved sources.
- C. Immediately remove defective materials and equipment from the site, at no additional cost to the Owner. The Contractor may be required to furnish sworn certificates as to the quality and quantity of materials before materials are incorporated in the Work.
- D. Engineer has the right to approve the source of supply of all material prior to delivery.

1.4 PRODUCT DELIVERY REQUIREMENTS

- A. Transport and handle products in accordance with manufacturer's instructions.
- B. Promptly inspect shipments to ensure products comply with requirements, quantities are correct, and products are undamaged.
- C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

- D. Progressively deliver materials and equipment to the Site so there will be neither delay in progress of the Work nor an accumulation of material that is not to be used within a reasonable time.
- E. Deliver products to the Site in their manufacturer's original container, with labels intact and legible.
 - 1. Maintain packaged materials with seals unbroken and labels intact until time of use.
 - 2. The Engineer may reject as non-complying such material and products that do not bear identification satisfactory to the Engineer as to the manufacturer, grade, quality, source, and other pertinent information.

1.5 PACKAGING, HANDLING AND STORAGE REQUIREMENTS

- A. Provide storage and handling of all materials and equipment required for the Work.
- B. Except as otherwise indicated in the Contract Documents, determine and comply with the manufacturer's recommendations on product storage, handling, and protection. Provide manufacturer's documentation on recommended storage procedures when requested by the Engineer.
- C. Properly store and protect all equipment immediately upon its arrival.
- D. Familiarize workmen and subcontractors with hazards associated with materials, equipment, and chemicals specified herein and take all necessary safety precautions.
- E. Areas available on the construction site for storage of material and equipment shall be as shown on the Drawings or approved by the Owner.
- F. Materials and equipment to be incorporated in the Work shall be handled and stored by the manufacturer, fabricator, supplier, and Contractor before, during and after shipment in a manner to prevent warping, twisting, bending, breaking, chipping, rusting, and any injury, theft, or damage of any kind to the material or equipment.
- G. Promptly remove materials from the site of the Work which have become damaged or are unfit for the use intended or specified. The Contractor will not be compensated for the damaged materials or their removal costs.
- H. Handle, haul, and distribute all materials and all surplus materials on the different portions of the Work, as necessary or required. Provide suitable and adequate storage room for materials and equipment during the progress of the Work, and be responsible for the protection, loss of, or damage to materials and equipment furnished, until the final completion and acceptance of the Work.
- I. Storage and demurrage charges by transportation companies and vendors shall be borne by the Contractor.
- J. All materials and equipment to be incorporated in the Work shall be placed so as to not damage 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. Keep materials and equipment neatly piled and compactly stored in such locations as will cause a minimum of inconvenience to the Owner.
- K. No material or equipment will be permitted to be stored in any of the Owner's facilities, unless otherwise approved by the Engineer.

- L. Do not store material or equipment in any wetland or environmentally sensitive area. Stockpile sites shall be level, devoid of mature stands of natural vegetation, and removed from drainage facilities and features, wetlands, and stream corridors.
- M. Contractor shall be fully responsible for loss or damage to stored materials and equipment.
- N. No item judged rusty, corroded or otherwise damaged during storage will be accepted. Any electrical or instrumentation item determined by the Engineer to be damaged shall be removed from the Site and replaced by a completely new item in first class condition. Items not properly stored will not be considered for any partial payment.

1.6 INSPECTION OF OFFSITE WORK – NOT USED

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

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SECTION 01630

PRODUCT SUBSTITUTION DURING CONSTRUCTION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Product substitution procedures

1.2 CONTRACTOR'S OPTIONS

- A. For materials or equipment (hereinafter products) specified only by performance or reference standard, select product meeting that standard, by any Supplier. To the maximum extent possible, provide products of the same generic kind from a single source.
- B. For products specified by naming several products or manufacturers, select any one of the products or Suppliers named, which fully complies with the Drawings and Specifications. Another "or-equal" product can also be considered by the Engineer if it complies with the provisions of Paragraph 1.3. If a product proposed by the Contractor does not qualify as an "or-equal" item, then it can be considered as a proposed substitute item, and the Contractor must comply with the requirements of Paragraph 1.3.A.2.
- C. For products specified by naming products or manufacturers and followed by words indicating that no "or-equal" item or substitution is permitted, there is no option and no substitution will be allowed.
- D. Where more than one choice is available as a Contractor's option, select product that is compatible with other products already selected or specified.

1.3 SUBSTITUTIONS

- 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 1.3.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 1.3.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 thereof. 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 1.3.A.2.d, as supplemented by the Contract Documents, 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:
 - perform adequately the functions and achieve the results called for by the general design,
 - be similar in substance to that specified, and
 - be suited to the same use as that specified;
 - 2) will state:
 - the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time,
 - 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

- 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:
 - all variations of the proposed substitute item from that specified, and
 - 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 1.3.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 1.3.A and 1.3.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 1.3.A.2 and 1.3.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.

1.4 SUBMISSION AND REVIEW

- A. If in the Engineer's sole discretion a product proposed by the Contractor does not qualify as an "or-equal" item under the provisions of Paragraph 1.3.A.1, it can be considered a proposed substitute item. Submit information required under Paragraph 1.3.A.2 for proposed substitutes.

- B. The Engineer will consider written requests from the Contractor for substitutions within 30 days after the Notice to Proceed. After this period, requests will be considered only in case of unavailability of product or other conditions beyond control of the Contractor.
- C. Submit 5 copies of request for substitutions. Submit a separate request for each proposed substitution. Include the following in each substitution request:
 - 1. For products or Suppliers:
 - a. Product identification, including Supplier & manufacturer's name and address.
 - b. Manufacturer's literature with product description, performance and test data, and reference standards.
 - c. Samples, if appropriate.
 - d. Name and address of similar projects on which product was used, and date of installation.
 - 2. For construction methods (if specified):
 - a. Detailed description of proposed method.
 - b. Drawings illustrating method.
 - 3. Such other data as the Engineer may require to establish that the proposed substitution is equal to the product, Supplier or method specified.
- D. The substitution request shall include written certification and statements that are outlined in this specification.
- E. A request constitutes a representation that Contractor:
 - 1. Has investigated proposed product and determined that it meets or exceeds quality level of specified product.
 - 2. Will provide same or better guarantees, warranties or bonds for proposed substitution as for specified product.
 - 3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
 - 4. Waives all claims for additional costs or time extension which may subsequently become apparent.
 - 5. Will reimburse Owner for review or redesign services associated with re-approval by authorities having jurisdiction.
- F. A proposed substitution will not be accepted if:
 - 1. Acceptance will require changes in the design concept or a substantial revision of the Contract Documents.
 - 2. It will delay completion of the Work.
 - 3. It is intended or implied on a Shop Drawing and is not accompanied by a formal request for substitution from the Contractor.
- G. The Contractor is responsible for all costs relating to substitution requests.

- H. Approval of a substitution does not relieve the Contractor from the requirement for submission of Shop Drawings as set forth in the Contract Documents.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

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SECTION 01720

FIELD ENGINEERING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Establishment of lines, benchmarks, and elevations required to layout and construct the Work

1.2 SUBMITTALS

A. Informational Submittals

1. Submit the qualifications of the Registered Land surveyor to be hired to perform various portions of the Work, as applicable.
2. Submit documentation verifying the accuracy of field engineering work.
3. Submit 4 copies of final record drawings of field engineering layouts and as-built survey.
4. Submit certificate signed by registered (licensed) surveyor certifying that elevations and locations of Work are in conformance with Contract Documents. Explain deviations.

1.3 RECORDS

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

1.4 QUALITY ASSURANCE

- A. Employ a competent surveyor, registered with the Commonwealth of Massachusetts as a Land Surveyor, as required for the particular characteristics of the work being performed.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 PROCEDURES

- A. The Registered Land Surveyor provided shall establish and maintain lines, elevations and reference marks needed during the progress of the Work and shall re-establish stakes and marks placed by the Engineer that are lost or destroyed through the course of the Work. Verify such work by instrument or other appropriate means.
- B. The Engineer shall be permitted at all times to check the lines, elevations and reference marks, set by the Contractor, who shall correct any errors 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 the responsibility of the Contractor for the accurate and satisfactory construction and completion of the entire Work.
- C. Make, check, and be responsible for measurements and dimensions necessary for the proper construction of and the prevention of misfittings in the Work.

- D. Furnish all protective stakes and temporary structures for marking and maintaining points and lines for the building of the Work, and give the Engineer such facilities and materials for verifying said lines and points as he may require.
- E. Revisions to the layout and elevations of the Work as defined by the Contract Documents shall be approved by the Engineer.
- F. Maintain and prepare final record drawings of field engineering layouts and as-built survey, performed by the Registered Land Surveyor, conducted after completion of the Work.

END OF SECTION

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SECTION 01725

PRESERVATION AND RESTORATION OF PROJECT FEATURES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Protection and replacement of trees, shrubs, signs, property markers, fences, and related project features.
2. Taking precautions, providing programs, and taking actions necessary to protect public and private property and facilities that are outside the demolition scope from damage.

1.2 DEFINITIONS

A. Underground Structures

1. Underground structures are defined to include, but not be limited to, sewer, water, gas, and other piping, and manholes, chambers, electrical and signal conduits, tunnels and other existing subsurface work located within or adjacent to the limits of the Work.
2. Underground structures known to the Engineer are shown on the Drawings to the extent that locations are available. This information is shown for the assistance of the Contractor in accordance with the best information available, but is not guaranteed to be correct or complete. The Contractor shall be responsible for checking on the actual locations of water, sewer, gas electric and telephone service connection lines to avoid potential interferences.

B. Surface Structures

1. Surface structures are defined as existing buildings, structures and other facilities above the ground surface. Included with such structures are their foundations or any extension below the surface. Surface structures include, but are not limited to, buildings, tanks, walls, bridges, roads (including pavement), dams, channels, open drainage, piping, poles, wires, posts, signs, markers, curbs, walks and all other facilities that are visible above the ground surface.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 REPAIR/RESTORATION

- A. Trees, shrubs, and similar items shall not be removed except where indicated on the drawings or as necessary to access the required demolition work, as approved by the Engineer. Items to be removed shall be clearly marked as directed by the Engineer. If objects not to be removed are damaged or removed, they shall be repaired or replaced to their original condition.
- B. Trees and shrubs on private property, which are removed or damaged by the Contractor shall be replaced in kind.

- C. Signs, fences, property markers, walls, guard rails and other public or private property that are outside the demolition scope shall be replaced in kind if damaged. Supports and protective devices required shall be provided.
- D. Roadway pavement shall be sawcut a sufficient distance from the edge of excavation so that all pavement damaged by the work is neatly removed and replaced. If pavement is damaged beyond the initial sawcut limits, the pavement shall again be sawcut and removed beyond the limit of damage and replaced.
- E. **Underground and Surface Structures**
 - 1. In the event of damage, injury or loss to existing utilities and structures that were not indicated to be removed or abandoned, whether shown on the Drawings or not, make all reasonable efforts to facilitate repairs and to mitigate the impact of such events upon the utility or structure owner's normal operations. Restore the existing utility or structure to the condition required by the owner of the utility or structure or at least to the condition found immediately prior to the Work. In the event that the utility owner elects to make the repairs, provide all reasonable access and assistance, and reimburse the utility owner for the cost of repairs. If utility service is interrupted due to damage to facilities, alternate facilities shall be provided.
 - 2. All other existing surface facilities, including but not limited to, guard rails, posts, guard cables, signs, poles, markers and curbs which are temporarily removed to facilitate the Work shall be replaced and restored to their original condition at the Contractor's expense unless otherwise indicated in other sections of these specifications.
 - 3. Wherever water, sewer, gas or petroleum mains, electric or telephone lines, cables or other utilities and structures are encountered and may be in any way interfered with, inform the Engineer and the appropriate utility company. Cooperate with the Engineer and utility company in the protection, removal, relocation, and replacement of structures and facilities.
 - 4. Prior to proceeding with any demolition or construction, notify in writing owners of utilities and structures within the vicinity of the proposed Work.
 - 5. Work affecting water distribution systems, which will take fire hydrants out of service, must be coordinated with the local fire department. The Contractor shall be prepared to restore fire flows in the event of an emergency or to provide for temporary fire flow service in accordance with the requirements of the local fire department.
 - 6. Materials used for relocation or replacement of utilities and structures shall be of an equivalent material, type, class, grade and construction as the existing or as approved by the respective owners thereof, unless otherwise shown or specified.
 - 7. When any survey monument or property marker, whether of stone, concrete, wood or metal, is in the line of any trench or other demolition or construction work and may have to be removed, notify the Engineer in advance of removal. Under no circumstances shall any monument or marker be removed or disturbed by the Contractor or by any of his Subcontractors, employees or agents, without the permission of the Engineer. Monuments or markers removed or disturbed shall be reset by a land surveyor licensed in the State where the Work is located at the Contractor's expense. Should any monuments or markers be destroyed

through accident, neglect or as a result of the Work under this Contract, the Contractor shall, at his own expense, employ a land surveyor licensed in the State where the Work is located to re-establish the monument or marker.

3.2 PROTECTION

- A. The construction of certain portions of the project may require excavation within the root systems of trees. Roots with a diameter of 2 inches or more within the excavation shall not be cut. If necessary, excavation shall be made with small powered equipment or by hand to comply with this requirement. It may be necessary to excavate from more than one direction to avoid damage to the roots.
- B. The trunks of trees that are to remain and are within the swing radius of the excavating machine bucket when fully extended shall be wrapped with burlap and 2 inch by 4 inch protective wood slats (8 inch spacing maximum) wired around the circumference of the trees to protect them from damage.
- C. Tree limbs shall not be cut except upon written approval of the Owner and the Engineer. Tree limbs cut shall be painted with approved forestry paint manufactured specifically for that purpose.
- D. Underground and Surface Structures
 - 1. Sustain in their places and protect from direct or indirect injury underground and surface structures designated to remain within or adjacent to the limits of the Work. Such sustaining and supporting shall be done carefully and as required by the party owning or controlling such structure. Before proceeding with the work of sustaining and supporting such structure, satisfy the Engineer that the methods and procedures to be used have been approved by the party owning same.
 - 2. Pay utility service company charges related to the temporary support of utility poles if required to complete the Work.
 - 3. Assume risks associated with the presence of underground and surface structures within or adjacent to the limits of the Work. The Contractor shall be responsible for damage and expense for direct or indirect injury caused by his Work to any structure. Immediately repair damage caused by the Work to the satisfaction of the owner of the damaged structure.

END OF SECTION

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SECTION 01770B

CLOSEOUT PROCEDURES

1.1 SUMMARY

A. Section Includes

1. Documentation required for the transfer of the completed Work to the Owner
2. Final Cleaning

1.2 SUBMITTALS

A. Closeout Submittals

1. As-built drawings
2. Operation and maintenance manuals
3. Evidence of payment and release of liens
4. List of Subcontractors, service organizations, and principal vendors

1.3 PROJECT CLOSEOUT DOCUMENTS

- A. As-built Drawings - Submit as-built drawings review, approval, or comment. The as-built drawings shall show the completed work, including all deviations from the Drawings. The as-built drawings shall depict the location of all conduit and devices exterior from the motor control centers, the location of valves, small diameter piping, relocated devices and all field changes.
- B. As-built drawings include an as-built survey of the work area showing final visible structures with elevations and the limits of the channel excavated through the pond. The survey shall be stamped by a licensed professional land surveyor.
- C. Provide warranties and bonds for items so listed in pertinent other sections of the Project Manual. Provide all warranties and bonds in a three-ring binder.
- D. Provide evidence of compliance with requirements of governmental agencies having jurisdiction.

1.4 FINAL PAYMENT

- A. The Contract shall be considered complete and final payment made, only when:
 1. All provisions of the Contract Documents have been strictly adhered to.
 2. The project and premises have been left in good order, including removal of all temporary construction, Contractor-owned and extraneous materials.

1.5 FINAL CLEANING & REPAIRS

- A. Sweep paved surfaces and rake lawns and landscaped areas.
- B. On or before the completion of the Work, tear down and remove all temporary buildings and structures, remove all temporary works, tools, and machinery or other construction equipment, remove all rubbish from any grounds which has been occupied and leave the roads and all parts of the premises and adjacent property in a neat and satisfactory condition.

- C. Restore or replace any public or private property damaged or removed during the course of the Work. Property shall be returned to a condition at least equal to that existing immediately prior to the beginning of operations. Complete all highway or driveway, walk, and landscaping work using suitable materials, equipment and methods. Perform restoration of existing property, signs or structures promptly as work progresses; do not leave restoration work until the end of the Contract Time.

1.6 COMPLETION

- A. The Contract shall be considered complete and final payment made, only when:
 - 1. All provisions of the Contract Documents have been strictly adhered to.
 - 2. All damage to adjoining areas caused by the Work has been repaired.
 - 3. The project and premises have been left in good order, including removal of all temporary construction, Contractor-owned and extraneous materials as required.
 - 4. All warranties, Operation and Maintenance Manuals, maintenance instructions, releases, and permits called for in the Contract have been submitted to the Owner and Engineer as applicable.
 - 5. All as-built drawings as required by the Contract Documents have been submitted to the Owner.
 - 6. All monies owed the Owner for services performed for the Contractor by Owner's forces in connection with the Contract have been paid.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

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DIVISION 02

SITE CONSTRUCTION

SECTION 02075

GEOSYNTHETICS

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes
 - 1. Non-woven geotextiles
 - 2. Temporary 100% biodegradable erosion control blankets

1.2 REFERENCES

- A. Data Sheet DS1 - Non-Woven Geotextiles
- B. ASTM D3786 - Test Method for Hydraulic Bursting Strength of Knitted Goods and Non-woven Fabrics: Diaphragm Bursting Strength Tester Method
- C. ASTM D4491 - Test Methods for Water Permeability of Geotextiles by Permittivity
- D. ASTM D4533 - Test Method for Trapezoid Tearing Strength of Geotextiles
- E. ASTM D4632 - Test Method for Grab Breaking Load and Elongation of Geotextiles
- F. ASTM D4751 - Test Method for Determining the Apparent Opening Size of a Geotextile
- G. ASTM D4833 - Test Method for Index Puncture Resistance of Geotextiles Geomembranes and Related Products
- H. ASTM D5261 - Test Method for Measuring Mass per Unit Area of Geotextiles

1.3 SUBMITTALS

- A. Product samples and data for all geosynthetics proposed for use on this project.
- B. Manufacturer-approved construction quality assurance/quality control manual for all of the geosynthetics proposed for use on this project.
- C. Manufacturing quality control testing data specified. Submit certification of required performance testing on all geosynthetics by an independent laboratory and label and identify all geosynthetic products delivered to the site.
- D. Manufacturer's recommended installation and fastening details for the erosion control blankets and turf reinforcement matrices. The following details are required:
 - 1. Typical stapling pattern and spacing. List staple density in terms of staples per square yard.
 - 2. Anchoring details for channels and slopes.
 - 3. Transverse blanket lap splice details, as well as longitudinal lap splice details if parallel blankets are to be installed.
 - 4. Termination details for the origin and termination of the channels and slopes.

1.4 QUALITY ASSURANCE

- A. Obtain from the geosynthetic product manufacturers a warranty that their products are free from defects in materials and workmanship at the time of delivery to the project site.
- B. Material found to be defective or which does not conform to these specifications will be rejected.

1.5 DELIVERY, STORAGE AND PROTECTION

- A. The Engineer reserves the right to reject and require replacement of any damaged materials delivered to the site, at no additional cost to the Owner.
- B. Stockpile and store the materials in accordance with the manufacturer's recommendations.
- C. Label and bag all geosynthetic rolls in packing that is resistant to photo degradation by ultraviolet (UV) radiation.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Group 2 Non-Woven Geotextile
 - 1. "4506" as manufactured by Amoco Fabrics and Fibers
 - 2. "FX-60HS" as manufactured by Carthage Mills
 - 3. "160N" as manufactured by Mirafi Inc.
 - 4. Or equal
- B. Temporary 100% biodegradable Erosion Control Blankets
 - 1. "ECC-2B" as manufactured by East Coast Erosion Control,
 - 2. "C125 BN" as manufactured by North American Green,
 - 3. Or equal

2.2 MATERIALS

- A. Non-woven geotextiles shall be manufactured from a continuous polypropylene filament. A needle punching process shall achieve bonding.
- B. Temporary, 100% biodegradable ECBs shall be composed of a core of 100% coconut fibers encased between two confining meshes of degradable material. Photo-degradable materials are not allowed.
 - 1. As a minimum, 100% biodegradable ECBs shall be recommended by the manufacturer for use on 2:1 slopes.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Inspect all products prior to the installation for any defects that may have been the result of storage and handling. The Engineer reserves the right to reject and require replacement of any damaged product, at no additional cost to the Owner.

3.2 INSTALLATION

- A. Install geosynthetic products in accordance with the approved manufacturer's QA/QC manuals, project details, and pertinent sections of these Specifications.

3.3 QUALITY CONTROL

- A. The Engineer may remove a sample (i.e. a strip that is 3 feet long by the entire roll width) from a maximum of 1 roll of each 10 rolls of all geosynthetic materials delivered to the project, and submit the samples to an independent laboratory for analysis of the product to ensure that the geosynthetics meet the specifications herein.

END OF SECTION

(DATA SHEETS FOLLOW)

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| Data Sheet DS1 - Non-Woven Geotextile Mechanical Properties | | | | | |
|--|--------------------|-------------------------------|---------------------------------|--------------|-----------------|
| Property | Test Method | Units | Testing Frequency | Value | |
| | | | | | Group 2 |
| Mass per Unit Area | ASTM D5261 | oz/yd² | 1/150,000 ft² | | 6 |
| AOS | ASTM D4751 | US Sieve | 1/150,000 ft² | | 70 |
| Permitivity | ASTM D4491 | gal/min/ft² | 1/150,000 ft² | | 90 |
| Puncture Strength | ASTM D4833 | lbs | 1/150,000 ft² | | 90 |
| Mullen Burst Strength | ASTM D3786 | lbs/in² | 1/150,000 ft² | | 350 |
| Trapezoidal Tear Strength | ASTM D4533 | lbs | 1/150,000 ft² | | 65 |
| Grab Tensile/Elongation | ASTM D4632 | lbs(%) | 1/150,000 ft² | | 150 (50) |

SECTION 02200

SITE PREPARATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes
 - 1. Clearing and grubbing
 - 2. Grading
 - 3. Stripping and stockpiling of soil and sod

1.2 SUBMITTALS

- A. Submit construction methods and equipment that will be utilized for the clearing, grubbing, and waste material disposal specified within this Section.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 CLEARING AND GRUBBING

- A. Except as otherwise directed, cut, grub, remove and dispose of all trees, stumps, brush, shrubs, roots and any other objectionable material within the limits of the Work on the site and where required to construct the work.
- B. Protect trees or groups of trees, designated by the Engineer to remain, from damage by all construction operations by erecting suitable barriers, or by other approved means. Conduct clearing operations to prevent falling trees from damaging trees designated to remain.
 - 1. All damage done to the trees by the Contractor's operation shall be trimmed and painted where cut as directed or as necessary to provide adequate vertical clearance for construction activities. The dressing or paint shall be applied no later than two days after the cuts are made.
 - 2. Use all necessary precautions to prevent injury to other desirable growth in all areas. Contractor shall assume full responsibility for any damage.
- C. Protect areas outside the limits of clearing from damage. No equipment or materials shall be stored in these areas.
- D. No stumps, trees, limbs, or brush shall be buried in fills or embankments.

3.2 DISPOSAL OF MATERIALS

- A. Remove all tree trunks, limbs, roots, stumps, brush, foliage, other vegetation and objectionable material from the site and dispose of in a legal manner.
- B. Burning or direct burial of cleared and grubbed materials on-site will not be permitted.

3.3 GRADING

- A. In preparation for placing loam, paved drives and appurtenances, perform grading to the lines, grades and elevations shown on the Drawings, and otherwise directed by the

Engineer and perform in such a manner that the requirements for formation of embankments can be followed. All material encountered, regardless of its nature, within the limits indicated, shall be removed and disposed of as directed. During the process of grading, maintain the subgrade in such condition that it will be well drained at all times. Install temporary drains and drainage ditches to intercept or divert surface water that may affect the work when necessary.

- B. If at the time of grading it is not possible to place material in its final location, stockpile material in approved areas for later use. No extra payment will be made for the stockpiling or double handling of excavated material.
- C. The right is reserved to make minor adjustments or revisions in lines or grades if found necessary as the work progresses.
- D. Stones or rock fragments larger than 4 inches in their greatest dimensions will not be permitted in the top 12 inches of the finished subgrade of all fills or embankments except along the access roadways and rip-rap where shown on the Drawings.
- E. In cuts, loose or protruding rocks on the excavated slopes shall be barred loose or otherwise removed to line or finished grade of slope. Cut and fill slopes shall be uniformly dressed to the slope, cross-section and alignment shown on the Drawings or as directed by the Engineer.

3.4 DUTCH ELM WOOD

- A. Dutch Elm diseased wood shall be disposed of in accordance with any local regulations.
- B. Where the work includes the removal of elm trees or the limbs of elm trees, such trees or limbs thereof shall be disposed of immediately after cutting or removal and in such a manner as to prevent the spread of Dutch Elm disease. This shall be accomplished by covering them with earth to a depth of at least 6 inches in areas outside the right-of-way locations where the Contractor has arranged for disposal.
- C. Where the work includes the removal and disposal of stumps of elm trees, such stumps shall be completely disposed of immediately after cutting in the manner specified above.

END OF SECTION

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SECTION 02220

DEMOLITION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Demolition of concrete spillway
 - 2. Demolition of existing stone walls
 - 3. Demolition of culvert
 - 4. Removal of concrete and wire guardrails
 - 5. Removal and lawful disposal of miscellaneous debris and solid waste located within the Limit of Work indicated on the Drawings
- B. Related Sections
 - 1. Section 01320 - Construction Photographs
 - 2. Section 01725 - Preservation and Restoration of Project Features
 - 3. Section 02315 - Excavation, Backfill, Compaction and Dewatering

1.2 DEFINITIONS

- A. Demolish – To tear down, segregate waste streams and lawfully recycle or dispose of all debris generated in the process including structure contents.
- B. Limit of Work – Area delineated on Drawings that defines the extent of demolition work under the Contract.

1.3 SUBMITTALS

- A. Informational Submittals
 - 1. Methods of demolition and equipment proposed to demolish structures. This submittal should be sufficient to demonstrate a thorough understanding of the Work to be completed and the means that will be implemented to safely complete the demolition within the Contract Time without damage to surrounding structures or resources.
 - 2. Waste Management Plan to indicate the types of wastes to be generated and the proposed disposal or recycling locations. Include back-up disposal facilities.
 - 3. Copies of any authorizations and permits required to perform the Work, including disposal/recycling facility permits.
- B. The following records and disposal documentation must be maintained and kept current throughout the Project. These documents will be maintained in chronological order in a 3-ring binder with appropriate tabbed dividers. The binder will be reviewed for completeness at each progress meeting. Requests for periodic payments may be rejected, in whole or in part, if documentation is not current.

1. Records of the amounts of waste generated, by waste type
2. Evidence of lawful disposal or recycling of all wastes generated
3. Documentation of underground structures and utilities
4. Copies of any analytical results generated as a result of waste stream characterization

1.4 REGULATORY REQUIREMENTS

- A. Contractor is solely responsible for obtaining permits or approvals which may be required to perform the work of this section, including all costs, fees and taxes required or levied, except for the following permits that will be obtained by the Owner:
 1. Order of Conditions from the Town of Sutton Conservation Commission
 2. MassDEP 401 Water Quality Certificate
 3. Army Corps of Engineers Section 404 Pre-Construction Notification
 4. MassDCR Chapter 253 Dam Safety Permit
- B. Notify and obtain such permits or approvals from agencies having jurisdiction over demolition prior to starting work.
- C. Complete, sign and submit a Notice of Intent to be covered under EPA's General Permit for Construction Activity. Comply with the requirements of the site-specific Stormwater Pollution Prevention Plan that is appended to this Project Manual.
- D. Comply with all applicable federal, state, and local environmental, safety and health requirements regarding the demolition of structures and other site features and recycling or disposal of demolition debris, as applicable.
- E. Conform to procedures identified in Section 01350 – Health and Safety Plan if hazardous or contaminated materials are discovered.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify site conditions before proceeding with demolition work. Field check the accuracy of the Drawings and inspect structures and utilities prior to start of work and notify the Engineer in writing, of any hazardous conditions and/or discrepancies. Primary structures and other site features are shown on the Drawings; other smaller structures, including, but not limited to, concrete walks and pads, miscellaneous signs, lamp posts, railings, and fencing may not be shown on the Drawings, but may exist within the Limit of Work and shall be demolished.
 1. Unknown Site Conditions - The information provided on the Drawings and in the Specifications is believed accurate. Field verify all information. Bear full responsibility for obtaining all locations of underground structures, utilities and their connections. Maintain services to buildings outside the limits of work.
 2. Interior Elements - Interior features including but not necessarily limited to structural elements, walls, partitions, equipment, piping or other building facilities are not shown on the drawings and must be visually inspected

and appraise all features and facilities to be demolished or removed for salvage. Investigate to assure the condition of the work to be demolished and take all precautions necessary to ensure safety of people and property.

- B. Demolish the structures by methods that will not cause damage to surrounding structures, underground and overhead utilities, or other existing items and structures that are to remain in place.
- C. Promptly and properly manage all debris as the demolition progresses. Construct and/or prepare material staging/stockpile areas at locations approved by the Engineer.

3.2 PREPARATION

- A. Remove and/or stabilize all overhead hazards, prior to commencing work.

3.3 HAZARDOUS MATERIALS

- A. Oil and Hazardous Material Contamination
 - 1. There is no known soil contamination at the site. However, contaminated soil may be encountered during excavation.

3.4 DEMOLITION

- A. Demolish the concrete spillway, waterway, stone wall, and concrete and wire guardrail by methods that will not cause damage to surrounding structures, underground and overhead utilities, or other existing items and structures that are to remain in place.
- B. Promptly and properly manage all debris as the demolition progresses. Construct and/or prepare material staging/stockpile areas at locations approved by the Engineer.
- C. Salvage stone from the dam and stone wall for reuse as defined by section 02320.

3.5 DISPOSAL

- A. Legally dispose of or recycle all materials from demolition as well as equipment and other materials that are within the buildings. The disposal site shall be permitted to accept the waste stream by the applicable State Agency. Perform the loading of demolition materials in a manner that prevents materials and activities from generating excessive dust and ensures minimum interference with roads, sidewalks and streets both onsite and offsite.
- B. Provide evidence that the demolition materials have been received at a legal disposal, recycle, reuse or salvage location. Such proof may include truck weigh slips from an approved disposal facility or documentation of transfer of title. Transport of all materials off site shall be in accordance with applicable Department of Transportation Regulations. All materials leaving the site shall become the property of the Contractor unless explicitly stated otherwise.
- C. Surplus stones shall be stockpiled on site as defined in Sections 01640 and 02320 and subsequently delivered to the Town of Sutton Public Works.

3.6 SITE RESTORATION

- A. Prior to any backfilling, document the location of any structures that remain in place through construction photographs (Section 01320) and by obtaining swing ties to and elevations of any structures to be buried. Progress payments may be withheld if current documentation is not maintained.

- B. Restore damaged areas of the site or neighboring properties in accordance with Sections 01725 and stabilize slopes in accordance with the erosion and sedimentation control requirements of the Contract.
- C. Loam and seed all disturbed areas in accordance with Section 02922.

END OF SECTION

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SECTION 02315

EXCAVATION, BACKFILL, COMPACTION, AND DEWATERING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Excavation, backfill and compaction for buildings, retaining walls and other structures
 - 2. Earth retention systems
 - 3. Temporary dewatering systems
- B. Related Sections
 - 1. Section 01570 - Temporary Controls
 - 2. Section 02320 - Borrow Materials

1.2 REFERENCES

- A. ASTM D1557-07 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³))
- B. ASTM D1556-07 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
- C. ASTM D2487-06e1 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
- D. ASTM D6938-08a - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)
- E. 29 CFR Part 1926 Subpart P - OSHA Excavation Regulations 1926.650 through 1926.652 including Appendices A through F
- F. 520 CMR 14.00 Excavation and Trench Safety
- G. 780 CMR 1705.0 Requirements for Structural Tests and Inspections
- H. Commonwealth of Massachusetts Highway Department "Standard Specifications for Highways and Bridges," 1988 Edition as amended

1.3 DEFINITIONS

- A. Benching - A method of protecting employees from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels.
- B. Earth Retention Systems - Any structural system, such as sheeting and bracing or cofferdams, designed to retain in-situ soils in place and prevent the collapse of the sides of an excavation in order to protect employees and adjacent structures.
- C. Excavation - Any man-made cut, cavity, trench, or depression in an earth surface, formed by earth removal.

- D. Protective System - A method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into an excavation, or from the collapse of adjacent structures. Protective systems include earth retention systems, sloping and benching systems, shield systems, and other systems that provide the necessary protection.
- E. Registered Professional Engineer - A person who is registered as a professional engineer in the state where the work is to be performed. However, a professional engineer, registered in any state is deemed to be a "registered professional engineer" within the meaning of this standard when approving designs for "manufactured protective systems" or "tabulated data" to be used in interstate commerce.
- F. Licensed Site Professional - A person who is registered by the Commonwealth of Massachusetts to render Hazardous Waste Site Cleanup Activity Opinions.
- G. Shield System - A structure that is designed to withstand the forces imposed on it by a cave-in and thereby protects employees within the structure. Shields can be permanent structures or can be designed to be portable and moved along as work progresses. Additionally, shields can be either pre-manufactured or job-built in accordance with 29 CFR 1926.652(c)(3) or (c)(4). Shields used in trenches are usually referred to as "trench boxes" or "trench shields."
- H. Sloping - A method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation so as to prevent cave-ins. The angle of incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure, and application of surcharge loads.
- I. Temporary Dewatering System – A system to lower and control water to maintain stable, undisturbed subgrades at the lowest excavation levels. Dewatering shall be provided for all pipelines, structures and for all other miscellaneous excavations.
- J. Trench - A narrow excavation (in relation to its length) made below the surface of the ground, of at least three feet in depth. In general, the depth is greater than the width, but the width of a trench (measured at the bottom) is not greater than 15 feet (4.6 m).

1.4 SUBMITTALS

- A. Drawings and calculations for each Earth Retention System required in the Work. The submittal shall be in sufficient detail to disclose the method of operation for each of the various stages of construction required for the completion of the Earth Retention Systems.
 - 1. Submit calculations and drawings for Earth Retention Systems prepared, signed and stamped by a Professional Engineer registered in the state where the work is performed.
- B. Performance data for the compaction equipment to be utilized
- C. Construction methods that will be utilized for the removal of rock
- D. Modified Proctor Test (ASTM D1557) results and soil classification (ASTM D2487) for all proposed backfill materials at the frequency specified below:

1. For suitable soil materials removed during Excavation, perform one test for every 1,000 cubic yards of similar soil type. Similarity of soil types will be as determined by the Engineer.
 2. For borrow materials; perform tests at frequency specified in Section 02320, Borrow Materials.
- E. Compaction test results (i.e. ASTM D6938 or ASTM D1556) at a frequency of one test for every 100 cubic yards of material backfilled or at a minimum of one test per lift. The Engineer will determine the locations and lifts to be tested. The Contractor shall plan his operations to allow adequate time for laboratory tests and to permit taking of field density tests during compaction.
1. Methods and equipment proposed for compaction shall be subject to prior review by the Engineer. Compaction generally shall be done with vibrating equipment. Static rolling without vibration may be required by the Engineer on sensitive soils that become unstable under vibration. Displacement of, or damage to existing utilities or structure shall be avoided. Any utility or structure damaged thereby shall be replaced or repaired as directed by the Engineer.
 2. Additional compaction testing may be required when there is evidence of a change in the quality of moisture control or the effectiveness of compaction.
 - a. Any costs associated with correcting and retesting as a result of a failure to meet compaction requirements shall be borne by the Contractor.
 3. If all compaction test results within the initial 25% of the total anticipated number of tests indicate compacted field densities equal to or greater than the project requirements, the Engineer may reduce frequency of compaction testing. In no case will the frequency be reduced to less than one test for every 500 cubic yards of material backfilled.
 4. The Contractor is cautioned that compaction testing by nuclear methods may not be effective where trenches are so narrow that trench walls impact the attenuation of the gamma radiation, when adjacent to concrete that impacts the accuracy of determining moisture content, or where oversize particles (i.e. large cobbles or coarse gravels) are present. In these cases, other field density testing methods may be required.
- F. Dewatering plan for the excavation locations. Design shall include calculations and drawings stamped and signed by a Professional Engineer registered in the state where the work is performed.

1.5 QUALITY ASSURANCE

- A. All Excavation, Trenching, and related Earth Retention Systems shall comply with the requirements of OSHA excavation safety standards (29 CFR Part 1926 Subpart P), 520 CMR 14.00, and other State and local requirements. Where conflict between OSHA and State regulations exists, the more stringent requirements shall apply.

1.6 PROJECT CONDITIONS

- A. Notify Dig Safe and obtain Dig Safe identification numbers.
- B. Notify utility owners in reasonable advance of the work and request the utility owner to stake out on the ground surface the underground facilities and structures. Notify the

Engineer in writing of any refusal or failure to stake out such underground utilities after reasonable notice.

- C. Coordinate with utility owners and make arrangements and pay for the temporary support and shutdown of overhead or underground utilities if needed.
- D. Make explorations and Excavations to determine the location of existing underground structures, pipes, house connection services, and other underground facilities in accordance with Paragraph 3.2.D of this Section.
- E. In accordance with 520 CMR 14.00, no person shall, except in an emergency, make an excavation in any public way, public property, or privately owned land until a permit is obtained from the appropriate designated permitting authority. For this project, the permit should be obtained from Town of Sutton Highway Department.
- F. Contractor is responsible for safe, properly supported excavation with properly controlled groundwater, including determining whether and what type of excavation support and dewatering is necessary.

PART 2 PRODUCTS

2.1 SOIL MATERIALS

- A. Fill material is subject to the approval of the Engineer and may be either material removed from excavations or borrow from off site. Fill material, whether from the excavations or from borrow, shall be of such nature that after it has been placed and properly compacted, it will make a dense, stable fill.
- B. Satisfactory fill materials shall include materials classified by ASTM D 2487 as GW, GP, GM, GP-GM, GW-GM, GC, GP-GC, SW, and SP. Additional requirements are included in Section 02320.
- C. Satisfactory fill materials shall not contain trash, refuse, vegetation, masses of roots, individual roots more than 18 inches long or more than 1/2 inch in diameter, or stones over 6 inches in diameter. Unless otherwise stated in the Contract Documents, organic matter shall not exceed minor quantities and shall be well distributed.
- D. Satisfactory fill materials shall not contain frozen materials nor shall backfill be placed on frozen material.
- E. Excavated surface and/or pavement materials such as gravel or trap rock that are salvaged may be used as a sub-grade material, if processed to the required gradation and compacted to the required degree of compaction. In no case shall salvaged materials be substituted for the required gravel base.

2.2 DEWATERING MATERIALS

- A. Provide compost wattles in accordance with Section 01570.
- B. Provide silt filter bags (Dandy Dewatering Bag, Dirtbag, JMP Environ-Protection Filter Bag, or equal) of adequate size to match flow rate.
- C. Provide dewatering equipment and materials for engineered dewatering systems.

PART 3 EXECUTION

3.1 PREPARATION

A. Public Safety and Convenience

1. Adhere to the requirements of 520 CMR 14.00 for all excavation work.
2. Take precautions for preventing injuries to persons or damage to property in or about the Work.
3. Provide safe access for the Owner and Engineer at site during construction.
4. Do not obstruct site drainage, natural watercourses or other provisions made for drainage.

3.2 CONSTRUCTION

A. Earth Retention Systems

1. Provide Earth Retention Systems necessary for safety of personnel and protection of the Work, adjacent work, utilities and structures.
2. Maintain Earth Retention Systems for the duration of the Work.
3. Sheeting
 - a. Systems shall be constructed using interlocking corner pieces at the four corners. Running sheet piles by at the corners, in lieu of fabricated corner pieces, will not be allowed.
 - b. Drive sheeting ahead of and below the advancing excavation to avoid loss of materials from below and from in front of the sheeting.
 - c. Sheeting is to be driven to at least the depth specified by the designer of the earth retention system, but no less than 2 feet below the bottom of the Excavation.
4. Remove earth retention system, unless designated to be left in place, in a manner that will not endanger the construction or other structures. Backfill and properly compact all voids left or caused by the withdrawal of sheeting.
 - a. Remove earth retention systems, which have been designated by the Engineer to be left in place, to a depth of 3 feet below the established grade.

B. Excavation

1. Perform excavation to the lines and grades indicated on the Drawings. Backfill unauthorized over-excavation in accordance with the provisions of this Section, at no additional cost to the Owner.
2. Excavate with equipment selected to prevent damage to existing utilities or other facilities. Hand excavate as necessary to locate utilities or avoid damage.
3. Sawcut the existing pavement in the vicinity of the excavation prior to the start of excavation in paved areas, so as to prevent damage to the paving outside the requirements of construction. The sawcut shall be neat in appearance with no ragged lines; trim pavement as necessary.
4. Perform excavation in such a manner as to prevent disturbance of the final subgrade. The Engineer or Owner may require the final six inches of excavation be performed by hand, with the use of a smooth-faced bucket, or other means

acceptable to the Engineer or Owner, at no additional cost if subgrade disturbance is considered excessive as judged by the Engineer or Owner.

5. During excavation, material satisfactory for backfill shall be stockpiled in an orderly manner at a distance from the sides of the excavation equal to at least one half the depth of the excavation, but in no case closer than 2 feet.
 - a. Excavated material not required or not suitable for backfill shall be removed from the site and disposed of in accordance with local, State and Federal laws and regulations.
 - b. Perform grading to prevent surface water from flowing into the excavation.
 - c. Pile excavated material in a manner that will endanger neither the safety of personnel in the excavation nor the Work itself. Avoid obstructing sidewalks and driveways.
6. Grade or create berms or swales to direct surface water from excavations to appropriate structures designed to accommodate storm water. If no structures exist, direct water to areas that minimize impacts to adjacent structures and properties.
7. If satisfactory materials are not encountered at the design subgrade level, excavate unsatisfactory materials to the depth directed by the Engineer and properly dispose of the material. Backfill the resulting extra depth of excavation with satisfactory fill materials and compact in accordance with the provisions of this Section.

C. Backfill and Compaction

1. Unless otherwise specified or indicated on the Drawings, use satisfactory material removed during excavation for backfilling trenches. The Engineer may require stockpiling, drying, blending and reuse of materials from sources on the Project.
2. Spread and compact the material promptly after it has been deposited. When, in the Engineer's judgment, equipment is inadequate to spread and compact the material properly, reduce the rate of placing of the fill or employ additional equipment.
3. Prior to backfilling or placement of structures, excavated subgrades shall be proof compacted with either 10 passes of a 10-ton vibratory drum roller for open excavations or 6 passes of a large, reversible, walk behind vibratory compactor capable of exerting a minimum force of 2,000 pounds in trench or pit excavations. Soft or weak spots shall be over-excavated and replaced with compacted Granular Fill or compacted Crushed Stone wrapped in a non-woven geotextile, as directed by the Owner or their representative. If proof compaction will prove detrimental to the subgrade due to the presence of groundwater, static rolling may be allowed at the discretion of the Engineer or Owner.
4. When excavated material is specified for backfill and there is an insufficient amount of this material at a particular location on the Project due to rejection of a portion thereof, consideration will be given to the use of excess material from one portion of the Project to make up the deficiency existing on other portions of the Project.

- a. Use borrow material if there is no excess of excavated material available at other portions of the Project.
5. Backfilling and compaction methods shall attain 92% of maximum dry density at optimum moisture content as determined in accordance with ASTM D1557.
6. Do not place stone or rock fragment larger than six inches in greatest dimension in the backfill.
7. Maximum loose lift height for backfilling existing or borrow material shall be 12 inches, unless satisfactory compaction is demonstrated otherwise to the Engineer through field-testing. In no case shall loose lift height for backfilling exceed 3 feet.
8. Do not drop large masses of backfill material into the trench endangering the work or adjacent utilities.
9. Where excavation is made through permanent pavements, curbs, paved driveways, or paved sidewalks, or where such structures are undercut by the excavation, place the entire backfill to sub-grade with granular materials and compact in 6 inch layers, unless satisfactory compaction is demonstrated otherwise to the Engineer through field-testing. Use approved mechanical tampers for the full depth of the trench. If required, sprinkle the backfill material with water before tamping so as to improve compaction. Any trenches improperly backfilled, or where settlement occurs, shall be reopened to the depth required to correct the problem, and shall then be refilled and properly compacted with the surface restored to required grade at no additional expense.
10. The Contractor shall not place backfill against or on structures until they have attained sufficient strengths to support the loads to which they will be subjected, without distortion, cracking, or other damage. As soon as possible after the structures are adequate, they shall be backfilled with suitable backfill material.

D. Dewatering

1. Provide, operate and maintain adequate pumping, diversion and drainage facilities in accordance with the approved dewatering plan to maintain the excavated area sufficiently dry from groundwater and/or surface runoff so as not to adversely affect construction procedures nor cause excessive disturbance of underlying natural ground. Locate dewatering system components so that they do not interfere with construction under this or other contracts.
2. Conduct operations so as to prevent at all times the accumulation of water, ice and snow in excavations or in the vicinity of excavated areas so as to prevent water from interfering with the progress or quality of the work.
3. Take actions necessary to ensure that dewatering discharges comply with permits applicable to the Project. Dispose of water from the trenches and excavations in such a manner as to avoid public nuisance, injury to public health or the environment, damage to public or private property, or damage to the work completed or in progress.
4. Repair any damage resulting from the failure of the dewatering operations and any damage resulting from the failure to maintain all the areas of work in a suitable dry condition, at no additional cost to the Owner.

5. Take precautions to protect new work from flooding during storms or from other causes. Control the grading in the areas surrounding all excavations so that the surface of the ground will be properly sloped to prevent water from running into the excavated area. Where required, provide temporary ditches for drainage. Upon completion of the work, all areas shall be restored to original condition.
6. Brace or otherwise protect pipelines and structures not stable against uplift during construction.
7. Do not excavate until the dewatering system is operational and the excavation may proceed without disturbance to the final subgrade.
8. Unless otherwise specified, continue dewatering uninterrupted until the structures, pipes, and appurtenances to be installed have been completed such that they will not float or be otherwise damaged by an increase in groundwater elevation.
9. Temporarily lower the groundwater level at least two feet below excavations to limit potential “boils”, loss of fines, or softening of the ground. If any of these conditions are observed, submit a modified dewatering plan to the Engineer within 48 hours. Implement the approved modified plan and repair any damage incurred at no additional cost to the Owner.
10. When subgrades are soft, weak, or unstable due to improper dewatering techniques, remove and replace the materials in accordance with Section 02320 at no additional cost to the Owner.
11. Notify the Engineer immediately if any settlement or movement is detected of survey points adjacent to excavations being dewatered. If settlement is deemed by the Engineer to be related to the dewatering, submit a modified dewatering plan to the Engineer within 24 hours. Implement the approved modified plan and repair any damage incurred to the adjacent structure at no additional cost to the Owner.
12. Dewatering discharge:
 - a. Install sand and gravel, or crushed stone, filters in conjunction with sumps, well points, and/or deep wells to prevent the migration of fines from the existing soil during the dewatering operation.
 - b. Transport pumped or drained water without interference to other work, damage to pavement, other surfaces, or property. Pump water through a silt filter bag or other approved sedimentation device prior to discharge.
 - c. Do not discharge water into any sanitary sewer system.
 - d. Provide separately controllable pumping lines.
 - e. The Engineer reserves the right to sample discharge water at any time.
13. Install erosion/sedimentation controls for velocity dissipation at point discharges onto non-paved surfaces.
14. Removal
 - a. Do not remove dewatering system without written approval from the Engineer.

- b. Backfill and compact sumps or ditches with screened gravel or crushed stone in accordance with Section 02320.

3.3 PROTECTION

A. Protection of Existing Structures

1. All existing foundations, conduits, wall, pipes, wires, poles, fences, property line markers and other items which the Engineer decides must be preserved in place without being temporarily or permanently relocated, shall be carefully supported and protected from damage by the Contractor. Should such items be damaged, they shall be restored by the Contractor to at least as good condition as that in which they were found immediately before the Work began.

B. Accommodation of Traffic

1. Streets and drives shall not be unnecessarily obstructed. The Contractor shall take such measures at his own expense to keep the street or road open and safe for two-way traffic unless otherwise indicated.
2. Construct and maintain such adequate and proper bridges over excavations as may be necessary or as directed for the safe accommodation of pedestrians and vehicles. Provide substantial barricades at crossings of trenches, or along the trench to protect the traveling public.
3. Where deemed necessary, such additional passageways as may be directed shall be maintained free of such obstructions. All material piles, open excavations, equipment, and pipe which may serve as obstructions to traffic shall be protected by proper lights, signage, or guards as necessary.
4. All traffic controls shall be in accordance with the Manual on Uniform Traffic Control Devices for Streets and Highways, latest edition.

C. Erosion and Sedimentation Control

1. Take all necessary steps to prevent soil erosion.
2. Plan the sequence of construction so that only the smallest practical area of land is exposed at any one time during construction.
3. Temporary vegetation and/or mulching shall be used to protect critical areas exposed during construction as judged by the Engineer.

END OF SECTION

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SECTION 02320

BORROW MATERIALS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Gravel Borrow
 - 2. Processed Gravel Borrow for Pavement Sub-base
 - 3. Stone Borrow
 - 4. Ordinary Borrow
 - 5. Low Permeability Borrow
- B. Related Sections
 - 1. Section 02315 – Excavation, Backfill, Compaction and Dewatering

1.2 REFERENCES

- A. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
- B. ASTM C117 - Standard Test Method for Materials Finer than 75 μm (No. 200) Sieve in Mineral Aggregates by Washing
- C. ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
- D. ASTM D1557 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lb./ft³)
- E. ASTM D2434 - Standard Test Method for Permeability of Granular Soils (Constant Head)
- F. ASTM D2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System)
- G. ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)
- H. ASTM D422 - Standard Test Method for Particle-Size Analysis of Soils (including Hydrometer analysis for silts and clays)
- I. ASTM D4318 – Standard Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils
- J. ASTM D5084 – Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials using a Flexible Wall Permeameter (Falling Head Permeability Test)
- K. AASHTO – Standard Specification for Transportation Materials and Methods of Sampling and Testing, 1986 Edition as amended

- L. Commonwealth of Massachusetts Highway Department “Standard Specification for Highways and Bridges,” 1988 Edition as amended

1.3 SUBMITTALS

- A. Representative Samples of borrow materials taken from the source. Tag, label, and package the Samples as requested by Engineer. Provide access to the borrow site for field evaluation and inspection.
- B. Provide sieve analysis (ASTM C136) and permeability analysis (ASTM D2434) from certified soils testing laboratory for all borrow materials. Take and test a sample, at no additional cost to the Owner for each 1,500 c.y. of borrow material placed.
- C. Provide modified proctor analysis (ASTM D1557) from certified soils testing laboratory for all borrow materials.
 - 1. All borrow materials shall be tested once unless more frequent testing is deemed necessary by the Engineer or Owner due to material variation.
- D. The Engineer reserves the right to require more frequent testing than that which is specified above should the borrow characteristics change.

1.4 QUALITY ASSURANCE

- A. No borrow shall be placed prior to the approval of Samples by the Engineer.

1.5 PROJECT/SITE CONDITIONS

- A. Existing Conditions
 - 1. Comply with any environmental requirements and restrictions.
 - 2. Keep all public and private roadway surfaces clean during hauling operations and promptly and thoroughly remove any borrow or other debris that may be brought upon the surface before it becomes compacted by traffic. Frequently clean and keep clean the wheels of all vehicles used for hauling to avoid bringing any dirt upon the paved surfaces.

PART 2 PRODUCTS

2.1 PROCESSED GRAVEL BORROW FOR PAVEMENT SUBBASE

- A. The compacted Processed Gravel Borrow to be used for gravel access roads and pavement subbase, or other area where a firm, free-draining subgrade is needed shall consist of inert material that is hard, durable stone and coarse sand, free from loam and clay, surface coatings and deleterious materials. The coarse aggregate shall have a percentage of wear, by the Los Angeles Abrasion Test, of not more than 50.
- B. Gradation requirements shall conform to the following:

| Sieve | Percent Passing |
|-------|-----------------|
| 3” | 100 |
| 1 ½” | 70 – 100 |
| ¾” | 50 – 85 |
| No. 4 | 30 – 60 |

No. 200

0 - 10

- C. Stockpile the processed materials in such a manner to minimize segregation of particle sizes. All processed gravel shall come from approved stockpiles.

2.2 STONE BORROW

A. Crushed Stone Borrow

1. Crushed stone borrow shall consist of one of the following materials:
 - a. Durable crushed rock consisting of the angular fragments obtained by breaking and crushing solid or shattered natural rock, and free from a detrimental quantity of thin, flat, elongated or other objectionable pieces. A detrimental quantity will be considered as any amount in excess of 15% of the total weight. Thin stones shall be considered to be such stones whose average width exceeds 4 times their average thickness. Elongated stones shall be considered to be stones whose average length exceeds 4 times their average width.
 - b. Durable crushed gravel stone obtained by artificial crushing of gravel boulders or fieldstone with a minimum diameter before crushing of 8 inches.
2. The crushed stone shall be free from clay, loam or deleterious material and not more than 1.0% of satisfactory material passing a No. 200 sieve will be allowed to adhere to the crushed stone.
3. The crushed stone shall have a maximum percentage of wear as determined by the Los Angeles Abrasion Test (AASHTO-T-96) as follows:
 - a. For Class 1 Bit. Conc. 30%**
 - b. For Cement Concrete Aggregate 45%***
 - c. Crushed Stone for Subbase 45%

**Crushed stone for this use shall consist of crushed or shattered natural rock only. Crushed gravel stone will not be permitted.

***Except for 5000 psi or greater cement concrete and prestressed concrete which shall be 30%.

4. The crushed stone shall conform to the grading requirements shown in the following grading Table.

| Sieve Size | Percent by Weight Passing Through | |
|---------------------------|-----------------------------------|---------|
| | Minimum | Maximum |
| 1 ½” Crushed Stone | | |
| 2” | 100 | -- |
| 1 ½” | 95 | 100 |
| 1” | 35 | 70 |
| ¾” | 0 | 25 |

5. Stone gradations shall vary depending on field use and shall be determined by Engineer.

A. Stone Riprap

1. Stone Riprap shall consist of hard, durable, and sound angular stone which is resistant to weathering. Rounded stones, boulders, elongated, thin or flat pieces whose breadth or thickness is less than one-third its length will not be allowed. The parent rock for riprap stones shall be igneous or metamorphic rock. Sedimentary rock types such as shale, sandstone, or similar soft stone will not be allowed. The stone shall be free of ice, snow, overburden, spoil, silt, clay, loam, organics and other deleterious matter.
2. Riprap stone shall have a minimum dry unit weight of 165 pounds per cubic foot.
3. Gradations of riprap stone material shall be based upon the thickness of the riprap layer as shown on the plans. Riprap layer thickness shall be defined as the typical layer thickness as measured perpendicular to the ground surface or slope. In all cases, no more than 5 percent by weight shall pass a 2-inch sieve. Diameter refers to the equivalent-volume spherical stone diameter as defined by the U.S. Army Corps of Engineers in EM 1110-2-1601.
 - a. Riprap

| Percent of Stones Smaller | Diameter (in.) | Percentage of Stones Weighing Less Than | Weight (lbs.) |
|---------------------------|----------------|---|---------------|
| D ₁₀₀ | 24 | 100 | 690 |
| D ₅₀ | 16 | 50 | 200 |
| D ₁₅ | 12 | 15 | 100 |

4. Riprap material shall be well graded as a material without gaps in the gradation curve. The uniformity ratio (D₈₅/D₁₅) shall be between 1.5 to 3.0.
5. All riprap stone placed at the site shall be of the same parent rock from the same quarry and shall be visually similar.

B. Cobbles and Boulders for Grouted Cobble and Riffle

1. Cobbles and Boulders shall be sound, clean, and rounded. Pieces with a breadth of less than 60% of the length shall not be allowed. Parent rock shall be igneous or metamorphic rock. The stone shall be free of ice, snow, overburden, spoil, silt, clay, loam, organics and other deleterious matter.
2. Gradations of cobble material shall be based upon the thickness of the layer as shown on the plans. Layer thickness shall be defined as the typical layer thickness as measured perpendicular to ground surface or slope. Diameter refers to the equivalent-volume spherical stone diameter as defined by the US Army Corps of Engineers in EM 1110-2-1601.

a. Cobble Bottom

| Percent of Stones Smaller | Diameter (in.) |
|---------------------------|----------------|
| D ₁₀₀ | 12 |
| D ₅₀ | 8 |
| D ₁₅ | 3 |

3. Cobbles shall be well graded as a material without gaps in the gradation curve. The uniformity ratio (D_{85}/D_{15}) should be between 1.5 to 2.5.
4. Cobbles and boulders used at the site shall be of the same parent rock from the same quarry and shall be visually similar.
5. Boulders shall conform to the diameters as shown on the Drawings. Diameter refers to the equivalent-volume spherical stone diameter as defined by the US Army Corps of Engineers in EM 1110-2-1601.

2.3 ORDINARY BORROW

- A. Ordinary borrow shall have the physical characteristics of soils designated as type GW, GP, GM, SW, SP or SM, under USCS and shall not be specified as gravel borrow, sand borrow, special borrow material or other particular kind of borrow. It shall have properties such that it may be readily spread and compacted for the formation of embankments. The borrow shall not include rocks with a major dimension greater than 8 inches.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Prior to the placement of borrow material, site preparation shall be completed as required by the Contract Documents, and approved by the Engineer.
- B. Ensure that all materials are properly stockpiled on site to prevent contamination by other materials.
- C. Place borrow material over the entire area in uniform lifts and compact in accordance with Section 02315.
- D. Utilize on-site soils prior to using off-site borrow provided on-site soils meet the requirements of the specifications.
- E. Utilize gravel borrow in all locations where a surface treatment has not been specified but requires a firm finish surface.
- F. Processed gravel for pavement subbase is intended to provide a stable foundation for driveways, sidewalk and roadway repair where a gravel base has been specified.
- G. Borrow shall be used as a replacement for unsuitable materials where poor soil conditions are encountered during the progress of the work, where approved by the Engineer. Borrow type will be determined by the Engineer. Borrow material used as a replacement for unsuitable soil is not intended to be an aid to dewatering.

- H. Shape borrow used for pipe foundation material so that it supports the pipe properly and will not damage the pipe, bells, collars, or the pipe fittings.
- I. Place all borrow to keep it free of other materials and to prevent segregation.

END OF SECTION

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SECTION 02670

CONSTRUCTION IN WETLANDS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Construction mats for access during construction
 - 2. Coir Fiber logs
 - 3. Invasive Species Management
 - 4. Removing and salvaging loam and topsoil
 - 5. Restoration of wetlands

1.2 RELATED SECTIONS

- A. Section 01140 – Work Restrictions
- B. Section 01570 – Temporary Controls
- C. Section 02200 – Site Preparation
- D. Section 02240 – Dewatering
- E. Section 02315 – Excavation, Backfill and Compaction

1.3 REFERENCES

- A. MAWPA/Town Bylaw Order of Conditions is included within.
- B. ACOE Section 404 Category II Authorization or Individual Permit is included within.
- C. MADEP Section 401 Water Quality Certification is included within.
- D. M.G.L Chapter 253 Dam Safety Permit is included within.

1.4 SUBMITTALS

- A. Submit a description of methods, sequence of construction, and types of equipment proposed for completing the Work in this Section to ensure compliance with Permits.
- B. Submit proposed construction mat product intended for use, and include manufacturer and literature with product description and performance. Include procedure for cleaning mats before and after use. Also include the names and addresses of similar projects on which timber mats were used and dates of use.
- C. Submit an Invasive Species Management plan that will describe measures to be taken to avoid importation of invasive plants into the site.
- D. Manufacturers information and Certificate: certify projects meet or exceed specified requirements.
- E. Materials suppliers: name, address, phone number
- F. Containment Boom – manufacturer and product data

1.5 WORK RESTRICTIONS

- A. Work associated with permits shall not begin until the applicable municipal, state and federal agencies have been notified in accordance with the permit conditions.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Compost wattles, siltation fencing, silt sacks and other erosion control products referred to in this section are detailed on the Drawings and specified in Section 01570, Temporary Controls.
- B. Provide construction mats for access to the Work in wetland areas, as described in this section and shown on the Drawings.
 - 1. Construction mats shall be a maximum of 16 feet wide.
 - 2. Construction mats shall provide a low ground pressure and shall be suitable for use in soft, wet, organic soils
- C. Coir Fiber Logs
 - 1. Coir fiber is made from pure coir drawn from the husk of the coconut, a 100% natural product. Coir fiber logs are machine fabricated cylindrical shaped rolls made with a knotted outer netting of machine spun coir twine.
 - 2. Log Dimensions: 12-inch diameter and a minimum length of 10 feet per log.
 - 3. Log Density: Packed to a density of no less than 7 lbs/cubic-foot.
 - 4. Provide with pre-drilled holes for tubeling or plug plantings, or logs may be hand drilled by the contractor. Equal to:
 - a. North American Green Coir Logs: Product 12CN7
 - b. RoLanka International, Inc. BioD-Roll 30L
 - c. Nedia Enterprises, Inc. 12" KoirLog (ND Series)
- D. Provide New England wetland seed mixture for wetland restoration activities. Seed mixture shall be New England Wetmix, as manufactured by New England Wetland Plants, Inc, New England Wetland Detention Basin and Moist Mix by Ernst Seeds, or Wet Meadow & Detention Basin Mix by Vermont Wetland Plant Supply or equal.
- E. Provide New England erosion control/restoration seed mixture for dry sites. Seed mixture shall be New England Erosion Control/Restoration Mix, as manufactured by New England Wetland Plants, Inc, New England Erosion Control & Restoration Mix for Dry & Moise Sites by Ernst Seeds, or Vermont Conservation & Wildlife Mix by Vermont Wetland Plant Supply or equal.
- F. The wetland seed mixture for the topographic relief mounds be 50% "New England Wetland Seed Mix" and 50% "Showy Wildflower Mix" by weight as manufactured by New England Wetland Plants, Inc., or equal.
- G. Provide erosion control blankets for wetland restoration activities in accordance with Section 02075.

PART 3 EXECUTION

3.1 GENERAL

- A. During construction activities in wetland areas and within the 100-foot buffer zone of those areas, erosion control and dewatering equipment will be monitored regularly by a qualified wetland scientist retained by the Owner. Provide access to all work areas for the wetland scientist.
- B. Limit storage of equipment and materials in the buffer zone, where possible.
- C. Servicing equipment in wetland areas is prohibited. Limit equipment servicing in the buffer zone, where possible.
- D. Do not use calcium chloride or other chemicals for dust control in wetland areas or buffer zones. Use water only for dust control.

3.2 CONSTRUCTION MAT USE

- A. Remove all vegetative matter, seeds, and loose soil from construction mats prior to transportation to site.
- B. Install mats in accordance with manufacturer's instructions.
- C. Remove loose soils from mats on a daily basis and dispose in upland areas.
- D. Remove timber mats immediately upon completion of work.

3.3 INVASIVE SPECIES MANAGEMENT

- A. Contractor is responsible for the removal of invasive plants introduced to the site by their activities including in wetland and upland areas. Contractor shall avoid the introduction of invasive plants and document measures to be taken to reduce the risk of new invasive plant introduction in an invasive species management plan. If invasive plants are introduced to the site as a result of the contractors activities they shall be removed at the contractor's expense.
- B. Contractor is not responsible for removal of invasive plants already present at the site.

3.4 SOIL REMOVAL AND RE-USE

- A. Segregate topsoil/muck from mineral subsoil and stockpile separately within upland area.
- B. Backfill excavation initially with mineral subsoil.
- C. Place wetland topsoil/muck over subsoils and grade to existing contours.

END OF SECTION

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SECTION 02740C

BITUMINOUS CONCRETE PAVEMENT

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Hot mix Asphalt (HMA) paving, permanent, wearing, and binder course for roads
- B. For the purposes of this Section, Hot Mix Asphalt (HMA) and bituminous concrete have the same meaning.
- C. Related Requirements
 - 1. Section 02315 - Excavation, Backfill, Compaction and Dewatering
 - 2. Section 02720 - Cold Planing of Pavement

1.2 REFERENCES

- A. Commonwealth of Massachusetts Department of Public Works "Standard Specifications for Highways and Bridges," 1988 Edition as amended

1.3 SUBMITTALS

- A. Job mix formula for each mix specified under this Section.
- B. Certificate indicating the mixes specified meet or exceed the requirements specified herein.

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with TAI Manual MS-8., Commonwealth of Massachusetts Department of Public Works "Standard Specifications for Highways and Bridges," 1988 Edition as amended
- B. Mixing Plant: Conform to TAI Manual MS-8., Commonwealth of Massachusetts Department of Public Works "Standard Specifications for Highways and Bridges," 1988 Edition as amended
- C. Obtain materials from same source throughout.

PART 2 PRODUCTS

2.1 MATERIALS

- A. General
 - 1. Bituminous materials shall conform to the requirements of these Specifications.
 - 2. Bitumen delivered to a project or to a mix plant must be accompanied by a proper certificate signed by the producer's authorized representative. Shipments of material not accompanied by a certificate will not be accepted for use in the Work.

- B. Hot Mix Asphalt Paving shall be Class I, Type I-1, as specified in Sections 460 and M3.11.0 of the above referenced Massachusetts Department of Public Works "Standard Specifications for Highways and Bridges," 1988 edition, as amended.
- C. Hot Mix Asphalt
 - 1. Hot Mix Asphalt materials shall meet the requirements of M3.11.0 of the above referenced Massachusetts Department of Public Works "Standard Specifications for Highways and Bridges," 1988 edition, as amended.
 - 2. Only Performance Graded Asphalt Binder grades PG 64-28 or PG 52-34 will be used as modifiers and shall meet the requirements of AASHTO M 320.

PART 3 EXECUTION

3.1 PAVING – GENERAL

- A. Maintain pavement under this Contract during the guarantee period of one year and promptly (within 3 days of notice given by the Engineer) refill and repave areas which have settled or are otherwise unsatisfactory for traffic.
- B. All pavement thicknesses referred to herein are compacted thicknesses. Place sufficient mix to ensure that the specified thickness of pavement results.
- C. Regardless of temperature, no permanent mix conforming to the requirements of these specifications shall be placed after October 31 or before May 1 of any year.
- D. When the air temperature falls below 50°F, extra precautions shall be taken in drying the aggregates, controlling the temperatures of the materials and placing and compacting the mixtures.
- E. Existing drainage patterns shall not be altered by the new pavement construction unless otherwise shown on the Drawings.
- F. Furnish and spread calcium chloride on disturbed surfaces to control dust conditions when necessary, or upon direction of the Engineer.
- G. All pavement edges that have been damaged shall be sawcut again if necessary to re-establish a straight clean line between the existing pavement and trench patch.
- H. Tack Coats
 - 1. The edges of the existing pavement where the joints are to be formed shall be thoroughly coated with tack coat to ensure adhesion between the two pavements.
 - 2. The contact surfaces of curbs, castings, and other structures shall be painted with a tack coat prior to placement of paving.
- I. Top course mixes shall provide for 4% air voids in the finished product. The initial in-place voids shall not exceed 7.5%. Final in-place voids shall not be below 2.5%. Additional asphalt content shall not be added for the sole purpose of reducing the in-place voids. If the in-place voids are too high or the paving is expected to occur during cold weather, more compactive effort will be required to adjust the void content rather than increasing the asphalt content.
- J. Breakdown rolling shall not occur before the HMA has cooled to a temperature of 320 degrees Fahrenheit, and shall be completed before the HMA mat has cooled to a temperature of 275 degrees Fahrenheit. Intermediate rolling shall be completed prior

to the HMA mat attaining a temperature of 200 degrees Fahrenheit. Finish rolling shall be completed prior to the HMA mat attaining a temperature of 150 degrees Fahrenheit. Roller and paver speeds shall be agreed upon with the Engineer prior to placing HMA to ensure mix temperature requirements will be met.

- K. Thermal segregation of the HMA shall be limited to a maximum of 20 degrees Fahrenheit.
- L. Cascading HMA material on the top of the finished mat with rakes or shovels will not be permitted. Coarse Aggregate dislodged as a result of unavoidable hand work shall be removed from the surface prior to rolling.
- M. Place and compact HMA materials by steel-wheeled rollers of sufficient weight to compact the HMA to 92.5% of the calculated **Theoretical Maximum Density (TMD)** in accordance with ASTM D2041.
- N. Along curbs, structures and all other places not accessible with a roller, the paving mixture shall be thoroughly compacted with tampers. Such tampers shall not weigh less than 25 pounds and shall have a tamping face no more than 50 square inches in size. The surface of the mixture after compaction shall be smooth and true to the established line and grade.
- O. No vehicular traffic shall be permitted on the newly completed pavement until adequate stability has been attained and the material has cooled to below 140 degrees Fahrenheit or sufficiently to prevent distortion or loss of fines. HMA delivery trucks (loaded or empty) shall not be permitted on the newly completed pavement until the asphalt has cooled to below 90 degrees Fahrenheit. If the climatic or other conditions warrant, the period of time before opening to traffic may be extended at the discretion of the Engineer.
- P. Following all paving, the area along the edge of all pavement shall be backed up with gravel, or loam and seed as required, so that it is flush with the adjacent paving. Whenever possible, the final surface of the backup material shall slope away from the surface edge for drainage runoff.

Q. Following all paving, clean all catch basins and remove and dispose of all debris.

3.2 PAVING – HMA PAVING, PERMANENT, AND WEARING COURSE FOR ROADS

- A. Prior to placing full-width permanent HMA, notify Engineer of the intended work area at least 24 hours prior to start of work, so that Engineer can adequately inform residents regarding impacts to road access, driveways, detours, and work hours.

3.3 PAVING – BASE AND BINDER COURSE

- A. Place base course as soon as possible after the gravel base has been prepared, shaped and compacted for all streets.
- B. Binder course shall be placed on reclaimed or fully reconstructed roads as shown on the Drawings and as specified herein in preparation for the full-width top course.
- C. Structure Adjustments
 - 1. All manhole frames, catch basin frames and utility boxes are to be lowered prior to placement of the base course. After placing the binder course, they shall be raised to the grade of the binder course until such time as the top course is placed, unless the period of time between the placement of the binder course and the

placement of the top course is less than 2 weeks, in which case the frames may be raised to the grade of the top course. All excavated materials removed for raising of the frames and utility boxes are to be replaced with concrete. This ring of concrete shall be filled flush with the surrounding binder course.

2. Adjustments to existing municipally owned utility structures and appurtenances such as drainage manholes, catch basins and gate valve boxes, both within the area of excavation and within the existing paved surface, will be carried out by the Contractor prior to installation of the top course. The raising of other structures (privately owned utilities) as required to properly complete the final paving work should be completed by the structure owners. It is the responsibility of the Contractor to coordinate all such work and to assure that all structures are properly raised in a timely manner.
- D. Maintain base course in a condition suitable for traffic throughout the construction period. Defects shall be repaired within 3 days of notification.
- E. Prepare the base course for placement of the top course. The base shall be graded prior to the placement of the binder course. The binder course shall be regraded, placing additional HMA where settling has occurred, repairing the existing surface and replacing broken or damaged sections at no additional cost to the Owner. The binder course surface shall be in all respects acceptable to the Engineer before the final pavement is placed. The surface shall then be broom cleaned.

3.4 FULL-WIDTH TOP COURSE

- A. Roads shall be cold planed, reclaimed, or fully reconstructed as shown on the Drawings and as specified herein in preparation for the full-width binder and/or top course.
- B. Prior to the start of spreading the permanent HMA top course the road surface shall be prepared. This shall include, but not be limited to sweeping, repairing, removing of debris, adjustment of all structures for the finished, compacted overlay thickness, and tack coating the surface of the road to be overlaid.
- C. Surface preparation shall also include filling and shimming all trench repair and pavement areas that have not been milled, reclaimed or reconstructed which require preparation prior to the placement of the overlay. Overlays shall not be placed over pavement areas with open seams, substantial cracks, pot-holes, depressions or other defects until proper filling and shimming has been completed.
- D. The final surface shall be properly graded and cambered to provide a smooth surface of proper cross-section and blended into all adjacent existing pavements. Any permanent pavement repair that in the opinion of the Engineer does not meet this requirement, or that will form puddles 1/16-inch deep or greater shall be repaired or replaced at the Contractor's expense.
- E. The finished top course shall blend smoothly with all rim elevations of catch basins, manhole covers, gate box covers, and any other utilities, and shall in no way interfere with or alter the existing surface drainage.

END OF SECTION

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SECTION 02820

CHAIN LINK FENCES AND GATES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Installation of fence framework, fabric, accessories; related hardware as shown on the Drawings and specified herein.

1.2 REFERENCES

- A. ASTM A53 - Specification for Pipe, Steel, Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless
- B. ASTM A123 – Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products
- C. ASTM A153 - Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
- D. ASTM A307 - Specification for Carbon Steel Externally Threaded Standard Fasteners
- E. ASTM A392 – Zinc-Coated Steel Chain-Link Fence Fabric
- F. ASTM A653 – Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-dip Process
- G. ASTM A824 – Metallic Coated Steel Marcellled Tension Wire for Use with Chain Link Fence
- H. ASTM F567 – Practice for Installation of Chain Link Fence
- I. ASTM F668 – Poly (Vinyl Chloride) (PVC) Coated Steel Chain Link Fence Fabric
- J. ASTM F934 – Standard Colors for Polymer-Coated Chain Link Fence
- K. ASTM F1083 – Pipe, Steel, Hot-dipped Zinc-Coated (Galvanized) Welded, for fence Structures
- L. CLFMI (Chain Link Fence Manufacturers institute) – Product Manual

1.3 SUBMITTALS

- A. Shop drawings showing the plan layout, spacing of components, post mounting hardware, hardware anchorage, and a schedule of components.
- B. Data indicating compliance with these specifications for the fabric, posts, accessories, fittings and hardware.
- C. Two fence samples complete with all typical hardware and components. The samples shall be representative of the type of construction for the project and color of all components.

1.4 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Supply material in accordance with CLFMI – Product Manual.
- C. Perform installation in accordance with ASTM F567.
- D. Provide manufacturer’s standard limited warranty that its chain link fence system is free from defects in material and workmanship including cracking, peeling, blistering and corroding for a period of ten (10) years from the date of purchase.
- E. Obtain chain link fence, including accessories, fittings, and fastenings, from a single source.
- F. Upon completion of installation, check equipment and components to ensure proper and safe function; correct any defects or deficiencies.

1.5 PRODUCT HANDLING

- A. Deliver fence fabric and accessories in packed cartons or firmly tied rolls.
- B. Packages shall be labeled with the manufacturer’s name.
- C. Store fence fabric and accessories in a secure and dry place.

PART 2 PRODUCTS

2.1 MATERIALS

- A. General - Material furnished shall be new and first quality and shall not have been painted. Steel shall be copper bearing, containing not less than 0.2% pure copper. Materials are to be galvanized, then PVC coated – color to be black.
- B. Framing (Steel): ASTM F1083 Schedule 40 galvanized steel pipe, welded construction, minimum yield strength of 25 ksi; coating conforming to ASTM F1043 Type A on pipe exterior and interior.
- C. Fabric Wire (Steel): ASTM F668 PVC coated.

2.2 COMPONENTS

- A. Line Posts: 2.50 inch diameter.
- B. Corner and Terminal Posts: 3.0 inch.
- C. Top and Bottom Rail: 1-3/8 inch diameter, plain end, sleeve coupled.
- D. Fabric: 2 inch diamond mesh interwoven wire, 9 gage thick, top selvage knuckle end closed, twisted tight, bottom selvage twisted tight, knuckle end closed.
- E. Tension Band: 1/8 inch thick steel.
- F. Tension Strap: 1/4 inch thick steel.
- G. Tie Wire: Aluminum alloy steel wire.
- H. Fastener Hardware: ASTM A307

2.3 ACCESSORIES

- A. Caps: Cast steel galvanized, PVC coated, sized to post diameter, set screw retainer.
- B. Fittings: Sleeves, bands, clips, rail ends, tension bars, fasteners and fittings; galvanized steel, PVC coated.

2.4 FINISHES

- A. Components and Fabric: Vinyl coating, black color in accordance with ASTM F934 over galvanized coating to ASTM A53; ASTM A123; ASTM A153, ASTM A653 for components; ASTM A392 for fabric of 2.0 oz/sq ft galvanizing.
- B. Vinyl Components: black color to match fabric.
- C. Hardware: Galvanized to ASTM A153, 2.0 oz/sq ft coating.
- D. Accessories: Same finish as framing, fabric.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install fence with posts vertical and components to line and grade shown on Drawings.
- B. Posts shall be face mounted to the precast concrete wing walls and headwalls. Contractor shall coordinate anchor installation with precast manufacturer to determine the location of the anchors prior to installation.
- C. Line post spacing shall be a maximum of 10'-0" center to center.
- D. Corner and terminal posts are to be braced horizontally and diagonally. The braces are to extend over one adjacent panel. Changes in line of 30 degrees or more shall be considered as corners.
- E. Install top rail through line post tops and splice with 6 inch rail sleeves.
- F. Install framework, fabric, and accessories in accordance with ASTM F567.
- G. Place fabric on inside of posts and rails.
- H. Install nuts for tension bands and hardware bolts on the side of the fence opposite the fabric.
- I. Stretch fabric between terminal posts or at intervals of 100 feet maximum, whichever is less.
- J. Position bottom of fabric 2 inches above finished grade.
- K. Fasten fabric to top rail, line posts, braces, and bottom tension wire with tie wire at maximum 15 inches on centers.
- L. Attach fabric to end, corner, and gate posts with tension bars and tension bar clips.
- M. Miscellaneous - Install nuts for tension bands and hardware bolts on the side of the fence opposite the fabric. Repair galvanized coating where damaged using hot-applied repair compound applied in accordance with the manufacturer's recommendations.
- N. Repair damage to galvanized coating using hot-applied repair compound in accordance with the manufacturer's recommendations.

3.2 ERECTION TOLERANCES

- A. Maximum Variation From Plumb: ¼ inch in 8 feet.
- B. Maximum Offset From Indicated Position: 1 inch.

END OF SECTION

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SECTION 02845

GUARDRAIL (POWDER COATED)

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Permanent guardrail systems and associated components.
 - 2. Guard rail systems include:
 - a. Galvanized Steel W beam highway guard
 - b. Terminal ends for galvanized Steel W beam highway guard

1.2 REFERENCES

- A. Massachusetts Department of Transportation – Highway Division Standard Specifications for Highways and Bridges, latest edition as amended.
- B. Massachusetts Department of Transportation – Highway Division Construction Standard Details, dated 2010 as amended.

1.3 SUBMITTALS

- A. Provide submittals of all guardrail components, including the size, type, material, and manufacturer.
- B. Provide detailed drawings of the guardrail system proposed.
- C. Sample powdercoat color.

1.4 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

PART 2 PRODUCTS

2.1 MATERIALS

- A. All components of the galvanized steel guardrail systems shall meet the standards referenced in Section 1.2 above.
- B. Powdercoat shall be applied to galvanized steel rail to achieve a durable finish. The color shall be dark brown. Posts, impact head, etc do not need to be powdercoated.

PART 3 EXECUTION

3.1 GUARDRAIL INSTALLATION

- A. All components of the guardrail systems shall be installed in accordance with the standards referenced in Section 1.2 above.

END OF SECTION

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SECTION 02900

PLANTING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Loam Borrow
 - 2. Preparation of Backfill Mix
 - 3. Planting of Trees, Shrubs and Bushes
 - 4. Maintenance

1.2 REFERENCES

- A. Massachusetts Department of Public Works Standard Specifications for Highways and Bridges (MDPW) 1988, as amended.
- B. American Nursery & Landscape Association (ANLA) standards

1.3 SUBMITTALS

- A. Samples
 - 1. Submit representative Samples to Engineer for selection and approval. Delivered materials shall match the approved Samples.
 - a. Loam Borrow: Provide representative Samples for testing and approval as directed by the Engineer. Deliver Samples to testing laboratory, having testing report sent directly to the Engineer, and pay all costs.
 - 1) Mechanical and chemical (pH soluble salts) analysis shall be by a public extension service agency or a certified private testing laboratory in accordance with the current standards of the "Association of Official Agricultural Chemists."
 - 2) Report shall be submitted before any loam is to be placed. Soil shall be tested for organic content, Nitrate-Nitrogen, Ammonium Nitrogen, Phosphorus, Potassium, Calcium, Aluminum, Soluble Salts and acidity.
 - b. Mulch: Submit one sample and provide the name and address of the Supplier.
 - B. Anti-desiccant: Submit manufacturer information.
 - C. Tree Paint: Submit manufacturer information.
 - D. Planting Soil Analysis: A standard soil test shall be performed by a licensed commercial testing laboratory or government agency approved by the Engineer. Soil test shall provide recommendation for the addition of fertilizer, lime, and other amendments.

- E. Furnish complete written instructions for maintenance of the plant materials to the Owner at least ten days prior to the end of the maintenance period in order to familiarize the Owner with the proper care and development of the plantings.
- F. Furnish certifications from plant Suppliers indicating the botanical name, quantity, and size of plants to be delivered to the Project.

1.4 QUALITY ASSURANCE

- A. Perform Work with experienced personnel under the direction of a skilled foreman with a minimum three years of experience with similar type and size projects.
- B. Plants are subject to inspection and approval by the Engineer before delivery for conformity to Specification requirements as to quality, size and variety.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Only deliver plant materials immediately prior to installation.
- B. Deliver plant materials to the Site in accordance with the best horticultural practices to prevent damage.
- C. Move and handle plant materials so as to prevent damage to roots and crowns.
- D. "Heal-in" plants that cannot immediately be installed with bark mulch or wood chips in a location that protects the plants from sun and wind. Root balls and containers shall be completely covered and kept consistently moist until installation.
- E. Replace damaged and unhealthy plant materials prior to installation.

1.6 SITE CONDITIONS

- A. Examination of Conditions
 - 1. All areas to be planted shall be inspected by the Contractor before starting Work and any defects such as incorrect grading, etc., shall be reported to the Engineer prior to beginning this Work. The commencement of Work by the Contractor shall indicate his acceptance of the areas to be planted, and he shall assume full responsibility for the Work of this Section.

PART 2 PRODUCTS

2.1 LOAM

- A. Loam shall consist of loose friable topsoil with no admixture of refuse or material toxic to plant growth. Loam shall be generally free from stones, lumps, stumps, or similar objects larger than 1 inch in greatest diameter, subsoil, roots, and weeds. The term as used herein shall mean that portion of the soil profile defined technically as the "A" horizon by the Soil Science Society of America. The pH shall be from 5.5 to 7.6. Loam shall contain a minimum of three percent and a maximum of ten percent of organic matter as determined by loss by ignition. Not more than 65 percent shall pass a No. 200 sieve as determined by the wash test in accordance with ASTM D 1140. In no instance shall more than 20 percent of that material passing the No. 4 sieve consist of clay size particles.
- B. The topsoil and sediment stripped and stockpiled on the Site may be used provided that, after testing and addition of necessary additives, it meets the above specifications.

Provide additional loam as required. All excess loam shall become the property of the Contractor and be legally disposed of off-site.

2.2 SOIL ADDITIVES

A. Commercial fertilizer, peat, humus or other additives shall be used to counteract soil deficiencies as recommended by the soil analysis and as directed by the Engineer.

1. Commercial fertilizer shall be a product complying with State and Federal requirements. Deliver to the Site in the original unopened containers, which shall bear the manufacturer's Certificate of Compliance covering analysis, which shall be furnished to the Engineer. At least 50 percent by weight of the nitrogen content shall be derived from organic materials. Fertilizer shall contain not less than the percentages of weight of ingredients as follows or as recommended by the soil analysis:

| | Nitrogen | Phosphorous | Potash |
|------------------------------|-----------------|--------------------|---------------|
| For deciduous trees & shrubs | 10% | 6% | 4% |
| For evergreen trees & shrubs | 7% | 7% | 7% |

B. Planting soil shall be prepared based on the following proportions.

1. Three parts loam with a pH of 6.0 to 6.5.
2. One part dehydrated sterilized manure
 - a. Manure shall be well-rotted, unleached stable manure not less than eight months and not more than two years old. It shall be free from sawdust, shavings, or refuse of any kind and shall not contain over 25 percent straw. Furnish information as to kind of disinfectant or chemicals, if any, that may have been used in storage of the manure.
3. One part peat moss
 - a. Peat moss shall be composed of the partly decomposed stems and leaves of any or several species of sphagnum moss. It shall be free from wood, decomposed colloidal residue, mineral matter such as sulfuric and iron harmful to plant life. It shall have a water absorbing capacity of 1100 percent to 2000 percent, and a moisture content of 30 percent. It shall have an acidity range of 3.5 pH to 5.5 pH as determined in accordance with the test methods of A.O.A.C.

C. Humus shall be natural humus, reed peat or sedge peat. It shall be free from excessive amounts of zinc, low in wood content, free from hard lumps and in a shredded or granular form. According to the methods of testing of A.O.A.C. latest edition, the acidity range shall be approximately 5.5 pH to 7.6 pH and the organic matter shall be not less than 85 percent as determined by weight on an over-dry basis.

D. Leaf mold shall be highly organic dark brown to black spongy residue resulting from the well aerated composting of deciduous tree leaves. It shall be at least three years old, without recognizable leaf parts, free of plants and their roots, debris and other extraneous matter and shall be uncontaminated by foreign matter and substances harmful to plant growth. The organic matter shall not be less than 85 percent by weight as determined by the loss on ignition of oven-dried Samples. Test Samples shall be oven-dried to a constant weight at a temperature of 110° C. The inorganic residue after

ignition shall not be finer textured than 4 percent by weight passing the number 200 sieve with washing.

- E. The following amendments shall be incorporated into the prepared planting soil prior to backfilling of planting pits in accordance with the recommendations of the planting soil analysis.
1. Fertilizer: Complete with 70 percent of the nitrogen derived from organic sources.
 2. Lime: Ground dolomite limestone; 95 percent passing through a 100-mesh sieve.
 3. Super Phosphate: Finely ground phosphate rock as commonly used for agricultural purposes containing not less than 18 percent available phosphoric acid.
 4. Bone Meal: Bone meal shall be fine ground, steam-cooked, packing house bone with a minimum analysis of 18 percent phosphoric acid and 1.0 percent nitrogen.
 5. Peat Moss

2.3 PLANT MATERIALS

- A. Installation of plants larger than specified will be acceptable only if approved by the Engineer, and at no increase to the Contract price. All plants shall be nursery grown unless specifically authorized to be collected.
- B. Plant Material Requirements:
1. Plants shall be in accordance with the U.S.A. Standard for Nursery Stock of the ANLA, latest edition.
 2. Hardy under climatic conditions similar to those in the locality of the Project. All plants shall be typical of their species or variety and shall have a normal habit of growth and be legibly tagged with the proper name. Only plant stock grown within the hardiness of Zones 4 through 6, as established by the Plant Hardiness Zone Map Miscellaneous Publications No. 814, Agricultural Research Service, US Department of Agriculture latest revision, will be accepted. Suppliers must certify in writing that the stock has actually been grown under required zones. Plants not so certified will not be accepted.
 3. Plants shall be typical of their species or variety, with a normal habit of growth. The root system of each shall be well provided with fibrous roots. All parts shall be moist and show active green cambium when cut. They shall be sound, healthy and vigorous, well-branched and densely foliated when in leaf. They shall be free of disease, insect pests, eggs or larvae.
 4. Dimensions shall conform to Specifications in the current edition of Horticultural Standards of the ANLA.
- C. Shrubs
1. Shrubs shall meet the requirements for spread or height stated in the Plant List. The measurements for height are to be taken from the ground level to the average height of the shrub and not to the longest branch. The thickness of each shrub shall correspond to the trade classification "No. 1." Single stemmed or thin plants will not be accepted. The side branches must be generous, well-twigged, and the

plant as a whole wee-branched to the ground. The plants must be in a moist vigorous condition, free from dead wood, bruises or other root or branch injuries. Plants shall not be pruned prior to delivery.

D. Plant Transport and Delivery

1. All plants must be moved with the root system as solid units with balls of earth firmly wrapped with untreated eight ounce burlap, firmly held in place by a stout cord or wire. The diameter and depth of the balls of earth must be sufficient to encompass the fibrous and root feeding system necessary for the healthy development of the plant. No plant shall be cracked or broken preparatory to or during the process of planting or after the burlap, staves, ropes or platform required in connection with its transplanting have been removed. The plants and balls shall remain intact during all operations. All plants that cannot be planted at once must be heeled in by setting in the ground and covering the balls with soil and then watering them.
2. Container grown stock shall have been grown in a container long enough for the root system to have developed sufficiently to hold its soil together, firm and whole. No plants shall be loose in the container.
3. Plants delivered by truck and plants requiring storage on Site shall be properly wrapped and covered to prevent wind-drying and desiccation of branches, leaves or buds. Plant balls should be firmly bound, unbroken, and reasonably moist to indicate watering prior to delivery and during storage, and tree trunks should be free from fresh scars and damage in handling. No trees with double-leaders or twin-heads shall be acceptable without the written approval of the Engineer. The Contractor shall reject such plants at time of delivery by the nursery/Supplier unless such plants were selected by the Engineer as indicated by tags and seals. No plant material from cold storage will be accepted.

PART 3 EXECUTION

3.1 EXAMINATION

A. Existing Conditions

1. Refer to Drawings showing finish grades. No installation of plants shall take place until all subgrade elevations have been completed.
2. Prior to planting, verify locations and depth of underground utilities. Exercise care when digging in these areas. Assume responsibility for any damage and replace or repair any damage at the Contractor's expense to the satisfaction of the Engineer.

3.2 PREPARATION

A. Field Measurements

1. Make all necessary measurements to properly locate the plants as shown on the Drawings. Location and arrangement of plants shall be approved by the Engineer prior to installation.
2. Plants installed prior to approval by the Engineer shall be relocated, if necessary, at no additional cost to the Owner.

3.3 INSTALLATION

A. Time of Planting

1. The time of planting shall be guided by the schedule below unless otherwise approved by the Engineer based on plant types, weather conditions or other factors that may be detrimental to plant growth.

| Material Type | Spring | Fall |
|----------------------|--|--|
| Deciduous | March 15 th to June 1 st | October 15 th to November 1 st |
| Evergreen | March 15 th to June 1 st | August 15 th to October 1 st |
| Wetland Plants | March 15 th to June 1 st | August 15 th to October 1 st |

B. Plantings General

1. All plantings shall be in accordance with ANLA standards.
2. Location for all plants and outlines for planting areas shall be staked on the ground by the Contractor for approval by the Engineer before any plant pits or plant beds are excavated.
3. At least ten days prior to the expected planting date, the Contractor shall request, in writing, that the Engineer provide a representative to select and tag stock to be planted under this section.
4. Plants shall be selected by the Engineer at the place of growth for conformity to specification requirements as to quality, size, and variety. Such approval shall not impair the right of inspection and rejection upon delivery at the Site or during the progress of the Work. Cost of replacement shall be borne by the Contractor.
5. Maintain at all times during the planting operations one or more stockpiles of approved planting soil.
6. If planting is done after lawn preparation or installation, proper protection of lawn areas shall be provided and any damage resulting from planting operations shall be repaired immediately at no cost to the Owner.
7. In the event that rock or obstructions are encountered in any plant pit or bed excavation, alternate locations may be selected by the Engineer.
8. Absolutely no debris may be left on the Site. Excavated material shall be removed as directed by the Engineer. Repair any damage to Site or structures to restore them to their original condition as directed by the Engineer.

3.4 INSTALLATION—GENERAL

A. Planting Pits

1. Excavate to the depths and widths necessary to achieve the dimensions indicated on the Drawings.
2. Excavated soil and material may be used as a portion of the backfill and planting soil provided it meets the requirements of paragraph 2.1.
3. Plant pits shall be excavated with sloped sides. Plant trees and shrubs in pits 12 inches greater in width than the diameter of the root ball. Pit depth shall be sufficient to ensure a minimum of 6 inches of planting soil mixture under plant root system.

4. All plant roots and earth balls must be damp and thoroughly protected from sun and wind from the beginning of the digging operation, during transportation and on the ground until the final planting. Set plants in center of pits, plumb and straight and at level that top of root ball is 1 inch lower than surrounding finished grade after settlement.

B. Cover, Watering, and Fill

1. Compact planting soil thoroughly around base of root ball to fill all voids, when plant material is set. Cut all burlap and lacing and remove from top of root ball. Do not pull burlap from under any root ball. Backfill pits halfway with planting soil mixture and thoroughly puddle before backfilling pit. Water planting, again, when each backfill operation is complete.
2. Immediately after plant pit is backfilled, form a shallow saucer slightly larger than pit with ridge of soil to facilitate and contain watering. Grub out sod or other growth and remove from bed area. Rake bed area smooth and neat. All plants shall be flooded with water twice within the first 24 hours of planting and all plants shall be watered at least twice each week during the maintenance period. At each watering the soil around each tree or shrub shall be thoroughly saturated. If sufficient moisture is retained in the soil, as determined by the Engineer, the required watering may be reduced. Trees will require a minimum of ten gallons of water each; shrubs a minimum of five gallons each.
3. Pine bark mulch is to be placed in a 3 inch thickness around the planting, not later than one week after planting. The area to be mulched shall be circular with a diameter of 12 inches greater than the plantings root ball. No mulch shall be applied prior to the first watering of plant materials. Mulch is to be contained around the circumference of the planting by means of installing a metal edge strip. Metal edge strips shall be fastened securely in place with tapered metal stakes at 30 inch intervals along the strip. Set edge strips to finished grade.
4. Planting soil shall be to a minimum depth of 24 inches or as shown on the Drawings.
5. Ground cover beds shall be dug to a depth of one foot below final grade. Supply sufficient planting mix where required to provide one-foot-deep beds.

C. Staking and Anchoring

1. All trees and plantings 10 feet or higher shall be firmly staked, guyed or anchored at the time of planting as shown on the Drawings, unless otherwise approved or directed by the Engineer. A minimum of two stakes shall be installed plumb and neat in appearance and shall not injure plant balls.

3.5 PLANT MAINTENANCE

- A. Begin maintenance immediately after planting and continue for 1 year from date all plantings have been installed or until the final acceptance of the Project. Plantings done in late fall after November 1st shall be maintained until the second spring leafing.
- B. Continue the maintenance period at no additional cost to the Owner until all previously noted deficiencies have been corrected, at which time the final inspection will be made. Plants that die during the maintenance period shall be replaced as directed by the Engineer.

- C. Maintenance shall consist of keeping the plants in a healthy growing condition and shall include watering, weeding, cultivating, remulching, removal of dead material, resetting plants to proper grades or upright position and maintaining the planting saucer. Spraying for both insect pests and diseases shall be included during the maintenance period as required and as directed by the Engineer.
- D. Provide all equipment and means for proper application of water to plants. All plants shall be watered at least twice each week. At each watering, the soil around each tree or shrub shall be thoroughly saturated during the maintenance period. If sufficient moisture is retained in the soil, as determined by the Engineer, the required water may be reduced. Trees will require a minimum of ten gallons of water each; shrubs a minimum of five gallons each.
- E. Stakes shall be kept plumb and neat in appearance. Guys shall be tightened and repaired weekly.
- F. Planting beds and individual plant pits shall be kept free of weeds and mulch shall be replaced as required to maintain a 4" layer of mulch. Beds and individual pits shall be neat in appearance and maintained to the lines originally laid out.
- G. Fertilize plants in spring and fall.
- H. Protect all planted areas against damage, including erosion and trespassing by providing and maintaining proper safeguards.

3.6 INSPECTION AND ACCEPTANCE

- A. The Engineer shall be the sole judge of acceptance.
- B. All materials and workmanship will be subject to inspection and examination by the Engineer, and he/she shall have the right to reject defective materials and workmanship or require corrections.
- C. Submit planting plans indicating the dates plants were installed for purposes of establishing warranty and replacement dates.
- D. Certification of Acceptance and Guarantee
 - 1. Submit written notice requesting inspection by the Engineer at least 10 days prior to the end of the maintenance period. If the plant material and workmanship are acceptable, written notice will be given by the Engineer to the Contractor stating that the guarantee period begins from the date of the Certificate of Acceptance.
 - 2. If a substantial number of plants are sickly or dead at the time of inspection, acceptance will not be granted, and the Contractor's responsibility for maintenance of all the plants shall be extended until replacements are made. All dead and unsatisfactory plants shall be promptly removed from the Project. Replacements shall conform in all respects to the Specifications for new plants and shall be planted in the same manner.
 - 3. Plants shall be true to botanical name and size, and in vigorous healthy growing condition.
 - 4. Plants shall be guaranteed for a period of one year after inspection and acceptance and shall be alive and in satisfactory growth at the end of the guarantee period.

5. At the end of the guarantee period, inspection will be made again. Any plant required under this Contract that is dead or unsatisfactory shall be removed from the Site. Each plant shall show at least 80 percent healthy growth and shall have the natural character of a plant of its species in accordance with the American Nurserymen's Association standards. These plants shall be replaced during the normal planting season, until the plants live through one year. A final inspection for acceptance will be made after the replacement plantings have lived through one year.
6. All replacements shall be plants of the same kind and size specified in the plant list. The cost shall be borne by the Contractor, except for possible replacements due to vandalism or neglect on the part of others.
7. Provide a physical handbook of maintenance instructions for all plant material installed. This handbook shall contain all necessary maintenance information, which will enable the Owner to maintain new plantings in a vigorous condition. Before planting Work is completed, submit two handbook copies to the Engineer for approval. Upon the acceptance of the planting Work, one handbook copy shall be furnished to the Owner for his future reference. The Engineer may require resubmittal of the Owner maintenance instructions if it is determined that the information provided is not sufficient to allow for proper maintenance.

END OF SECTION

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SECTION 02922

HYDROSEEDING & MULCHING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Loam
 - 2. Lime
 - 3. Fertilizer
 - 4. Seed
 - 5. Bonded Fiber matrix
 - 6. Water
- B. Related Sections
 - 1. Section 02920 – Landscaping

1.2 SUBMITTALS

- A. Results of vegetative support material nutrient analysis and recommendation for limestone and fertilizer application rates.
- B. Product data and specifications for the Bonded Fiber Matrix
- C. Product data and specifications for the fertilizer and lime.
- D. Product data for seed mixtures.
- E. Based on results of vegetative support material nutrient analysis to be provided by the Owner, submit recommendation for limestone and fertilizer application rates.

1.3 QUALITY ASSURANCE

- A. Provide seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging. Damaged packages are not acceptable.
- B. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.
- C. Deliver lime in waterproof bags showing weight, chemical analysis, and name of manufacturer.

1.4 TESTS

- A. A certified statement shall be furnished to the Engineer by the Contractor prior to the start of work, stating the number of pounds of limestone, fertilizer, seed, and mulch, per 100 gallons of water and shall also specify the number of square yards of seeding that can be covered with the solution specified above.

PART 2 PRODUCTS**2.1 LOAM**

- A. Loam shall be consistent with Section 02900.

2.2 LIME

- A. Lime shall be consistent with Section 02900. The ground limestone shall have a neutralizing value satisfactory to the Engineer. Lime as herein described shall be applied at the rate of not less than 50 pounds per 1,000 square feet, or higher, depending upon soil requirements as determined above.

2.3 FERTILIZER

- A. Fertilizer shall be a commercial grade, chemical fertilizer for lawns, the elements of which are derived from organic sources and shall contain the percentages by weight recommended in the laboratory analyses.
- B. The availability of the various elements shall conform to the standards of the "Association of Official Agricultural Chemists". A minimum of 70% of the nitrogen content by weight shall be derived from organic materials.
- C. All fertilizer shall arrive on the job site in standard size bags, bearing the manufacturer's name, the content, weight and guaranteed analysis.
- D. The Contractor shall be responsible in every respect for the fertilizer, and it shall be stored in a weatherproof enclosure on dunnage in such a manner that its effectiveness will not be impaired.
- E. Fertilizer shall be applied to areas acceptable to the Engineer as ready for seed at a rate recommended by a state and/or federally supported soil experiment lab.

2.4 SEED

- A. Seed shall be of the previous year's crop.
- B. Required ranges:
 - 1. Purity > 90%
 - 2. Germination > 80%
 - 3. Crop < 0.5%
 - 4. Weed < 0.3%
 - 5. Noxious Weed – 0%
 - 6. Inert < 8%
- C. The standard seed mixture shall be applied at a minimum rate of 175 lbs./acre, 4 lbs/1,000 s.f.
- D. The wetland and upland seed mixture for disturbed vegetated areas shall be consistent with Section 02670 and the drawings.
- E. All seed shall comply with State and Federal seed laws.

- F. A sworn certificate indicating each variety of seed, weed content, germination of seed, net weight, date of shipment and manufacturer's name shall accompany each seed shipment. Regardless of approval by the Engineer to sow the seed, complete responsibility for satisfactory results shall rest entirely on the Contractor.

2.5 WATER

- A. Provide water for hydroseeding.
- B. Make arrangements with the local authorities to obtain water for hydroseeding.

PART 3 EXECUTION

3.1 HYDROSEEDING & MULCHING

- A. Lime, fertilizer, seed, and mulch shall be simultaneously applied in one operation by the use of an approved spraying machine. 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 water. The spraying equipment shall be so designed that when the solution is sprayed over an area, the resulting deposits of limestone, fertilizer, seed, and mulch shall be equal in quantity to those specified above.
- B. Seed shall be sown only between the periods from April 15th to June 1st, and from August 15th to October 1st.
- C. If as a result of rain, the prepared seedbed becomes eroded, the Contractor shall rework the topsoil until it is smooth and re-hydroseed such reworked areas.
- D. No seeded area will be acceptable until it is covered with a satisfactory, healthy stand of quality grass of the variety specified. A satisfactory stand of grass, as determined by the Engineer, shall consist of a uniform stand of at least 60% established permanent grass species, with a uniform count of at least 100 plants per square foot. If the results of the spray operation are unsatisfactory, the Contractor will be required to repeat the hydroseeding process as needed to achieve a thick stand of grass.
- E. The Contractor shall protect seeded areas from damage and shall repair and maintain all areas at his own expense at no additional cost to the Owner until a certificate of final acceptance is issued by the Engineer. The Contractor shall repair and reseed all defective or non-growth grass areas during the following season.
- F. After side slopes have received vegetative support material, they shall be traversed by a bulldozer to create ridges running perpendicular to the slope to impede the travel of stormwater runoff. The tracking shall be done prior to hydroseeding.
- G. The Contractor is fully responsible for providing adequate amounts of water to the seeded areas to provide an adequate growth.
- H. All areas to be seeded shall be hydroseeded. Hand seeding will not be allowed.

3.2 MAINTENANCE AND PROVISIONAL ACCEPTANCE

- A. Keep all planted and seeded areas watered and mowed and in good condition, all areas if and when necessary until a good, healthy, uniform growth is established over the entire area and shall maintain all these areas in an approved condition until final acceptance.
- B. The Engineer will inspect all work for provisional acceptance at the end of the 10 week maintenance period, upon the written request received at least 10 days before the

anticipated date of inspection. The maintenance period must occur during the growing season between March 31 and October 1 and shall include a minimum of three mowings.

- C. A satisfactory planted area will be defined as:
 - 1. No bare spots larger than 2 sq. ft.
 - 2. No more than 10 percent of total area with bare spots larger than 1 sq. ft.
 - 3. No more than 15 percent of total area with bare spots larger than 6-in. square.
 - 4. No invasive plants present.
- D. After the inspection has occurred but prior to provisional acceptance, a soil test shall be performed to determine if additional soil fertilization should occur. If necessary additional fertilized not to exceed 30 lbs/1,000 sq. ft. of 20-10-10 shall be applied as directed by the Engineer.
- E. Furnish full and complete written instructions for maintenance of the planted areas to the Owner at the time of provisional acceptance.
- F. The inspection by the Engineer will determine whether maintenance shall continue. Continue maintenance until all areas of the site meet the minimum requirements specified above.
- G. After all necessary corrective work and clean-up has been completed, and maintenance instructions have been reviewed by the Owner, the Engineer will certify in writing the provisional acceptance of the turf areas. Maintenance of all turf areas shall cease on receipt of provisional acceptance.

3.3 GUARANTEE PERIOD AND FINAL ACCEPTANCE

- A. All seeded areas shall be guaranteed for not less than 1 full year from the time of final acceptance.
- B. At the end of the guarantee period, inspection will be made by the Engineer upon written request submitted at least 10 days before the anticipated date. Seeded areas not demonstrating satisfactory stands as outlined above, as determined by the Engineer, shall be renovated, reseeded and maintained meeting all requirements as specified herein.
- C. After all necessary corrective work has been completed, the Engineer shall certify in writing the final acceptance of the seeded areas.

END OF SECTION

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DIVISION 03

CONCRETE

SECTION 03485

PRECAST CONCRETE STRUCTURES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Pre-engineered Precast Four-sided Box Culvert
 - 2. Pre-engineered Precast Headwall
 - 3. Pre-engineered Concrete Wingwalls
 - 4. Pre-engineered Precast Concrete Footing
- B. Related Sections
 - 1. Section 02315 - Excavating, Backfilling and Compacting
 - 2. Section 02820 - Chain Link Fence
 - 3. Section 07130 - Sheet Membrane Waterproofing

1.2 REFERENCES

- A. Massachusetts Department of Transportation, LRFD Bridge Manual, current edition as of the date of the design.
- B. Precast Concrete Institute (PCI)
 - 1. MNL-116 - Manual for Quality Control for Plants and Production of Structural Precast Concrete Products.
- C. American Concrete Institute (ACI)
 - 1. ACI 214 – Guide to Evaluation Strength Test Results of Concrete
 - 2. ACI 301 - Specifications for Structural Concrete for Buildings, (included as part of this specification).
 - 3. ACI 318 - Building Code Requirements for Reinforced Concrete.
 - 4. ACI 343 –Analysis and Design of Reinforced Concrete Bridge Structures.
 - 5. ACI 350 - Environmental Engineering Concrete Structures.
- D. American Association of State Highway and Transportation Officials (AASHTO)
 - 1. LRFD Bridge Design Specifications, latest edition with current interims as of the date of the design.
 - 2. LRFD Bridge Construction Specifications, latest edition with current interims as of the date of the design.
- E. American Society for Testing and Materials (ASTM)
 - 1. ASTM A615 - Specification for Deformed and Plain Billet - Steel Bars for Concrete Reinforcement.

2. ASTM C31 – Standard Practice for Making and Curing Concrete Test Specimens in the Field.
3. ASTM C33 - Standard Specification for Concrete Aggregates.
4. ASTM C39 - Standard Method of Testing for Compressive Strength of Cylindrical Concrete Specimens.
5. ASTM C150 - Standard Specification for Portland Cement.
6. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete.
7. ASTM C494 - Standard Specification for Chemical Admixtures for Concrete.
8. ASTM C990 – Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants
9. ASTM C1577 – Standard Specification for Precast Reinforced Concrete Monolithic Box Sections for Culverts, Storm Drains, and Sewers Designed According to AASHTO LRFD

1.3 SUBMITTALS

- A. Submit to the Engineer, as provided in Section 01330, material specifications, and shop drawings for all materials specified and furnished under this Section. Submittals shall detail size and elevations of all structure penetrations.
- B. The contract drawings show a generalized configuration for the precast concrete structures. Submittals shall include separate scaled, detailed drawings for each precast concrete structure.
- C. Submit to the Engineer shop drawings sealed by an Engineer registered in the Commonwealth of Massachusetts, and material specifications for all materials specified and furnished under this Section. Submittals shall include: details of the precast concrete culvert, precast concrete wing walls, headwalls, and precast footings, joints between precast sections, accessories, fittings, connections, size elevation, and layouts of all structure appurtenances, general structure elevations, details for leveling pads, allowable and calculated maximum bearing pressures, backfill gradation, placement, and compaction requirements. Drawings submitted for review by Engineer are reviewed for compliance with contract documents only and not for accuracy
- D. Submit structural design calculations in accordance with these contract documents for the precast reinforced concrete culvert, wingwall, headwall, and footings prepared and sealed by an Engineer registered in the Commonwealth of Massachusetts.
 1. Design shall conform to relevant Massachusetts Department of Transportation Reinforced Concrete Box Culvert design requirements as stated in the LRFD Bridge Manual and design methodologies of AASHTO LRFD Design Specifications for Highway Bridges.
- E. Submit structural design calculations in accordance with these contract documents for the fence anchorage points. The calculations shall be prepared and sealed by an Engineer registered in the Commonwealth of Massachusetts. The applicable wind and live loads shall be in accordance with the MassDOT LRFD Bridge Manual and design methodologies of AASHTO LRFD Design Specifications for Highway Bridges. Loads

shall be considered in design of precast elements; section 1.3.C and 1.3.E of this specification.

- F. Submit earth pressure and stability calculations for all footings of retaining walls and abutments, and all applicable components related to settlement, sliding, overturning, and global stability. Refer to the MassDOT Bridge Manual and AASHTO LRFD Bridge Design Specifications for analysis requirements. The calculations shall be prepared and sealed by an Engineer registered in the Commonwealth of Massachusetts.
- G. The computations shall include a detailed explanation of any symbols and computer programs used in the design. Calculations submitted for review by Tighe & Bond are informational and reviewed for compliance with contract documents only and not for accuracy.
- H. Submit manufacturer's data on structures, and associated specialty products.
- I. Submit Certificates of Compliance for reinforcing steel and concrete.
- J. Concrete Mix Design
 - 1. At least four (4) days prior to concrete placement, submit proportions for a concrete mixture for each strength and type of concrete. Submit a complete list of materials proposed including type; brand; source and amount of cement, aggregate, fly ash, (or slag pozzolans), silica fume, ground slag; and applicable reference specifications. Submit additional data regarding concrete aggregates if the source of aggregate changes. Submittal shall clearly indicate where each mixture will be used when more than one mix design is submitted.
 - 2. Submit mix designs to the Engineer for use on this project at least fifteen (15) days prior to start of precast unit production. Do not begin concrete production until mixes and evaluations have been approved by the Engineer.
- K. Erection Plan
 - 1. The contractor shall submit, at least thirty (30) days prior to start of erection, an erection procedure. The erection procedure shall include drawings and calculations stamped by an engineer licensed in the Commonwealth of Massachusetts. The drawings and calculations shall be complete and sufficient to enable the Engineer to determine the adequacy of the proposed method. Submit supporting documentation including equipment charts and rigging charts as required to move structural components and complete the erection.
 - 2. The package will be informational and reviewed by the Engineer for completeness and not for accuracy.
 - 3. Construction procedures shall be in compliance with OSHA 1926 and the AASHTO LRFD Bridge Construction Specifications.

1.4 CLOSEOUT SUBMITTALS

A. As-Built Drawings

- 1. After completion of the installation and prior to final acceptance, the Contractor shall submit as-built Drawings of the wall construction stamped by a Registered Professional Engineer in the Commonwealth of Massachusetts

1.5 QUALITY ASSURANCE

- A. Fabricator Qualifications – Contractor shall employ a firm that has at least 5 years successful experience in fabrication of precast concrete units similar to units required for this project. Qualifications shall be made available upon request by the Engineer.
- B. Contractor's Qualifications - Firms with at least 3 years of successful installation on projects with structures, similar to those required for project. Qualifications shall be made available upon request by the Engineer.
- C. Allowable Tolerances
 - 1. Dimensional and erection tolerances shall be in accordance with or as modified herein.
 - 2. Compression test results shall be evaluated in accordance with ACI 214. Concrete strength level will be considered satisfactory if the average of all sets of 3 consecutive strength test results equal or exceed the specified compressive strength and no individual strength test results fall below the specific compressive strength by more than 500 psi.
- D. Source Quality Control
 - 1. One set of 4 compression test cylinders shall be made for each day's production for each type of precast Unit. Make compression test specimens in accordance with ASTM C31. Obtain concrete for specimens from actual production batch. Cure specimens using same methods used for curing precast units.
 - 2. 2 specimens shall be tested at 28 days for acceptance, one shall be tested prior to removing forms, and one shall be tested at seven days. Compression tests shall be conducted in accordance with ASTM C39. Do not remove precast units from forms unless strength tests have been completed and results are equal to, or greater than, minimum required values.
- E. Provide 7 day written notification to the Owner's Project Representative prior to casting the structures. The Engineer may sample the concrete and inspect reinforcement placement at the time of fabrication.
- F. The quality of all materials, the process of manufacture, and the finished sections shall be subject to inspection and approval by the Owner's Project Representative. Such inspection may be made at the place of manufacture, or on the work after delivery, or at both places, and the materials shall be subject to rejection at any time on account of failure to meet any of the Specifications requirements, even though samples may have been accepted as satisfactory at the place of manufacture. Material rejected after delivery to the job shall be marked for identification and shall be removed from the job at once. All materials, which have been damaged after delivery will be rejected, and if already installed, shall be acceptably repaired, if permitted, or removed and replaced, entirely at the Contractor's expense.
- G. At the time of inspection, the materials will be carefully examined for compliance with these Specifications, and with the approved manufacturer's drawings. All sections shall be inspected for general appearance, dimension, "scratch-strength," blisters, cracks, roughness, soundness, etc. The surface shall be dense and close-textured.
- H. Imperfections in sections may be repaired, subject to the approval of the Owner's Project Representative, after demonstration by the manufacturer that strong and permanent repairs result. Repairs shall be carefully inspected before final approval. Cement mortar used for repairs shall have a minimum compressive strength of 4,000 psi. at 7

days and 5,000 psi. at 28 days, when tested in 3 inch by 6 inch cylinders stored in the standard manner. Epoxy mortar may be utilized for repairs subject to the approval of the Engineer.

- I. Plans and calculations for the precast structures shall be approved and stamped by a Structural/Civil Professional Engineer registered in the Commonwealth of Massachusetts.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Equip and protect factory-fabricated product to prevent damage, including chipping and cracking during transportation, storage and handling. Do not install damaged units; replace and remove damaged units from project site at the Contractor's expense.
- B. Deliver all structural precast concrete units to project site in such quantities and at such times to ensure continuity of erection.
- C. Units shall be handled and transported in a position consistent with their shape and design to avoid excessive stresses, damage, or warping due to bending deflections.
- D. Lift and support units only at designated lift points. The design of the lifting hooks shall be the responsibility of the fabricator and used per the fabricator's instructions. Provide permanent lifting hooks on the top.
- E. Protect all lifting devices from rusting by applying red lead primer.
- F. Do not store units on soft ground.
- G. Provide setting diagrams and instructions as required for installation.
- H. Units shall be stored on firm, level and smooth surfaces and protected from contact with soil, staining and other physical damage.
- I. All holes shall be protected from water and from ice during freezing weather.
- J. Units shall be stored so that identification marks are visible.
- K. Damaged, cracked, chipped, or soiled units shall be repaired or removed and replaced without cost to the Owner, regardless of the origin of the defect or damage.
- L. Any unit delivered to the job site that is stained, cracked, or chipped and cannot be repaired or restored in all respects shall not be installed.
- M. Rejection of units will be based on the following criteria:
 - 1. Defects that indicate imperfect proportioning and mixing.
 - 2. Surface defects indicating honeycombed or open texture.
 - 3. Damaged or cracked concrete at support anchors or areas adjacent to inserts and loose inserts.
 - 4. Any continuous crack having a surface width of 0.01-in or more and extending for a length 12-in or more regardless of position in any piece.
 - 5. Surface chips on face that cannot be restored to match the adjacent finish.
 - 6. Exposed reinforcement.
- N. Rejection also will be based on fabrication inspection and test results as follows:

- 1. Incorrect proportioning of materials and use of water in excess of the maximum permissible quantity specified.
- O. Reinforcement is installed with inadequate provision to maintain 1-in. of cover except as approved on shop drawings.

1.7 WARRANTY

- A. Provide a warranty that the structural prestressed and precast units will not spall or show evidence of visible cracking resulting from inferior materials or workmanship for a period of five (5) years from the date of final acceptance of the project. Should any defect develop within this time due to any manufacturing or erection defect, the Contractor agrees to make all necessary repairs or replacements without charge to the Owner.

PART 2 PRODUCTS

2.1 DESIGN REQUIREMENTS

- A. Precast concrete units shall be designed for all applicable loads as indicated in the MassDOT LRFD Bridge Manual. See sheet of the Contract Drawings for additional design requirements.
- B. Precast culvert units shall be mechanically connected and connections shall be recessed. Connections projecting above the face of the precast sections will not be accepted.
- C. Chain link Fence anchorage points:
 - 1. Installation requirements per manufacturer’s recommendations.
 - 2. Live loads on chain link fence per MassDOT LRFD Bridge Design Manual.
- D. Joints between culvert sections shall be made water tight.
- E. Precast unit shall be designed in accordance with the Massachusetts Department of Transportation Bridge Design Manual, ACI 343, and the AASHTO LRFD Bridge Design Specifications.
- F. Comply with applicable requirements of American Society for Testing and Materials (ASTM) standards pertaining to construction and materials for precast structures.
- G. Maximum allowable live load deflection are as follows:

| | | <u>ALLOWABLE LIVE LOAD PLUS DYNAMIC LOAD DEFLECTION</u> |
|----|-----------------------|--|
| | <u>ELEMENT</u> | |
| A. | 1. Bridge Deck | L/800 |

2.2 CONCRETE MATERIALS

- A. Portland Cement - ASTM C150, Type III.
- B. Aggregates - ASTM C33, and as herein specified. Provide aggregates from a single source for exposed concrete.
- C. Local aggregates not complying with ASTM C33, but which have shown by special test or actual service to produce concrete of adequate strength and durability, may be used when acceptable to Engineer.

- D. Water - Potable and free from foreign materials in amounts harmful to concrete and embedded steel.
- E. Air-Entraining Admixture - ASTM C260, not containing calcium chloride.
- F. Water-Reducing Admixture - ASTM C494, Type A, not containing calcium chloride.
- G. Calcium Chloride - Not permitted.

2.3 FORM MATERIALS

- A. Forms shall be of metal or wood. If unlined wood forms are used, they shall be of selected material with tongue and groove joints and shall be kept continuously wet to prevent shrinking and warping due to exposure to the elements. Nonstaining form oil shall be used.
- B. Forms shall be sufficiently tight to prevent leakage of mortar.
- C. Forms shall be accurately constructed, mortar-tight, of sufficient strength to withstand pressures due to concrete placing operations and temperature changes.
- D. Coat surface of forms with bond-breaking compound before reinforcement is placed. Provide a commercial formulation form-coating compound that will not bond with, stain, nor adversely affect concrete surfaces, and will not impair subsequent treatments of concrete surfaces requiring bond or adhesion. Apply in compliance with manufacturer's instructions.

2.4 REINFORCEMENT

- A. Reinforcement shall be clean of loose rust and mill scale, earth and other materials, which reduce or destroy bond with concrete.
- B. Reinforcing steel shall be new billet steel conforming to ASTM Specification A615 (latest edition), Grade 60.
- C. Reinforcement shall be accurately positioned, supported, and secured against displacement by formwork construction, or concrete placement operations. Locate and support reinforcement by metal chairs, runners, bolsters, spacers and hangers, as required. Welding of reinforcement is strictly prohibited.
- D. Place reinforcement to obtain at least the minimum coverage for concrete reinforcing protection. Minimum allowable cover shall be $\frac{3}{4}$ inch.

2.5 GROUT MATERIALS

- A. Non-metallic Shrinkage-Resistant Grout - Pre-mixed, non-metallic, non-corrosive, non-staining product containing selected silica sands, Portland cement, shrinkage compensating agents, plasticizing and water reducing agents. Compressive strength not less than 10,000 psi. at 28 days.
 - 1. Products - Subject to compliance with requirements, provide one of the following:
 - a. Eucocrete; Euclid Chemical Co.
 - b. Crystex; L&M Construction Chemicals
 - c. Masterflow 713; Master Builders

- d. Five Star Grout; U.S. Grout Corp.
- e. Upcon; Bostik Construction Products
- f. or equal.

2.6 CONCRETE SEALANT

- A. Concrete sealant for Portland cement concrete surfaces used to protect surfaces from chloride intrusion shall be a penetrating sealer and one of the following acceptable products:
 1. SIL-ACT ATS-100LV, manufactured by Advanced Technologies
 2. MasterProtect H 400, manufactured by BASF
 3. Weather Worker 100% J29A, manufactured by Dayton Superior
 4. BARACADE WB 244, manufactured by Euclid Chemical
 5. SLX100 Water & Oil Repellent, manufactured by Prosoco Inc
 6. Powerseal 40, manufactured by Vexcon Chemicals

2.7 COMPRESSIBLE FILLER

- A. Compressible filler shall consist of a multiple-web design composed of polychloroprene and functions only by compression of the seal between the faces of the joint with the seal folding inward at the top to facilitate compression.
- B. Seal is installed with a lubricant adhesive and is designed to seal the joint and reject incompressibles.
- C. The compression seal and lubricant-adhesive shall conform to AASHTO M 297.

2.8 PROPORTIONING AND DESIGN OF MIXES

- A. Prepare design mixes for each type of concrete required.
- B. Design mixes may be prepared by independent testing facility or by qualified precast manufacturing plant personnel, at precast manufacturer's option.
- C. Produce standard-weight concrete consisting of the specified Portland cement, aggregates, admixtures, and water to produce the following properties.
 1. Compressive strength; 5,000 psi. minimum at 28 days.
 2. Air entrainment shall be 4.5% plus or minus 1%.
- D. Admixtures
 1. Use air-entraining admixture in concrete, unless otherwise indicated.
 2. Use water-reducing admixtures in strict compliance with manufacturer's directions. Admixtures to increase cement dispersion, or provide increased workability for low-slump concrete, may be used.
 3. Use amounts as recommended by admixture manufacturer for climatic conditions prevailing at time of placing. Adjust quantities of admixtures as required to maintain quality control.

2.9 FABRICATION

- A. General - Fabricate precast concrete units complying with manufacturing and testing procedures, quality control recommendations, and dimensional tolerances specified for the type of unit required.
- B. Clean reinforcement of the loose rust and mill scale, earth and other materials that reduce or destroy bond with concrete.
- C. Place concrete in a continuous operation to prevent formation of seams or planes of weakness in precast units. Thoroughly consolidate placed concrete by internal and external vibration without dislocation or damage to reinforcement and built-in items.
- D. Identification - Provide permanent markings to identify pickup points and orientation in structure, complying with markings indicated on final shop drawings. Imprint date of casting on each precast unit on a surface, which will not show in finished structure.
- E. Fabricate precast concrete units as detailed in accordance with approved erection drawings and to meet requirements of these specifications.
- F. All surfaces of the precast structure shall be smooth, even and free from roughness, irregularities and other defects, and shall be suitable for receiving the interior and exterior finishes specified elsewhere herein.
- G. The precast concrete structures shall be constructed to the lengths, widths and heights as shown on the Plans.
- H. The precast concrete structures shall have minimum wall, floor and roof thickness of 8 inches. The structures shall have a design loading in accordance with AASHTO-HS20-44 and be constructed of 5,000 psi. 28 days strength concrete. Reinforcing steel shall be in accordance with ASTM A615 Grade 60 with a minimum of 1 inch of concrete cover.

2.10 ACCEPTABLE PRECAST STRUCTURE MANUFACTURERS

- A. Manufacturers - Subject to compliance with requirements, provide prefabricated unit of one of the following:
 - 1. Arrow Concrete Products, Inc.
 - 2. American Precast Corp.
 - 3. Chase Precast
 - 4. Old Castle/Rotondo & Sons, Inc.
 - 5. Ditullio & Sons, Inc.
 - 6. Utility Vault Co.
 - 7. TRENWA
 - 8. or equal
- B. Pre-cast elements comprising each structure (e.g., the culvert, headwall, footings, wingwall, etc) shall be compatible, supplied by one manufacturer and shall be consistent in appearance.

2.11 BACKFILL MATERIALS

- A. All backfill material used in wall construction shall be as specified by the wall designer on the approved wall plans. Backfill material requirements shown on the Drawings indicate the maximum particle size and maximum percentage of fines acceptable for use in the wall design. On-site material is not expected to be suitable as wall backfill.

PART 3 EXECUTION

3.1 FOUNDATION PREPARATION

- A. The foundation for the structure shall be graded level for a width as shown on the submitted wall plans. Prior to structure installation, the foundation, if not on sound, intact, bedrock, shall be compacted as indicated on the submitted shop drawings. Any foundation soils found to be unsuitable shall be removed and replaced as directed by the Engineer. Subgrade preparation shall be performed in accordance with Section 02315.

3.2 INSPECTION

- A. Installer must examine areas and conditions under which each structure is to be installed, and notify Contractor in writing of those conditions detrimental to proper completion of work. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Contractor.

3.3 INSTALLATION OF FACTORY-FABRICATED UNITS

- A. General - Install structure as indicated, in accordance with manufacturer's written instructions, and in accordance with recognized industry practices to ensure compliance with requirements and intended purposes. Joints between abutting precast units shall be mechanically connected, watertight, grouted, and membraned.
- B. Mortaring Keyways – After precast concrete units have been placed and secured, grout open spaces at connection and joints as follows:
 - 1. Shrinkage-resistant grout consisting of premixed compound and water to provide a flowable mixture without segregation or bleeding.
 - 2. Provide forms or other acceptable method to retain grout in place until sufficiently hard to support itself. Pack spaces with still grout material, tamping until voids are completely filled. Place grout to finish smooth, plumb, and level with adjacent concrete surfaces. Keep grouted joints damp for not less than 24 hours after initial set. Promptly remove grout material from exposed surfaces before it hardens.

3.4 DAMPPROOFING

- A. Below-grade outer surfaces of precast units shall be given two coats of bituminous dampproofing at the rate of 30-60 sq. ft. per gallon in accordance with manufacturer's instructions.

3.5 BACKFILLING

- A. General - Delay backfilling of excavation until after Owner's Project Representative's inspection has been completed. Backfilling shall be in accordance with Section 02315.

END OF SECTION

DIVISION 07

THERMAL AND MOISTURE PROTECTION

SECTION 07130

SHEET MEMBRANE WATERPROOFING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Sheet Membrane Waterproofing
 - 2. Protection Course
 - 3. Drainage Composite

1.2 REFERENCES

- A. ASTM D 412 – Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers -Tension
- B. ASTM D 570 – Standard Test Method for Water Absorption of Plastics
- C. ASTM D 751 – Standard Test Methods for Coated Fabrics
- D. ASTM D 882 – Standard Test Method for Tensile Properties of Thin Plastic Sheeting
- E. ASTM D 1970 – Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection
- F. ASTM D 3767 – Standard Practice for Rubber – Measurement of Dimensions
- G. ASTM E 96 (B) – Standard Test Method for Water Vapor Transmission of Materials
- H. ASTM E 154 – Standard Test Method for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover

1.3 SYSTEM DESCRIPTION

- A. Product is a self-adhesive membrane of not less than 60 mils thickness, consisting of a rubberized asphalt membrane laminated to a 4 mil cross-laminated polyethylene film.

1.4 SUBMITTALS

- A. Manufacturer's product literature and installation instructions
- B. Documentation stating manufacturer's acceptance of subcontractor as an approved applicator for the specified materials
- C. Sample warranty identifying the terms and conditions stated in Section 1.8

1.5 QUALITY ASSURANCE

- A. Comply with applicable codes, regulations, ordinances, and laws regarding use and application of products that contain volatile organic compounds (VOC).
- B. Prior to beginning work, convene a conference to review conditions, installation procedures, schedules and coordination with other work.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to project site in original, factory-sealed, unopened containers bearing manufacturer's name and label intact and legible with following information.
 - 1. Name of material
 - 2. Manufacturer's stock number and date of manufacture
 - 3. Material safety data sheet
- B. Store materials in protected and well ventilated area.

1.7 PROJECT CONDITIONS

- A. Do not apply membrane when surface temperature is below or inclement weather conditions conflict with manufacturer's published requirements.
- B. Coordinate waterproofing work with other trades. The approved applicator shall have sole right of access to the specified areas for the time needed to complete the installation.
- C. Warn personnel against breathing of vapors and contact of material with skin or eyes. Wear applicable protective clothing and respiratory protection gear.
- D. Keep flammable products away from spark or flame. Do not allow the use of spark producing equipment during application and until all vapors have dissipated. Post "NO SMOKING" signs.
- E. Maintain work area in a neat and orderly condition, removing empty containers, rags, and rubbish daily from the site.

1.8 WARRANTY

- A. Upon completion and acceptance of the work required by this section, the manufacturer shall issue a warranty agreeing to promptly replace defective materials for a period of 5 years at no cost to the Owner.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Provide Sheet Membrane Waterproofing from one of the following manufacturers.
 - 1. MiraDRI 860/861 by Carlisle Coatings and Waterproofing Incorporated.
 - 2. Bituthane System 4000 by Grace Construction Products.
 - 3. Or equal.

2.2 PRODUCTS

- A. Self-Adhesive Sheet Membrane Waterproofing shall consist of a 56 mil rubberized asphalt membrane laminated to 4 mil cross-laminated polyethylene film, and shall meet or exceed the following requirements:
 - 1. Tensile Strength: 325 psi minimum, ASTM D 412
 - 2. Ultimate Elongation: 300% minimum, ASTM D 412
 - 3. Puncture Resistance: 50 lbs. minimum, ASTM E 154
 - 4. Permeance: 0.05 Perm maximum, ASTM E 96 (B)

5. Low Temperature Flexibility: Unaffected at -45°F, ASTM D 1970, 1" mandrel
6. Tensile to Film: 5000 psi, ASTM D 882
7. Thickness: 60 mils, ASTM D 3767
8. Hydrostatic Head: 230 ft., ASTM D 751
9. Water Absorption: 0.1% by wt., ASTM D 570

2.3 ACCESSORY PRODUCTS

- A. Surface Primer: Water-based primer.
- B. Mastic: Mastic recommended by manufacturer for each condition.
- C. Sealants: Two-component polyurethane sealant by membrane manufacturer.
- D. Backing Rod: Closed-cell polyethylene foam rod.
- E. Protection Course: Recommended product by manufacturer for horizontal or vertical surfaces.
- F. Drainage Composite: Recommended by the manufacturer for each condition.

PART 3 EXECUTION

3.1 INSPECTION

- A. Before any waterproofing work is started the approved applicator shall examine all surfaces for any deficiencies. Should any deficiencies exist, the Owner, Engineer, and Contractor shall be notified in writing and corrections made.
- B. Condition of Concrete Surfaces:
 1. The concrete surfaces shall be of sound structural grade and shall have a smooth finish, free of fins, ridges, protrusions, rough spalled areas, loose aggregate, exposed coarse aggregate, voids or entrained air holes. Rough surfaces shall receive a well-adhered parged coat.
 2. Concrete shall be cured by water curing method. Any curing compounds must be of the pure sodium silicate type and be approved by the manufacturer's representative.
 3. Concrete shall be cured at least 7 days and shall be sloped for proper drainage.
 4. Voids, rock pockets and excessively rough surfaces shall be repaired with approved non-shrink grout or ground to match the unrepaired areas.
 5. Surfaces at cold joints shall be on the same plane.

3.2 SURFACE PREPARATION

- A. The concrete surface shall be clean, dry and free from any surface contaminants or cleaning residue that may harmfully affect the adhesion of the membrane.
- B. Install a 3/4 inch face, 45 degree cant of polyurethane sealant at all angle changes and inside corners including penetrations through the deck, walls, curbs, etc.

- C. Cracks greater than 1/16 inch in width and all moving cracks less than 1/16 inch in width shall be routed out to 1/4 inch minimum in width and depth and filled flush with polyurethane sealant.
- D. Expansion joints less than 1 inch wide shall be cleaned, primed, fitted with a backing rod and caulked with polyurethane sealant. For larger joints, use standard detail recommended by membrane manufacturer.
- E. Allow sealant to cure overnight.
- F. Stir primer. Apply a thin film of primer 10 inches wide, centered over sealed cracks and joints, hairline cracks, and cold joints. Apply primer 8 inches on each side of all corners. Prime concrete around drain flanges. Allow primer to dry per manufacturer's recommendations.
- G. Install an 8 inch wide strip of sheet membrane centered over joints and cracks. Install a 12 inch wide strip of sheet membrane centered over the axis of all corners.

3.3 APPLICATION

- A. Priming: Clean surfaces to remove residual dust before priming. Stir primer. Apply by spray or roller at a rate recommended by manufacturer. Allow to dry per manufacturer's recommendation.
- B. Horizontal surfaces: Install sheet membrane from low to high point, so that laps will shed water. Overlap edge seams 2½ inches, end laps 5 inches. Stagger end seams. Roll in place with an 18 to 24 inch wide, 100 lb. (min.) resilient roller. Ensure that laps are firmly adhered and that there are no gaps or fish-mouths.
- C. Vertical Surfaces: Apply in lengths of 8 feet or less. Overlap edge seams 2½ inches. On walls over 8 feet high, apply in 8 foot sections, starting at the lowest point with the higher section overlapping the lower section 5 inches. Roll in place using firm pressure with a hand roller.
- D. Terminations: Consult manufacturer's standard details for proper terminations. Roll terminating edges firmly. Apply mastic to terminations and "T" joints. Apply mastic to laps at angle changes, extending 9 inches in each direction.

END OF SECTION

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Arnold Pond Dam Removal Project

Technical Specifications

Commonwealth of Massachusetts
Department of Fish and Game
Division of Fisheries and Wildlife

October 2024



Tighe & Bond

53 Southampton Road
Westfield, MA 01085

Arnold Pond Dam Removal Project
Commonwealth of Massachusetts Department of Fish and Game
Division of Fisheries and Wildlife

Sutton, MA
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**Arnold Pond Dam Removal Project
Commonwealth of Massachusetts Department of Fish and Game
Division of Fisheries and Wildlife**

**Sutton, MA
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END OF SECTION

DIVISION 01

GENERAL REQUIREMENTS

SECTION 01110

SUMMARY OF WORK

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Work of the Contract is shown and described in Drawings and Project Manual entitled:

Arnold Pond Dam Removal Project
Massachusetts Division of Fisheries and Wildlife
Town of Sutton
October 2024

Tighe & Bond, Inc.
Consulting Engineers
Westfield, Massachusetts

2. The Work includes the following major items:
 - a. Mobilization and site preparation, including clearing and grubbing;
 - b. Implementation of erosion and sediment controls at project area;
 - c. Lower impoundment level, and install water controls;
 - d. Removal of outlet structure and selective demolition of stone masonry walls;
 - e. Abandonment of existing culvert;
 - f. Removal of full vertical extent of dam;
 - g. Installation of pedestrian bridge and associated cast-in-place concrete abutments;
 - h. Sediment excavation and placement;
 - i. Construction of footpath;
 - j. Installation of removable bollards; and
 - k. Site restoration including loam and seed.

1.2 SUBMITTALS

A. Informational Submittals

1. Submit copies of permits or approvals required for the Work, prior to initiating the Work.

1.3 PROJECT/SITE CONDITIONS

A. Permits

1. Obtain the permits and approvals listed below:

- a. Permits and licenses of a temporary nature necessary to perform the Work.
 - b. Permits for disposal of construction wastes including disposal of cleared and grubbed materials.
 - c. Other permits or licenses required for the Contractor's operations or required elsewhere in the Contract Documents and not included herein.
2. Comply with the permits and approvals listed below:
 - a. Town of Sutton Conservation Commission Order of Conditions. A copy of the Order of Conditions is included.
 - b. 401 Water Quality Certification from the Massachusetts Department of Environmental Protection. A copy of the Water Quality Certification is included.
 - c. Section 404 General Permit Pre-Construction Authorization from the Army Corps of Engineers. A copy of the Individual Permit is included.
 - d. M.G.L Chapter 253 Dam Safety Permit. A copy of the individual permit is included.
 3. Obtain required time extensions to permits obtained by the Contractor, if construction authorized by permits has not been completed by the expiration date noted on these permits.
 4. Obtain permits and approvals from appropriate jurisdictional agencies and property owners for use of premises not furnished by the Owner, and for all off-site areas.
 5. Submit copies of permits prior to performance of Work authorized by permits.
- B. Existing Conditions
1. Use of Premises and Off-site Work
 - a. The Work shall occur on the Owner's property and Town Property. Keep to the limits of Work shown on the Drawings.
 - b. Land available for staging and is shown on the Drawings.
 - c. Obtain permits and approvals for use of any land and access thereto that is deemed necessary for the Work, where such land is not available for use by the Owner, including land for temporary construction facilities, access and egress, or for storage of materials. Confine apparatus and storage to such additional areas.
 - d. Obtain permits and written approvals from appropriate jurisdictional agencies for the use of premises not available for use by the Owner, including all offsite staging areas, borrow pits and waste areas. Submit copies of all permits and approvals to the Owner prior to using areas.
 - e. Provide for the disposal of waste materials off-site in accordance with all applicable laws.
 - f. Adhere to the limits of Work as indicated, to minimize obstruction to traffic and inconvenience to the Owner, general public, and residents in the vicinity of the Work, and to protect people and property.

- g. Maintain functioning gutters, stormwater systems, drainage ditches, and culverts.
- h. Maintain public access to businesses and residences including driveways and parking lots at all times during the Work.

PART 2 PRODUCTS

2.1 MATERIALS FURNISHED BY OWNER

- A. The Owner will not furnish any materials, labor or equipment under this Contract.

PART 3 EXECUTION – NOT USED

END OF SECTION

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SECTION 01140

WORK RESTRICTIONS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Work Schedule
2. Available Work Area
3. Site Usage Plan

B. Related Requirements

1. Section 01310 - Coordination
2. Section 01325 - Scheduling of Construction

1.2 SUBMITTALS

A. Incorporate the requirements of this Section in the project schedule submitted under Section 01325.

B. Action Submittals

1. Submit site usage plan within thirty (30) days of the Notice to Proceed.

1.3 WORK SCHEDULE

A. Conduct the Work during daylight hours on Monday through Friday, and within the time between 7:00 a.m. and 5:00 p.m. No work is to be done on Owner's holidays, Saturdays, Sundays or outside of the work hours described above unless approved in advance by the Owner or Engineer.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 AVAILABLE WORK AREA

A. Limits of construction are defined on the Drawings. No work will be permitted to be performed outside these boundaries.

3.2 SITE USAGE PLAN

A. Locations of available staging areas are shown on the Drawings.

B. Submit a site usage plan showing all proposed staging areas, locations of all office and storage trailers, and material laydown areas. The site usage plan should be a drawing showing the proposed locations and shall include on-site traffic modifications and temporary utilities as may be applicable.

END OF SECTION

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SECTION 01290

APPLICATION AND CERTIFICATES FOR PAYMENT

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Definition and description of measurement and payment to be used for the Work
 - 2. Payment procedures
 - 3. Payment requests for stored materials
- B. Related Requirements
 - 1. Section 01295 - Schedule of Values

1.2 GENERAL

- A. The following paragraphs describe payment procedures for the work to be done under the respective items in the Bid Form.
- B. Each lump sum will be deemed to include an amount considered by the Contractor to be adequate to cover the Contractor's overhead and profit for each separately identified item.
- C. Except as provided for in Section 01295, no separate measurement or payment will be made for Work called for in Division 0 or Division 1 of the Contract Specifications, unless specifically covered under the Bid items listed below. All costs associated with this Work will be considered incidental to the Contract Bid price.
- D. Division 2 through Division 7 Work will be measured and paid for at the Contractor's lump sum Bid price as indicated on the Bid form. Those payable Work items, and related prices as Bid, will be the basis for all compensation to the Contractor for Work performed under this Contract. Work not specifically included as a Bid item, but which is required to properly and satisfactorily complete the Work is considered ancillary and incidental to the Bid item Work, and payment for such Work is considered to be included in the values as Bid for payable items.

1.3 LUMP SUM ITEMS

- A. Each lump sum price stated in the Bid form shall constitute full compensation for all labor, equipment and materials necessary and required to complete the work specified under that particular item, and also all costs for doing related work as set forth in the Contract Documents or implied in carrying out their intent.
- B. Item 2 – Arnold Pond Dam Removal
 - 1. Measurement
 - a. There will be no measurement of quantities for lump sum items. Periodic partial payments for this Work, included under the Agreement, shall be based on the percent completion of each work item listed in the Schedule of Values provided under Section 01295 estimated by the Contractor and approved by the Engineer.

2. Payment

- a. The lump sum payment shall be full compensation for furnishing all labor, materials, tools, equipment, and services necessary for the construction of the removal of Arnold Pond Dam in its entirety as detailed in the Contract Documents.

1.4 PAYMENT PROCEDURES

A. Informal submittal: Unless otherwise directed by the Engineer:

1. Make an informal submittal of request for payment by filling in, with erasable pencil, pertinent portions of EJCDC C-620, Contractor's Application for Payment, plus continuation sheet or sheets.
2. Make this preliminary submittal to the Engineer at the last regular job meeting of each month.
3. Revise the preliminary submittal as approved by the Engineer and incorporate the approved payments into the formal submittal.

B. Formal submittal: Unless otherwise directed by the Engineer:

1. Make formal submittal of request for payment by filling in the agreed data, by typewriter or electronically on EJCDC C-620, Contractor's Application for Payment, plus continuation sheet or sheets.
2. Sign and notarize the Application for Payment.
3. Submit the original of the Application for Payment, plus six identical copies of the continuation sheet or sheets, to the Engineer.
4. The Engineer will compare the formal submittal with the approved informal submittal and, if acceptable, will sign the Contractor's Application for Payment, and present the Application to the Owner.
5. Provide a signed and notarized Certificate for Stored Materials and proof of storage in a dry, watertight, heated and insured warehouse facility.

1.5 PAYMENT REQUESTS FOR STORED MATERIALS

- A. Requests for payment for stored materials shall be accompanied by the attached "Certificate for Stored Materials" form. Payment for stored materials shall not exceed the value actually paid by the Contractor for the stored materials as evidenced by the accompanying bill of sale, invoice, or other documentation.
- B. Partial payment requests for materials stored or so-called "engineering costs" by equipment manufacturers will not be allowed. All such costs shall be distributed proportionately among the various items of equipment/hardware to be furnished.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

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CERTIFICATE FOR STORED MATERIALS

2209440056/10/08/24

01290-2

Application and Certificate
for Payment

Tighe & Bond Project No.

We, _____, request payment for materials and/or equipment not incorporated in the work included under our firm's contract with _____ as listed below.

We hereby certify under penalty of perjury, that the materials not incorporated in the work have been delivered and are securely stored at the site or at _____ and that we have title to said materials free and clear of all Liens, as evidenced by the attached bill of sale, invoice, or other documentation.

We also certify that an inventory of said materials and/or equipment has been compiled for the purposes of this monthly partial payment request. This list of materials and/or equipment, including unit prices for said material not incorporated in the work for which payment is hereby requested, consisting of _____ pages and dated _____, is signed and attached hereto.

We acknowledge that payments made based on this request for materials and/or equipment not incorporated in the work does not relieve the contractor of its responsibility for furnishing all materials and equipment required for the satisfactory completion of the project pursuant to the contractual requirements.

We further certify that we can and will adequately protect said materials and/or equipment until they are incorporated in the work; that they meet the requirements of the specifications, and that they will be needed for incorporation in the work in the near future.

IN WITNESS WHEREOF, we, the said _____ h-
ereunto set our hand and seal this _____ day of _____, 20__.

Contractor's Firm Name

SIGNED, SEALED AND DELIVERED IN THE PRESENCE OF

By _____

Title _____

Notary Public

SCHEDULE OF STORED MATERIALS

Job No. _____
 Contract No. _____
 Contractor: _____
 Location: _____

Date _____
 Pay Estimate _____

| Item | Description | Supplier/Manufacturer | Quantity Stored and not Incorporated | Unit \$ | Certified Value |
|------|-------------|-----------------------|--|---------|-----------------|
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| | | | | | |

Signature: _____
 Contractor's Principal

Total Amount Due for Stored Materials _____

Title: _____

SECTION 01295

SCHEDULE OF VALUES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Schedule of Values

1.2 SUBMITTALS

- A. Action Submittals
 - 1. Submit 3 copies of the Schedule of Values for approval within 10 days after the Effective Date of the Agreement.

1.3 SCHEDULE OF VALUES

- A. Schedule of Values shall be a detailed breakdown of the lump sum Work items showing values allocated to the various elements of the Work.
- B. The format of the Schedule of Values shall be a breakdown by Specification Section and content and shall be submitted on EJCDC C-620, Contractor's Application for Payment. The Engineer may require additional detailed documentation to support the values in the form of executed purchase orders, subcontracts, or other agreements.
- C. The Engineer will determine the level of breakdown and detail required. The breakdown shall include materials, installation, and start-up for equipment and controls where applicable. The final document will be the basis of payment requests for the duration of the Contract. No progress payment will be made until the Schedule of Values is approved by the Engineer.
- D. An unbalanced Schedule of Values providing overpayment on items of work performed first will not be accepted.
- E. At the Contractor's option, items for mobilization and demobilization may be included in the Schedule of Values. The combined value shall not exceed 5 percent of the Contract Price, and the values for mobilization and demobilization shall be equal. Payment for mobilization will be included in the first payment request after the Contractor has initiated full-time construction activity. Payment for demobilization will be included in the first payment request after Substantial Completion has been reached and all equipment has been removed from the Site.
- F. At the Contractor's option, an item for bonds and insurance may be included in the Schedule of Values. If included, requests for payment including values for bonds and insurance shall be accompanied by matching invoices.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

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SECTION 01310

COORDINATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Project Management
 - 2. Coordination
 - 3. Project Meetings
- B. Related Requirements
 - 1. Section 01140 - Work Restrictions
 - 2. Section 01325 - Scheduling of Construction

1.2 SUBMITTALS

- A. Incorporate the requirements of this Section, as well as Work which may impact the existing system operation, or the operations of any adjacent utility, in the project schedule submitted under Section 01325.
- B. A resume for the full-time superintendent proposal for approval by the Owner and Engineer.
- C. Informational Submittals
 - 1. At the pre-construction conference, supply to the Owner the cell phone number of a responsible person who may be contacted during off-hours for emergencies 24 hours a day, seven days a week.
 - 2. Prepare a contact list of phone numbers, including cell phone numbers, and emails for all Project personnel and submit to the Engineer within one week after the pre-construction conference. Include Contractor, Owner, Engineer, and Town personnel including police, fire, and ambulance.

1.3 PROJECT MANAGEMENT

- A. Retain a full-time Superintendent, satisfactory to the Owner and Engineer. The Superintendent shall not be changed except with the consent of the Owner and Engineer. The Superintendent shall be in full charge of the Work.
- B. Complete the Work in a continuous uninterrupted operation. Use sufficient personnel and adequate equipment to complete the Work within the Contract Time.

1.4 COORDINATION

- A. Coordinate with appropriate utility companies, as well as with the Owner, where the Work crosses or is adjacent to existing utilities.

1.5 PROJECT MEETINGS

- A. Pre-Construction Conference

1. The Contractor shall be prepared to discuss the following subjects at the Pre-Construction Conference. Documentation for these items is required to be submitted within the time frames included in individual specification sections.
 - a. Project scheduling
 - b. Sequencing of critical path Work items
 - c. Shop Drawing procedures
 - d. Project changes and clarification procedures
 - e. Use of sites, access to Work areas, office and storage areas, security and temporary facilities
 - f. Contractor safety plan and representative
 - g. Progress payments and procedures
 - h. Required documentation
 - i. Project personnel contact list

B. Progress Meetings

1. Progress meetings will be held every two (2) weeks and at other times as requested by the Owner or as required by the Progress of the Work.
2. The Contractor's Superintendent shall attend all progress meetings.
3. At a minimum, progress meetings will review Work progress, schedule, Shop Drawing submission schedule, Applications for Payment, and other matters needing discussion and resolution.
4. Review the schedule with all parties to be affected by upcoming work.
5. Review the monthly construction report required under Section 01325.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 GENERAL

- A. Notify DIGSAFE at 1-888-344-7233 at least 72 hours prior to any digging, trenching, rock removal, demolition, borings, backfill, grading, landscaping, or any other earth moving operations.

3.2 COORDINATION WITH THE TOWN OF SUTTON

- A. Notify the Owner, Engineer, and Town of Sutton in writing, a minimum of two (2) weeks in advance of commencing Work on site. Work on site shall not occur until necessary permits are obtained.

3.3 SEQUENCE OF CONSTRUCTION

- A. Provide a detailed construction schedule as required in Section 01325.

END OF SECTION

SECTION 01320

CONSTRUCTION PHOTOGRAPHS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Photographs taken at specified intervals before, during and after construction.

1.2 SUBMITTALS

A. Informational Submittals

1. Submit electronic files of each photograph on a CD or USB flash drive.

PART 2 PRODUCTS

2.1 CONSTRUCTION PHOTOGRAPHS

A. Electronic files shall be in .jpg format.

PART 3 EXECUTION

3.1 PRE-CONSTRUCTION PHOTOGRAPHY

- A. Prior to the commencement of any Work under this Contract, take photographs at each location at fifty (50) foot intervals along the entire length of the dam. The photographs will serve as a record of the original conditions where construction activities will occur.
- B. The area to be photographed shall include, but not be limited to, the area within and adjacent to the proposed construction, including roadways, utilities, driveways, landscaping, trees, structures and buildings.
- C. Provide a minimum of thirty (30) preconstruction photographs, or more as required to document the preconstruction condition of the Site and adjacent properties.

3.2 PROGRESS PHOTOGRAPHY

- A. Take construction photographs at least weekly or before future activities will prevent capturing the work completed within active work areas throughout the life of the Contract. The photographs shall be indicative of the work that is currently in progress. A minimum of ten (10) photographs shall be taken at each scheduled interval at each location where work is in progress.
- B. Take post construction photographs at locations in sufficient quantity to document final conditions of the dam. Provide a minimum of thirty (30) post construction photographs taken at the same locations as the preconstruction photograph.

END OF SECTION

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SECTION 01325

SCHEDULING OF CONSTRUCTION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Progress Schedule
 - 2. Cash Flow Projections
- B. Related Requirements
 - 1. Section 01140 - Work Restrictions
 - 2. Section 01310 - Coordination

1.2 REFERENCES

- A. The Use of CPM in Construction - A Manual for General Contractors and the Construction Industry, an Associated General Contractors (AGC) of America publication.
- B. The Contractor shall complete all Work no later than December 30, 2025.

1.3 PROGRESS SCHEDULE

- A. Graphically show the order and interdependence of activities, sequence of Work, how the start of a given activity depends on completion of preceding activities, and how completion of an activity may restrain the start of subsequent activities.
- B. The Work shall be planned by the Contractor and his Project field superintendent in coordination with all Subcontractors and Suppliers whose Work is shown on the Progress Schedule.
- C. Include, at a minimum, the following activities on the Progress Schedule:
 - 1. Project mobilization
 - 2. Submittal and approval of Shop Drawings
 - 3. Procurement of equipment and critical materials
 - 4. Installation of equipment and critical materials
 - 5. Fabrication of special equipment and material, and its installation and testing
 - 6. Final inspecting and testing
 - 7. Punchlist
 - 8. Final cleanup
 - 9. Other activities that may be critical to the Progress Schedule
 - 10. All activities of the Owner and the Engineer which affect progress and/or affect required dates for completion of the Work

- D. Take into consideration Shop Drawing submittal and approval time, the delivery times of equipment and materials, Subcontractors' Work, availability and abilities of workmen, weather conditions, any restrictions in operations at the Work site, and all other items that may affect completion of the Work within the Contract Time.
- E. The Progress Schedule shall reflect the requirements and constraints outlined in Section 01310, Coordination.
- F. The Progress Schedule shall reflect Work restrictions outlined in Section 01140.
- G. Show information in such detail that duration times of activities will range from one to 15 days. The selection and number of activities shall be subject to the approval of the Owner and Engineer.
- H. The Progress Schedule should show a description of each activity, and activity duration in calendar days.

1.4 CASH FLOW PROJECTIONS

- A. If requested by the owner, with the progress schedule, show projected pay application quantities on a monthly basis.

1.5 SUBMITTALS

- A. Informational Submittals
 1. Submit four prints of the preliminary Progress Schedule prepared in accordance with the requirements of this section. Progress schedule must be submitted within 10 days after the Effective Date of the Agreement. Progress Schedule must be approved by the Owner and Engineer before the first progress payment will be made.
 2. Revised analyses - Within 10 days after receipt of the review comments, submit four prints of the Progress Schedule revised in accordance with those comments.
 3. Periodic reports - On the first progress meeting of each month, submit four prints of the updated Progress Schedule, as well as a report of construction activities in the prior month.
 4. Before initiating the Work, submit an estimated monthly rate of Contractor payments for the project. If the payment schedule deviates from the original projection, submit a revised rate of expenditure schedule.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

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SECTION 01330

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Action Submittals
 - 2. Informational Submittals

1.2 DEFINITIONS

- A. Action Submittals – includes written and graphic information submitted by Contractor that requires Engineer’s approval.
- B. Informational Submittals – includes information submitted by Contractor that does not require Engineer’s approval. The Engineer will acknowledge receipt of such documents and provide comments when the submittals lack the detail required by the Contract Documents.

1.3 ACTION SUBMITTALS

- A. Shop Drawings
 - 1. 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 drawings, schedule information, piece part drawings, actual shop work manufacturing instructions, special wiring diagrams, coordination drawings, individual system or equipment inspection and test reports including performance curves and certification, as applicable to the Work.
 - 2. Shop Drawings shall be of standardized sizes to enable the Owner to maintain a permanent record of the submissions. Approved standard size drawings shall be
 - a. 24 inches by 36 inches
 - b. 22 inches by 34 inches
 - c. 11 inches by 17 inches
 - d. 8.5 inches by 11 inches
 - 3. Submit Shop Drawings at the proper time to prevent delays in delivery of materials. Coordinate submittals for related or interdependent equipment.
 - 4. Advise the Engineer in writing of any deviations from the requirements of the Contract Documents.
 - 5. Check all Shop Drawings regarding measurements, size of members, materials, and details to determine if they conform to the Contract Documents. Shop Drawings found to be inaccurate, not in compliance, or otherwise in error shall be returned to the Subcontractors or Suppliers for correction before submission to the Engineer. Drawings that are current shall be marked with the date, name, and approval stamp of the Contractor.

6. All details on Shop Drawings submitted for approval shall show clearly the relation of the various parts to the main members and lines of the structure, and where correct fabrication of the work depends upon field measurements, such measurements shall be made and noted on the Shop Drawings before being submitted for approval.
 7. Detailed installation drawings shall be drawn to scale and fully dimensioned.
 8. No material or equipment shall be purchased or fabricated until the required Shop Drawings have been submitted and approved. Materials and equipment and the work involved in their installation or incorporation into the Work shall then be as shown in and represented by the Shop Drawings.
 9. Until the necessary approval has been given, do not proceed with any portion of the work, the design or details of which are dependent upon the design or details of work, materials, equipment or other features for which approval is required.
 10. If submitted equipment requires modifications to the structures, layout, or other details shown on the Drawings, details of the proposed modifications must also be submitted for approval. If such equipment and modifications are approved, perform all Work necessary to make such modifications at no additional cost to the Owner.
- B. Product Data: Product data as specified in individual Sections, include, but are not necessarily limited to, standard prepared data for manufactured products (catalog data), such as the manufacturer's product specification and installation instructions, availability of colors and patterns, manufacturer's printed statements of compliances and applicability, roughing-in diagrams and templates, catalog cuts, product photographs, standard wiring diagrams, printed performance curves and operational-range diagrams, production or quality control inspection and test reports and certifications, mill reports, product operating and maintenance instructions and recommended spare-parts listing, and printed product warranties, as applicable to the Work.
- C. Samples and color selection charts: Provide sample, when requested by individual Specification to establish conformance with the Specifications, and as necessary to define color, texture and pattern selections available.
- D. Product Substitutions: In accordance with Section 01630.
- E. Schedule of Values: In accordance with Section 01295.
- F. Site Usage Plan: In accordance with Section 01140.

1.4 INFORMATIONAL SUBMITTALS

- A. Schedule of Submittals
1. Submit a preliminary Schedule of Submittals within 10 days of the Effective Date of the Agreement.
- B. Schedule of Manufacturers and Suppliers
1. Submit a schedule of manufacturers and Suppliers within 7 days after Notice to Proceed including the names and addresses of the manufacturers and Suppliers of materials and equipment to be incorporated into the Work.
- C. Schedule of Major Products

1. Submit a schedule of major products within 30 days after Notice to Proceed including a complete list of major products proposed for use, with specification section number, name of manufacturer, trade name, and model number of each product.
- D. Product Listing and Manufacturers Qualifications
1. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation and reference standards. Specifically identify the products, the anticipated schedule for delivery and storage, and the estimated value thereof for materials which the Contractor intends to request approval for off-site storage.
- E. Certificates of Compliance
1. General:
 - a. Submit sworn certificates from the manufacturer or material supplier that the materials and fabrications provided under the Specification section conform with the Contract Documents.
 - b. Certificates shall be signed by an officer of the manufacturer's corporation and witnessed by a Notary Public.
 2. Welding: Submit in accordance with individual Specification sections.
 3. Installer: Prepare written statements on manufacturer's letterhead certifying that installer complies with requirements as specified in individual Specification sections.
 4. Material Test: Prepared by qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.
 5. Certificates of Successful Testing or Inspection: Submit when testing or inspection is required by Laws and Regulations or governing agency, or when specified in individual Specification sections.
 6. Manufacturer's Certificate of Compliance: In accordance with individual Specification sections.
- F. Application for Payment
1. Submit applications for payment in accordance with Section 01290, Application and Certificate for Payment.
- G. Construction Photography: Provide preconstruction, progress, and post-construction photography in accordance with Sections 01320.
- H. Contract Closeout Submittals: In accordance with Section 01770.
- I. Contractor Design Data
1. Written and graphic information
 2. List of assumptions
 3. List of performance and design criteria
 4. Summary of loads or load diagram

5. Calculations
 6. List of applicable codes and regulations
 7. Name and version of software
 8. Information requested in individual Specification section
- J. Manufacturer's Instructions: Written or published information that documents manufacturer's recommendations, guidelines, and procedures in accordance with individual Specification sections.
- K. Schedules - Submit construction progress schedules and schedule updates in accordance with Section 01325.
- L. Statement of Qualifications: Submit evidence of qualification, certification, or registration as required in Contract Documents to verify qualifications of professional land surveyor, engineer, materials testing laboratory, specialty subcontractor, trade, specialist, consultant, installer, and other professionals.
- M. Submittals Required by Laws, Regulations, and Governing Agencies
1. Submit promptly notifications, reports, certifications, payrolls, and other required information as may be required, directly to the applicable federal, state, or local governing agency or their representative.
 2. Transmit to Engineer for Owner's records, one copy of correspondence and transmittals (including enclosures and attachments) between Contractor and governing agency.
- N. Test and Inspection Reports
1. Submit test and inspection reports as required by individual Specification sections.
 2. Test and inspection reports shall contain signature of person responsible for test or report.
 3. Reports shall include identification of product and Specification, project name, date and time of test, type of test, location, test results, corrective action required if report indicates test is not in compliance with Contract Documents, interpretation of test results, and other information as required in individual Specification sections.
- O. Equipment Data: Submit information on equipment to be used in the performance of the Work as required by individual Specification sections.
- P. Submittals stamped by another Professional Engineer: When specified in individual Specification sections, prepare and submit calculations and/or drawings stamped by a Professional Engineer licensed in the State where the work is being performed.
- Q. Work Plans: When specified in individual Specification sections, prepare and submit copies of all work plans needed to demonstrate to the Owner that Contractor has adequately thought-out the means and methods of construction and their interface with existing facilities.
- R. Erosion Control Plan: When specified in Contract Documents or required by local ordinances or regulations, prepare and submit copies of erosion control plans.

1.5 PROCEDURES

- A. Coordination
 - 1. Prepare and submit documentation in advance of fabrication and product manufacturer, so that the installation will not be delayed, other related work can be properly coordinated, and there is adequate time for review and resubmission, if required.
 - 2. Provide no less than 30 days for review of submittals from the time received by the Engineer. For submittals of major equipment, that require more than 30 days to review, due to complexity and detail or those requiring review by multiple engineering disciplines, Engineer will notify Contractor of the circumstances and identify the anticipated date when the submittal will be returned.
 - 3. Re-submittals will be subject to same review time.
 - 4. No extension of time will be authorized due to failure to provide approvable submittals sufficiently in advance of the Work.
- B. Review Shop Drawings, product data, and samples prior to submission and verify and determine:
 - 1. Field measurements
 - 2. Conformance with the Contract Documents. Advise the Engineer in writing of any deviations from the requirements of the Contract Documents.
 - 3. Delete or strike out information that is not applicable to the Work.
- C. Upload the electronic submittal files via Procore. Access to Procore will be provided by the Engineer. Files must be in .pdf format. The submittals will be returned in electronic .pdf format via Procore.
- D. Numbering: Submissions shall be accompanied by a transmittal form referencing the project name and applicable Specification section. Submittals shall be numbered sequentially, with the applicable Specification section and a hyphen preceding the number. (*e.g.* Submittal number 11330-01). Resubmittals shall bear the same transmittal number with a revision number commencing with "1" (*e.g.* Submittal number 11330-01-1).
- E. Provide a copy of the Submittal Certification Form (copy attached at the end of this section) which shall be attached to every copy of each submittal. Apply the Contractor's stamp and initials or signature certifying that the submission has been thoroughly reviewed for completeness, compliance with the Contract Documents, coordination with adjacent construction and dimensional compatibility. Items submitted without the stamp or that are incomplete will be returned by the Engineer for rework and resubmission.
- F. Provide a copy of the PE Certification Form (copy attached at the end of this section) which shall be attached to every copy of each submittal stamped by another Professional Engineer. Items submitted without the completed certification form will be returned by the Engineer for resubmission.
- G. Distribute copies of reviewed submittals along with the Engineer's transmittal to concerned parties with instructions to promptly report any inability to comply with the provisions or integrate the requirements with interfacing work.

- H. Partial and Incomplete Submittals
 - 1. Shop Drawings shall be submitted as a complete package by Specification section, unless otherwise reviewed and approved by the Engineer. It is the intent that all information, materials, and samples associated with each Specification section be included as a single submittal for the Engineer's review.
 - 2. Engineer will return entire submittals if preliminary review deems it incomplete including:
 - a. Missing or incomplete Submittal Certification Form
 - b. Insufficient number of copies
 - c. Missing content
 - 3. Partial submittals may be considered, at Engineer's option, only when necessary to expedite the Project.
 - 4. Partial submittals shall be clearly identified as such on the transmittal to identify missing components.
- I. Submittals not required by the Specification will be returned without review or action code.
- J. Resubmission
 - 1. Make corrections and modifications required by the Engineer and resubmit until approved.
 - 2. Clearly identify changes made to submittals and indicate other changes that have been made other than those requested by the Engineer.
 - 3. A maximum of two re-submissions of each shop drawing will be reviewed, checked and commented upon without charge to the Contractor (total of 3 submittals). Any additional submissions which are required by the Engineer to fulfill the stipulations of the Contract Documents will be charged to the Contractor.
- K. Distribution
 - 1. Distribute approved Shop Drawings and approved product data to the Project Site and elsewhere as required to communicate the information to Suppliers, Subcontractors, and field personnel.

1.6 ENGINEER'S REVIEW

- A. The Engineer will review submittals for design, general methods of construction and detailing. The Engineer's review and approval of submittals shall not be construed as a complete check nor does it relieve the Contractor from responsibility for any departures or deviations from the requirements of the Contract Documents unless he has, in writing, called the Engineer's attention to such deviations at the time of submission. It will not extend to means, methods, technique, sequences, or procedures of construction (except where specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto.
- B. The Engineer's review of the submittals shall not relieve the Contractor from the responsibility for proper fitting of the Work, or the responsibility of furnishing any work

required by the Contract Documents which may not be indicated on the submittals. The Contractor shall be solely responsible for any quantities shown on the submittals.

- C. If the Contractor considers any correction indicated on the submittals to constitute a change to the Contract Documents, the Contractor shall provide written notice to the Engineer at least 7 working days prior to release for manufacture.
- D. When the submittals 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.
- E. Action submittals as defined in paragraph 1.2 will be reviewed and returned under one of the following codes:
 - 1. Approved (Action Code 1) is assigned when there are no notations or comments on the submittal. Equipment or materials may be released for manufacture, provided that it complies with requirements of the Contract Documents.
 - 2. Approved as Noted (Action Code 2) is assigned when there are notations or comments on the submittal, but the equipment or materials may still be released for manufacture. All notations and comments must be incorporated in the final product. Resubmission is not necessary.
 - 3. Revise and Resubmit (Action Code 3) is assigned when there are notations and comments requiring a resubmittal of the package. Work cannot proceed until the submittal is revised and resubmitted for review.
 - 4. Not Approved (Action Code 4) is assigned when the submittal contains non-specified items or does not meet the requirements of the Contract Documents. It may also be assigned when there is a significant amount of missing material required for the Engineer to perform a complete review. The entire package must be resubmitted, revised to bring the submittal into conformance. It may be necessary to resubmit using a different manufacturer/vendor to meet the requirements of the Contract Documents.
- F. Informational submittals as defined in paragraph 1.2 do not require approval by the Engineer. Such submittals will be returned under one of the following codes:
 - 1. Receipt Acknowledged (Action Code 5) is assigned when the submittal is provided for documentation purposes and is acknowledged as received. Comments may be noted using this action code.
 - 2. Revise and Resubmit (Action Code 6) is assigned when there are notations and comments requiring a resubmittal of the package.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

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SUBMITTAL CERTIFICATION FORM

PROJECT: _____
ENGINEER: _____ ENGINEER'S PROJECT NO.: _____
CONTRACTOR: _____ CONTRACTOR'S PROJECT
NO.: _____

TRANSMITTAL NO.: _____ SUBMITTAL NO.: _____
SPECIFICATION NO.: _____ DRAWING NO: _____
DESCRIPTION: _____
MANUFACTURER: _____

The above referenced submittal has been reviewed by the undersigned and I/we certify that the materials and/or equipment meets or exceeds the project specification requirements; that field measurements, dimensions, quantities, specified performance criteria, installation requirements, materials, catalog numbers and related materials have been verified; that all materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the work has been determined and verified; that review includes all information related to the contractor's sole responsibility for means, methods, techniques, sequences, and procedures of construction and safety; and item has been coordinated with the overall project with:

- NO DEVIATIONS

- A COMPLETE LIST OF DEVIATIONS AS FOLLOWS:

SUBMITTED BY: _____ DATE: _____

| |
|----------------------------|
| GENERAL CONTRACTOR'S STAMP |
|----------------------------|

PE CERTIFICATION FORM

The undersigned hereby certifies that he/she is a Professional Engineer registered in the Commonwealth of Massachusetts and that he/she has been employed by

_____ to design
(Name of Contractor)

(Insert PE Responsibilities)

In accordance with Specification section _____ for the

(Name of Project)

The undersigned further certifies that he/she has performed the said design in conformance with all applicable local, state and federal codes, rules and regulations; and, that his/her signature and PE stamp have been affixed to all calculations and drawings used in, and resulting from, the design.

The undersigned hereby agrees to make all original design drawings and calculations available to the

(Insert Name of Owner)

or Owner's representative within seven days following written request therefor by the Owner.

PE Name

Contractor's Name

Signature

Signature

Title

Title

Address

Address

SECTION 01420

REFERENCES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Standards referenced in the Contract Documents.

1.2 GENERAL

- A. Comply with the requirements of standards referenced in the Contract Documents.

1.3 ABBREVIATIONS

A. Abbreviations used in the Specifications are defined as follows:

1. AA – Aluminum Association
2. AABC – Associated Air Balance Council
3. AASHTO – American Association of State Highway and Transportation Officials
4. ACI - American Concrete Institute
5. ACOE - U.S. Army Corps of Engineers
6. ADA – Americans with Disabilities Act
7. ADC – Air Diffusion Council
8. AFBMA – Antifriction Bearing Manufacturers Association
9. AGA – American Gas Association
10. AGC – Associated General Contractors of America
11. AGMA - American Gear Manufacturer Association
12. AI – Asphalt Institute
13. AIA – American Institute of Architects
14. AISC – American Institute of Steel Construction
15. AISI - American Iron and Steel Institute
16. AITC - American Institute of Timber Construction
17. AMCA – Air Movement and Control Association
18. ANSI – American National Standards Institute
19. APA – American Plywood Association
20. API – American Petroleum Institute
21. ARI – Air Conditioning and Refrigeration Institute

22. ASCE – American Society of Civil Engineers
23. ASHRAE – American Society of Heating, Refrigeration and Air Conditioning Engineers
24. ASME – American Society of Mechanical Engineers
25. ASPA – American Sod Producers Association
26. ASTM – American Society for Testing and Materials
27. AWG – American Wire Gauge
28. AWI - Architectural Woodwork Institute
29. AWPA – American Wood Preservers’ Association
30. AWS – American Welding Society
31. AWWA – American Water Works Association
32. BIA – Brick Institute of America
33. CDA – Copper Development Association
34. CLFMI – Chain Link Fence Manufacturer’s Institute
35. CPM - Critical Path Method
36. CPVC – Chlorinated Polyvinyl Chloride
37. CRSI – Concrete Reinforcing Steel Institute
38. CI – Cast Iron
39. DEP - Massachusetts Department of Environmental Protection
40. DHI – Door and Hardware Institute
41. DI – Ductile Iron
42. EJCDC – Engineers’ Joint Contract Documents Committee
43. EJMA – Expansion Joint Manufacturers Association
44. EPDM – Ethylene Propylene Diene Monomer
45. EPT – Electrical Plastic Tubing
46. EVT – Equiviscous Temperature
47. FGMA - Flat Glass Marketing Association
48. FM – Factory Mutual
49. FS – Federal Specifications
50. GA – Gypsum Association
51. GFCI – Ground Fault Circuit Interrupter
52. GPR - Ground Penetrating Radar
53. GPS – Global Positioning System

54. HVAC – Heating, Ventilating and Air Conditioning
55. IBC – International Building Code
56. IBR – Institute of Boiler and Radiator Manufacturers
57. ICBO – International Conference of Building Officials
58. ICS – Industrial Control and Systems
59. IEEE – Institute of Electrical and Electronics Engineers
60. IMI – International Masonry Institute
61. ISA – Instrument Society of America
62. JIC – Joint Industrial Council
63. LCD – Liquid Crystal Display
64. MADEP – Massachusetts Department of Environmental Protection
65. MBMA – Metal Building Manufacturer’s Association
66. MEC – Massachusetts Electric Code
67. MFMA Maple Flooring Manufacturers Association
68. MGL – Massachusetts General Law
69. ML/SFA – Metal Lath/Steel Framing Association
70. MSS – Manufacturer’s Standardization Society
71. NAAMM – National Association of Architectural Metal Manufacturers
72. NAVD – North American Vertical Datum
73. NCMA – National Concrete Masonry Association
74. NEBB – National Environmental Balancing Bureau
75. NEC – National Electrical Code
76. NECA – National Electrical Contractors Association
77. NEMA – National Electrical Manufacturers Association
78. NFPA – National Fire Protection Association
79. NRCA – National Roofing Contractors Association
80. NRS – Non-rising Stem
81. NSF – National Sanitation Foundation
82. NSWMA – National Solid Waste Management Association
83. NWMA – National Woodwork Manufacturers Association
84. O&M – Operation and Maintenance
85. OSHA – Occupational Safety and Health Administration

86. PCA – Portland Cement Association
87. PCI – Precast/Prestressed Concrete Institute
88. PDOP – Positional Dilution of Precision
89. PLC – Programmable Logic Controller
90. PS – Product Standard
91. PVC – Polyvinyl Chloride
92. QA/QC – Quality Assurance/Quality Control
93. RCP – Reinforced Concrete Pipe
94. RCSHSB – Red Cedar Shingle and Handsplit Shake Bureau
95. RIS – Redwood Inspection Service
96. RTU – Remote Telemetry Unit
97. SCADA – Supervisory Control and Data Acquisition
98. SDI – Steel Deck Institute
99. SDS – Safety Data Sheets
100. SSPC – Steel Structures Painting Council
101. TCA – Tile Council of America
102. UL – Underwriter’s Laboratories
103. UPS – Uninterruptable Power Supply
104. USCS – Unified Soil Classification System
105. USDA – United States Department of Agriculture
106. WCLIB – West Coast Lumber Inspection Bureau
107. WOG – Water, Oil, Gas
108. WWPA – Western Wood Products Association

END OF SECTION

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SECTION 01450

QUALITY CONTROL

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Quality assurance and control of the Work
 - 2. Testing and inspection services
 - 3. Product test reports
 - 4. Manufacturer's field service
- B. Related Requirements
 - 1. Section 01451 - Independent Testing Services
 - 2. Testing requirements are described in various Sections of the Project Manual.

1.2 SUBMITTALS

- A. Informational Submittals
 - 1. Product test reports

1.3 QUALITY ASSURANCE

- A. Monitor quality control over Suppliers, products, services, site conditions, and workmanship to produce Work of specified quality.
- B. Comply fully with manufacturer's instructions. Should these instructions conflict with the Specifications, request clarification from the Owner before proceeding.
- C. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or requirements indicate higher standards or more precise workmanship.

1.4 TESTING SERVICES FURNISHED BY CONTRACTOR

- A. Furnish all testing services required for materials and equipment proposed to be used in the Work, and quality control tests made in the field including:
 - 1. Concrete materials and mix designs
 - 2. Concrete in place
 - 3. Modified proctor analyses for all borrow materials used on the Project
 - 4. Modified proctor analysis of all subgrade material to be compacted during surface preparation and fine grading and compaction work
 - 5. Sieve analyses for all borrow materials used on the Project
 - 6. Soil structure and nutrient analyses for all loam and topsoil used on the Project

7. Compaction tests performed during trench backfilling and compaction, rough grading and site preparation, fine grading and compaction of roadway and sidewalk subgrades, and placement of roadway and sidewalk subbase materials
 8. All other tests and engineering data as required in the Contract Documents.
- B. Testing agencies must meet the requirements of Section 01451.
 - C. An independent commercial testing laboratory, with current Massachusetts certification, shall perform all tests that require the services of a laboratory to determine compliance with the Contract Documents. Independent testing laboratory requirements are defined under Section 01451.
 - D. Secure and deliver the required number of samples to the laboratory as required by the Contract Documents.
 - E. Notify Owner and Engineer of time, location and material being sampled.
 - F. Schedule necessary testing laboratory services.
 - G. Furnish written reports of each test within 48 hours of completion of testing.
 - H. Notify the Engineer 48 hours prior to operations requiring inspections and laboratory testing services so the Engineer may witness testing. All failed test areas shall be re-worked and re-tested until passing results are obtained.
 - I. The Owner may hire its own independent testing laboratory for quality control tests made in the field or laboratory on materials and equipment during and after their incorporation in the Work. Cooperate with the Owner and independent testing laboratory and furnish samples of materials, design, mix, equipment, tools, storage, and assistance as requested.
 - J. Re-work all failed test areas until passing results are obtained. All re-tests required as a result of the Contractor's failure to perform the work in accordance with the Contract Documents shall be at the Contractor's expense.
- 1.5 CODE COMPLIANCE TESTING
- A. Provide inspections and tests required by codes or ordinances, or by a legally constituted authority having jurisdiction over the Work.
- 1.6 PRODUCT TEST REPORTS
- A. Submit 2 copies of product test reports where required by the Contract Documents.
- 1.7 SUPPLIERS' FIELD SERVICE
- A. Provide qualified field service and installation personnel from material and equipment Suppliers to observe site conditions, installation techniques, quality of workmanship, equipment start-up, adjustment, and performance test where required by the Contract Documents. Observations are to be reported and incorporated in the Work procedures.
- PART 2 PRODUCTS - NOT USED
- PART 3 EXECUTION - NOT USED

END OF SECTION

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SECTION 01451

INDEPENDENT TESTING SERVICES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Independent testing services including geotechnical, and concrete testing
 - 2. Testing laboratory services
- B. Related Requirements
 - 1. Section 01450 - Quality Control
 - 2. Section 02315 - Excavation, Backfill, Compaction and Dewatering
 - 3. Section 02320 - Borrow Material
 - 4. Section 03300 - Cast-in-Place Concrete

1.2 REFERENCES

- A. General
 - 1. ASTM E329 – Standard Specifications for Agencies Engaged in the Testing and/or Inspection of Materials used in Construction
- B. Soil Testing
 - 1. American Association of State Highway and Transportation Officials (AASHTO)
- C. Concrete Testing
 - 1. Cement and Concrete Reference Laboratory (CCRL)

1.3 SUBMITTALS

- A. Informational Submittals
 - 1. Qualifications, experience, and certifications of each proposed testing service
 - 2. Certificate of calibration for testing equipment
 - 3. Inspection and test reports

1.4 QUALITY ASSURANCE

- A. General
 - 1. Comply with the requirements of Section 01450, Quality Control, for testing and inspection requirements.
 - 2. Testing services shall have the following general qualifications:
 - a. Minimum five years as a firm with the type of testing specified.

- b. Ability to provide timely field testing services to minimize the impact of the testing requirements on construction progress.
 - c. Certification to perform the specified services in the state in which the Work is to be performed.
3. Testing services proposed by the Contractor shall be subject to review by the Owner and Engineer. Any testing firm not acceptable to the Owner or Engineer will be rejected.
- B. All testing agencies and laboratories must meet the requirements of ASTM E329.
 - C. Testing company shall have been in business for a minimum of the last 5 years providing applicable testing services.
 - D. Testing equipment shall be calibrated at maximum 12 month intervals by devices of accuracy traceable to National Bureau of Standards. Submit copy of certificate of calibration made by accredited calibration agency.
 - E. Testing shall be in accordance with applicable codes and regulations referenced in individual Specification Sections, and with selected standards of the American Society for Testing and Materials.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 TESTING SERVICES – GENERAL

- A. Provide testing services meeting the following:
 - 1. Provide qualified personnel promptly on notice.
 - 2. Perform inspections required by the Contract Documents. Sample and test materials and observe methods of construction to determine compliance with applicable standards and with the requirements of the Contract Documents.
 - 3. Take specimens and samples for testing, as required in individual Specification Sections. Provide all sampling equipment and deliver all specimens and Samples.
 - 4. Promptly notify the Owner and the Engineer of irregularities or deficiencies in the Work which are observed during performance of services.
 - 5. Promptly submit 2 copies of reports of inspections and tests to the Owner, and one copy to the Engineer including:
 - a. Date issued
 - b. Project title and number
 - c. Testing laboratory or agency name and address
 - d. Name and signature of inspector
 - e. Date of inspection or sampling
 - f. Record of temperature and weather
 - g. Date of test

- h. Identification of product and Specification Section
 - i. Location of Project
 - j. Type of inspection or test
 - k. Results of tests and observations regarding compliance with Contract Documents
- B. Perform additional tests and services as required to assure compliance with the Contract Documents.
- C. Obtain Owner's approval of testing laboratory before performing testing services.
- D. Coordinate with testing laboratory.
- 3.2 GEOTECHNICAL TESTING
- A. Provide field testing and laboratory services for geotechnical soil testing required in Sections 02315 and 02320.
- 3.3 CONCRETE TESTING
- A. Provide qualified independent field and laboratory testing service to perform the concrete testing required in Division 3 of the specifications.
- B. The concrete testing laboratory shall have been inspected by the CCRL within the past five years.
- C. The testing laboratory shall be licensed by the Commonwealth of Massachusetts.
- D. Field testing technicians shall have a Grade 1 concrete field technician license as issued by the American Concrete Institute (ACI).
- 3.4 COORDINATION WITH TESTING LABORATORY
- A. Provide testing laboratory personnel access to site and manufacturer's operations.
- B. Provide laboratory with representative samples of materials to be tested in required quantities.
- C. Furnish labor and facilities:
- 1. To provide access to Work to be tested.
 - 2. To facilitate inspections and tests.
 - 3. For laboratory's exclusive use for storage and curing of test samples.
 - 4. to provide forms for preparing concrete test beams and cylinders.
- D. Notify laboratory sufficiently in advance of operations to allow for assignment of personnel and scheduling of tests.
- E. Arrange with laboratory and pay for additional inspections, samples, and tests required for Contractor's convenience.

END OF SECTION

SECTION 01510

TEMPORARY UTILITIES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Temporary electricity
 - 2. Temporary water service
 - 3. Temporary fuel oil

1.2 QUALITY ASSURANCE

- A. Maintain temporary utilities in proper and safe condition throughout the progress of the Work.

1.3 TEMPORARY ELECTRICITY

- A. Provide temporary electrical service capable of providing sufficient power throughout the site for both temporary power and temporary lighting throughout the project. Due to the potential risks of contamination from fuel spills, the use of all fuel-driven generator sets must be strictly controlled and monitored while on site.
- B. Refueling must be accomplished off-site when feasible and if fuel is transported to the site, it must be in approved containers with secondary containment. All gasoline driven pumps or diesel generators shall be underlain by sheets of polyethylene plastic and on-site refueling shall be accomplished by pumping or siphoning. Absorbent pads shall be available for immediate use in the event of an accidental spill. The Contractor shall be responsible for complete cleanup of any accidental spills.
- C. Portable power supplies shall conform to the noise requirements of Section 02315.
- D. Maintain and service the portable power unit(s) throughout the duration of the project.
- E. Provide a general power distribution system including all wires, cables, supports, protective devices, transformers, motor starters, etc., as required for a complete electrically protected and safe system to handle construction services.

1.4 TEMPORARY WATER SERVICE

- A. Water for Construction Purposes
 - 1. The Contractor shall provide water for construction and testing purposes.

1.5 TEMPORARY FUEL OIL

- A. Properly contain, label, and store all petroleum products off the ground with suitable secondary containment.
- B. Take all necessary precautions to avoid leakage and spillage of all petroleum products, including lubricating oils.
- C. In general, perform fueling and refueling of all equipment and vehicles off-site. In the event that on-site refueling is necessary and as approved by the Engineer, provide

suitable secondary containment facilities to contain all potential spillage, including that resulting from over-filling.

- D. Inspect vehicles for leaks prior to entrance to the Work site. Vehicles with leaks are prohibited from entering the Work site. All vehicles, while on the work site, shall be underlain with polyethylene plastic sheets. Absorbent pads must be available on site for immediate use if needed.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

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SECTION 01520

CONSTRUCTION FACILITIES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Temporary sanitary and first-aid facilities

1.2 QUALITY ASSURANCE

- A. Maintain temporary construction facilities in proper and safe condition throughout the progress of the Work.

1.3 FIELD OFFICE

- A. A field office is not required.

1.4 TEMPORARY SANITARY AND FIRST AID FACILITIES

- A. Provide suitably enclosed chemical or self-contained toilets for the use of the labor force employed on the Work. Toilets shall be located near the Work sites and secluded from observation insofar as possible. Toilets shall be serviced weekly, kept clean and supplied throughout the course of the Work.
- B. Contractor shall enforce proper use of sanitary facilities.
- C. Provide a first aid station at the site.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

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SECTION 01570

TEMPORARY CONTROLS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Dust control
 - 2. Compost Wattles
 - 3. Mulch
 - 4. Sediment trapping devices
- B. Related Requirements
 - 1. Section 02922 – Hydroseeding and Mulching
 - 2. Section 01571 – Control of Water

1.2 SUBMITTALS

- A. Informational Submittals
 - 1. Materials proposed for use in dust control
 - 2. Compost wattles, mulch, and sediment trapping devices

1.3 COMPLIANCE WITH WETLANDS PROTECTION ACT ORDER OF CONDITIONS

- A. The Project includes a Wetlands Protection Act Order of Conditions from the Sutton Conservation Commission along with other environmental permits. Comply with the Order and associated documents including the following:
 - 1. Comply with the OOC and erosion and sediment control measures shown on the Drawings, including control of stormwater and non-stormwater discharges through use of structural and non-structural best management practices, inspections, maintenance activities, and emergency response.

PART 2 PRODUCTS

2.1 COMPOST WATTLES

- A. Compost wattles required for siltation control shall consist of a 100% biodegradable sock/tube of cotton, burlap, jute, or similar material, containing a porous compost media designed to filter pollutants from stormwater. Nominal diameter shall be 12-inches and the effective height shall be 9.5-inches.

2.2 SEDIMENT TRAPPING DEVICES

- A. Sediment trapping devices shall be Siltsack®, Dandy Bag II®, or equal.

2.3 MULCH

- A. Hay mulch shall consist of mowed cured grass, clover, alfalfa, timothy, oats, or wheat. No salt hay shall be used.

PART 3 EXECUTION

3.1 DUST CONTROL

- A. Control dust during the Work. Use a mechanical street sweeper daily.
- B. Prevent dust from becoming a nuisance or hazard. During construction, excavated material and open or stripped areas are to be policed and controlled to prevent spreading of the material.
- C. Control dust during the work on-site using calcium chloride and/or water.
- D. During the Work on-site, all paved road and driveway surfaces shall be scraped and broomed free of soil and debris on a daily basis. Dusty bare surfaces shall be hosed down or otherwise treated to eliminate active or potential dust conditions and the natural road or wearing surface shall be exposed.

3.2 DRAINAGE AND EROSION CONTROL

- A. Control erosion and siltation during the construction through mulching, compost wattles, siltation fencing, diversion and control of storm water run-off, ponding areas and similar methods.
- B. Provide and maintain sediment trapping systems.
- C. Discharge surface runoff from any disturbances to the site into silt containment basins. Utilize siltation prevention measures including compost wattles before discharge to drainage systems.

3.3 COMPOST WATTLES

- A. Place and maintain compost wattles as shown on the drawings or as required by permit.
- B. Install compost wattles as shown on the drawings. Replace deteriorated wattles. Remove and dispose of the wattles following the successful growth of vegetation in the areas disturbed by the construction. Wattles shall not be removed until their removal is approved by the Engineer.
- C. Perform work in accordance with Town of Sutton Conservation Commission Order of Conditions.

3.4 RESTORATION

- A. Provide erosion control, seed and mulch and netting for surface restoration of areas disturbed during construction activities.
- B. Provide temporary stabilization of disturbed areas that remain inactive greater than 14 consecutive days to minimize erosion. Methods to minimize erosion may include but are not limited to:
 - 1. Spreading straw and/or providing temporary planting stabilization.
 - 2. Installing jute netting.
 - 3. Preparing surfaces to increase the runoff flow path, reduce the runoff flow velocity, or create small storage pockets to retain surface flows. Methods of accomplishing this include using mechanical devices such as track equipment or sheep's foot rollers.

- C. Restore the ground surface in brush and/or woodland areas by machine spreading of existing stripped surface soils (loam and humus), liming, fertilizing, seeding and mulching, as well as installing jute netting where required by steep slopes.
- D. Salvage existing loam and topsoil and stockpile this material for re-spreading where originally removed. On backfilling, grading shall be returned to preconstruction contours and the stockpile of loam shall be spread over areas disturbed during construction activities.
- E. Place mulch on seeded areas. Use jute netting on areas having a slope greater than 3 horizontal to 1 vertical, to anchor the mulch until a satisfactory growth is obtained. If seeding is not possible because of the time of the year, apply mulch and netting to stabilize the area until such time as seed can be sown.
- F. Provide grading, refertilizing, reseeding, remulching and/or netting to maintain the restored areas until the Work is accepted by the Owner.
- G. Seed shall be as specified under Section 02920 and on the drawings.

3.5 CLEANING

- A. Remove any sediment that builds up around the compost wattles. Replace and, or supplement erosion controls as necessary to ensure no discharges of turbid or sediment laden water.

END OF SECTION

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SECTION 01571

CONTROL OF WATER

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes requirements for the control of surface water, including
 - 1. Cofferdams
 - 2. Surface Water Diversion
 - 3. Flood Contingency Plan
- B. Related Requirements
 - 1. Section 01570 – Temporary Controls
 - 2. Section 02315 – Excavation, Backfill, Compaction and Dewatering
 - 3. Section 02670 – Construction in Wetlands

1.2 SUBMITTALS

- A. Informational Submittals
 - 1. The following may be separate documents or combined into one plan and should be signed and stamped by a Professional Engineer registered in the state where the work is performed.
 - a. Water Control Plan, including description of approach, plans, location, materials, size, methods, phasing, calculations, and specifications for the control of water, dewatering of/removal of water from enclosed areas.
 - b. Cofferdam designs, including materials, location, construction methods and details, design criteria planned, calculations demonstrating the adequacy of the system, etc.
 - c. Flood Contingency Plan, which shall include:
 - 1) Plans for monitoring for potential flooding conditions and responses to be undertaken if flooding is forecast or occurs.
 - 2) Methods to be implemented for protection of the Work and preventing potential discharges of sediment to the impoundment or downstream resource areas during flooding conditions.
 - 3) Ensure that structures, materials, and equipment will be anchored or restrained to prevent displacement or flotation or will be removed from the floodplain prior to a flood.
 - 4) Identify the storm events that will adversely affect construction activities.

- 5) Identify the name, address and telephone number of the person(s) responsible for implementing this plan.

1.3 PROJECT CONDITIONS

A. Estimated Flood Characteristics

1. Existing Conditions:

The following flood flow and elevation information was estimated for Arnold Pond by Tighe & Bond as part of the hydrologic and hydraulic evaluation report dated December 19, 2023.

| Flood Event | Freeboard (feet) | Outflow (cubic feet per second) | Peak Water Surface Elevation (feet, NAVD88) |
|----------------|------------------|---------------------------------|---|
| 5-year flood | 7.5 | 24 | 598.5 |
| 10-year flood | 7.2 | 37 | 598.8 |
| 25-year flood | 6.6 | 65 | 599.4 |
| 50-year flood | 6.1 | 91 | 599.9 |
| 100-year flood | 5.4 | 132 | 600.6 |

Once Arnold Pond Dam is breached allowing the free flow of water, water levels are controlled by the dam at Adams Pond. Tighe & Bond has estimated the following resulting flood characteristics:

| Flood Event | Precip Depth (Inches) | Peak Inflow (CFS) | Peak Water Surface Level (FT, NAVD83) |
|----------------|-----------------------|-------------------|---------------------------------------|
| 2-year flood | 3.28 | 111.1 | 597.0 |
| 5-year flood | 4.25 | 218.7 | 597.3 |
| 10-year flood | 5.06 | 322.6 | 597.6 |
| 25-year flood | 6.19 | 482.0 | 598.0 |
| 50-year flood | 7.06 | 612.9 | 598.2 |
| 100-year flood | 7.92 | 747.5 | 598.3 |

B. Design Criteria

1. Control water for normal flows and small rainfall events that will occur routinely during construction so as to protect the work, private property, and private infrastructure without mobilizing turbidity from the pond bottoms.
2. Contractor shall be responsible for selection of the design storm and flood elevation for design of the cofferdam and water control system. The drawings show sample water control phasing and maximum cofferdam limits for permitting purposes.

3. No additional payment shall be made to the Contractor for any damages to the work caused by a flood event up to a 25-year flood; for off-site damages caused by a flood event up to the 100-year flood; or if the cofferdam fails unexpectedly during its design flood or a lesser flood.
4. The basis for determination of the flood return frequency shall be the measured or calculated flow at the site relative to the flow information presented in this section and not total rainfall or other factors.

PART 2 PRODUCTS

2.1 TEMPORARY COFFERDAM SYSTEM

- A. Provide an efficient temporary cofferdam system to allow safe execution of the work under this contract. Cofferdams constructed of uncontained fill material (e.g. earth, rock systems) will not be acceptable. Examples of acceptable systems are as follows:
 1. A steel frame with membrane system such as the one utilized by Portadam Inc., 107 Drivers Lane, Laurel Springs, NJ 08021, Tel. (609) 784-2208
 2. 4'x4' Supersacks constructed of polypropylene (filled with sand) and with lifting straps, provided a properly-installed waterproof membrane on the upstream side is included
 3. Water filled cofferdam, such as the one utilized by Water Structures Unlimited (Aquadam ®)
 4. Sheeting, appropriately braced
- B. The Contractor is solely responsible for the design and stability of cofferdams.

PART 3 EXECUTION

3.1 TEMPORARY COFFERDAM SYSTEM

- A. Furnish, install, and remove a safe temporary cofferdam system.
- B. Installation of rip-rap for slope protection or erosion repair may be performed up to one foot below the water line without a cofferdam, provided no placement or compaction of granular materials including low-permeability fill is required, and provided that the area is surrounded by a functioning turbidity curtain.
- C. The cofferdam shall be surrounded by a functioning turbidity curtain during placement and removal and at other times if necessary to prevent discharge of turbidity.

3.2 DEWATERING

- A. The areas within the cofferdam shall be dewatered and maintained in a dry condition to the extent required to construct the work in accordance with all applicable provisions in other sections of the specifications.

3.3 DIVERSION

- A. Maintain flow around the cofferdam in a manner that meets the following requirements:
 1. Prevents impacts to upstream and downstream areas (eg, increased water levels or flow velocities) that may result from temporary flow constrictions as a result of cofferdams and diversions.

2. Provide temporary scour protection and erosion controls at diversion inlets, discharges, and along diversion channels so that diversions do not cause scour, erosion, sedimentation, or cause unacceptable levels of turbidity.
 3. Inlets, channels, and outlets are monitored and maintained free of debris and obstructions.
- B. The Contractor is solely responsible for designing, providing, and maintaining sufficient flow capacity for the diversion system.

3.4 MAINTENANCE

- A. Continuously monitor the cofferdam for evidence of movement, deterioration, and excessive seepage throughout use. The cofferdam shall be maintained in good working order as necessary for the safety of workers and the protection of the permanent work.

3.5 FLOODING

- A. Monitor weather and weather related events to anticipate if flood control activities are anticipated. If flooding is anticipated, suspend construction operations, remove equipment which could be damaged, and take such actions and perform such additional work as approved by the Engineer to protect the work and prepare the area for flooding.

END OF SECTION

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SECTION 01582

PROJECT IDENTIFICATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Project Identification Signs
 - 2. Informational Signs
- B. Related Requirements
 - 1. Section 01330, Submittal Procedures

1.2 SUBMITTALS

- A. Action Submittals
 - 1. Information on paints to be used for items under this section.
 - 2. Layout of each sign.

1.3 QUALITY ASSURANCE

- A. Employ the services of a professional painter who has successfully performed at least five emblems of similar size and character within the last two years to perform lettering and Owner's emblem.
- B. Finishes and painting shall resist weathering and fading for scheduled construction period.

1.4 MAINTENANCE

- A. Maintain signs and supports in a neat, clean condition; repair damages to structures, framing or sign.

PART 2 PRODUCTS

2.1 SYSTEM DESCRIPTION

- A. Project Identification Sign
 - 1. Do not erect or display advertising signs of any kind on site. At start of Work, furnish, erect, and maintain on site where directed by the Owner one sign, 4 ft. by 8 ft. in size, bearing the following information:
 - a. Name of Project and Contract number
 - b. Name of Owner and emblem. The emblem will be furnished electronically by the Owner
 - c. Name of Funding Source of sources, with emblem.
 - d. Name of Consulting Engineer
 - e. Name and Address of Contractor

f. Contact telephone number

B. Informational Signs

1. Provide and post one sign with permit number information as required by the Wetlands Protection Act Order of Conditions.

2.2 MATERIALS

A. Sign Materials

1. Structure and Framing: May be new or used, wood or metal, in sound condition, structurally adequate to work, and suitable for specified finish.
2. Sign Surfaces: Exterior softwood plywood with medium density overlay, standard large sizes to minimize joints:
 - a. Thickness: As required by standards to span framing members, to provide even, smooth surface without waves or buckles.
3. Wrought Hardware: Galvanized.
4. Paint:
 - a. Apply a coat of white alkyd primer wood oil to entire woodwork of sign.
 - b. Apply 2 coats of white exterior latex paint to sign including framework.

B. Sign layout shall be approved by the Owner prior to fabrication.

PART 3 EXECUTION

3.1 PREPARATION

A. Project Identification Sign

1. Paint exposed surface of supports, framing and surface material; one coat of primer and one coat of exterior white paint.
2. Paint graphics in styles, sizes, and colors selected.
3. Sign to be minimum of 48 inches by 96 inches.

3.2 ERECTION

A. Project Identification Sign

1. Erect Project signs at locations approved by the Owner in the vicinity of the access.
2. Maintain in good condition until completion of the Project.
 - a. Remove sign, framing, supports and foundations at completion of the Project.

END OF SECTION

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SECTION 01600

PRODUCT REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Products and Materials
 - 2. Product Delivery Requirements
 - 3. Packaging, Handling and Storage Requirements
 - 4. Inspection of Offsite Work

1.2 QUALITY ASSURANCE

- A. Review all contract Drawings and Specifications with respect to specific system characteristics, applicability of materials and equipment for the intended purposes, sizes, orientation, and interface with other systems, both existing and proposed, and certify that the materials and equipment proposed will perform as specified prior to submitting shop drawings.
- B. Provide sworn certificates as to quality and quantity of materials where specified or requested by the Engineer.
- C. Obtain concurrence of the Engineer prior to processing, fabricating, or delivering material or equipment.

1.3 PRODUCTS AND MATERIALS

- A. Furnish products of qualified manufacturers suitable for intended use. Furnish products of each type by a single manufacturer unless specified otherwise.
- B. Use only new and first quality material in the Work. Material shall conform to the requirements of these Specifications and be approved by the Engineer. If, after trial, it is found that sources of supply that have been approved do not furnish a uniform product, or if the product from any source proves unacceptable at any time, the Contractor shall furnish approved materials from other approved sources.
- C. Immediately remove defective materials and equipment from the site, at no additional cost to the Owner. The Contractor may be required to furnish sworn certificates as to the quality and quantity of materials before materials are incorporated in the Work.
- D. Engineer has the right to approve the source of supply of all material prior to delivery.

1.4 PRODUCT DELIVERY REQUIREMENTS

- A. Transport and handle products in accordance with manufacturer's instructions.
- B. Promptly inspect shipments to ensure products comply with requirements, quantities are correct, and products are undamaged.
- C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

- D. Progressively deliver materials and equipment to the Site so there will be neither delay in progress of the Work nor an accumulation of material that is not to be used within a reasonable time.
- E. Deliver products to the Site in their manufacturer's original container, with labels intact and legible.
 - 1. Maintain packaged materials with seals unbroken and labels intact until time of use.
 - 2. The Engineer may reject as non-complying such material and products that do not bear identification satisfactory to the Engineer as to the manufacturer, grade, quality, source, and other pertinent information.

1.5 PACKAGING, HANDLING AND STORAGE REQUIREMENTS

- A. Provide storage and handling of all materials and equipment required for the Work.
- B. Except as otherwise indicated in the Contract Documents, determine and comply with the manufacturer's recommendations on product storage, handling, and protection. Provide manufacturer's documentation on recommended storage procedures when requested by the Engineer.
- C. Properly store and protect all equipment immediately upon its arrival.
- D. Familiarize workmen and subcontractors with hazards associated with materials, equipment, and chemicals specified herein and take all necessary safety precautions.
- E. Areas available on the construction site for storage of material and equipment shall be as shown on the Drawings or approved by the Owner.
- F. Materials and equipment to be incorporated in the Work shall be handled and stored by the manufacturer, fabricator, supplier, and Contractor before, during and after shipment in a manner to prevent warping, twisting, bending, breaking, chipping, rusting, and any injury, theft, or damage of any kind to the material or equipment.
- G. Promptly remove materials from the site of the Work which have become damaged or are unfit for the use intended or specified. The Contractor will not be compensated for the damaged materials or their removal costs.
- H. Handle, haul, and distribute all materials and all surplus materials on the different portions of the Work, as necessary or required. Provide suitable and adequate storage room for materials and equipment during the progress of the Work, and be responsible for the protection, loss of, or damage to materials and equipment furnished, until the final completion and acceptance of the Work.
- I. Storage and demurrage charges by transportation companies and vendors shall be borne by the Contractor.
- J. All materials and equipment to be incorporated in the Work shall be placed so as to not damage 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. Keep materials and equipment neatly piled and compactly stored in such locations as will cause a minimum of inconvenience to the Owner.
- K. No material or equipment will be permitted to be stored in any of the Owner's facilities, unless otherwise approved by the Engineer.

- L. Do not store material or equipment in any wetland or environmentally sensitive area. Stockpile sites shall be level, devoid of mature stands of natural vegetation, and removed from drainage facilities and features, wetlands, and stream corridors.
- M. Contractor shall be fully responsible for loss or damage to stored materials and equipment.
- N. No item judged rusty, corroded or otherwise damaged during storage will be accepted. Any electrical or instrumentation item determined by the Engineer to be damaged shall be removed from the Site and replaced by a completely new item in first class condition. Items not properly stored will not be considered for any partial payment.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

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SECTION 01630

PRODUCT SUBSTITUTION DURING CONSTRUCTION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Product substitution procedures

1.2 CONTRACTOR'S OPTIONS

- A. For materials or equipment (hereinafter products) specified only by performance or reference standard, select product meeting that standard, by any Supplier. To the maximum extent possible, provide products of the same generic kind from a single source.
- B. For products specified by naming several products or manufacturers, select any one of the products or Suppliers named, which fully complies with the Drawings and Specifications. Another "or-equal" product can also be considered by the Engineer if it complies with the provisions of Paragraph 1.3. If a product proposed by the Contractor does not qualify as an "or-equal" item, then it can be considered as a proposed substitute item, and the Contractor must comply with the requirements of Paragraph 1.3.A.2.
- C. For products specified by naming products or manufacturers and followed by words indicating that no "or-equal" item or substitution is permitted, there is no option and no substitution will be allowed.
- D. Where more than one choice is available as a Contractor's option, select product that is compatible with other products already selected or specified.

1.3 SUBSTITUTIONS

- 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 1.3.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 1.3.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 thereof. 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 1.3.A.2.d, as supplemented by the Contract Documents, 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:
 - perform adequately the functions and achieve the results called for by the general design,
 - be similar in substance to that specified, and
 - be suited to the same use as that specified;
 - 2) will state:
 - the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time,
 - 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

- 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:
- all variations of the proposed substitute item from that specified, and
 - 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 1.3.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 1.3.A and 1.3.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 1.3.A.2 and 1.3.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.

1.4 SUBMISSION AND REVIEW

- A. If in the Engineer's sole discretion a product proposed by the Contractor does not qualify as an "or-equal" item under the provisions of Paragraph 1.3.A.1, it can be

considered a proposed substitute item. Submit information required under Paragraph 1.3.A.2 for proposed substitutes.

- B. The Engineer will consider written requests from the Contractor for substitutions within 30 days after the Notice to Proceed. After this period, requests will be considered only in case of unavailability of product or other conditions beyond control of the Contractor.
- C. Submit 5 copies of request for substitutions. Submit a separate request for each proposed substitution. Include the following in each substitution request:
 - 1. For products or Suppliers:
 - a. Product identification, including Supplier & manufacturer's name and address.
 - b. Manufacturer's literature with product description, performance and test data, and reference standards.
 - c. Samples, if appropriate.
 - d. Name and address of similar projects on which product was used, and date of installation.
 - 2. For construction methods (if specified):
 - a. Detailed description of proposed method.
 - b. Drawings illustrating method.
 - 3. Such other data as the Engineer may require to establish that the proposed substitution is equal to the product, Supplier or method specified.
- D. A request constitutes a representation that Contractor:
 - 1. Has investigated proposed product and determined that it meets or exceeds quality level of specified product.
 - 2. Will provide same or better guarantees, warranties or bonds for proposed substitution as for specified product.
 - 3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
 - 4. Waives all claims for additional costs or time extension which may subsequently become apparent.
 - 5. Will reimburse Owner for review or redesign services associated with re-approval by authorities having jurisdiction.
- E. A proposed substitution will not be accepted if:
 - 1. Acceptance will require changes in the design concept or a substantial revision of the Contract Documents.
 - 2. It will delay completion of the Work.
 - 3. It is intended or implied on a Shop Drawing and is not accompanied by a formal request for substitution from the Contractor.
- F. The Contractor is responsible for all costs relating to substitution requests.

- G. Approval of a substitution does not relieve the Contractor from the requirement for submission of Shop Drawings as set forth in the Contract Documents.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

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SECTION 01720

FIELD ENGINEERING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Establishment of lines, benchmarks, and elevations required to layout and construct the Work

1.2 SUBMITTALS

A. Informational Submittals

1. Submit the qualifications of the Registered Professional Engineer and/or Registered Land surveyor to be hired to perform various portions of the Work, as applicable.
2. Submit documentation verifying the accuracy of field engineering work.
3. Submit 4 copies of final record drawings of field engineering layouts and as-built survey.
4. Submit certificate signed by registered (licensed) engineer or surveyor certifying that elevations and locations of Work are in conformance with Contract Documents. Explain deviations.

1.3 RECORDS

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

1.4 QUALITY ASSURANCE

- A. Employ a qualified engineer, registered with the Commonwealth of Massachusetts as a Professional Engineer or a competent surveyor, registered with the Commonwealth of Massachusetts as a Land Surveyor, as required for the particular characteristics of the work being performed.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 PROCEDURES

- A. The Registered Professional Engineer or Land Surveyor provided shall establish and maintain lines, elevations and reference marks needed during the progress of the Work and shall re-establish stakes and marks placed by the Engineer that are lost or destroyed through the course of the Work. Verify such work by instrument or other appropriate means.
- B. The Engineer shall be permitted at all times to check the lines, elevations and reference marks, set by the Contractor, who shall correct any errors 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 the responsibility of the Contractor for the accurate and satisfactory construction and completion of the entire Work.

- C. Make, check, and be responsible for measurements and dimensions necessary for the proper construction of and the prevention of misfittings in the Work.
- D. Furnish all protective stakes and temporary structures for marking and maintaining points and lines for the building of the Work, and give the Engineer such facilities and materials for verifying said lines and points as he may require.
- E. Revisions to the layout and elevations of the Work as defined by the Contract Documents shall be approved by the Engineer.
- F. Maintain and prepare final record drawings of field engineering layouts and an as-built survey conducted after completion of the Work.

END OF SECTION

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SECTION 01725

PRESERVATION AND RESTORATION OF PROJECT FEATURES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Protection and replacement of trees, shrubs, signs, property markers, fences, and related project features.
2. Taking precautions, providing programs, and taking actions necessary to protect public and private property and facilities that are outside the demolition scope from damage.

1.2 DEFINITIONS

A. Underground Structures

1. Underground structures are defined to include, but not be limited to, sewer, water, gas, and other piping, and manholes, chambers, electrical and signal conduits, tunnels and other existing subsurface work located within or adjacent to the limits of the Work.
2. Underground structures known to the Engineer are shown on the Drawings to the extent that locations are available. This information is shown for the assistance of the Contractor in accordance with the best information available, but is not guaranteed to be correct or complete. The Contractor shall be responsible for checking on the actual locations of water, sewer, gas electric and telephone service connection lines to avoid potential interferences.

B. Surface Structures

1. Surface structures are defined as existing buildings, structures and other facilities above the ground surface. Included with such structures are their foundations or any extension below the surface. Surface structures include, but are not limited to, buildings, tanks, walls, bridges, roads, dams, channels, open drainage, piping, poles, wires, posts, signs, markers, curbs, walks and all other facilities that are visible above the ground surface.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 REPAIR/RESTORATION

- A. Trees, shrubs, and similar items shall not be removed except where indicated on the drawings or as necessary to access the required demolition work, as approved by the Engineer. Items to be removed shall be clearly marked as directed by the Engineer. If objects not to be removed are damaged or removed, they shall be repaired or replaced to their original condition.
- B. Trees and shrubs on private property, which are removed or damaged by the Contractor shall be replaced in kind.

- C. Signs, fences, property markers, walls, guard rails and other public or private property that are outside the demolition scope shall be replaced in kind if damaged. Supports and protective devices required shall be provided.
- D. Underground and Surface Structures
1. In the event of damage, injury or loss to existing utilities and structures that were not indicated to be removed or abandoned, whether shown on the Drawings or not, make all reasonable efforts to facilitate repairs and to mitigate the impact of such events upon the utility or structure owner's normal operations. Restore the existing utility or structure to the condition required by the owner of the utility or structure or at least to the condition found immediately prior to the Work. In the event that the utility owner elects to make the repairs, provide all reasonable access and assistance, and reimburse the utility owner for the cost of repairs. If utility service is interrupted due to damage to facilities, alternate facilities shall be provided.
 2. All other existing surface facilities, including but not limited to, guard rails, posts, guard cables, signs, poles, markers and curbs which are temporarily removed to facilitate the Work shall be replaced and restored to their original condition at the Contractor's expense unless otherwise indicated in other sections of these specifications.
 3. Wherever water, sewer, gas or petroleum mains, electric or telephone lines, cables or other utilities and structures are encountered and may be in any way interfered with, inform the Engineer and the appropriate utility company. Cooperate with the Engineer and utility company in the protection, removal, relocation, and replacement of structures and facilities.
 4. Prior to proceeding with any demolition or construction, notify in writing owners of utilities and structures within the vicinity of the proposed Work.
 5. Work affecting water distribution systems, which will take fire hydrants out of service, must be coordinated with the local fire department. The Contractor shall be prepared to restore fire flows in the event of an emergency or to provide for temporary fire flow service in accordance with the requirements of the local fire department.
 6. Materials used for relocation or replacement of utilities and structures shall be of an equivalent material, type, class, grade and construction as the existing or as approved by the respective owners thereof, unless otherwise shown or specified.
 7. When any survey monument or property marker, whether of stone, concrete, wood or metal, is in the line of any trench or other demolition or construction work and may have to be removed, notify the Engineer in advance of removal. Under no circumstances shall any monument or marker be removed or disturbed by the Contractor or by any of his Subcontractors, employees or agents, without the permission of the Engineer. Monuments or markers removed or disturbed shall be reset by a land surveyor licensed in the State where the Work is located at the Contractor's expense. Should any monuments or markers be destroyed through accident, neglect or as a result of the Work under this Contract, the Contractor shall, at his own expense, employ a land surveyor licensed in the State where the Work is located to re-establish the monument or marker.

3.2 PROTECTION

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Preservation and Restoration
of Project Features

- A. The construction of certain portions of the project may require excavation within the root systems of trees. Roots with a diameter of 2 inches or more within the excavation shall not be cut. If necessary, excavation shall be made with small powered equipment or by hand to comply with this requirement. It may be necessary to excavate from more than one direction to avoid damage to the roots.
- B. The trunks of trees that are to remain and are within the swing radius of the excavating machine bucket when fully extended shall be wrapped with burlap and 2 inch by 4 inch protective wood slats (8 inch spacing maximum) wired around the circumference of the trees to protect them from damage.
- C. Tree limbs shall not be cut except upon written approval of the Owner and the Engineer. Tree limbs cut shall be painted with approved forestry paint manufactured specifically for that purpose.
- D. **Underground and Surface Structures**
 - 1. Sustain in their places and protect from direct or indirect injury underground and surface structures designated to remain within or adjacent to the limits of the Work. Such sustaining and supporting shall be done carefully and as required by the party owning or controlling such structure. Before proceeding with the work of sustaining and supporting such structure, satisfy the Engineer that the methods and procedures to be used have been approved by the party owning same.
 - 2. Pay utility service company charges related to the temporary support of utility poles if required to complete the Work.
 - 3. Assume risks associated with the presence of underground and surface structures within or adjacent to the limits of the Work. The Contractor shall be responsible for damage and expense for direct or indirect injury caused by his Work to any structure. Immediately repair damage caused by the Work to the satisfaction of the owner of the damaged structure.

END OF SECTION

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SECTION 01770B

CLOSEOUT PROCEDURES

1.1 SUMMARY

A. Section Includes

1. Documentation required for the transfer of the completed Work to the Owner
2. Final Cleaning

1.2 SUBMITTALS

A. Closeout Submittals

1. As-built drawings
2. Operation and maintenance manuals
3. Evidence of payment and release of liens
4. List of Subcontractors, service organizations, and principal vendors

1.3 PROJECT CLOSEOUT DOCUMENTS

- A. As-built Drawings - Submit as-built drawings review, approval, or comment. The as-built drawings shall show the completed work, including all deviations from the Drawings. The as-built drawings shall depict the location of all conduit and devices exterior from the motor control centers, the location of valves, small diameter piping, relocated devices and all field changes.
- B. As-built drawings include an as-built survey of the work area showing final visible structures with elevations. The survey shall be stamped by a licensed professional land surveyor.
- C. Provide warranties and bonds for items so listed in pertinent other sections of the Project Manual. Provide all warranties and bonds in a three-ring binder.
- D. Provide evidence of compliance with requirements of governmental agencies having jurisdiction.

1.4 FINAL PAYMENT

A. The Contract shall be considered complete and final payment made, only when:

1. All provisions of the Contract Documents have been strictly adhered to.
2. The project and premises have been left in good order, including removal of all temporary construction, Contractor-owned and extraneous materials.

1.5 FINAL CLEANING & REPAIRS

- A. Sweep paved surfaces and rake lawns and landscaped areas.
- B. On or before the completion of the Work, tear down and remove all temporary buildings and structures, remove all temporary works, tools, and machinery or other construction equipment, remove all rubbish from any grounds which has been occupied and leave the roads and all parts of the premises and adjacent property in a neat and satisfactory condition.

- C. Restore or replace any public or private property damaged or removed during the course of the Work. Property shall be returned to a condition at least equal to that existing immediately prior to the beginning of operations. Complete all highway or driveway, walk, and landscaping work using suitable materials, equipment and methods. Perform restoration of existing property, signs or structures promptly as work progresses; do not leave restoration work until the end of the Contract Time.

1.6 COMPLETION

- A. The Contract shall be considered complete and final payment made, only when:
 - 1. All provisions of the Contract Documents have been strictly adhered to.
 - 2. All damage to adjoining areas caused by the Work has been repaired.
 - 3. The project and premises have been left in good order, including removal of all temporary construction, Contractor-owned and extraneous materials as required.
 - 4. All warranties, Operation and Maintenance Manuals, maintenance instructions, releases, and permits called for in the Contract have been submitted to the Owner and Engineer as applicable.
 - 5. All as-built drawings as required by the Contract Documents have been submitted to the Owner.
 - 6. All monies owed the Owner for services performed for the Contractor by Owner's forces in connection with the Contract have been paid.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

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DIVISION 02

SITE CONSTRUCTION

SECTION 02075

GEOSYNTHETICS

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes
 - 1. Non-woven geotextiles
 - 2. Temporary 100% degradable erosion control blankets

1.2 REFERENCES

- A. Data Sheet DS1 - Non-Woven Geotextiles
- B. ASTM D3786 - Test Method for Hydraulic Bursting Strength of Knitted Goods and Non-woven Fabrics: Diaphragm Bursting Strength Tester Method
- C. ASTM D4491 - Test Methods for Water Permeability of Geotextiles by Permittivity
- D. ASTM D4533 - Test Method for Trapezoid Tearing Strength of Geotextiles
- E. ASTM D4632 - Test Method for Grab Breaking Load and Elongation of Geotextiles
- F. ASTM D4751 - Test Method for Determining the Apparent Opening Size of a Geotextile
- G. ASTM D4833 - Test Method for Index Puncture Resistance of Geotextiles Geomembranes and Related Products
- H. ASTM D5261 - Test Method for Measuring Mass per Unit Area of Geotextiles

1.3 SUBMITTALS

- A. Product samples and data for all geosynthetics proposed for use on this project.
- B. Manufacturer-approved construction quality assurance/quality control manual for all of the geosynthetics proposed for use on this project.
- C. Manufacturing quality control testing data specified. Submit certification of required performance testing on all geosynthetics by an independent laboratory and label and identify all geosynthetic products delivered to the site.
- D. Manufacturer's recommended installation and fastening details for the erosion control blankets and turf reinforcement matrices. The following details are required:
 - 1. Typical stapling pattern and spacing. List staple density in terms of staples per square yard.
 - 2. Anchoring details for channels and slopes.
 - 3. Transverse blanket lap splice details, as well as longitudinal lap splice details if parallel blankets are to be installed.
 - 4. Termination details for the origin and termination of the channels and slopes.

1.4 QUALITY ASSURANCE

- A. Obtain from the geosynthetic product manufacturers a warranty that their products are free from defects in materials and workmanship at the time of delivery to the project site.
- B. Material found to be defective or which does not conform to these specifications will be rejected.

1.5 DELIVERY, STORAGE AND PROTECTION

- A. The Engineer reserves the right to reject and require replacement of any damaged materials delivered to the site, at no additional cost to the Owner.
- B. Stockpile and store the materials in accordance with the manufacturer's recommendations.
- C. Label and bag all geosynthetic rolls in packing that is resistant to photo degradation by ultraviolet (UV) radiation.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Group 2 Non-Woven Geotextile
 - 1. "4506" as manufactured by Amoco Fabrics and Fibers
 - 2. "FX-60HS" as manufactured by Carthage Mills
 - 3. "160N" as manufactured by Mirafi Inc.
 - 4. Or equal
- B. Temporary 100% Degradable Erosion Control Blankets
 - 1. "ECC-2B" as manufactured by East Coast Erosion Control,
 - 2. "C125 BN" as manufactured by North American Green,
 - 3. Or equal

2.2 MATERIALS

- A. Non-woven geotextiles shall be manufactured from a continuous polypropylene filament. A needle punching process shall achieve bonding.
- B. Temporary, 100% degradable ECBs shall be composed of a core of 100% coconut fibers encased between two confining meshes of biodegradable material. Photo-degradable materials are not allowed.
 - 1. As a minimum, 100% biodegradable ECBs shall be recommended by the manufacturer for use on 2:1 slopes.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Inspect all products prior to the installation for any defects that may have been the result of storage and handling. The Engineer reserves the right to reject and require replacement of any damaged product, at no additional cost to the Owner.

3.2 INSTALLATION

- A. Install geosynthetic products in accordance with the approved manufacturer's QA/QC manuals, project details, and pertinent sections of these Specifications.

3.3 QUALITY CONTROL

- A. The Engineer may remove a sample (i.e. a strip that is 3 feet long by the entire roll width) from a maximum of 1 roll of each 10 rolls of all geosynthetic materials delivered to the project, and submit the samples to an independent laboratory for analysis of the product to ensure that the geosynthetics meet the specifications herein.

END OF SECTION

(DATA SHEETS FOLLOW)

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| Data Sheet DS1 - Non-Woven Geotextile Mechanical Properties | | | | | |
|---|-------------|-------------------------|---------------------------|-------|----------|
| Property | Test Method | Units | Testing Frequency | Value | |
| | | | | | Group 2 |
| Mass per Unit Area | ASTM D5261 | oz/yd ² | 1/150,000 ft ² | | 6 |
| AOS | ASTM D4751 | US Sieve | 1/150,000 ft ² | | 70 |
| Permitivity | ASTM D4491 | gal/min/ft ² | 1/150,000 ft ² | | 90 |
| Puncture Strength | ASTM D4833 | lbs | 1/150,000 ft ² | | 90 |
| Mullen Burst Strength | ASTM D3786 | lbs/in ² | 1/150,000 ft ² | | 350 |
| Trapezoidal Tear Strength | ASTM D4533 | lbs | 1/150,000 ft ² | | 65 |
| Grab Tensile/Elongation | ASTM D4632 | lbs(%) | 1/150,000 ft ² | | 150 (50) |

SECTION 02200

SITE PREPARATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes
 - 1. Clearing and grubbing
 - 2. Grading
 - 3. Stripping and stockpiling of soil and sod

1.2 SUBMITTALS

- A. Submit construction methods and equipment that will be utilized for the clearing, grubbing, and waste material disposal specified within this Section.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 CLEARING AND GRUBBING

- A. Except as otherwise directed, cut, grub, remove and dispose of all trees, stumps, brush, shrubs, roots and any other objectionable material within the limits of the Work on the site and where required to construct the work.
- B. Protect trees or groups of trees, designated by the Engineer to remain, from damage by all construction operations by erecting suitable barriers, or by other approved means. Conduct clearing operations to prevent falling trees from damaging trees designated to remain.
 - 1. All damage done to the trees by the Contractor's operation shall be trimmed and painted where cut as directed or as necessary to provide adequate vertical clearance for construction activities. The dressing or paint shall be applied no later than two days after the cuts are made.
 - 2. Use all necessary precautions to prevent injury to other desirable growth in all areas. Contractor shall assume full responsibility for any damage.
- C. Protect areas outside the limits of clearing from damage. No equipment or materials shall be stored in these areas.
- D. No stumps, trees, limbs, or brush shall be buried in fills or embankments.

3.2 DISPOSAL OF MATERIALS

- A. Remove all tree trunks, limbs, roots, stumps, brush, foliage, other vegetation and objectionable material from the site and dispose of in a legal manner.
- B. Burning or direct burial of cleared and grubbed materials on-site will not be permitted.

3.3 GRADING

- A. In preparation for placing loam, paved drives and appurtenances, perform grading to the lines, grades and elevations shown on the Drawings, and otherwise directed by the

Engineer and perform in such a manner that the requirements for formation of embankments can be followed. All material encountered, regardless of its nature, within the limits indicated, shall be removed and disposed of as directed. During the process of grading, maintain the subgrade in such condition that it will be well drained at all times. Install temporary drains and drainage ditches to intercept or divert surface water that may affect the work when necessary.

- B. If at the time of grading it is not possible to place material in its final location, stockpile material in approved areas for later use. No extra payment will be made for the stockpiling or double handling of excavated material.
- C. The right is reserved to make minor adjustments or revisions in lines or grades if found necessary as the work progresses.
- D. Stones or rock fragments larger than 4 inches in their greatest dimensions will not be permitted in the top 12 inches of the finished subgrade of all fills or embankments except along the access roadways and rip-rap where shown on the Drawings.
- E. In cuts, loose or protruding rocks on the excavated slopes shall be barred loose or otherwise removed to line or finished grade of slope. Cut and fill slopes shall be uniformly dressed to the slope, cross-section and alignment shown on the Drawings or as directed by the Engineer.

3.4 DUTCH ELM WOOD

- A. Dutch Elm diseased wood shall be disposed of in accordance with any local regulations.
- B. Where the work includes the removal of elm trees or the limbs of elm trees, such trees or limbs thereof shall be disposed of immediately after cutting or removal and in such a manner as to prevent the spread of Dutch Elm disease. This shall be accomplished by covering them with earth to a depth of at least 6 inches in areas outside the right-of-way locations where the Contractor has arranged for disposal.
- C. Where the work includes the removal and disposal of stumps of elm trees, such stumps shall be completely disposed of immediately after cutting in the manner specified above.

END OF SECTION

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SECTION 02220

DEMOLITION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Demolition of concrete spillway
 - 2. Demolition of concrete waterway
 - 3. Demolition of existing stone walls
 - 4. Removal and lawful disposal of miscellaneous debris and solid waste located within the Limit of Work indicated on the Drawings
- B. Related Sections
 - 1. Section 01320 - Construction Photographs
 - 2. Section 01725 - Preservation and Restoration of Project Features
 - 3. Section 02315 - Excavation, Backfill, Compaction and Dewatering

1.2 DEFINITIONS

- A. Demolish – To tear down, segregate waste streams and lawfully recycle or dispose of all debris generated in the process including structure contents.
- B. Limit of Work – Area delineated on Drawings that defines the extent of demolition work under the Contract.

1.3 SUBMITTALS

- A. Informational Submittals
 - 1. Methods of demolition and equipment proposed to demolish structures. This submittal should be sufficient to demonstrate a thorough understanding of the Work to be completed and the means that will be implemented to safely complete the demolition within the Contract Time without damage to surrounding structures or resources.
 - 2. Waste Management Plan to indicate the types of wastes to be generated and the proposed disposal or recycling locations. Include back-up disposal facilities.
 - 3. Copies of any authorizations and permits required to perform the Work, including disposal/recycling facility permits.
- B. The following records and disposal documentation must be maintained and kept current throughout the Project. These documents will be maintained in chronological order in a 3-ring binder with appropriate tabbed dividers. The binder will be reviewed for completeness at each progress meeting. Requests for periodic payments may be rejected, in whole or in part, if documentation is not current.
 - 1. Records of the amounts of waste generated, by waste type

2. Evidence of lawful disposal or recycling of all wastes generated
3. Documentation of underground structures and utilities
4. Copies of any analytical results generated as a result of waste stream characterization

1.4 REGULATORY REQUIREMENTS

- A. Contractor is solely responsible for obtaining permits or approvals which may be required to perform the work of this section, including all costs, fees and taxes required or levied, except for the following permits that will be obtained by the Owner:
 1. Order of Conditions from the local Conservation Commission.
 2. MassDEP 401 Water Quality Certificate
 3. Army Corps of Engineers Section 404 Pre-Construction Notification
 4. MassDCR Chapter 253 Dam Safety Permit
- B. Notify and obtain such permits or approvals from agencies having jurisdiction over demolition prior to starting work.
- C. Comply with all applicable federal, state, and local environmental, safety and health requirements regarding the demolition of structures and other site features and recycling or disposal of demolition debris, as applicable.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify site conditions before proceeding with demolition work. Field check the accuracy of the Drawings and inspect structures and utilities prior to start of work and notify the Engineer in writing, of any hazardous conditions and/or discrepancies. Primary structures and other site features are shown on the Drawings; other smaller structures, including, but not limited to, concrete walks and pads, miscellaneous signs, lamp posts, railings, and fencing may not be shown on the Drawings, but may exist within the Limit of Work and shall be demolished.
 1. Unknown Site Conditions - The information provided on the Drawings and in the Specifications is believed accurate. Field verify all information. Bear full responsibility for obtaining all locations of underground structures, utilities and their connections. Maintain services to buildings outside the limits of work.
 2. Interior Elements - Interior features including but not necessarily limited to structural elements, walls, partitions, equipment, piping or other building facilities are not shown on the drawings and must be visually inspected. Inspect and appraise all features and facilities to be demolished or removed for salvage. Investigate to assure the condition of the work to be demolished and take all precautions necessary to ensure safety of people and property.
- B. Demolish the structures by methods that will not cause damage to surrounding structures, underground and overhead utilities, or other existing items and structures that are to remain in place.

- C. Promptly and properly manage all debris as the demolition progresses. Construct and/or prepare material staging/stockpile areas at locations approved by the Engineer.

3.2 PREPARATION

- A. Remove and/or stabilize all overhead hazards, prior to commencing work.

3.3 HAZARDOUS MATERIALS

- A. Oil and Hazardous Material Contamination

- 1. There is no known soil contamination at the site. However, contaminated soil may be encountered during excavation. In the event that contaminated soil is encountered, handle such material in accordance with Section 01350 – Health and Safety Plan.

3.4 DEMOLITION

- A. Demolish the concrete spillway, waterway and stone wall by methods that will not cause damage to surrounding structures, underground and overhead utilities, or other existing items and structures that are to remain in place.
- B. Promptly and properly manage all debris as the demolition progresses. Construct and/or prepare material staging/stockpile areas at locations approved by the Engineer.
- C. Salvage stone from the dam and stone wall for reuse as defined by section 02320.

3.5 DISPOSAL

- A. Legally dispose of or recycle all materials from demolition as well as equipment and other materials that are within the buildings. The disposal site shall be permitted to accept the waste stream by the applicable State Agency. Perform the loading of demolition materials in a manner that prevents materials and activities from generating excessive dust and ensures minimum interference with roads, sidewalks and streets both onsite and offsite.
- B. Provide evidence that the demolition materials have been received at a legal disposal, recycle, reuse or salvage location. Such proof may include truck weigh slips from an approved disposal facility or documentation of transfer of title. Transport of all materials off site shall be in accordance with applicable Department of Transportation Regulations. All materials leaving the site shall become the property of the Contractor.
- C. Stone that is suitable for reuse shall be stockpiled on site as defined in Sections 01640 and 02320. Legally dispose of unused stone at end of project.

3.6 SITE RESTORATION

- A. Prior to any backfilling, document the location of any structures that remain in place through construction photographs (Section 01320) and by obtaining swing ties to and elevations of any structures to be buried. Progress payments may be withheld if current documentation is not maintained.
- B. Restore damaged areas of the site or neighboring properties in accordance with Sections 01725 and stabilize slopes in accordance with the erosion and sedimentation control requirements of the Contract.
- C. Loam and seed all disturbed areas in accordance with Section 02920 and 02922.

END OF SECTION

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SECTION 02280

PIPELINE AND UNDERGROUND STRUCTURE ABANDONMENT

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Abandonment of existing culverts
 - 2. For use when an unneeded pipe is found within the limit of work but outside of excavations. Unneeded pipes found outside of excavations are to be removed.
- B. Related Sections
 - 1. Section 02320, Borrow Material

1.2 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and methods required for proper performance of the work in this section.
- B. Use equipment of adequate size, capacity and quantity to accomplish the work of this Section in a safe timely manner.
- C. Comply with the directions of the Engineer and the requirements of governmental agencies having jurisdiction.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Gravel borrow shall meet the requirements of Section 02320, Borrow Material.
- B. Controlled density fill shall meet the requirements of Section 02319, Controlled Density Fill.

PART 3 EXECUTION

3.1 ABANDONING PIPELINES AND CULVERTS

- A. Fill the whole pipe length of gravity pipes and culverts to be abandoned with controlled density fill complying with Section 02319.
- B. Seal gravity pipes that are to be abandoned at each end with a concrete plug not less than 1½ times the pipe diameter long in the barrel of the pipeline. For example, a 10-inch diameter pipe will require that a minimum 15-inch long plug be installed. Where the pipe plug will be buried, the complete concrete plug shall be covered with a PVC cap on the outside to further help prevent the intrusion of soil into the abandoned pipe. A suitably strong mounted bulkhead or other secure plug or blockage may be substituted for a concrete plug.
- C. The plug shall include a fill pipe for Controlled Density Fill and an air relief pipe. Filling the pipe with Controlled Density Fill may require set ups on both ends of the pipe or culvert to ensure the entire pipe or culvert has been filled.

- D. Pipe ends shall not be backfilled unless properly abandoned.
- E. Over-excavation to the crown of the culvert, demolition of the crown, and filling the culvert from the top with CDF may also be performed if preferred by the Contactor.

3.2 REPAIR/RESTORATION

- A. Match surface repairs to its immediate surrounding area. Complete this work in accordance with the applicable specification section.

END OF SECTION

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SECTION 02315

EXCAVATION, BACKFILL, COMPACTION, AND DEWATERING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Excavation, backfill and compaction for buildings, retaining walls and other structures
 - 2. Earth retention systems
 - 3. Temporary dewatering systems
- B. Related Sections
 - 1. Section 01570 - Temporary Controls
 - 2. Section 02320 - Borrow Materials

1.2 REFERENCES

- A. ASTM D1557-07 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³))
- B. ASTM D1556-07 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
- C. ASTM D2487-06e1 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
- D. ASTM D6938-08a - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)
- E. 29 CFR Part 1926 Subpart P - OSHA Excavation Regulations 1926.650 through 1926.652 including Appendices A through F
- F. 520 CMR 14.00 Excavation and Trench Safety
- G. 780 CMR 1705.0 Requirements for Structural Tests and Inspections
- H. Commonwealth of Massachusetts Highway Department "Standard Specifications for Highways and Bridges," 1988 Edition as amended

1.3 DEFINITIONS

- A. Benching - A method of protecting employees from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels.
- B. Earth Retention Systems - Any structural system, such as sheeting and bracing or cofferdams, designed to retain in-situ soils in place and prevent the collapse of the sides of an excavation in order to protect employees and adjacent structures.
- C. Excavation - Any man-made cut, cavity, trench, or depression in an earth surface, formed by earth removal.

- D. Protective System - A method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into an excavation, or from the collapse of adjacent structures. Protective systems include earth retention systems, sloping and benching systems, shield systems, and other systems that provide the necessary protection.
- E. Registered Professional Engineer - A person who is registered as a professional engineer in the state where the work is to be performed. However, a professional engineer, registered in any state is deemed to be a "registered professional engineer" within the meaning of this standard when approving designs for "manufactured protective systems" or "tabulated data" to be used in interstate commerce.
- F. Licensed Site Professional - A person who is registered by the Commonwealth of Massachusetts to render Hazardous Waste Site Cleanup Activity Opinions.
- G. Shield System - A structure that is designed to withstand the forces imposed on it by a cave-in and thereby protects employees within the structure. Shields can be permanent structures or can be designed to be portable and moved along as work progresses. Additionally, shields can be either pre-manufactured or job-built in accordance with 29 CFR 1926.652(c)(3) or (c)(4). Shields used in trenches are usually referred to as "trench boxes" or "trench shields."
- H. Sloping - A method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation so as to prevent cave-ins. The angle of incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure, and application of surcharge loads.
- I. Temporary Dewatering System – A system to lower and control water to maintain stable, undisturbed subgrades at the lowest excavation levels. Dewatering shall be provided for all pipelines, structures and for all other miscellaneous excavations.
- J. Trench - A narrow excavation (in relation to its length) made below the surface of the ground, of at least three feet in depth. In general, the depth is greater than the width, but the width of a trench (measured at the bottom) is not greater than 15 feet (4.6 m).

1.4 SUBMITTALS

- A. Drawings and calculations for each Earth Retention System required in the Work. The submittal shall be in sufficient detail to disclose the method of operation for each of the various stages of construction required for the completion of the Earth Retention Systems.
 - 1. Submit calculations and drawings for Earth Retention Systems prepared, signed and stamped by a Professional Engineer registered in the state where the work is performed.
- B. Performance data for the compaction equipment to be utilized
- C. Construction methods that will be utilized for the removal of rock
- D. Modified Proctor Test (ASTM D1557) results and soil classification (ASTM D2487) for all proposed backfill materials at the frequency specified below:

1. For suitable soil materials removed during Excavation, perform one test for every 1,000 cubic yards of similar soil type. Similarity of soil types will be as determined by the Engineer.
 2. For borrow materials; perform tests at frequency specified in Section 02320, Borrow Materials.
- E. Compaction test results (i.e. ASTM D6938 or ASTM D1556) at a frequency of one test for every 100 cubic yards of material backfilled or at a minimum of one test per lift. The Engineer will determine the locations and lifts to be tested. The Contractor shall plan his operations to allow adequate time for laboratory tests and to permit taking of field density tests during compaction.
1. Methods and equipment proposed for compaction shall be subject to prior review by the Engineer. Compaction generally shall be done with vibrating equipment. Static rolling without vibration may be required by the Engineer on sensitive soils that become unstable under vibration. Displacement of, or damage to existing utilities or structure shall be avoided. Any utility or structure damaged thereby shall be replaced or repaired as directed by the Engineer.
 2. Additional compaction testing may be required when there is evidence of a change in the quality of moisture control or the effectiveness of compaction.
 - a. Any costs associated with correcting and retesting as a result of a failure to meet compaction requirements shall be borne by the Contractor.
 3. If all compaction test results within the initial 25% of the total anticipated number of tests indicate compacted field densities equal to or greater than the project requirements, the Engineer may reduce frequency of compaction testing. In no case will the frequency be reduced to less than one test for every 500 cubic yards of material backfilled.
 4. The Contractor is cautioned that compaction testing by nuclear methods may not be effective where trenches are so narrow that trench walls impact the attenuation of the gamma radiation, when adjacent to concrete that impacts the accuracy of determining moisture content, or where oversize particles (i.e. large cobbles or coarse gravels) are present. In these cases, other field density testing methods may be required.
- F. Dewatering plan for the excavation locations. Design shall include calculations and drawings stamped and signed by a Professional Engineer registered in the state where the work is performed.

1.5 QUALITY ASSURANCE

- A. All Excavation, Trenching, and related Earth Retention Systems shall comply with the requirements of OSHA excavation safety standards (29 CFR Part 1926 Subpart P), 520 CMR 14.00, and other State and local requirements. Where conflict between OSHA and State regulations exists, the more stringent requirements shall apply.

1.6 PROJECT CONDITIONS

- A. Notify Dig Safe and obtain Dig Safe identification numbers.
- B. Notify utility owners in reasonable advance of the work and request the utility owner to stake out on the ground surface the underground facilities and structures. Notify the

Engineer in writing of any refusal or failure to stake out such underground utilities after reasonable notice.

- C. In accordance with 520 CMR 14.00, no person shall, except in an emergency, make an excavation in any public way, public property, or privately owned land until a permit is obtained from the appropriate designated permitting authority. For this project, the permit should be obtained from Town of Sutton Highway Department.
- D. Contractor is responsible for safe, properly supported excavation with properly controlled groundwater, including determining whether and what type of excavation support and dewatering is necessary.

PART 2 PRODUCTS

2.1 SOIL MATERIALS

- A. Fill material is subject to the approval of the Engineer and may be either material removed from excavations or borrow from off site. Fill material, whether from the excavations or from borrow, shall be of such nature that after it has been placed and properly compacted, it will make a dense, stable fill.
- B. Satisfactory fill materials shall include materials classified by ASTM D 2487 as GW, GP, GM, GP-GM, GW-GM, GC, GP-GC, SW, and SP. Additional requirements are included in Section 02320.
- C. Satisfactory fill materials shall not contain trash, refuse, vegetation, masses of roots, individual roots more than 18 inches long or more than 1/2 inch in diameter, or stones over 6 inches in diameter. Unless otherwise stated in the Contract Documents, organic matter shall not exceed minor quantities and shall be well distributed.
- D. Satisfactory fill materials shall not contain frozen materials nor shall backfill be placed on frozen material.
- E. Excavated surface and/or pavement materials such as gravel or trap rock that are salvaged may be used as a sub-grade material, if processed to the required gradation and compacted to the required degree of compaction. In no case shall salvaged materials be substituted for the required gravel base.

2.2 DEWATERING MATERIALS

- A. Provide compost wattles in accordance with Section 01570.
- B. Provide silt filter bags (Dandy Dewatering Bag, Dirtbag, JMP Environ-Protection Filter Bag, or equal) of adequate size to match flow rate.
- C. Provide dewatering equipment and materials for engineered dewatering systems.

PART 3 EXECUTION

3.1 PREPARATION

- A. Public Safety and Convenience
 1. Adhere to the requirements of 520 CMR 14.00 for all excavation work.
 2. Take precautions for preventing injuries to persons or damage to property in or about the Work.
 3. Provide safe access for the Owner and Engineer at site during construction.

4. Do not obstruct site drainage, natural watercourses or other provisions made for drainage.

3.2 CONSTRUCTION

A. Earth Retention Systems

1. Provide Earth Retention Systems necessary for safety of personnel and protection of the Work, adjacent work, utilities and structures.
2. Maintain Earth Retention Systems for the duration of the Work.
3. Sheeting
 - a. Systems shall be constructed using interlocking corner pieces at the four corners. Running sheet piles by at the corners, in lieu of fabricated corner pieces, will not be allowed.
 - b. Drive sheeting ahead of and below the advancing excavation to avoid loss of materials from below and from in front of the sheeting.
 - c. Sheeting is to be driven to at least the depth specified by the designer of the earth retention system, but no less than 2 feet below the bottom of the Excavation.
4. Remove earth retention system, unless designated to be left in place, in a manner that will not endanger the construction or other structures. Backfill and properly compact all voids left or caused by the withdrawal of sheeting.
 - a. Remove earth retention systems, which have been designated by the Engineer to be left in place, to a depth of 3 feet below the established grade.

B. Excavation

1. Perform excavation to the lines and grades indicated on the Drawings. Backfill unauthorized over-excavation in accordance with the provisions of this Section, at no additional cost to the Owner.
2. Excavate with equipment selected to prevent damage to existing utilities or other facilities. Hand excavate as necessary to locate utilities or avoid damage.
3. Sawcut the existing pavement in the vicinity of the excavation prior to the start of excavation in paved areas, so as to prevent damage to the paving outside the requirements of construction. The sawcut shall be neat in appearance with no ragged lines; trim pavement as necessary.
4. Perform excavation in such a manner as to prevent disturbance of the final subgrade. The Engineer or Owner may require the final six inches of excavation be performed by hand, with the use of a smooth-faced bucket, or other means acceptable to the Engineer or Owner, at no additional cost if subgrade disturbance is considered excessive as judged by the Engineer or Owner.
5. During excavation, material satisfactory for backfill shall be stockpiled in an orderly manner at a distance from the sides of the excavation equal to at least one half the depth of the excavation, but in no case closer than 2 feet.

- a. Excavated material not required or not suitable for backfill shall be removed from the site and disposed of in accordance with local, State and Federal laws and regulations.
 - b. Perform grading to prevent surface water from flowing into the excavation.
 - c. Pile excavated material in a manner that will endanger neither the safety of personnel in the excavation nor the Work itself.
6. Grade or create berms or swales to direct surface water from excavations to appropriate structures designed to accommodate storm water. If no structures exist, direct water to areas that minimize impacts to adjacent structures and properties.
 7. If satisfactory materials are not encountered at the design subgrade level, excavate unsatisfactory materials to the depth directed by the Engineer and properly dispose of the material. Backfill the resulting extra depth of excavation with satisfactory fill materials and compact in accordance with the provisions of this Section.
 8. Contractor shall remove buried peat layer below footings.

C. Backfill and Compaction

1. Unless otherwise specified or indicated on the Drawings, use satisfactory material removed during excavation for backfilling trenches. The Engineer may require stockpiling, drying, blending and reuse of materials from sources on the Project.
2. Spread and compact the material promptly after it has been deposited. When, in the Engineer's judgment, equipment is inadequate to spread and compact the material properly, reduce the rate of placing of the fill or employ additional equipment.
3. Prior to backfilling or placement of structures, excavated subgrades shall be proof compacted with either 10 passes of a 10-ton vibratory drum roller for open excavations or 6 passes of a large, reversible, walk behind vibratory compactor capable of exerting a minimum force of 2,000 pounds in trench or pit excavations. Soft or weak spots shall be over-excavated and replaced with compacted Granular Fill or compacted Crushed Stone wrapped in a non-woven geotextile, as directed by the Owner or their representative. If proof compaction will prove detrimental to the subgrade due to the presence of groundwater, static rolling may be allowed at the discretion of the Engineer or Owner.
4. When excavated material is specified for backfill and there is an insufficient amount of this material at a particular location on the Project due to rejection of a portion thereof, consideration will be given to the use of excess material from one portion of the Project to make up the deficiency existing on other portions of the Project.
 - a. Use borrow material if there is no excess of excavated material available at other portions of the Project.
5. Backfilling and compaction methods shall attain 92% of maximum dry density at optimum moisture content as determined in accordance with ASTM D1557.

6. Do not place stone or rock fragment larger than six inches in greatest dimension in the backfill.
7. Maximum loose lift height for backfilling existing or borrow material shall be 12 inches, unless satisfactory compaction is demonstrated otherwise to the Engineer through field-testing. In no case shall loose lift height for backfilling exceed 3 feet.
8. This initial backfill is to be placed in layers of no more than 6 inches and thoroughly tamped under and around the pipe. This initial backfilling shall be deposited in the trench for its full width on both sides of the pipe, fittings and appurtenances simultaneously.
9. The Contractor shall not place backfill against or on structures until they have attained sufficient strengths to support the loads to which they will be subjected, without distortion, cracking, or other damage. As soon as possible after the structures are adequate, they shall be backfilled with suitable backfill material.

D. Dewatering

1. Provide, operate and maintain adequate pumping, diversion and drainage facilities in accordance with the approved dewatering plan to maintain the excavated area sufficiently dry from groundwater and/or surface runoff so as not to adversely affect construction procedures nor cause excessive disturbance of underlying natural ground. Locate dewatering system components so that they do not interfere with construction under this or other contracts.
2. Conduct operations so as to prevent at all times the accumulation of water, ice and snow in excavations or in the vicinity of excavated areas so as to prevent water from interfering with the progress or quality of the work.
3. Take actions necessary to ensure that dewatering discharges comply with permits applicable to the Project. Dispose of water from the excavations in such a manner as to avoid public nuisance, injury to public health or the environment, damage to public or private property, or damage to the work completed or in progress.
4. Repair any damage resulting from the failure of the dewatering operations and any damage resulting from the failure to maintain all the areas of work in a suitable dry condition, at no additional cost to the Owner.
5. Take precautions to protect new work from flooding during storms or from other causes. Control the grading in the areas surrounding all excavations so that the surface of the ground will be properly sloped to prevent water from running into the excavated area. Where required, provide temporary ditches for drainage. Upon completion of the work, all areas shall be restored to original condition.
6. Brace or otherwise protect pipelines and structures not stable against uplift during construction.
7. Do not excavate until the dewatering system is operational and the excavation may proceed without disturbance to the final subgrade.
8. Unless otherwise specified, continue dewatering uninterrupted until the structures, pipes, and appurtenances to be installed have been completed such that they will not float or be otherwise damaged by an increase in groundwater elevation.

9. Temporarily lower the groundwater level at least two feet below excavations to limit potential “boils”, loss of fines, or softening of the ground. If any of these conditions are observed, submit a modified dewatering plan to the Engineer within 48 hours. Implement the approved modified plan and repair any damage incurred at no additional cost to the Owner.
10. When subgrades are soft, weak, or unstable due to improper dewatering techniques, remove and replace the materials in accordance with Section 02320 at no additional cost to the Owner.
11. Notify the Engineer immediately if any settlement or movement is detected of survey points adjacent to excavations being dewatered. If settlement is deemed by the Engineer to be related to the dewatering, submit a modified dewatering plan to the Engineer within 24 hours. Implement the approved modified plan and repair any damage incurred to the adjacent structure at no additional cost to the Owner.
12. Dewatering discharge:
 - a. Install sand and gravel, or crushed stone, filters in conjunction with sumps, well points, and/or deep wells to prevent the migration of fines from the existing soil during the dewatering operation.
 - b. Transport pumped or drained water without interference to other work, damage to pavement, other surfaces, or property. Pump water through a silt filter bag or other approved sedimentation device prior to discharge.
 - c. Do not discharge water into any sanitary sewer system.
 - d. Provide separately controllable pumping lines.
 - e. The Engineer reserves the right to sample discharge water at any time.
13. Install erosion/sedimentation controls for velocity dissipation at point discharges onto non-paved surfaces.
14. Removal
 - a. Do not remove dewatering system without written approval from the Engineer.
 - b. Backfill and compact sumps or ditches with screened gravel or crushed stone in accordance with Section 02320.

3.3 PROTECTION

A. Protection of Existing Structures

1. All existing foundations, conduits, wall, pipes, wires, poles, fences, property line markers and other items which the Engineer decides must be preserved in place without being temporarily or permanently relocated, shall be carefully supported and protected from damage by the Contractor. Should such items be damaged, they shall be restored by the Contractor to at least as good condition as that in which they were found immediately before the Work began.

B. Accommodation of Traffic

1. Streets and drives shall not be unnecessarily obstructed. The Contractor shall take such measures at his own expense to keep the street or road open and safe for two-way traffic unless otherwise indicated.
 2. Construct and maintain such adequate and proper bridges over excavations as may be necessary or as directed for the safe accommodation of pedestrians and vehicles. Provide substantial barricades at crossings of trenches, or along the trench to protect the traveling public.
 3. Where deemed necessary, such additional passageways as may be directed shall be maintained free of such obstructions. All material piles, open excavations, equipment, and pipe which may serve as obstructions to traffic shall be protected by proper lights, signage, or guards as necessary.
 4. All traffic controls shall be in accordance with the Manual on Uniform Traffic Control Devices for Streets and Highways, latest edition.
- C. Erosion and Sedimentation Control
1. Take all necessary steps to prevent soil erosion.
 2. Plan the sequence of construction so that only the smallest practical area of land is exposed at any one time during construction.
 3. Temporary vegetation and/or mulching shall be used to protect critical areas exposed during construction as judged by the Engineer.

END OF SECTION

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SECTION 02319

CONTROLLED DENSITY FILL

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Non-Excavatable Controlled Density Fill for pipe and culvert abandonment
- B. For the purposes of this Section, Controlled Density Fill (CDF) and Controlled Low-Strength Material (CLSM) have the same meaning.

1.2 REFERENCES

- A. American Concrete Institute (ACI) 229 - Controlled Low-Strength Materials
- B. American Society for Testing Materials
 - 1. ASTM C33 – Standard Specification for Concrete Aggregates
 - 2. ASTM C143 - Standard Test Method for Slump of Hydraulic-Cement Concrete
 - 3. ASTM C150 – Standard Specification for Portland Cement
 - 4. ASTM C231 – Standard Test Method for Air Content of Freshly Mixed Concrete using Pressure Method
 - 5. ASTM C260 – Standard Specification for Air-Entraining Admixtures
 - 6. ASTM C618 – Standard Specification for Fly Ash and Raw or Calcinated Natural Pozzolan for use as a Mineral Admixture in Portland Cement Concrete
 - 7. ASTM D6103 – Standard Test Method for Flow Consistency of Controlled Low Strength Material

1.3 SUBMITTALS

- A. Submit proposed CDF design mix fifteen (15) days prior to use, indicating unit weight, slump or flowability (per ASTM C143 or ASTM D6103), test results indicating 28-day compressive strength, supplier, batch quantities, and constituents.
- B. If pumping is utilized, submit a list of proposed equipment and a CDF design mix compatible with pumping.
- C. Submit truck load tickets upon delivery. Ticket information shall include batch time and date, weight of constituents, quantity of admixtures, water added at the plant, and moisture content of coarse and fine aggregates.

1.4 QUALITY ASSURANCE

- A. Provide facilities and access for sampling and testing CDF materials at the plant.
- B. Notify the Engineer prior to placement to allow for inspection of the CDF on site and observation of the placement.
- C. Any material or workmanship which is rejected, either at the batch plant or at the site, shall be removed or replaced promptly.

PART 2 PRODUCTS**2.1 MATERIALS**

- A. CDF shall be a self-leveling, self-consolidating, rigid setting material to be used where indicated on the Drawings or as directed by the Engineer.
- B. CDF shall be comprised of combinations of Portland Cement, water, sand aggregate, fine aggregate, fly ash, air-entrainment admixture or other admixtures.
 - 1. Portland Cement: Cement shall be American-made Portland cement, free from water soluble salts or alkalis which will cause efflorescence on exposed surfaces. Portland cement shall be Type I, II or III meeting the requirements of ASTM C150.
 - 2. Aggregate: Fine aggregate and sand aggregate shall be washed, inert, natural sand conforming to ASTM C33.
 - 3. Water: Water shall be from an approved source, and shall be potable, clean and free from oils, acids, alkali, organic matter and other deleterious material.
 - 4. Fly Ash: Fly ash shall conform to the requirements of ASTM C618.
 - 5. Admixtures: Admixtures shall conform to the requirements of ASTM C260. Acceptable admixtures include:
 - a. DAREX AEA – W.R. Grace & Co.
 - b. MB-VR or MB-AE90 – BASF Admixtures Inc.
 - c. Air-Mix – Eucid Chemical Co.
 - d. MasterCell 25 - BASF Admixtures, Inc.
 - e. Approved equal
- C. Water shall be used to produce mix designs with a consistency that will result in a flowable self-leveling product at time of placement.
- D. Chemicals and/or mineral admixtures, primarily for air entraining or flowability, may be used as necessary.

2.2 CONTROLLED DENSITY MATERIAL FOR PIPE ABANDONMENT

- A. CDF for pipe abandonment shall be highly flowable for use filling abandoned pipe and shall exhibit a 28-day compressive strength of 30-150 psi with a minimum slump of 10 inches.

PART 3 EXECUTION**3.1 TESTING**

- A. Sample the CDF in the field and perform a modified slump test in accordance with ACI 229 and ASTM C143 upon request by the Engineer.

3.2 PLACEMENT

- A. Do not place material on a frozen surface. If the ambient temperature is less than 40°F, the ambient temperature shall be at least 35°F and rising at the time of placement. Provide adequate protection against frost action when freezing weather is anticipated.

- B. CDF may be placed by chutes, conveyors, buckets or pumps directly into the cavity to be filled. To avoid segregation, the drum shall be kept agitating. Place CDF in such a manner as to prevent segregation and accumulations of hardened CDF on forms or reinforcement above the grade of CDF being placed. Use suitable hoppers and spouts with restricted outlets and tremies as needed.
- C. Where CDF is to be placed in pipes or conduits for abandonment, provide means to allow displaced air and water to escape, thereby deterring entrapment.
- D. If voids or cavities remain after the placement of the CDF, the Contractor shall modify the placement method or flow characteristics of the CDF. Pipes, voids or cavities which have not been filled properly shall be corrected as directed by the Engineer.
- E. Cover or otherwise protect CDF placed in a trench as backfill until the material is load bearing for the intended use.

END OF SECTION

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SECTION 02320

BORROW MATERIALS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Dense Graded Crushed Stone
 - 2. Granular Fill
 - 3. Stone Borrow
- B. Related Sections
 - 1. Section 02315 – Excavation, Backfill, Compaction and Dewatering

1.2 REFERENCES

- A. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
- B. ASTM C117 - Standard Test Method for Materials Finer than 75 μ m (No. 200) Sieve in Mineral Aggregates by Washing
- C. ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
- D. ASTM D1557 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lb./ft³)
- E. ASTM D2434 - Standard Test Method for Permeability of Granular Soils (Constant Head)
- F. ASTM D2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System)
- G. ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)
- H. AASHTO – Standard Specification for Transportation Materials and Methods of Sampling and Testing, 1986 Edition as amended
- I. Commonwealth of Massachusetts Highway Department “Standard Specification for Highways and Bridges,” 1988 Edition as amended

1.3 SUBMITTALS

- A. Representative Samples of borrow materials taken from the source. Tag, label, and package the Samples as requested by Engineer. Provide access to the borrow site for field evaluation and inspection.
- B. Provide sieve analysis (ASTM C136) and permeability analysis (ASTM D2434) from certified soils testing laboratory for all borrow materials. Take and test a sample, at no additional cost to the Owner for each 1,500 c.y. of borrow material placed.

- C. Provide modified proctor analysis (ASTM D1557) from certified soils testing laboratory for all borrow materials.
 - 1. All borrow materials shall be tested once unless more frequent testing is deemed necessary by the Engineer or Owner due to material variation.
- D. The Engineer reserves the right to require more frequent testing than that which is specified above should the borrow characteristics change.

1.4 QUALITY ASSURANCE

- A. No borrow shall be placed prior to the approval of Samples by the Engineer.

1.5 PROJECT/SITE CONDITIONS

- A. Existing Conditions
 - 1. Comply with any environmental requirements and restrictions.
 - 2. Keep all public and private roadway surfaces clean during hauling operations and promptly and thoroughly remove any borrow or other debris that may be brought upon the surface before it becomes compacted by traffic. Frequently clean and keep clean the wheels of all vehicles used for hauling to avoid bringing any dirt upon the paved surfaces.

PART 2 PRODUCTS

2.1 DENSE GRADED CRUSHED STONE FOR SUBBASE

- A. The compacted Processed Gravel Borrow to be used for gravel access roads and pavement subbase, or other area where a firm, free-draining subgrade is needed shall consist of inert material that is hard, durable stone and coarse sand, free from loam and clay, surface coatings and deleterious materials. The coarse aggregate shall have a percentage of wear, by the Los Angeles Abrasion Test, of not more than 50.
- B. Gradation requirements shall conform to the following:

| Sieve | Percent Passing |
|---------|-----------------|
| 3" | 100 |
| 1 ½" | 70 – 100 |
| ¾" | 50 – 85 |
| No. 4 | 30 – 60 |
| No. 200 | 0 - 10 |

- C. Stockpile the processed materials in such a manner to minimize segregation of particle sizes. All processed gravel shall come from approved stockpiles.

2.2 STONE SCREENINGS

- A. Stone Screenings shall be a product from a stone crusher that conform to the following gradation requirements:

Percent by Weight Passing Through

| Sieve Size | Minimum | Maximum |
|-------------------|----------------|----------------|
| #4 | 100 | - |
| #8 | 55 | 80 |
| #16 | 40 | 70 |
| #30 | 25 | 50 |
| #200 | 6 | 15 |

B.

2.3 GRANULAR FILL

A. Granular Fill to be used as fill material to achieve gravel base grade beneath structures, pavement, or other area requiring structural fill shall consist of inert material that is hard, durable stone and sand, free from loam and clay, surface coatings and deleterious materials. The coarse aggregate shall have a percentage of wear, by the Los Angeles Abrasion Test, of not more than 50.

B. Gradation requirements for Granular Fill shall conform to the following:

Percent by Weight Passing Through

| Sieve Size | Minimum | Maximum |
|-----------------------------|----------------|----------------|
| 2/3rds loose lift thickness | 100 | -- |
| No. 10 | 30 | 95 |
| No. 40 | 10 | 70 |
| No. 200 | 0 | 15 |

2.4 STONE BORROW

A. Crushed Stone Borrow

1. Crushed stone borrow shall consist of one of the following materials:

- a. Durable crushed rock consisting of the angular fragments obtained by breaking and crushing solid or shattered natural rock, and free from a detrimental quantity of thin, flat, elongated or other objectionable pieces. A detrimental quantity will be considered as any amount in excess of 15% of the total weight. Thin stones shall be considered to be such stones whose average width exceeds 4 times their average thickness. Elongated stones shall be considered to be stones whose average length exceeds 4 times their average width.
- b. Durable crushed gravel stone obtained by artificial crushing of gravel boulders or fieldstone with a minimum diameter before crushing of 8 inches.

2. The crushed stone shall be free from clay, loam or deleterious material and not more than 1.0% of satisfactory material passing a No. 200 sieve will be allowed to adhere to the crushed stone.
3. The crushed stone shall have a maximum percentage of wear as determined by the Los Angeles Abrasion Test (AASHTO-T-96) as follows:
 - a. For Class 1 Bit. Conc. 30%**
 - b. For Cement Concrete Aggregate 45%***
 - c. Crushed Stone for Subbase 45%

**Crushed stone for this use shall consist of crushed or shattered natural rock only. Crushed gravel stone will not be permitted.

***Except for 5000 psi or greater cement concrete and prestressed concrete which shall be 30%.

4. The crushed stone shall conform to the grading requirements shown in the following grading Table.

| Sieve Size | Percent by Weight Passing Through | |
|---------------------------|-----------------------------------|---------|
| | Minimum | Maximum |
| 1 ½” Crushed Stone | | |
| 2” | 100 | -- |
| 1 ½” | 95 | 100 |
| 1” | 35 | 70 |
| ¾” | 0 | 25 |

5. Stone gradations shall vary depending on field use and shall be determined by Engineer.
 - A. Stone Riprap
 1. Stone Riprap shall consist of hard, durable, and sound angular stone which is resistant to weathering. Rounded stones, boulders, elongated, thin or flat pieces whose breadth or thickness is less than one-third its length will not be allowed. The parent rock for riprap stones shall be igneous or metamorphic rock. Sedimentary rock types such as shale, sandstone, or similar soft stone will not be allowed. The stone shall be free of ice, snow, overburden, spoil, silt, clay, loam, organics and other deleterious matter.
 2. Riprap stone shall have a minimum dry unit weight of 165 pounds per cubic foot.
 3. Gradations of riprap stone material shall be based upon the thickness of the riprap layer as shown on the plans. Riprap layer thickness shall be defined as the typical layer thickness as measured perpendicular to the ground surface or slope. In all cases, no more than 5 percent by weight shall pass a 2-inch sieve. Diameter refers to the equivalent-volume spherical stone diameter as defined by the U.S. Army Corps of Engineers in EM 1110-2-1601.

a. Riprap Type 2

| Percent of Stones Smaller | Diameter (in.) | Percentage of Stones Weighing Less Than | Weight (lbs.) |
|---------------------------|----------------|---|---------------|
| D ₁₀₀ | 24 | 100 | 690 |
| D ₅₀ | 16 | 50 | 200 |
| D ₁₅ | 12 | 15 | 100 |

4. Riprap material shall be well graded as a material without gaps in the gradation curve. The uniformity ratio (D₈₅/D₁₅) shall be between 1.5 to 3.0.
5. All riprap stone placed at the site shall be of the same parent rock from the same quarry and shall be visually similar.
6. Each load of riprap shall be reasonably well graded from the smallest to the maximum size specified. Stones smaller than the specified 10% size and spall will not be permitted in an amount exceeding 10% by weight of each load.

2.5 ORDINARY BORROW

- A. Ordinary borrow shall have the physical characteristics of soils designated as type GW, GP, GM, SW, SP or SM, under USCS and shall not be specified as gravel borrow, sand borrow, special borrow material or other particular kind of borrow. It shall have properties such that it may be readily spread and compacted for the formation of embankments. The borrow shall not include rocks with a major dimension greater than 4 inches and not include organic material. The source shall be provided and the material shall be free of contamination.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Prior to the placement of borrow material, site preparation shall be completed as required by the Contract Documents, and approved by the Engineer.
- B. Ensure that all materials are properly stockpiled on site to prevent contamination by other materials.
- C. Place borrow material over the entire area in uniform lifts and compact in accordance with Section 02315.
- D. Utilize on-site soils prior to using off-site borrow provided on-site soils meet the requirements of the specifications.
- E. Utilize gravel borrow in all locations where a surface treatment has not been specified but requires a firm finish surface.
- F. Processed gravel for pavement subbase is intended to provide a stable foundation for driveways, sidewalk and roadway repair where a gravel base has been specified.
- G. Borrow shall be used as a replacement for unsuitable materials where poor soil conditions are encountered during the progress of the work, where approved by the Engineer. Borrow type will be determined by the Engineer. Borrow material used as a replacement for unsuitable soil is not intended to be an aid to dewatering.

- H. Shape borrow used for pipe foundation material so that it supports the pipe properly and will not damage the pipe, bells, collars, or the pipe fittings.
- I. Place all borrow to keep it free of other materials and to prevent segregation.

END OF SECTION

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SECTION 02670

CONSTRUCTION IN WETLANDS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Timber mats for access during construction
 - 2. Coir fiber logs
 - 3. Invasive species management
 - 4. Removing and salvaging loam and topsoil
 - 5. Restoration of wetlands

1.2 RELATED SECTIONS

- A. Section 01140 – Work Restrictions
- B. Section 01570 – Temporary Controls
- C. Section 02200 – Site Preparation
- D. Section 02315 – Excavation, Backfill and Compaction

1.3 REFERENCES

- A. Order of Conditions from the Sutton Conservation Commission is included in Division 00.
- B. ACOE Section 404 Category II Authorization or Individual Permit is included in Division 00.
- C. MADEP Section 401 Water Quality Certification included is in Division 00.
- D. M.G.L Chapter 253 Dam Safety Permit is included in Division 00.

1.4 SUBMITTALS

- A. Submit a description of methods, sequence of construction, and types of equipment proposed for completing the Work in this Section to ensure compliance with Permits.
- B. Submit proposed construction mat product intended for use, and include manufacturer and literature with product description and performance. Include procedure for cleaning mats before and after use. Also include the names and addresses of similar projects on which timber mats were used and dates of use.
- C. Submit an Invasive Species Management plan that will describe measures to be taken to avoid importation of invasive plants into the site.
- D. Manufacturers information and Certificate: certify projects meet or exceed specified requirements.
- E. Materials suppliers: name, address, phone number
- F. Containment Boom – manufacturer and product data

1.5 WORK RESTRICTIONS

- A. Work associated with permits shall not begin until the applicable municipal, state and federal agencies have been notified in accordance with the permit conditions.
- B. Open trenches within wetland areas are restricted to a maximum of three pipe lengths at any one time.
- C. Equipment refueling is not permitted within 100 feet of wetland areas.
- D. The placement of soil stockpiles is restricted within 50 feet of wetland areas.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Compost wattles, siltation fencing, silt sacks and other erosion control products referred to in this section are detailed on the Drawings and specified in Section 01570, Temporary Controls.
- B. Provide timber construction mats for access to the Work in wetland areas, as described in this section and shown on the Drawings.
 - 1. Timber construction mats shall be a maximum of 16 feet wide.
 - 2. Timber construction mats shall be a hardwood, interlocking mat system manufactured by K.W. Reese, Inc., Northern Tree Services, Inc., American Mat & Timber Co., Empire Mat, or equal.
- C. Coir Fiber Logs
 - 1. Coir fiber is made from pure coir drawn from the husk of the coconut, a 100% natural product. Coir fiber logs are machine fabricated cylindrical shaped rolls made with a knotted outer netting of machine spun coir twine.
 - 2. Log Dimensions: 12-inch diameter and a minimum length of 10 feet per log.
 - 3. Log Density: Packed to a density of no less than 7 lbs/cubic-foot.
 - 4. Provide with pre-drilled holes for tubelings or plug plantings, or logs may be hand drilled by the contractor. Equal to:
 - a. North American Green Coir Logs: Product 12CN7
 - b. RoLanka International, Inc. BioD-Roll 30L
 - c. Nedia Enterprises, Inc. 12" KoirLog (ND Series)
- D. Provide erosion control blankets for wetland restoration activities in accordance with Section 02075.
- E. Provide New England wetland seed mixture for wetland restoration activities. Seed mixture shall be New England Wetmix, as manufactured by New England Wetland Plants, Inc, New England Wetland Detention Basin and Moist Mix by Ernst Seeds, or Wet Meadow & Detention Basin Mix by Vermont Wetland Plant Supply or equal.
- F. Provide New England erosion control/restoration seed mixture for dry sites. Seed mixture shall be New England Erosion Control/Restoration Mix, as manufactured by New England Wetland Plants, Inc, New England Erosion Control & Restoration Mix

for Dry & Moise Sites by Ernst Seeds, or Vermont Conservation & Wildlife Mix by Vermont Wetland Plant Supply or equal.

2.2 GENERAL

- A. During construction activities in wetland areas and within the 100-foot buffer zone of those areas, erosion control and dewatering equipment will be monitored regularly by a qualified wetland scientist retained by the Owner. Provide access to all work areas for the wetland scientist.
- B. Limit storage of equipment and materials in the buffer zone, where possible.
- C. Servicing equipment in wetland areas is prohibited. Limit equipment servicing in the buffer zone, where possible.
- D. Do not use calcium chloride or other chemicals for dust control in wetland areas or buffer zones. Use water only for dust control.

2.3 TIMBER MAT USE

- A. Determine whether the use of timber mats will be required to minimize the rutting of wetland soils. Work completed during sufficiently dry or frozen conditions may not warrant the use of timber mats.
- B. Prior to installation inspect for and remove all vegetative matter.
- C. Install timber mats in accordance with manufacturer's instructions.
- D. Remove loose soils from mats on a daily basis and dispose in upland areas.
- E. Remove timber mats immediately upon completion of work.

2.4 VEGETATION REMOVAL

- A. Trees to be cut will be marked by a qualified wetland scientist retained by the Owner.
- B. Store slash and logs in upland areas for off-site disposal, chipping or re-use on-site.
- C. Remove shrubs and herbaceous vegetation designated on Drawings for re-use by hand with roots intact. Store outside of work area and water as needed.
- D. Remove vegetation designated on Drawings as "invasive" with roots intact and dispose off-site.
- E. Cut remaining vegetation at ground level as needed. Dispose as necessary.

2.5 INVASIVE SPECIES MANAGEMENT

- A. Contractor is responsible for the removal of invasive plants introduced to the site by their activities including in wetland and upland areas. Contractor shall avoid the introduction of invasive plants and document measures to be taken to reduce the risk of new invasive plant introduction in an invasive species management plan. If invasive plants are introduced to the site as a result of the contractors activities they shall be removed at the contractor's expense.
- B. Contractor is not responsible for removal of invasive plants already present at the site.

2.6 SOIL REMOVAL AND RE-USE

- A. Segregate topsoil/muck from mineral subsoil and stockpile separately within upland area.

- B. Backfill excavation initially with mineral subsoil.
- C. Place wetland topsoil/muck over subsoils and grade to existing contours.

END OF SECTION

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SECTION 02900

PLANTING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Loam Borrow
 - 2. Preparation of Backfill Mix
 - 3. Planting of Trees, Shrubs and Bushes
 - 4. Maintenance

1.2 REFERENCES

- A. Massachusetts Department of Public Works Standard Specifications for Highways and Bridges (MDPW) 1988, as amended.
- B. American Nursery & Landscape Association (ANLA) standards

1.3 SUBMITTALS

- A. Samples
 - 1. Submit representative Samples to Engineer for selection and approval. Delivered materials shall match the approved Samples.
 - a. Loam Borrow: Provide representative Samples for testing and approval as directed by the Engineer. Deliver Samples to testing laboratory, having testing report sent directly to the Engineer, and pay all costs.
 - 1) Mechanical and chemical (pH soluble salts) analysis shall be by a public extension service agency or a certified private testing laboratory in accordance with the current standards of the "Association of Official Agricultural Chemists."
 - 2) Report shall be submitted before any loam is to be placed. Soil shall be tested for organic content, Nitrate-Nitrogen, Ammonium Nitrogen, Phosphorus, Potassium, Calcium, Aluminum, Soluble Salts and acidity.
 - b. Mulch: Submit one sample and provide the name and address of the Supplier.
 - B. Anti-desiccant: Submit manufacturer information.
 - C. Tree Paint: Submit manufacturer information.
 - D. Planting Soil Analysis: A standard soil test shall be performed by a licensed commercial testing laboratory or government agency approved by the Engineer. Soil test shall provide recommendation for the addition of fertilizer, lime, and other amendments.

- E. Furnish complete written instructions for maintenance of the plant materials to the Owner at least ten days prior to the end of the maintenance period in order to familiarize the Owner with the proper care and development of the plantings.
- F. Furnish certifications from plant Suppliers indicating the botanical name, quantity, and size of plants to be delivered to the Project.

1.4 QUALITY ASSURANCE

- A. Perform Work with experienced personnel under the direction of a skilled foreman with a minimum three years of experience with similar type and size projects.
- B. Plants are subject to inspection and approval by the Engineer before delivery for conformity to Specification requirements as to quality, size and variety.
- C. No shrubs, trees, or woody vegetation are to be planted within 20 feet of the dam.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Only deliver plant materials immediately prior to installation.
- B. Deliver plant materials to the Site in accordance with the best horticultural practices to prevent damage.
- C. Move and handle plant materials so as to prevent damage to roots and crowns.
- D. "Heal-in" plants that cannot immediately be installed with bark mulch or wood chips in a location that protects the plants from sun and wind. Root balls and containers shall be completely covered and kept consistently moist until installation.
- E. Replace damaged and unhealthy plant materials prior to installation.

1.6 SITE CONDITIONS

- A. Examination of Conditions
 - 1. All areas to be planted shall be inspected by the Contractor before starting Work and any defects such as incorrect grading, etc., shall be reported to the Engineer prior to beginning this Work. The commencement of Work by the Contractor shall indicate his acceptance of the areas to be planted, and he shall assume full responsibility for the Work of this Section.

PART 2 PRODUCTS

2.1 LOAM

- A. Loam shall consist of loose friable topsoil with no admixture of refuse or material toxic to plant growth. Loam shall be generally free from stones, lumps, stumps, or similar objects larger than 1 inch in greatest diameter, subsoil, roots, and weeds. The term as used herein shall mean that portion of the soil profile defined technically as the "A" horizon by the Soil Science Society of America. The pH shall be from 5.5 to 7.6. Loam shall contain a minimum of three percent and a maximum of ten percent of organic matter as determined by loss by ignition. Not more than 65 percent shall pass a No. 200 sieve as determined by the wash test in accordance with ASTM D 1140. In no instance shall more than 20 percent of that material passing the No. 4 sieve consist of clay size particles.

- B. The topsoil and sediment stripped and stockpiled on the Site may be used provided that, after testing and addition of necessary additives, it meets the above specifications. Provide additional loam as required. All excess loam shall become the property of the Contractor and be legally disposed of off-site.

2.2 SOIL ADDITIVES

- A. Commercial fertilizer, peat, humus or other additives shall be used to counteract soil deficiencies as recommended by the soil analysis and as directed by the Engineer.

- 1. Commercial fertilizer shall be a product complying with State and Federal requirements. Deliver to the Site in the original unopened containers, which shall bear the manufacturer's Certificate of Compliance covering analysis, which shall be furnished to the Engineer. At least 50 percent by weight of the nitrogen content shall be derived from organic materials. Fertilizer shall contain not less than the percentages of weight of ingredients as follows or as recommended by the soil analysis:

| | Nitrogen | Phosphorous | Potash |
|------------------------------|-----------------|--------------------|---------------|
| For deciduous trees & shrubs | 10% | 6% | 4% |
| For evergreen trees & shrubs | 7% | 7% | 7% |

- B. Planting soil shall be prepared based on the following proportions.

- 1. Three parts loam with a pH of 6.0 to 6.5.
- 2. One part dehydrated sterilized manure
 - a. Manure shall be well-rotted, unleached stable manure not less than eight months and not more than two years old. It shall be free from sawdust, shavings, or refuse of any kind and shall not contain over 25 percent straw. Furnish information as to kind of disinfectant or chemicals, if any, that may have been used in storage of the manure.
- 3. One part peat moss
 - a. Peat moss shall be composed of the partly decomposed stems and leaves of any or several species of sphagnum moss. It shall be free from wood, decomposed colloidal residue, mineral matter such as sulfuric and iron harmful to plant life. It shall have a water absorbing capacity of 1100 percent to 2000 percent, and a moisture content of 30 percent. It shall have an acidity range of 3.5 pH to 5.5 pH as determined in accordance with the test methods of A.O.A.C.

- C. Humus shall be natural humus, reed peat or sedge peat. It shall be free from excessive amounts of zinc, low in wood content, free from hard lumps and in a shredded or granular form. According to the methods of testing of A.O.A.C. latest edition, the acidity range shall be approximately 5.5 pH to 7.6 pH and the organic matter shall be not less than 85 percent as determined by weight on an over-dry basis.

- D. Leaf mold shall be highly organic dark brown to black spongy residue resulting from the well aerated composting of deciduous tree leaves. It shall be at least three years old, without recognizable leaf parts, free of plants and their roots, debris and other extraneous matter and shall be uncontaminated by foreign matter and substances harmful to plant growth. The organic matter shall not be less than 85 percent by weight

as determined by the loss on ignition of oven-dried Samples. Test Samples shall be oven-dried to a constant weight at a temperature of 110° C. The inorganic residue after ignition shall not be finer textured than 4 percent by weight passing the number 200 sieve with washing.

- E. The following amendments shall be incorporated into the prepared planting soil prior to backfilling of planting pits in accordance with the recommendations of the planting soil analysis.
 - 1. Fertilizer: Complete with 70 percent of the nitrogen derived from organic sources.
 - 2. Lime: Ground dolomite limestone; 95 percent passing through a 100-mesh sieve.
 - 3. Super Phosphate: Finely ground phosphate rock as commonly used for agricultural purposes containing not less than 18 percent available phosphoric acid.
 - 4. Bone Meal: Bone meal shall be fine ground, steam-cooked, packing house bone with a minimum analysis of 18 percent phosphoric acid and 1.0 percent nitrogen.
 - 5. Peat Moss

2.3 PLANT MATERIALS

- A. Installation of plants larger than specified will be acceptable only if approved by the Engineer, and at no increase to the Contract price. All plants shall be nursery grown unless specifically authorized to be collected.
- B. Plant Material Requirements:
 - 1. Plants shall be in accordance with the U.S.A. Standard for Nursery Stock of the ANLA, latest edition.
 - 2. Hardy under climatic conditions similar to those in the locality of the Project. All plants shall be typical of their species or variety and shall have a normal habit of growth and be legibly tagged with the proper name. Only plant stock grown within the hardiness of Zones 4 through 6, as established by the Plant Hardiness Zone Map Miscellaneous Publications No. 814, Agricultural Research Service, US Department of Agriculture latest revision, will be accepted. Suppliers must certify in writing that the stock has actually been grown under required zones. Plants not so certified will not be accepted.
 - 3. Plants shall be typical of their species or variety, with a normal habit of growth. The root system of each shall be well provided with fibrous roots. All parts shall be moist and show active green cambium when cut. They shall be sound, healthy and vigorous, well-branched and densely foliated when in leaf. They shall be free of disease, insect pests, eggs or larvae.
 - 4. Dimensions shall conform to Specifications in the current edition of Horticultural Standards of the ANLA.
- C. Trees
 - 1. The height of the trees (measured from the crown of the roots to the tip of the top branch) shall be not less than the minimum size designated. Take caliper measurement six inches above ground level up to and including four inch caliper

size and twelve inches above ground for larger sizes. The trunk of each tree shall be a single trunk growing from a single un-mutilated crown of roots. No part of the trunk shall be conspicuously crooked as compared with normal trees of the same variety. The trunk shall be free from sunscald, frost cracks, or abrasions resulting from fire or other causes. No pruning wounds shall be present having a diameter exceeding two inches and such wounds must show vigorous bark on all edges. Plants shall not be pruned prior to delivery.

D. Shrubs

1. Shrubs shall meet the requirements for spread or height stated in the Plant List. The measurements for height are to be taken from the ground level to the average height of the shrub and not to the longest branch. The thickness of each shrub shall correspond to the trade classification "No. 1." Single stemmed or thin plants will not be accepted. The side branches must be generous, well-twigged, and the plant as a whole well-branched to the ground. The plants must be in a moist vigorous condition, free from dead wood, bruises or other root or branch injuries. Plants shall not be pruned prior to delivery.

E. Ground Cover

1. Ground cover plants shall be of size, age and/or condition listed in the Plant List. Plants shall be healthy, free of insects and diseases. Ground cover plants shall be potted or in sod.

F. Plant Transport and Delivery

1. All plants must be moved with the root system as solid units with balls of earth firmly wrapped with untreated eight ounce burlap, firmly held in place by a stout cord or wire. The diameter and depth of the balls of earth must be sufficient to encompass the fibrous and root feeding system necessary for the healthy development of the plant. No plant shall be cracked or broken preparatory to or during the process of planting or after the burlap, staves, ropes or platform required in connection with its transplanting have been removed. The plants and balls shall remain intact during all operations. All plants that cannot be planted at once must be heeled in by setting in the ground and covering the balls with soil and then watering them.
2. Container grown stock shall have been grown in a container long enough for the root system to have developed sufficiently to hold its soil together, firm and whole. No plants shall be loose in the container.
3. Plants delivered by truck and plants requiring storage on Site shall be properly wrapped and covered to prevent wind-drying and desiccation of branches, leaves or buds. Plant balls should be firmly bound, unbroken, and reasonably moist to indicate watering prior to delivery and during storage, and tree trunks should be free from fresh scars and damage in handling. No trees with double-leaders or twin-heads shall be acceptable without the written approval of the Engineer. The Contractor shall reject such plants at time of delivery by the nursery/Supplier unless such plants were selected by the Engineer as indicated by tags and seals. No plant material from cold storage will be accepted.

2.4 STAKES, WIRE AND HOSE

- A. Stakes for supporting trees shall be of sound hardwood of uniform size, reasonably free of knots, with a maximum allowable deflection of one-half inch for every one foot of

length, free from insects and fungi and capable of standing in the ground at least two years. Stakes eight to ten feet long shall have a minimum diameter of between two to two and one-half inches. Stakes twelve feet long shall have a minimum diameter of three inches. Stakes shall be pointed at one end and shall be stained dark brown.

- B. Hose to encase wires shall be new two ply reinforced rubber garden hose not less than one-half inch inside diameter. Wire for guying plants shall be new pliable annealed galvanized steel wire, A.S.&W. twelve-gauge or gauge as shown on the Drawings.
- C. The size and quality of cables, turnbuckles, thimbles, leg hooks, eye bolts, rods, washers and nuts shall be as shown on the Drawings or as approved by the Engineer.
- D. Drive anchors and guy wire assembly shall be as manufactured by Laconia Malleable Iron Works, Laconia, New Hampshire, or equal. Sizes used shall be in accordance with the manufacturer's recommendations.

2.5 MULCH

- A. Mulch shall be aged pine bark mulch aged sufficiently so that it will not float in water or aged for a period of six months, whichever is greater. The mulch shall be dark brown in color, free of chunks and pieces of wood thicker than one-quarter inch. Mulch must be free of stringy material and shall not contain, in the judgment of the Engineer, an excess of fine particles.

2.6 WRAPPING MATERIAL

- A. Wrapping material shall be first quality, eight to ten inches wide heavy waterproof crepe paper or six-inch wide burlap manufactured for this purpose. Twine for tying shall be a lightly tarred medium or coarse sisal yarn, two ply for trees three inches or less in diameter and three ply for trees over three inches in diameter.

2.7 ANTI-DESICCANTS

- A. Anti-desiccants shall be emulsions or other materials which will provide a protective film over plant surfaces permeable enough to permit transpiration and specifically manufactured for that purpose. Anti-Desiccant shall be "Wilt-Pruf" or equal.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Existing Conditions
 - 1. Refer to Drawings showing finish grades. No installation of plants shall take place until all subgrade elevations have been completed.
 - 2. Prior to planting, verify locations and depth of underground utilities. Exercise care when digging in these areas. Assume responsibility for any damage and replace or repair any damage at the Contractor's expense to the satisfaction of the Engineer.

3.2 PREPARATION

- A. Field Measurements
 - 1. Make all necessary measurements to properly locate the plants as shown on the Drawings. Location and arrangement of plants shall be approved by the Engineer prior to installation.

2. Plants installed prior to approval by the Engineer shall be relocated, if necessary, at no additional cost to the Owner.

3.3 INSTALLATION

A. Time of Planting

1. The time of planting shall be guided by the schedule below unless otherwise approved by the Engineer based on plant types, weather conditions or other factors that may be detrimental to plant growth.

| Material Type | Spring | Fall |
|----------------------|--|--|
| Deciduous | March 15 th to June 1 st | October 15 th to November 1 st |
| Evergreen | March 15 th to June 1 st | August 15 th to October 1 st |
| Wetland Plants | March 15 th to June 1 st | August 15 th to October 1 st |

B. Plantings General

1. All plantings shall be in accordance with ANLA standards.
2. Location for all plants and outlines for planting areas shall be staked on the ground by the Contractor for approval by the Engineer before any plant pits or plant beds are excavated.
3. At least ten days prior to the expected planting date, the Contractor shall request, in writing, that the Engineer provide a representative to select and tag stock to be planted under this section.
4. Plants shall be selected by the Engineer at the place of growth for conformity to specification requirements as to quality, size, and variety. Such approval shall not impair the right of inspection and rejection upon delivery at the Site or during the progress of the Work. Cost of replacement shall be borne by the Contractor.
5. Maintain at all times during the planting operations one or more stockpiles of approved planting soil.
6. If planting is done after lawn preparation or installation, proper protection of lawn areas shall be provided and any damage resulting from planting operations shall be repaired immediately at no cost to the Owner.
7. In the event that rock or obstructions are encountered in any plant pit or bed excavation, alternate locations may be selected by the Engineer.
8. Absolutely no debris may be left on the Site. Excavated material shall be removed as directed by the Engineer. Repair any damage to Site or structures to restore them to their original condition as directed by the Engineer.

3.4 INSTALLATION—GENERAL

A. Planting Pits

1. Excavate to the depths and widths necessary to achieve the dimensions indicated on the Drawings.
2. Excavated soil and material may be used as a portion of the backfill and planting soil provided it meets the requirements of paragraph 2.1.

3. Plant pits shall be excavated with sloped sides. Plant trees and shrubs in pits 12 inches greater in width than the diameter of the root ball. Pit depth shall be sufficient to ensure a minimum of 6 inches of planting soil mixture under plant root system.
4. All plant roots and earth balls must be damp and thoroughly protected from sun and wind from the beginning of the digging operation, during transportation and on the ground until the final planting. Set plants in center of pits, plumb and straight and at level that top of root ball is 1 inch lower than surrounding finished grade after settlement.

B. Cover, Watering, and Fill

1. Compact planting soil thoroughly around base of root ball to fill all voids, when plant material is set. Cut all burlap and lacing and remove from top of root ball. Do not pull burlap from under any root ball. Backfill pits halfway with planting soil mixture and thoroughly puddle before backfilling pit. Water planting, again, when each backfill operation is complete.
2. Immediately after plant pit is backfilled, form a shallow saucer slightly larger than pit with ridge of soil to facilitate and contain watering. Grub out sod or other growth and remove from bed area. Rake bed area smooth and neat. All plants shall be flooded with water twice within the first 24 hours of planting and all plants shall be watered at least twice each week during the maintenance period. At each watering the soil around each tree or shrub shall be thoroughly saturated. If sufficient moisture is retained in the soil, as determined by the Engineer, the required watering may be reduced. Trees will require a minimum of ten gallons of water each; shrubs a minimum of five gallons each.
3. Pine bark mulch is to be placed in a 3 inch thickness around the planting, not later than one week after planting. The area to be mulched shall be circular with a diameter of 12 inches greater than the plantings root ball. No mulch shall be applied prior to the first watering of plant materials. Mulch is to be contained around the circumference of the planting by means of installing a metal edge strip. Metal edge strips shall be fastened securely in place with tapered metal stakes at 30 inch intervals along the strip. Set edge strips to finished grade.
4. Planting soil shall be to a minimum depth of 24 inches or as shown on the Drawings.
5. Ground cover beds shall be dug to a depth of one foot below final grade. Supply sufficient planting mix where required to provide one-foot-deep beds.

C. Staking and Anchoring

1. All trees and plantings 10 feet or higher shall be firmly staked, guyed or anchored at the time of planting as shown on the Drawings, unless otherwise approved or directed by the Engineer. A minimum of two stakes shall be installed plumb and neat in appearance and shall not injure plant balls.

D. Anti-Desiccant Application

1. Apply anti-desiccant to all evergreen trees and shrubs and to all deciduous plant materials which are leafed out at time of planting. Rate and method of application shall be in accordance with manufacturer's recommendations. Anti-

desiccant shall be applied to all plants before digging at the nursery and/or as directed by the Engineer once the plants have been delivered to the Site.

E. Pruning

1. Prune each tree and shrub in accordance with ANLA standards to preserve natural form and character of plant. All pruning is to be done with clean, sharp tools and carried out only by workmen thoroughly familiar with this type of Work.
2. All dead wood or suckers and all broken or badly bruised branches shall be removed. In addition, one-fourth of the wood shall be removed by thinning out and shortening branches to balance root loss due to retransplanting.
3. Cuts over one inch in diameter shall be painted with an approved tree paint. Paint shall cover all exposed living tissues.

3.5 MULCHING DECIDUOUS AND EVERGREEN PLANTS

- A. Cover all tree pits and shrub beds with bark mulch. Neatly outline the edges of the saucer at a uniform radius from the tree trunk.

3.6 REPLACEMENT OF DECIDUOUS AND EVERGREEN PLANTS

- A. Dead or declining plant material shall be removed immediately and replaced as soon as possible with a new, healthy plant of the same type and size as specified, at no additional cost to the Owner. Replacement plants shall be maintained and guaranteed for 1 year from time of replacement.
- B. All plant material required under this contact, deemed by the Engineer to be unsightly, unhealthy, or excessively pruned, during and at the end of the guarantee period, shall be replaced as soon as conditions permit.
- C. At the end of the maintenance period all plant material shall be in a healthy growing condition.

3.7 PLANT MAINTENANCE

- A. Begin maintenance immediately after planting and continue for 1 year from date all plantings have been installed or until the final acceptance of the Project. Plantings done in late fall after November 1st shall be maintained until the second spring leafing.
- B. Continue the maintenance period at no additional cost to the Owner until all previously noted deficiencies have been corrected, at which time the final inspection will be made. Plants that die during the maintenance period shall be replaced as directed by the Engineer.
- C. Maintenance shall consist of keeping the plants in a healthy growing condition and shall include watering, weeding, cultivating, remulching, removal of dead material, resetting plants to proper grades or upright position and maintaining the planting saucer. Spraying for both insect pests and diseases shall be included during the maintenance period as required and as directed by the Engineer.
- D. Provide all equipment and means for proper application of water to plants. All plants shall be watered at least twice each week. At each watering, the soil around each tree or shrub shall be thoroughly saturated during the maintenance period. If sufficient moisture is retained in the soil, as determined by the Engineer, the required water may

be reduced. Trees will require a minimum of ten gallons of water each; shrubs a minimum of five gallons each.

- E. Stakes shall be kept plumb and neat in appearance. Guys shall be tightened and repaired weekly.
- F. Planting beds and individual plant pits shall be kept free of weeds and mulch shall be replaced as required to maintain a 4" layer of mulch. Beds and individual pits shall be neat in appearance and maintained to the lines originally laid out.
- G. Fertilize plants in spring and fall.
- H. Protect all planted areas against damage, including erosion and trespassing by providing and maintaining proper safeguards.

3.8 INSPECTION AND ACCEPTANCE

- A. The Engineer shall be the sole judge of acceptance.
- B. All materials and workmanship will be subject to inspection and examination by the Engineer, and he/she shall have the right to reject defective materials and workmanship or require corrections.
- C. Submit planting plans indicating the dates plants were installed for purposes of establishing warranty and replacement dates.
- D. Certification of Acceptance and Guarantee
 - 1. Submit written notice requesting inspection by the Engineer at least 10 days prior to the end of the maintenance period. If the plant material and workmanship are acceptable, written notice will be given by the Engineer to the Contractor stating that the guarantee period begins from the date of the Certificate of Acceptance.
 - 2. If a substantial number of plants are sickly or dead at the time of inspection, acceptance will not be granted, and the Contractor's responsibility for maintenance of all the plants shall be extended until replacements are made. All dead and unsatisfactory plants shall be promptly removed from the Project. Replacements shall conform in all respects to the Specifications for new plants and shall be planted in the same manner.
 - 3. Plants shall be true to botanical name and size, and in vigorous healthy growing condition.
 - 4. Plants shall be guaranteed for a period of one year after inspection and acceptance and shall be alive and in satisfactory growth at the end of the guarantee period.
 - 5. At the end of the guarantee period, inspection will be made again. Any plant required under this Contract that is dead or unsatisfactory shall be removed from the Site. Each plant shall show at least 80 percent healthy growth and shall have the natural character of a plant of its species in accordance with the American Nurserymen's Association standards. These plants shall be replaced during the normal planting season, until the plants live through one year. A final inspection for acceptance will be made after the replacement plantings have lived through one year.

6. All replacements shall be plants of the same kind and size specified in the plant list. The cost shall be borne by the Contractor, except for possible replacements due to vandalism or neglect on the part of others.
7. Provide a physical handbook of maintenance instructions for all plant material installed. This handbook shall contain all necessary maintenance information, which will enable the Owner to maintain new plantings in a vigorous condition. Before planting Work is completed, submit two handbook copies to the Engineer for approval. Upon the acceptance of the planting Work, one handbook copy shall be furnished to the Owner for his future reference. The Engineer may require resubmittal of the Owner maintenance instructions if it is determined that the information provided is not sufficient to allow for proper maintenance.

END OF SECTION

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SECTION 02922

HYDROSEEDING & MULCHING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Lime
 - 2. Fertilizer
 - 3. Seed
 - 4. Bonded Fiber matrix
 - 5. Water
- B. Related Sections
 - 1. Section 02075 - Geosynthetics
 - 2. Section 02920 - Landscaping

1.2 SUBMITTALS

- A. Results of vegetative support material nutrient analysis and recommendation for limestone and fertilizer application rates.
- B. Product data and specifications for the Bonded Fiber Matrix
- C. Product data and specifications for the fertilizer and lime.
- D. Product data for seed mixtures.
- E. Based on results of vegetative support material nutrient analysis to be provided by the Owner, submit recommendation for limestone and fertilizer application rates.

1.3 QUALITY ASSURANCE

- A. Provide seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging. Damaged packages are not acceptable.
- B. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.
- C. Deliver lime in waterproof bags showing weight, chemical analysis, and name of manufacturer.

1.4 TESTS

- A. Provide limestone and fertilizer in accordance with the types and rates specified by said laboratory.
- B. A certified statement shall be furnished to the Engineer by the Contractor prior to the start of work, stating the number of pounds of limestone, fertilizer, seed, and mulch, per

100 gallons of water and shall also specify the number of square yards of seeding that can be covered with the solution specified above.

PART 2 PRODUCTS

2.1 LIME

- A. Lime shall consist of pulverized limestone obtained by grinding either calcareous or dolomitic limestone so that 100% of the material will pass a No. 1 sieve, 80% shall pass a 100-mesh sieve and 45% shall pass a 200-mesh sieve. The ground limestone shall have a neutralizing value satisfactory to the Engineer. Lime as herein described shall be applied at the rate of not less than 50 pounds per 1,000 square feet, or higher, depending upon soil requirements as determined above.

2.2 FERTILIZER

- A. Fertilizer shall be a commercial grade, chemical fertilizer for lawns, the elements of which are derived from organic sources and shall contain the percentages by weight recommended in the laboratory analyses.
- B. The availability of the various elements shall conform to the standards of the "Association of Official Agricultural Chemists". A minimum of 50% of the nitrogen content by weight shall be derived from organic materials.
- C. All fertilizer shall arrive on the job site in standard size bags, bearing the manufacturer's name, the content, weight and guaranteed analysis.
- D. The Contractor shall be responsible in every respect for the fertilizer, and it shall be stored in a weatherproof enclosure on dunnage in such a manner that its effectiveness will not be impaired.
- E. Fertilizer shall be applied to areas acceptable to the Engineer as ready for seed at a rate recommended by a state and/or federally supported soil experiment lab.

2.3 SEED

- A. Seed shall be of the previous year's crop.
- B. Required ranges:
 - 1. Purity > 90%
 - 2. Germination > 80%
 - 3. Crop < 0.5%
 - 4. Weed < 0.3%
 - 5. Noxious Weed – 0%
 - 6. Inert < 8%
- C. The standard seed mixture shall be applied at a minimum rate of 175 lbs./acre, 4 lbs/1,000 s.f.
- D. The wetland and upland seed mixture shall be consistent with Section 02670 and the drawings.

- E. All seed shall comply with State and Federal seed laws.
- F. A sworn certificate indicating each variety of seed, weed content, germination of seed, net weight, date of shipment and manufacturer's name shall accompany each seed shipment. Regardless of approval by the Engineer to sow the seed, complete responsibility for satisfactory results shall rest entirely on the Contractor.

2.4 BONDDED FIBER MATRIX

- A. Bonded fiber matrix shall be a hydraulically applied system of long strand residual wood fibers produced by thermo-mechanical defibration of wood chips and joined together by a high-strength non-toxic adhesive to create a continuous three dimensional blanket that adheres to the soil surface to form a bonded fiber matrix. The system shall be applied to the soil as a viscous mixture, which upon drying creates a high-strength, porous and erosion resistant mat. Upon drying, the matrix shall not inhibit the germination and growth of plants in and beneath the layer. The matrix shall retain its form despite rewetting.
- B. The bonded fiber matrix shall be hydraulically applied at the rate of 4,000 pounds per acre, or in accordance with the manufacturer's recommendations and application requirements/specifics. The resultant coverage must be at least 1/8 inch thick over the entire surface area. The bonded fiber matrix shall be applied from alternate directions to alleviate shadowing. Bonded fiber matrix shall not be applied within 24 hours of an expected rainfall.
- C. Production Specifications:
 - 1. Composition - Refined wood fiber 90% by weight, blended hydrocolloidal based binder 10% by weight
 - 2. Color - Natural
 - 3. Moisture - 9%-15%
 - 4. Application - Conventional hydraulic seeding equipment with mechanical agitation at a rate of 4,000 pounds per acre
 - 5. Thickness 1/8-1/4 inch after application
 - 6. Mixing 40 pounds of fiber per 100 gallons of water

2.5 WATER

- A. Provide water for hydroseeding.
- B. Make arrangements with the local authorities to obtain water for hydroseeding.

2.6 MULCH

- A. Mulch shall be virgin wood fiber mulch applied at a rate of 1,500-lbs/acre or hay mulch applied at a rate of 3,500-lbs/acre.

PART 3 EXECUTION

3.1 HYDROSEEDING & MULCHING

- A. Lime, fertilizer, seed, and mulch shall be simultaneously applied in one operation by the use of an approved spraying machine. 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 water. The spraying equipment shall be so designed that when the solution is sprayed over an area, the resulting deposits of limestone, fertilizer, seed, and mulch shall be equal in quantity to those specified above.

- B. Bonded fiber matrix shall be applied to all seeded areas on slopes steeper than 7%, except for those designated to receive erosion control blankets. The thickness of the matrix after application shall be 1/8 inch to ¼ inch thick.
- C. All areas to be seeded that have a slope of 7% or less shall receive wood fiber or hay mulch in lieu of bonded fiber matrix.
- D. Seed shall be sown only between the periods from April 15th to June 1st, and from August 15th to October 1st.
- E. If as a result of rain, the prepared seedbed becomes eroded, the Contractor shall rework the topsoil until it is smooth and re-hydroseed such reworked areas.
- F. No seeded area will be acceptable until it is covered with a satisfactory, healthy stand of quality grass of the variety specified. A satisfactory stand of grass, as determined by the Engineer, shall consist of a uniform stand of at least 60% established permanent grass species, with a uniform count of at least 100 plants per square foot. If the results of the spray operation are unsatisfactory, the Contractor will be required to repeat the hydroseeding process as needed to achieve a thick stand of grass.
- G. The Contractor shall protect seeded areas from damage and shall repair and maintain all areas at his own expense at no additional cost to the Owner until a certificate of final acceptance is issued by the Engineer. The Contractor shall repair and reseed all defective or non-growth grass areas during the following season.
- H. The Contractor is fully responsible for providing adequate amounts of water to the seeded areas to provide an adequate growth.
- I. All areas to be seeded shall be hydroseeded. Hand seeding will not be allowed.

3.2 MAINTENANCE AND PROVISIONAL ACCEPTANCE

- A. Keep all planted areas watered and mowed and in good condition, all areas if and when necessary until a good, healthy, uniform growth is established over the entire area and shall maintain all these areas in an approved condition until final acceptance.
- B. Invasive plants growing within the limit of work will be removed and disposed off-site.
- C. The Engineer will inspect all work for provisional acceptance at the end of the 10 week maintenance period, upon the written request received at least 10 days before the anticipated date of inspection. The maintenance period must occur during the growing season between March 31 and October 1 and shall include a minimum of three mowings.
- D. A satisfactory turf will be defined as:
 - 1. No bare spots larger than 2 sq. ft.
 - 2. No more than 10 percent of total area with bare spots larger than 1 sq. ft.
 - 3. No more than 15 percent of total area with bare spots larger than 6-in. square.
- E. Furnish full and complete written instructions for maintenance of the planted areas to the Owner at the time of provisional acceptance.

- F. The inspection by the Engineer will determine whether maintenance shall continue. Continue maintenance until all areas of the site meet the minimum requirements specified above.
- G. After all necessary corrective work and clean-up has been completed, and maintenance instructions have been reviewed by the Owner, the Engineer will certify in writing the provisional acceptance of the turf areas. Maintenance of all turf areas shall cease on receipt of provisional acceptance.

3.3 GUARANTEE PERIOD AND FINAL ACCEPTANCE

- A. All seeded areas shall be guaranteed for not less than 1 full year from the time of final acceptance.
- B. Invasive plants shall be removed from the Limit of Work and other areas designated for invasive plant removal for not less than one (1) full year from the time of final acceptance. However, the Contractor will be obligated to completely remove invasive plants from the ongoing limit of work no more than three times during this period, not including the initial removal effort.
- C. At the end of the guarantee period, inspection will be made by the Engineer upon written request submitted at least 10 days before the anticipated date. Seeded areas not demonstrating satisfactory stands as outlined above, as determined by the Engineer, shall be renovated, reseeded and maintained meeting all requirements as specified herein.
- D. After all necessary corrective work has been completed, the Engineer shall certify in writing the final acceptance of the seeded areas.

END OF SECTION

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DIVISION 03

CONCRETE

SECTION 03100

CONCRETE FORMS AND ACCESSORIES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Wood Form Material
 - 2. Prefabricated Forms
 - 3. Formwork Accessories
- B. Related Sections
 - 1. Section 03200 - Concrete Reinforcement
 - 2. Section 03300 - Cast-in-Place Concrete

1.2 REFERENCES

- A. American Concrete Institute (ACI)
 - 1. ACI 301 - Specifications for Structural Concrete for Buildings
 - 2. ACI 318 - Building Code Requirements for Reinforced Concrete
 - 3. ACI 347 - Guide to Formwork for Concrete
- B. American Society for Testing and Materials (ASTM)
 - 1. D4 - Standard Test Method for Bitumen Content
 - 2. D6 - Standard Test Method for Loss on Heating of Oil and Asphaltic Compounds
 - 3. D71 - Standard Test Method for Relative Density of Solid Pitch and Asphalt (Displacement Method)
 - 4. D217 - Standard Test Method for Cone Penetration of Lubricating Grease
 - 5. D1056 - Specification for Flexible Cellular Materials - Sponge or Expanded Rubber
 - 6. D1751 - Standard Specifications for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types)
 - 7. D1752 - Standard Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction
 - 8. D4397 - Standard Specification for Polyethylene Sheeting for Construction, Industrial and Agricultural Applications
- C. National Institute of Standards and Technology (NIST)
 - 1. Voluntary Product Standard PS 1-95 - Construction and Industrial Plywood

1.3 SUBMITTALS

- A. Drawings showing schedule of placement, location of all construction joints and all control joints with methods of forming. Show the location and elevation of all sleeves, wall pipes and embedded items.
- B. Drawings showing sizes and materials for forms, form bracing, and form ties.
- C. Product Data on form release agent, permanent formwork and inserts.
- D. Samples for the following materials:
 - 1. Form ties (including cones) and spreaders
 - 2. Other materials requested by the Engineer

1.4 DESIGN REQUIREMENTS

- A. Design formwork and shoring at the Contractor's expense by a Professional Engineer registered in the Commonwealth of Massachusetts to conform to all design and code requirements in ACI 301, ACI 318 and ACI 347 and other applicable regulations and codes. The design shall consider any special requirements that may result due to the use of super plasticized and/or retarded set concrete.

PART 2 PRODUCTS

2.1 WOOD FORM MATERIALS

- A. Plywood: Class I High Density Overlay plyform, exterior grade, not less than 5 ply nor less than 5/8 inches thick conforming to Voluntary Product Standard PS 1-95
- B. Lumber: Douglas Fir species, No. 1 grade S4S with grade stamp clearly visible

2.2 PREFABRICATED FORMS

- A. Manufacturers:
 - 1. Symons Corporation, DesPlains, Illinois
 - 2. HICO Corporation, Bronx, NY
 - 3. Or equal
- B. Preformed Steel Forms: Minimum 16 gage (1.5 mm), tight fitting, stiffened to support weight of concrete without deflection detrimental to tolerances and appearances of finished concrete surfaces; with clean, warp free, undented, ungouged, undamaged surfaces
- C. Glass Fiber Fabric Reinforced Plastic Forms: Matched, tight fitting, stiffened to support weight of concrete without deflection detrimental to tolerances and appearances of finished concrete surfaces

2.3 FORMWORK ACCESSORIES

- A. Form Ties:
 - 1. Ties for foundation walls shall be metal and designed with removable setback cones so that after removal of the projecting part, no metal shall remain within 1½ inches of the face of the concrete.
 - 2. Flat bar snap ties for panel forms shall have plastic or rubber inserts with 1½ inch minimum depth to allow patching of tie hole after removal.

3. Setback cones shall be wood or plastic tapered cones 1 inch diameter and 1½ inches deep to allow filling and patching of the concrete surface after removal.
 4. Common wire ties shall not be used.
- B. Form Release Agent:
1. Non-staining and non-emulsifiable type which will not stain concrete or absorb moisture nor interfere with adherence of any material to be applied to concrete surfaces.
- C. Corners:
1. Chamfered No. 1 Poplar wood strips; ¾ inch by ¾ inch; maximum possible lengths

PART 3 EXECUTION

3.1 GENERAL

- A. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with Drawings.
- B. Review all work prepared by others to receive work of this Section and correct any defects affecting installation. Commencement of work by the Contractor will be construed as complete acceptance of preparatory work by others.
- C. Handle and store materials separately in such manner as to prevent intrusion of foreign matter, segregation, or deterioration. Do not use foreign materials or those containing frozen material. Remove improper and rejected materials immediately from point of use. Cover materials and accessories during construction period.

3.2 EARTH FORMS

- A. Earth forms are not permitted.

3.3 FORM PREPARATION

- A. Coat contact surfaces of forms with a form release agent prior to form installation.
- B. Thoroughly clean steel forms between uses using high pressure water or jet or sand blasting to remove all mill scale, concrete laitance or other ferrous deposits from the contact surfaces of the forms.
- C. Before re-use of wood forms, thoroughly clean form contact surfaces, repair damaged areas and remove projecting nails. A partial or complete steel lining on wood sheathing or plywood will not be allowed.

3.4 ERECTION - FORMWORK

- A. Erect formwork, shoring and bracing to achieve design requirements of ACI 301 and the following additional requirements:
 1. Variation from plumb in the lines and surfaces of columns, piers, and in walls
 - a. In any 10 feet of length ¼ inch
 - b. Maximum for entire length ½ inch

2. Variation of the linear building lines from established position in plan and related positions of columns, walls and partitions:
 - a. In any bay $\frac{1}{4}$ inch
 - b. In any 20 foot of length $\frac{1}{4}$ inch
 - c. Maximum for the entire length $\frac{1}{2}$ inch
3. Variation in cross-sectional dimensions of columns and beams and in thickness of slabs and walls:
 - a. Minus $\frac{1}{8}$ inch
 - b. Plus $\frac{1}{4}$ inch

3.5 JOINTS

- A. Construction and expansion joints indicated on the Drawings are mandatory and shall not be omitted.
- B. Form construction and expansion joints with a keyway and waterstop unless otherwise shown on the Drawings. The depth of the keyway shall be approximately 3 inches, and the minimum width of keyway shall be one-third the width of the wall or floor section unless otherwise shown on the Drawings. The maximum width of any key at a joint with waterstop shall be 3 inches. Construction and expansion joints are to be formed in place prior to notifying the Engineer for inspection of formwork.
- C. Where joints other than those shown are required, obtain approval prior to installation.
- D. Joints shall be straight and true. Brace all slab bulkheads adequately to keep joints straight. Construction joints in slabs exceeding 5 inches in thickness shall be keyed using a keyway nominally 3-5/8 inches by 1/3 of the slab thickness but not greater than 3 inches wide.
- E. Wall construction joints shall be placed as shown on the Drawings, or the maximum spacing of vertical construction joints in walls shall not exceed 40 feet where construction joints are not shown.
- F. Joints not indicated or specified shall be placed to least impair strength of structure and shall be subject to approval of the Engineer.

3.6 INSERTS, EMBEDDED ITEMS, AND OPENINGS

- A. Provide formed openings where required for items to be embedded in or passing through concrete work in conformance with requirements of ACI 318, paragraph 6.3, "Conduits and pipes embedded in concrete."
- B. Locate and set in place items that will be cast directly into concrete.
- C. Coordinate work of other Sections in forming and placing openings, slots, reglets, recesses, chases, sleeves, wall pipes, anchor bolts and other inserts.
- D. Install accessories in accordance with manufacturer's instructions, straight, level and plumb. Ensure items are not disturbed or damaged during placement of concrete.
- E. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at the bottom of forms to allow flushing water to drain.

- F. Close temporary openings with tight fitting panels, flush with inside face of forms and neatly fitted so that joints will not be apparent in exposed concrete surfaces after concrete placement.

3.7 FORM REMOVAL

- A. The Contractor shall be responsible for damage resulting from form removal. Forms and shoring for structural slabs or beams shall remain in place in accordance with requirements in ACI 301. Form removal shall also conform to the requirements specified in Section 03300.

3.8 INSPECTION

- A. The Engineer shall be notified when the forms are complete and ready for inspection at least thirty-six hours prior to the proposed concrete placement.
- B. Failure of the forms to comply with the requirements specified herein, or to produce concrete complying with requirements of these Specifications, shall be grounds for rejection of that portion of the concrete work. Rejected work shall be repaired or replaced at no additional cost to the Owner. Such repair or replacement shall be subject to the requirements of these Specifications and approval of the Engineer.

END OF SECTION

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SECTION 03200

CONCRETE REINFORCEMENT

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Reinforcing Steel Bars
 - 2. Welded Wire Fabric
 - 3. Reinforcing Accessories
- B. Related Sections
 - 1. Section 03100 - Concrete Forms and Accessories
 - 2. Section 03300 - Cast-in-Place Concrete

1.2 REFERENCES

- A. The Massachusetts State Building Code, latest edition.
- B. American Concrete Institute (ACI)
 - 1. ACI 117 - Standard Tolerance for Concrete Construction and Materials
 - 2. ACI 301 - Specifications for Structural Concrete for Buildings
 - 3. ACI 315 - Details and Detailing of Concrete Reinforcement
 - 4. ACI 318 - Building Code Requirements for Reinforced Concrete, American Concrete Institute
 - 5. ACI 350R - Environmental Engineering Concrete Structures
 - 6. ACI SP-66 - Detailing Manual
- C. American Society for Testing and Materials (ASTM)
 - 1. A615 - Specification for Deformed and Plain Billet - Steel Bars for Concrete Reinforcement
 - 2. A675 - Specifications for Steel Bars, Carbon, Hot Wrought, Special Quality, Mechanical Properties
- D. American Welding Society (AWS)
 - 1. D1.4 Structural Welding Code - Reinforcing Steel
- E. Concrete Reinforcing Steel Institute (CRSI)
 - 1. CRSI 63 - Recommended Practice for Placing Reinforcing Bars
 - 2. CRSI 65 - Recommended Practice for Placing Bar Supports, specifications and nomenclature

1.3 SUBMITTALS

- A. Provide shop drawings in accordance with the recommendations of ACI 315, "Details and Detailing of Concrete Reinforcement" and show the following: elevations, dimensions of concrete work with specified reinforcement clearances; ledges, brackets, openings, sleeves or other items furnished by other Sections, where interference with reinforcement may occur; bending diagrams; assembly diagrams; splices and laps of reinforcement; temperature and shrinkage reinforcement; construction joint reinforcement and shape; dimensions, grade designations, and details of reinforcement and accessories. Show dowels with concrete work to be placed first. Shop drawings shall be drawn to scale.
- B. Bar Bending Details - The bars shall be referenced to the same identification marks shown on the placement drawings. Bars to have special coatings and/or to be of special steel or special yield strength are to be clearly identified.
- C. Prior to delivery of reinforcing steel or concrete to job site, submit certified mill test reports of reinforcing steel and cement (including names and locations of mills and shops, and analyses of chemical and physical properties), properly correlated to concrete to be used in this project.

1.4 DELIVERY, HANDLING AND STORAGE

- A. Reinforcing steel shall be substantially free from mill scale, rust, dirt, grease, or other foreign matter.
- B. Reinforcing steel shall be covered and stored off the ground, protected from moisture, and kept free from dirt, oil, or other foreign matter.

PART 2 PRODUCTS

2.1 REINFORCING STEEL BARS

- A. Reinforcing steel bars shall be newly rolled billet steel conforming to ASTM A615, Grade 60.
- B. Minimum yield strength shall be 60,000 psi.

2.2 REINFORCEMENT ACCESSORIES

- A. Reinforcement accessories shall conform to Product Standard PS7-766, National Bureau of Standards, Department of commerce, Class C, as produced by Dayton Superior Corporation; R.K.L. Building Specialties Co., Inc. or equal approved by the Engineer.
- B. Reinforcement accessories shall include spacers, chair ties, slab bolsters, clips, chair bars, and other devices for properly assembling, placing, spacing, supporting, and fastening reinforcement.
- C. Tie wire shall be of sufficient strength for all intended purpose, but not less than No. 18 gauge. Metal supports shall be of such type as not to penetrate surface of formwork and show through surface of concrete.
- D. Accessories touching interior formed surfaces exposed to view shall have not less than 1/8 inch of plastic between metal and concrete surface. Plastic tips shall extend not less than 1/2 inch up on metal legs.
- E. Individual and continuous slab bolsters and chairs shall be of type to suit various conditions encountered and must be capable of supporting 300-pound load without damage or permanent distortion.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Review all work prepared by others to receive work of this Section. Commencement of work will be construed as complete acceptance of preparatory work by others.

3.2 PREPARATION

- A. Notify the Engineer prior to the start of any phase of the reinforcing work so as to provide the opportunity to inspect the work. Such notification shall be made at least 24 hours in advance of reinforcement placements and at least 36 hours in advance of other inspections (forms, etc.).

3.3 REINFORCING BAR FABRICATION

- A. Fabrication of reinforcement shall be in accordance with the recommendations of CRSI.
- B. Reinforcing bars shall be cold bent and shall not be straightened or re-bent. Bars shall not be field bent unless approved by the Engineer.
- C. Reinforcing bars shall be bent around a revolving collar having a diameter of not less than that recommended by the CRSI.
- D. Reinforcing bar ends that are to be butt spliced or threaded, shall have the applicable end saw-cut. Such ends shall terminate in flat surfaces at a right angle to the axis of the bar.
- E. Where reinforcing bars are called for to be welded, the welding shall conform to AWS D1.4 Structural Welding Code - Reinforcing Steel.

3.4 INSTALLATION

- A. Reinforcement shall be placed in accordance with requirements of CRSI -63 - "Recommended Practice for Placing Reinforcing Bars" and CRSI 65, "Recommended Practice for Placing Bar Supports" and with further requirements below.
- B. Reinforcement shall be accurately placed in accordance with Contract Documents and shall be firmly secured in position by wire ties, chairs, spacers, and hangers, each of type approved by the Engineer. For slabs, grade beams, etc. where concrete is poured on grade, use additional setup bars and concrete brick to provide required cover over reinforcement.
- C. Bending, welding or cutting reinforcement in field in any manner other than as shown on Drawings, is prohibited, unless specific approval for each case is given by the Engineer.
- D. Reinforcement shall be continuous through construction joints unless otherwise indicated on Drawings.
- E. Reinforcement shall be spliced only in accordance with requirements of Contract Documents or as otherwise specifically approved. Splices of reinforcement at points of maximum stress shall generally be avoided.
- F. Proceed with installation of embedded items, and reinforcement, but do not place concrete into or around such items until the Engineer has approved work.

3.5 FIELD QUALITY CONTROL

- A. The Engineer shall have the right to postpone or stop concrete operations when in his judgment, reinforcement and embedded item installation has not been properly completed or the quality of construction will impair strength and durability or desired finished product. Costs arising from delays due to noncompliance will not be considered.
- B. Any material or workmanship that is rejected, either at the batch plant or at the site, shall be replaced promptly at no additional cost to the Owner.
- C. Before concrete is placed, reinforcement shall be free of excessive rust, dirt, oil, scale or other foreign matter that will destroy or reduce bond requirements. Reinforcement expected to be exposed to weather for a considerable length of time shall be painted with a heavy coat of cement grout. Protect stored materials so as not to bend or distort bars in any way. Bars that become damaged will be rejected.
- D. Before concrete is placed, check all installed reinforcement to ensure that it conforms to Contract Documents and approved Shop Drawings. Such checking shall be done only by qualified experienced personnel. In addition, the Engineer shall be notified at least 36 hours prior to concrete placement and given opportunity to inspect completed reinforcement. Prior approval of Shop Drawings shall in no way limit the Engineer's right to require modifications or additions to reinforcement or accessories.

3.6 ADJUSTING

- A. Carry out corrections without delay as directed by the Engineer when construction operations indicate that requirements of Contract Documents or prudent construction practices are being or are about to be violated.

END OF SECTION

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SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Concrete Materials
 - 2. Admixtures
 - 3. Concrete Mix
 - 4. Miscellaneous Concrete Materials
- B. RELATED SECTIONS
 - 1. Section 03100 - Concrete Forms and Accessories
 - 2. Section 03200 - Concrete Reinforcement

1.2 REFERENCES

- A. The Massachusetts State Building Code, latest edition
- B. American Concrete Institute (ACI)
 - 1. ACI 301- Specifications for Structural Concrete for Buildings, (included as part of this specification)
 - 2. ACI 305 - Hot Weather Concreting
 - 3. ACI 306.1- Standard Specifications for Cold Weather Concreting
 - 4. ACI 318-19 - Building Code Requirements for Reinforced Concrete, American Concrete Institute
- C. American Society for Testing and Materials (ASTM)
 - 1. C33 – Standard Specification for Concrete Aggregates
 - 2. C39 – Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
 - 3. C40 - Standard Test Method for Organic Impurities in Fine Aggregates for Concrete
 - 4. C42 – Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
 - 5. C87 - Standard Test Method for Effect of Organic Impurities in Fine Aggregate on Strength of Mortar
 - 6. C94 - Standard Specification for Ready-Mixed Concrete
 - 7. C131 - Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine

8. C150 – Standard Specification for Portland Cement
9. C260 - Standard Specification for Air-Entraining Admixtures for Concrete
10. C309 – Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
11. C494 - Standard Specification for Chemical Admixtures for Concrete
12. C535 - Standard Test Method for Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
13. C618 – Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete
14. C685 – Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing
15. C881 – Standard Specification for Epoxy-Resin Base Bonding Systems for Concrete
16. C989 – Standard Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars
17. C1059 – Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete

1.3 SUBMITTALS

- A. Submit concrete mix proposed for use, indicating design strength, supplier, batch quantities, and constituents. Provide test report copies indicating prior satisfactory performance in accordance with ACI 301.
- B. If conveying concrete by pump is requested, related data regarding concrete materials, pumping device and methods shall be submitted for approval three weeks before such method is proposed for use. Tests for approval of concrete mixtures to be pumped shall be paid for by Contractor. Provide certified mill test reports of cement, (including names and locations of mills and shops, and analyses of chemical and physical properties), properly correlated to concrete to be used.
- C. Submit data and descriptive literature for concrete constituents including admixtures, aggregate tests, bond breaker, bonding agent, and repair grout.
- D. Submit detailed methods proposed for curing and protection of concrete. This submittal shall be made not less than 10 days prior to the placement of any concrete.
- E. Submit a truck load ticket for every concrete delivery. Ticket information shall include batch time and date, weights of all constituents, quantity of admixtures, water added at the batch plant and moisture content of coarse and fine aggregates.
- F. Maintain an accurate daily record of the locations and quantity of concrete placed. Submit a certified copy of this record with each pay estimate.

1.4 QUALITY ASSURANCE

- A. Provide inspection of cast-in-place concrete work, and testing, including slump tests, air content, and standard compression testing. Materials and workmanship shall be subjected to inspection and testing in mill, shop and/or field by the Engineer. Such inspection and testing shall not relieve Contractor of his responsibility to provide his

own inspection, testing, and quality control as necessary to furnish materials and workmanship in accordance with requirements of this Section.

- B. Provide source of and allow access to materials required to be sampled and tested.
- C. Sampling and testing required by the Engineer to determine if materials proposed for use in the project comply with Specification requirements shall be made prior to actual use of materials in project. Coordinate the work to ensure that materials are supplied, sampled, tested and approved so as not to delay progress of the work.

Whenever source, quality, or characteristics of approved material changes, or indicates lack of compliance with requirements of Contract Documents, resubmit additional materials for sampling and testing until requirements are satisfied. Additional sampling, testing and inspection of materials and workmanship not originally conforming to requirements of Contract Documents shall be provided at no additional cost.

- D. Provide notification prior to the start of any phase of concrete placement work so as to provide the opportunity to inspect the work. Such notification shall be made at least 24 hours in advance of concrete placements and at least 36 hours in advance of other inspections (forms, rebar, etc.).
- E. Facilitate observation by the Engineer as well as inspection and testing by the concrete testing agency, and furnish the following:
 - 1. Safe access to the work at all times to allow proper inspection of the work
 - 2. Full and ample means and assistance for sampling and testing materials and proper facilities for inspection of work in plant and at project site
 - 3. Covered box large enough to contain twenty-four standard concrete cylinders. At temperatures below 60°F, box shall be electrically heated and thermostatically controlled to maintain inside temperature of 60° to 80°F. Cylinders shall be placed in box immediately after molding and shall be covered with moist burlap until delivery to laboratory, 24 to 72 hours after molding.
 - 4. Access by the Engineer or his representative to the batch plant supplying the concrete at any time.
- F. Compression tests shall consist of one set of 4 cylinders for each test made, cured, and tested by testing laboratories during progress of job. 6 cylinders shall be required for each test made with concrete mix containing fly ash or ground granulated blast furnace slag. One set of cylinders shall be taken for every 100 cubic yards of concrete or fraction thereof placed in any one day.
 - 1. 1 cylinder of each set shall be tested for 7-day compressive strength; 2 cylinders shall be tested for 28-day compressive strength. The remaining cylinder shall be tested for 56-day compressive strength if either one of the 28-day tests are below the specified strength, otherwise the 56-day test will be eliminated.
 - 2. For modified mix with fly ash or ground granulated blast furnace slag, 1 cylinder of each set shall be tested for 7-day compressive strength, 2 cylinders shall be tested for 28-day compressive strength and 2 cylinders shall be tested for 56-days compressive strength. The remaining cylinder shall be tested for 84-day compressive strength if either one of the 56-day tests are below the specified strength, otherwise the 84-day test will be eliminated.

3. The Contractor will provide and pay for the services of an approved testing laboratory to test the cylinders. The Contractor shall coordinate and schedule all concrete testing performed by approved agency.
 4. Compression strength test of cylinders shall conform to ASTM C39, latest revision. The testing laboratory will submit certified copies of the test results directly to the Engineer and the Owner within 24 hours after tests are made.
 5. Sampling, molding, curing and testing of cylinders shall conform to ASTM requirements. Specimens shall be cured under laboratory conditions. The Engineer may require additional cylinders to be cured under field conditions when unusual conditions may tend to reduce concrete strength.
 6. Report of tests shall include: name of project, date and location of concrete placement, design strength of concrete, mix data, slump, air content (if tested), compressive strength, age and condition of test cylinder, type of fracture, and type of curing.
- G. Slump test, to check consistency, shall be made from the sample used to mold cylinders. Additional slump tests may be taken of every batch delivered to job site.
- H. Tests for determination of air content shall be made as required to verify conformance with the specifications.
- I. The strength level of the concrete mix shall be considered satisfactory if both of the following criteria are satisfied:
1. Every arithmetic average of any three consecutive strength tests equals or exceeds the specified design strength.
 2. No individual strength test (average of two cylinders from the same test group) falls below the specified design strength by more than 500 psi when the specified design strength is 5000 psi or less or by more than 10 percent of the specified design strength when the design strength is more than 5000 psi.
- J. When tests of control specimens fall below these requirements, the Engineer will require 56 day or 84 day cylinder tests or core specimens taken from concrete in question and tested in accordance with ASTM C42. If these specimens do not meet strength requirements, the Engineer has the right to require additional curing, load tests, strengthening or removal and replacement of those parts of the structure which are unacceptable, and in addition, removal of such sound portions of structure as necessary to ensure safety, appearance, and durability of structure. Additional testing, load tests, strengthening or removal and replacement of parts or structure and any costs associated with delay of project shall be at no additional cost to the Owner.
- K. Any material or workmanship which is rejected, either at the batch plant or at the site, shall be replaced promptly at no additional cost to the Owner.
- L. If arrangements for corrections and/or replacements are not made within seven days after notice of rejection, the Owner has the right to have corrections and/or replacement made and charge cost thereof and any costs associated with delay of project against balance of monies withheld.
- M. Acceptance of work and admixtures at the batch plant shall not prevent final rejection at job site upon arrival or after it has been installed, if work is found to be defective.

- N. Portions of a structure which do not meet the requirements of the Contract Documents based on appearance or for any other aesthetic reason, shall be corrected or removed and replaced at no additional cost to the Owner.
- O. Work on new concrete structures shall conform to the requirements of ACI 306.1, Standard Specifications for Cold Weather Concreting, except as modified herein.

PART 2 PRODUCTS

2.1 CONCRETE MATERIALS

- A. Cement: shall be American-made Portland Cement, free from water soluble salts or alkalis which will cause efflorescence on exposed surfaces. Portland Cement shall be Type II, ASTM C150. Air entraining cements are prohibited.
- B. Pozzolans and Blast Furnace Slag
 - 1. Fly Ash: Class F conforming to the requirements of ASTM C618.
 - 2. Ground Granulated Iron Blast-Furnace Slag: Conforming to ASTM C989.
- C. Normal weight Fine Aggregate
 - 1. Washed, inert, natural sand conforming to ASTM C33 and the following additional requirements.
 - a. Fineness Modulus 2.75 (plus/minus 0.25)
 - b. Clay lumps and friable particles – 3.0 percent maximum
 - c. Coal and lignite – 0.5 percent maximum
 - d. Organic Impurities (ASTM C40) – Organic Plate No. 2
 - e. Strength of Mortar (ASTM C87) – not less than 95 percent at 7 days
 - f. Soundness (AASHTO T-104) - 10 percent maximum loss (magnesium sulfate solution, five cycles)
- D. Normal weight Coarse Aggregate
 - 1. Well graded crushed stone or washed gravel conforming to ASTM C33 and the following additional requirements:
 - a. Material finer than No. 200 sieve – 1.0 percent maximum
 - b. Clay lumps and friable particles – 2.0 percent maximum
 - c. Chert (less than 2.40 specific gravity, saturated surface dry) – 3.0 percent maximum by weight.
 - d. Sum of clay lumps, friable particles, and chert (less than 2.40 specific gravity, saturated surface dry) – 3.0 percent maximum by weight. This limitation only applies to aggregates in which chert appears as an impurity.
 - e. Coal and lignite – 0.5 percent maximum
 - f. Soundness - 18 percent maximum loss (magnesium sulfate solution, five cycles)

- g. Soundness - 10 percent maximum loss (sodium sulfate solution, five cycles)
- 2. Coarse aggregates shall not exceed 35% by weight "percentage of wear" as determined by the Los Angeles Abrasion and Impact Tests in ASTM C131 and C535.
- E. Water shall be from approved source, potable, clean and free from oils, acids, alkali, organic matter and other deleterious material.

2.2 ADMIXTURES

- A. Water-reducing agent:
 - 1. Water-reducing agent shall be by same manufacturer as air-entraining agent.
 - 2. Daracem - 55 W.R. Grace & Co.
 - 3. Pozzolith 220N – BASF Admixtures, Inc.
 - 4. Eucon MR - Euclid Chemical Co.
 - 5. Or equal conforming to ASTM C494 Type A.
- B. Air-entraining agent:
 - 1. DAREX AEA - W.R. Grace & Co.
 - 2. MB-VR or MB-AE90 - BASF Admixtures, Inc.
 - 3. Air-Mix - Euclid Chemical Co.
 - 4. Or equal conforming to ASTM C260.
- C. Admixtures which retard setting of cement in concrete shall not be used without written approval of the Engineer. Admixtures causing accelerated setting of cement in concrete shall not be used.

2.3 CONCRETE MIX

- A. Select proportions of ingredients to meet the design strength and materials limits specified and to produce concrete having proper placability, durability, strength, appearance and other required properties. Proportioning shall also conform to the requirements in ACI 301 and ACI 318.
- B. The concrete mix design shall be a 4000 psi compressive strength concrete using ¾ inch aggregate. The design mix shall be selected based on previous test records for a mix with essentially the same proportions, and shall meet the following limiting values in Table A:

TABLE A
Maximum Allowable Water/Cement Ratios

| Minimum Allowable 28 day Compressive Strength (psi) | Maximum Allowable Water/Cement Ratio | Total Cementitious Material (Pounds) | |
|---|---|---|-----|
| | | Min | Max |
| 4000 | 0.45 | 611 | 635 |

- C. If sufficient test records are not available, (at least 30 consecutive strength tests or two groups of tests totaling at least 30 within the past 12 months), the design mix shall be developed using laboratory trial mixtures in accordance with ACI 301.
- D. All concrete is normal weight with air-dry weight not to exceed 150 lbs. per cubic foot.
- E. Fly ash may be substituted for up to 20 percent by weight of the total cementitious material. Ground granulated iron blast-furnace slag may be substituted for up to 40 percent by weight of the total cementitious material.
- F. For concrete flatwork with a steel trowel finish, fly ash may be substituted for up to 10 percent by weight and ground granulated iron blast-furnace slag may be substituted for up to 25 percent by weight of the total cementitious material.
- G. All concrete shall contain the approved air-entraining admixture as per manufacturer's written instructions to provide entrained air by volume in the cured concrete between 4.5 and 7.5%.
- H. The design mix shall meet the following slump limiting values in Table B:

TABLE B
Concrete Slump¹

| Portion of Structure | Recommended (inches) | Maximum Range (inches) |
|----------------------|-------------------------|---------------------------|
| Abutments | 4 | 3-5 |

¹After addition of high range water reducer

- I. The approved water-reducing admixture shall be used in all concrete, in accordance with manufacturer's written instructions.

2.4 MISCELLANEOUS MATERIALS

- A. Grout shall be a ready-to-use, non-metallic, non-shrink aggregate product requiring only the addition of water at the job site. Grout shall be as manufactured by Five Star Products, Inc.; Euclid Chemical Company; Master Builders; or equal. Grout shall be easily workable and shall have no drying shrinkage at any age. Compressive strength of grout (2 inch by 2 inch cubes) shall not be less than 5000 psi at 7 days, and 7500 psi at 28 days.
- B. Concrete Construction Joint Roughener:
 - 1. Provide a water soluble non-flammable, surface-retardant roughener.
 - 2. Product and Manufacturer:
 - a. Rugasol-S by Sika Corporation for horizontal joints only
 - b. MasterFinish QD 200 by BASF Corporation for vertical joints
 - c. Approval equal
- C. Bond Breaker:
 - 1. Provide an adhesive-backed glazed butyl or polyethylene tape which will satisfactorily adhere to the premolded joint filler or concrete surface as required. The tape shall be the same width as the joint.

2. Bond breaker for concrete other than where tape is specifically called for shall be either bond breaker tape or an ASTM C309 non-staining type bond prevention coating such as Masterkure 100WB by Degussa Construction Chemicals, Dayton Superior Sure Lift J6WB, StarSeal Clean Lift by Vexcon Chemicals or equal.

D. Bonding Agent:

1. Provide a two-component, 100% solids, moisture –tolerant structural epoxy adhesive conforming to ASTM C881, Type II. The bonding agent shall be Sikadur 32 Hi-Mod by Sika Corporation of Lyndhurst, NJ, Concessive Liquid (LPL) by Degussa Admixtures, Inc. of Cleveland, OH or equal.
2. Latex bonding agent shall be a non-remulsifiable acrylic-polymer latex conforming to ASTM C1059 Type II.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify cover requirements over all reinforcement.
- B. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not cause hardship in placing concrete.
- C. Verify site conditions to ensure that full access is available for placement of concrete.

3.2 JOINTS

- A. Construction and expansion joints indicated on Drawings are mandatory and shall not be omitted. Construction joints shall conform to the requirements of Section 03100 and the following:
 1. Before placing new concrete against concrete already in place and hardened, the surface shall again be cleaned with a jet where practical. The exposed aggregate shall then be mopped with a mortar composed of the same proportions of sand and placed and mopped in place immediately prior to the placing of concrete and shall not have set up or hardened prior to the placing of concrete.
 2. Where joints other than those shown are required, they shall be made at such locations as the Engineer may allow, and shall in no case impair the structural strength of the structure.
- B. Joints not indicated or specified shall be placed to least impair strength of structure and shall be subject to approval of the Engineer.
- C. Saw-cut joints shall be installed in the locations shown on the Drawings. Saw-cut joints shall not be substituted for formed construction joints unless approved by the Engineer. Saw-cut joints shall conform to the following requirements:
 1. The depth of the saw cut shall be at least $\frac{1}{4}$ of the slab thickness or a minimum depth of one inch unless otherwise shown on the Drawings.
 2. Do not saw cut through slab reinforcing steel unless directed to do so in writing by the Engineer.

3. Joints produced using conventional wet-cut process shall be completed within 4 to 12 hours after the slab has been finished - 4 hours in hot weather conditions and 12 hours in cold weather conditions.
4. Joints produced using the early-entry dry cut process shall be formed using diamond-impregnated blades and shall be completed within 1 to 4 hours after the slab has been finished – 1 hour in hot weather conditions and 4 hours in cold weather conditions. The maximum depth of joints produced by the dry cut process shall not exceed 1-1/4 inches. Care should be taken to make sure that the saw does not ride up over large or hard coarse aggregates.
5. Regardless of the saw cutting process chosen, the saw cutting must be performed before the concrete starts to cool, as soon as the concrete surface is firm enough not to be torn or damaged by the cutting blade, and before random-drying-shrinkage cracks can form in the concrete slab.

3.3 MIXING, CONSISTENCY, AND DELIVERY OF CONCRETE

- A. Concrete shall be ready-mixed, produced by a central batch plant. Hand or site mixing shall not be allowed. Constituents, including admixtures, shall be batched at the central batch plant. Admixtures shall be premixed in solution form and dispensed as recommended by the manufacturer.
- B. Central plant and rolling stock equipment and methods shall conform to Truck Mixer and Agitator Standard of Truck Mixer Manufacturer's National Ready-Mixed Concrete Association, ASTM C94, ASTM C685, and Contract Documents. Consistency of concrete at time of placement shall be at a 3 inch slump, +/- 1 inch.
- C. Ready mixed concrete shall be transported to the site in watertight agitator or mixer trucks loaded not in excess of rated capacities. Discharge at site shall be within one and one-half hours after cement is first introduced into the aggregates. Concrete with a temperature greater than 90°F. shall be rejected and removed from the site.
- D. During any of the following conditions: high ambient temperature, high concrete temperature, low relative humidity, increased wind velocity, high solar radiation, when the temperature of the concrete is 85°F or above, the time between the introduction of cement to the aggregates and discharge shall not exceed one hour. In addition, when the rate of evaporation on the surface of the concrete is expected to approach 0.2 lb/ft²/hr. (see chart in ACI 305R) special precautions shall be taken against the formation of plastic shrinkage cracking on the surface of the concrete after placement.
- E. During any period when for more than three successive days the average daily outdoor temperature drops below 40°F, the concrete temperature at the time of placement shall be as specified in Table C below.

TABLE C
Concrete Temperature During Cold Weather

| Least dimension of section, inches. | Minimum temperature of concrete as placed and maintained during the protection period, °F | Maximum gradual decrease in surface temperature during any 24 hours after end of protection, °F |
|--|--|--|
| Less than 12 | 55 | 50 |
| 12 to less than 36 | 50 | 40 |

| | | |
|-----------------|----|----|
| 36 to 72 | 45 | 30 |
| Greater than 72 | 40 | 20 |

- F. Central mixed concrete shall be plant mixed a minimum of five minutes. Agitation shall begin immediately after premixed concrete is placed in truck and shall continue without interruption until discharged. Transit mixed concrete shall be mixed at mixing speed for at least ten minutes immediately after charging truck followed by agitation without interruption until discharged.
- G. Retempering of concrete which has partially hardened by mixing with or without additional cement, aggregates, or water shall not be permitted.

3.4 PLACING CONCRETE

- A. Remove excess water and foreign matter from forms and excavations. Do not place concrete on frozen soil. Provide adequate protection against frost action during freezing weather.
- B. Transport concrete from mixer to place of final deposit as rapidly as practical by methods which prevent separation of ingredients and displacement of reinforcements, and which avoid re-handling. Do not deposit partially hardened concrete. When concrete is conveyed by chutes, equipment shall be of such size and shape to ensure continuous flow in chute. Flat (coal) chutes shall not be used. Chutes shall be of metal or metal lined and uniformly sloped. Slope shall not be less than 25° nor more than 45° from horizontal. Concrete shall be lowered and maintained as near to the surface of deposit as practicable. The chute shall be thoroughly cleaned before and after each use and debris and any water shall be discharged outside of the forms. Concrete shall not be allowed to flow horizontally over distances exceeding 10 feet or dropped vertically over 6 feet.
- C. Place concrete in such a manner as to prevent segregation and accumulations of hardened concrete on forms or reinforcement above the grade of concrete being placed. Suitable hoppers and spouts with restricted outlets and tremies shall be used as required.
- D. Thoroughly consolidate each layer of concrete by rodding and vibrating using internal type mechanical vibrator. Vibration shall be done by experienced operators under close supervision and shall be carried on only enough to produce homogeneity and optimum consolidation without permitting segregation of constituents or "pumping" of air. Vibrators used for normal weight concrete shall operate at speeds of not less than 7,000 vpm and be of suitable capacity. Do not use vibrators to move concrete. Vibration shall be supplemented by spading to remove bubbles and honeycombs adjacent to visible surfaces. At least one vibrator shall be on hand for every 10 cubic yards of concrete placed per hour, plus one spare. Vibrators shall be operable and on site prior to starting concrete placement.
- E. Deposit concrete continuously, and in layers of such thickness that no concrete will be deposited on concrete which has hardened sufficiently to cause formation of seams and planes of weakness within the section. If a section cannot be placed continuously between planned construction joints, as specified, field joints and additional reinforcement shall be introduced at the Contractor's expense to preserve structural continuity.
- F. Cold joints, particularly in exposed concrete, including "honeycombs", are unacceptable. If they occur in concrete surfaces exposed to view, the Engineer will

require that entire section in which blemish occurs be removed and replaced with new materials at the Contractor's expense.

3.5 CURING AND PROTECTION

- A. When concrete is placed at or below an ambient air temperature of 40°F. or whenever this temperature or lower values are likely to occur within 48 hours after placement of concrete, cold weather concreting procedures, according to ACI 306.1 and as specified herein, shall be followed. The entire area affected shall be protected by adequate housing or covering, and heating. No salt, chemicals or other foreign materials shall be used in the mix to lower the freezing point of concrete. No oil or kerosene heaters shall be utilized. Vent flue gases from combustion heating units to the outside of the enclosure.
- B. No frozen materials shall be used in batching concrete and any ice shall be removed from coming into contact with the concrete.
- C. Protect concrete work against injury from heat, cold, and defacement of any nature during construction operations.
- D. Concrete shall be treated and protected immediately after concreting or cement finishing is completed, to provide continuous moist curing above 50°F. for at least 7 days, regardless of ambient air temperatures.
- E. All concrete shall be cured immediately after finishing in accordance with the following requirements:
 - 1. Curing shall be accomplished by a continuous soaking process such as the use of soaker hose or sprinklers, or by use of plastic roll materials to cover the concrete, which shall be thoroughly wetted at least once a day or more often as required in very hot weather. Such plastic shall be placed as soon as possible after finishing of concrete so that scarring of the surface will not occur. Plastic shall be held in place on the surface of the concrete in such a manner and means as will not allow it to be blown off or otherwise dislodged from the concrete surface. Curing procedures shall be maintained continuously for a period of at least 7 days.
 - 2. All methods of curing shall be subject to approval of the Engineer, and each method employed shall be practical and adequate for the curing required. Curing compounds in lieu of wet curing will not be allowed.
- F. Keep permanent temperature records showing date and outside temperature during concreting operations. Thermometer readings shall be taken at start of work in morning, at noon, and again late in afternoon. Locations of concrete placed during such periods shall likewise be recorded in such manner as to show any effect temperatures may have had on construction.

3.6 REMOVAL OF FORMWORK

- A. Forms shall not be removed until concrete has attained sufficient strength to support its own weight, construction loads to be placed thereon and lateral loads, without damage to structure or excessive deflection.
- B. With the exception of construction joint bulkheads and keyways, forms and supports shall remain in place for not less than the minimum time periods noted below.
 - 1. Unless specifically authorized by the Engineer, forms for vertical surfaces shall not be removed before the concrete has attained a strength of not less than 30

percent of the minimum allowable prescribed compressive strength nor not less than the minimum time period specified in Table D.

2. Unless specifically authorized by the Engineer, forms for horizontal surfaces shall not be removed before the concrete has attained a strength of not less than 60 percent of the minimum allowable prescribed compressive strength nor not less than the minimum time period specified in Table D.

TABLE D
Minimum Degree Day Requirement for Form Removal

| Form Use | Degree-Days |
|-----------------------------|-------------|
| Walls and Vertical Surfaces | 200 |
| Form and Pour Repairs | 400 |

3. Definition of degree-days - Total number of days times mean daily air temperature at the surface of the concrete. For example, 5 days at temperature of 60°F. equals 300 degree-days. Days or fractions of days in which temperature is below 50°F. shall not be included in calculation of degree-days except where modified by Table C above.
- C. Forms for construction joint bulkheads and keyways may be removed the following day, after the concrete pour. Extreme caution must be used to avoid damage to the concrete surface and keyway.
- D. Any test cylinders required to verify the specified minimum strengths for form removal shall be field cured under the same conditions as the concrete they represent. Such cylinders and testing shall be at the Contractor's expense.

3.7 FINISHING OF CAST-IN-PLACE CONCRETE

A. Upper Horizontal Surfaces

1. Horizontal surfaces not subjected to wear, such as tops of parapets, copings, walls, etc., shall be formed by placing an excess of material in the forms and removing or striking off such excess with a template, forcing the coarse aggregate below the surface of the mortar.
2. Horizontal surfaces shall be attained by striking off excess concrete and in no case shall concrete be added to the tops of walls, etc., once initial set has taken place.
3. The top of such surfaces shall be finished in a manner as required and dictated by the necessary appearance of the part being finished. For covered surfaces, a wood float finish will in most cases be sufficient. Steel troweling may be necessary where concrete is exposed to view and adjacent surfaces have a steel trowel finish. In other cases, a "broom" finish may be required.

B. Formed Surfaces

1. Immediately after the end of the wet cure period, remove form ties and patch all tie-holes, rat holes, and other surface voids with a non-metallic, non-shrink grout, which most nearly matches the color and texture of the concrete surface. All protrusions shall be ground smooth with an approved mechanical grinder.

3.8 REPAIRING OF HARDENED CONCRETE SURFACES

- A. Defective concrete and honeycombed areas shall not be patched unless examined and approval is given by the Engineer. After approval, areas involved shall be cut back to a minimum depth of 1 inch from the finished surface, or as otherwise directed, whichever is greater. Edges of areas to be repaired shall be cut square to a minimum depth of 3/4 inch. Feathered edges will not be allowed. Any voids or honeycomb around reinforcing steel shall be chipped away to provide at least 3/4 inch clearance all around to permit proper placement of repair concrete around the steel to the parent, sound concrete.
- B. Exposed surfaces shall be thoroughly cleaned of all mud, paint, grime, scum, laitance, organic matter, detritus, calcareous growth and other foreign matter by sand and water blasting or other acceptable means. Immediately after cleaning, the surface shall be checked by the Engineer for proper surface preparation, including fractured concrete or loose aggregate. Any such material shall be removed using pneumatic or hand tools. The final surfaces shall be thoroughly rinsed with clean water to remove remaining dirt and dust.
- C. Premoisten the prepared surface for at least 2 hours to reduce the absorption of water by the parent concrete and to provide a reservoir for moist curing at the interface of the repair. The substrate should be saturated surface dry with no standing water. While the concrete surface is still damp, apply a thin 1/16 inch coat of neat cement slurry (mixed to the consistency of a heavy paste) with a bristle brush to provide a bond coat throughout the entire cavity of the repair. Before the slurry has dried or changed color, promptly install the repair concrete or dry-pack, as may be required or selected.
- D. For relatively small areas, ram repair concrete into this portion of the formed void. This concrete shall comprise a crumbly-dry 1-1-1.5 mixture of cement, concrete sand and pea gravel (or 3/4 inch gravel) mixed slightly damp to the touch (just short of "balling"). The "dry-pack" consistency of the concrete shall be zero slumps, but moist enough so that when it is rodded and tamped until dense, an excess of paste will appear on the surface in the form of a spider web. In cases of unformed voids of thinner section, do not build-up repair in excess of a depth which will sag with the weight of the fresh mortar or concrete. Trowel smooth with heavy pressure.
- E. The concrete shall be of the driest possible consistency and mix composition so that it can be worked into the corners and angles of forms and around the reinforcement, without permitting the materials to segregate or free water to collect on the surface, due consideration being given to the methods of placing and compacting. Source and mixture of concrete shall be submitted for approval.
- F. Concrete shall be deposited continuously, or in layers of such thickness that no concrete will be deposited which has hardened sufficiently to cause the formation of seams and planes of weakness within the section. Concrete shall be thoroughly consolidated and trowelled dense, smooth and plane. Avoid premature and excessive trowelling which could cause sagging.
- G. Repair areas and adjacent parent concrete surfaces shall be continuously moist cured immediately after finishing for at least 7 days. Surfaces shall be covered with damp burlap and sealed with taped polyethylene. Membrane curing compounds shall not be used.
- H. Leave finished work and adjacent concrete surfaces in a neat, clean condition with no evidence of spillovers or staining.

3.9 CLEANING

- A. Concrete surfaces shall be cleaned of objectionable stains as determined by the Engineer. Materials containing acid in any form or methods which will damage the "skin" of concrete surfaces shall not be employed, except where otherwise specified.

END OF SECTION

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DIVISION 05

METALS

SECTION 05500

MISCELLANEOUS METALS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Galvanized steel bollard
- B. Related Sections
 - 1. Section 09900 - Painting

1.2 REFERENCES

- A. The Commonwealth of Massachusetts State Building Code, Ninth Edition
- B. The Commonwealth of Massachusetts Architectural Access Board, 521 CMR
- C. American Society for Testing and Materials (ASTM)
 - 1. A36, Standard Specification for Carbon Structural Steel
 - 2. A53, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
 - 3. A123, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
 - 4. A143, Standard Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedures for Detecting Embrittlement
 - 5. A153, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
 - 6. A193, Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service
 - 7. A194, Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High-Pressure or High-Temperature Service
 - 8. A283, Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates
 - 9. A307, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength
 - 10. A325, Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
 - 11. A384, Standard Practice for Safeguarding Against Warpage and Distortion During Hot-Dip Galvanizing of Steel Assemblies
 - 12. A385, Standard Practice for Providing High-Quality Zinc Coatings (Hot-Dip)
 - 13. A489, Standard Specification for Carbon Steel Lifting Eyes

14. A490, Standard Specification for Structural bolts, Alloy Steel, Heat Treated, 150 ksi Minimum Tensile Strength
 15. A563, Standard Specification for Carbon and Alloy Steel Nuts
 16. F436, Standard Specification for Hardened Steel Washers
 17. F844, Standard Specification for Washers, Steel, Plain (Flat), Unhardened for General Use
 18. F959, Standard Specification for Compressible Washer–Type Direct Tension Indicators for Use with Structural Fasteners
 19. F1554, Standard Specification for Anchor Bolts, Steel, 36-, 55-, and 105-ksi Yield Strength
- D. International Conference of Building Officials (ICBO): Evaluation Reports for Concrete and Masonry Anchors.
- E. The Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities.

1.3 SUBMITTALS

- A. Product Data:
1. Manufactured outdoor removable bollard
 2. Prime Paint.
 3. Fasteners (when requested by the Engineer).
 4. Galvanizing touch-up / repair materials.
- B. Quality Control Submittals:
1. Concrete and Masonry Drilled Anchors:
 - a. Current test data or ICBO evaluation report.
 - b. Adhesive Anchor Installer Certification.
 2. Welding: In accordance with the requirements of Section 05050.
 3. Provide Certificates of Compliance on other materials as requested by the Engineer.
- C. Submit to the Engineer shop drawings sealed by an Engineer registered in the Commonwealth of Massachusetts, and material specifications for all materials specified and furnished under this Section. Submittals shall include details of anchoring systems, accessories, fittings, connections, member size and elevations.
- D. Submit structural design calculations including verification of adequate strength prepared and sealed by an Engineer registered in the Commonwealth of Massachusetts.

1.4 QUALITY ASSURANCE

- A. Shop Assembly: Pre-assemble items in shop to the greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.
- B. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- C. Qualifications for Welding Work: In accordance with the requirements of Section 05050.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Handle and stack materials carefully to prevent deformation or damage.
- B. Store materials carefully on substantial timbers and blocking, so arranged that materials will be free from earth and properly drained, preventing any splattering with dirt or accumulation of water or snow in or about materials.
- C. Prevent accumulation of mud, dirt, or other foreign matter on materials. Any accumulation shall be completely removed prior to erection.
- D. Protect painted, hot-dip galvanized, and other finishes from damage due to metal banding and rough handling. Use padded slings and straps.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Unless otherwise indicated, meet the following requirements:

| Item | ASTM Reference |
|--|-----------------------------|
| Steel Shapes: | |
| W-Shapes | A992 |
| M-, S-, and HP-Shapes | A36 |
| Channels | A36 |
| Angles | A36 |
| Plates | A36 |
| Steel Sheet | A570 or A611, Class 1. |
| Galvanized Structural Sheet Steel | A446, G90 coating thickness |
| Steel Pipe | A53, Grade B |
| Raised-Pattern Floor Plate | A786 |
| Stainless Steel: | |
| Bars and Angles | A276, AISI Type 316 |
| Shapes | A276, AISI Type 304 |
| Steel Plate, Sheet, and Strip | A240, AISI Type 316 |
| Bolts, Threaded Rods, Anchor Bolts, and Anchor Studs | F593, AISI Type 316 |
| Nuts | F594, AISI Type 316 |
| Aluminum: | |

| Item | ASTM Reference |
|-------------------------------------|--|
| Extruded Shapes | B221, Alloy 6061, Temper T6 |
| Pipe | B210, Alloy 6063, Temper T6 |
| Aluminum Sheet | B209, Alloy 3003, Temper H14 |
| Steel Bolts and Nuts: | |
| Carbon Steel | A307 bolts, with A563 nuts |
| High-Strength | A325, Type 1 bolts, with A563 nuts A153 for galvanized components |
| Anchor Bolts and Rods | F1554, Grade 55, with weldability supplement S1 |
| Eyebolts | A489 |
| Threaded Rods | A36 |
| Flat Washers (Unhardened) | F844 |
| Flat and Beveled Washers (Hardened) | F436 |

2.2 MANUFACTURED UNITS

A. Galvanized Steel Bollards

1. Fabricate bollards of 8 inch diameter, Schedule 40 steel pipe.
2. Hot-dip galvanize and prime and paint bollards after fabrication. Color shall be yellow.
3. Bollards shall be designed for outdoor use
4. Bollards shall have provisions to avoid binding with soil penetration

2.3 ACCESSORIES

- A. Electrolysis Isolators: All dissimilar metals shall be isolated over their full length with 1/8 inch thick neoprene unless otherwise noted.

2.4 SHOP FABRICATION

A. General

1. All dimensions shall be verified at the site before fabrication is started.
2. Galvanized items shall be shop fabricated and completely welded prior to galvanizing.
3. Fit and shop assemble items in largest practical sections, for delivery to site.
4. Fabricate items with joints tightly fitted and secured.
5. Welding shall be in accordance with the requirements of Section 05050.
6. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

7. Exposed Mechanical Fastenings: Flush countersunk screws or bolts, unobtrusively located, consistent with the design of the component, except where specifically noted otherwise.
8. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.
9. Miscellaneous metals work shall be formed true to detail, with clean, straight, sharply defined profiles and smooth surfaces of uniform color and texture and free from defects impairing strength or durability.
10. Metal Surfaces: For fabrication of miscellaneous metal work that will be exposed to view, use only materials that are smooth and free of surface blemishes including pitting, seam marks, roller marks, rolled trade names and roughness.
11. Connections and accessories shall be of sufficient strength to safely withstand stresses and strains to which they will be subjected. Accessories and connections to steel or cast iron shall be steel, unless otherwise specified. Threaded connections shall be made so that the threads are concealed by fittings.
12. Castings shall be of good quality, strong, tough, even-grained, smooth, free from scale, lumps, blisters, sand holes, and defects of any kind which render them unfit for the service for which they are intended. Castings shall be thoroughly cleaned and will be subjected to a hammer inspection in the field by the Engineer. Finished surfaces shown on the Drawings and/or specified shall be machined to a true plane surface and shall be true and seat at all points without rocking. Allowances shall be made in the patterns so that the thickness specified or shown shall not be reduced in obtaining finished surfaces. Castings will not be acceptable if the actual weight is less than 95% of the theoretical weight computed from the dimensions shown.
13. No splicing of any member or part of the work will be allowed where full-length members are commercially available.
14. Screws, bolts, studs and other connecting devices required in the work shall be concealed wherever possible. On all finish work where fasteners must be exposed to view, they shall be countersunk and finished flush with the exposed surfaces. All screws, bolts and other fastening devices used for exterior work shall be aluminum, bronze or stainless steel, whichever is appropriate for the work in which it is to be used.

B. Fabrication Tolerances:

1. Squareness: 1/8 inch maximum difference in diagonal measurements.
2. Maximum Offset Between Faces: 1/16 inch.
3. Maximum Misalignment of Adjacent Members: 1/16 inch.
4. Maximum Bow: 1/8 inch in 48 inches.
5. Maximum Deviation From Plane: 1/16 inch in 48 inches.

2.5 FINISHES

A. Hot Dip Galvanizing

1. Material for galvanizing shall be geometrically suitable as specified in ASTM A384 and A385.
2. To be chemically suitable for galvanizing, steel should contain carbon below 0.25%, phosphorous below 0.5%; and manganese below 1.35%. Contact galvanizer if steel does not comply to determine suitability for processing.
3. To safeguard against warpage or distortion of steel members, in conformance with ASTM A384, miscellaneous metals fabricator shall submit shop drawings of non-standard fabrications, all tubular fabrications, all fabrications involving any dimension that exceeds the size of the galvanizer's kettle, and any fabrication involving materials of different thickness. These drawings shall be submitted to the galvanizer prior to fabrication to determine the suitability of the material for galvanizing.
4. All ferrous metals specified herein or indicated on the drawings as galvanized shall be hot-dipped galvanized after fabrication in compliance with ASTM A123 as modified to include 0.5% nickel, A143, A153, A384, or A385 as applicable. Galvanizing bath shall include zinc, nickel, and other state of the art alloys designed to ensure homogeneous metallurgical growth and greater corrosion resistance.
5. All galvanized materials must be inspected for compliance with these specifications and marked with a stamp indicating the name of the galvanizer, the ASTM number, and the weight of the zinc coating in ounces per square foot. Coating shall be not less than 2.3 oz. per square foot of surface. After galvanizing, steel to be painted shall be dipped in a 0.2% chromic acid solution.
6. Within 12 hours of galvanizing, a factory prime coating shall be applied to all galvanized steel that is to be painted. Prime paint shall conform to the requirements and be of the same manufacturer as that provided under Section 09900. Finish painting is included under the Work of Section 09900.
7. To minimize distortion, material less than thirty feet in length shall be preheated in a suitable chamber maintaining a constant heat of no less than 200°F immediately prior to immersion into the molten zinc.
8. To minimize surface imperfections (e.g., flux inclusions) material to be galvanized shall be dipped into a solution of Zinc Ammonium Chloride prior to galvanizing. The type of galvanizing kettle utilizing a flux blanket overlaying the molten zinc shall not be permitted.
9. Pipe gate shall be galvanized and painted.

2.6 SOURCE QUALITY CONTROL

- A. Miscellaneous Metals fabrications, materials, and workmanship shall be subjected to inspection and testing in mill, shop and/or field by the Engineer.
- B. Inspection and testing of shop welding shall be in accordance with the requirements of Section 05050. Repair and retest defective welds as specified in Section 05050.
- C. Maintain inspection and quality control records of shop and field work.
- D. The Contractor shall maintain records of each impact wrench used in the shop, showing dates, sizes of bolts tested and the corresponding torque values. Certified copies of the records shall be made available to the Engineer, upon request.

- E. Notify the Engineer prior to start of any fabrication, the start of sandblasting and painting, or other phases of work so as to afford them reasonable opportunity to inspect work.
- F. Furnish the Engineer upon request, with the following:
 - 1. Complete sets of approved Shop Drawings and corrective work procedures at fabricating shop(s) and in field.
 - 2. Cutting lists, order lists, material bills, and shipping lists.
 - 3. Information as to time and place of all rollings and shipments of material to shops and field.
 - 4. Representative sample pieces requested for testing.
 - 5. Full and ample means and assistance for testing materials, and proper facilities for inspection of work, in mill, shop and field.
- G. Do not remove any marks or tags identifying rejected work.
- H. Any work found deficient shall be corrected or replaced in accordance with these specifications. Deficient welds shall be cut out to sound material and re-welded. Deficient assemblies shall be taken apart, corrected and reassembled, using new materials as required. ASTM A490 bolts shall not be reused. ASTM A325 bolts may be retightened once only.
- I. Miscellaneous Metals work that has been rejected by the Engineer in the mill or shop shall be corrected without delay and at no expense to the Owner.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.
- B. Verify that anchor bolts, bearing plates, and other items furnished to be installed by others have been installed correctly.

3.2 PREPARATION

- A. Clean and strip primed steel items to bare metal where site welding is required.
- B. All steel and aluminum surfaces to come in contact with exposed concrete or masonry shall receive a protective coating of an approved heavy bitumastic troweling applied in accordance with manufacturer's instructions prior to installation.

3.3 FIELD FABRICATION

- A. No fabricated section shall be cut in the field without the permission of the Engineer.
- B. All miscellaneous metals work shall be formed true to detail, with clean, straight, sharply defined profiles and smooth surfaces of uniform color and texture and free from defects impairing strength or durability.
- C. Connections and accessories shall be of sufficient strength to safely withstand stresses and strains to which they will be subjected. Accessories and connections to steel or cast iron shall be steel, unless otherwise specified. Threaded connections shall be made so that the threads are concealed by fittings.

- D. No splicing of any member or part of the work will be allowed where full-length members are commercially available. Jointing shall meet the approval of the Engineer.
- E. Screws, bolts, studs and other connecting devices required in the work shall be concealed wherever possible. On finish work where fasteners must be exposed to view, they shall be countersunk and finished flush with the exposed surfaces. Screws, bolts and other fastening devices used for exterior work shall be aluminum, bronze or stainless steel, whichever is appropriate for the work in which it is to be used.

3.4 INSTALLATION

- A. Install all items furnished except items to be imbedded in concrete or masonry. Items to be attached to concrete or masonry after such work is completed shall be installed in accordance with the details shown. Fastening to wood plugs in masonry will not be permitted.
- B. Where aluminum contacts wood, apply two coats of aluminum metal and masonry paint to the wood.
- C. Removable pipe bollards shall be installed in accordance with the manufacturer's requirements.
- C. Pack grout solidly between concrete or masonry bearing surfaces and plates to ensure that no voids remain.
- D. Make no openings without the specific written approval of the Engineer. All re-entrant corners shall be shaped notch-free to a radius of at least ½ inch at blocks, copes, cuts and openings.

3.5 FIELD QUALITY CONTROL

- A. The fact that Miscellaneous Metals work has been accepted at the shop shall not prevent its final rejection at the job site, even after it has been erected, if it is found to be defective in any way.
- B. Miscellaneous Metals erection, materials, and workmanship shall be subjected to inspection and testing in mill, shop and/or field by the Engineer.
- C. Inspection and testing of field welding shall be in accordance with the requirements of Section 05050.
- D. Maintain inspection and quality control records of shop and field work.
- E. Notify the Engineer prior to start of any miscellaneous metals erection, or other phases of work so as to afford them reasonable opportunity to inspect work.
- F. Furnish the Engineer upon request, with the following:
 - 1. Complete sets of approved Shop Drawings and corrective work procedures at fabricating shop(s) and in field.
 - 2. Full and ample means and assistance for testing materials, and proper facilities for inspection of work, in mill, shop and field.
- G. Do not remove any marks or tags identifying rejected work.
- H. Any work found deficient shall be corrected or replaced in accordance with these specifications, without delay and at no expense to the Owner.

1. Deficient assemblies shall be taken apart, corrected and reassembled, using new materials as required. ASTM A490 bolts shall not be reused. ASTM A325 bolts may be retightened once only.
 2. Re-inspect defective and improperly tightened high-strength bolted connections. Retest fully tensioned bolts as necessary to demonstrate compliance of the completed work.
- I. Welded Connections shall be tested in accordance with Section 05050.
- 3.6 ADJUST AND CLEAN
- A. Touch-Up Painting - Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as approved for use for shop painting.
 - B. Apply by brush or spray to provide a minimum dry film thickness of 2.0 mils.
 - C. For galvanized surfaces, clean field welds, bolted connections and abraded areas and touch-up all damage using suitable touch up material complying with ASTM A780.

END OF SECTION

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SECTION 05500

MISCELLANEOUS METALS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Galvanized steel bollard
- B. Related Sections
 - 1. Section 09900 - Painting

1.2 REFERENCES

- A. The Commonwealth of Massachusetts State Building Code, Ninth Edition
- B. The Commonwealth of Massachusetts Architectural Access Board, 521 CMR
- C. American Society for Testing and Materials (ASTM)
 - 1. A36, Standard Specification for Carbon Structural Steel
 - 2. A53, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
 - 3. A123, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
 - 4. A143, Standard Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedures for Detecting Embrittlement
 - 5. A153, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
 - 6. A193, Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service
 - 7. A194, Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High-Pressure or High-Temperature Service
 - 8. A283, Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates
 - 9. A307, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength
 - 10. A325, Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
 - 11. A384, Standard Practice for Safeguarding Against Warpage and Distortion During Hot-Dip Galvanizing of Steel Assemblies
 - 12. A385, Standard Practice for Providing High-Quality Zinc Coatings (Hot-Dip)
 - 13. A489, Standard Specification for Carbon Steel Lifting Eyes

14. A490, Standard Specification for Structural bolts, Alloy Steel, Heat Treated, 150 ksi Minimum Tensile Strength
 15. A563, Standard Specification for Carbon and Alloy Steel Nuts
 16. F436, Standard Specification for Hardened Steel Washers
 17. F844, Standard Specification for Washers, Steel, Plain (Flat), Unhardened for General Use
 18. F959, Standard Specification for Compressible Washer–Type Direct Tension Indicators for Use with Structural Fasteners
 19. F1554, Standard Specification for Anchor Bolts, Steel, 36-, 55-, and 105-ksi Yield Strength
- D. International Conference of Building Officials (ICBO): Evaluation Reports for Concrete and Masonry Anchors.
- E. The Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities.

1.3 SUBMITTALS

- A. Product Data:
1. Manufactured outdoor removable bollard
 2. Prime Paint.
 3. Fasteners (when requested by the Engineer).
 4. Galvanizing touch-up / repair materials.
- B. Quality Control Submittals:
1. Concrete and Masonry Drilled Anchors:
 - a. Current test data or ICBO evaluation report.
 - b. Adhesive Anchor Installer Certification.
 2. Welding: In accordance with the requirements of Section 05050.
 3. Provide Certificates of Compliance on other materials as requested by the Engineer.
- C. Submit to the Engineer shop drawings sealed by an Engineer registered in the Commonwealth of Massachusetts, and material specifications for all materials specified and furnished under this Section. Submittals shall include details of anchoring systems, accessories, fittings, connections, member size and elevations.
- D. Submit structural design calculations including verification of adequate strength prepared and sealed by an Engineer registered in the Commonwealth of Massachusetts.

1.4 QUALITY ASSURANCE

- A. Shop Assembly: Pre-assemble items in shop to the greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.
- B. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- C. Qualifications for Welding Work: In accordance with the requirements of Section 05050.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Handle and stack materials carefully to prevent deformation or damage.
- B. Store materials carefully on substantial timbers and blocking, so arranged that materials will be free from earth and properly drained, preventing any splattering with dirt or accumulation of water or snow in or about materials.
- C. Prevent accumulation of mud, dirt, or other foreign matter on materials. Any accumulation shall be completely removed prior to erection.
- D. Protect painted, hot-dip galvanized, and other finishes from damage due to metal banding and rough handling. Use padded slings and straps.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Unless otherwise indicated, meet the following requirements:

| Item | ASTM Reference |
|--|-----------------------------|
| Steel Shapes: | |
| W-Shapes | A992 |
| M-, S-, and HP-Shapes | A36 |
| Channels | A36 |
| Angles | A36 |
| Plates | A36 |
| Steel Sheet | A570 or A611, Class 1. |
| Galvanized Structural Sheet Steel | A446, G90 coating thickness |
| Steel Pipe | A53, Grade B |
| Raised-Pattern Floor Plate | A786 |
| Stainless Steel: | |
| Bars and Angles | A276, AISI Type 316 |
| Shapes | A276, AISI Type 304 |
| Steel Plate, Sheet, and Strip | A240, AISI Type 316 |
| Bolts, Threaded Rods, Anchor Bolts, and Anchor Studs | F593, AISI Type 316 |
| Nuts | F594, AISI Type 316 |
| Aluminum: | |

| Item | ASTM Reference |
|-------------------------------------|--|
| Extruded Shapes | B221, Alloy 6061, Temper T6 |
| Pipe | B210, Alloy 6063, Temper T6 |
| Aluminum Sheet | B209, Alloy 3003, Temper H14 |
| Steel Bolts and Nuts: | |
| Carbon Steel | A307 bolts, with A563 nuts |
| High-Strength | A325, Type 1 bolts, with A563 nuts A153 for galvanized components |
| Anchor Bolts and Rods | F1554, Grade 55, with weldability supplement S1 |
| Eyebolts | A489 |
| Threaded Rods | A36 |
| Flat Washers (Unhardened) | F844 |
| Flat and Beveled Washers (Hardened) | F436 |

2.2 MANUFACTURED UNITS

A. Galvanized Steel Bollards

1. Fabricate bollards of 8 inch diameter, Schedule 40 steel pipe.
2. Hot-dip galvanize and prime and paint bollards after fabrication. Color shall be yellow.
3. Bollards shall be designed for outdoor use
4. Bollards shall have provisions to avoid binding with soil penetration

2.3 ACCESSORIES

- A. Electrolysis Isolators: All dissimilar metals shall be isolated over their full length with 1/8 inch thick neoprene unless otherwise noted.

2.4 SHOP FABRICATION

A. General

1. All dimensions shall be verified at the site before fabrication is started.
2. Galvanized items shall be shop fabricated and completely welded prior to galvanizing.
3. Fit and shop assemble items in largest practical sections, for delivery to site.
4. Fabricate items with joints tightly fitted and secured.
5. Welding shall be in accordance with the requirements of Section 05050.
6. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

7. Exposed Mechanical Fastenings: Flush countersunk screws or bolts, unobtrusively located, consistent with the design of the component, except where specifically noted otherwise.
8. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.
9. Miscellaneous metals work shall be formed true to detail, with clean, straight, sharply defined profiles and smooth surfaces of uniform color and texture and free from defects impairing strength or durability.
10. Metal Surfaces: For fabrication of miscellaneous metal work that will be exposed to view, use only materials that are smooth and free of surface blemishes including pitting, seam marks, roller marks, rolled trade names and roughness.
11. Connections and accessories shall be of sufficient strength to safely withstand stresses and strains to which they will be subjected. Accessories and connections to steel or cast iron shall be steel, unless otherwise specified. Threaded connections shall be made so that the threads are concealed by fittings.
12. Castings shall be of good quality, strong, tough, even-grained, smooth, free from scale, lumps, blisters, sand holes, and defects of any kind which render them unfit for the service for which they are intended. Castings shall be thoroughly cleaned and will be subjected to a hammer inspection in the field by the Engineer. Finished surfaces shown on the Drawings and/or specified shall be machined to a true plane surface and shall be true and seat at all points without rocking. Allowances shall be made in the patterns so that the thickness specified or shown shall not be reduced in obtaining finished surfaces. Castings will not be acceptable if the actual weight is less than 95% of the theoretical weight computed from the dimensions shown.
13. No splicing of any member or part of the work will be allowed where full-length members are commercially available.
14. Screws, bolts, studs and other connecting devices required in the work shall be concealed wherever possible. On all finish work where fasteners must be exposed to view, they shall be countersunk and finished flush with the exposed surfaces. All screws, bolts and other fastening devices used for exterior work shall be aluminum, bronze or stainless steel, whichever is appropriate for the work in which it is to be used.

B. Fabrication Tolerances:

1. Squareness: 1/8 inch maximum difference in diagonal measurements.
2. Maximum Offset Between Faces: 1/16 inch.
3. Maximum Misalignment of Adjacent Members: 1/16 inch.
4. Maximum Bow: 1/8 inch in 48 inches.
5. Maximum Deviation From Plane: 1/16 inch in 48 inches.

2.5 FINISHES

A. Hot Dip Galvanizing

1. Material for galvanizing shall be geometrically suitable as specified in ASTM A384 and A385.
2. To be chemically suitable for galvanizing, steel should contain carbon below 0.25%, phosphorous below 0.5%; and manganese below 1.35%. Contact galvanizer if steel does not comply to determine suitability for processing.
3. To safeguard against warpage or distortion of steel members, in conformance with ASTM A384, miscellaneous metals fabricator shall submit shop drawings of non-standard fabrications, all tubular fabrications, all fabrications involving any dimension that exceeds the size of the galvanizer's kettle, and any fabrication involving materials of different thickness. These drawings shall be submitted to the galvanizer prior to fabrication to determine the suitability of the material for galvanizing.
4. All ferrous metals specified herein or indicated on the drawings as galvanized shall be hot-dipped galvanized after fabrication in compliance with ASTM A123 as modified to include 0.5% nickel, A143, A153, A384, or A385 as applicable. Galvanizing bath shall include zinc, nickel, and other state of the art alloys designed to ensure homogeneous metallurgical growth and greater corrosion resistance.
5. All galvanized materials must be inspected for compliance with these specifications and marked with a stamp indicating the name of the galvanizer, the ASTM number, and the weight of the zinc coating in ounces per square foot. Coating shall be not less than 2.3 oz. per square foot of surface. After galvanizing, steel to be painted shall be dipped in a 0.2% chromic acid solution.
6. Within 12 hours of galvanizing, a factory prime coating shall be applied to all galvanized steel that is to be painted. Prime paint shall conform to the requirements and be of the same manufacturer as that provided under Section 09900. Finish painting is included under the Work of Section 09900.
7. To minimize distortion, material less than thirty feet in length shall be preheated in a suitable chamber maintaining a constant heat of no less than 200°F immediately prior to immersion into the molten zinc.
8. To minimize surface imperfections (e.g., flux inclusions) material to be galvanized shall be dipped into a solution of Zinc Ammonium Chloride prior to galvanizing. The type of galvanizing kettle utilizing a flux blanket overlaying the molten zinc shall not be permitted.
9. Pipe gate shall be galvanized and painted.

2.6 SOURCE QUALITY CONTROL

- A. Miscellaneous Metals fabrications, materials, and workmanship shall be subjected to inspection and testing in mill, shop and/or field by the Engineer.
- B. Inspection and testing of shop welding shall be in accordance with the requirements of Section 05050. Repair and retest defective welds as specified in Section 05050.
- C. Maintain inspection and quality control records of shop and field work.
- D. The Contractor shall maintain records of each impact wrench used in the shop, showing dates, sizes of bolts tested and the corresponding torque values. Certified copies of the records shall be made available to the Engineer, upon request.

- E. Notify the Engineer prior to start of any fabrication, the start of sandblasting and painting, or other phases of work so as to afford them reasonable opportunity to inspect work.
- F. Furnish the Engineer upon request, with the following:
 - 1. Complete sets of approved Shop Drawings and corrective work procedures at fabricating shop(s) and in field.
 - 2. Cutting lists, order lists, material bills, and shipping lists.
 - 3. Information as to time and place of all rollings and shipments of material to shops and field.
 - 4. Representative sample pieces requested for testing.
 - 5. Full and ample means and assistance for testing materials, and proper facilities for inspection of work, in mill, shop and field.
- G. Do not remove any marks or tags identifying rejected work.
- H. Any work found deficient shall be corrected or replaced in accordance with these specifications. Deficient welds shall be cut out to sound material and re-welded. Deficient assemblies shall be taken apart, corrected and reassembled, using new materials as required. ASTM A490 bolts shall not be reused. ASTM A325 bolts may be retightened once only.
- I. Miscellaneous Metals work that has been rejected by the Engineer in the mill or shop shall be corrected without delay and at no expense to the Owner.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.
- B. Verify that anchor bolts, bearing plates, and other items furnished to be installed by others have been installed correctly.

3.2 PREPARATION

- A. Clean and strip primed steel items to bare metal where site welding is required.
- B. All steel and aluminum surfaces to come in contact with exposed concrete or masonry shall receive a protective coating of an approved heavy bitumastic troweling applied in accordance with manufacturer's instructions prior to installation.

3.3 FIELD FABRICATION

- A. No fabricated section shall be cut in the field without the permission of the Engineer.
- B. All miscellaneous metals work shall be formed true to detail, with clean, straight, sharply defined profiles and smooth surfaces of uniform color and texture and free from defects impairing strength or durability.
- C. Connections and accessories shall be of sufficient strength to safely withstand stresses and strains to which they will be subjected. Accessories and connections to steel or cast iron shall be steel, unless otherwise specified. Threaded connections shall be made so that the threads are concealed by fittings.

- D. No splicing of any member or part of the work will be allowed where full-length members are commercially available. Jointing shall meet the approval of the Engineer.
- E. Screws, bolts, studs and other connecting devices required in the work shall be concealed wherever possible. On finish work where fasteners must be exposed to view, they shall be countersunk and finished flush with the exposed surfaces. Screws, bolts and other fastening devices used for exterior work shall be aluminum, bronze or stainless steel, whichever is appropriate for the work in which it is to be used.

3.4 INSTALLATION

- A. Install all items furnished except items to be imbedded in concrete or masonry. Items to be attached to concrete or masonry after such work is completed shall be installed in accordance with the details shown. Fastening to wood plugs in masonry will not be permitted.
- B. Where aluminum contacts wood, apply two coats of aluminum metal and masonry paint to the wood.
- C. Removable pipe bollards shall be installed in accordance with the manufacturer's requirements.
- C. Pack grout solidly between concrete or masonry bearing surfaces and plates to ensure that no voids remain.
- D. Make no openings without the specific written approval of the Engineer. All re-entrant corners shall be shaped notch-free to a radius of at least ½ inch at blocks, copes, cuts and openings.

3.5 FIELD QUALITY CONTROL

- A. The fact that Miscellaneous Metals work has been accepted at the shop shall not prevent its final rejection at the job site, even after it has been erected, if it is found to be defective in any way.
- B. Miscellaneous Metals erection, materials, and workmanship shall be subjected to inspection and testing in mill, shop and/or field by the Engineer.
- C. Inspection and testing of field welding shall be in accordance with the requirements of Section 05050.
- D. Maintain inspection and quality control records of shop and field work.
- E. Notify the Engineer prior to start of any miscellaneous metals erection, or other phases of work so as to afford them reasonable opportunity to inspect work.
- F. Furnish the Engineer upon request, with the following:
 - 1. Complete sets of approved Shop Drawings and corrective work procedures at fabricating shop(s) and in field.
 - 2. Full and ample means and assistance for testing materials, and proper facilities for inspection of work, in mill, shop and field.
- G. Do not remove any marks or tags identifying rejected work.
- H. Any work found deficient shall be corrected or replaced in accordance with these specifications, without delay and at no expense to the Owner.

1. Deficient assemblies shall be taken apart, corrected and reassembled, using new materials as required. ASTM A490 bolts shall not be reused. ASTM A325 bolts may be retightened once only.
 2. Re-inspect defective and improperly tightened high-strength bolted connections. Retest fully tensioned bolts as necessary to demonstrate compliance of the completed work.
- I. Welded Connections shall be tested in accordance with Section 05050.
- 3.6 ADJUST AND CLEAN
- A. Touch-Up Painting - Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as approved for use for shop painting.
 - B. Apply by brush or spray to provide a minimum dry film thickness of 2.0 mils.
 - C. For galvanized surfaces, clean field welds, bolted connections and abraded areas and touch-up all damage using suitable touch up material complying with ASTM A780.

END OF SECTION

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DIVISION 06

WOOD AND PLASTICS

SECTION 06100

ROUGH CARPENTRY

PART 1 GENERAL

1.1 SUMMARY

A. SECTION INCLUDES

1. Timber bridge deck
2. Wood nailers and blocking

B. RELATED SECTIONS

1. Section 03100 – Concrete Forms and Accessories
2. Section 05500 – Miscellaneous Metals
3. Section 13127 – Prefabricated Bridge

1.2 REFERENCES

- A. The Commonwealth of Massachusetts State Building Code, latest edition
- B. ASTM A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
- C. ASTM A446 - Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Structural (Physical) Quality
- D. ASTM D1761 - Testing Mechanical Fasteners in Wood
- E. AWPA Analytical Standards: A2-98, A3-00, A9-00, A16-93, A17-97, A18-99
- F. AWPA C1 - All Timber Products
- G. AWPA C2 – Lumber, Timber, Bridge Ties and Mine Ties
- H. AWPA P5 - Waterborne Preservatives
- I. AWPA M4 - Standard for the Care of Preservative Treated Wood Products
- J. ICBO ES ER-4981
- K. National Evaluation Report (NER): Report No. NER-628
- L. National Evaluation Report (NER): Report No. NER-643
- M. Inspection Agencies - Inspection agencies and the abbreviations used to reference with lumber grades and species include the following:
 - ALSA - American Lumber Standards Committee: Softwood Lumber Standards
 - APA - American Plywood Association
 - NFPA - National Forest Products Association
 - RIS - Redwood Inspection Service
 - NELMA – Northeastern Lumber Manufacturers Association

NLGA - National Lumber Grades Authority (Canadian)

SPIB - Southern Pine Inspection Bureau

WCLIB - West Coast Lumber Inspection Bureau

WWPA - Western Wood Products Association

N. Truss Plate Institute (TPI)

1. Recommended Code of Standard Practice for the Metal Plate Connected Wood Truss Industry
2. Quality Control Manual
3. Bracing Wood Trusses: Commentary and Recommendation
4. Design Specification for Metal Plate Connected Wood Trusses

1.3 DEFINITIONS

- A. Rough carpentry includes carpentry work not specified as part of other sections and which is generally not exposed, except as otherwise indicated.

1.4 SUBMITTALS

1. For each type of pressure treatment specified, include certification by treating plant stating type of preservative solution and pressure process used, net amount of preservative retained and conformance with applicable standards.
 2. For water-borne treatment, include statement that moisture content of treated materials was reduced to levels indicated prior to shipment to project site.
 3. Evaluation Report:
 - a. NER-628
 - b. NER-643
 - c. ICBO ES ER-4981
 4. Warranty documents
- B. Submit shop drawings prepared and sealed by a Massachusetts Registered Structural Professional Engineer showing complete information for fabrication and installation of timber prefabricated bridge deck. Indicate member dimensions; location, size and type of steel connection plates.
1. Indicate layout, dimensions, and identification of each unit corresponding to sequence and procedure of installation. Detail inserts, connections, and joints, including accessories.
 2. Provide location and details of anchorage devices that are to be embedded in other construction. Furnish templates if required for accurate placement.
- C. Submit shop drawings of wood blocking installation and other rough carpentry work. Describe proposed methods of installation and anchorage to structure showing sizes, types, thicknesses, connections of wood blocking and related items, including adjoining work by other trades.

- D. Take all necessary field measurements before preparation of shop drawings and fabrication. Do not delay progress of the job. If field measurements are not possible prior to fabrication, allow for field cutting and fitting.
- E. Manufacturer's literature for all metal connectors and framing anchors
- F. Wood-preservative-treatment data from chemical treatment manufacturer. Include certification of chemical solution and affirm that it complies with indicated treatment standard.

1.5 QUALITY ASSURANCE

- A. Design standards shall conform to applicable provisions of NFPA and TPI Specification.
- B. Source: For each material type required for the work of this section, provide primary materials that are the product of one manufacturer. Provide secondary or accessory materials that are acceptable to the manufacturers of the primary materials.
 - 1. Alkaline copper quaternary (ACQ) preservative-treated wood products from a single approved source.
 - 2. Wood Treatment Plant Qualifications: Wood treatment plant experienced in performing work of this section which has specialized in the treatment of wood similar to that required for this project, licensed by the manufacturer.
- C. Installer: A firm with a minimum of three years experience in type of work required by this section and which is acceptable to the manufacturers.
- D. Engineering: Provide the services of a Professional Engineer, registered in the Commonwealth of Massachusetts, to design and certify that the work of this section meets or exceeds performance requirements specified.
- E. Regulatory Requirements: Provide preservative treatment that complies with the following regulatory requirements:
 - 1. NES Report No. NER-643
 - 2. ICBO ES ER-4981
- F. Quality Mark: All ACQ preservative-treated wood members shall bear an end tag or permanent ink stamp indicating the following:
 - 1. Name of wood treating company
 - 2. Treatment plant city and state
 - 3. Symbol for alkaline copper quaternary (ACQ)
 - 4. Preservative retention level
 - 5. Approved use
 - 6. Code report number

1.6 TESTING AND INSPECTION

- A. Materials and workmanship under this Section may be subject to inspection in the mill, shop, or field by the Engineer or by qualified inspectors selected by the Engineer and paid directly by the Owner.

- B. However, such inspection, wherever conducted, shall not diminish fabricator's responsibility to provide his own inspection, testing, and quality control, and to furnish materials and workmanship in accordance with Contract requirements, nor shall inspector's acceptance of materials or workmanship prevent later rejection of same by Owner or Engineer if defects are discovered.
- C. The fabricator shall give proper notice to inspection agencies designated by the Engineer and shall allow access and full facilities as required for this inspection.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Keep materials under cover and dry. Protect against exposure to weather and contact with damp or wet surfaces. Stack lumber; provide for air circulation within and around stacks and under temporary coverings including polyethylene and similar materials.
 - 1. For lumber treated with waterborne chemicals, sticker between each course to provide air circulation.

1.8 PROJECT CONDITIONS

- A. Coordination - Fit carpentry work to other work; scribe and cope as required for accurate fit. Correlate location of nailers, blocking, grounds and similar supports to allow attachment of other work.

PART 2 PRODUCTS

2.1 GENERAL

- A. Lumber: DOC PS 20 and applicable rules of lumber grading agencies certified by the American Lumber Standards Committee Board of Review.
 - 1. Grade Stamps - Factory-mark each piece of lumber with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, moisture content at time of surfacing and mill.
 - a. Apply grade stamps to ends or back of each piece, or omit grade stamps entirely and issue certificate of grade compliance from inspection agency in lieu of grade stamp.
 - 2. Nominal sizes are indicated, except as shown by detail dimensions. Provide actual sizes as required by PS 20, for moisture content specified for each use.
 - a. Provide dressed lumber, S4S, unless otherwise indicated.
 - b. Provide lumber with 19% maximum moisture content at time of dressing and shipment for sizes 2" or less in nominal thickness, unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

- A. Preservative Treatment by Pressure Process: AWPA C2 (lumber) and AWPA C9 (plywood), except that lumber that is not in contact with the ground and is continuously protected from liquid water may be treated according to AWPA C31 with inorganic boron (SBX).
 - 1. Preservative Chemicals:
 - a. Alkaline copper quaternary (ACQ)

- b. Chromated copper arsenate (CCA)
- B. End Cut Preservative: Treat cut ends in accordance with manufacturer's recommendations.
- C. Adhesive: Use adhesives in accordance with manufacturer's recommendations.
- D. Kiln-dry preservative treated lumber and plywood panel material after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood. Do not use material that is warped or does not comply with requirements for untreated material.
- E. Mark each treated item with the treatment quality mark of an inspection agency approved by the American Lumber Standards Committee Board of Review.
- F. Application: Treat items indicated on Drawings, and the following:
 - 1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with vapor barriers and waterproofing.
 - 2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
 - 3. Southern Yellow Pine No. 1 or better per SPIB rules

2.3 DIMENSION LUMBER

- A. General: Provide dimension lumber of grades indicated according to the American Lumber Standards Committee National Grading Rule provisions of the grading agency indicated. No. 1 grade and any of the following species:
 - 1. Southern Yellow Pine No. 1

2.4 MISCELLANEOUS LUMBER

- A. For concealed boards, provide lumber with 19 percent maximum moisture content and any of the following species and grades:
 - 1. Southern Yellow Pine No. 1
 - 2. Hem-fir or Hem-fir (north), No. 1 Common grade; NLGA, WCLIB, or WWPA
 - 3. Spruce-pine-fir (south) or Spruce-pine-fir, No. 1 Common grade; NELMA, NLGA, WCLIB, or WWPA
 - 4. Eastern softwoods, No. 1 Common grade; NELMA
 - 5. Northern species, No. 1 Common grade; NLGA
 - 6. Western woods, Construction or No. 1 Common grade; WCLIB or WWPA

2.5 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture and compatible with the pressure treatment chemicals.
 - 1. Where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M or Type 304 stainless steel.

- B. Nails, Brads, and Staples: ASTM F 1667
- C. Power-Driven Fasteners: CABO NER-272
- D. Wood Screws: ASME B18.6.1
- E. Screws for Fastening to Cold-Formed Metal Framing: ASTM C 954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material being fastened.
- F. Lag Bolts: ASME B18.2.1. (ASME B18.2.3.8M).
- G. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.
- H. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.
 - 1. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.
- I. Material: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2 (ASTM F 738M and ASTM F 836M, Grade A1 or A4).

PART 3 EXECUTION

3.1 INSTALLATION, GENERAL

- A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.
- B. Do not use materials with defects that impair quality of rough carpentry or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- C. Cutting, framing and fitting shall be done as necessary for the accommodation of other work. The use of wood chips, shims, or other shrinkable material for leveling will not be permitted. Holes shall be bored accurately for bolts and as required to prevent splitting wood. Bolts shall be drawn up tight.
- D. Make provisions for erection loads, and for sufficient temporary bracing to maintain structure safe, plumb, and in true alignment until completion of erection and installation of permanent bracing.
- E. Apply field treatment complying with AWWA M4 to cut surfaces of preservative-treated lumber and plywood.
- F. Install pressure treated wood in accordance with requirements of applicable codes. Avoid milling operations that could adversely affect preservative characteristics of ACQ treated wood.

- G. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 - 1. Massachusetts State Building Code, most recent edition
 - 2. CABO NER-272 for power-driven fasteners
 - 3. Published requirements of metal framing anchor manufacturer
 - 4. Table 23-II-B-1, "Nailing Schedule," and Table 23-II-B-2, "Wood Structural Panel Roof Sheathing Nailing Schedule," in the Uniform Building Code
 - 5. Table 2305.2, "Fastening Schedule," in the BOCA National Building Code
 - 6. Table 2306.1, "Fastening Schedule," in the Standard Building Code
 - 7. Table 602.3(1), "Fastener Schedule for Structural Members," and Table 602.3(2), "Alternate Attachments," in the International One- and Two-Family Dwelling Code
- H. Make tight connections between members. Install fasteners without splitting of wood; predrill as required.

3.2 WOOD FURRING, GROUNDS, NAILERS, AND BLOCKING

- A. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate location with other work involved.
- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated.
- C. Provide wherever shown and where required for screeding or attachment of other work. Form to shapes as shown and cut as required for true line and level of work to be attached. Coordinate location with other work involved.
- D. Install treated wood nailers and blocking at locations indicated on Drawings.
- E. Contractor shall conduct pullout tests prior to start of nailer, blocking and plywood installation.
- F. Nailers shall be anchored to resist a minimum force of 300 pounds per lineal foot in any direction. A 1/2 inch space shall be provided between nailer lengths. Individual nailer lengths shall not be less than 3 feet long. Nailer fastener spacing shall not exceed 12 inches on center. Fasteners shall be staggered 1/3 the nailer width and installed within 6 inches of each end. Nailer attachment shall meet this requirement and that of the current Factory Mutual Loss Prevention Data Sheet 1-49.
- G. Thickness of nailers and woodwork shall be as indicated on Drawings to match substrate or insulation height to allow smooth transition.

3.3 FRAMING

- A. Set structural members level and plumb, in correct position.
- B. Place horizontal members, crown side up.
- C. Construct framing members full length without splices.

3.4 ADJUSTING AND CLEANING

- A. Repair damaged and defective woodwork where possible to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.

END OF SECTION

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DIVISION 09

FINISHES

SECTION 09900

PAINTING

PART 1 GENERAL

1.1 SUB-BID REQUIREMENTS

- A. Sub Sub-Bid Requirements: None are required.

1.2 SUMMARY

- A. Section Includes
 - 1. Surface preparation and application of coatings.
- B. Related Sections
 - 1. Section 05500- Misc. Metals

1.3 REFERENCES

- A. The Society for Protective Coatings (SSPC):
 - 1. Surface Preparation Specifications
 - a. SP-1 - Solvent Cleaning
 - b. SP-2 - Hand Tool Cleaning
 - c. SP-3 - Power Tool Cleaning
 - d. SP-5 - White Metal Blast Cleaning
 - e. SP-6 - Commercial Blast Cleaning
 - f. SP-7 - Brush-Off Blast Cleaning
 - g. SP-10 - Near-White Blast Cleaning
 - h. SP-13 – Surface Preparation of Concrete
 - 2. SP-16 – Brush Off Blast of Galvanized and Non-Ferrous Metals
 - 3. National Association of Pipe Fabricators (NAPF):
 - a. NAPF 500-03-01 - Solvent Cleaning
 - b. NAPF 500-03-02 – Hand Tool Cleaning
 - c. NAPF 500-03-03 – Power Tool Cleaning
 - d. NAPF 500-03-04 – Abrasive Blast Cleaning for Ductile Iron Pipe
 - e. NAPF 500-03-05 – Abrasive Blast Cleaning for Cast Ductile Iron Pipe
 - 4. SSPC-PA 1 – Shop, Field and Maintenance Painting
 - 5. SSPC-PA 2 - Measurement of Dry Coating Thickness with Magnetic Gages

6. SSPC Visual Standards SSPC VIS 1-89
7. SSPC Guide 4 – Guide to Maintenance Repainting with Oil Base or Alkyd Painting Systems
8. SSPC Guide 6 – Guide for Containing Debris Generated During Paint Removal Operations

B. Occupational Safety and Health Administration (OSHA) Standards

1.4 SCOPE OF WORK

- A. Items of work include but are not limited to the surface preparation and coating of the following:
 1. Touch-up painting of shop primers
 2. Items listed to be painted on Drawings
 3. Galvanized metal, at the locations specified on the Drawings
 4. Back painting items that will be inaccessible to finish painting once installed including but not limited to clip angles, structural steel, miscellaneous metals
 5. Miscellaneous steel fabrications
- B. Coatings are not required for glass, stainless steel, chrome, cadmium plate or aluminum that is not in contact with concrete.
- C. Ventilation, dehumidification, and temperature control equipment required to provide and maintain the proper environment for worker protection and for coating application and curing.

1.5 SUBMITTALS

- A. Applicator qualifications for general coatings.
- B. List of coating products and systems proposed, giving brand, type and manufacturer.
- C. Product for product listing of the manufacturer's coating system showing a comparison with the specified coating systems in Schedules 09900-A and 09900-B.
- D. Manufacturer's current printed recommendations and product data sheets for each system, and ASTM performance criteria.
- E. Paint manufacturer's compatibility guide, to be a complete listing of all compatible paint systems/combinations produced by the paint manufacturer.
- F. Copies of manufacturer's complete color charts for each coating system.
- G. When requested by the Engineer, provide product container labels and labeled mixing instructions for products utilized in the Work.

1.6 QUALITY ASSURANCE

- A. Use adequate number of skilled workmen who are trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and methods required for proper performance of the work in this Section.

- B. Applicator Qualifications – Minimum 5 years experience in application of specified products.
- C. Regulatory Requirements – Meet federal, state and local requirements limiting the emission of volatile organic compounds.
- D. A qualified and experienced representative of the paint manufacturer shall meet with Contractor and Engineer to coordinate items requiring painting and to schedule the Work. Monthly field visits shall occur to ensure proper application of the painting system. The Contractor shall coordinate with the paint manufacturer to schedule site visits.
- E. Use equipment of adequate size, capacity, and quantity to accomplish the work of this Section in a timely manner.

1.7 DELIVERY, HANDLING, STORAGE AND PROTECTION

- A. Deliver materials to painter's area in original, unbroken, containers with name and analysis of product, manufacturer's name, and shelf life date. Do not use or retain contaminated, outdated, prematurely opened, or diluted materials.
- B. Storage of materials shall be in accordance with the paint manufacturer's recommendations.
- C. Store coated items carefully. Store paints and painter's materials only in areas designated solely for this purpose. Avoid damaging or dirtying coatings by contact with soil, pavement or other harmful materials that might necessitate special cleaning. Use suitable blocking during storage.
- D. Confine mixing, thinning, clean-up and associated operations, and storage of painting debris before authorized disposal, to these areas.
- E. Do not expose primed surfaces to weather for more than six months before top coating. Allow less time if recommended by coating manufacturer.
- F. Do not use plumbing fixtures, piping or mechanical equipment for mixing or disposal of paint materials.
- G. Store waste temporarily in closed, nonflammable containers until final disposal. Keep no rubbish in painter's area longer than 24 hours. Finally, dispose of waste in an approved disposal system.
- H. During surface preparation, cleaning and painting operations, protect all surfaces not to be painted.
- I. Protect coated items, whether prime or finish, from damage due to shipping and handling. Use padding, blocking, fabric slings and extra care as required.
- J. Upon completion of field painting, ensure coatings are undamaged and in good condition. Repair damaged or deteriorated coating, resulting from failure to observe foregoing requirements.

1.8 PROJECT/SITE CONDITIONS

- A. Environmental Requirements:
 - 1. Comply with manufacturer's recommendations as to environmental conditions under which coatings and coating systems can be applied.

2. Do not apply coatings when dust is being generated.
- B. Cover or otherwise protect work by other trades and surfaces not being painted during all painting operations.
- C. All shop primed ferrous metals shall be primed using the same coatings specified in the paint schedule.

1.9 EXTRA MATERIALS

- A. Provide one spare 1 quart paint container for each type and color applied.
- B. Multi-component products shall have sufficient unopened quantities of each component to produce the required amount of mixed paint for future maintenance.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Coating systems are designated by reference to Tnemec Company, Inc. and Sherman Williams products to establish the type and quality required. Equal products as manufactured by International Protective Coatings, PPG Industries, Carboline Company or equal will be considered if provided with a "Product for Product" listing with the submittal. The Engineer reserves the right to request and receive detailed technical literature of each proposed coating system before approval.
- B. No coating systems will be considered that decrease the film thickness, decrease the number of coats, decrease the effectiveness of the surface preparation or change the type of coating specified in the schedule of this section.

2.2 MATERIALS, GENERAL

- A. Paint Coatings - Suitable for intended use, recommended by their manufacturer for intended service. All coatings, unless otherwise specified, shall be suitable for severe service.
- B. Products Used - Minimum of five years satisfactory use under similar service conditions.
- C. Use products of one manufacturer in any one paint coating system; all coating materials compatible. Coatings for touch-up - same as original.
- D. Equipment prime or finish painted by the equipment manufacturer shall be painted in strict accordance with this Section and the equipment's individual specification section.
- E. Bear entire responsibility in providing complete compatibility of all shop and field painting systems.
- F. It is recognized that the specific application of the coating products varies for each specific manufacturer (number of coats, mil thickness per coat, etc.). Therefore, these Specifications represent the minimum to be provided under this contract and shall be increased in accordance with each manufacturer's recommendations.

2.3 COLORS AND FINISHES

- A. All finish colors will be selected from manufacturer's color chips. The Owner will select the colors. Match final colors to selected color chips, as scheduled.

- B. To provide contrast between successive coats, lightly tint each coat to distinguish it from preceding coats.
- C. Unless otherwise indicated, use gloss or semi-gloss for finish paint.

2.4 COATING TYPES

- A. Coating types and minimum acceptable percent (by volume) of component solids are described in Schedule 09900-A Coating Types. Description of coating systems including surface preparation and dry film thicknesses are included in Schedule 09900-B Coating Systems.

PART 3 EXECUTION

3.1 GENERAL

- A. Examine surfaces scheduled to receive paint and finishes for conditions that will adversely affect execution, permanence or quality of work and which cannot be put into an acceptable condition through preparatory work.
- B. Do not proceed with surface preparation or coating application until conditions are suitable.
- C. The following shop and field instruments shall be used to inspect surface preparation and dry film thickness.
 - 1. SSPC visual standards SSPC-VIS 1-89
 - 2. Testex Press-O-Film replica type x-coarse
 - 3. Surface temperature thermometer
 - 4. Sling psychrometer and psychrometric tables
 - 5. Type I or Type II dry film thickness gauges
 - 6. SSPC-PA2 methods

3.2 PREPARATION

- A. Basic Steps
 - 1. Arrange to do all preparation and paint work in heated enclosure unless ambient weather conditions ensure still, dry air and a minimum of 50 degree F temperature. Do not apply paints to surfaces in direct sunlight.
 - 2. Coordinate cleaning and painting operations to eliminate contamination of one by the other.
 - 3. Maintain all coating materials at manufacturer's recommended mixing and application temperatures for not less than 24 hours before use. Have clean, proper containers, spray equipment, applicators and accessory items ready for use before decanting or mixing paint materials.
 - 4. Ensure proper coordination of materials to be applied hereunder with previous coatings on affected surfaces. Have all manufacturer's written directions on hand, and follow them strictly, except where otherwise specified.

5. Carefully coordinate preparation and material compatibility requirements of paint systems used by manufacturers to shop prime equipment.
- B. Before any paint application, carefully clean all surfaces to be coated of dust, dirt, grease, rust, mill scale, paint unsuitable for top coatings, efflorescence, oil, moisture, foreign matter or conditions detrimental to coating bond and durability.
1. Following cleaning, apply preparatory treatment in strict accordance with manufacturer's written instructions.
 2. Fill imperfections and holes in surfaces to be painted.
- C. Metals
1. Prepare all field and shop primed ferrous metals, including galvanized ferrous metals, in accordance with Schedule 09900-B Coating System Schedule included under this Section.
 2. A needle gun may be used for field welds and shop welds which occur in narrow, unprimed areas in an otherwise shop primed surface.
 3. Bituminous coated metals for paint finish - clean of all dirt, grease, oil and foreign matter, and prime with a barrier coat to seal the bitumen and prevent bleeding and discoloration of finish.
 4. Prepare non-ferrous and galvanized metal surfaces for finishing in accordance with SSPC-SP16 Brush-Off Blast Cleaning of Coated and Uncoated Galvanized Steels, Stainless Steels and Non-Ferrous Metals. Provide minimum uniform anchor profile of 1 mil. Apply coatings as outlined on the Paint Schedule.
- D. Provide higher degree of cleaning for acceptable equivalent paint products when paint manufacturer recommends in his printed surface preparation recommendations.

3.3 APPLICATION

A. Conditions

1. Do not apply paints or other finish to wet or damp surfaces, except in accordance with instructions of manufacturer. Do not apply exterior paint during cold, rainy, or frosty weather, or when temperature is likely to drop to freezing within the paint coatings curing time as specified by the paint manufacturer. Avoid painting of surfaces while they are exposed to direct sunlight.
2. Paint surfaces which have been cleaned, pretreated, or otherwise prepared for painting with first finish coat as soon as practicable after such preparation has been completed, but in any event prior to deterioration of prepared surface.
3. Coat blast cleaned metal surfaces immediately after cleaning, before any rusting or other deterioration or contamination of the surface occurs. Do not coat blast cleaned surfaces later than 8 hours after cleaning under ideal conditions or sooner if conditions are not ideal.
4. Work shall conform to SSPC-PA 1.

B. Methods

1. Prepare surfaces, mix and apply paint materials in strict accordance with manufacturer's printed instructions and recommendations, except where specifically directed otherwise. Control temperature of materials upon mixing and application, surface temperature and condition, thinning and modifying.
2. Protect surfaces to be coated, before, during and after application unless ambient weather conditions are favorable.

C. Workmanship

1. Apply coating materials to meet manufacturer's spreading rate and dry film thickness recommendations. Dry film thicknesses specified are constant for brush, spray, roller or other form of application.
 - a. Control thinning for spray use and to manufacturer's printed instructions, and produce specified dry film thickness on level surfaces, interior and exterior angles.
 - b. Record quantities of materials of each type, for each coat used.
2. Apply paints and coatings using skilled painters, brushed or rolled or sprayed out carefully to a smooth, even coating without runs or sags. Allow each coat of paint to dry thoroughly, on the surface and throughout the film thickness, before the next coat is applied. High polymer coatings may be exempted from the drying requirement if recoat time is specified by manufacturer.
3. Finish surfaces - Uniform in finish and color, and free from flash spots and brush marks.
4. Accessory items, finish hardware, lighting fixtures, escutcheons, plates, trim and similar finish items not to be painted: Remove or carefully mask before painting adjacent surfaces; carefully replace and reposition upon completion of adjacent painting and cleaning work.

3.4 PROTECTION, CLEAN-UP

- A. Protect all materials and surfaces painted or coated under this Section, from the time of surface preparation until the final coat has fully dried. Also protect all adjacent work and materials from touch-up painting by the use of sufficient drop cloths during the progress of this work. Upon completion of the work, clean up all paint spots, oil, and stains from floors, glass, hardware, and similar finished items.

3.5 PAINT SCHEDULE

- A. Coordinate, schedule and confirm the various cleaning, touch-up and finishing operations. Ensure the transmission of materials data, color selections and coating system methods between the coating applicators. Take responsibility for not exceeding exposure and recoat time limits.
- B. Color code all piping in accordance with Schedule 09900-C, Color Schedule.

3.6 FACTORY ASSEMBLED EQUIPMENT AND SKID PACKAGES

- A. Painting fabricated ferrous assemblies, frames, supports, skids, vessels, tanks, and OSHA guards shall strictly conform to the requirements of this Section including SSPC-

SP6 surface preparation, epoxy primer, and intermediate coats, and a polyurethane topcoat.

The Engineer shall be given a minimum 7 day notice to witness blasting and painting operations.

- B. Submit detailed schedule of painting system(s) to be used for all equipment to the Engineer. All schedules shall be provided prior to commencement of all painting operations.
- C. Stainless steel and aluminum are not required to be painted unless it is the manufacturer's standard practice.

3.7 FIELD QUALITY CONTROL

- A. Leave staging and lighting in place until the Engineer has inspected surface or coating. Replace staging removed prior to approval by the Engineer. Provide additional staging and lighting as requested by the Engineer.
- B. Unsatisfactory Application
 - 1. If surface has an improper finish color or insufficient film thickness, clean surface and topcoat with specified paint material to obtain specified color and coverage. Obtain specific surface preparation information from coating manufacturer.
 - 2. Evidence of runs, bridges, shiners, laps or other imperfections is cause for rejection.
 - 3. Repair defects in accordance with written recommendations of coating manufacturer.
- C. Damaged coatings, Pinholes and Holidays
 - 1. Feather edges and repair in accordance with recommendations of paint manufacturer.
 - 2. Hand or power sand visible areas of chipped, peeled or abraded paint, and feather the edges. Follow with primer and finish coat. Depending on the extent of repair and appearance, a finish sanding and topcoat may be required.
 - 3. Apply finish coats, including touchup and damage repair coats in a manner that will present a uniform texture and color-matched appearance.

3.8 FINAL TOUCH-UP

- A. Prior to final completion and acceptance, examine painted and finished surfaces and retouch or refinish as necessary to leave surfaces in perfect condition.
- B. After doors have been fitted and hung, refinish edges, tops and bottoms.

| Schedule 09900-A - Coating Types | | |
|---|---|--|
| Tnemec Company Inc. | Sherwin-Williams | Type of Coating System (Solids Content by Volume) |
| Series 1026 Enduratone | DTM Acrylic Primer-Finish or Pro Industrial Pro-Cryl Universal Acrylic Primer | Acrylic Emulsion (43.0 ± 2.0%). |
| Series 20HS Pota-Pox | Macropoxy 646 PW Potable Water Epoxy or Macropoxy 5500 Low VOC Epoxy | Polyamide Epoxy (77.0 ± 2.0%) |
| Series FC20HS Pota-Pox (Fast Cure) | Macropoxy 646 PW Potable Water Epoxy or Macropoxy 5500 Low VOC Epoxy | Polyamide Epoxy (77.0 ± 2.0%) |
| Series 1029 Enduratone | Sher-Cryl HPA High Performance Acrylic-Semi-Gloss | HDP Acrylic Polymer (40.0 ± 2.0%) |
| Series 66HS Hi-Build Epoxoline | Macropoxy 5500 Low VOC Epoxy | Polyamide Epoxy (78.0 ± 2.0%) |
| Series 73 Endura Shield | Acrolon 218 HS Acrylic Polyurethane-Semi-Gloss | Aliphatic Acrylic Polyurethane (58.0 ± 2.0%) |
| Series 94-H2O Hydro-Zinc | Corothane I Galvapac 2K 100 Zinc Primer (NSF) | Aromatic Urethane, Zinc Rich (63.0 ± 2.0%) |
| Series 130 Envirofill | Cement Plex 875 Block Filler. | Waterborne Cementitious Acrylic (68.0 ± 2.0%) |
| Series 151 Elasto-Grip | Preprite ProBlock Interior/Exterior Latex Primer | Waterborne Modified Polyamine Epoxy (17.0 ± 2.0%) |
| Series 218 MortarClad | Dura-Plate 2300 WB Epoxy Cementitious Resurfacer | Epoxy Modified Concrete (100%) |
| Series 217 MortarCrete | AW Cook Cement Cemtec MSM Mortar or Rapid Cure Vertical Grade. | Acrylic Modified Cement (100%) |
| Series 434 PermaShield | DuraPlate 5900 HB Epoxy (formerly Cor-Cote SC Plus) with Type SC aggregate. | Modified Aliphatic Amine Epoxy Mortar (100%) |
| Series 435 Perma-Glaze | Dura-Plate 5900 HB Epoxy (formely Cor Cote SC Plus). | Modified Polyamine Epoxy (100%) |

| Schedule 09900-A - Coating Types | | |
|---|---|--|
| Series 1 Omnithane | Corothane I Galvapak Two Pack Zinc Primer (NSF). | MIO/Zinc-Filled Urethane (61.0 ± 2.0%) |
| Series 215 Surfacing Epoxy | Steel Seam FT910 Epoxy Patching and Surfacing Compound. | Modified Polyamine Epoxy (100%) |
| Series 1528 Endura-Heat DTM | Heat Flex 1200 / Heat Flex 3500 | Inert Multipolymeric Matrix (65%) |

| Schedule 09900-B - Coating Systems | | | | |
|--|--|---------------------------------------|-------------------------------------|--------------------------------------|
| Surface | System Surface Preparation (Shop/Field) | System Finishes | | |
| | | Primer | 2nd | Final |
| | | DFT = Dry Film Thickness, MILS | | |
| Ferrous Metals, Interior Non-Submerged | SSPC-SP-6 | Series 1 (2.5-3.5 DFT) | Series 66HS (4.0-6.0 DFT) | Series 73 (2.5-5.0 DFT) |
| | | <i>Corothane I Galvapak 2K</i> | <i>Macropoxy 646 FC Epoxy</i> | <i>Acrolon 218 HS Polyurethane</i> |
| Ferrous Metals, Exterior Non-Submerged | SSPC-SP-6 | Series 1 (2.5-3.5 DFT) | Series 66HS (3.0-5.0 DFT) | Series 73 (2.5-5.0 DFT) |
| | | <i>Corothane I Galvapak 2K</i> | <i>Macropoxy 646 FC Epoxy</i> | <i>Acrolon 218 HS Polyurethane .</i> |
| Ferrous Metals, Submerged or Intermittently Submerged - Potable | SSPC-SP-10 | Series 94-H2O (2.5-3.5 DFT) | Series 20HS or FC20HS (6.0-8.0 DFT) | Series 20HS or FC20HS (6.0-8.0 DFT) |
| | | <i>Corothane I Galvapak 2K</i> | <i>Macropoxy 5500 or 646 PW</i> | <i>Macropoxy 5500 or 646 PW</i> |
| Ferrous Metals, Submerged or Intermittently Submerged – Non-Potable Open Space | SSPC-SP-10 | Series 1 (2.5-3.5 DFT) | Series 66HS (6.0-8.0 DFT) | Series 66HS (6.0-8.0 DFT) |
| | | <i>Corothane I Galvapak 2K</i> | <i>Macropoxy 5500 or 646 PW.</i> | <i>Macropoxy 5500 or 646 PW.</i> |
| Ferrous Metals, Submerged or Intermittently Submerged – Non-Potable – Enclosed/Partially Enclosed Spaces, H ₂ S Resistant | SSPC-SP-5 Min Anchor Pattern 3.0 mils | Series 435 (15-20 DFT) | | Series 435 (15-20 DFT) |
| | | <i>Dura-Plate 5900</i> | | <i>Dura-Plate 5900</i> |

| Schedule 09900-B - Coating Systems | | | | |
|---|---|---------------------------------------|-------------------------------------|-------------------------------------|
| Surface | System Surface Preparation (Shop/Field) | System Finishes | | |
| | | Primer | 2nd | Final |
| | | DFT = Dry Film Thickness, Mils | | |
| Ductile and Cast Iron Pipe, Interior and Exterior, Non-submerged | NAPF 500-03-04 / SSPC-SP-6 | Series 66HS (3.0-5.0 DFT) | Series 66HS (3.0-5.0 DFT) | Series 73 (2.5-5.0 DFT) |
| | | <i>Macropoxy 646 FC Epoxy</i> | <i>Macropoxy 646 FC Epoxy</i> | <i>Acrolon 218 HS Polyurethane</i> |
| Ductile and Cast Iron Pipe, Interior and Exterior, Submerged. Non-potable | NAPF 500-03-04 / SSPC-SP-10 | Series 66HS (3.0-5.0 DFT) | Series 66HS (3.0-5.0 DFT) | Series 66HS (4.0-6.0 DFT) |
| | | <i>Macropoxy 5500 or 646 PW</i> | <i>Macropoxy 5500 or 646 PW</i> | <i>Macropoxy 5500 or 646 PW</i> |
| Ductile and Cast Iron Pipe, Interior and Exterior, Submerged. Potable | NAPF 500-03-04 / SSPC-SP-10 | Series 94-H2O (2.5-3.5 DFT) | Series 20HS or FC20HS (4.0-6.0 DFT) | Series 20HS or FC20HS (4.0-6.0 DFT) |
| | | <i>Corothane I Galvapak</i> | <i>Macropoxy 5500 or 646 PW</i> | <i>Macropoxy 5500 or 646 PW</i> |
| Ferrous Metals, Exposed to High Heat | SSPC-SP-10 | Series 1528 (3-4 DFT) | Series 1528 (3-4 DFT) | |
| | | <i>Heat Flex 1200</i> | <i>Heat Flex 3500</i> | <i>Heat Flex 3500</i> |
| Ferrous & Non-Ferrous Metals, Encased in concrete or requiring backpainting due to inaccessibility once installed | SSPC-SP-2 | | | Series 1 (2.5-3.5 DFT) |
| | | <i>Macropoxy 646 FC Epoxy</i> | | <i>Macropoxy 646 FC Epoxy</i> |
| Non-Ferrous Metal (Other Than Galvanized), Interior and Exterior Non-Submerged | SSPC-SP-16 Surface Preparation of Galvanized Steel (Minimum 1 mil anchor profile) | Series 66HS (2.0-3.0 DFT) | | Series 73 (2.5-3.0 DFT) |
| | | <i>Macropoxy 646 FC Epoxy</i> | | <i>Acrolon 218 HS Polyurethane</i> |
| | SSPC-SP-16 Surface | Series 66HS (3.0-5.0 DFT) | | Series 66HS (4.0-6.0 DFT) |

| Schedule 09900-B - Coating Systems | | | | |
|--|---|---|-------------------------------|--|
| Surface | System Surface Preparation (Shop/Field) | System Finishes | | |
| | | Primer | 2nd | Final |
| | | DFT = Dry Film Thickness, Mils | | |
| Non-Ferrous Metal (Other Than Galvanized), Submerged or Intermittently Submerged | Preparation of Galvanized Steel (Minimum 2 mil anchor profile) | <i>Macropoxy 646 PW</i> | | <i>Macropoxy 646 PW</i> |
| Galvanized Steel, Interior and Exterior | SSPC-SP-16 Surface Preparation of Galvanized Steel 1.0-1.5 mil profile | Series 1 for field touch-up (2.5-3.5 DFT) | Series 66HS (2.0-3.0 DFT) | Series 73 (2.5-3.0 DFT) |
| | | <i>Corothane I Galvapac 1K for field touch up</i> | <i>Macropoxy 646 FC Epoxy</i> | <i>Acrolon 218 HS Polyurethane</i> |
| Concrete Masonry Units and Brick Interior, Non Submerged | New or Unpainted: Broom Clean; Previously Painted: SSPC-SP-7 | Series 130 (~100 sq. ft. per gallon) | Series 66HS (3.0-6.0 DFT) | Series 66HS (3.0-6.0 DFT) |
| | | <i>Cement Plex 875 BF /</i> | <i>Macropoxy 646 FC Epoxy</i> | <i>Macropoxy 646 FC Epoxy</i> |
| Interior Concrete Walls & Ceilings | SSPC-SP13 (ICRI CSP 3); Fill all voids and bugholes with Series 215 Filler Surfacer | Series 66HS (3.0-5.0 DFT) | | Series 66HS (4.0-6.0 DFT) |
| | | <i>Macropoxy 646 FC Epoxy</i> | | <i>Macropoxy 646 FC Epoxy</i> |
| Submerged or Intermittently Submerged Concrete - Potable | SSPC-SP-13 (Reference ICRI CSP 5) | Series 218 (~125 mils DFT) | | Series 22 or FC22 (25.0-30.0 DFT) |
| | | <i>Dura-Plate 2300</i> | | <i>Dura-Plate UHS</i> |
| Submerged or Intermittently Submerged Concrete – Non-Potable, pH 5-10 | SSPC-SP-13 (Reference ICRI CSP 5) | Series 218 (~125 mils DFT) | Series 435 (15.0-20.0 DFT) | Series 435 (15.0-20.0 DFT) |
| | | <i>Dura-Plate 2300</i> | | <i>Dura-Plate 5900 + Type SC aggregate</i> |
| Submerged or Intermittently Submerged Concrete – Non- | | Series 218 (~125 mils DFT) | | Series 434 (125 DFT) |

| Schedule 09900-B - Coating Systems | | | | |
|---|--|---|---------------------------------|--|
| Surface | System Surface Preparation (Shop/Field) | System Finishes | | |
| | | Primer | 2nd | Final |
| | | DFT = Dry Film Thickness, Mils | | |
| Potable, Enclosed and Partially Enclosed Spaces - Head Space and Top Wall Sections, H ₂ S Resistant up to 100 ppm, pH<4 | SSPC-SP-13 (Reference ICRI CSP 5) | <i>Dura-Plate 2300</i> | <i>Dura-Plate 5900</i> | <i>Dura-Plate 5900 + Type SC aggregate</i> |
| Submerged or Intermittently Submerged Concrete – Non-Potable, Enclosed and Partially Enclosed Spaces - Head Space and Top Wall Sections, H ₂ S Resistant > 100 ppm, pH<4 | SSPC-SP-13 (Reference ICRI CSP 5) | Series 218 (~125 mils DFT) | Series 434 (125 DFT) | Series 435 (20 mils DFT) |
| | | | | |
| Wood, Exterior or Interior | Sand Smooth & Remove Dust | Series 151-1051 (1.0-1.5 DFT) | Series 1029 (2.5-3.5 DFT) | Series 1029 (2.5-3.0 DFT) |
| | | <i>Preprite ProBlock Int/Ext Primer</i> | <i>Sher-Cryl HPA Semi-gloss</i> | <i>Sher-Cry HPA Semi-Gloss</i> |
| Plastic Pipe & Insulation, Including Fiberglass | SSPC-SP-1 and Lightly Sanded | Series 66HS (2.0-3.0 DFT) | | Series 66HS (2.0-3.0 DFT) |
| | | <i>Macropoxy 646 FC Epoxy</i> | | <i>Macropoxy 646 FC Epoxy</i> |
| Insulation - Canvas | Wipe Clean All Foreign Matter | Series 151 (1.0-1.5 DFT) | Series 1026 (2.0-3.0 DFT) | Series 1026 (2.0-3.0 DFT) |
| | | <i>Preprite ProBlock Int/Ext Primer</i> | <i>Sher-Cryl HPA</i> | <i>Sher-Cryl HPA</i> |
| Gypsum Drywall | Sand Smooth and Remove Dust | Series 151 (1.0-1.5 DFT) | Series 1029 (2.0-3.0 DFT) | Series 1029 (2.0-3.0 DFT) |
| | | <i>Preprite ProBlock Int/Ext Primer</i> | <i>Sher-Cryl HPA</i> | <i>Sher-Cryl HPA</i> |
| <i>Notes</i> | | | | |
| (1) Tnemec Products are listed in the first row for each surface and Sherwin-Williams products are listed in italics on the second row for each surface without a dry film thickness. Refer to Paragraph 2.1 for “or equal” products. | | | | |

| Schedule 09900-C - Colors | |
|---|------------------------------------|
| Item | Color |
| Pedestrian Bridge | Brown with red hue (eg Tuscan Red) |
| Bollards | Safety Yellow |
| Notes: (1) For piping not to be painted (see Paragraph 1.4 B), the color coding shall apply to the background color of the identification markers provided in Section 15075. | |

END OF SECTION

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DIVISION 13

SPECIAL CONSTRUCTION

SECTION 13127

PREFABRICATED UTILITY BRIDGE

PART 1 GENERAL

1.1 SUMMARY

A. SECTION INCLUDES

1. Pre-engineered bridge structure

1.2 REFERENCES

A. ORGANIZATIONS

1. AASHTO – American Association of State Highway and Transportation Officials
2. AISC – American Institute of Steel Construction
3. ASTM – American Society for Testing and Materials
4. NEPCOAT – Northeast Protective Coating Committee
5. RCSC – Research Council on Structural Connections
6. SSPC – Society for Protective Coatings, alternatively referred to as legacy organization Steel Structures Painting Council (SSPC) and successor organization Association for Materials Protection and Performance (AMPP)

B. DOCUMENTS

1. AASHTO LRFD Bridge Design Specifications, 9th Edition
2. AASHTO LRFD Guide Specifications for the Design of Pedestrian Bridges, 2nd Edition, with Interim Revisions through 2015
3. AASHTO LRFD Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, 1st Edition, with interim revisions through 2020
4. AISC Steel Construction Manual, 15th Edition
5. AWS D1.1 – American Welding Society (AWS) Structural Welding Code – Steel, 2020
6. AWS D1.5 – American Welding Society (AWS) Bridge Welding Code, 2020
7. RCSC Specification for Structural Joints Using High-Strength Bolts, 2020
8. SSPC-SP 6 – Society for Protective Coatings Surface Preparation Specification No. 6, Commercial Blast Cleaning.

1.3 FABRICATOR QUALIFICATIONS

- A. Certification: The Fabricator shall be approved under the AISC Certification Program under the category Certified Bridge Fabricator – Intermediate (IBR). The Fabricator shall maintain AISC Fracture Critical Endorsement (FCE) and AISC Sophisticated Paint System Endorsement - Exposed (SPE-P3).

- B. Experience: The Fabricator shall have designed and fabricated at least ten (10) permanent prefabricated steel truss or rolled beam bridges of approximately the same size and configuration as the project structure during a period of not more than five (5) continuous years immediately preceding the bid opening.

1.4 SUBMITTALS

- A. Fabricator Qualifications: The Contractor shall submit for approval a package providing full documentation of their proposed Fabricator's qualifications, as listed in Section 1.3 of this Specification. If the Fabricator has facilities at more than one location, the Contractor shall provide AISC certifications and endorsements for the location of the facility where the project structure will be fabricated.

Approval of the Fabricator shall not be construed as approval of their preferred materials, laborers, and practices. The Fabricator shall be held to the full standards of the Construction Contract as detailed within the Contract Plans and Specifications.

- B. Design Calculations: Following approval of the Fabricator, the Contractor shall submit for approval design calculations for the proposed prefabricated bridge, bearings, and anchor bolts. The design calculations will not be reviewed until the Fabricator has been approved, and any work performed prior to approval of the Fabricator shall be at the Contractor's sole risk. The design calculations shall be stamped by a Professional Engineer currently registered in the Commonwealth of Massachusetts.

Calculations shall be performed in conformance with the design criteria provided in Section 1.5 B of this specification.

- C. Design Drawings: The Contractor shall submit for approval design drawings of the proposed prefabricated bridge, bearings, and anchor bolts stamped by a Professional Engineer currently registered in the Commonwealth of Massachusetts. Shop drawings may be utilized as design drawings, but only if they are stamped by a Massachusetts Professional Engineer. Shop drawings will not be reviewed until stamped design drawings have been provided or the shop drawings themselves are stamped.

The Contractor's design drawings shall provide all information necessary to coordinate the proposed prefabricated bridge with the substructure shown on the Contract Plans. The drawings shall clearly show the locations of bearings and anchor bolts with respect to the proposed substructures, including the proposed bridge seat and backwall. Clearances shall be provided between the proposed prefabricated bridge and backwall, and any modification of the proposed substructure shown on the Contract Plans shall be clearly noted. The drawings shall also note the size, grade, and design load for proposed anchor bolts, regardless of whether the bolts are to be supplied by the Fabricator or Contractor.

- D. Shop Drawings: The Contractor shall submit for approval shop drawings for the proposed bridge and bearings. The drawings shall include a fully dimensioned details, material designations and finishes for each unique piece prior to assembly. Fabrication of each assembly shall be accomplished using bolted and/or prequalified welded connections, which shall be fully detailed on the assembly drawings.

- E. Welder Certifications: Assembly shall be performed by welders certified by AWS for the specific welding procedures that are required for assembly of the proposed structure. The Contractor shall submit for approval copies of the certified welders' AWS cards prior to fabrication.

- F. **Welding Procedures:** The bridge shall be fabricated using prequalified welds in conformance with AWS D1.1 and AWS D1.5 and bolted connections in conformance with the RSCS/AISC Specification for Structural Joints Using High-Strength Bolts. All welds shall be inspected by a Certified Welding Inspector who is qualified under the AWS QC-1 program. This inspection shall include as a minimum requirement the following: review of shop drawings, weld procedures, welder qualifications and weld testing reports, visual inspection of welds, and verification of overall dimensions and geometry of the bridge. The Contractor shall submit a brief letter from the Fabricator indicating the above items were reviewed. The letter shall be signed by the Certified Welding Inspector and shall be accompanied by a copy of the inspector's certification.

Full payment will not be made for the project structure without the signed letter.

- G. **Coatings:** For painted steel structures, the Contractor shall submit for approval product literature (cut sheets) for each product to be utilized in the coating system for the prefabricated bridge and bearings. Refer to Section 2.3 B of this Specification for coating system requirements.
- H. **Erection Procedure:** The Contractor shall submit for approval a narrative detailing the proposed erection procedure. The narrative shall be accompanied by calculations and drawings stamped by a Professional Engineer currently registered in the Commonwealth of Massachusetts. The submission shall include adequate information on the specific equipment that the Contractor will use to install the proposed bridge such that the safety of the entire operation can be ensured. This information shall include, but may not be limited to pick weights, crane charts, and cut sheets for all slings and attachments. Crane charts and cut sheets shall be clearly marked-up highlighting the specific size and configuration of all items.

The stability of the structure during erection shall be investigated and clearly demonstrated by the calculations and drawings.

- I. **Warranty:** The Contractor shall submit for approval the Fabricator's signed warranty for the project structure. The structure shall be warrantied as follows:
1. The structure shall be free of design, material, and workmanship defects for a period of ten years.
 2. Wood decking shall be free of rot, termite damage, and fungal decay for a period of ten years.
 3. Galvanized and painted steel components shall be free of laminating rust for a period of 25 years.

Full payment will not be made for the project structure without the signed warranty.

- J. **Inspection and Maintenance Procedures:** The Contractor shall submit for information a brief document outlining inspection and maintenance procedures for the project structure, including a recommended interval for each procedure. Full payment will not be made for the project structure without the document outlining inspection and maintenance procedures.
- K. **Product Data:**
1. Manufacturer's product descriptions for anchorage to concrete elements to include adhesive/grout (if post-installed) and anchor data.

2. Specific installation instructions, including drilled hole size, preparation, placement procedures, and instructions for safe handling of anchoring systems.
- L. Anchors may be cast-in-place or post-installed. Contractor shall submit calculations and product specifications certifying the anchoring system is suitable for use as designed.
- M. Quality Control Submittals:
 1. Manufacturer's and/or fabricator's and/or erector's affidavit, upon request, stating that the materials or products provided complies with the Specifications.

1.5 REQUIREMENTS

A. LAYOUT

1. **Span Length:** Span length for the prefabricated bridge, measured as the distance between centerlines of bearings, shall be determined by the manufacturer based on the bridge seat width and clear span between abutments as shown on the Contract Plans.
2. **Profile and Camber:** If noted on the Contract Plans, profile grade curvature shall be accounted for when determining the fabricated camber of the bridge. If no camber is noted on the Contract Plans, rolled beam bridges with a span length of at least 50 feet and all truss bridges shall be fabricated with a residual camber of at least $L/360$ after the application of full dead load.

The camber requirements noted above may be waived for rolled beam bridges less than 50 feet in span. These structures may be fabricated with their natural mill camber as "up". However, in any case, negative camber or sag under dead load is undesirable and shall be considered adequate grounds for rejection of the structure by the Owner.

3. **Width:** Deck width for the prefabricated bridge, measured as the clear distance between the inside faces of pedestrian railings, shall be as shown on the Contract Plans.
4. **Railings:** Pedestrian railings shall be provided with geometry in full conformance with Section 13.8.1 of the AASHTO LRFD Bridge Design Specifications. Curbs or toe plates shall be provided, whether integral with the rail system or separate. For through truss structures, the railings shall be located on deck side of the truss panels. Railings shall have a smooth surface all around with no protrusions, depressions, or sharp edges. All ends of angles and tubes shall be closed and ground smooth.

B. DESIGN CRITERIA

1. Structural design of the bridge shall conform to the AASHTO LRFD Guide Specifications for the Design of Pedestrian Bridges. Items not covered in this guide specification shall be designed in conformance with the following supplemental documents, in order of decreasing priority:
 - a. AASHTO LRFD Bridge Design Specifications
 - b. AASHTO LRFD Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals
 - c. AWS D1.5 Bridge Welding Code

- d. AISC Steel Construction Manual
- e. AWS D1.1 Structural Welding Code – Steel

The versions of these documents specified in Section 1.2 B of this specification shall apply.

Designs not performed utilizing the AASHTO specifications noted above as the primary codes will be rejected outright.

- 2. Design loads shall be in conformance with the AASHTO LRFD Guide Specifications for the Design of Pedestrian Bridges, as supplemented by the AASHTO LRFD Bridge Design Specifications. Design loads include the following:
 - a. Dead Load (DL)
 - b. Pedestrian Load (PL) of 90 psf per Section 3.1 of the AASHTO LRFD Guide Specifications for the Design of Pedestrian Bridges
 - c. Vehicle Load (LL) per Section 3.2 of the AASHTO LRFD Guide Specifications for the Design of Pedestrian Bridges
 - d. Wind Load on Structure (WS) per Section 3.4 of the AASHTO LRFD Guide Specifications for the Design of Pedestrian Bridges
- 3. Load combinations shall be in conformance with the Section 3.4 of the AASHTO LRFD Bridge Design Specifications, as modified by the limitations noted in Section 3.7 of the AASHTO LRFD Guide Specifications for the Design of Pedestrian Bridges.
- 4. Fatigue due to wind loading shall be investigated per Sections 3.5, 3.7 and 4 of the AASHTO LRFD Guide Specifications for the Design of Pedestrian Bridges.
- 5. Deflections shall be limited per Section 5 of the AASHTO LRFD Guide Specifications for the Design of Pedestrian Bridges. Vertical and horizontal deflections due to transient loads at the Service I limit state shall not exceed $L/360$.
- 6. The Vibration criteria of Section 6 of the AASHTO LRFD Guide Specifications for the Design of Pedestrian Bridges is waived.
- 7. Stability shall be thoroughly investigated per Section 7 of the AASHTO LRFD Guide Specifications for the Design of Pedestrian Bridges. Particular attention shall be paid to top chord stability of half through or “pony” trusses. Approximate or second-order analyses may be conducted at the discretion of the designer, provided that all applicable code provisions are met. Stability calculations shall include lateral loads on the top chord and guiderails due to Wind on Structure (WS) as specified in Section 3.4 of the AASHTO LRFD Guide Specifications for Pedestrian Bridges and Live Load (LL) on the guiderails and/or top chord as specified in Section 13.8.2 of the AASHTO LRFD Bridge Design Specifications.
- 8. All connections shall be checked for all potential failure modes. Special attention shall be given to connections at truss panel points.

9. The analysis and design of truss bridges shall account for moments induced in members due to joint fixity where applicable. Moments due to both truss deflection and joint eccentricity shall be considered.
10. Bearings and joints shall be designed to accommodate a temperature range of -30 to 120 degrees Fahrenheit.

PART 2 PRODUCTS

2.1 GENERAL

- A. Minimum Dimensions of Structural Members: The minimum dimensions of all structural members shall be as specified in the AASHTO LRFD Bridge Design Specifications.
- B. Drain Holes: When the collection of water inside a structural tube is a possibility, either during construction or during service, the tube shall be provided with a drain hole at its lowest point to let water out.

2.2 MATERIALS

- A. Steel: Structural steel shall be in conformance with Section 6.4.1 of the AASHTO LRFD Bridge Design Specifications, except that ASTM A500 tubing shall not be used.
- B. Fasteners: Structural fasteners shall be in conformance with Section 6.4.3 of the AASHTO LRFD Bridge Design Specifications. Fastener materials and surface treatments shall be selected to provide a finish that is consistent with that of the connected material.
- C. Decking: Wood decking shall be pressure treated Southern Pine No 1.
- D. Anchor bolts
 1. Minimum Bolt Size: as determined by prefabricated bridge designer.
 2. Headed type, unless otherwise shown on Drawings.
 3. Material shall be ASTM F593, Grade 316 stainless steel.

2.3 FINISH

- A. Finish may be painted or weathering steel. For painted steel structures, the top coat paint color shall be coordinated with the Owner.
- B. Painted Steel Structures
 1. Surface Preparation: Exposed surfaces of steel components to be painted shall be blast cleaned in conformance with SSPC-SP 6.
 2. Shop Coatings: The Contractor shall select a three-coat system from the qualified product List A or B, issued by NEPCOAT. The approved listings may be found at <http://www.nepcoat.org/>. The same coating material manufacturer shall furnish all materials for the complete coating system. Thinning of paint shall conform to the manufacturer's written instructions.
 3. Field Coatings: The Fabricator shall supply primer and paint for touch-up after erection. Any damaged coatings, field splices, and fasteners installed in the field shall be painted to match the connected material. The primer shall be compatible with the shop paint, and the paint shall be identical to the shop paint.

The Aesthetics of any field painting is very important. Every effort must be made to perform any field painting in a professional manner that does not affect the appearance or aesthetic value of the structural steel in any way. Significant color variations or texture changes between the shop painting and field painting will not be allowed. The Contractor will be required to perform any additional field painting work required to provide consistent color and texture throughout the structural steel.

C. Weathering Steel Structures

1. Preparation for Weathering: The Fabricator shall prepare exposed surfaces of steel components for uniform weathering by blast cleaning those surfaces in conformance with SSPC-SP 7.

PART 3 EXECUTION

3.1 FABRICATION

Fabrication shall be in strict conformance with the requirements laid out in Parts 1 and 2 of this specification.

3.2 ERECTION

- A. Erection shall not take place until written documentation has been provided to the Engineer's Construction Observer that the concrete substructures have reached their full design strength. The written documentation shall be available on site at the time of erection.
- B. Erection shall be in conformance with the approved Erection Procedure submittal. Three copies of the approved submittal shall be available on site at the time of erection: one each for the Engineer's Construction Observer, the Contractor's crane operator, and Contractor's support staff.

3.3 BEARINGS

- A. Bearing devices shall be set with due consideration to ambient temperature.

3.4 ANCHOR BOLTS

- A. Coordinate installation of anchor bolts and other connectors required for securing pedestrian bridge to in-place work.
- B. Furnish templates, anchor bolts, and other items to be embedded in cast-in-place concrete or concrete masonry, in ample time so that this work will not be delayed.

END OF SECTION

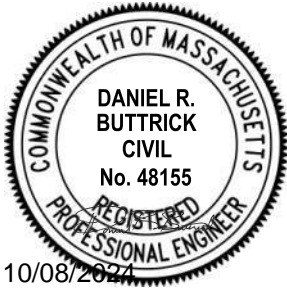
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Salmon Brook Dam Removal Project

Technical Specifications

Commonwealth of Massachusetts
Department of Fish and Game
Division of Fisheries and Wildlife

October 2024



Tighe & Bond
53 Southampton Road
Westfield, MA 01085

Salmon Brook Dam Removal Project
Commonwealth of Massachusetts Department of Fish and Game
Division of Fisheries and Wildlife
Brookfield, MA
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END OF SECTION

DIVISION 01

GENERAL REQUIREMENTS

SECTION 01110

SUMMARY OF WORK

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Work of the Contract is shown and described in Drawings and Project Manual entitled:

Salmon Brook Dam Removal Project
Massachusetts Division of Fisheries and Wildlife
Town of Brookfield
October 2024

Tighe & Bond, Inc.
Consulting Engineers
Westfield, Massachusetts

2. The Work includes the following major items:
 - a. Mobilization
 - b. Establishing temporary access to the site, including clearing and grubbing, invasive plant treatment; construction of temporary access to the site;
 - c. Implementation of water control and erosion controls;
 - d. Controlled reduction in water levels of a two ponds;
 - e. Demolition of existing concrete and stone outlet structures
 - f. Removal of full vertical extent of Salmon Brook dam, and a small unnamed dam.
 - g. Removal of a stone culvert.
 - h. Site restoration including loam and seed, and tree plantings.

1.2 SUBMITTALS

A. Informational Submittals

1. Submit copies of permits or approvals required for the Work, prior to initiating the Work.

1.3 PROJECT/SITE CONDITIONS

A. Permits

1. Obtain the permits and approvals listed below:
 - a. National Pollution Discharge Elimination System (NPDES) Stormwater Permit
 - b. Permits and licenses of a temporary nature necessary to perform the Work.

- c. Permits for disposal of construction wastes including disposal of cleared and grubbed materials.
 - d. Other permits or licenses required for the Contractor's operations or required elsewhere in the Contract Documents and not included herein.
 2. Comply with the permits and approvals listed below:
 - a. Town of Brookfield Conservation Commission Order of Conditions. The order of conditions has been applied for but is not yet available.
 - b. MADEP Section 401 Water Quality Certification. A copy of the Water Quality Certification is included.
 - c. Section 404 General Permit Pre-Construction Notification from the Army Corps of Engineers. A copy of the Permit will be included once issued by the Army Corps of Engineers.
 3. Obtain required time extensions to permits obtained by the Contractor, if construction authorized by permits has not been completed by the expiration date noted on these permits.
 4. Obtain permits and approvals from appropriate jurisdictional agencies and property owners for use of premises not furnished by the Owner, and for all off-site areas.
 5. Submit copies of permits prior to performance of Work authorized by permits.
- B. Existing Conditions
 1. Use of Premises and Off-site Work
 - a. The Work shall occur on the Owner's property within the limits of Work shown on the Drawings.
 - b. Land owned by the Owner is available for staging and is shown on the Drawings.
 - c. Obtain permits and approvals for use of any land and access thereto that is deemed necessary for the Work, where such land is not available for use by the Owner, including land for temporary construction facilities, access and egress, or for storage of materials. Confine apparatus and storage to such additional areas.
 - d. Obtain permits and written approvals from appropriate jurisdictional agencies for the use of premises not available for use by the Owner, including all offsite staging areas, borrow pits and waste areas. Submit copies of all permits and approvals to the Owner prior to using areas.
 - e. Provide for the disposal of waste materials off-site in accordance with all applicable laws.
 - f. Adhere to the limits of Work as indicated, to minimize obstruction to traffic and inconvenience to the Owner, general public, and residents in the vicinity of the Work, and to protect people and property.
 - g. Maintain functioning gutters, stormwater systems, drainage ditches, and culverts.

- h. Maintain public access to residences including driveways and parking lots at all times during the Work.

PART 2 PRODUCTS

2.1 MATERIALS FURNISHED BY OWNER

- A. The Owner will not furnish any materials, labor or equipment under this Contract.

PART 3 EXECUTION – NOT USED

END OF SECTION

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Brookfield\Design\Specifications\01110 - Summary of Work.docx

SECTION 01140

WORK RESTRICTIONS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Work Schedule
 - 2. Available Work Area
 - 3. Site Usage Plan
- B. Related Requirements
 - 1. Section 01310 - Coordination
 - 2. Section 01325 - Scheduling of Construction

1.2 SUBMITTALS

- A. Incorporate the requirements of this Section in the project schedule submitted under Section 01325.
- B. Action Submittals
 - 1. Submit site usage plan within thirty (30) days of the Notice to Proceed.

1.3 WORK SCHEDULE

- A. Conduct the Work during daylight hours on Monday through Friday, and within the time between 7:00 a.m. and 5:00 p.m. No work is to be done on Owner's holidays, Saturdays, Sundays or outside of the work hours described above, unless approved by the owner or Engineer.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 AVAILABLE WORK AREA

- A. Limits of construction are defined on the Drawings. No work will be permitted to be performed outside these boundaries.

3.2 SITE USAGE PLAN

- A. Locations of available staging areas are shown on the Drawings.
- B. Submit a site usage plan showing all proposed staging areas, locations of all office and storage trailers, and material laydown areas. The site usage plan should be a drawing showing the proposed locations and shall include on-site traffic modifications and temporary utilities as may be applicable.

END OF SECTION

SECTION 01290

APPLICATION AND CERTIFICATES FOR PAYMENT

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Definition and description of measurement and payment to be used for the Work
 - 2. Payment procedures
 - 3. Payment requests for stored materials
- B. Related Requirements
 - 1. Section 01295 - Schedule of Values

1.2 GENERAL

- A. The following paragraphs describe payment procedures for the work to be done under the respective items in the Bid Form.
- B. Each lump sum will be deemed to include an amount considered by the Contractor to be adequate to cover the Contractor's overhead and profit for each separately identified item.
- C. Except as provided for in Section 01295, no separate measurement or payment will be made for Work called for in Division 0 or Division 1 of the Contract Specifications, unless specifically covered under the Bid items listed below. All costs associated with this Work will be considered incidental to the Contract Bid price.
- D. Division 2 Work will be measured and paid for at the Contractor's lump sum Bid price as indicated on the Bid form. Those payable Work items, and related prices as Bid, will be the basis for all compensation to the Contractor for Work performed under this Contract. Work not specifically included as a Bid item, but which is required to properly and satisfactorily complete the Work is considered ancillary and incidental to the Bid item Work, and payment for such Work is considered to be included in the values as Bid for payable items.

1.3 LUMP SUM ITEMS

- A. Each lump sum price stated in the Bid form shall constitute full compensation for all labor, equipment and materials necessary and required to complete the work specified under that particular item, and also all costs for doing related work as set forth in the Contract Documents or implied in carrying out their intent.
- B. Item 3 – Salmon Brook Dam Removal Project
 - 1. Measurement
 - a. There will be no measurement of quantities for lump sum items. Periodic partial payments for this Work, included under the Agreement, shall be based on the percent completion of each work item listed in the Schedule of Values provided under Section 01295 estimated by the Contractor and approved by the Engineer.

2. Payment

- a. The lump sum payment shall be full compensation for furnishing all labor, materials, tools, equipment, and services necessary for the construction of the Salmon Brook Dams Removal Project, in its entirety as detailed in the Contract Documents.

1.4 PAYMENT PROCEDURES

A. Informal submittal: Unless otherwise directed by the Engineer:

1. Make an informal submittal of request for payment by filling in, with erasable pencil, pertinent portions of EJCDC C-620, Contractor's Application for Payment, plus continuation sheet or sheets.
2. Make this preliminary submittal to the Engineer at the last regular job meeting of each month.
3. Revise the preliminary submittal as approved by the Engineer and incorporate the approved payments into the formal submittal.

B. Formal submittal: Unless otherwise directed by the Engineer:

1. Make formal submittal of request for payment by filling in the agreed data, by typewriter or electronically on EJCDC C-620, Contractor's Application for Payment, plus continuation sheet or sheets.
2. Sign and notarize the Application for Payment.
3. Submit the original of the Application for Payment, plus six identical copies of the continuation sheet or sheets, to the Engineer.
4. The Engineer will compare the formal submittal with the approved informal submittal and, if acceptable, will sign the Contractor's Application for Payment, and present the Application to the Owner.
5. Provide a signed and notarized Certificate for Stored Materials and proof of storage in a dry, watertight, heated and insured warehouse facility.

1.5 PAYMENT REQUESTS FOR STORED MATERIALS

- A. Requests for payment for stored materials shall be made in accordance with Section 00700 and shall be accompanied by the attached "Certificate for Stored Materials" form. Payment for stored materials shall not exceed the value actually paid by the Contractor for the stored materials as evidenced by the accompanying bill of sale, invoice, or other documentation.
- B. Partial payment requests for materials stored or so-called "engineering costs" by equipment manufacturers will not be allowed. All such costs shall be distributed proportionately among the various items of equipment/hardware to be furnished.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

CERTIFICATE FOR STORED MATERIALS

Tighe & Bond Project No.

We, _____, request payment for materials and/or equipment not incorporated in the work included under our firm's contract with _____ as listed below.

We hereby certify under penalty of perjury, that the materials not incorporated in the work have been delivered and are securely stored at the site or at _____ and that we have title to said materials free and clear of all Liens, as evidenced by the attached bill of sale, invoice, or other documentation.

We also certify that an inventory of said materials and/or equipment has been compiled for the purposes of this monthly partial payment request. This list of materials and/or equipment, including unit prices for said material not incorporated in the work for which payment is hereby requested, consisting of _____ pages and dated _____, is signed and attached hereto.

We acknowledge that payments made based on this request for materials and/or equipment not incorporated in the work does not relieve the contractor of its responsibility for furnishing all materials and equipment required for the satisfactory completion of the project pursuant to the contractual requirements.

We further certify that we can and will adequately protect said materials and/or equipment until they are incorporated in the work; that they meet the requirements of the specifications, and that they will be needed for incorporation in the work in the near future.

IN WITNESS WHEREOF, we, the said _____ h-
ereunto set our hand and seal this _____ day of _____, 20__.

Contractor's Firm Name

SIGNED, SEALED AND DELIVERED IN THE PRESENCE OF

By _____

Title _____

Notary Public

SCHEDULE OF STORED MATERIALS

Job No. _____
 Contract No. _____
 Contractor: _____
 Location: _____

Date _____
 Pay Estimate _____

| Item | Description | Supplier/Manufacturer | Quantity Stored and not Incorporated | Unit \$ | Certified Value |
|------|-------------|-----------------------|--------------------------------------|---------|-----------------|
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| | | | | | |

Signature: _____
 Contractor's Principal

Total Amount Due for Stored Materials _____

Title: _____

SECTION 01295

SCHEDULE OF VALUES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Schedule of Values

1.2 SUBMITTALS

- A. Action Submittals
 - 1. Submit 3 copies of the Schedule of Values for approval within 10 days after the Effective Date of the Agreement.

1.3 SCHEDULE OF VALUES

- A. Schedule of Values shall be a detailed breakdown of the lump sum Work items showing values allocated to the various elements of the Work.
- B. The format of the Schedule of Values shall be a breakdown by Specification Section and content and shall be submitted on EJCDC C-620, Contractor's Application for Payment. The Engineer may require additional detailed documentation to support the values in the form of executed purchase orders, subcontracts, or other agreements.
- C. The Engineer will determine the level of breakdown and detail required. The breakdown shall include materials, installation, and start-up for equipment and controls where applicable. The final document will be the basis of payment requests for the duration of the Contract. No progress payment will be made until the Schedule of Values is approved by the Engineer.
- D. An unbalanced Schedule of Values providing overpayment on items of work performed first will not be accepted.
- E. At the Contractor's option, items for mobilization and demobilization may be included in the Schedule of Values. The combined value shall not exceed 5 percent of the Contract Price, and the values for mobilization and demobilization shall be equal. Payment for mobilization will be included in the first payment request after the Contractor has initiated full-time construction activity. Payment for demobilization will be included in the first payment request after Substantial Completion has been reached and all equipment has been removed from the Site.
- F. At the Contractor's option, an item for bonds and insurance may be included in the Schedule of Values. If included, requests for payment including values for bonds and insurance shall be accompanied by matching invoices.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

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Brookfield\Design\Specifications\01295 - Schedule of Values.docx

SECTION 01310

COORDINATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Project Management
 - 2. Coordination
 - 3. Project Meetings
- B. Related Requirements
 - 1. Section 01140 - Work Restrictions
 - 2. Section 01325 - Scheduling of Construction

1.2 SUBMITTALS

- A. Incorporate the requirements of this Section, as well as Work which may impact the existing system operation, or the operations of any adjacent utility, in the project schedule submitted under Section 01325.
- B. Informational Submittals
 - 1. At the pre-construction conference, supply to the Owner the cell phone number of a responsible person who may be contacted during off-hours for emergencies 24 hours a day, seven days a week.
 - 2. Prepare a contact list of phone numbers, including cell phone numbers, and emails for all Project personnel and submit to the Engineer within one week after the pre-construction conference. Include Contractor, Owner, Engineer, and Town personnel including police, fire, and ambulance.

1.3 PROJECT MANAGEMENT

- A. Retain a full-time Superintendent, satisfactory to the Owner and Engineer. The Superintendent shall not be changed except with the consent of the Owner and Engineer. The Superintendent shall be in full charge of the Work.
- B. Complete the Work in a continuous uninterrupted operation. Use sufficient personnel and adequate equipment to complete the Work within the Contract Time.

1.4 COORDINATION

- A. Coordinate with appropriate utility companies, as well as with the Owner, where the Work crosses or is adjacent to existing utilities.

1.5 PROJECT MEETINGS

- A. Pre-Construction Conference
 - 1. The Contractor shall be prepared to discuss the following subjects at the Pre-Construction Conference. Documentation for these items is required to be submitted within the time frames included in individual specification sections.

- a. Project scheduling
 - b. Sequencing of critical path Work items
 - c. Shop Drawing procedures
 - d. Project changes and clarification procedures
 - e. Use of sites, access to Work areas, office and storage areas, security and temporary facilities
 - f. Contractor safety plan and representative
 - g. Progress payments and procedures
 - h. Required documentation
 - i. Project personnel contact list
- B. Progress Meetings
1. Progress meetings will be held every two (2) weeks and at other times as requested by the Owner or as required by the Progress of the Work.
 2. The Contractor's Superintendent shall attend all progress meetings.
 3. At a minimum, progress meetings will review Work progress, schedule, Shop Drawing submission schedule, Applications for Payment, and other matters needing discussion and resolution.
 4. Review the schedule with all parties to be affected by upcoming work.
 5. Review the monthly construction report required under Section 01325.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 GENERAL

- A. Notify DIGSAFE at 1-888-344-7233 at least 72 hours prior to any digging, trenching, rock removal, demolition, borings, backfill, grading, landscaping, or any other earth moving operations.

3.2 COORDINATION WITH THE OWNER'S OPERATIONS

- A. Notify the Owner and Engineer, in writing, a minimum of 2 weeks in advance of commencing Work on site. Work on site shall not occur until necessary permits are obtained.

3.3 SEQUENCE OF CONSTRUCTION

- A. Provide a detailed construction schedule as required in Section 01325.

END OF SECTION

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Brookfield\Design\Specifications\01310 - Coordination.docx

SECTION 01320

CONSTRUCTION PHOTOGRAPHS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Photographs taken at specified intervals before, during and after construction.

1.2 SUBMITTALS

A. Informational Submittals

1. Submit electronic files of each photograph on a CD or USB flash drive.

PART 2 PRODUCTS

2.1 CONSTRUCTION PHOTOGRAPHS

A. Electronic files shall be in .jpg format.

PART 3 EXECUTION

3.1 PRE-CONSTRUCTION PHOTOGRAPHY

- A. Prior to the commencement of any Work under this Contract, take photographs at each location at fifty (50) foot intervals along the entire length of the dams and culvert. The photographs will serve as a record of the original conditions where construction activities will occur.
- B. The area to be photographed shall include, but not be limited to, the area within and adjacent to the proposed construction, including roadways, utilities, driveways, landscaping, trees, structures and buildings.
- C. Provide a minimum of thirty (30) preconstruction photographs, or more as required to document the preconstruction condition of the Site and adjacent properties.

3.2 PROGRESS PHOTOGRAPHY

- A. Take construction photographs of active work areas at least weekly or before future activities will prevent capturing the work completed within active work areas throughout the life of the Contract. The photographs shall be indicative of the work that is currently in progress. A minimum of ten (10) photographs shall be taken at each scheduled interval at each location where work is in progress.
- B. Take post construction photographs at locations in sufficient quantity to document final conditions of the dam. Provide a minimum of thirty (30) post construction photographs taken at the same locations as the preconstruction photograph.

END OF SECTION

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Brookfield\Design\Specifications\01320 - Construction Photographs.docx

SECTION 01325

SCHEDULING OF CONSTRUCTION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Progress Schedule
 - 2. Cash Flow Projections
- B. Related Requirements
 - 1. Section 01140 - Work Restrictions
 - 2. Section 01310 - Coordination

1.2 REFERENCES

- A. The Use of CPM in Construction - A Manual for General Contractors and the Construction Industry, an Associated General Contractors (AGC) of America publication.

1.3 MILESTONES

- A. The Contactor shall not begin work until all permits are obtained, including those permits applied for by the Owner and not yet received.
- B. Impoundment drawdown shall be performed following September 30 and prior to March 1.
- C. For funding reasons, the Contractor shall be prepared to perform the majority of the work (75% or greater on a cost basis) following July 1, 2026 unless otherwise approved by the Owner.
- D. The Contractor shall complete all Work on the project prior to December 30, 2026
- E. If, in the opinion of the Owner, the progress of the Work is insufficient to achieve the scheduled completion of the milestone, the Contractor shall be required to take such measures as are necessary to achieve completion by the milestone date. Such measures may include, but shall not be limited to, employing additional equipment and personnel, working overtime, added shifts or any combination thereof, all at no additional cost to the Owner.

1.4 PROGRESS SCHEDULE

- A. Graphically show the order and interdependence of activities, sequence of Work, how the start of a given activity depends on completion of preceding activities, and how completion of an activity may restrain the start of subsequent activities.
- B. The Work shall be planned by the Contractor and his Project field superintendent in coordination with all Subcontractors and Suppliers whose Work is shown on the Progress Schedule.
- C. Include, at a minimum, the following activities on the Progress Schedule:
 - 1. Project mobilization

2. Submittal and approval of Shop Drawings
 3. Procurement of equipment and critical materials
 4. Punchlist
 5. Final cleanup
 6. Other activities that may be critical to the Progress Schedule
 7. All activities of the Owner and the Engineer which affect progress and/or affect required dates for completion of the Work
- D. Take into consideration Shop Drawing submittal and approval time, the delivery times of equipment and materials, Subcontractors' Work, availability and abilities of workmen, weather conditions, any restrictions in operations at the Work site, and all other items that may affect completion of the Work within the Contract Time.
- E. The Progress Schedule shall reflect the requirements and constraints outlined in Section 01310, Coordination.
- F. The Progress Schedule shall reflect Work restrictions outlined in Section 01140.
- G. Show information in such detail that duration times of activities will range from one to 15 days. The selection and number of activities shall be subject to the approval of the Owner and Engineer.
- H. The Progress Schedule should show a description of each activity, and activity duration in calendar days.
- 1.5 CASH FLOW PROJECTIONS
- A. If requested by the owner, with the progress schedule, show projected pay application quantities on a monthly basis.
- 1.6 SUBMITTALS
- A. Informational Submittals
1. Submit four prints of the preliminary Progress Schedule prepared in accordance with Article 2.05 of Section 00700 and the requirements of this section. Progress schedule must be submitted within 10 days after the Effective Date of the Agreement. Progress Schedule must be approved by the Owner and Engineer before the first progress payment will be made.
 2. Revised analyses - Within 10 days after receipt of the review comments, submit four prints of the Progress Schedule revised in accordance with those comments.
 3. Periodic reports - On the first progress meeting of each month, submit four prints of the updated Progress Schedule, as well as a report of construction activities in the prior month.
 4. Before initiating the Work, submit an estimated monthly rate of Contractor payments for the project. If the payment schedule deviates from the original projection, submit a revised rate of expenditure schedule.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

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SECTION 01330

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Action Submittals
 - 2. Informational Submittals

1.2 DEFINITIONS

- A. Action Submittals – includes written and graphic information submitted by Contractor that requires Engineer’s approval.
- B. Informational Submittals – includes information submitted by Contractor that does not require Engineer’s approval. The Engineer will acknowledge receipt of such documents and provide comments when the submittals lack the detail required by the Contract Documents.

1.3 ACTION SUBMITTALS

- A. Product Data: Product data as specified in individual Sections, include, but are not necessarily limited to, standard prepared data for manufactured products (catalog data), such as the manufacturer's product specification and installation instructions, availability of colors and patterns, manufacturer's printed statements of compliances and applicability, roughing-in diagrams and templates, catalog cuts, product photographs, standard wiring diagrams, printed performance curves and operational-range diagrams, production or quality control inspection and test reports and certifications, mill reports, product operating and maintenance instructions and recommended spare-parts listing, and printed product warranties, as applicable to the Work.
- B. Product Substitutions: In accordance with Section 01630.
- C. Schedule of Values: In accordance with Section 01295.
- D. Site Usage Plan: In accordance with Section 01140.

1.4 INFORMATIONAL SUBMITTALS

- A. Schedule of Submittals
 - 1. Submit a preliminary Schedule of Submittals within 10 days of the Effective Date of the Agreement.
- B. Application for Payment
 - 1. Submit applications for payment in accordance with Section 01290, Application and Certificate for Payment.
- C. Construction Photography: Provide preconstruction, progress, and post-construction photography in accordance with Sections 01320.
- D. Contract Closeout Submittals: In accordance with Section 01770.

- E. Schedules - Submit construction progress schedules and schedule updates in accordance with Section 01325.
- F. Statement of Qualifications: Submit evidence of qualification, certification, or registration as required in Contract Documents to verify qualifications of professional land surveyor, engineer, materials testing laboratory, specialty subcontractor, trade, specialist, consultant, installer, and other professionals.
- G. Submittals Required by Laws, Regulations, and Governing Agencies
 - 1. Submit promptly notifications, reports, certifications, payrolls, and other required information as may be required, directly to the applicable federal, state, or local governing agency or their representative.
 - 2. Transmit to Engineer for Owner's records, one copy of correspondence and transmittals (including enclosures and attachments) between Contractor and governing agency.
- H. Test and Inspection Reports
 - 1. Submit test and inspection reports as required by individual Specification sections.
 - 2. Test and inspection reports shall contain signature of person responsible for test or report.
 - 3. Reports shall include identification of product and Specification, project name, date and time of test, type of test, location, test results, corrective action required if report indicates test is not in compliance with Contract Documents, interpretation of test results, and other information as required in individual Specification sections.
- I. Submittals stamped by another Professional Engineer: When specified in individual Specification sections, prepare and submit calculations and/or drawings stamped by a Professional Engineer licensed in the State where the work is being performed.
- J. Work Plans: When specified in individual Specification sections, prepare and submit copies of all work plans needed to demonstrate to the Owner that Contractor has adequately thought-out the means and methods of construction and their interface with existing facilities.
- K. Erosion Control Plan: When specified in Contract Documents or required by local ordinances or regulations, prepare and submit copies of erosion control plans.

1.5 PROCEDURES

- A. Coordination
 - 1. Provide no less than 30 days for review of submittals from the time received by the Engineer. For submittals of major equipment, that require more than 30 days to review, due to complexity and detail or those requiring review by multiple engineering disciplines, Engineer will notify Contractor of the circumstances and identify the anticipated date when the submittal will be returned.
 - 2. Re-submittals will be subject to same review time.
 - 3. No extension of time will be authorized due to failure to provide approvable submittals sufficiently in advance of the Work.

- B. Review product data, and samples prior to submission and verify and determine:
 - 1. Field measurements
 - 2. Conformance with the Contract Documents. Advise the Engineer in writing of any deviations from the requirements of the Contract Documents.
 - 3. Delete or strike out information that is not applicable to the Work.
- C. Upload the electronic submittal files via Procore. Access to Procore will be provided by the Engineer. Files must be in .pdf format. The submittals will be returned in electronic .pdf format via Procore.
- D. Numbering: Submissions shall be accompanied by a transmittal form referencing the project name and applicable Specification section. Submittals shall be numbered sequentially, with the applicable Specification section and a hyphen preceding the number. (*e.g.* Submittal number 11330-01). Resubmittals shall bear the same transmittal number with a revision number commencing with "1" (*e.g.* Submittal number 11330-01-1).
- E. Provide a copy of the Submittal Certification Form (copy attached at the end of this section) which shall be attached to every copy of each submittal. Apply the Contractor's stamp and initials or signature certifying that the submission has been thoroughly reviewed for completeness, compliance with the Contract Documents, coordination with adjacent construction and dimensional compatibility. Items submitted without the stamp or that are incomplete will be returned by the Engineer for rework and resubmission.
- F. Provide a copy of the PE Certification Form (copy attached at the end of this section) which shall be attached to every copy of each submittal stamped by another Professional Engineer. Items submitted without the completed certification form will be returned by the Engineer for resubmission.
- G. Distribute copies of reviewed submittals along with the Engineer's transmittal to concerned parties with instructions to promptly report any inability to comply with the provisions or integrate the requirements with interfacing work.
- H. Partial and Incomplete Submittals
 - 1. Shop Drawings shall be submitted as a complete package by Specification section, unless otherwise reviewed and approved by the Engineer. It is the intent that all information, materials, and samples associated with each Specification section be included as a single submittal for the Engineer's review.
 - 2. Engineer will return entire submittals if preliminary review deems it incomplete including:
 - a. Missing or incomplete Submittal Certification Form
 - b. Insufficient number of copies
 - c. Missing content
 - 3. Partial submittals may be considered, at Engineer's option, only when necessary to expedite the Project.
 - 4. Partial submittals shall be clearly identified as such on the transmittal to identify missing components.

- I. Submittals not required by the Specification will be returned without review or action code.
- J. Resubmission
 - 1. Make corrections and modifications required by the Engineer and resubmit until approved.
 - 2. Clearly identify changes made to submittals and indicate other changes that have been made other than those requested by the Engineer.
 - 3. A maximum of two re-submissions of each shop drawing will be reviewed, checked and commented upon without charge to the Contractor (total of 3 submittals). Any additional submissions which are required by the Engineer to fulfill the stipulations of the Contract Documents will be charged to the Contractor.
- K. Distribution
 - 1. Distribute approved Shop Drawings and approved product data to the Project Site and elsewhere as required to communicate the information to Suppliers, Subcontractors, and field personnel.

1.6 ENGINEER'S REVIEW

- A. The Engineer will review submittals for design, general methods of construction and detailing. The Engineer's review and approval of submittals shall not be construed as a complete check nor does it relieve the Contractor from responsibility for any departures or deviations from the requirements of the Contract Documents unless he has, in writing, called the Engineer's attention to such deviations at the time of submission. It will not extend to means, methods, technique, sequences, or procedures of construction (except where specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto.
- B. The Engineer's review of the submittals shall not relieve the Contractor from the responsibility for proper fitting of the Work, or the responsibility of furnishing any work required by the Contract Documents which may not be indicated on the submittals. The Contractor shall be solely responsible for any quantities shown on the submittals.
- C. If the Contractor considers any correction indicated on the submittals to constitute a change to the Contract Documents, the Contractor shall provide written notice to the Engineer at least 7 working days prior to release for manufacture.
- D. When the submittals 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.
- E. Action submittals as defined in paragraph 1.2 will be reviewed and returned under one of the following codes:
 - 1. Approved (Action Code 1) is assigned when there are no notations or comments on the submittal. Equipment or materials may be released for manufacture, provided that it complies with requirements of the Contract Documents.
 - 2. Approved as Noted (Action Code 2) is assigned when there are notations or comments on the submittal, but the equipment or materials may still be released

for manufacture. All notations and comments must be incorporated in the final product. Resubmission is not necessary.

3. Revise and Resubmit (Action Code 3) is assigned when there are notations and comments requiring a resubmittal of the package. Work cannot proceed until the submittal is revised and resubmitted for review.
 4. Not Approved (Action Code 4) is assigned when the submittal contains non-specified items or does not meet the requirements of the Contract Documents. It may also be assigned when there is a significant amount of missing material required for the Engineer to perform a complete review. The entire package must be resubmitted, revised to bring the submittal into conformance. It may be necessary to resubmit using a different manufacturer/vendor to meet the requirements of the Contract Documents.
- F. Informational submittals as defined in paragraph 1.2 do not require approval by the Engineer. Such submittals will be returned under one of the following codes:
1. Receipt Acknowledged (Action Code 5) is assigned when the submittal is provided for documentation purposes and is acknowledged as received. Comments may be noted using this action code.
 2. Revise and Resubmit (Action Code 6) is assigned when there are notations and comments requiring a resubmittal of the package.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

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SUBMITTAL CERTIFICATION FORM

PROJECT: _____
ENGINEER: _____ ENGINEER'S PROJECT NO.: _____
CONTRACTOR: _____ CONTRACTOR'S PROJECT
NO.: _____

TRANSMITTAL NO.: _____ SUBMITTAL NO.: _____
SPECIFICATION NO.: _____ DRAWING NO: _____
DESCRIPTION: _____
MANUFACTURER: _____

The above referenced submittal has been reviewed by the undersigned and I/we certify that the materials and/or equipment meets or exceeds the project specification requirements; that field measurements, dimensions, quantities, specified performance criteria, installation requirements, materials, catalog numbers and related materials have been verified; that all materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the work has been determined and verified; that review includes all information related to the contractor's sole responsibility for means, methods, techniques, sequences, and procedures of construction and safety; and item has been coordinated with the overall project with:

- NO DEVIATIONS

- A COMPLETE LIST OF DEVIATIONS AS FOLLOWS:

SUBMITTED BY: _____ DATE: _____

| |
|----------------------------|
| GENERAL CONTRACTOR'S STAMP |
|----------------------------|

PE CERTIFICATION FORM

The undersigned hereby certifies that he/she is a Professional Engineer registered in the Commonwealth of Massachusetts and that he/she has been employed by

_____ to design
(Name of Contractor)

(Insert PE Responsibilities)

In accordance with Specification section _____ for the

(Name of Project)

The undersigned further certifies that he/she has performed the said design in conformance with all applicable local, state and federal codes, rules and regulations; and, that his/her signature and PE stamp have been affixed to all calculations and drawings used in, and resulting from, the design.

The undersigned hereby agrees to make all original design drawings and calculations available to the

(Insert Name of Owner)

or Owner's representative within seven days following written request therefor by the Owner.

PE Name

Contractor's Name

Signature

Signature

Title

Title

Address

Address

SECTION 01420

REFERENCES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Standards referenced in the Contract Documents.

1.2 GENERAL

- A. Comply with the requirements of standards referenced in the Contract Documents.

1.3 ABBREVIATIONS

A. Abbreviations used in the Specifications are defined as follows:

1. AA – Aluminum Association
2. AABC – Associated Air Balance Council
3. AASHTO – American Association of State Highway and Transportation Officials
4. ACI - American Concrete Institute
5. ACOE - U.S. Army Corps of Engineers
6. ADA – Americans with Disabilities Act
7. ADC – Air Diffusion Council
8. AFBMA – Antifriction Bearing Manufacturers Association
9. AGA – American Gas Association
10. AGC – Associated General Contractors of America
11. AGMA - American Gear Manufacturer Association
12. AI – Asphalt Institute
13. AIA – American Institute of Architects
14. AISC – American Institute of Steel Construction
15. AISI - American Iron and Steel Institute
16. AITC - American Institute of Timber Construction
17. AMCA – Air Movement and Control Association
18. ANSI – American National Standards Institute
19. APA – American Plywood Association
20. API – American Petroleum Institute
21. ARI – Air Conditioning and Refrigeration Institute

22. ASCE – American Society of Civil Engineers
23. ASHRAE – American Society of Heating, Refrigeration and Air Conditioning Engineers
24. ASME – American Society of Mechanical Engineers
25. ASPA – American Sod Producers Association
26. ASTM – American Society for Testing and Materials
27. AWG – American Wire Gauge
28. AWI - Architectural Woodwork Institute
29. AWPA – American Wood Preservers’ Association
30. AWS – American Welding Society
31. AWWA – American Water Works Association
32. BIA – Brick Institute of America
33. CDA – Copper Development Association
34. CLFMI – Chain Link Fence Manufacturer’s Institute
35. CPM - Critical Path Method
36. CPVC – Chlorinated Polyvinyl Chloride
37. CRSI – Concrete Reinforcing Steel Institute
38. CI – Cast Iron
39. DEP - Massachusetts Department of Environmental Protection
40. DHI – Door and Hardware Institute
41. DI – Ductile Iron
42. EJCDC – Engineers’ Joint Contract Documents Committee
43. EJMA – Expansion Joint Manufacturers Association
44. EPDM – Ethylene Propylene Diene Monomer
45. EPT – Electrical Plastic Tubing
46. EVT – Equiviscous Temperature
47. FGMA - Flat Glass Marketing Association
48. FM – Factory Mutual
49. FS – Federal Specifications
50. GA – Gypsum Association
51. GFCI – Ground Fault Circuit Interrupter
52. GPR - Ground Penetrating Radar
53. GPS – Global Positioning System

54. HVAC – Heating, Ventilating and Air Conditioning
55. IBC – International Building Code
56. IBR – Institute of Boiler and Radiator Manufacturers
57. ICBO – International Conference of Building Officials
58. ICS – Industrial Control and Systems
59. IEEE – Institute of Electrical and Electronics Engineers
60. IMI – International Masonry Institute
61. ISA – Instrument Society of America
62. JIC – Joint Industrial Council
63. LCD – Liquid Crystal Display
64. MADEP – Massachusetts Department of Environmental Protection
65. MBMA – Metal Building Manufacturer’s Association
66. MEC – Massachusetts Electric Code
67. MFMA Maple Flooring Manufacturers Association
68. MGL – Massachusetts General Law
69. ML/SFA – Metal Lath/Steel Framing Association
70. MSS – Manufacturer’s Standardization Society
71. NAAMM – National Association of Architectural Metal Manufacturers
72. NAVD – North American Vertical Datum
73. NCMA – National Concrete Masonry Association
74. NEBB – National Environmental Balancing Bureau
75. NEC – National Electrical Code
76. NECA – National Electrical Contractors Association
77. NEMA – National Electrical Manufacturers Association
78. NFPA – National Fire Protection Association
79. NRCA – National Roofing Contractors Association
80. NRS – Non-rising Stem
81. NSF – National Sanitation Foundation
82. NSWMA – National Solid Waste Management Association
83. NWMA – National Woodwork Manufacturers Association
84. O&M – Operation and Maintenance
85. OSHA – Occupational Safety and Health Administration

86. PCA – Portland Cement Association
87. PCI – Precast/Prestressed Concrete Institute
88. PDOP – Positional Dilution of Precision
89. PLC – Programmable Logic Controller
90. PS – Product Standard
91. PVC – Polyvinyl Chloride
92. QA/QC – Quality Assurance/Quality Control
93. RCP – Reinforced Concrete Pipe
94. RCSHSB – Red Cedar Shingle and Handsplit Shake Bureau
95. RIS – Redwood Inspection Service
96. RTU – Remote Telemetry Unit
97. SCADA – Supervisory Control and Data Acquisition
98. SDI – Steel Deck Institute
99. SDS – Safety Data Sheets
100. SSPC – Steel Structures Painting Council
101. TCA – Tile Council of America
102. UL – Underwriter’s Laboratories
103. UPS – Uninterruptable Power Supply
104. USCS – Unified Soil Classification System
105. USDA – United States Department of Agriculture
106. WCLIB – West Coast Lumber Inspection Bureau
107. WOG – Water, Oil, Gas
108. WWPA – Western Wood Products Association

END OF SECTION

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SECTION 01450

QUALITY CONTROL

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Quality assurance and control of the Work
 - 2. Testing and inspection services
 - 3. Product test reports
- B. Related Requirements
 - 1. Section 01451 - Independent Testing Services
 - 2. Testing requirements are described in various Sections of the Project Manual.

1.2 SUBMITTALS

- A. Informational Submittals
 - 1. Product test reports

1.3 QUALITY ASSURANCE

- A. Monitor quality control over Suppliers, products, services, site conditions, and workmanship to produce Work of specified quality.
- B. Comply fully with manufacturer's instructions. Should these instructions conflict with the Specifications, request clarification from the Owner before proceeding.
- C. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or requirements indicate higher standards or more precise workmanship.

1.4 TESTING SERVICES FURNISHED BY CONTRACTOR

- 1. Modified proctor analyses for all borrow materials used on the Project
- 2. Modified proctor analysis of all subgrade material to be compacted during surface preparation and fine grading and compaction work
- 3. Sieve analyses for all borrow materials used on the Project
- 4. Soil structure and nutrient analyses for all loam and topsoil used on the Project
- 5. Compaction tests performed during backfilling and compaction, rough grading and site preparation, and fine grading
- 6. All other tests and engineering data as required in the Contract Documents.
- B. Testing agencies must meet the requirements of Section 01451.
- C. An independent commercial testing laboratory, with current Massachusetts certification, shall perform all tests that require the services of a laboratory to determine

compliance with the Contract Documents. Independent testing laboratory requirements are defined under Section 01451.

- D. Secure and deliver the required number of samples to the laboratory as required by the Contract Documents.
- E. Notify Owner and Engineer of time, location and material being sampled.
- F. Schedule necessary testing laboratory services.
- G. Furnish written reports of each test within 48 hours of completion of testing.
- H. Notify the Engineer 48 hours prior to operations requiring inspections and laboratory testing services so the Engineer may witness testing. All failed test areas shall be re-worked and re-tested until passing results are obtained.
- I. The Owner may hire its own independent testing laboratory for quality control tests made in the field or laboratory on materials and equipment during and after their incorporation in the Work. Cooperate with the Owner and independent testing laboratory and furnish samples of materials, design, mix, equipment, tools, storage, and assistance as requested.
- J. Re-work all failed test areas until passing results are obtained. All re-tests required as a result of the Contractor's failure to perform the work in accordance with the Contract Documents shall be at the Contractor's expense.

1.5 CODE COMPLIANCE TESTING

- A. Provide inspections and tests required by codes or ordinances, or by a legally constituted authority having jurisdiction over the Work.

1.6 PRODUCT TEST REPORTS

- A. Submit 2 copies of product test reports where required by the Contract Documents.

1.7 SUPPLIERS' FIELD SERVICE

- A. Provide qualified field service and installation personnel from material and equipment Suppliers to observe site conditions, installation techniques, quality of workmanship, equipment start-up, adjustment, and performance test where required by the Contract Documents. Observations are to be reported and incorporated in the Work procedures.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

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SECTION 01451

INDEPENDENT TESTING SERVICES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Independent testing services including geotechnical testing.
2. Testing laboratory services

B. Related Requirements

1. Section 01450 - Quality Control
2. Section 02315 - Excavation, Backfill, Compaction and Dewatering
3. Section 02320 - Borrow Material

1.2 REFERENCES

A. General

1. ASTM E329 – Standard Specifications for Agencies Engaged in the Testing and/or Inspection of Materials used in Construction

B. Soil Testing

1. American Association of State Highway and Transportation Officials (AASHTO)

1.3 SUBMITTALS

A. Informational Submittals

1. Qualifications, experience, and certifications of each proposed testing service
2. Certificate of calibration for testing equipment
3. Inspection and test reports

1.4 QUALITY ASSURANCE

A. General

1. Comply with the requirements of Section 01450, Quality Control, for testing and inspection requirements.
2. Testing services shall have the following general qualifications:
 - a. Minimum five years as a firm with the type of testing specified.
 - b. Ability to provide timely field testing services to minimize the impact of the testing requirements on construction progress.
 - c. Certification to perform the specified services in the state in which the Work is to be performed.

3. Testing services proposed by the Contractor shall be subject to review by the Owner and Engineer. Any testing firm not acceptable to the Owner or Engineer will be rejected.
- B. All testing agencies and laboratories must meet the requirements of ASTM E329.
- C. Testing company shall have been in business for a minimum of the last 5 years providing applicable testing services.
- D. Testing equipment shall be calibrated at maximum 12 month intervals by devices of accuracy traceable to National Bureau of Standards. Submit copy of certificate of calibration made by accredited calibration agency.
- E. Testing shall be in accordance with applicable codes and regulations referenced in individual Specification Sections, and with selected standards of the American Society for Testing and Materials.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 TESTING SERVICES – GENERAL

- A. Provide testing services meeting the following:
 1. Provide qualified personnel promptly on notice.
 2. Perform inspections required by the Contract Documents. Sample and test materials and observe methods of construction to determine compliance with applicable standards and with the requirements of the Contract Documents.
 3. Take specimens and samples for testing, as required in individual Specification Sections. Provide all sampling equipment and deliver all specimens and Samples.
 4. Promptly notify the Owner and the Engineer of irregularities or deficiencies in the Work which are observed during performance of services.
 5. Promptly submit 2 copies of reports of inspections and tests to the Owner, and one copy to the Engineer including:
 - a. Date issued
 - b. Project title and number
 - c. Testing laboratory or agency name and address
 - d. Name and signature of inspector
 - e. Date of inspection or sampling
 - f. Record of temperature and weather
 - g. Date of test
 - h. Identification of product and Specification Section
 - i. Location of Project
 - j. Type of inspection or test

- k. Results of tests and observations regarding compliance with Contract Documents
 - B. Perform additional tests and services as required to assure compliance with the Contract Documents.
 - C. Obtain Owner's approval of testing laboratory before performing testing services.
 - D. Coordinate with testing laboratory.
- 3.2 GEOTECHNICAL TESTING
- A. Provide field testing and laboratory services for geotechnical soil testing required in Sections 02315 and 02320.
- 3.3 COORDINATION WITH TESTING LABORATORY
- A. Provide testing laboratory personnel access to site and manufacturer's operations.
 - B. Provide laboratory with representative samples of materials to be tested in required quantities.
 - C. Furnish labor and facilities:
 - 1. To provide access to Work to be tested.
 - 2. To facilitate inspections and tests.
 - 3. For laboratory's exclusive use for storage and curing of test samples.
 - 4. to provide forms for preparing concrete test beams and cylinders.
 - D. Notify laboratory sufficiently in advance of operations to allow for assignment of personnel and scheduling of tests.
 - E. Arrange with laboratory and pay for additional inspections, samples, and tests required for Contractor's convenience.

END OF SECTION

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SECTION 01510

TEMPORARY UTILITIES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Temporary electricity
 - 2. Temporary water service
 - 3. Temporary fuel oil

1.2 QUALITY ASSURANCE

- A. Maintain temporary utilities in proper and safe condition throughout the progress of the Work.

1.3 TEMPORARY ELECTRICITY

- A. Provide a portable power supply capable of providing sufficient power at the site for both temporary power and lighting throughout the project. Due to the potential risks of contamination from fuel spills, the use of all fuel-driven generator sets must be strictly controlled and monitored while on site.
- B. Refueling must be accomplished off-site when feasible and if fuel is transported to the site, it must be in approved containers with secondary containment. All gasoline driven pumps or diesel generators shall be underlain by sheets of polyethylene plastic and on-site refueling shall be accomplished by pumping or siphoning. Absorbent pads shall be available for immediate use in the event of an accidental spill. The Contractor shall be responsible for complete cleanup of any accidental spills.
- C. Maintain and service the portable power unit(s) throughout the duration of the project.
- D. Provide a general power distribution system including all wires, cables, supports, protective devices, transformers, motor starters, etc., as required for a complete electrically protected and safe system to handle required construction services.

1.4 TEMPORARY WATER SERVICE

- A. Water for Construction Purposes
 - 1. The Contractor shall provide water for construction and testing purposes.

1.5 TEMPORARY FUEL OIL

- A. Properly contain, label, and store all petroleum products off the ground with suitable secondary containment.
- B. Take all necessary precautions to avoid leakage and spillage of all petroleum products, including lubricating oils.
- C. In general, perform fueling and refueling of all equipment and vehicles off-site. In the event that on-site refueling is necessary and as approved by the Engineer, provide suitable secondary containment facilities to contain all potential spillage, including that resulting from over-filling.

- D. Inspect vehicles for leaks prior to entrance to the Work site. Vehicles with leaks are prohibited from entering the Work site. All vehicles, while on the work site, shall be underlain with polyethylene plastic sheets. Absorbent pads must be available on site for immediate use if needed.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

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SECTION 01520

CONSTRUCTION FACILITIES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Temporary sanitary and first-aid facilities

1.2 QUALITY ASSURANCE

- A. Maintain temporary construction facilities in proper and safe condition throughout the progress of the Work.

1.3 FIELD OFFICE

- A. A field office is not required.

1.4 TEMPORARY SANITARY AND FIRST AID FACILITIES

- A. Provide suitably enclosed chemical or self-contained toilets for the use of the labor force employed on the Work. Toilets shall be located near the Work sites and secluded from observation insofar as possible. Toilets shall be serviced weekly, kept clean and supplied throughout the course of the Work.
- B. Contractor shall enforce proper use of sanitary facilities.
- C. Provide a first aid station at the site.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

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SECTION 01570

TEMPORARY CONTROLS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Dust control
 - 2. Drainage and erosion control
 - 3. Siltation fence
 - 4. Compost wattles
 - 5. Mulch
 - 6. Sediment trapping devices
- B. Related Requirements
 - 1. Section 01571-Control of Water
 - 2. Section 02922 – Hydroseeding and Mulching

1.2 SUBMITTALS

- A. Informational Submittals
 - 1. Storm Water Pollution Prevention Plan (SWPPP)
 - 2. Compost wattles, siltation fence, mulch, and sediment trapping devices

1.3 COMPLIANCE WITH EPA PHASE II STORMWATER PROGRAM

- A. The Project involves an overall disturbance of greater than 1 acre and is therefore under jurisdiction of the Environmental Protection Agency's (EPA) Phase II Stormwater Program. Comply with the program in accordance with EPA's 2022 Construction General Permit with subsequent revisions including the following:
 - 1. Prepare a SWPPP and maintain a copy on site throughout construction period. The SWPPP must be kept current and shall be amended according to the conditions described in the permit.
 - 2. Submit a Notice of Intent (NOI) 14 days prior to commencement of earth disturbing work.
 - 3. Post a sign or other notice of permit coverage .
 - 4. Comply with SWPPP including control of stormwater and non-stormwater discharges through use of structural and non-structural best management practices, inspections, maintenance and corrective action activities, spill prevention and emergency response.
 - 5. Submit a Notice of Termination following completion of all construction activities and having met permit requirements for termination.

PART 2 PRODUCTS**2.1 COMPOST WATTLES**

- A. Compost wattles required for siltation control shall consist of a 100% biodegradable sock/tube of cotton, burlap, jute, or similar material, containing a porous compost media designed to filter pollutants from stormwater. Nominal diameter shall be 12-inches and the effective height shall be 9.5-inches.

2.2 FILTER FABRIC

- A. Filter fabric siltation fencing shall be a woven filter fabric having a weight of at least 2.5 ounces per square yard, a thickness of at least 17 mils, a coefficient of permeability of not less than 0.0009 centimeters per second and allows a water flow rate of a minimum 40 gallons per minute per square yard. The material shall have a high sediment filtration capacity, high slurry flow and minimum clogging characteristics. The material shall be equal to FW-300 as manufactured by Mirafi, Inc., Charlotte, North Carolina; Amoco 2130 by Nilex, Inc., Centennial, CO; MISF 180 by Mutual Industries, PA; or equal.

2.3 SEDIMENT TRAPPING DEVICES

- A. Sediment trapping devices shall be Siltsack®, Dandy Bag II®, or equal.

2.4 MULCH

- A. Hay mulch shall consist of mowed cured grass, clover, alfalfa, timothy, oats, or wheat with the grain/seed and chaff removed. No salt hay shall be used.

PART 3 EXECUTION**3.1 DUST CONTROL**

- A. Control dust during the Work. Use a mechanical street sweeper daily.
- B. Prevent dust from becoming a nuisance or hazard. During construction, excavated material and open or stripped areas are to be policed and controlled to prevent spreading of the material.
- C. Control dust during the work on-site using calcium chloride and/or water.
- D. During the Work on-site, all paved road and driveway surfaces shall be scraped and broomed free of excavated materials on a daily basis. The surfaces shall be hosed down or otherwise treated to eliminate active or potential dust conditions and the natural road or wearing surface shall be exposed.

3.2 DRAINAGE AND EROSION CONTROL

- A. Control erosion and siltation during the construction through mulching, haybales, siltation fencing, diversion and control of storm water run-off, ponding areas and similar methods.
- B. Provide and maintain sediment trapping systems.
- C. Discharge surface runoff from any disturbances to the site into silt containment basins. Utilize siltation prevention measures including haybale and geotextile fences before discharge to drainage systems.

3.3 COMPOST WATTLES

- A. Place and maintain compost wattles as shown on the drawings or as required by permit.
- B. Install compost wattles as shown on the drawings. Replace deteriorated wattles. Remove and dispose of the wattles following the successful growth of vegetation in the areas disturbed by the construction. Wattles shall not be removed until their removal is approved by the Engineer.
- C. Perform work in accordance with the Town of Hardwick Conservation Commission Order of Conditions and all other permits.
- D. Perform work in accordance with Town of Brookfield Conservation Commission Order of Conditions.

3.4 RESTORATION

- A. Provide erosion control, seed and mulch and netting for surface restoration of areas disturbed during construction activities.
- B. Provide temporary stabilization of disturbed areas that remain inactive greater than 14 consecutive days to minimize erosion. Methods to minimize erosion may include but are not limited to:
 - 1. Spreading straw and/or providing temporary planting stabilization.
 - 2. Installing jute netting.
 - 3. Preparing surfaces to increase the runoff flow path, reduce the runoff flow velocity, or create small storage pockets to retain surface flows. Methods of accomplishing this include using mechanical devices such as track equipment or sheep's foot rollers.
- C. Restore the ground surface in brush and/or woodland areas by machine spreading of existing stripped surface soils (loam and humus), liming, fertilizing, seeding and mulching, as well as installing jute netting where required by steep slopes.
- D. Salvage existing loam and topsoil and stockpile this material for re-spreading where originally removed. On backfilling, grading shall be returned to preconstruction contours and the stockpile of loam shall be spread over areas disturbed during construction activities.
- E. Place mulch on seeded areas. Use jute netting on areas having a slope greater than 3 horizontal to 1 vertical, to anchor the mulch until a satisfactory growth is obtained. If seeding is not possible because of the time of the year, apply mulch and netting to stabilize the area until such time as seed can be sown.
- F. Provide grading, re-fertilizing, reseeding, re-mulching and/or netting to maintain the restored areas until the Work is accepted by the Owner.
- G. Seed shall be as specified under Section 02920.

3.5 CLEANING

- A. Clean sediment trapping devices periodically during the Work. Devices shall be cleaned on a weekly basis, or more frequently if the devices become clogged.

END OF SECTION

SECTION 01571

CONTROL OF WATER

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes requirements for the control of surface water, including
 - 1. Cofferdams
 - 2. Surface Water Diversion
 - 3. Flood Contingency Plan
- B. Related Requirements
 - 1. Section 01570 – Temporary Controls
 - 2. Section 02315 – Excavation, Backfill, Compaction and Dewatering
 - 3. Section 02670 – Construction in Wetlands

1.2 SUBMITTALS

- A. Informational Submittals
 - 1. The following may be separate documents or combined into one plan.
 - a. Water Control Plan, including description of approach, plans, location, materials, size, methods, phasing, calculations, and specifications for the control of water, dewatering of/removal of water from enclosed areas.
 - b. Cofferdam designs, if desired, including materials, location, construction methods and details, design criteria planned, calculations demonstrating the adequacy of the system, etc. Cofferdams in excess of 4 feet in height shall be designed and sealed by a professional engineer licensed in Massachusetts
 - c. Flood Contingency Plan, which shall include:
 - 1) Plans for monitoring for potential flooding conditions and responses to be undertaken if flooding is forecast or occurs.
 - 2) Methods to be implemented for protection of the Work and preventing potential discharges of sediment to the impoundment or downstream resource areas during flooding conditions.
 - 3) Ensure that structures, materials, and equipment will be anchored or restrained to prevent displacement or flotation or will be removed from the floodplain prior to a flood.
 - 4) Identify the storm events that will adversely affect construction activities.
 - 5) Identify the name, address and telephone number of the person(s) responsible for implementing this plan.

1.3 PROJECT CONDITIONS

A. Estimated Flood Characteristics

- The following flood flow and elevation information has been obtained from Hydrological and hydraulic modeling performed by Tighe & Bond for the existing conditions.

| Flood Event | Peak Water Surface Elevation (feet, NAVD88) | Inflow (Cubic feet per second) | Outflow (Cubic Feet per Second) |
|----------------|---|--------------------------------|---------------------------------|
| 2-year flood | 635.2 | 50 | 50 |
| 5-year flood | 635.4 | 105 | 105 |
| 10-year flood | 635.5 | 170 | 170 |
| 25-year flood | 635.7 | 290 | 290 |
| 50-year flood | 635.8 | 365 | 365 |
| 100-year flood | 635.9 | 510 | 510 |

B. Design Criteria

- Provide a suitable water control system sized adequately to control water for normal flows and small rainfall events that will occur routinely during construction. Contractor shall be responsible for selection of the flood event for the water control system.
- Work may occur in the wet; a cofferdam is not required but may be used at the Contractor’s discretion.
- No additional payment shall be made to the Contractor for any damages to the work caused by a flood event up to a 25-year flood; for off-site damages caused by a flood event up to the 100-year flood; or if the cofferdam fails unexpectedly during its design flood or a lesser flood.
- The basis for determination of the flood return frequency shall be the measured or calculated flow at the site relative to the flow information presented in this section and not total rainfall or other factors.

PART 2 PRODUCTS

2.1 TEMPORARY COFFERDAM SYSTEM

- If desired by the Contractor, provide an efficient temporary cofferdam system to allow safe execution of the work under this contract. Cofferdams constructed of uncontained fill material (e.g. earth, rock systems) will not be acceptable. Examples of acceptable systems are as follows:
 - A steel frame with membrane system such as the one utilized by Portadam Inc., 107 Drivers Lane, Laurel Springs, NJ 08021, Tel. (609) 784-2208
 - 4’x4’ Supersacks constructed of polypropylene (filled with sand) and with lifting straps, provided a properly-installed waterproof membrane on the upstream side is included
 - Water filled cofferdam, such as the one utilized by Water Structures Unlimited (Aquadam ®)

- B. The Contractor is solely responsible for the design and stability of cofferdams.

PART 3 EXECUTION

3.1 TEMPORARY COFFERDAM SYSTEM

- A. Furnish, install, and remove a safe temporary cofferdam system.
- B. Installation of rip-rap for slope protection or erosion repair may be performed up to one foot below the water line without a cofferdam, provided no placement or compaction of granular materials including low-permeability fill is required, and provided that the area is surrounded by a functioning turbidity curtain.
- C. The cofferdam shall be surrounded by a functioning turbidity curtain during placement and removal and at other times if necessary to prevent discharge of turbidity.

3.2 DEWATERING

- A. The areas within the cofferdam shall be dewatered and maintained in a dry condition to the extent required to construct the work in accordance with all applicable provisions in other sections of the specifications.

3.3 DIVERSION

- A. Maintain flow around the cofferdam in a manner that meets the following requirements:
 1. Avoid impacts to upstream and downstream areas (eg, increased water levels or flow velocities) that may result from temporary flow constrictions as a result of cofferdams and diversions.
 2. Provide temporary scour protection and erosion controls at diversion inlets, discharges, and along diversion channels so that diversions do not cause scour, erosion, sedimentation, or cause unacceptable levels of turbidity.
 3. Inlets, channels, and outlets are monitored and maintained free of debris and obstructions.

3.4 MAINTENANCE

- A. Continuously monitor the cofferdam for evidence of movement, deterioration, and excessive seepage throughout use. The cofferdam shall be maintained in good working order as necessary for the safety of workers and the protection of the permanent work.

3.5 FLOODING

- A. Monitor weather and weather related events to anticipate if flood control activities are anticipated. If flooding is anticipated, suspend construction operations, remove equipment which could be damaged, and take such actions and perform such additional work as approved by the Engineer to protect the work and prepare the area for flooding.

END OF SECTION

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SECTION 01582

PROJECT IDENTIFICATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Project Identification Signs
- B. Related Requirements
 - 1. Section 01330, Submittal Procedures

1.2 SUBMITTALS

- A. Action Submittals
 - 1. Information on paints to be used for items under this section.
 - 2. Layout of each sign.

1.3 QUALITY ASSURANCE

- A. Employ the services of a professional painter who has successfully performed at least 5 emblems of similar size and character within the last 2 years to perform lettering .
- B. Finishes and painting shall resist weathering and fading for scheduled construction period.

1.4 MAINTENANCE

- A. Maintain signs and supports in a neat, clean condition; repair damages to structures, framing or sign.

PART 2 PRODUCTS

2.1 SYSTEM DESCRIPTION

- A. Project Identification Sign
 - 1. Do not erect or display advertising signs of any kind on site. At start of Work, furnish, erect, and maintain on site where directed by the Owner one sign, 2 ft. by 3 ft. in size, bearing the following information:
 - a. Name of Project and Contract number
 - b. Name of Owner
 - c. Name of Consulting Engineer
 - d. Name and Address of Contractor
 - e. Contact telephone number

2.2 MATERIALS

A. Sign Materials

1. Structure and Framing: May be new or used, wood or metal, in sound condition, structurally adequate to work, and suitable for specified finish.
2. Sign Surfaces: Exterior softwood plywood with medium density overlay, standard large sizes to minimize joints:
 - a. Thickness: As required by standards to span framing members, to provide even, smooth surface without waves or buckles.
3. Wrought Hardware: Galvanized.
4. Paint:
 - a. Apply a coat of white alkyd primer wood oil to entire woodwork of sign.
 - b. Apply 2 coats of white exterior latex paint to sign including framework.

B. Sign layout shall be approved by the Owner prior to fabrication.

PART 3 EXECUTION

3.1 PREPARATION

A. Project Identification Sign

1. Paint exposed surface of supports, framing and surface material; one coat of primer and one coat of exterior white paint.
2. Paint graphics in styles, sizes, and colors selected.
3. Sign to be minimum of 48 inches by 96 inches.

3.2 ERECTION

A. Project Identification Sign

1. Erect Project signs at location approved by the Owner.
2. Maintain in good condition until completion of the Project.
 - a. Remove sign, framing, supports and foundations at completion of the Project.

END OF SECTION

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SECTION 01600

PRODUCT REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Products and Materials
 - 2. Product Delivery Requirements
 - 3. Packaging, Handling and Storage Requirements

1.2 QUALITY ASSURANCE

- A. Review all contract Drawings and Specifications with respect to specific system characteristics, applicability of materials and equipment for the intended purposes, sizes, orientation, and interface with other systems, both existing and proposed, and certify that the materials and equipment proposed will perform as specified prior to submitting shop drawings.
- B. Provide sworn certificates as to quality and quantity of materials where specified or requested by the Engineer.
- C. Obtain concurrence of the Engineer prior to processing, fabricating, or delivering material or equipment.

1.3 PRODUCTS AND MATERIALS

- A. Furnish products of qualified manufacturers suitable for intended use. Furnish products of each type by a single manufacturer unless specified otherwise.
- B. Use only new and first quality material in the Work. Material shall conform to the requirements of these Specifications and be approved by the Engineer. If, after trial, it is found that sources of supply that have been approved do not furnish a uniform product, or if the product from any source proves unacceptable at any time, the Contractor shall furnish approved materials from other approved sources.
- C. Immediately remove defective materials and equipment from the site, at no additional cost to the Owner. The Contractor may be required to furnish sworn certificates as to the quality and quantity of materials before materials are incorporated in the Work.
- D. Engineer has the right to approve the source of supply of all material prior to delivery.

1.4 PRODUCT DELIVERY REQUIREMENTS

- A. Transport and handle products in accordance with manufacturer's instructions.
- B. Promptly inspect shipments to ensure products comply with requirements, quantities are correct, and products are undamaged.
- C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

- D. Progressively deliver materials and equipment to the Site so there will be neither delay in progress of the Work nor an accumulation of material that is not to be used within a reasonable time.
- E. Deliver products to the Site in their manufacturer's original container, with labels intact and legible.
 - 1. Maintain packaged materials with seals unbroken and labels intact until time of use.
 - 2. The Engineer may reject as non-complying such material and products that do not bear identification satisfactory to the Engineer as to the manufacturer, grade, quality, source, and other pertinent information.

1.5 PACKAGING, HANDLING AND STORAGE REQUIREMENTS

- A. Provide storage and handling of all materials and equipment required for the Work.
- B. Except as otherwise indicated in the Contract Documents, determine and comply with the manufacturer's recommendations on product storage, handling, and protection. Provide manufacturer's documentation on recommended storage procedures when requested by the Engineer.
- C.
- D. Familiarize workmen and subcontractors with hazards associated with materials, equipment, and chemicals specified herein and take all necessary safety precautions.
- E. Areas available on the construction site for storage of material and equipment shall be as shown on the Drawings or approved by the Owner.
- F. Materials to be incorporated in the Work shall be handled and stored by the manufacturer, fabricator, supplier, and Contractor before, during and after shipment in a manner to prevent theft, or damage of any kind to the material or equipment.
- G. Promptly remove materials from the site of the Work which have become damaged or are unfit for the use intended or specified. The Contractor will not be compensated for the damaged materials or their removal costs.
- H. Handle, haul, and distribute all materials and all surplus materials on the different portions of the Work, as necessary or required. Provide suitable and adequate storage room for materials and equipment during the progress of the Work, and be responsible for the protection, loss of, or damage to materials and equipment furnished, until the final completion and acceptance of the Work.
- I. Storage and demurrage charges by transportation companies and vendors shall be borne by the Contractor.
- J. All materials and equipment to be incorporated in the Work shall be placed so as to not damage 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. Keep materials and equipment neatly piled and compactly stored in such locations as will cause a minimum of inconvenience to the Owner.
- K. No material or equipment will be permitted to be stored in any of the Owner's facilities, unless otherwise approved by the Engineer.

- L. Do not store material or equipment in any wetland or environmentally sensitive area. Stockpile sites shall be level, devoid of mature stands of natural vegetation, and removed from drainage facilities and features, wetlands, and stream corridors.
- M. Contractor shall be fully responsible for loss or damage to stored materials and equipment.

1.6 INSPECTION OF OFFSITE WORK-NOT USED

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

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SECTION 01630

PRODUCT SUBSTITUTION DURING CONSTRUCTION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Product substitution procedures

1.2 CONTRACTOR'S OPTIONS

- A. For materials or equipment (hereinafter products) specified only by performance or reference standard, select product meeting that standard, by any Supplier. To the maximum extent possible, provide products of the same generic kind from a single source.
- B. For products specified by naming several products or manufacturers, select any one of the products or Suppliers named, which fully complies with the Drawings and Specifications. Another "or-equal" product can also be considered by the Engineer if it complies with the provisions of Paragraph 1.3. If a product proposed by the Contractor does not qualify as an "or-equal" item, then it can be considered as a proposed substitute item, and the Contractor must comply with the requirements of Paragraph 1.3.A.2.

1.3 SUBSTITUTIONS

- 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 1.3.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 1.3.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 thereof. 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 1.3.A.2.d, as supplemented by the Contract Documents, 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:
 - perform adequately the functions and achieve the results called for by the general design,
 - be similar in substance to that specified, and
 - be suited to the same use as that specified;
 - 2) will state:
 - the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time,
 - 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
 - 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:

- all variations of the proposed substitute item from that specified, and
 - 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 1.3.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 1.3.A and 1.3.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 1.3.A.2 and 1.3.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.

1.4 SUBMISSION AND REVIEW

- A. If in the Engineer's sole discretion a product proposed by the Contractor does not qualify as an "or-equal" item under the provisions of Paragraph 1.3.A.1, it can be considered a proposed substitute item. Submit information required under Paragraph 1.3.A.2 for proposed substitutes.
- B. The Engineer will consider written requests from the Contractor for substitutions within 30 days after the Notice to Proceed. After this period, requests will be considered only in case of unavailability of product or other conditions beyond control of the Contractor.

- C. Submit 5 copies of request for substitutions. Submit a separate request for each proposed substitution. In addition to the submittal requirements outlined in Article 7.05 of Section 00700, include the following in each substitution request:
1. For products or Suppliers:
 - a. Product identification, including Supplier & manufacturer's name and address.
 - b. Manufacturer's literature with product description, performance and test data, and reference standards.
 - c. Samples, if appropriate.
 - d. Name and address of similar projects on which product was used, and date of installation.
 2. For construction methods (if specified):
 - a. Detailed description of proposed method.
 - b. Drawings illustrating method.
 3. Such other data as the Engineer may require to establish that the proposed substitution is equal to the product, Supplier or method specified.
- D. The substitution request shall include written certification and statements that are outlined in Article 7.05 of Section 00700.
- E. A request constitutes a representation that Contractor:
1. Has investigated proposed product and determined that it meets or exceeds quality level of specified product.
 2. Will provide same or better guarantees, warranties or bonds for proposed substitution as for specified product.
 3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
 4. Waives all claims for additional costs or time extension which may subsequently become apparent.
 5. Will reimburse Owner for review or redesign services associated with re-approval by authorities having jurisdiction.
- F. A proposed substitution will not be accepted if:
1. Acceptance will require changes in the design concept or a substantial revision of the Contract Documents.
 2. It will delay completion of the Work.
 3. It is intended or implied on a Shop Drawing and is not accompanied by a formal request for substitution from the Contractor.
- G. The Contractor is responsible for all costs relating to substitution requests.
- H. Approval of a substitution does not relieve the Contractor from the requirement for submission of Shop Drawings as set forth in the Contract Documents.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

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SECTION 01720

FIELD ENGINEERING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Establishment of lines, benchmarks, and elevations required to layout and construct the Work

1.2 SUBMITTALS

A. Informational Submittals

1. Submit the qualifications of the Registered Land surveyor to be hired to perform various portions of the Work, as applicable.
2. Submit documentation verifying the accuracy of field engineering work.
3. Submit 4 copies of final record drawings of field engineering layouts and as-built survey.
4. Submit certificate signed by registered (licensed) surveyor certifying that elevations and locations of Work are in conformance with Contract Documents. Explain deviations.

1.3 RECORDS

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

1.4 QUALITY ASSURANCE

- A. Employ a competent surveyor, registered with the Commonwealth of Massachusetts as a Land Surveyor, as required for the particular characteristics of the work being performed.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 PROCEDURES

- A. The Registered Land Surveyor provided shall establish and maintain lines, elevations and reference marks needed during the progress of the Work and shall re-establish stakes and marks placed by the Engineer that are lost or destroyed through the course of the Work. Verify such work by instrument or other appropriate means.
- B. The Engineer shall be permitted at all times to check the lines, elevations and reference marks, set by the Contractor, who shall correct any errors 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 the responsibility of the Contractor for the accurate and satisfactory construction and completion of the entire Work.
- C. Make, check, and be responsible for measurements and dimensions necessary for the proper construction of and the prevention of misfittings in the Work.

- D. Furnish all protective stakes and temporary structures for marking and maintaining points and lines for the building of the Work, and give the Engineer such facilities and materials for verifying said lines and points as he may require.
- E. Revisions to the layout and elevations of the Work as defined by the Contract Documents shall be approved by the Engineer.
- F. Maintain and prepare final record drawings of field engineering layouts and as-built survey, performed by the Registered Land Surveyor, conducted after completion of the Work.

END OF SECTION

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SECTION 01725

PRESERVATION AND RESTORATION OF PROJECT FEATURES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Protection and replacement of trees, shrubs, signs, property markers, fences, and related project features.
2. Taking precautions, providing programs, and taking actions necessary to protect public and private property and facilities that are outside the demolition scope from damage.

1.2 DEFINITIONS

A. Underground Structures

1. Underground structures are defined to include, but not be limited to, sewer, water, gas, and other piping, and manholes, chambers, electrical and signal conduits, tunnels and other existing subsurface work located within or adjacent to the limits of the Work.
2. Underground structures known to the Engineer are shown on the Drawings to the extent that locations are available. This information is shown for the assistance of the Contractor in accordance with the best information available, but is not guaranteed to be correct or complete. The Contractor shall be responsible for checking on the actual locations of water, sewer, gas electric and telephone service connection lines to avoid potential interferences.

B. Surface Structures

1. Surface structures are defined as existing buildings, structures and other facilities above the ground surface. Included with such structures are their foundations or any extension below the surface. Surface structures include, but are not limited to, buildings, tanks, walls, bridges, roads, dams, channels, open drainage, piping, poles, wires, posts, signs, markers, curbs, walks and all other facilities that are visible above the ground surface.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 REPAIR/RESTORATION

- A. Trees, shrubs, and similar items shall not be removed except where indicated on the drawings or as necessary to access the required demolition work, as approved by the Engineer. Items to be removed shall be clearly marked as directed by the Engineer. If objects not to be removed are damaged or removed, they shall be repaired or replaced to their original condition.

- B. Trees and shrubs on private property, which are removed or damaged by the Contractor shall be replaced in kind.
- C. Signs, fences, property markers, walls, guard rails and other public or private property that are outside the demolition scope shall be replaced in kind if damaged. Supports and protective devices required shall be provided.
- D. Underground and Surface Structures
 1. In the event of damage, injury or loss to existing utilities and structures that were not indicated to be removed or abandoned, whether shown on the Drawings or not, make all reasonable efforts to facilitate repairs and to mitigate the impact of such events upon the utility or structure owner's normal operations. Restore the existing utility or structure to the condition required by the owner of the utility or structure or at least to the condition found immediately prior to the Work. In the event that the utility owner elects to make the repairs, provide all reasonable access and assistance, and reimburse the utility owner for the cost of repairs. If utility service is interrupted due to damage to facilities, alternate facilities shall be provided.
 2. All other existing surface facilities, including but not limited to, guard rails, posts, guard cables, signs, poles, markers and curbs which are temporarily removed to facilitate the Work shall be replaced and restored to their original condition at the Contractor's expense unless otherwise indicated in other sections of these specifications.
 3. Wherever water, sewer, gas or petroleum mains, electric or telephone lines, cables or other utilities and structures are encountered and may be in any way interfered with, inform the Engineer and the appropriate utility company. Cooperate with the Engineer and utility company in the protection, removal, relocation, and replacement of structures and facilities.
 4. Prior to proceeding with any demolition or construction, notify in writing owners of utilities and structures within the vicinity of the proposed Work.
 5. Work affecting water distribution systems, which will take fire hydrants out of service, must be coordinated with the local fire department. The Contractor shall be prepared to restore fire flows in the event of an emergency or to provide for temporary fire flow service in accordance with the requirements of the local fire department.
 6. Materials used for relocation or replacement of utilities and structures shall be of an equivalent material, type, class, grade and construction as the existing or as approved by the respective owners thereof, unless otherwise shown or specified.
 7. When any survey monument or property marker, whether of stone, concrete, wood or metal, is in the line of any trench or other demolition or construction work and may have to be removed, notify the Engineer in advance of removal. Under no circumstances shall any monument or marker be removed or disturbed by the Contractor or by any of his Subcontractors, employees or agents, without the permission of the Engineer. Monuments or markers removed or disturbed shall be reset by a land surveyor licensed in the State where the Work is located at the Contractor's expense. Should any monuments or markers be destroyed through accident, neglect or as a result of the Work under this Contract, the

Contractor shall, at his own expense, employ a land surveyor licensed in the State where the Work is located to re-establish the monument or marker.

3.2 PROTECTION

- A. The construction of certain portions of the project may require excavation within the root systems of trees. Roots with a diameter of 2 inches or more within the excavation shall not be cut. If necessary, excavation shall be made with small powered equipment or by hand to comply with this requirement. It may be necessary to excavate from more than one direction to avoid damage to the roots.
- B. The trunks of trees that are to remain and are within the swing radius of the excavating machine bucket when fully extended shall be wrapped with burlap and 2 inch by 4 inch protective wood slats (8 inch spacing maximum) wired around the circumference of the trees to protect them from damage.
- C. Tree limbs shall not be cut except upon written approval of the Owner and the Engineer. Tree limbs cut shall be painted with approved forestry paint manufactured specifically for that purpose.
- D. Underground and Surface Structures
 - 1. Sustain in their places and protect from direct or indirect injury underground and surface structures designated to remain within or adjacent to the limits of the Work. Such sustaining and supporting shall be done carefully and as required by the party owning or controlling such structure. Before proceeding with the work of sustaining and supporting such structure, satisfy the Engineer that the methods and procedures to be used have been approved by the party owning same.
 - 2. Pay utility service company charges related to the temporary support of utility poles if required to complete the Work.
 - 3. Assume risks associated with the presence of underground and surface structures within or adjacent to the limits of the Work. The Contractor shall be responsible for damage and expense for direct or indirect injury caused by his Work to any structure. Immediately repair damage caused by the Work to the satisfaction of the owner of the damaged structure.

END OF SECTION

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SECTION 01770B

CLOSEOUT PROCEDURES

1.1 SUMMARY

A. Section Includes

1. Documentation required for the transfer of the completed Work to the Owner
2. Final Cleaning

1.2 SUBMITTALS

A. Closeout Submittals

1. As-built drawings
2. Operation and maintenance manuals
3. Evidence of payment and release of liens
4. List of Subcontractors, service organizations, and principal vendors

1.3 PROJECT CLOSEOUT DOCUMENTS

- A. As-built Drawings - Submit as-built drawings review, approval, or comment. The as-built drawings shall include a survey by a licensed professional surveyor that shows the completed work, including all deviations from the Drawings. The as-built drawings shall depict the dam removals and culvert removal, channel excavations plantings and all field changes.. The survey shall be stamped by a licensed professional land surveyor.

1.4 FINAL PAYMENT

A. The Contract shall be considered complete and final payment made, only when:

1. All provisions of the Contract Documents have been strictly adhered to.
2. The project and premises have been left in good order, including removal of all temporary construction, Contractor-owned and extraneous materials.

1.5 FINAL CLEANING & REPAIRS

- A. On or before the completion of the Work, tear down and remove all temporary buildings and structures, remove all temporary works, tools, and machinery or other construction equipment, remove all rubbish from any grounds which has been occupied and leave the roads and all parts of the premises and adjacent property in a neat and satisfactory condition.

- B. Restore or replace any public or private property damaged or removed during the course of the Work. Property shall be returned to a condition at least equal to that existing immediately prior to the beginning of operations. Complete all highway or driveway, walk, and landscaping work using suitable materials, equipment and methods. Perform restoration of existing property, signs or structures promptly as work progresses; do not leave restoration work until the end of the Contract Time.

1.6 COMPLETION

A. The Contract shall be considered complete and final payment made, only when:

1. All provisions of the Contract Documents have been strictly adhered to.
2. All damage to adjoining areas caused by the Work has been repaired.
3. The project and premises have been left in good order, including removal of all temporary construction, Contractor-owned and extraneous materials as required.
4. All warranties, maintenance instructions, releases, and permits called for in the Contract have been submitted to the Owner and Engineer as applicable.
5. All as-built drawings as required by the Contract Documents have been submitted to the Owner.
6. All monies owed the Owner for services performed for the Contractor by Owner's forces in connection with the Contract have been paid.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

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DIVISION 02

SITE CONSTRUCTION

SECTION 02075

GEOSYNTHETICS

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes
 - 1. Non-woven geotextiles
 - 2. Temporary 100% biodegradable erosion control blankets

1.2 REFERENCES

- A. Data Sheet DS1 - Non-Woven Geotextiles
- B. ASTM D3786 - Test Method for Hydraulic Bursting Strength of Knitted Goods and Non-woven Fabrics: Diaphragm Bursting Strength Tester Method
- C. ASTM D4491 - Test Methods for Water Permeability of Geotextiles by Permittivity
- D. ASTM D4533 - Test Method for Trapezoid Tearing Strength of Geotextiles
- E. ASTM D4632 - Test Method for Grab Breaking Load and Elongation of Geotextiles
- F. ASTM D4751 - Test Method for Determining the Apparent Opening Size of a Geotextile
- G. ASTM D4833 - Test Method for Index Puncture Resistance of Geotextiles Geomembranes and Related Products
- H. ASTM D5261 - Test Method for Measuring Mass per Unit Area of Geotextiles

1.3 SUBMITTALS

- A. Product samples and data for all geosynthetics proposed for use on this project.
- B. Manufacturer-approved construction quality assurance/quality control manual for all of the geosynthetics proposed for use on this project.
- C. Manufacturing quality control testing data specified. Submit certification of required performance testing on all geosynthetics by an independent laboratory and label and identify all geosynthetic products delivered to the site.
- D. Manufacturer's recommended installation and fastening details for the erosion control blankets and turf reinforcement matrices. The following details are required:
 - 1. Typical stapling pattern and spacing. List staple density in terms of staples per square yard.
 - 2. Anchoring details for channels and slopes.
 - 3. Transverse blanket lap splice details, as well as longitudinal lap splice details if parallel blankets are to be installed.
 - 4. Termination details for the origin and termination of the channels and slopes.

- E. Manufacturer's recommended installation details including, orientation, overlap, and joining/seaming information for all drainage geocomposite products.

1.4 QUALITY ASSURANCE

- A. Obtain from the geosynthetic product manufacturers a warranty that their products are free from defects in materials and workmanship at the time of delivery to the project site.
- B. Material found to be defective or which does not conform to these specifications will be rejected.

1.5 DELIVERY, STORAGE AND PROTECTION

- A. The Engineer reserves the right to reject and require replacement of any damaged materials delivered to the site, at no additional cost to the Owner.
- B. Stockpile and store the materials in accordance with the manufacturer's recommendations.
- C. Label and bag all geosynthetic rolls in packing that is resistant to photo degradation by ultraviolet (UV) radiation.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Group 2 Non-Woven Geotextile
 - 1. "4506" as manufactured by Amoco Fabrics and Fibers
 - 2. "FX-60HS" as manufactured by Carthage Mills
 - 3. "160N" as manufactured by Mirafi Inc.
 - 4. Or equal
- B. Temporary 100% Biodegradable Erosion Control Blankets
 - 1. "ECC-2B" as manufactured by East Coast Erosion Control,
 - 2. "C125 BN" as manufactured by North American Green,
 - 3. Or equal

2.2 MATERIALS

- A. Non-woven geotextiles shall be manufactured from a continuous polypropylene filament. A needle punching process shall achieve bonding.
- B. Temporary, 100% biodegradable ECBs shall be composed of a core of 100% coconut fibers encased between two confining meshes of degradable material. Photo-degradable materials are not allowed.
 - 1. As a minimum, 100% biodegradable ECBs shall be recommended by the manufacturer for use on 2:1 slopes.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Inspect all products prior to the installation for any defects that may have been the result of storage and handling. The Engineer reserves the right to reject and require replacement of any damaged product, at no additional cost to the Owner.

3.2 INSTALLATION

- A. Install geosynthetic products in accordance with the approved manufacturer's QA/QC manuals, project details, and pertinent sections of these Specifications.

3.3 QUALITY CONTROL

- A. The Engineer may remove a sample (i.e. a strip that is 3 feet long by the entire roll width) from a maximum of 1 roll of each 10 rolls of all geosynthetic materials delivered to the project, and submit the samples to an independent laboratory for analysis of the product to ensure that the geosynthetics meet the specifications herein.

END OF SECTION

(DATA SHEETS FOLLOW)

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| Data Sheet DS1 - Non-Woven Geotextile Mechanical Properties | | | | | |
|--|--------------------|-------------------------------|---------------------------------|--------------|-----------------|
| Property | Test Method | Units | Testing Frequency | Value | |
| | | | | | Group 2 |
| Mass per Unit Area | ASTM D5261 | oz/yd² | 1/150,000 ft² | | 6 |
| AOS | ASTM D4751 | US Sieve | 1/150,000 ft² | | 70 |
| Permitivity | ASTM D4491 | gal/min/ft² | 1/150,000 ft² | | 90 |
| Puncture Strength | ASTM D4833 | lbs | 1/150,000 ft² | | 90 |
| Mullen Burst Strength | ASTM D3786 | lbs/in² | 1/150,000 ft² | | 350 |
| Trapezoidal Tear Strength | ASTM D4533 | lbs | 1/150,000 ft² | | 65 |
| Grab Tensile/Elongation | ASTM D4632 | lbs(%) | 1/150,000 ft² | | 150 (50) |

SECTION 02200

SITE PREPARATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes
 - 1. Clearing and grubbing
 - 2. Grading
 - 3. Stripping and stockpiling of soil and sod

1.2 SUBMITTALS

- A. Submit construction methods and equipment that will be utilized for the clearing, grubbing, and waste material disposal specified within this Section.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 CLEARING AND GRUBBING

- A. Except as otherwise directed, cut, grub, remove and dispose of all trees, stumps, brush, shrubs, roots and any other objectionable material within the limits of the Work on the site and where required to construct the work.
- B. Protect trees or groups of trees, designated by the Engineer to remain, from damage by all construction operations by erecting suitable barriers, or by other approved means. Conduct clearing operations to prevent falling trees from damaging trees designated to remain.
 - 1. All damage done to the trees by the Contractor's operation shall be trimmed and painted where cut as directed or as necessary to provide adequate vertical clearance for construction activities. The dressing or paint shall be applied no later than two days after the cuts are made.
 - 2. Use all necessary precautions to prevent injury to other desirable growth in all areas. Contractor shall assume full responsibility for any damage.
- C. Protect areas outside the limits of clearing from damage. No equipment or materials shall be stored in these areas.
- D. No stumps, trees, limbs, or brush shall be buried in fills or embankments.

3.2 DISPOSAL OF MATERIALS

- A. Remove all tree trunks, limbs, roots, stumps, brush, foliage, other vegetation and objectionable material from the site and dispose of in a legal manner.
- B. Burning or direct burial of cleared and grubbed materials on-site will not be permitted.
- C. Manage materials to avoid spread of invasive plant matter

3.3 GRADING

- A. In preparation for completion, perform grading to the lines, grades and elevations shown on the Drawings, and otherwise directed by the Engineer and perform in such a manner that the requirements for formation of embankments can be followed. All material encountered, regardless of its nature, within the limits indicated, shall be removed and disposed of as directed. During the process of grading, maintain the subgrade in such condition that it will be well drained at all times. Install temporary drains and drainage ditches to intercept or divert surface water that may affect the work when necessary.
- B. If at the time of grading it is not possible to place material in its final location, stockpile material in approved areas for later use. No extra payment will be made for the stockpiling or double handling of excavated material.
- C. The right is reserved to make minor adjustments or revisions in lines or grades if found necessary as the work progresses.
- D. Stones or rock fragments larger than 4 inches in their greatest dimensions will not be permitted in the top 12 inches of the finished subgrade of all fills or embankments except along the access roadways and rip-rap where shown on the Drawings.
- E. In cuts, loose or protruding rocks on the excavated slopes shall be barred loose or otherwise removed to line or finished grade of slope. Cut and fill slopes shall be uniformly dressed to the slope, cross-section and alignment shown on the Drawings or as directed by the Engineer.

3.4 DUTCH ELM WOOD

- A. Dutch Elm diseased wood shall be disposed of in accordance with any local regulations.
- B. Where the work includes the removal of elm trees or the limbs of elm trees, such trees or limbs thereof shall be disposed of immediately after cutting or removal and in such a manner as to prevent the spread of Dutch Elm disease. This shall be accomplished by covering them with earth to a depth of at least 6 inches in areas outside the right-of-way locations where the Contractor has arranged for disposal.
- C. Where the work includes the removal and disposal of stumps of elm trees, such stumps shall be completely disposed of immediately after cutting in the manner specified above.

END OF SECTION

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SECTION 02220

DEMOLITION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Demolition of the concrete spillway at Salmon Brook Dam, and the full vertical extent of the earth and stone embankment dam.
2. Demolition of the full vertical extent of the small unnamed dam including concrete, earth, and stone materials.
3. Demolition of the stone box culvert
4. Removal and lawful disposal of miscellaneous debris and solid waste located within the Limit of Work indicated on the Drawings

B. Related Sections

1. Section 01320 - Construction Photographs
2. Section 01725 - Preservation and Restoration of Project Features
3. Section 02315 - Excavation, Backfill, Compaction and Dewatering

1.2 DEFINITIONS

- A. Demolish – To tear down, segregate waste streams and lawfully recycle or dispose of all debris generated in the process including structure contents.
- B. Limit of Work – Area delineated on Drawings that defines the extent of demolition work under the Contract.

1.3 SUBMITTALS

A. Informational Submittals

1. Methods of demolition and equipment proposed to demolish structures. This submittal should be sufficient to demonstrate a thorough understanding of the Work to be completed and the means that will be implemented to safely complete the demolition within the Contract Time without damage to surrounding structures or resources.
2. Waste Management Plan to indicate the types of wastes to be generated and the proposed disposal or recycling locations. Include back-up disposal facilities.
3. Copies of any authorizations and permits required to perform the Work, including disposal/recycling facility permits.

- B. The following records and disposal documentation must be maintained and kept current throughout the Project. These documents will be maintained in chronological order in a 3-ring binder with appropriate tabbed dividers. The binder will be reviewed for completeness at each progress meeting. Requests for periodic payments may be rejected, in whole or in part, if documentation is not current.

1. Records of the amounts of waste generated, by waste type
2. Evidence of lawful disposal or recycling of all wastes generated
3. Documentation of underground structures and utilities
4. Copies of any analytical results generated as a result of waste stream characterization

1.4 REGULATORY REQUIREMENTS

- A. Contractor is solely responsible for obtaining permits or approvals which may be required to perform the work of this section, including all costs, fees and taxes required or levied, except for the following permits that will be obtained by the Owner:
 1. Order of Conditions from the Brookfield Conservation Commission.
 2. MassDEP 401 Water Quality Certificate Army Corps of Engineers Section 404 Pre-Construction Notification
- B. Notify and obtain such permits or approvals from agencies having jurisdiction over demolition prior to starting work.
- C. Complete, sign and submit a Notice of Intent to be covered under EPA's General Permit for Construction Activity. Comply with the requirements of the site-specific Stormwater Pollution Prevention Plan that is appended to this Project Manual.
- D. Comply with all applicable federal, state, and local environmental, safety and health requirements regarding the demolition of structures and other site features and recycling or disposal of demolition debris, as applicable.
- E. Conform to procedures identified in Section 01350 – Health and Safety Plan if hazardous or contaminated materials are discovered.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify site conditions before proceeding with demolition work. Field check the accuracy of the Drawings and inspect structures and utilities prior to start of work and notify the Engineer in writing, of any hazardous conditions and/or discrepancies. Primary structures and other site features are shown on the Drawings; other smaller structures, including, but not limited to, concrete walks and pads, miscellaneous signs, lamp posts, railings, and fencing may not be shown on the Drawings, but may exist within the Limit of Work and shall be demolished.
 1. Unknown Site Conditions - The information provided on the Drawings and in the Specifications is believed accurate. Field verify all information. Bear full responsibility for obtaining all locations of underground structures, utilities and their connections. Maintain services to buildings outside the limits of work.
 2. Interior Elements - Interior features including but not necessarily limited to structural elements, walls, partitions, equipment, piping or other building facilities are not shown on the drawings and must be visually inspected. Inspect and appraise all features and facilities to be demolished or removed for salvage.

Investigate to assure the condition of the work to be demolished and take all precautions necessary to ensure safety of people and property.

3.2 HAZARDOUS MATERIALS

A. Oil and Hazardous Material Contamination

1. There is no known soil contamination at the site. However, contaminated soil may be encountered during excavation.

3.3 DEMOLITION

A. Demolish the concrete spillway and stone culvert by methods that will not cause damage to surrounding structures, underground and overhead utilities, or other existing items and structures that are to remain in place.

B. Promptly and properly manage all debris as the demolition progresses. Construct and/or prepare material staging/stockpile areas at locations approved by the Engineer.

C. Miscellaneous Site Features

1. Trees – Trees are an important resource and shall be treated as such. Unless specifically noted to be demolished, protect all trees and obtain approval of the Engineer prior to removing or pruning any other trees. Refer to Section 01725.

3.4 DISPOSAL

A. Legally dispose of or recycle all materials from demolition as well as equipment and other materials that are within the buildings. The disposal site shall be permitted to accept the waste stream by the applicable State Agency. Perform the loading of demolition materials in a manner that prevents materials and activities from generating excessive dust and ensures minimum interference with roads, sidewalks and streets both onsite and offsite.

B. Provide evidence that the demolition materials have been received at a legal disposal, recycle, reuse or salvage location. Such proof may include truck weigh slips from an approved disposal facility or documentation of transfer of title. Transport of all materials off site shall be in accordance with applicable Department of Transportation Regulations. All materials leaving the site shall become the property of the Contractor unless explicitly stated otherwise..

3.5 SITE RESTORATION

A. Restore damaged areas of the site or neighboring properties in accordance with Sections 01725 and stabilize slopes in accordance with the erosion and sedimentation control requirements of the Contract.

B. Loam and seed all disturbed areas in accordance with Section 02922.

END OF SECTION

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SECTION 02315

EXCAVATION, BACKFILL, COMPACTION, AND DEWATERING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Excavation, backfill and compaction for buildings, retaining walls and other structures
 - 2. Earth retention systems
 - 3. Temporary dewatering systems
- B. Related Sections
 - 1. Section 01570 - Temporary Controls
 - 2. Section 02320 - Borrow Materials

1.2 REFERENCES

- A. ASTM D1557-07 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³))
- B. ASTM D1556-07 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
- C. ASTM D2487-06e1 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
- D. ASTM D6938-08a - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)
- E. 29 CFR Part 1926 Subpart P - OSHA Excavation Regulations 1926.650 through 1926.652 including Appendices A through F
- F. 520 CMR 14.00 Excavation and Trench Safety
- G. Commonwealth of Massachusetts Highway Department "Standard Specifications for Highways and Bridges," 1988 Edition as amended

1.3 DEFINITIONS

- A. Benching - A method of protecting employees from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels.
- B. Earth Retention Systems - Any structural system, such as sheeting and bracing or cofferdams, designed to retain in-situ soils in place and prevent the collapse of the sides of an excavation in order to protect employees and adjacent structures.
- C. Excavation - Any man-made cut, cavity, trench, or depression in an earth surface, formed by earth removal.

- D. Protective System - A method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into an excavation, or from the collapse of adjacent structures. Protective systems include earth retention systems, sloping and benching systems, shield systems, and other systems that provide the necessary protection.
- E. Registered Professional Engineer - A person who is registered as a professional engineer in the state where the work is to be performed. However, a professional engineer, registered in any state is deemed to be a "registered professional engineer" within the meaning of this standard when approving designs for "manufactured protective systems" or "tabulated data" to be used in interstate commerce.
- F. Licensed Site Professional - A person who is registered by the Commonwealth of Massachusetts to render Hazardous Waste Site Cleanup Activity Opinions.
- G. Shield System - A structure that is designed to withstand the forces imposed on it by a cave-in and thereby protects employees within the structure. Shields can be permanent structures or can be designed to be portable and moved along as work progresses. Additionally, shields can be either pre-manufactured or job-built in accordance with 29 CFR 1926.652(c)(3) or (c)(4). Shields used in trenches are usually referred to as "trench boxes" or "trench shields."
- H. Sloping - A method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation so as to prevent cave-ins. The angle of incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure, and application of surcharge loads.
- I. Temporary Dewatering System – A system to lower and control water to maintain stable, undisturbed subgrades at the lowest excavation levels. Dewatering shall be provided for all pipelines, structures and for all other miscellaneous excavations.
- J. Trench - A narrow excavation (in relation to its length) made below the surface of the ground, of at least three feet in depth. In general, the depth is greater than the width, but the width of a trench (measured at the bottom) is not greater than 15 feet (4.6 m).

1.4 SUBMITTALS

- A. Drawings and calculations for each Earth Retention System required in the Work. The submittal shall be in sufficient detail to disclose the method of operation for each of the various stages of construction required for the completion of the Earth Retention Systems.
 - 1. Submit calculations and drawings for Earth Retention Systems prepared, signed and stamped by a Professional Engineer registered in the state where the work is performed.
- B. Performance data for the compaction equipment to be utilized
- C. Construction methods that will be utilized for the removal of rock
- D. Modified Proctor Test (ASTM D1557) results and soil classification (ASTM D2487) for all proposed backfill materials at the frequency specified below:

1. For suitable soil materials removed during Excavation, perform one test for every 1,000 cubic yards of similar soil type. Similarity of soil types will be as determined by the Engineer.
 2. For borrow materials; perform tests at frequency specified in Section 02320, Borrow Materials.
- E. Compaction test results (i.e. ASTM D6938 or ASTM D1556) at a frequency of one test for every 100 cubic yards of material backfilled or at a minimum of one test per lift. The Engineer will determine the locations and lifts to be tested. The Contractor shall plan his operations to allow adequate time for laboratory tests and to permit taking of field density tests during compaction.
1. Methods and equipment proposed for compaction shall be subject to prior review by the Engineer. Compaction generally shall be done with vibrating equipment. Static rolling without vibration may be required by the Engineer on sensitive soils that become unstable under vibration. Displacement of, or damage to existing utilities or structure shall be avoided. Any utility or structure damaged thereby shall be replaced or repaired as directed by the Engineer.
 2. Additional compaction testing may be required when there is evidence of a change in the quality of moisture control or the effectiveness of compaction.
 - a. Any costs associated with correcting and retesting as a result of a failure to meet compaction requirements shall be borne by the Contractor.
 3. If all compaction test results within the initial 25% of the total anticipated number of tests indicate compacted field densities equal to or greater than the project requirements, the Engineer may reduce frequency of compaction testing. In no case will the frequency be reduced to less than one test for every 500 cubic yards of material backfilled.
 4. The Contractor is cautioned that compaction testing by nuclear methods may not be effective where trenches are so narrow that trench walls impact the attenuation of the gamma radiation, when adjacent to concrete that impacts the accuracy of determining moisture content, or where oversize particles (i.e. large cobbles or coarse gravels) are present. In these cases, other field density testing methods may be required.
- F. Dewatering plan for the excavation locations. Design shall include calculations and drawings stamped and signed by a Professional Engineer registered in the state where the work is performed.

1.5 QUALITY ASSURANCE

- A. All Excavation, Trenching, and related Earth Retention Systems shall comply with the requirements of OSHA excavation safety standards (29 CFR Part 1926 Subpart P), 520 CMR 14.00, and other State and local requirements. Where conflict between OSHA and State regulations exists, the more stringent requirements shall apply.

1.6 PROJECT CONDITIONS

- A. Notify Dig Safe and obtain Dig Safe identification numbers.
- B. Notify utility owners in reasonable advance of the work and request the utility owner to stake out on the ground surface the underground facilities and structures. Notify the

Engineer in writing of any refusal or failure to stake out such underground utilities after reasonable notice.

- C. In accordance with 520 CMR 14.00, no person shall, except in an emergency, make an excavation in any public way, public property, or privately owned land until a permit is obtained from the appropriate designated permitting authority. For this project, the permit should be obtained from Town of Brookfield.
- D. Contractor is responsible for safe, properly supported excavation with properly controlled groundwater, including determining whether and what type of excavation support and dewatering is necessary.

PART 2 PRODUCTS

2.1 SOIL MATERIALS

- A. Fill material is subject to the approval of the Engineer and may be either material removed from excavations or borrow from off site. Fill material, whether from the excavations or from borrow, shall be of such nature that after it has been placed and properly compacted, it will make a dense, stable fill.
- B. Satisfactory fill materials shall include materials classified by ASTM D 2487 as GW, GP, GM, GP-GM, GW-GM, GC, GP-GC, SW, and SP. Additional requirements are included in Section 02320.
- C. Satisfactory fill materials shall not contain trash, refuse, vegetation, masses of roots, individual roots more than 18 inches long or more than 1/2 inch in diameter, or stones over 6 inches in diameter. Unless otherwise stated in the Contract Documents, organic matter shall not exceed minor quantities and shall be well distributed.
- D. Satisfactory fill materials shall not contain frozen materials nor shall backfill be placed on frozen material.
- E. Excavated surface and/or pavement materials such as gravel or trap rock that are salvaged may be used as a sub-grade material, if processed to the required gradation and compacted to the required degree of compaction. In no case shall salvaged materials be substituted for the required gravel base.

2.2 DEWATERING MATERIALS

- A. Provide haybales and silt fence in accordance with Section 01570.
- B. Provide silt filter bags (Dandy Dewatering Bag, Dirtbag, JMP Environ-Protection Filter Bag, or equal) of adequate size to match flow rate.
- C. Provide dewatering equipment and materials for engineered dewatering systems.

PART 3 EXECUTION

3.1 PREPARATION

- A. Public Safety and Convenience
 1. Adhere to the requirements of 520 CMR 14.00 for all excavation work.
 2. Take precautions for preventing injuries to persons or damage to property in or about the Work.
 3. Provide safe access for the Owner and Engineer at site during construction.

4. Do not obstruct site drainage, natural watercourses or other provisions made for drainage.

3.2 CONSTRUCTION

A. Earth Retention Systems

1. Provide Earth Retention Systems necessary for safety of personnel and protection of the Work, adjacent work, utilities and structures.
2. Maintain Earth Retention Systems for the duration of the Work.
3. Sheeting
 - a. Systems shall be constructed using interlocking corner pieces at the four corners. Running sheet piles by at the corners, in lieu of fabricated corner pieces, will not be allowed.
 - b. Drive sheeting ahead of and below the advancing excavation to avoid loss of materials from below and from in front of the sheeting.
 - c. Sheeting is to be driven to at least the depth specified by the designer of the earth retention system, but no less than 2 feet below the bottom of the Excavation.
4. Remove earth retention system, unless designated to be left in place, in a manner that will not endanger the construction or other structures. Backfill and properly compact all voids left or caused by the withdrawal of sheeting.
 - a. Remove earth retention systems, which have been designated by the Engineer to be left in place, to a depth of 3 feet below the established grade.

B. Excavation

1. Perform excavation to the lines and grades indicated on the Drawings. Backfill unauthorized over-excavation in accordance with the provisions of this Section, at no additional cost to the Owner.
2. Perform excavation in such a manner as to prevent disturbance of the final subgrade. The Engineer or Owner may require the final six inches of excavation be performed by hand, with the use of a smooth-faced bucket, or other means acceptable to the Engineer or Owner, at no additional cost if subgrade disturbance is considered excessive as judged by the Engineer or Owner.
3. During excavation, material satisfactory for backfill shall be stockpiled in an orderly manner at a distance from the sides of the excavation equal to at least one half the depth of the excavation, but in no case closer than 2 feet.
 - a. Excavated material not required or not suitable for backfill shall be removed from the site and disposed of in accordance with local, State and Federal laws and regulations.
 - b. Perform grading to prevent surface water from flowing into the excavation.

- c. Pile excavated material in a manner that will endanger neither the safety of personnel in the excavation nor the Work itself. Avoid obstructing sidewalks and driveways.
 4. Grade or create berms or swales to direct surface water from excavations to appropriate structures designed to accommodate storm water. If no structures exist, direct water to areas that minimize impacts to adjacent structures and properties.
 5. If satisfactory materials are not encountered at the design subgrade level, excavate unsatisfactory materials to the depth directed by the Engineer and properly dispose of the material. Backfill the resulting extra depth of excavation with satisfactory fill materials and compact in accordance with the provisions of this Section.
- C. Backfill and Compaction
 1. Unless otherwise specified or indicated on the Drawings, use satisfactory material removed during excavation for backfilling trenches. The Engineer may require stockpiling, drying, blending and reuse of materials from sources on the Project.
 2. Spread and compact the material promptly after it has been deposited. When, in the Engineer's judgment, equipment is inadequate to spread and compact the material properly, reduce the rate of placing of the fill or employ additional equipment.
 3. When excavated material is specified for backfill and there is an insufficient amount of this material at a particular location on the Project due to rejection of a portion thereof, consideration will be given to the use of excess material from one portion of the Project to make up the deficiency existing on other portions of the Project.
 - a. Use borrow material if there is no excess of excavated material available at other portions of the Project.
 4. Backfilling and compaction methods shall attain 92% of maximum dry density at optimum moisture content as determined in accordance with ASTM D1557.
 5. Do not place stone or rock fragment larger than six inches in greatest dimension in the backfill.
 6. Maximum loose lift height for backfilling existing or borrow material shall be 12 inches, unless satisfactory compaction is demonstrated otherwise to the Engineer through field-testing. In no case shall loose lift height for backfilling exceed 3 feet.
- D. Dewatering
 1. Provide, operate and maintain adequate pumping, diversion and drainage facilities in accordance with the approved dewatering plan to maintain the excavated area sufficiently dry from groundwater and/or surface runoff so as not to adversely affect construction procedures nor cause excessive disturbance of underlying natural ground. Locate dewatering system components so that they do not interfere with construction under this or other contracts.

2. Conduct operations so as to prevent at all times the accumulation of water, ice and snow in excavations or in the vicinity of excavated areas so as to prevent water from interfering with the progress or quality of the work.
3. Take actions necessary to ensure that dewatering discharges comply with permits applicable to the Project. Dispose of water from the trenches and excavations in such a manner as to avoid public nuisance, injury to public health or the environment, damage to public or private property, or damage to the work completed or in progress.
4. Repair any damage resulting from the failure of the dewatering operations and any damage resulting from the failure to maintain all the areas of work in a suitable dry condition, at no additional cost to the Owner.
5. Take precautions to protect new work from flooding during storms or from other causes. Control the grading in the areas surrounding all excavations so that the surface of the ground will be properly sloped to prevent water from running into the excavated area. Where required, provide temporary ditches for drainage. Upon completion of the work, all areas shall be restored to original condition.
6. Do not excavate until the dewatering system is operational and the excavation may proceed without disturbance to the final subgrade.
7. Temporarily lower the groundwater level at least two feet below excavations to limit potential “boils”, loss of fines, or softening of the ground. If any of these conditions are observed, submit a modified dewatering plan to the Engineer within 48 hours. Implement the approved modified plan and repair any damage incurred at no additional cost to the Owner.
8. When subgrades are soft, weak, or unstable due to improper dewatering techniques, remove and replace the materials in accordance with Section 02320 at no additional cost to the Owner.
9. Notify the Engineer immediately if any settlement or movement is detected of survey points adjacent to excavations being dewatered. If settlement is deemed by the Engineer to be related to the dewatering, submit a modified dewatering plan to the Engineer within 24 hours. Implement the approved modified plan and repair any damage incurred to the adjacent structure at no additional cost to the Owner.
10. Dewatering discharge:
 - a. Install sand and gravel, or crushed stone, filters in conjunction with sumps, well points, and/or deep wells to prevent the migration of fines from the existing soil during the dewatering operation.
 - b. Transport pumped or drained water without interference to other work, damage to pavement, other surfaces, or property. Pump water through a silt filter bag or other approved sedimentation device prior to discharge to grade of drainage system.
 - c. Provide separately controllable pumping lines.
 - d. The Engineer reserves the right to sample discharge water at any time.

11. Install erosion/sedimentation controls for velocity dissipation at point discharges onto non-paved surfaces.
12. Removal
 - a. Do not remove dewatering system without written approval from the Engineer.
 - b. Backfill and compact sumps or ditches with screened gravel or crushed stone in accordance with Section 02320.

3.3 PROTECTION

A. Protection of Existing Structures

1. All existing foundations, conduits, wall, pipes, wires, poles, fences, property line markers and other items which the Engineer decides must be preserved in place without being temporarily or permanently relocated, shall be carefully supported and protected from damage by the Contractor. Should such items be damaged, they shall be restored by the Contractor to at least as good condition as that in which they were found immediately before the Work began.

B. Erosion and Sedimentation Control

1. Take all necessary steps to prevent soil erosion.
2. Plan the sequence of construction so that only the smallest practical area of land is exposed at any one time during construction.
3. Temporary vegetation and/or mulching shall be used to protect critical areas exposed during construction as judged by the Engineer.

END OF SECTION

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SECTION 02320

BORROW MATERIALS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Gravel Borrow
 - 2. Stone Borrow
- B. Related Sections
 - 1. Section 02315 – Excavation, Backfill, Compaction and Dewatering

1.2 REFERENCES

- A. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
- B. AASHTO – Standard Specification for Transportation Materials and Methods of Sampling and Testing, 1986 Edition as amended
- C. Commonwealth of Massachusetts Highway Department “Standard Specification for Highways and Bridges,” 1988 Edition as amended

1.3 SUBMITTALS

- A. Representative Samples of borrow materials taken from the source. Tag, label, and package the Samples as requested by Engineer. Provide access to the borrow site for field evaluation and inspection.
- B. Provide sieve analysis (ASTM C136) and permeability analysis (ASTM D2434) from certified soils testing laboratory for all borrow materials. Take and test a sample, at no additional cost to the Owner for each 1,500 c.y. of borrow material placed.
- C. Provide modified proctor analysis (ASTM D1557) from certified soils testing laboratory for all borrow materials.
 - 1. All borrow materials shall be tested once unless more frequent testing is deemed necessary by the Engineer or Owner due to material variation.
- D. The Engineer reserves the right to require more frequent testing than that which is specified above should the borrow characteristics change.

1.4 QUALITY ASSURANCE

- A. No borrow shall be placed prior to the approval of Samples by the Engineer.

1.5 PROJECT/SITE CONDITIONS

- A. Existing Conditions
 - 1. Comply with any environmental requirements and restrictions.
 - 2. Keep all public and private roadway surfaces clean during hauling operations and promptly and thoroughly remove any borrow or other debris that may be brought upon the surface before it becomes compacted by traffic. Frequently clean and

keep clean the wheels of all vehicles used for hauling to avoid bringing any dirt upon the paved surfaces.

PART 2 PRODUCTS

2.1 GRAVEL BORROW

- A. Gravel Borrow shall consist of inert material that is hard, durable stone and coarse sand, free from loam and clay, surface coatings, and deleterious materials. The coarse aggregate shall have a percentage of wear, by the Los Angeles Abrasion Test, of not more than 50.

Gradation requirements for Gravel Borrow shall be determined by AASHTO-T11 and T27 and shall conform to the following:

| Sieve | Percent Passing |
|---------|-----------------|
| ½ inch | 50 – 85 |
| No. 4 | 40 – 75 |
| No. 50 | 8 – 28 |
| No. 200 | 0 - 10 |

Maximum size of stone in Gravel Borrow shall be 2 inches.

- B. Stockpile the processed materials in such a manner to minimize segregation of particle sizes. All processed gravel shall come from approved stockpiles.

2.2 STONE BORROW

- A. Crushed Stone Borrow

1. Crushed stone borrow shall consist of one of the following materials:
 - a. Durable crushed rock consisting of the angular fragments obtained by breaking and crushing solid or shattered natural rock, and free from a detrimental quantity of thin, flat, elongated or other objectionable pieces. A detrimental quantity will be considered as any amount in excess of 15% of the total weight. Thin stones shall be considered to be such stones whose average width exceeds 4 times their average thickness. Elongated stones shall be considered to be stones whose average length exceeds 4 times their average width.
 - b. Durable crushed gravel stone obtained by artificial crushing of gravel boulders or fieldstone with a minimum diameter before crushing of 8 inches.
2. The crushed stone shall be free from clay, loam or deleterious material and not more than 1.0% of satisfactory material passing a No. 200 sieve will be allowed to adhere to the crushed stone.
3. The crushed stone shall have a maximum percentage of wear as determined by the Los Angeles Abrasion Test (AASHTO-T-96) as follows:
 - a. For Class 1 Bit. Conc. 30%**
 - b. For Cement Concrete Aggregate 45%***

- c. Crushed Stone for Subbase 45%

**Crushed stone for this use shall consist of crushed or shattered natural rock only. Crushed gravel stone will not be permitted.

***Except for 5000 psi or greater cement concrete and prestressed concrete which shall be 30%.

- 4. The crushed stone shall conform to the grading requirements shown in the following grading Table.

| Sieve Size | Percent by Weight Passing Through | |
|---------------------------|-----------------------------------|---------|
| | Minimum | Maximum |
| 1 ½” Crushed Stone | | |
| 2” | 100 | -- |
| 1 ½” | 95 | 100 |
| 1” | 35 | 70 |
| ¾” | 0 | 25 |

- 5. Stone gradations shall vary depending on field use and shall be determined by Engineer.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Prior to the placement of borrow material, site preparation shall be completed as required by the Contract Documents, and approved by the Engineer.
- B. Ensure that all materials are properly stockpiled on site to prevent contamination by other materials.
- C. Place borrow material over the entire area in uniform lifts and compact in accordance with Section 02315.
- D. Utilize on-site soils prior to using off-site borrow provided on-site soils meet the requirements of the specifications.
- E. Utilize gravel borrow in all locations where a surface treatment has not been specified but requires a firm finish surface.
- F. Processed gravel for pavement subbase is intended to provide a stable foundation for driveways, sidewalk and roadway repair where a gravel base has been specified.
- G. Borrow shall be used as a replacement for unsuitable materials where poor soil conditions are encountered during the progress of the work, where approved by the Engineer. Borrow type will be determined by the Engineer. Borrow material used as a replacement for unsuitable soil is not intended to be an aid to dewatering.
- H. Shape borrow used for pipe foundation material so that it supports the pipe properly and will not damage the pipe, bells, collars, or the pipe fittings.
- I. Place all borrow to keep it free of other materials and to prevent segregation.

END OF SECTION

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SECTION 02670

CONSTRUCTION IN WETLANDS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Timber mats for access during construction
 - 2. Invasive species management
 - 3. Removing and salvaging wetland vegetation
 - 4. Removing and salvaging loam and topsoil
 - 5. Restoration of wetlands
 - 6. Replanting of wetland vegetation

1.2 RELATED SECTIONS

- A. Section 01140 – Work Restrictions
- B. Section 01570 – Temporary Controls
- C. Section 01571 – Control of Water
- D. Section 02230 – Site Clearing
- E. Section 02315 – Excavation, Backfill and Compaction

1.3 REFERENCES

- A. MAWPA/Town Bylaw Order of Conditions included in 00800.
- B. ACOE Section 404 Category II Authorization or Individual Permit included in 00800.
- C. MADEP Section 401 Water Quality Certification included in 00800.

1.4 SUBMITTALS

- A. Submit a description of methods, sequence of construction, and types of equipment proposed for completing the Work in this Section to ensure compliance with Permits.
- B. Submit proposed construction mat product intended for use, and include manufacturer and literature with product description and performance. Include procedure for cleaning mats before and after use. Also include the names and addresses of similar projects on which timber mats were used and dates of use.
- C. Submit an Invasive Species Management plan prepared by a qualified environmental professional that will describe measures to be taken to address invasive plants currently present within the limit of work, avoidance of measures to avoid importation of additional invasive plant species into the site as a result of construction activities, and measures to address invasive plants that may be inadvertently imported as a result of construction activities.

1. Bidders shall assume three rounds of treatment of invasives plant matter and shall assume that treatment consists of one acre of Asiatic bittersweet distributed throughout the limit of work but concentrated at the entrance to the site.
 2. Bidders shall participate in review of the plan by the Brookfield Conservation Commission and shall provide plan sufficiently in advance to allow for review by both the Engineer and conservation commission.
 3. Plan shall adhere to all applicable laws, regulations, rules, and herbicide labels.
- D. Manufacturers information and Certificate: certify projects meet or exceed specified requirements.
- E. Materials suppliers: name, address, phone number

1.5 WORK RESTRICTIONS

- A. Work associated with permits shall not begin until the applicable municipal, state and federal agencies have been notified in accordance with the permit conditions.
- B. Equipment refueling is not permitted within 100 feet of wetland areas.
- C. The placement of soil stockpiles is restricted within 50 feet of wetland areas.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Compost wattles, siltation fencing, silt sacks and other erosion control products referred to in this section are detailed on the Drawings and specified in Section 01570, Temporary Controls.
- B. Silt bags described for use during dewatering in this section are specified in Section 01571, Control of Water.
- C. Provide timber construction mats for access to the Work in wetland areas, as described in this section and shown on the Drawings.
 1. Timber construction mats shall be a maximum of 16 feet wide.
 2. Timber construction mats shall be a hardwood, interlocking mat system manufactured by K.W. Reese, Inc., Northern Tree Services, Inc., American Mat & Timber Co., Empire Mat, or equal.
- D. Provide New England wetland seed mixture for wetland restoration activities. Seed mixture shall be New England Wetmix, as manufactured by New England Wetland Plants, Inc, New England Wetland Detention Basin and Moist Mix by Ernst Seeds, or Wet Meadow & Detention Basin Mix by Vermont Wetland Plant Supply or equal.
- E. Provide New England erosion control/restoration seed mixture for dry sites. Seed mixture shall be New England Erosion Control/Restoration Mix, as manufactured by New England Wetland Plants, Inc, New England Erosion Control & Restoration Mix for Dry & Moist Sites by Ernst Seeds, or Vermont Conservation & Wildlife Mix by Vermont Wetland Plant Supply or equal.

Provide erosion control blankets for wetland restoration activities in accordance with Section 02075.

PART 3 EXECUTION

3.1 GENERAL

- A. During construction activities in wetland areas and within the 100-foot buffer zone of those areas, erosion control and dewatering equipment will be monitored regularly by a qualified wetland scientist retained by the Owner. Provide access to all work areas for the wetland scientist.
- B. Limit storage of equipment and materials in the buffer zone, where possible.
- C. Servicing equipment in wetland areas is prohibited. Limit equipment servicing in the buffer zone, where possible.
- D. Do not use calcium chloride or other chemicals for dust control in wetland areas or buffer zones. Use water only for dust control.

3.2 TIMBER MAT USE

- A. Determine whether the use of timber mats will be required to minimize the rutting of wetland soils. Work completed during sufficiently dry or frozen conditions may not warrant the use of timber mats.
- B. Prior to installation inspect for and remove all vegetative matter.
- C. Install timber mats in accordance with manufacturer's instructions.
- D. Remove loose soils from mats on a daily basis and dispose in upland areas.
- E. Remove timber mats immediately upon completion of work.

3.3 VEGETATION REMOVAL

- A. Trees to be cut will be marked by a qualified wetland scientist retained by the Owner.
- B. Store slash and logs in upland areas for off-site disposal, chipping or re-use on-site.
- C. Remove shrubs and herbaceous vegetation designated on Drawings for re-use by hand with roots intact. Store outside of work area and water as needed.
- D. Remove vegetation designated on Drawings as "invasive" with roots intact and dispose off-site.
- E. Cut remaining vegetation at ground level as needed. Dispose as necessary.

3.4 INVASIVE SPECIES MANAGEMENT

- A. Treat invasive plants following the approved invasive species management plan. Personnel shall be appropriately qualified and licensed.
- B. Contractor is responsible for the removal of invasive plants introduced to the site by their activities including in wetland and upland areas. Contractor shall avoid the introduction of invasive plants and document measures to be taken to reduce the risk of new invasive plant introduction in an invasive species management plan. If invasive plants are introduced to the site as a result of the contractor's activities they shall be removed at the contractor's expense.

3.5 SOIL REMOVAL AND RE-USE

- A. Segregate topsoil/muck from mineral subsoil and stockpile separately within upland area.

- B. Backfill excavation initially with mineral subsoil.
- C. Place wetland topsoil/muck over subsoils and grade to existing contours.

3.6 TREE RESTORATION PLAN

- A. In areas where construction mats will be placed, stump trees at approximately 6 inches above the ground surface.
 - 1. After the construction mats are removed, leave stumps in place.
 - 2. Do not cover stumps with erosion control blankets.
 - 3. Cover stumps with a light layer of straw to minimize erosion potential.
- B. In tree restoration area (dam embankment spoil placement area) plant trees a minimum of 8 feet apart from center to allow adequate room to maximize growth rates.
- C. Tree re-planting will be overseen by the qualified wetland scientist to ensure that the planting is conducted in a random fashion, to the extent feasible, in order to minimize the “tree-farm” appearance.
- D. The minimum height of planted trees shall be five feet.

3.7 CHANNEL PROTECTION

- A. Stone substrate and intermittent boulder patterns shall be placed within the proposed channel as outlined in the Drawings prior to flow passing through the channel.

END OF SECTION

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SECTION 02900

PLANTING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Loam Borrow
 - 2. Preparation of Backfill Mix
 - 3. Planting of Trees, Shrubs and Bushes
 - 4. Maintenance

1.2 REFERENCES

- A. Massachusetts Department of Public Works Standard Specifications for Highways and Bridges (MDPW) 1988, as amended.
- B. American Nursery & Landscape Association (ANLA) standards

1.3 SUBMITTALS

- A. Samples
 - 1. Submit representative Samples to Engineer for selection and approval. Delivered materials shall match the approved Samples.
 - a. Loam Borrow: Provide representative Samples for testing and approval as directed by the Engineer. Deliver Samples to testing laboratory, having testing report sent directly to the Engineer, and pay all costs.
 - 1) Mechanical and chemical (pH soluble salts) analysis shall be by a public extension service agency or a certified private testing laboratory in accordance with the current standards of the "Association of Official Agricultural Chemists."
 - 2) Report shall be submitted before any loam is to be placed. Soil shall be tested for organic content, Nitrate-Nitrogen, Ammonium Nitrogen, Phosphorus, Potassium, Calcium, Aluminum, Soluble Salts and acidity.
 - b. Mulch: Submit one sample and provide the name and address of the Supplier.
 - B. Anti-desiccant: Submit manufacturer information.
 - C. Tree Paint: Submit manufacturer information.
 - D. Planting Soil Analysis: A standard soil test shall be performed by a licensed commercial testing laboratory or government agency approved by the Engineer. Soil test shall provide recommendation for the addition of fertilizer, lime, and other amendments.

- E. Furnish complete written instructions for maintenance of the plant materials to the Owner at least ten days prior to the end of the maintenance period in order to familiarize the Owner with the proper care and development of the plantings.

Furnish certifications from plant Suppliers indicating the botanical name, quantity, and size of plants to be delivered to the Project.

1.4 QUALITY ASSURANCE

- A. Perform Work with experienced personnel under the direction of a skilled foreman with a minimum three years of experience with similar type and size projects.
- B. Plants are subject to inspection and approval by the Engineer before delivery for conformity to Specification requirements as to quality, size and variety.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Only deliver plant materials immediately prior to installation.
- B. Deliver plant materials to the Site in accordance with the best horticultural practices to prevent damage.
- C. Move and handle plant materials so as to prevent damage to roots and crowns.
- D. "Heal-in" plants that cannot immediately be installed with bark mulch or wood chips in a location that protects the plants from sun and wind. Root balls and containers shall be completely covered and kept consistently moist until installation.
- E. Replace damaged and unhealthy plant materials prior to installation.

1.6 SITE CONDITIONS

- A. Examination of Conditions
 - 1. All areas to be planted shall be inspected by the Contractor before starting Work and any defects such as incorrect grading, etc., shall be reported to the Engineer prior to beginning this Work. The commencement of Work by the Contractor shall indicate his acceptance of the areas to be planted, and he shall assume full responsibility for the Work of this Section.

PART 2 PRODUCTS

2.1 LOAM

- A. Loam shall consist of loose friable topsoil with no admixture of refuse or material toxic to plant growth. Loam shall be generally free from stones, lumps, stumps, or similar objects larger than 1 inch in greatest diameter, subsoil, roots, and weeds. The term as used herein shall mean that portion of the soil profile defined technically as the "A" horizon by the Soil Science Society of America. The pH shall be from 5.5 to 7.6. Loam shall contain a minimum of three percent and a maximum of ten percent of organic matter as determined by loss by ignition. Not more than 65 percent shall pass a No. 200 sieve as determined by the wash test in accordance with ASTM D 1140. In no instance shall more than 20 percent of that material passing the No. 4 sieve consist of clay size particles.
- B. The topsoil stripped and stockpiled on the Site may be used provided that, after testing and addition of necessary additives, it meets the above specifications. The contractor

will provide additional loam as required. All excess loam shall become the property of the Contractor and be legally disposed of off-site.

2.2 SOIL ADDITIVES

A. Commercial fertilizer, peat, humus or other additives shall be used to counteract soil deficiencies as recommended by the soil analysis and as directed by the Engineer.

1. Commercial fertilizer shall be a product complying with State and Federal requirements. Deliver to the Site in the original unopened containers, which shall bear the manufacturer's Certificate of Compliance covering analysis, which shall be furnished to the Engineer. At least 50 percent by weight of the nitrogen content shall be derived from organic materials. Fertilizer shall contain not less than the percentages of weight of ingredients as follows or as recommended by the soil analysis:

| | Nitrogen | Phosphorous | Potash |
|------------------------------|-----------------|--------------------|---------------|
| For deciduous trees & shrubs | 10% | 6% | 4% |
| For evergreen trees & shrubs | 7% | 7% | 7% |

B. Planting soil shall be prepared based on the following proportions.

1. Three parts loam with a pH of 6.0 to 6.5.
2. One part dehydrated sterilized manure
 - a. Manure shall be well-rotted, unleached stable manure not less than eight months and not more than two years old. It shall be free from sawdust, shavings, or refuse of any kind and shall not contain over 25 percent straw. Furnish information as to kind of disinfectant or chemicals, if any, that may have been used in storage of the manure.

3. One part peat moss
 - a. Peat moss shall be composed of the partly decomposed stems and leaves of any or several species of sphagnum moss. It shall be free from wood, decomposed colloidal residue, mineral matter such as sulfuric and iron harmful to plant life. It shall have a water absorbing capacity of 1100 percent to 2000 percent, and a moisture content of 30 percent. It shall have an acidity range of 3.5 pH to 5.5 pH as determined in accordance with the test methods of A.O.A.C.

C. Humus shall be natural humus, reed peat or sedge peat. It shall be free from excessive amounts of zinc, low in wood content, free from hard lumps and in a shredded or granular form. According to the methods of testing of A.O.A.C. latest edition, the acidity range shall be approximately 5.5 pH to 7.6 pH and the organic matter shall be not less than 85 percent as determined by weight on an over-dry basis.

D. Leaf mold shall be highly organic dark brown to black spongy residue resulting from the well aerated composting of deciduous tree leaves. It shall be at least three years old, without recognizable leaf parts, free of plants and their roots, debris and other extraneous matter and shall be uncontaminated by foreign matter and substances harmful to plant growth. The organic matter shall not be less than 85 percent by weight as determined by the loss on ignition of oven-dried Samples. Test Samples shall be oven-dried to a constant weight at a temperature of 110° C. The inorganic residue after

ignition shall not be finer textured than 4 percent by weight passing the number 200 sieve with washing.

- E. The following amendments shall be incorporated into the prepared planting soil prior to backfilling of planting pits in accordance with the recommendations of the planting soil analysis.
1. Fertilizer: Complete with 70 percent of the nitrogen derived from organic sources.
 2. Lime: Ground dolomite limestone; 95 percent passing through a 100-mesh sieve.
 3. Super Phosphate: Finely ground phosphate rock as commonly used for agricultural purposes containing not less than 18 percent available phosphoric acid.
 4. Bone Meal: Bone meal shall be fine ground, steam-cooked, packing house bone with a minimum analysis of 18 percent phosphoric acid and 1.0 percent nitrogen.
 5. Peat Moss

2.3 PLANT MATERIALS

- A. Installation of plants larger than specified will be acceptable only if approved by the Engineer, and at no increase to the Contract price. All plants shall be nursery grown unless specifically authorized to be collected.
- B. Plant Material Requirements:
1. Plants shall be in accordance with the U.S.A. Standard for Nursery Stock of the ANLA, latest edition.
 2. Hardy under climatic conditions similar to those in the locality of the Project. All plants shall be typical of their species or variety and shall have a normal habit of growth and be legibly tagged with the proper name. Only plant stock grown within the hardiness of Zones 4 through 6, as established by the Plant Hardiness Zone Map Miscellaneous Publications No. 814, Agricultural Research Service, US Department of Agriculture latest revision, will be accepted. Suppliers must certify in writing that the stock has actually been grown under required zones. Plants not so certified will not be accepted.
 3. Plants shall be typical of their species or variety, with a normal habit of growth. The root system of each shall be well provided with fibrous roots. All parts shall be moist and show active green cambium when cut. They shall be sound, healthy and vigorous, well-branched and densely foliated when in leaf. They shall be free of disease, insect pests, eggs or larvae.
 4. Dimensions shall conform to Specifications in the current edition of Horticultural Standards of the ANLA.
- C. Trees
1. The height of the trees (measured from the crown of the roots to the tip of the top branch) shall be not less than the minimum size designated. Take caliper measurement six inches above ground level up to and including four inch caliper size and twelve inches above ground for larger sizes. The trunk of each tree shall be a single trunk growing from a single un-mutilated crown of roots. No part of

the trunk shall be conspicuously crooked as compared with normal trees of the same variety. The trunk shall be free from sunscald, frost cracks, or abrasions resulting from fire or other causes. No pruning wounds shall be present having a diameter exceeding two inches and such wounds must show vigorous bark on all edges. Plants shall not be pruned prior to delivery.

D. Plant Transport and Delivery

1. All plants must be moved with the root system as solid units with balls of earth firmly wrapped with untreated eight ounce burlap, firmly held in place by a stout cord or wire. The diameter and depth of the balls of earth must be sufficient to encompass the fibrous and root feeding system necessary for the healthy development of the plant. No plant shall be cracked or broken preparatory to or during the process of planting or after the burlap, staves, ropes or platform required in connection with its transplanting have been removed. The plants and balls shall remain intact during all operations. All plants that cannot be planted at once must be heeled in by setting in the ground and covering the balls with soil and then watering them.
2. Container grown stock shall have been grown in a container long enough for the root system to have developed sufficiently to hold its soil together, firm and whole. No plants shall be loose in the container.
3. Plants delivered by truck and plants requiring storage on Site shall be properly wrapped and covered to prevent wind-drying and desiccation of branches, leaves or buds. Plant balls should be firmly bound, unbroken, and reasonably moist to indicate watering prior to delivery and during storage, and tree trunks should be free from fresh scars and damage in handling. No trees with double-leaders or twin-heads shall be acceptable without the written approval of the Engineer. The Contractor shall reject such plants at time of delivery by the nursery/Supplier unless such plants were selected by the Engineer as indicated by tags and seals. No plant material from cold storage will be accepted.

E. Wetland Perennials

1. Wetlands plants shall consist of Caespitose and Aerenchymatous perennials. Acceptable plants are as follows: *Carex stricta* (Tussock Sedge), *Juncus effusus* (Soft Rush), *Scirpus atrovirens* (Green Bulrush), *Iris pseudacorus* (Yellow Iris), *Iris Versicolor* (Blue Iris), *Sparganium eurycarpum* (Giant Burweed), *Typha latifolia* (Broadleaf Cattail), *Typha angustifolia* (Narrowleaf Cattail), *Sparganium americanum* (American Burweed).
2. The number and variety utilized of each of the aforementioned species is at the discretion of the Contractor; however, the following requirements must be met:
 - a. At least 25 percent of the plants shall consist of some form of iris.
 - b. At least 10 percent of the plants shall consist of some form of burweed.
 - c. At least 25 percent of the plants shall consist of some form of cattail.
3. Other Caespitose and Aerenchymatous perennials may also be used if submitted by the Contractor and approved by the Engineer at least two weeks prior to the commencement of planting.

4. Highbush Blueberry will also be utilized in the basin planting as called for in the Drawings.

2.4 STAKES, WIRE AND HOSE

- A. Stakes for supporting trees shall be of sound hardwood of uniform size, reasonably free of knots, with a maximum allowable deflection of one-half inch for every one foot of length, free from insects and fungi and capable of standing in the ground at least two years. Stakes eight to ten feet long shall have a minimum diameter of between two to two and one-half inches. Stakes twelve feet long shall have a minimum diameter of three inches. Stakes shall be pointed at one end and shall be stained dark brown.
- B. Hose to encase wires shall be new two ply reinforced rubber garden hose not less than one-half inch inside diameter. Wire for guying plants shall be new pliable annealed galvanized steel wire, A.S.&W. twelve-gauge or gauge as shown on the Drawings.
- C. The size and quality of cables, turnbuckles, thimbles, leg hooks, eye bolts, rods, washers and nuts shall be as shown on the Drawings or as approved by the Engineer.
- D. Drive anchors and guy wire assembly shall be as manufactured by Laconia Malleable Iron Works, Laconia, New Hampshire, or equal. Sizes used shall be in accordance with the manufacturer's recommendations.

2.5 MULCH

- A. Mulch shall be aged pine bark mulch aged sufficiently so that it will not float in water or aged for a period of six months, whichever is greater. The mulch shall be dark brown in color, free of chunks and pieces of wood thicker than one-quarter inch. Mulch must be free of stringy material and shall not contain, in the judgment of the Engineer, an excess of fine particles.

2.6 WRAPPING MATERIAL

- A. Wrapping material shall be first quality, eight to ten inches wide heavy waterproof crepe paper or six-inch wide burlap manufactured for this purpose. Twine for tying shall be a lightly tarred medium or coarse sisal yarn, two ply for trees three inches or less in diameter and three ply for trees over three inches in diameter.

2.7 ANTI-DESICCANTS

- A. Anti-desiccants shall be emulsions or other materials which will provide a protective film over plant surfaces permeable enough to permit transpiration and specifically manufactured for that purpose. Anti-Desiccant shall be "Wilt-Pruf" or equal.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Existing Conditions
 1. Refer to Drawings showing finish grades. No installation of plants shall take place until all subgrade elevations have been completed.
 2. Prior to planting, verify locations and depth of underground utilities. Exercise care when digging in these areas. Assume responsibility for any damage and replace or repair any damage at the Contractor's expense to the satisfaction of the Engineer.

3.2 PREPARATION

A. Field Measurements

1. Make all necessary measurements to properly locate the plants as shown on the Drawings. Location and arrangement of plants shall be approved by the Engineer prior to installation.
2. Plants installed prior to approval by the Engineer shall be relocated, if necessary, at no additional cost to the Owner.

3.3 INSTALLATION

A. Time of Planting

1. The time of planting shall be guided by the schedule below unless otherwise approved by the Engineer based on plant types, weather conditions or other factors that may be detrimental to plant growth.

| Material Type | Spring | Fall |
|----------------------|--|--|
| Deciduous | March 15 th to June 1 st | October 15 th to November 1 st |
| Evergreen | March 15 th to June 1 st | August 15 th to October 1 st |
| Wetland Plants | March 15 th to June 1 st | August 15 th to October 1 st |

B. Plantings General

1. All plantings shall be in accordance with ANLA standards.
2. Location for all plants and outlines for planting areas shall be staked on the ground by the Contractor for approval by the Engineer before any plant pits or plant beds are excavated.
3. At least ten days prior to the expected planting date, the Contractor shall request, in writing, that the Engineer provide a representative to select and tag stock to be planted under this section.
4. Plants shall be selected by the Engineer at the place of growth for conformity to specification requirements as to quality, size, and variety. Such approval shall not impair the right of inspection and rejection upon delivery at the Site or during the progress of the Work. Cost of replacement shall be borne by the Contractor.
5. Maintain at all times during the planting operations one or more stockpiles of approved planting soil.
6. If planting is done after lawn preparation or installation, proper protection of lawn areas shall be provided and any damage resulting from planting operations shall be repaired immediately at no cost to the Owner.
7. In the event that rock or obstructions are encountered in any plant pit or bed excavation, alternate locations may be selected by the Engineer.
8. Absolutely no debris may be left on the Site. Excavated material shall be removed as directed by the Engineer. Repair any damage to Site or structures to restore them to their original condition as directed by the Engineer.

3.4 INSTALLATION—GENERAL

- A. Planting Pits
1. Excavate to the depths and widths necessary to achieve the dimensions indicated on the Drawings.
 2. Excavated soil and material may be used as a portion of the backfill and planting soil provided it meets the requirements of paragraph 2.1.
 3. Plant pits shall be excavated with sloped sides. Plant trees and shrubs in pits 12 inches greater in width than the diameter of the root ball. Pit depth shall be sufficient to ensure a minimum of 6 inches of planting soil mixture under plant root system.
 4. All plant roots and earth balls must be damp and thoroughly protected from sun and wind from the beginning of the digging operation, during transportation and on the ground until the final planting. Set plants in center of pits, plumb and straight and at level that top of root ball is 1 inch lower than surrounding finished grade after settlement.
- B. Cover, Watering, and Fill
1. Compact planting soil thoroughly around base of root ball to fill all voids, when plant material is set. Cut all burlap and lacing and remove from top of root ball. Do not pull burlap from under any root ball. Backfill pits halfway with planting soil mixture and thoroughly puddle before backfilling pit. Water planting, again, when each backfill operation is complete.
 2. Immediately after plant pit is backfilled, form a shallow saucer slightly larger than pit with ridge of soil to facilitate and contain watering. Grub out sod or other growth and remove from bed area. Rake bed area smooth and neat. All plants shall be flooded with water twice within the first 24 hours of planting and all plants shall be watered at least twice each week during the maintenance period. At each watering the soil around each tree or shrub shall be thoroughly saturated. If sufficient moisture is retained in the soil, as determined by the Engineer, the required watering may be reduced. Trees will require a minimum of ten gallons of water each; shrubs a minimum of five gallons each.
 3. Pine bark mulch is to be placed in a 3 inch thickness around the planting, not later than one week after planting. The area to be mulched shall be circular with a diameter of 12 inches greater than the plantings root ball. No mulch shall be applied prior to the first watering of plant materials. Mulch is to be contained around the circumference of the planting by means of installing a metal edge strip. Metal edge strips shall be fastened securely in place with tapered metal stakes at 30 inch intervals along the strip. Set edge strips to finished grade.
 4. Planting soil shall be to a minimum depth of 24 inches or as shown on the Drawings.
 5. Ground cover beds shall be dug to a depth of one foot below final grade. Supply sufficient planting mix where required to provide one-foot-deep beds.
- C. Staking and Anchoring
1. All trees and plantings 10 feet or higher shall be firmly staked, guyed or anchored at the time of planting as shown on the Drawings, unless otherwise approved or

directed by the Engineer. A minimum of two stakes shall be installed plumb and neat in appearance and shall not injure plant balls.

D. Anti-Desiccant Application

1. Apply anti-desiccant to all evergreen trees and shrubs and to all deciduous plant materials which are leafed out at time of planting. Rate and method of application shall be in accordance with manufacturer's recommendations. Anti-desiccant shall be applied to all plants before digging at the nursery and/or as directed by the Engineer once the plants have been delivered to the Site.

E. Pruning

1. Prune each tree and shrub in accordance with ANLA standards to preserve natural form and character of plant. All pruning is to be done with clean, sharp tools and carried out only by workmen thoroughly familiar with this type of Work.
2. All dead wood or suckers and all broken or badly bruised branches shall be removed. In addition, one-fourth of the wood shall be removed by thinning out and shortening branches to balance root loss due to retransplanting.
3. Cuts over one inch in diameter shall be painted with an approved tree paint. Paint shall cover all exposed living tissues.

3.5 MULCHING DECIDUOUS AND EVERGREEN PLANTS

- A. Cover all tree pits and shrub beds with bark mulch. Neatly outline the edges of the saucer at a uniform radius from the tree trunk.

3.6 REPLACEMENT OF DECIDUOUS AND EVERGREEN PLANTS

- A. Dead or declining plant material shall be removed immediately and replaced as soon as possible with a new, healthy plant of the same type and size as specified, at no additional cost to the Owner. Replacement plants shall be maintained and guaranteed for 1 year from time of replacement.
- B. All plant material required under this contact, deemed by the Engineer to be unsightly, unhealthy, or excessively pruned, during and at the end of the guarantee period, shall be replaced as soon as conditions permit.
- C. At the end of the maintenance period all plant material shall be in a healthy growing condition.

3.7 PLANT MAINTENANCE

- A. Begin maintenance immediately after planting and continue for 1 year from date all plantings have been installed or until the final acceptance of the Project. Plantings done in late fall after November 1st shall be maintained until the second spring leafing.
- B. Continue the maintenance period at no additional cost to the Owner until all previously noted deficiencies have been corrected, at which time the final inspection will be made. Plants that die during the maintenance period shall be replaced as directed by the Engineer.
- C. Maintenance shall consist of keeping the plants in a healthy growing condition and shall include watering, weeding, cultivating, remulching, removal of dead material, resetting plants to proper grades or upright position and maintaining the planting saucer.

Spraying for both insect pests and diseases shall be included during the maintenance period as required and as directed by the Engineer.

- D. Provide all equipment and means for proper application of water to plants. All plants shall be watered at least twice each week. At each watering, the soil around each tree or shrub shall be thoroughly saturated during the maintenance period. If sufficient moisture is retained in the soil, as determined by the Engineer, the required water may be reduced. Trees will require a minimum of ten gallons of water each; shrubs a minimum of five gallons each.
- E. Stakes shall be kept plumb and neat in appearance. Guys shall be tightened and repaired weekly.
- F. Planting beds and individual plant pits shall be kept free of weeds and mulch shall be replaced as required to maintain a 4" layer of mulch. Beds and individual pits shall be neat in appearance and maintained to the lines originally laid out.
- G. Fertilize plants in spring and fall.
- H. Protect all planted areas against damage, including erosion and trespassing by providing and maintaining proper safeguards.

3.8 INSPECTION AND ACCEPTANCE

- A. The Engineer shall be the sole judge of acceptance.
- B. All materials and workmanship will be subject to inspection and examination by the Engineer, and he/she shall have the right to reject defective materials and workmanship or require corrections.
- C. Submit planting plans indicating the dates plants were installed for purposes of establishing warranty and replacement dates.
- D. Certification of Acceptance and Guarantee
 1. Submit written notice requesting inspection by the Engineer at least 10 days prior to the end of the maintenance period. If the plant material and workmanship are acceptable, written notice will be given by the Engineer to the Contractor stating that the guarantee period begins from the date of the Certificate of Acceptance.
 2. If a more than 25% of plants are sickly or dead at the time of inspection, acceptance will not be granted, and the Contractor's responsibility for maintenance of all the plants shall be extended until replacements are made. All dead and unsatisfactory plants shall be promptly removed from the Project. Replacements shall conform in all respects to the Specifications for new plants and shall be planted in the same manner.
 3. Plants shall be true to botanical name and size, and in vigorous healthy growing condition.
 4. Plants shall be guaranteed for a period of one year after inspection and acceptance and shall be alive and in satisfactory growth at the end of the guarantee period.
 5. At the end of the guarantee period, inspection will be made again. Any plant required under this Contract that is dead or unsatisfactory shall be removed from the Site. Each plant shall show at least 80 percent healthy growth and shall have the natural character of a plant of its species in accordance with the American

Nurserymen's Association standards. These plants shall be replaced during the normal planting season, until the plants live through one year. A final inspection for acceptance will be made after the replacement plantings have lived through one year.

6. All replacements shall be plants of the same kind and size specified in the plant list. The cost shall be borne by the Contractor, except for possible replacements due to vandalism or neglect on the part of others.
7. Provide a physical handbook of maintenance instructions for all plant material installed. This handbook shall contain all necessary maintenance information, which will enable the Owner to maintain new plantings in a vigorous condition. Before planting Work is completed, submit two handbook copies to the Engineer for approval. Upon the acceptance of the planting Work, one handbook copy shall be furnished to the Owner for his future reference. The Engineer may require resubmittal of the Owner maintenance instructions if it is determined that the information provided is not sufficient to allow for proper maintenance.

END OF SECTION

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SECTION 02922

HYDROSEEDING & MULCHING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Loam
 - 2. Lime
 - 3. Fertilizer
 - 4. Seed
 - 5. Bonded Fiber matrix
 - 6. Water
- B. Related Sections
 - 1. Section 02075 – Geosynthetics
 - 2. Section 09290 - Landscaping

1.2 SUBMITTALS

- A. Results of vegetative support material nutrient analysis and recommendation for limestone and fertilizer application rates.
- B. Product data and specifications for the Bonded Fiber Matrix
- C. Product data and specifications for the fertilizer and lime.
- D. Product data for seed mixtures.
- E. Based on results of vegetative support material nutrient analysis to be provided by the Owner, submit recommendation for limestone and fertilizer application rates.

1.3 QUALITY ASSURANCE

- A. Provide seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging. Damaged packages are not acceptable.
- B. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.
- C. Deliver lime in waterproof bags showing weight, chemical analysis, and name of manufacturer.

1.4 TESTS

- A. A certified statement shall be furnished to the Engineer by the Contractor prior to the start of work, stating the number of pounds of limestone, fertilizer, seed, and mulch, per 100 gallons of water and shall also specify the number of square yards of seeding that can be covered with the solution specified above.

PART 2 PRODUCTS**2.1 LOAM**

- A. Loam shall be consistent with Section 02900
- B. Organic soils from the site shall be used for the seeding medium wherever possible.

2.2 LIME

- A. Lime shall be consistent with Section 02900. The ground limestone shall have a neutralizing value satisfactory to the Engineer. Lime as herein described shall be applied at the rate of not less than 50 pounds per 1,000 square feet, or higher, depending upon soil requirements as determined above.

2.3 FERTILIZER

- A. Fertilizer shall be a commercial grade, chemical fertilizer for lawns, the elements of which are derived from organic sources and shall contain the percentages by weight recommended in the laboratory analyses.
- B. The availability of the various elements shall conform to the standards of the "Association of Official Agricultural Chemists". A minimum of 70% of the nitrogen content by weight shall be derived from organic materials.
- C. All fertilizer shall arrive on the job site in standard size bags, bearing the manufacturer's name, the content, weight and guaranteed analysis.
- D. The Contractor shall be responsible in every respect for the fertilizer, and it shall be stored in a weatherproof enclosure on dunnage in such a manner that its effectiveness will not be impaired.
- E. Fertilizer shall be applied to areas acceptable to the Engineer as ready for seed at a rate recommended by a state and/or federally supported soil experiment lab.

2.4 SEED

- A. Seed shall be of the previous year's crop.
- B. Required ranges:
 - 1. Purity > 90%
 - 2. Germination > 80%
 - 3. Crop < 0.5%
 - 4. Weed < 0.3%
 - 5. Noxious Weed – 0%
 - 6. Inert < 8%
- C. The standard seed mixture shall be applied at a minimum rate of 175 lbs./acre, 4 lbs/1,000 s.f. or as otherwise recommended by the manufacturer.
- D. The wetland and upland seed mixture shall be consistent with Section 02670 and the drawings.
- E. All seed shall comply with State and Federal seed laws.

- F. A sworn certificate indicating each variety of seed, weed content, germination of seed, net weight, date of shipment and manufacturer's name shall accompany each seed shipment. Regardless of approval by the Engineer to sow the seed, complete responsibility for satisfactory results shall rest entirely on the Contractor.

2.5 WATER

- A. Provide water for hydroseeding.
- B. Make arrangements with the local authorities to obtain water for hydroseeding.

PART 3 EXECUTION

3.1 HYDROSEEDING & MULCHING

- A. Lime, fertilizer, seed, and mulch shall be simultaneously applied in one operation by the use of an approved spraying machine. 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 water. The spraying equipment shall be so designed that when the solution is sprayed over an area, the resulting deposits of limestone, fertilizer, seed, and mulch shall be equal in quantity to those specified above.
- B. Seed shall be sown only between the periods from April 15th to June 1st, and from August 15th to October 1st.
- C. If as a result of rain, the prepared seedbed becomes eroded, the Contractor shall rework the topsoil until it is smooth and re-hydroseed such reworked areas.
- D. No seeded area will be acceptable until it is covered with a satisfactory, healthy stand of quality grass of the variety specified. A satisfactory stand of grass, as determined by the Engineer, shall consist of a uniform stand of at least 60% established permanent grass species, with a uniform count of at least 100 plants per square foot. If the results of the spray operation are unsatisfactory, the Contractor will be required to repeat the hydroseeding process as needed to achieve a thick stand of grass.
- E. The Contractor shall protect seeded areas from damage and shall repair and maintain all areas at his own expense at no additional cost to the Owner until a certificate of final acceptance is issued by the Engineer. The Contractor shall repair and reseed all defective or non-growth grass areas during the following season.
- F. After side slopes have received vegetative support material, they shall be traversed by a bulldozer to create ridges running perpendicular to the slope to impede the travel of stormwater runoff. The tracking shall be done prior to hydroseeding.
- G. The Contractor is fully responsible for providing adequate amounts of water to the seeded areas to provide an adequate growth.
- H. All areas to be seeded shall be hydroseeded. Hand seeding will not be allowed.

3.2 MAINTENANCE AND PROVISIONAL ACCEPTANCE

- A. Keep all planted areas watered and mowed and in good condition, all areas if and when necessary until a good, healthy, uniform growth is established over the entire area and shall maintain all these areas in an approved condition until final acceptance.
- B. The Engineer will inspect all work for provisional acceptance at the end of the 10 week maintenance period, upon the written request received at least 10 days before the anticipated date of inspection. The maintenance period must occur during the growing

season between March 31 and October 1 and shall include a minimum of three mowings.

- C. A satisfactory turf will be defined as:
 - 1. No bare spots larger than 2 sq. ft.
 - 2. No more than 10 percent of total area with bare spots larger than 1 sq. ft.
 - 3. No more than 15 percent of total area with bare spots larger than 6-in. square.
- D. After the inspection has occurred but prior to provisional acceptance, a soil test shall be performed to determine if additional soil fertilization should occur. If necessary additional fertilizer not to exceed 30 lbs/1,000 sq. ft. of 20-10-10 shall be applied as directed by the Engineer.
- E. Furnish full and complete written instructions for maintenance of the planted areas to the Owner at the time of provisional acceptance.
- F. The inspection by the Engineer will determine whether maintenance shall continue. Continue maintenance until all areas of the site meet the minimum requirements specified above.
- G. After all necessary corrective work and clean-up has been completed, and maintenance instructions have been reviewed by the Owner, the Engineer will certify in writing the provisional acceptance of the turf areas. Maintenance of all turf areas shall cease on receipt of provisional acceptance.

3.3 GUARANTEE PERIOD AND FINAL ACCEPTANCE

- A. All seeded areas shall be guaranteed for not less than 1 full year from the time of final acceptance.
- B. At the end of the guarantee period, inspection will be made by the Engineer upon written request submitted at least 10 days before the anticipated date. Seeded areas not demonstrating satisfactory stands as outlined above, as determined by the Engineer, shall be renovated, reseeded and maintained meeting all requirements as specified herein.
- C. After all necessary corrective work has been completed, the Engineer shall certify in writing the final acceptance of the seeded areas.

END OF SECTION

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