jb

COMMONWEALTH OF MASSACHUSETTS

massDOT
Massachusetts Department of Transportation
Highway Division

# CONTRACT DOCUMENTS AND SPECIAL PROVISIONS

| | |
|---|---|
| PROPOSAL NO. | 616375-136648 |
| P.V. = | $4,853,000.00 |
| PLANS | YES |

FOR

**Federal Aid Project No. EMR/STP/PRC-EMRS(123)X**
**Culvert Replacement, Culvert Repair and Retaining Wall Replacement and Related Work at Three Locations**

**in the City of**

**LEOMINSTER**

In accordance with the STANDARD SPECIFICATIONS
for HIGHWAYS and BRIDGES dated 2026

This Proposal to be opened and read: **TUESDAY, OCTOBER 20, 2026 at 2:00 P.M.**

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DOCUMENT 00010

# TABLE OF CONTENTS

DOCUMENT 00010
TABLE OF CONTENTS ..... 00010-1 through 4

DOCUMENT 00104
NOTICE TO CONTRACTORS ..... 00104-1 through 4

DOCUMENT 00210
REQUIREMENTS OF MASSACHUSETTS GENERAL
LAWS CHAPTER 30 SECTION 39R; CHAPTER 30, SECTION 39O ..... 00210-1 through 4

DOCUMENT 00331
LOCUS MAP ..... 00331-1 through 2

DOCUMENT 00439
CONTRACTOR PROJECT EVALUATION FORM ..... 00439-1 through 2

DOCUMENT 00440
SUBCONTRACTOR PROJECT EVALUATION FORM ..... 00440-1 through 2

DOCUMENT 00710
GENERAL CONTRACT PROVISIONS ..... 00710-1 through 2

DOCUMENT 00715
SUPPLEMENTAL SPECIFICATIONS ..... 00715-1 through 20

DOCUMENT 00760
REQUIRED CONTRACT PROVISIONS FOR FEDERAL-AID
CONSTRUCTION CONTRACTS ..... 00760-1 through 12

DOCUMENT 00811
MONTHLY PRICE ADJUSTMENT FOR HOT MIX ASPHALT
(HMA) MIXTURES ..... 00811-1 through 2

DOCUMENT 00812
MONTHLY PRICE ADJUSTMENT FOR DIESEL FUEL AND GASOLINE ..... 00812-1 through 2

DOCUMENT 00813
PRICE ADJUSTMENT FOR STRUCTURAL STEEL
AND REINFORCING STEEL ..... 00813-1 through 4

DOCUMENT 00814
PRICE ADJUSTMENT FOR PORTLAND CEMENT CONCRETE MIXES ..... 00814-1 through 2

DOCUMENT 00820
THE COMMONWEALTH OF MASSACHUSETTS
SUPPLEMENTAL EQUAL EMPLOYMENT OPPORTUNITY,
NON-DISCRIMINATION AND AFFIRMATIVE ACTION PROGRAM ..... 00820-1 through 6

DOCUMENT 00821
ELECTRONIC REPORTING REQUIREMENTS
CIVIL RIGHTS PROGRAM AND CERTIFIED PAYROLL ..... 00821-1 through 2

DOCUMENT 00859
CONTRACTOR/SUBCONTRACTOR CERTIFICATION FORM ..... 00859-1 through 2

DOCUMENT 00860
COMMONWEALTH OF MASSACHUSETTS PUBLIC EMPLOYMENT LAWS ..... 00860-1 through 2

**TABLE OF CONTENTS** (Continued)

DOCUMENT 00861
STATE PREVAILING WAGE RATES ..... 00861-1 through 36

DOCUMENT 00870
STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY
CONSTRUCTION CONTRACT SPECIFICATIONS ..... 00870-1 through 8

DOCUMENT 00875
TRAINEE SPECIAL PROVISIONS ..... 00875-1 through 2

DOCUMENT 00880
MINIMUM WAGES FOR FEDERAL AND FEDERALLY
ASSISTED CONTRACTS ..... 00880-1 through 8

DOCUMENT A00801
SPECIAL PROVISIONS ..... A00801-1 through 184

DOCUMENT A00802
DETAIL SHEETS ..... A00802-1 through 20

DOCUMENT A00808
PROJECT UTILITY COORDINATION FORM ..... A00808-1 through 6

DOCUMENT A00810
MASS DOT HERBICIDE REPORT ..... A00810-1 through 2

DOCUMENT A00811
WATERING LOG ..... A00811-1 through 2

DOCUMENT A00820
REQUEST FOR RELEASE OF MASSDOT AUTOCAD FILES FORM ..... A00820-1 through 2

DOCUMENT A00830
JOINT SECTION 401 MASSACHUSETTS DEPARTMENT OF
ENVIRONMENTAL PROTECTION WATER QUALITY CERTIFICATE (WQC) &
SECTION 404 U.S. ARMY CORPS OF ENGINEERS (ACOE) GENERAL PERMIT
PRE-CONSTRUCTION NOTIFICATION (PCN) APPLICATION ..... A00830-1 through 414

DOCUMENT A00831
ARMY CORPS OF ENGINEERS VERIFICATION –
PROJECT FILE NUMBER **NAE-2025-00175** & RTCs
GENERAL PERMIT NUMBER **NAE-2022-02649** ..... A00831-1 through 104

DOCUMENT A00840
MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
ADMINISTRATIVE COMPLETENESS
AND TECHNICAL DEFICIENCY REVIEW ..... A00840-1 through 38

DOCUMENT A00841
MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
WATER QUALITY CERTIFICATE –
FILING NUMBER: **26-WW26-0016-APP** ..... A00841-1 through 26

DOCUMENT A00844
US FISH AND WILDLIFE SERVICE
NLAA CONCURRENCE
VERIFICATION LETTER ..... A00844-1 through 16

**TABLE OF CONTENTS** (Continued)

DOCUMENT A00850
MASSACHUSETTS WETLANDS PROTECTION ACT &
LEOMINSTER CONSERVATION COMMISSION
REQUEST FOR DETERMINATION OF APPLICABILITY ..... A00850-1 through 18

DOCUMENT A00851
MASSACHUSETTS WETLANDS PROTECTION ACT &
LEOMINSTER CONSERVATION COMMISSION
DETERMINATION OF APPLICABILITY ..... A00851-1 through 10

DOCUMENT A00875
POLICY DIRECTIVE P-22-001 AND POLICY DIRECTIVE P-22-002 ..... A00875-1 through 8

DOCUMENT B00420
PROPOSAL.....B00420-1 through 18

*** END OF DOCUMENT ***

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DOCUMENT 00104

# NOTICE TO CONTRACTORS

Electronic proposals for the following project will be received through the internet using www.bidx.com until the date and time stated below and will be posted on www.bidx.com forthwith after the bid submission deadline. No paper copies of bids will be accepted. All Bidders must have a valid vendor code issued by MassDOT in order to bid on projects. Bidders need to apply for a Digital ID at least 14 days prior to a scheduled bid opening date with www.bidx.com.

**TUESDAY, OCTOBER 20, 2026 at 2:00 P.M. ****
**LEOMINSTER**
**Federal Aid Project No. EMR/STP/PRC-EMRS(123)X**
**Culvert Replacement, Culvert Repair and Retaining Wall Replacement and Related Work at Three Locations**
**(616375)**

****Date Subject to Change**

PROJECT VALUE = $4,853,000.00

Bidders must be pre-qualified by the Department in the HIGHWAY-CONSTRUCTION or BRIDGE-CULVERT categories to bid on the above project. An award will not be made to a Contractor who is not pre-qualified by the Department prior to the opening of Proposals.

All prospective Bidders who intend to bid on this project must obtain "Request Proposal Form (R109)". The blank "Request Proposal Form (R109)" can be obtained at: https://www.mass.gov/prequalification-of-horizontal-construction-firms.

All prospective Bidders must complete and e-mail an electronic copy of "Request Proposal Form (R109)" to the MassDOT Director of Prequalification for approval: prequal.r109@dot.state.ma.us.

Proposal documents for official bidders are posted on www.bidx.com. Other interested parties may receive informational Contract Documents containing the Plans and Special Provisions, free of charge.

Bids will be considered, and the contract awarded in accordance with statutes governing such contracts in accordance with Massachusetts General Laws Chapter 30 § 39M.

The Project Bids File Attachments folder for proposals at www.bidx.com shall be used for submitting at the time of bid required information such as the Bid Bond required document, and other documents that may be requested in the proposal.

**NOTICE TO CONTRACTORS** (Continued)

All parties who wish to have access to information plans and specification must send a "Request for Informational Documents" to MassDOTBidDocuments@dot.state.ma.us.

A Proposal Guaranty in the amount of 5% of the value of the bid is required.

This project is subject to the schedule of prevailing wage rates as determined by the Commissioner of the Massachusetts Department of Labor and Workforce Development, and the Division of Occupational Safety, and the United States Department of Labor.

The Massachusetts Department of Transportation, in accordance with Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S.C. §§ 2000d to 2000d-4) and the Regulations, hereby affirmatively ensures that for any contract entered into pursuant to this advertisement, all bidders, including disadvantaged business enterprises, will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, national origin in consideration for an Award.

This Proposal contains the "STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONTRACT SPECIFICATIONS (EXECUTIVE ORDER 11246)". The goals and timetables applicable to this proposal for minority and female participation, expressed in percentage terms for the Contractor's aggregate work force in each trade on all work, are contained in Appendices A and B-80 of the above specifications.

The Contractor (hereinafter includes consultants) will comply with the Acts and Regulations relative to Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, Federal Highway Administration (FHWA), as they may be amended from time to time, which are herein incorporated by reference and made a part of this Contract as contained in Appendices C and D of the above specifications.

**NOTICE TO CONTRACTORS** (Continued)

PRICE ADJUSTMENTS

This Contract contains price adjustments for hot mix asphalt and Portland cement mixtures, diesel fuel, and gasoline. For reference the base prices are as follows: liquid asphalt $712.50 per ton, Portland cement $452.13 per ton, diesel fuel $4.693 per gallon, and gasoline $3.341 per gallon, and Steel Base Price Index 384.0. MassDOT posts the **Price Adjustments** on their Highway Division's website at
https://www.mass.gov/massdot-contract-price-adjustments

This Contract contains Price Adjustments for steel. See Document 00813 - PRICE ADJUSTMENT FOR STRUCTURAL STEEL AND REINFORCING STEEL for their application and base prices.

MassDOT projects are subject to the rules and regulations of the Architectural Access Board (521 CMR 1.00 et seq.)

Prospective bidders and interested parties can access this information and more via the internet at WWW.COMMBUYS.COM.

BY: Phillip Eng, Interim MassDOT Secretary
Jonathan L. Gulliver, Undersecretary and Highway Administrator
SATURDAY, SEPTEMBER 5, 2026

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DOCUMENT 00210

REQUIREMENTS OF MASSACHUSETTS GENERAL LAWS
CHAPTER 30, SECTION 39R;
CHAPTER 30, SECTION 39O

July 1, 1981, updated October 2016

**M.G.L. c. 30, § 39R. Award of Contracts; Accounting Statements; Annual Financial Statements; Definitions.**

(a) The words defined herein shall have the meaning stated below whenever they appear in this section:

(1) “Contractor" means any person, corporation, partnership, joint venture, sole proprietorship, or other entity awarded a contract pursuant to sections thirty-eight A1/2 to thirty-eight O, inclusive, of chapter seven and any contract awarded or executed pursuant to section eleven C of chapter twenty-five A, section thirty-nine M of chapter thirty, or sections forty-four A to forty-four H, inclusive, of chapter one hundred and forty-nine, which is for an amount or estimated amount greater than one hundred thousand dollars.

(2) "Contract" means any contract awarded or executed pursuant to sections thirty-eight A1/2 to thirty-eight O, inclusive, of chapter seven and any contract awarded or executed pursuant to section eleven C of chapter twenty-five A, section thirty-nine M of chapter thirty, or sections forty-four A through forty-four H, inclusive, of chapter one hundred and forty-nine, which is for amount or estimated amount greater than one hundred thousand dollars.

(3) “Records" means books of original entry, accounts, checks, bank statements and all other banking documents, correspondence, memoranda, invoices, computer printouts, tapes, discs, papers and other documents or transcribed information of any type, whether expressed in ordinary or machine language.

(4) “Independent Certified Public Accountant" means a person duly registered in good standing and entitled to practice as a certified public accountant under the laws of the place of his residence or principal office and who is in fact independent. In determining whether an accountant is independent with respect to a particular person, appropriate consideration should be given to all relationships between the accountant and that person or any affiliate thereof. Determination of an accountant's independence shall not be confined to the relationships existing in connection with the filing of reports with the awarding authority.

(5) “Audit", when used in regard to financial statements, means an examination of records by an independent certified public accountant in accordance with generally accepted accounting principles and auditing standards for the purpose of expressing a certified opinion thereon, or, in the alternative, a qualified opinion or a declination to express an opinion for stated reasons.

(6) "Accountant's Report", when used in regard to financial statements, means a document in which an independent certified public accountant indicates the scope of the audit which he has made and sets forth his opinion regarding the financial statements taken as a whole with a listing of noted exceptions and qualifications, or an assertion to the effect that an overall opinion cannot be expressed. When an overall opinion cannot be expressed the reason therefor shall be stated. An accountant's report shall include as a part thereof a signed statement by the responsible corporate officer attesting that management has fully disclosed all material facts to the independent certified public accountant, and that the audited financial statement is a true and complete statement of the financial condition of the contractor.

(7) “Management", when used herein, means the chief executive officers, partners, principals or other person or persons primarily responsible for the financial and operational policies and practices of the contractor.

(8) Accounting terms, unless otherwise defined herein, shall have a meaning in accordance with generally accepted accounting principles and auditing standards.

(b) Subsection (a)(2) hereof notwithstanding, every agreement or contract awarded or executed pursuant to sections thirty-eight A 1/2 to thirty-eight O, inclusive, of chapter seven, or eleven C of chapter twenty-five A, and pursuant to section thirty-nine M of chapter thirty or to section forty-four A through H, inclusive, of chapter one hundred and forty-nine, shall provide that:

(1) The contractor shall make, and keep for at least six years after final payment, books, records, and accounts which in reasonable detail accurately and fairly reflect the transactions and dispositions of the contractor, and

(2) Until the expiration of six years after final payment, the office of inspector general, and the commissioner of capital asset management and maintenance shall have the right to examine any books, documents, papers or records of the contractor or of his subcontractors that directly pertain to, and involve transactions relating to, the contractor or his subcontractors, and

(3) If the agreement is a contract as defined herein, the contractor shall describe any change in the method of maintaining records or recording transactions which materially affect any statements filed with the awarding authority, including in his description the date of the change and reasons therefor, and shall accompany said description with a letter from the contractor's independent certified public accountant approving or otherwise commenting on the changes, and

(4) If the agreement is a contract as defined herein, the contractor has filed a statement of management on internal accounting controls as set forth in paragraph (c) below prior to the execution of the contract, and

(5) If the agreement is a contract as defined herein, the contractor has filed prior to the execution of the contracts and will continue to file annually, an audited financial statement for the most recent completed fiscal year as set forth in paragraph (d) below.

(c) Every contractor awarded a contract shall file with the awarding authority a statement of management as to whether the system of internal accounting controls of the contractor and its subsidiaries reasonably assures that:

(1) transactions are executed in accordance with management's general and specific authorization;

(2) transactions are recorded as necessary

i. to permit preparation of financial statements in conformity with generally accepted accounting principles, and

ii. to maintain accountability for assets;

(3) access to assets is permitted only in accordance with management's general or specific authorization; and

(4) the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action was taken with respect to any difference.

Every contractor awarded a contract shall also file with the awarding authority a statement prepared and signed by an independent certified public accountant, stating that he has examined the statement of management on internal accounting controls, and expressing an opinion as to:

(1) whether the representations of management in response to this paragraph and paragraph (b) above are consistent with the result of management's evaluation of the system of internal accounting controls; and

(2) whether such representations of management are, in addition, reasonable with respect to transactions and assets in amounts which would be material when measured in relation to the applicant's financial statements.

(d) Every contractor awarded a contract by the commonwealth or by any political subdivision thereof shall annually file with the commissioner of capital asset management and maintenance during the term of the contract a financial statement prepared by an independent certified public accountant on the basis of an audit by such accountant. The final statement filed shall include the date of final payment. All statements shall be accompanied by an accountant's report. Such statements shall be made available to the awarding authority upon request.

(e) The office of inspector general, the commissioner of capital asset management and maintenance and any other awarding authority shall enforce the provisions of this section. The commissioner of capital asset management and maintenance may after providing an opportunity for the inspector general and other interested parties to comment, promulgate pursuant to the provisions of chapter thirty A such rules, regulations and guidelines as are necessary to effectuate the purposes of this section. Such rules, regulations and guidelines may be applicable to all awarding authorities. A contractor's failure to satisfy any of the requirements of this section may be grounds for debarment pursuant to section forty-four C of chapter one hundred and forty-nine.

(f) Records and statements required to be made, kept or filed under the provisions of this section shall not be public records as defined in section seven of chapter four and shall not be open to public inspection; provided, however, that such records and statements shall be made available pursuant to the provisions of clause (2) of paragraph (b).

**M.G.L. c. 30, § 39O: Suspension, Delay, or Interruption or Failure to Act by Awarding Authority; Adjustment in Contract Price; Submission of Claims.**

Section 39O. Every contract subject to the provisions of section thirty-nine M of this chapter or subject to section forty-four A of chapter one hundred forty-nine shall contain the following provisions (a) and (b) in their entirety and, in the event a suspension, delay, interruption or failure to act of the awarding authority increases the cost of performance to any subcontractor, that subcontractor shall have the same rights against the general contractor for payment for an increase in the cost of his performance as provisions (a) and (b) give the general contractor against the awarding authority, but nothing in provisions (a) and (b) shall in any way change, modify or alter any other rights which the general contractor or the subcontractor may have against each other.

(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 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 for fifteen days or more or 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 provided further, that the awarding authority shall not make any adjustment in the contract price under this provision for any suspension, delay, interruption or failure to act to the extent that such is due to any cause for which this contract provides for an equitable adjustment of the contract price under any other contract provisions.

(b) The general contractor must submit the amount of a claim under provision (a) to the awarding authority in writing as soon as practicable after the end of the suspension, delay, interruption or failure to act and, in any event, not later than the date of final payment under this contract and, except for costs due to a suspension order, the awarding authority shall not approve any costs in the claim incurred more than twenty days before the general contractor notified the awarding authority in writing of the act or failure to act involved in the claim.

**<<<<<<<<<<>>>>>>>>>>**

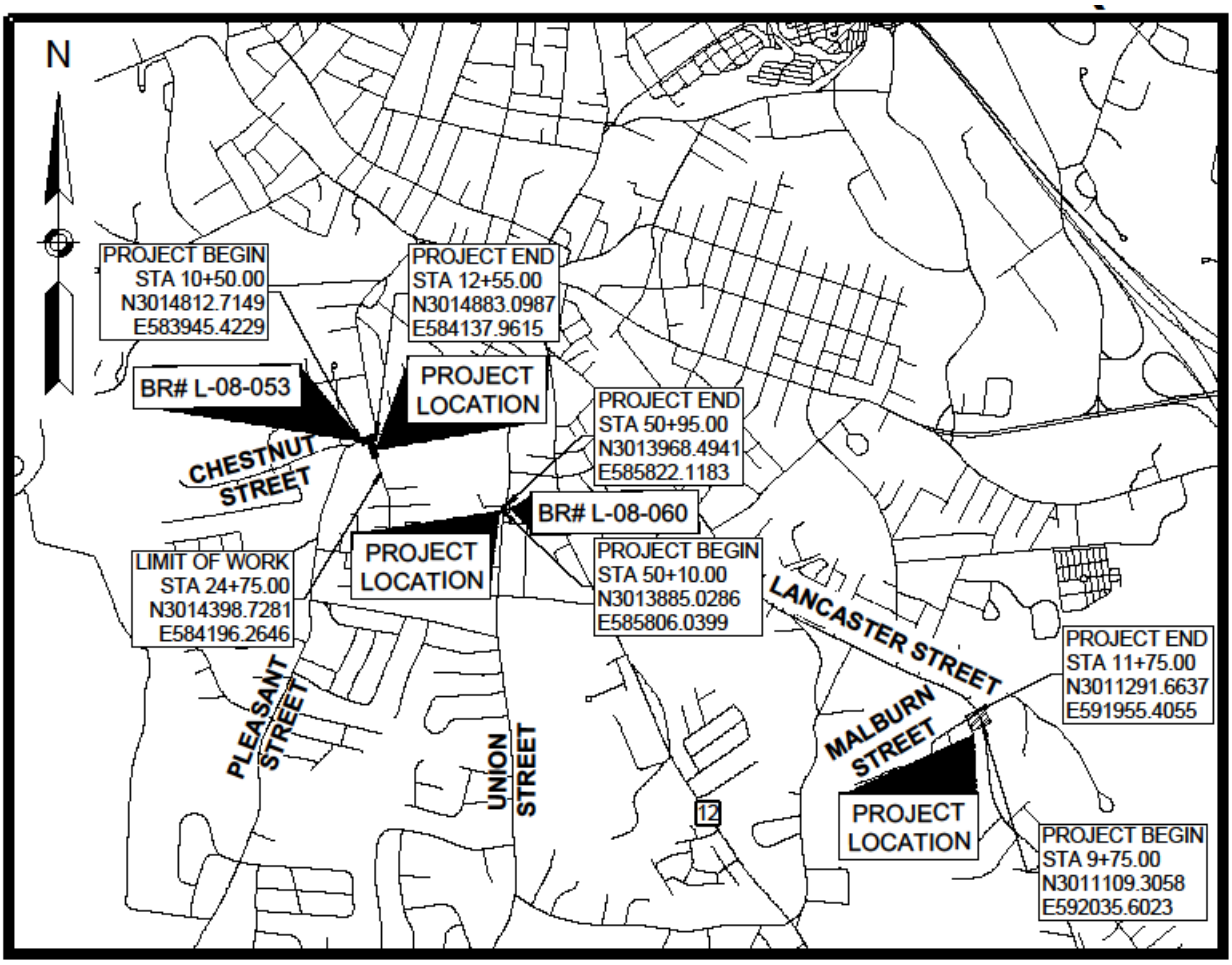
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DOCUMENT 00331

# LOCUS MAP

## LEOMINSTER
## Federal Aid Project No. EMR/STP/PRC-EMRS(123)X
## Culvert Replacement, Culvert Repair and Retaining Wall Replacement and Related Work at Three Locations




NOT TO SCALE

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DOCUMENT 00439

Final Report ☐

Interim Report ☐

# CONTRACTOR PROJECT EVALUATION FORM

***For instructions on using this form, see Engineering Directive E-10-002, Dated 4/20/2010***

Date: _____

City/Town: _____ Contractor: _____

Project: _____ Address: _____

F.A. No. _____ Contract Number: _____

Bid Price: _____ Notice to Proceed: _____

Funds: State: _____ Fed Aid: _____ Current Contract Completion Date: _____

Date Work Started: _____ Date Work Completed*: _____

Contractor's Superintendent: _____

Division: (indicates class of work) Highway: _____ Bridge: _____ Maintenance: _____

*If work was NOT completed within specified time (including extensions) give reasons on following page.

| | Excellent 10 | Very Good 9 | Average 8 | 7 | Fair 6 | 5 | Poor 4 | % Rating |
|---|---|---|---|---|---|---|---|---|
| **1. Workmanship** | | | | | | | | x 2= |
| **2. Safety** | | | | | | | | x 2= |
| **3. Schedule** | | | | | | | | x 1.5= |
| **4. Home Office Support** | | | | | | | | x 1= |
| **5. Subcontractors Performance** | | | | | | | | x 1= |
| **6. Field Supervision/ Superintendent** | | | | | | | | x 1= |
| **7. Contract Compliance** | | | | | | | | x 0.5= |
| **8. Equipment** | | | | | | | | x 0.5= |
| **9. Payment of Accounts** | | | | | | | | x 0.5= |
| **(use back for additional comments)** | | | | | | **Overall Rating:** | | |

*(Give explanation of items 1 through 9 on the following page in numerical order if overall rating is below 80%. Use additional sheets if necessary.)*

_____ _____

District Construction Engineer's Signature/Date Resident Engineer's Signature/Date

_____

Contractor's Signature Acknowledging Report/Date

Contractor Requests Meeting with the District: No ☐ Yes ☐ Date Meeting Held: _____

Contractor's Comments/Meeting Notes (extra sheets may be added to this form and noted here if needed): _____

_____

_____

## CONTRACTOR PROJECT EVALUATION FORM (Continued)

Date: _____ Contract Number: _____

INFORMATION FOR DISTRICT HIGHWAY DIRECTORS RELATING TO PREQUALIFICATION

A deduction shall be recommended for unsatisfactory performance if computed overall rating is under 80%.
A deduction may be recommended for this project being completed late due to the Contractor's fault.

RECOMMENDATIONS FOR DEDUCTIONS FROM CONTRACTORS' ASSIGNED FACTOR
(*Write Yes or No in space provided*)

I recommend a deduction for Contractor's unsatisfactory performance: _____

I recommend a deduction for project completed late: _____

Signed: _____
District Highway Director

EXPLANATION OF RATINGS 1 – 9: _____

WORK NOT COMPLETED WITHIN SPECIFIED TIME: _____

Revised: 04/28/17

*** END OF DOCUMENT ***

DOCUMENT 00440

Final Report ☐

Interim Report ☐

# SUBCONTRACTOR PROJECT EVALUATION FORM

***For instructions on using this form, see Engineering Directive E-10-002, Dated 4/20/2010***

Date: _____

City/Town: _____ Subcontractor: _____

Project: _____ Address: _____

F.A. No.: _____ Contract Number: _____

Prime Contractor _____ Current Contract Completion Date: _____

Date Work Started: _____ Date Work Completed*: _____

Subcontractor's Superintendent: _____

Type of Work Performed by Subcontractor: _____

*If work was NOT completed within specified time (including extensions) give reasons on following page.

| | Excellent 10 | Very Good 9 | Average 8 | 7 | Fair 6 | 5 | Poor 4 | % Rating |
|---|---|---|---|---|---|---|---|---|
| **1. Workmanship** | | | | | | | | x 2= |
| **2. Safety** | | | | | | | | x 2= |
| **3. Schedule** | | | | | | | | x 1.5= |
| **4. Home Office Support** | | | | | | | | x 1.5= |
| **5. Field Supervision/ Superintendent** | | | | | | | | x 1= |
| **6. Contract Compliance** | | | | | | | | x 1= |
| **7. Equipment** | | | | | | | | x 0.5= |
| **8. Payment of Accounts** | | | | | | | | x 0.5= |
| **(use back for additional comments)** | | | | | | | **Overall Rating:** | |

*(Give explanation of items 1 through 8 on the following page in numerical order if overall rating is below 80%. Use additional sheets if necessary.)*

_____ _____

District Construction Engineer's Signature/Date Resident Engineer's Signature/Date

_____ _____

Contractor Signature Acknowledging Report/Date Subcontractor Signature Acknowledging Report/Date

Subcontractor Requests Meeting with the District: No ☐ Yes ☐ Date Meeting Held: _____

Subcontractor's Comments / Meeting Notes (extra sheets may be added to this form and noted here if needed):

_____

_____

Contractor's Comments: _____

_____

## SUBCONTRACTOR PROJECT EVALUATION FORM (Continued)

Date: _____ Contract Number:_____

INFORMATION FOR DISTRICT HIGHWAY DIRECTORS RELATING TO PREQUALIFICATION

A deduction shall be recommended for unsatisfactory performance if computed overall rating is under 80%.
A deduction may be recommended for this project being completed late due to the Contractor's fault.

RECOMMENDATIONS FOR DEDUCTIONS FROM CONTRACTORS' ASSIGNED FACTOR
(*Write Yes or No in space provided*)

I recommend a deduction for Contractor's unsatisfactory performance: _____

I recommend a deduction for project completed late:_____

Signed: _____
District Highway Director

EXPLANATION OF RATINGS 1 – 8: _____

_____

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WORK NOT COMPLETED WITHIN SPECIFIED TIME: _____

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Revised: 04/28/17

*** END OF DOCUMENT ***

DOCUMENT 00710
GENERAL CONTRACT PROVISIONS
Revised: 03-31-26

NOTICE OF AVAILABILITY

The STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES dated 2026, the SUPPLEMENTAL SPECIFICATIONS , the 1990 STANDARD DRAWINGS FOR SIGNS AND SUPPORTS; the 1968 STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING and the CONSTRUCTION STANDARD DETAILS are available online at https://www.mass.gov/massdot-highway-division-manuals-and-publications

SPECIAL PROVISIONS FOR RIGHT-TO-KNOW ACT REQUIREMENTS

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.

ALTERNATIVE DISPUTE RESOLUTION
Forum, Choice of Law and Mediations:

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. MassDOT and the Contractor may both agree to mediation of any claim and will share the costs of such mediation pro rata based on the number of parties involved.

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DOCUMENT 00715

# SUPPLEMENTAL SPECIFICATIONS

JUNE 30, 2026

The 2026 *Standard Specifications for Highways and Bridges* are amended by the following modifications, additions and deletions. These Supplemental Specifications prevail over those published in the Standard Specifications.

The Specifications Committee has issued these Supplemental Specifications for inclusion into each proposal until such time as they are updated or incorporated into the next Standard Specifications.

Contractors are cautioned that these Supplemental Specifications are dated and will change as they are updated.

## DIVISION I

## GENERAL REQUIREMENTS AND COVENANTS

## SECTION 5.00: CONTROL OF WORK

Subsection 5.03: Conformity with Plans and Specifications
*Change the MGL reference in the first sentence to Chapter 30, Section 39I (from Section 39L).*

## DIVISION II

## CONSTRUCTION DETAILS

## SECTION 200: DRAINAGE

### SUBSECTION 227: DRAINAGE SYSTEM SEDIMENT

Subsection 227.30, Method of Measurement
*Change the subsection number to 227.80*

Subsection 227.31, Basis of Payment
*Change the subsection number to 227.81*

Subsection 227.31, Payment Items
*Change the subsection number to 227.82*

## SECTION 400: SUB-BASE, BASE COURSE, SHOULDERS, PAVEMENT AND BERMS

### SUBSECTION 430: CEMENT CONCRETE BASE COURSE

Subsection 430.40: General
*Change Applied Crack Sealer to Hot Applied Crack Sealer.*

## SUBSECTION 476: CEMENT CONCRETE PAVEMENT

Subsection 476.20: Materials
*Delete Preformed Bituminous Joint Filler for Concrete - M3.05.5 and add the following in M number sequence:*

| | |
|---|---|
| Preformed Expansion Joint Filler | M9.14.0 |

## SUBSECTION 477: MILLED RUMBLE STRIPS

Subsection 477: Milled Rumble Strips
*Replace this subsection with the following:*

### DESCRIPTION

**477.20: General**

The work consists of constructing rumble strips on roadways by milling grooves into finished surfaces. Milled Rumble Strips are categorized as Type A, Type B, Type C, or Type D. Type A are rectangular milled grooves at regular intervals in the paved surface, Type B rumble strips are rectangular grooves at regular intervals with designed gaps between intervals to accommodate bicyclists, and Type C and Type D rumble strips form continuous grooves in the paved surface in the form of a vertical sinusoidal wave pattern.

### CONSTRUCTION METHODS

**477.61: Equipment**

The equipment shall self-align with the slope of the roadway surface and/or any irregularities in the roadway surface.

The Contractor shall demonstrate to the Engineer the ability to achieve the desired groove without tearing or snagging the roadway surface prior to beginning the work.

**477.62: Installation of Rumble Strips**

Rumble strips shall be installed in accordance with the locations, dimensions, and Type shown on the plans.

Type A and Type B rumble strips shall be installed after the longitudinal pavement markings they supplement (typically edge lines or channelizing lines) are in place. Installation of any diagonal or chevron pavement markings that cross the Type A or Type B rumble strips shall only occur after the rumble strips are in place.

Type C rumble strips shall be installed after the location of the longitudinal pavement markings they supplement (typically center lines) has been laid out, but before the pavement markings are installed. The pavement markings shall only be installed after the Type C rumble strips are in place.

Type D rumble strips shall be installed after the longitudinal pavement markings they supplement (typically center lines) are in place.

**477.63: Control of the Work Area**

At the end of each working day, all equipment shall be moved to a location where it does not present a hazard to traffic. The pavement shall be cleaned by sweeping and the work area shall be reopened to traffic.

Pavement millings shall become the property of the Contractor and shall be removed and disposed of off-site.

### COMPENSATION

**477.80: Method of Measurement**

Milled Rumble Strip (Type A), Milled Rumble Strip (Type C), and Milled Rumble Strip (Type D) will be measured by the total length of installed rumble strip. Milled Rumble Strip (Type B) will be measured by the total length of installed rumble strip excluding the designed gaps. Breaks at castings, bridge decks, intersections or other breaks will not be measured for payment for all types.

**477.81: Basis of Payment**

Payment for Milled Rumble Strip (Type A), Milled Rumble Strip (Type B), Milled Rumble Strip (Type C), and Milled Rumble Strip (Type D) will be made at the contract unit price per foot of rumble strips, complete in place. Such payment will be full compensation for furnishing all equipment and labor for satisfactorily performing the work including cleanup and disposal of excess materials.

**477.82: Payment Items**

| Item number | Description | Unit |
|---|---|---|
| 477. | Milled Rumble Strip (Type A) | Foot |
| 477.1 | Milled Rumble Strip (Type B) | Foot |
| 477.2 | Milled Rumble Strip (Type C) | Foot |
| 477.3 | Milled Rumble Strip (Type D) | Foot |

### SUBSECTION 482: SAWCUTTING

Subsection 482.80: Method of Measurement
*Replace this subsection with the following:*

Sawcutting, when included in the Contract as its own bid item, will be measured for payment by the foot along the cut line, regardless of depth.

## SECTION 600: HIGHWAY GUARD, FENCES AND WALLS

### SUBSECTION 628: IMPACT ATTENUATORS

Subsection 628.82: Payment Items
*Replace this subsection with the following:*

| Item number | Description | Unit |
|---|---|---|
| 628.302 | Permanent Impact Attenuator, Non-Redirective, TL-2 | Each |
| 628.303 | Permanent Impact Attenuator, Non-Redirective, TL-3 | Each |
| 628.304 | Temporary Impact Attenuator, Non-Redirective, TL-2 | Each |
| 628.305 | Temporary Impact Attenuator, Non-Redirective, TL-3 | Each |
| 628.312 | Permanent Impact Attenuator, Redirective, TL-2 | Each |
| 628.313 | Permanent Impact Attenuator, Redirective, TL-3 | Each |
| 628.314 | Temporary Impact Attenuator, Redirective, TL-2 | Each |
| 628.315 | Temporary Impact Attenuator, Redirective, TL-3 | Each |
| 628.322 | Permanent Impact Attenuator, Low-Maintenance, TL-2 | Each |
| 628.323 | Permanent Impact Attenuator, Low-Maintenance, TL-3 | Each |

# SECTION 800: TRAFFIC CONTROL DEVICES

## SUBSECTION 813: WIRING, GROUNDING AND SERVICE CONNECTIONS

Subsection 813.20: General
*Replace this subsection with the following:*

This work shall consist of furnishing and installing wire and cable of the type and size indicated for traffic signals and other traffic control devices, ITS systems, highway lighting and related electrical systems, equipment grounding systems, new ground electrodes or connections to existing ground electrodes, power pedestals, and all materials and equipment necessary to deliver power to such systems.

Service points shown on the plans are approximate only. The Contractor shall determine exact locations for both overhead and underground service access points. The Contractor shall determine riser elevations or connections/routing to manhole facilities from the serving utility, and arrange to complete the service connections.

All work under this Subsection shall comply with the MEC and the National Electrical Safety Code.

Subsection 813.41: Grounding and Bonding Conductions
*Replace this subsection with the following:*

Grounding and bonding conductors shall conform to M8.16.10: Type 10 Grounding and Bonding Conductors (Solid or Stranded, Insulated or Bare).

Subsection 813.42: Ground Rods
*Replace this subsection with the following:*

Ground rods shall consist of driven rod(s) conforming to M8.17.0: Ground Rod or other devices approved for the purpose.

Subsection 813.44: Power Pedestal
*Add this subsection in numerical order:*

A Power Pedestals shall consist of a side-of-post mounted lockable load center enclosure, a load center with circuit breakers, an exterior-mounted electrical meter, signal post and base, equipment bonding, ground rod(s) conforming to 813.42: Ground Rods, and a cement concrete foundation. The enclosure, lock, circuit breakers, signal post and base, and foundation shall all be included in the Shop Drawing submission.

The enclosure shall be rated to meet or exceed NEMA 3R and be suitable for post-mounting and shall be sized appropriately to house the load center. The enclosure shall be capable of being secured with an integrated locking mechanism or by a Contractor-supplied padlock; regardless of locking mechanism, it shall be operated with a #2 key.

The circuit breakers shall be designed for single-phase, 3-wire, 120/240 VAC. Circuit breakers shall provide a means to manually operate a circuit and/or automatically open a circuit that is in overload or short circuit conditions. All circuit breakers shall be UL listed and have CSA certification.

The enclosure shall be furnished with a meter socket installed. The meter socket shall be approved by the servicing electrical utility.

The signal post and base shall conform to M10.05.1: Signal Posts and Bases and the Plans. The Contractor shall supply a square aluminum base with a natural or anodized finish and a Schedule 80 aluminum post with a brushed or spun finish, unless otherwise indicated in the Plans.

The Contractor shall supply mounting equipment recommended by the enclosure manufacturer to side-mount the cabinet to the post.

Bonding for the Power Pedestal shall utilize a #8 AWG or larger ASTM-B3 wire.

The cement concrete foundation shall conform to the Plans and M4.02.0: Concrete Produced by Stationary and Truck Mixers, M4.03.0: Concrete Produced by Volumetric Mixers, M4.06.1: Conventional Concrete, M4.09.0: Precast, Prestressed, and Prefabricated Concrete Products, M4.11.0: Evaporation Reducing Materials, and M4.12.0: Curing Materials, as applicable.

Subsection 813.64: Power Pedestal
*Add this subsection in numerical order:*

No work shall commence until Shop Drawings have been approved.

The Power Pedestal Cabinet shall be mounted side-of-post to the Signal Post, per the manufacturer's recommendations. The Power Pedestal Cabinet should be installed directly below the meter socket, per the Plans. If dissimilar metals are present, they shall be electrically insulated to prevent galvanic corrosion.

The Contractor shall supply the appropriate type (single pole or double pole) and number of circuit breakers included within the Power Pedestal Cabinet to provide the recommended AC power to each device receiving power from the Cabinet. The circuit breakers shall be clearly labeled as to which device they are powering (e.g. RRFB-1, RRFB-2, Warning Beacon, Speed Feedback Sign, etc.).

The Power Pedestal shall be grounded and bonded per 813.61: Equipment Grounding and Bonding and 813.62: Grounding Electrodes.

Subsection 813.80.E: Power Pedestal
*Add this subsection in numerical order:*

Power Pedestals will be measured by the number of Power Pedestals each furnished and installed.

Subsection 813.81.E: Power Pedestal
*Add this subsection in numerical order:*

Power Pedestals will be paid for at the contract unit price for each installed in place. This includes all labor and materials required for a working system.

All costs associated with grounding and bonding of Power Pedestals shall be considered incidental to the item.

All costs associated with providing service connections to Power Pedestals shall be paid for under their respective pay items.

Subsection 813.82: Payment Items
*Change the unit of measure for items 813.80 and 813.81 to Each and add the following pay item:*

Subsection 815.82: Payment Items
*Delete payment items 818.90 to 818.94, 819.39, 819.832, 819.52, 819.53, 819.60 to 819.64, 819.70, 819.71, 819.72, 819.800, 819.801, 819.802, 819.803,:819.810, 819.811, 819.820, 819.821, 819.850, 819.851, 819.852.*

*Add the following payment item:*

| | | |
|---|---|---|
| 813.90 | Power Pedestal | Each |

# SUBSECTION 819: TRAFFIC SIGNAL DETECTION

Subsection 819: Traffic Signal Detection
*Add this subsection:*

## DESCRIPTION

### 819.20: General

Work under this Subsection consists of furnishing and installing detection devices for vehicles, bicycles, pedestrians, and other road users.

## MATERIALS

### 819.40: General

Materials shall meet the requirements specified in the following Subsections of Division III, Materials:

| Material | Section |
|---|---|
| Vehicle Detection Systems | M10.08.0 |
| Passive Stop Line Detectors | M10.08.1 |
| Passive Advanced Detectors | M10.08.2 |
| Pedestrian Detectors | M10.09.0 |
| Pedestrian Pushbutton Assembly | M10.09.1 |
| APS Pushbutton Assembly | M10.09.2 |

The Contractor shall furnish Vehicle Detection Systems (VDS) and Pedestrian Detectors that are listed on the QTCE.

Any software, firmware, cables, or adapters required to program, adjust, fine-tune, or monitor VDS or Pedestrian Detectors shall be provided by the Contractor. VDS and Pedestrian Detectors shall have the latest versions of software and/or firmware installed prior to inspection. Manufacturer updates to software and/or firmware shall be included at no cost for the life of the products.

### 819.40.A: Vehicle Detection Systems

A VDS shall consist of one or more Internet Protocol (IP) -based detector/sensor assemblies and a cabinet interface device that is installed in a Traffic Signal Controller Cabinet or similar device.

Stop Line VDS shall be capable of providing motor vehicle and bicycle detection at all locations shown on the Plans. The Contractor may furnish a VDS that utilizes a single detector/sensor or multiple, as long as all stop line motor vehicle and bicycle detection zones are encompassed and the traffic signal or other device utilizing the detection can operate per the Plans. All Passive Stop Line Detectors required to provide stop line detection at an intersection shall be included in the cost of a single Stop Line Vehicle Detection System.

If the Contractor furnishes a Stop Line VDS that does not utilize an integrated video monitoring system, a separate video monitoring system per 819.41: Video Monitoring System shall be furnished and installed at no additional cost.

Advanced VDS shall be capable of providing motor vehicle detection on a single approach, at the location shown on the Plans. The Contractor Shall furnish Passive Advanced Detectors that utilize, and are compatible with, the same interface device installed in the Traffic Signal Controller Cabinet, or similar device, as the Stop Line VDS.

All VDSs shall be furnished with manufacturer-supplied mounting hardware.

If multiple VDSs over multiple locations are supplied under a single contract, all components furnished by the Contractor shall be of the same make and model.

**819.40.B: Pedestrian Detectors**

Pedestrian Pushbutton Assembly and Accessible Pedestrian Signal (APS) Pushbutton Assembly shall both include a pushbutton, sign, housing, manufacturer-specified mounting hardware, and wiring. The Contractor shall review the Contract Documents to determine if one or more in-cabinet control units are required to meet the pedestrian detector type and operational requirements. In-cabinet control units shall be considered incidental to the cost of the item.

The Contractor shall provide a pushbutton housing that conforms to the shape of the pole it is mounted to or shall furnish and install a manufacturer-supplied saddle to provide a flush, secure fit, at no additional cost.

An APS Pushbutton Assembly shall include a pedestrian pushbutton sign that conforms to the Plans. If the sign is not integral to the housing, separate mounting equipment shall be furnished and installed by the Contractor. All costs associated with the sign and mounting equipment shall be considered incidental to the cost of the item.

**819.41: Video Monitoring System**

When required by 819.40.A: Vehicle Detection Systems, the Contractor shall furnish and install a Video Monitoring System. The Video Monitoring System shall consist of one or more IP-based 4K, 1080p, H.264 dome-type CCTV cameras; mounting hardware, including but not limited to: brackets, bands, straps, posts, plates, and pole mount adapters; power distribution and conditioning equipment including surge suppression; and all necessary cabling and wiring.

All equipment provided for the Video Monitoring System shall be commercial, off-the-shelf products. Custom equipment designed specifically for the Contract will not be accepted. All cabling and wiring shall be recommended by the manufacturer and rated for outdoor use. Any special wiring or connectors required by the manufacturer shall be identified in the Shop Drawings.

The Video Monitoring System shall conform to National Electrical Manufactures Association (NEMA) standards, Underwriters' Laboratory (UL), and Military Standards (MIL), as applicable. All components of the Video Monitoring System shall be new and still under production by the manufacturer. Obsolete, no longer produced, and/or no longer supported components will not be accepted.

The Video Monitoring System shall be capable of operating in temperatures ranging from -29°F to +165°F.

The camera shall meet or exceed the requirements found in Table 819.41-1:

**Table 819.41-1: Minimum Camera Requirements**

| Feature | Requirement |
|---|---|
| Zoom Ratio | The minimum zoom ratio shall be 30x Optical and 12x Digital |
| Camera Type | The camera shall be an IP-type CCTV camera. |
| Auto Focus | The camera shall include auto focus with a selection for manual override of auto focus. |
| Lens Aperture Ratio | Typical: F/1.6 to F/4.7 (wide to telephoto) |
| On-Screen Direction | The CCTV camera shall display on-screen azimuth indications. |
| Privacy Zones | The CCTV camera shall be programmable to blank out up to 8, four-sided areas to electronically block portions of the camera's field of view from being |

| Feature | Requirement |
|---|---|
| | displayed. These privacy zones shall move and adjust sizing synchronously with camera movements and degree of lens zooming. |
| On-Screen Labels, Text and Titles | The CCTV camera shall display a minimum of 20 programmable characters for on-screen camera ID, preset position, sector, and alarm titles. |
| On-Screen Labels, Text and Title Positioning | The position of the on-screen text shall be adjustable to appear at selectable positions on the CCTV camera screen image. |
| Number of Pixels | The camera shall provide a minimum of 1280H x 720V effective pixels. The camera shall be capable of being configured to operate at all standard lower resolutions down to 320H x 180V effective pixels. |
| Image Sensor Size | The camera shall include an image sensor of 1/1.8 in., nominal. |
| Lens Focal Length | The camera shall include a zoom lens of 4.3 mm to 129 mm, minimum focal length. |
| Color and Black & White Image Selection | The camera shall have Color and Black & White video image display modes incorporating both automatic and manual override image mode selection. The camera shall transition automatically to a Black & White mode (when in automatic mode) when the luminance level reaches a user predefined threshold. At all times the camera shall provide a full motion video output at 30 frames per second. |
| Image Stabilization | The CCTV camera shall incorporate electronic image stabilization to reduce the effects of vibration and wind gusts on the displayed video image. |
| Automatic Iris | The camera shall include both automatic iris control and an override for manual iris adjustments. |
| Wide Dynamic Range | The CCTV camera's wide dynamic range shall be 120 dB. |
| CCTV Camera Optical Sensitivity | The camera's sensitivity shall be sufficient to provide a clear, usable color video image display with a scene illumination of ≤ 0.1 lux at an aperture of F1.6, nominal. |
| Power Input | The power input for the CCTV camera and dome shall be PoE+. |
| Alarms | No alarm contacts shall be wired. |

The Contractor shall mount the camera at a location that optimizes line-of-sight for all approaches. The view of each approach shall have a clear line of sight, free from obstructions from trees, overhead wires, buildings, and/or other obstructions. If the Contractor is unable to provide a clear line of sight for all approaches to the satisfaction of the Engineer, a second camera, including mounting hardware, cabling, and wiring, shall be furnished and installed on a different traffic signal structure at no additional cost.

The Contractor shall be responsible for the following items prior to installation:

- Ensure that all components are assembled and factory-tested prior to delivery to the project site.
- Fully configure the camera settings, including but not limited to: camera resolution, camera address, default settings, and pre-set and home positions, per the direction of the Engineer.
- Coordinate with the Engineer to set the camera address number to provide unique identification that is compatible with the CCTV camera addressing schema utilized by the Department.

The Contractor shall deliver the camera(s) fully assembled to the project site.

The Contractor shall provide up to 3 hard copy sets of operating manuals, service manuals, and maintenance instructions for all components of the system. At the request of the Engineer, the number of copies may be reduced if the manuals are provided in .pdf file format.

**819.42: Material Warranties**

All components of Vehicle Detection Systems, including Video Monitoring Systems, and Pedestrian Detectors shall include a minimum two-year manufacturer's replacement warranty that will commence upon acceptance by the Engineer. The warranty shall cover any manufacturing defects of the products.

**Construction Methods**

**819.60: General**

The Contractor shall use discretion in installing the detectors/sensors at locations that optimize the performance of the VDS and to eliminate false calls. The Contractor shall notify the Engineer if the size or location of the detection zones differs from what is shown in the Plans. At the direction of the Engineer, the Contractor will be required to readjust the location of the detection zones and/or modify the detection channels if false calls are observed or the traffic signal system is not operating per the Plans due to the performance of the VDS; this work shall be considered incidental to the cost of the item.

The Contractor shall use manufacturer-specified mounting hardware for all detectors/sensors. If mounted to mast arms or strain poles, any addition weight or wind loading from the detector/sensor shall be accounted for in the structural calculations.

The Contractor shall install the cabinet interface device in the traffic signal controller cabinet. The cabinet interface device shall be connected to the Field Monitoring Unit (FMU) or an ethernet switch in the traffic signal controller cabinet. All communication between devices shall be IP-based. Use of external communications that are not routed through the FMU is prohibited.

The Contractor shall furnish and install low voltage power cabling surge protection equipment required for all data and power lines associated with VDS, Video Monitoring Systems, and/or Pedestrian Detection Systems entering the traffic signal controller cabinet.

The Contractor shall install the manufacturer-specified cable between the detectors/sensors to the cabinet interface device in the traffic signal controller cabinet via traffic signal structures, conduit, and/or pullboxes. This shall include all connectors, sealing tape, and incidental work to complete the connection(s). All equipment installation and wiring shall be installed in a neat and orderly manner and per the manufacturer's specifications.

The VDS shall be powered through one of the power outlets available on the FMU. The VDS shall be capable of being powered down and remotely restarted through remote control of the power outlet on the FMU.

Under the supervision of the Engineer, the Contractor shall install the VDS software that allows visual confirmation of the detection zones on Department computers.

The Contractor shall install Pedestrian Detectors at the location(s) and mounting height shown on the Plans.

The Contractor shall mount and orient the APS Pushbutton Assembly in a manner so that the vibrotactile arrow is aligned parallel to the crosswalk.

Prior to acceptance, the Contractor shall furnish all passwords for Vehicle Detection Systems and Pedestrian Detectors to the Engineer. The use of default passwords is prohibited.

**819.61: Programming APS Pushbuttons**

Each APS Pushbutton shall have an audible walk indication during the associated walk interval. The duration of the audible walk indication shall match the duration of the walk interval unless the pedestrian signal is programmed to rest in walk. If programmed to rest in walk, the audible walk indication shall be limited to 7 seconds in length but may be recalled by a subsequent button press during the walk interval.

The APS Pushbutton locator tone and audible walk indication shall be programmed to broadcast at volume 5 dBA louder than ambient sound, except when audible beaconing is provided in response to an extended pushbutton press. The broadcast volume shall be programmed to not exceed 100 dBA at 3 ft. from the emitter, regardless of ambient noise conditions.

The locator tone shall have a duration of 0.15 seconds or less and shall repeat at 1-second intervals.

The locator tone shall be active during all signal intervals, except for the following conditions:

- When the audible walk indication is being broadcast.
- If the signal is programmed to rest in walk, the locator tone shall resume 7 seconds after the start of the walk interval.
- The locator tone shall be disabled if the traffic control signal or pedestrian hybrid beacon is operating in an emergency or fault flashing mode.

The locator tone shall be active during the flashing yellow and alternating flashing red intervals of a pedestrian hybrid beacon phasing sequence.

Upon button press, the locator tone at that pushbutton shall be interrupted and a speech message of “Wait” shall be broadcast.

The normal status of the pilot light shall be dark. The pilot light shall illuminate upon button press and stay illuminated until the start of the walk interval, when it shall return to dark. If the associated pedestrian phase is set to pedestrian recall, the pilot light shall stay illuminated for all intervals except for the walk interval.

The audible walk indication shall an audible tone unless a speech message is called for in the Plans. The audible tone shall repeat at 8 to 10 ticks per second, in multiple frequencies, with the dominant component at 880 Hz.

If a speech message is used, the following shall apply:

- For exclusive pedestrian phases, during the walk interval the speech message shall be: “walk sign is on for all crossings.” This message shall be broadcast a single instance.
- *For concurrent pedestrian phases, during the walk interval the speech message shall be: “[STREET NAME]. Walk sign is on for [STREET NAME].” This message shall be broadcast a single instance.
- If the signal is programmed to rest in walk, the concurrent pedestrian speech message shall be repeated upon each subsequent button press.

*Note: See Plans for Street Name information.

The vibrotactile arrow shall vibrate during the walk interval.

The Contractor shall include a fault relay that will default to placing a constant pedestrian call from any pushbutton assembly that fails to communicate back to the in-cabinet control unit.

The Contractor shall connect the in-cabinet control unit to the Field Monitoring Unit (FMU) via an open ethernet port.

**819.62: VDS Testing and Evaluation**

After the VDS is installed, but prior to acceptance, the Contractor shall conduct an evaluation of the system in the presence of the Engineer. The purpose of the evaluation is to certify the system is operating per the requirements of M10.08.0: Vehicle Detection Systems, M10.08.1: Passive Stop Line Detectors, and M10.08.2: Passive Advanced Detectors, as applicable. The Contractor shall submit their testing and evaluation plan as a part of the Shop Drawing submittal.

The testing and evaluation shall take place for a minimum of 30 minutes under moderate live traffic conditions. Testing shall not be conducted during inclement weather.

If the Engineer determines that the system does not meet the operational requirements, the Contractor will be required to adjust the location, orientation, and/or number of detector/sensors. The Contractor may also adjust the location of the detection zones at this time. Upon completion of this work, the system shall be reevaluated in the presence of the Engineer. This process shall be repeated until the operational requirements are met.

All costs associated with testing and evaluation of the VDS, including the repositioning or addition of new materials, shall be considered incidental to the item.

**Compensation**

**819.80: Method of Measurement**

Stop Line Vehicle Detection Systems will be measured as each system furnished and installed.

Advanced Vehicle Detection Systems will be measured as each system furnished and installed.

Pedestrian Pushbuttons and APS Pushbuttons will be measured as each pushbutton furnished and installed.

**819.81: Basis of Payment**

Stop Line Vehicle Detection Systems will be paid for each system installed at an intersection. For the purposes of this work, an intersection shall be defined as all roadway, path, and/or trail approaches controlled by a single traffic signal controller. Where a Video Monitoring System is required per 819.40: General, it shall be included in the cost of Item 819.840.

Advanced Vehicle Detection System will be paid for each system installed on an intersection approach.

Pedestrian Pushbutton and APS Pushbutton will be paid for each pushbutton assembly installed. The pedestrian sign mounted directly above the pushbutton shall be considered incidental to the item.

The unit cost of each vehicle detection system or pushbutton item shall include all wiring, cabling, mounting hardware, software, firmware, video monitoring system (if required), testing, calibrating, Department Acceptance, training, and all other labor and materials required for the system(s) to operate per the Plans.

**819.82: Payment Items**

| Item number | Description | Unit |
|---|---|---|
| 819.840 | Stop Line Vehicle Detection System | Each |
| 819.845 | Advanced Vehicle Detection System | Each |
| 819.850 | Pedestrian Pushbutton | Each |
| 819.855 | APS Pushbutton | Each |

# SUBSECTION 850: TRAFFIC CONTROLS FOR CONSTRUCTION AND MAINTENANCE OPERATIONS

Subsection 850.25: Arrow Board
Subsection 850.45: Arrow Board
Subsection 850.65: Arrow Board
*Delete these subsections.*

Subsection 850.80: Method of Measurement
*Delete the 7th paragraph beginning with "Arrow Board will be measured …"*

Subsection 850.81: Basis of Payment
*Delete the 7th paragraph beginning with "Arrow Board will be paid for …"*

Subsection 850.82: Payment Items
*Revise description and unit of item 852. to Safety Signing for Traffic Management / Square Foot.*
*Delete item number 856.*

# SUBSECTION 856: CONNECTED WORK ZONE NOTIFICATION SYSTEM AND ASSOCIATED DEVICES

Subsection 856: Connected Work Zone Notification System and Associated Devices
*Add this new subsection.*

## DESCRIPTION

### 856.20: General

The Connected Work Zone Notification System (CWZNS) is a system of field devices that transmit real-time location-based data about work zones. CWZNS field device data is provided in a Work Zone Data Exchange (WZDx) Device Feed in accordance with the United States Department of Transportation (USDOT) WZDx Specification. The Device Feed is consumed by the MassDOT Work Zone Manager (WZM) application.

The Contractor shall be responsible for furnishing, installing, repositioning, operating, maintaining, and removing these CWZNS devices.

## MATERIALS

856.40: General

Materials shall meet the requirements specified in the following Subsections of Division III, Materials:

| Material | Section |
|---|---|
| Connected Work Zone Notification System Devices | M10.18.0 |
| Location Marker | M10.18.1 |
| Connected Arrow Board | M10.18.2 |

End Location Markers shall conform to M10.18.1: Location Marker and include power and communication status lights and an on/off switch.

### 856.41: Arrow Board

Arrow Boards shall consist of a matrix of yellow elements that may be illuminated in flashing or sequential patterns, on a non-reflective, black background. The light output from the Arrow Board shall meet the minimum legibility distance, per the MUTCD. The elements shall be capable of at least 50% dimming from full brilliance to avoid nighttime glare. Arrow Boards that are continuously operational in both daylight and nighttime conditions shall automatically adjust the light output based upon ambient light conditions.

The mounting height of the Arrow Board, when in operation, shall be per the Plans.

The minimum dimensions and number of elements for Arrow Boards shall be per Table 856.41-1.

**Table 856.41-1: Arrow Board Dimensions and Elements**

| Item Numbers | MUTCD Type | Minimum Dimensions (width by height) | Minimum Number of Elements |
|---|---|---|---|
| 856.060, 856.160 | B | 60 in. by 30 in. | 13 |
| 856.096, 856.196 | C | 96 in. by 48 in. | 15 |

Arrow Boards shall be capable of the following operating modes, per the MUTCD:

- Four Corners Flashing Caution
- Alternating Diamond Caution
- Flashing Arrow (left or right)
- Sequential Chevron (left or right)
- Flashing Double Arrow

Arrow Boards that are categorized as "Connected Arrow Boards" (Items 856.160 and 856.196) shall meet the requirements of M10.18.2: Connected Arrow Board in addition to the requirements of an Arrow Board described in this Subsection.

### 856.42: Shop Drawings

Within 30 days of the Notice to Proceed, the Contractor shall submit to the Engineer for review and approval cut sheets for each model of CWZNS device to be used. The cut sheets shall document device specifications, including details of how the CWZNS device will communicate. Work that requires the use of CWZNS devices shall not commence until the submission has been approved.

## CONSTRUCTION METHODS

### 856.60: General

At least 15 days prior to deploying CWZNS devices, the Contractor shall visit the site to verify cellular coverage. If the devices the Contractor plans to deploy do not have coverage, the Contractor shall swap out the cellular modem, SIM card, or both to a carrier that provides coverage. If no adequate cellular coverage exists from 4G LTE or 5G providers, the Contractor shall immediately notify the Engineer.

The Contractor shall install CWZNS devices at the locations shown on the Plans.

Per the WZDx Specification Device Feed, an End Location Marker shall have a single MarkedLocation with the "type" property as "work-zone-end".

The Contractor shall install and power on the End Location Marker coinciding with the deployment of the temporary traffic control setup that calls for its use. The Contractor shall power down and remove the Location Marker at the conclusion of the removal of the temporary traffic control setup. If the location of the work moves during a work shift, the Contractor shall power down the Location Marker, relocate it, and then power it back on.

The operating mode for the Arrow Board or Connected Arrow Board shall be per the Plans. When activated, the minimum element on-time shall be 50% for the flashing mode, with equal intervals of 25% for each sequential phase. The flashing rate shall be not less than 25 or more than 40 flashes per minute.

If a Connected Arrow Board is being used to transmit its location without utilizing other arrow board functions, such as operating a Flashing Arrow, the arrow board shall remain dark and removed from the roadway or protected from approaching traffic while the data is being transmitted.

The Contractor shall be responsible for remediating any CWZNS device that is not operating as specified, at no additional cost to the Department.

CWZNS devices that are lost, stolen, vandalized, damaged, destroyed, or deemed unacceptable while their use is required on the project shall be replaced by the Contractor at no additional cost to the Department.

**COMPENSATION**

**856.80: Method of Measurement**

Arrow Boards and Connected Arrow Boards will be measured by the Day. Each period of up to 24 hours during which an Arrow Board or Connected Arrow Board is in use will be measured as one day, regardless of the number of times that the unit is positioned, repositioned, removed, or returned to service.

End Location Markers will be measured by the Day. Each period of up to 24 hours during which a End Location Marker is in use will be measured as one day, regardless of the number of times that the unit is positioned, repositioned, removed, or returned to service.

**856.81: Basis of Payment**

Arrow Boards and Connected Arrow Boards will be paid for at the contract unit price per day which shall include full compensation for labor and materials, positioning, repositioning, and removing or returning to service.

End Location Markers will be paid for at the contract unit price per day which shall include full compensation for labor and materials, positioning, repositioning, and removing or returning to service.

If an End Location Marker is attached to another traffic control device that is not otherwise called for in the Plans or Specifications, that ancillary device shall be considered incidental to the cost of the End Location Marker.

Licenses, fees, communication costs, power costs, and access to real-time and recorded data associated with the Device Feed for CWZNS devices shall be considered incidental to the cost of the item.

The Department will not pay for CWZNS devices that fail to operate as specified.

**856.82: Payment Items**

| Item number | Description | Unit |
|---|---|---|
| 856.060 | Arrow Board (Type B) | Day |
| 856.096 | Arrow Board (Type C) | Day |
| 856.160 | Connected Arrow Board (Type B) | Day |
| 856.196 | Connected Arrow Board (Type C) | Day |
| 856.201 | End Location Marker | Day |

# SECTION 900: STRUCTURES

## SUBSECTION 901: CEMENT CONCRETE

Subsection 901.20: Materials

*Delete Asphaltic Materials – M3, Preformed Bituminous Fiber Joint Filler – M3.05.3 and add the following in M number sequence:*

| | |
|---|---|
| Preformed Expansion Joint Filler | M9.14.0 |

## SUBSECTION 983: REVETMENT

Subsection 983.40: General
*Delete Preformed Bituminous Fiber Joint Filler – M3.05.3 and add the following in M number sequence:*

| | |
|---|---|
| Preformed Expansion Joint Filler | M9.14.0 |

# DIVISION III

# MATERIALS SPECIFICATIONS

# SECTION M3: ASPHALTIC MATERIALS

Subsection M3.05.5: Preformed Bituminous Joint Filler for Concrete
*Delete this subsection.*

# SECTION M9: MISCELLANEOUS MATERIALS

Subsection M9.14.0: Preformed Expansion Joint Filler
*Replace this subsection with the following:*

Preformed expansion joint filler for concrete applications and structural construction shall meet the requirements specified herein. The Contractor shall provide certified test data which documents compliance with the required physical properties. The certified test data shall be submitted to the Engineer for approval.

**Table M9.14.0-1: Types of Preformed Expansion Joint Filler**

| Specification | Type and Description |
|---|---|
| AASHTO M 153 | Type I – Sponge Rubber<br>Type II – Cork<br>Type III – Self-Expanding Cork<br>Type IV – Polyurethane-Bonded Recycled Rubber |
| AASHTO M 213 | Type I – Asphalt-Saturated Cellulosic Fiber<br>Type II – Asphalt Binder-Cork with Asphalt-Saturated or Glass Fiber Felt<br>Type III – Polyurethane-Bonded Recycled Rubber |
| ASTM D1752 | Type IV – Recycled PVC |
| ASTM D7174 | Type I – Closed-Cell Polyethylene or Blended Polyethylene Foam |
| ASTM D8139 | Type I – Closed-Cell Polypropylene Foam |

Subsection M9.14.2: Closed Cell Foam Joint Filler
*Delete this subsection:*

### M10.03.1: Field Monitoring Unit

All Field Monitoring Units (FMU) shall be compatible with the MassDOT Critical Operations Multi-jurisdictional Modular System (MCOMMS), cloud-based management system.

Subsection M9.14.2: Closed Cell Foam Joint Filler
*Delete this subsection:*

# SECTION M10: TRAFFIC CONTROL DEVICES

Subsection M10.03.1: Field Monitoring Unit
*Add these new subsections:*

## M10.03.1: Field Monitoring Unit

All Field Monitoring Units (FMU) shall be compatible with the MassDOT Critical Operations Multi-jurisdictional Modular System (MCOMMS), cloud-based management system.

FMUs shall be capable of operating independently from the brand of traffic signal controller, vehicle and pedestrian detection systems, battery backup system (BBS), and any other Ethernet-based, web accessible device present in the traffic signal controller cabinet.

### M10.03.1.A: Hardware

The FMU shall communicate via an Ethernet port with an RJ45 connector and have an integrated Ethernet switch with a minimum of four ports.

The FMU shall be powered via standard 120 VAC input power. The FMU shall include an integrated battery and battery charging/monitoring circuit that will allow the FMU to fully function even if all other electrical service to the cabinet has been interrupted. The battery shall continue to supply the FMU with power for a minimum of 5 hours on a single charge.

The FMU shall have an integrated GPS that will allow for automated telemetry without additional configuration. The GPS shall be capable of providing a time sync pulse to the internal clock of a connected traffic signal controller. The FMU shall utilize the integrated GPS to geolocate itself on a map via the FMU management software.

### M10.03.1.B: Software

The configuration of the FMU shall be accomplished by accessing FMU management software via an internet browser. It shall be possible to configure the FMU without any special software.

The FMU shall operate without requiring a static IP address. The only configuration required at the FMU is to enter the URL to the host of the FMU management software.

The FMU shall utilize HTTPS protocols and XML data structure for communications with the FMU management software. The data shall be scalable for future expansion; proprietary protocols shall not be used.

### M10.03.1.C: Wireless Connectivity

The FMU shall be supplied with an internal 4G LTE cellular modem.

The modem shall support future upgrades to 5G service, when available, and shall be compatible with SIM cards from multiple cellular carriers.

### M10.03.1.D: Remote Access

Remote access to any traffic signal cabinet component that has a web interface via the FMU shall not require the end user to create a separate Virtual Private Network (VPN) connection.

Subsection M10.08.0: Vehicle Detection Systems
Subsection M10.08.0: Vehicle Detection Systems
Subsection M10.08.0: Vehicle Detection Systems
*Add theses new subsections:*

### M10.08.0: Vehicle Detection Systems

Vehicle Detection Systems (VDS) shall be capable of detecting the presence of all motor vehicle types and bicycles in designated areas and sending corresponding detector outputs to a traffic signal controller.

All in-cabinet components of VDS shall be compatible with the following standards:

- ATCC 5301 v02
- ATC 5201 v06
- NEMA TS2 environmental standards

Through an ethernet-based connection to the detection module and/or cabinet interface device in the field or through the internal network of the traffic signal controller cabinet, the VDS shall support remote management of motor vehicle and bicycle detection configurations and access to data including:

- The number, location, and size of detection zones.
- Configuration of the detector channel and assigned phase for each zone.
- Configuration of detection zones for signal performance measurement data collection.
- The ability to add and remove users.
- Signal performance data:
  - Monitoring and recording the status of the phase and detector channels from the traffic signal controller through the SIU bus at a frequency of no less than 10 times per second.
  - Estimation of the speed of vehicles at defined, user-configurable points, such as entering or exiting a detection zone.
  - Retrieval of the signal performance data through an http-based Application Programming Interface (API), or equivalent process, in .xml, .json, or .csv format.
  - The data shall be available in a per vehicle format, be viewable in real time, and store at least 168 hours of data locally on the device.

VDS shall be capable of supporting user-based restrictions to limit functionality, including:

- The ability to make changes to the VDS settings.
- The ability to view imagery or digital video streams.
- The ability to view and download signal performance data.

VDS shall be capable of automatically determining if the system's ability to accurately detect vehicles and shall default to a constant call state if this system error is detected.

VDS shall be capable of classifying vehicles based upon length and/or number of axles.

VDS shall be capable of performing all detection, classification, and data collection functions in the absence of an internet connection.

VDS shall be capable of providing remote access to the latest images or digital video stream of all IP video units through either an HTTP request or through a Real Time Streaming Protocol compatible with RFC2326 standards. VDS that do not utilize video shall be able to display the current state of the vehicle detection zones and approximate vehicle locations in a digital twin model of the intersection.

**M10.08.1: Passive Stop Line Detectors**

Passive Stop Line Detectors shall demonstrate a reliability of 99% or greater for vehicle detection functions.

Passive Stop Line Detectors shall be able to track and classify turning movements for all motor vehicle types and bicycles and shall demonstrate an accuracy of 95% or greater for turning movement counts.

**M10.08.2: Passive Advanced Detectors**

Passive Advanced Detectors shall be capable of detecting all motor vehicle types at a minimum distance of 600 ft upstream of the stop line.

Subsection M10.09.0: Pedestrian Detectors
Subsection M10.09.1: Pedestrian Pushbutton Assembly
Subsection M10.09.2: APS Pushbutton Assembly
*Add theses new subsections:*

**M10.09.0: Pedestrian Detectors**

Pedestrian Detectors shall be capable of detecting the presence of pedestrians and placing a corresponding call for a phase in a traffic signal controller or similar device.

Pedestrian Detectors may be pushbuttons or passive detection devices.

Components of Pedestrian Detectors shall meet NEMA TS2 compliance for temperature and humidity, mechanical shock and vibration, transient voltage protection, transient suppression, and electrical reliability.

If Pedestrian Detectors include an in-cabinet control unit, it shall meet the following requirements:

- Operate on a cabinet-supplied 120 VAC power source.
- Include labelled LED indicators for each channel operation.
- Include a 10/100BaseT, RJ45 ethernet connector port.
- Capable of communication with the Pedestrian Detectors to allow for remote programming and firmware updates via the ethernet connection.
- Capable of supporting a minimum of 4 pedestrian detectors per NEMA pedestrian phase and up to 16 pushbuttons.
- Will automatically reset upon loss of internal communication.

**M10.09.1: Pedestrian Pushbutton Assembly**

A Pedestrian Pushbutton Assembly shall consist of a pushbutton, a sign, and a housing to mount those devices to a post.

The pushbutton shall be a minimum of 2 in. in diameter and the force to activate it shall be no greater than 5 lbs. The pushbutton must be weather-tight and tamper-resistant.

The pushbutton shall meet one of the following criteria:

- A normally open, mechanical phenolic enclosed, positive-acting, spring-loaded, audible (i.e., click) snap-action switch with single pole, single throw contacts; or
- A piezo-driven solid state switch rated for a minimum of 50 V, a minimum of 20 million cycles, and capable of providing an audible indication of actuation.

The pushbutton shall have an operating voltage range of 12 to 36 VDC.

The housing shall be yellow.

Housings that include an integral sign mount for the pedestrian pushbutton sign shall be capable of mounting a 9 in. by 12 in. or 9 in. by 15 in. sign (width by height).

**M10.09.2: APS Pushbutton Assembly**

An APS Pushbutton Assembly shall meet all of the requirements of M10.09.1: Pedestrian Pushbutton Assembly, and the following.

The pushbutton shall have a vibrotactile arrow. The arrow shall have high visual contrast (light on dark or dark on light).

APS Pushbutton Assembly shall be capable of the following:

- Emitting a locator tone.
- Providing two types of audible walk indications: an audible tone in multiple frequencies and a speech message. The type of audible walk indication will be programmed by Contractor per the Plans.
- Emitting sound via one or more speakers that automatically adjust to ambient noise and shall also be capable of being capped at a preprogrammed level.
- Providing three functions as a result of an extended pushbutton press: increased crossing time, audible beaconing, and speech pushbutton information. The function of the extended pushbutton press will be programmed by the Contractor per the Plans.

APS Pushbutton Assembly shall include a latching red LED pilot light.

Subsection M10.18.: Connected Work Zone Notification System Devices
*Add this new subsection.*

**M10.18.0: Connected Work Zone Notification System Devices**

Connected Work Zone Notification System (CWZNS) devices shall include the following:

- An internal 4G LTE or 5G cellular modem. The modem shall be compatible with SIM cards from multiple cellular carriers, or the device shall be capable of using a cellular modem from more than one cellular carrier.
- An integrated GPS that will allow for automated telemetry without additional configuration.
- A self-contained power source that can be recharged without manual intervention. The power source shall enable uninterrupted operation of the CWZNS field device.
- Mounting and supporting hardware and wiring necessary to complete a working system.

CWZNS devices shall be capable of operating in temperatures ranging from -40°F to +122°F with no degradation in operation due to rain, fog, snow, ice, darkness, dust, or road debris.

CWZNS devices shall be physically and digitally secured to prevent unauthorized access.

When powered on, real-time data from CWZNS devices shall be provided in a USDOT Work Zone Data Exchange (WZDx) Specification Device Feed version 4.2. The Device Feed shall then be able to be consumed by the MassDOT Work Zone Manager (WZM) application. The Device Feed shall meet the following requirements:

- Each manufacturer of CWZNS field devices and Smart Work Zone (SWZ) field devices shall provide a single statewide Device Feed (a single URL) that consists of that manufacturer's field devices that are used by or under the direction of the Department.
- The Device Feed shall be made available via an HTTP GET request. The response shall be the WZDx Device Feed JSON object without a wrapper or paging.
- The Device Feed shall be public or use "Basic" HTTP Authentication.
- The Device Feed shall be provided over HTTPS.
- The Device Feed shall reflect changes in CWZNS field device status (e.g., display changed or device moved) no later than 60 seconds after they occur.
- For each CWZNS field device, the "update date" property shall be no older than 60 minutes, except when it has stopped communicating or is otherwise in error.
- The "id" property of each CWZNS field device feature in the Device Feed shall stay the same for the duration of the Contract and shall be a Universally Unique IDentifier (UUID) to guarantee uniqueness between feeds and over time.

**M10.18.1: Location Marker**

Location Markers shall meet the requirements of M10.18.0: Connected Work Zone Notification System Devices.

Location Markers may be standalone devices or an attachment to a channelizing device. Either type shall be certified to comply with the relevant minimum TL-3 testing requirements of the *Manual on Assessing Safety Hardware*.

**<<<<<<<<<<>>>>>>>>>>**

END OF SUPPLEMENTAL SPECIFICATIONS

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**CONTRACT PROVISIONS FOR
FEDERAL-AID CONSTRUCTION CONTRACTS**

I. General
II. Nondiscrimination
III. Davis-Bacon and Related Act Provisions
IV. Contract Work Hours and Safety Standards Act Provisions
V. Subletting or Assigning the Contract
VI. Safety: Accident Prevention
VII. False Statements Concerning Highway Projects
VIII. Implementation of Clean Air Act and Federal Water Pollution Control Act
IX. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion
X. Certification Regarding Use of Contract Funds for Lobbying
XI. Use of United States-Flag Vessels

ATTACHMENTS

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only).

## I. GENERAL

1. Historically, contracting agencies using Federal-aid highway funds were required to ensure Form FHWA-1273 was physically incorporated into all contracts and subcontracts. Effective June 10, 2026, this requirement was eliminated [91 FR 25492]. Future use of Form FHWA-1273 is now optional on the part of the contracting agency using Federal-aid highway funds. FHWA continues to make Form FHWA-1273 available as a convenience to contracting agencies. Contracting agencies must continue to ensure compliance with the provisions cited in Form FHWA-1273 in accordance with the provisions regardless of the use of Form FHWA-1273. Accordingly, the contracting agency retains the authority to determine whether the contractor must use Form FHWA-1273 to physically incorporate required contract provisions in each subcontract and in lower tier contracts. Where permitted by the contracting agency, the contractor may choose other ways to include required contract provisions in each subcontract, besides incorporating Form FHWA-1273. Contract provisions in Form FHWA-1273 are not required to be physically included in subcontracts for design services on Federal-aid design-build contracts, or in purchase orders, rental agreements and other agreements for supplies or services.

The applicable provisions of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor or design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in solicitation-for-bids or request-for-proposals documents.

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. 23 U.S.C. 114(b). The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors. 23 U.S.C. 101(a).

## II. NONDISCRIMINATION

The contractor and all subcontractors must comply with the following policies: 29 CFR Parts 1625-1627, 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), and related regulations including 49 CFR Parts 21, 26, and 27, including any amendments thereto.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with 29 CFR Parts 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), and Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), and related regulations including 49 CFR Parts 21, 26, and 27, including any amendments thereto.

The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR Part 35 and 29 CFR Part 1630 are incorporated by reference in this contract.

**1.Assurances Required:**

a. The requirements of 49 CFR Part 26, including any amendments thereto, and the State DOT's FHWA-approved Disadvantaged Business Enterprise (DBE) program are incorporated by reference.

b. The contractor, subrecipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR part 26, including any amendments thereto, in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, which may include, but is not limited to:

(1) Withholding monthly progress payments;
(2) Assessing sanctions;
(3) Liquidated damages; and/or
(4) Disqualifying the contractor from future bidding as non-responsible.

c. The Title VI and nondiscrimination provisions of U.S. DOT Order 1050.2A at Appendixes A and E, including any amendments thereto, are incorporated by reference. 49 CFR Part 21.

**III. DAVIS-BACON AND RELATED ACT PROVISIONS**

This section is applicable to all Federal-aid construction projects exceeding $2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size), in accordance with 29 CFR 5.5. The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. 23 U.S.C. 113. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. 23 U.S.C. 101. Where applicable law requires that projects be treated as a project on a Federal-aid highway, the provisions of this subpart will apply regardless of the location of the project. Examples include: Surface Transportation Block Grant Program projects funded under 23 U.S.C. 133 [excluding recreational trails projects], the Nationally Significant Freight and Highway Projects funded under 23 U.S.C. 117, and National Highway Freight Program projects funded under 23 U.S.C. 167.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 “Contract provisions and related matters” with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

**1. Minimum wages** (29 CFR 5.5)

a. *Wage rates and fringe benefits.* All laborers and mechanics employed or working upon the site of the work (or otherwise working in construction or development of the project under a development statute), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of basic hourly wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. As provided in paragraphs (d) and (e) of 29 CFR 5.5, the appropriate wage determinations are effective by operation of law even if they have not been attached to the contract. Contributions made or costs reasonably anticipated for bona fide fringe benefits under the Davis-Bacon Act (40 U.S.C. 3141(2)(B)) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.e. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics must be paid the appropriate wage rate and fringe benefits on the wage determination for the classification(s) of work actually performed, without regard to skill, except as provided in paragraph 4. of this section. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: *Provided,* That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classifications and wage rates conformed under paragraph 1.c. of this section) and the Davis-Bacon poster (WH–1321) must be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b. *Frequently recurring classifications.* (1) In addition to wage and fringe benefit rates that have been determined to be prevailing under the procedures set forth in 29 CFR part 1, a wage determination may contain, pursuant to § 1.3(f), wage and fringe benefit rates for classifications of laborers and mechanics for which conformance requests are regularly submitted pursuant to paragraph 1.c. of this section, provided that:

(i) The work performed by the classification is not performed by a classification in the wage determination for which a prevailing wage rate has been determined;

(ii) The classification is used in the area by the construction industry; and

(iii) The wage rate for the classification bears a reasonable relationship to the prevailing wage rates contained in the wage determination.

(2) The Administrator will establish wage rates for such classifications in accordance with paragraph 1.c.(1)(iii) of this section. Work performed in such a classification must be paid at no less than the wage and fringe benefit rate listed on the wage determination for such classification.

c. *Conformance.* (1) The contracting officer must require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract be classified in conformance with the wage determination. Conformance of an additional classification and wage rate and fringe benefits is appropriate only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is used in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) The conformance process may not be used to split, subdivide, or otherwise avoid application of classifications listed in the wage determination.

(3) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the

classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken will be sent by the contracting officer by email to DBAconformance@dol.gov. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30–day period that additional time is necessary.

(4) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer will, by email to DBAconformance@dol.gov, refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30–day period that additional time is necessary.

(5) The contracting officer must promptly notify the contractor of the action taken by the Wage and Hour Division under paragraphs 1.c.(3) and (4) of this section. The contractor must furnish a written copy of such determination to each affected worker or it must be posted as a part of the wage determination. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 1.c.(3) or (4) of this section must be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

d. *Fringe benefits not expressed as an hourly rate.* Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor may either pay the benefit as stated in the wage determination or may pay another bona fide fringe benefit or an hourly cash equivalent thereof.

e. *Unfunded plans.* If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, *Provided,* That the Secretary of Labor has found, upon the written request of the contractor, in accordance with the criteria set forth in § 5.28, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

f. *Interest.* In the event of a failure to pay all or part of the wages required by the contract, the contractor will be required to pay interest on any underpayment of wages.

**2. Withholding** (29 CFR 5.5)

a. *Withholding requirements.* The contracting agency may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for the full amount of wages and monetary relief, including interest, required by the clauses set forth in this section for violations of this contract, or to satisfy any such liabilities required by any other Federal contract, or federally assisted contract subject to Davis-Bacon labor standards, that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to Davis-Bacon labor standards requirements and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld. In the event of a contractor's failure to pay any laborer or mechanic, including any apprentice or helper working on the site of the work all or part of the wages required by the contract, or upon the contractor's failure to submit the required records as discussed in paragraph 3.d. of this section, the contracting agency may on its own initiative and after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

b. *Priority to withheld funds.* The Department has priority to funds withheld or to be withheld in accordance with paragraph 2.a. of this section or Section IV, paragraph 3.a., or both, over claims to those funds by:

(1) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;

(2) A contracting agency for its reprocurement costs;

(3) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;

(4) A contractor's assignee(s);

(5) A contractor's successor(s); or

(6) A claim asserted under the Prompt Payment Act, 31 U.S.C. 3901–3907.

**3. Records and certified payrolls** (29 CFR 5.5)

a. *Basic record requirements* (1) *Length of record retention.* All regular payrolls and other basic records must be maintained by the contractor and any subcontractor during the course of the work and preserved for all laborers and mechanics working at the site of the work (or otherwise working in construction or development of the project under a development statute) for a period of at least 3 years after all the work on the prime contract is completed.

(2) *Information required.* Such records must contain the name; Social Security number; last known address, telephone number, and email address of each such worker; each worker's correct classification(s) of work actually performed; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in 40 U.S.C. 3141(2)(B) of the Davis-Bacon Act); daily and weekly number

of hours actually worked in total and on each covered contract; deductions made; and actual wages paid.

(3) *Additional records relating to fringe benefits.* Whenever the Secretary of Labor has found under paragraph 1.e. of this section that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in 40 U.S.C. 3141(2)(B) of the Davis-Bacon Act, the contractor must maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits.

(4) *Additional records relating to apprenticeship.* Contractors with apprentices working under approved programs must maintain written evidence of the registration of apprenticeship programs, the registration of the apprentices, and the ratios and wage rates prescribed in the applicable programs.

b. *Certified payroll requirements* (1) *Frequency and method of submission.* The contractor or subcontractor must submit weekly, for each week in which any DBA- or Related Acts-covered work is performed, certified payrolls to the contracting agency. The prime contractor is responsible for the submission of all certified payrolls by all subcontractors. A contracting agency or prime contractor may permit or require contractors to submit certified payrolls through an electronic system, as long as the electronic system requires a legally valid electronic signature; the system allows the contractor, the contracting agency, and the Department of Labor to access the certified payrolls upon request for at least 3 years after the work on the prime contract has been completed; and the contracting agency or prime contractor permits other methods of submission in situations where the contractor is unable or limited in its ability to use or access the electronic system.

(2) *Information required.* The certified payrolls submitted must set out accurately and completely all of the information required to be maintained under paragraph 3.a.(2) of this section, except that full Social Security numbers and last known addresses, telephone numbers, and email addresses must not be included on weekly transmittals. Instead, the certified payrolls need only include an individually identifying number for each worker ( *e.g.,* the last four digits of the worker's Social Security number). The required weekly certified payroll information may be submitted using Optional Form WH–347 or in any other format desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division website at *https://www.dol.gov/sites/dolgov/files/WHD/legacy/files/wh347/.pdf* or its successor website. It is not a violation of this section for a prime contractor to require a subcontractor to provide full Social Security numbers and last known addresses, telephone numbers, and email addresses to the prime contractor for its own records, without weekly submission by the subcontractor to the contracting agency.

(3) *Statement of Compliance.* Each certified payroll submitted must be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor, or the contractor's or subcontractor's agent who pays or supervises the payment of the persons working on the contract, and must certify the following:

(i) That the certified payroll for the payroll period contains the information required to be provided under paragraph 3.b. of this section, the appropriate information and basic records are being maintained under paragraph 3.a. of this section, and such information and records are correct and complete;

(ii) That each laborer or mechanic (including each helper and apprentice) working on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR part 3; and

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification(s) of work actually performed, as specified in the applicable wage determination incorporated into the contract.

(4) *Use of Optional Form WH–347.* The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH–347 will satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(3) of this section.

(5) *Signature.* The signature by the contractor, subcontractor, or the contractor's or subcontractor's agent must be an original handwritten signature or a legally valid electronic signature.

(6) *Falsification.* The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under 18 U.S.C. 1001 and 31 U.S.C. 3729.

(7) *Length of certified payroll retention.* The contractor or subcontractor must preserve all certified payrolls during the course of the work and for a period of 3 years after all the work on the prime contract is completed.

c. *Contracts, subcontracts, and related documents.* The contractor or subcontractor must maintain this contract or subcontract and related documents including, without limitation, bids, proposals, amendments, modifications, and extensions. The contractor or subcontractor must preserve these contracts, subcontracts, and related documents during the course of the work and for a period of 3 years after all the work on the prime contract is completed.

d. *Required disclosures and access* (1) *Required record disclosures and access to workers.* The contractor or subcontractor must make the records required under paragraphs 3.a. through 3.c. of this section, and any other documents that the contracting agency, the State DOT, the FHWA, or the Department of Labor deems necessary to determine compliance with the labor standards provisions of any of the applicable statutes referenced by § 5.1, available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and must permit such representatives to interview workers during working hours on the job.

(2) *Sanctions for non-compliance with records and worker access requirements.* If the contractor or subcontractor fails to submit the required records or to make them available, or refuses to permit worker interviews during working hours on the job, the Federal agency may, after written notice to the contractor, sponsor, applicant, owner, or other entity, as the case may be, that maintains such records or that employs such workers, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available, or to permit worker interviews during working hours on the job, may be grounds for debarment action pursuant to § 5.12. In addition, any contractor or other person that fails to submit the required records or make those records available to WHD within the time WHD requests that the records be produced will be precluded from introducing as evidence in an administrative proceeding under 29 CFR part 6 any of the required records that were not provided or made available to WHD. WHD will take into consideration a reasonable request from the contractor or person for an extension of the time for submission of records. WHD will determine the reasonableness of the request and may consider, among other things, the location of the records and the volume of production.

(3) *Required information disclosures.* Contractors and subcontractors must maintain the full Social Security number and last known address, telephone number, and email address of each covered worker, and must provide them upon request to the contracting agency, the State DOT, the FHWA, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or other compliance action.

**4. Apprentices and equal employment opportunity** (29 CFR 5.5)

a. *Apprentices* (1) *Rate of pay.* Apprentices will be permitted to work at less than the predetermined rate for the work they perform when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship (OA), or with a State Apprenticeship Agency recognized by the OA. A person who is not individually registered in the program, but who has been certified by the OA or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice, will be permitted to work at less than the predetermined rate for the work they perform in the first 90 days of probationary employment as an apprentice in such a program. In the event the OA or a State Apprenticeship Agency recognized by the OA withdraws approval of an apprenticeship program, the contractor will no longer be permitted to use apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(2) *Fringe benefits.* Apprentices must be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringe benefits must be paid in accordance with that determination.

(3) *Apprenticeship ratio.* The allowable ratio of apprentices to journeyworkers on the job site in any craft classification must not be greater than the ratio permitted to the contractor as to the entire work force under the registered program or the ratio applicable to the locality of the project pursuant to paragraph 4.a.(4) of this section. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated in paragraph 4.a.(1) of this section, must be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under this section must be paid not less than the applicable wage rate on the wage determination for the work actually performed.

(4) *Reciprocity of ratios and wage rates.* Where a contractor is performing construction on a project in a locality other than the locality in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyworker's hourly rate) applicable within the locality in which the construction is being performed must be observed. If there is no applicable ratio or wage rate for the locality of the project, the ratio and wage rate specified in the contractor's registered program must be observed.

b. *Equal employment opportunity.* The use of apprentices and journeyworkers under this part must be in conformity with 29 CFR part 30, including any amendments thereto.

c. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section III. 23 CFR 230.111(e)(2). The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeyworkers shall not be greater than permitted by the terms of the particular program.

**5. Compliance with Copeland Act requirements.** The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract as provided in 29 CFR 5.5.

**6. Subcontracts**. The contractor or subcontractor must insert in any subcontracts the clauses set forth in paragraphs (1) through (11) of this section, along with the applicable wage determination(s) and such other clauses or contract modifications as the contracting agency may by appropriate instructions require, and a clause requiring the subcontractors to include these clauses and wage determination(s) in any lower tier subcontracts. The prime contractor is responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this section. In the event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and may be subject to debarment, as appropriate. 29 CFR 5.5.

**7. Contract termination: debarment.** A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the

contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

**8. Compliance with Davis-Bacon and Related Act requirements.** All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract as provided in 29 CFR 5.5.

**9. Disputes concerning labor standards.** As provided in 29 CFR 5.5, disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

**10. Certification of eligibility**. a. By entering into this contract, the contractor certifies that neither it nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of 40 U.S.C. 3144(b) or § 5.12(a).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of 40 U.S.C. 3144(b) or § 5.12(a).

c. The penalty for making false statements is prescribed in the U.S. Code, Title 18 Crimes and Criminal Procedure, 18 U.S.C. 1001.

**11. Anti-retaliation**. It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:

a. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the DBA, Related Acts, this part, or 29 CFR part 1 or 3;

b. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under the DBA, Related Acts, this part, or 29 CFR part 1 or 3;

c. Cooperating in any investigation or other compliance action, or testifying in any proceeding under the DBA, Related Acts, this part, or 29 CFR part 1 or 3; or

d. Informing any other person about their rights under the DBA, Related Acts, this part, or 29 CFR part 1 or 3.

## IV. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

Pursuant to 29 CFR 5.5(b), the following clauses apply to any Federal-aid construction contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchpersons and guards.

**1. Overtime requirements.** No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek. 29 CFR 5.5.

**2. Violation; liability for unpaid wages; liquidated damages.** In the event of any violation of the clause set forth in paragraph 1. of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages and interest from the date of the underpayment. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchpersons and guards, employed in violation of the clause set forth in paragraph 1. of this section, in the sum currently provided in 29 CFR 5.5(b)(2)* 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 1. of this section.

* $33 as of January 15, 2025 (See 90 FR 1859) as may be adjusted annually by the Department of Labor, pursuant to the Federal Civil Penalties Inflation Adjustment Act of 1990.

**3. Withholding for unpaid wages and liquidated damages**

a. *Withholding process.* The FHWA or the contracting agency may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for any unpaid wages; monetary relief, including interest; and liquidated damages required by the clauses set forth in this section on this contract, 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 that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to the Contract Work Hours and Safety Standards Act and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld.

b. *Priority to withheld funds.* The Department has priority to funds withheld or to be withheld in accordance with Section III paragraph 2.a. or paragraph 3.a. of this section, or both, over claims to those funds by:

(1) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;

(2) A contracting agency for its reprocurement costs;

(3) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;

(4) A contractor's assignee(s);

(5) A contractor's successor(s); or

(6) A claim asserted under the Prompt Payment Act, 31 U.S.C. 3901–3907.

**4. Subcontracts.** The contractor or subcontractor must insert in any subcontracts the clauses set forth in paragraphs 1. through 5. of this section and a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor is responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs 1. through 5. In the event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and associated liquidated damages and may be subject to debarment, as appropriate.

**5. Anti-retaliation.** It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:

a. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the Contract Work Hours and Safety Standards Act (CWHSSA) or its implementing regulations in this part;

b. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under CWHSSA or this part;

c. Cooperating in any investigation or other compliance action, or testifying in any proceeding under CWHSSA or this part; or

d. Informing any other person about their rights under CWHSSA or this part.

## V. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System pursuant to 23 CFR 635.116.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term “perform work with its own organization” in paragraph 1. of this section refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions: (based on longstanding interpretation)

(1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;
(2) the prime contractor remains responsible for the quality of the work of the leased employees;
(3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and
(4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract. 23 CFR 635.102.

2. Pursuant to 23 CFR 635.116(a), the contract amount upon which the requirements set forth in paragraph 1. of this section is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. Pursuant to 23 CFR 635.116(c), the contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract. (based on long-standing interpretation of 23 CFR 635.116).

5. The 30-percent self-performance requirement of paragraph (1) is not applicable to design-build contracts; however,

contracting agencies may establish their own self-performance requirements. 23 CFR 635.116(d).

**VI. SAFETY: ACCIDENT PREVENTION**

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR Part 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract. 23 CFR 635.108.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR Part 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704). 29 CFR 1926.10.

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

**VII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS**

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR Part 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 11, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

**VIII. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT** (42 U.S.C. 7606; 2 CFR 200.88; EO 11738)

This provision is applicable to all Federal-aid construction contracts in excess of $150,000 and to all related subcontracts. 48 CFR 2.101; 2 CFR 200.327.

By submission of this bid/proposal or the execution of this contract or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, subcontractor, supplier, or vendor 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). Violations must be reported to the Federal Highway Administration and the Regional Office of the Environmental Protection Agency. 2 CFR Part 200, Appendix II.

The contractor agrees to include or cause to be included the requirements of this Section in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements. 2 CFR 200.327.

**IX. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION**

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost $25,000 or more – as defined in 2 CFR Parts 180 and 1200. 2 CFR 180.220 and 1200.220.

1**. Instructions for Certification – First Tier Participants:**

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this

covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction. 2 CFR 180.320.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default. 2 CFR 180.325.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances. 2 CFR 180.345 and 180.350.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180, Subpart I, 180.900-180.1020, and 1200. “First Tier Covered Transactions” refers to any covered transaction between a recipient or subrecipient of Federal funds and a participant (such as the prime or general contract). “Lower Tier Covered Transactions” refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). “First Tier Participant” refers to the participant who has entered into a covered transaction with a recipient or subrecipient of Federal funds (such as the prime or general contractor). “Lower Tier Participant” refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction. 2 CFR 180.330.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold. 2 CFR 180.220 and 180.300.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. 2 CFR 180.300; 180.320, and 180.325. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. 2 CFR 180.335. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the System for Award Management website (https://www.sam.gov/). 2 CFR 180.300, 180.320, and 180.325.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default. 2 CFR 180.325.

* * * * *

**2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:**

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency, 2 CFR 180.335;

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property, 2 CFR 180.800;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification, 2 CFR 180.700 and 180.800; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default. 2 CFR 180.335(d).

(5) Are not a corporation that has been convicted of a felony violation under any Federal law within the two-year period preceding this proposal (USDOT Order 4200.6 implementing appropriations act requirements); and

(6) Are not a corporation with any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability (USDOT Order 4200.6 implementing appropriations act requirements).

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant should attach an explanation to this proposal. 2 CFR 180.335 and 180.340.

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3. **Instructions for Certification - Lower Tier Participants:**

(Applicable to all subcontracts, purchase orders, and other lower tier transactions requiring prior FHWA approval or estimated to cost $25,000 or more - 2 CFR Parts 180 and 1200). 2 CFR 180.220 and 1200.220.

a. By signing and submitting this proposal, the prospective lower tier participant is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances. 2 CFR 180.365.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180, Subpart I, 180.900 – 180.1020, and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. “First Tier Covered Transactions” refers to any covered transaction between a recipient or subrecipient of Federal funds and a participant (such as the prime or general contract). “Lower Tier Covered Transactions” refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). “First Tier Participant” refers to the participant who has entered into a covered transaction with a recipient or subrecipient of Federal funds (such as the prime or general contractor). “Lower Tier Participant” refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated. 2 CFR 1200.220 and 1200.332.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold. 2 CFR 180.220 and 1200.220.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the System for Award Management website (https://www.sam.gov/), which is compiled by the General Services Administration. 2 CFR 180.300, 180.320, 180.330, and 180.335.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment. 2 CFR 180.325.

* * * * *

**4. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:**

a. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals:

(1) is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency, 2 CFR 180.355;

(2) is a corporation that has been convicted of a felony violation under any Federal law within the two-year period preceding this proposal (USDOT Order 4200.6 implementing appropriations act requirements); and

(3) is a corporation with any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability. (USDOT Order 4200.6 implementing appropriations act requirements)

b. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant should attach an explanation to this proposal.

* * * * *

**X. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING**

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed $100,000. 49 CFR Part 20, App. A.

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, 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 any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction 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.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such recipients shall certify and disclose accordingly.

**XI. USE OF UNITED STATES-FLAG VESSELS:**

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, or any other covered transaction. 46 CFR Part 381.

This requirement applies to material or equipment that is acquired for a specific Federal-aid highway project. 46 CFR 381.7. It is not applicable to goods or materials that come into inventories independent of an FHWA funded-contract.

When oceanic shipments (or shipments across the Great Lakes) are necessary for materials or equipment acquired for a specific Federal-aid construction project, the bidder, proposer, contractor, subcontractor, or vendor agrees:

1. To utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels. 46 CFR 381.7.

2. To furnish within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, ‘on-board’ commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (b)(1) of this section to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Office of Cargo and Commercial Sealift (MAR-620), Maritime Administration, Washington, DC 20590. (MARAD requires copies of the ocean carrier's (master) bills of lading, certified onboard, dated, with rates and charges. These bills of lading may contain business sensitive information and therefore may be submitted directly to MARAD by the Ocean Transportation Intermediary on behalf of the contractor). 46 CFR 381.7.

**ATTACHMENT A - EMPLOYMENT AND MATERIALS PREFERENCE FOR APPALACHIAN DEVELOPMENT HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS ROAD CONTRACTS** (40 U.S.C. sections 14501(d) and 14701 and the Appalachian Regional Commission Code as authorized under 40 U.S.C. section 14302)
This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:

a. To the extent that qualified persons regularly residing in the area are not available.

b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.

c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph (1c) shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph (4) below.

2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which the participant estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, the participant shall promptly notify the State Employment Service.

3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.

4. If, within one week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph (1c) above.

5. The provisions of 40 U.S.C. 14501 allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.

6. The contractor shall include the provisions of Sections 1 through 4 of this Attachment A in every subcontract for work which is, or reasonably may be, done as on-site work.

DOCUMENT 00811

SPECIAL PROVISIONS
MONTHLY PRICE ADJUSTMENT FOR HOT MIX ASPHALT (HMA) MIXTURES
Revised: 02/03/2023

This provision applies to all projects using greater than 100 tons of hot mix asphalt (HMA) mixtures containing liquid asphalt cement as stipulated in the Notice to Contractors section of the bid documents.

Price Adjustments will be based on the variance in price, for the liquid asphalt component only, between the Base Price and the Period Price. They shall not include transportation or other charges. Price Adjustments will occur on a monthly basis.

**Base Price**
The Base Price of liquid asphalt on a project as listed in the Notice to Contractors section of the bid documents is a fixed price determined by the Department at the time of the bid using the same method as the determination of the Period Price detailed below. The Base Price shall be used in all bids.

**Period Price**
The Period Price is the price of liquid asphalt for each monthly period as determined by the Department using the average selling price per standard ton of PG64-28 paving grade (primary binder classification) asphalt, FOB manufacturer's terminal, as listed under the "East Coast Market - New England, Boston, Massachusetts area" section of the Poten & Partners, Inc. "Asphalt Weekly Monitor". This average selling price is listed in the issue having a publication date of the second Friday of the month and will be posted as the Period Price for that month. The Department will post this Period Price on its website at https://www.mass.gov/service-details/massdot-current-contract-price-adjustments following its receipt of the relevant issue of the "Asphalt Weekly Monitor". Poten and Partners has granted the Department the right to publish this specific asphalt price information sourced from the Asphalt Weekly Monitor.

**Price Adjustment Determination, Calculation and Payment**
The Contract Price of the HMA mixture will be paid under the respective item in the Contract. Price Adjustments, as herein provided, either upwards or downwards, will be made after the work has been performed using the monthly period price for the month during which the work was performed.

Price Adjustments will be paid only if the variance from the Base Price is 5% or more for a monthly period. The complete adjustment will be paid in all cases with no deduction of the 5% from either upward or downward adjustments.

The Price Adjustment applies only to the actual virgin liquid asphalt content in the mixture placed on the job in accordance with the approved Job Mix Formula.

Price Adjustments will be separate payment items. The pay item numbers are 999.401 for a positive price adjustment (a payment) and 999.402 for a negative price adjustment (a deduction). Price Adjustments will be calculated using the following equation:

Price Adjustment = Tons of HMA Placed X Liquid Asphalt Content % X RAP Factor X (Period Price - Base Price)

No Price Adjustment will be allowed beyond the Completion Date of this Contract, unless there is a Department-approved extension of time.

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DOCUMENT 00812

SPECIAL PROVISIONS
MONTHLY PRICE ADJUSTMENT FOR DIESEL FUEL AND GASOLINE –
ENGLISH UNITS
Revised: 02/01/2021

This monthly fuel price adjustment is inserted in this contract because the national and worldwide energy situation has made the future cost of fuel unpredictable. This adjustment will provide for either additional compensation to the Contractor or repayment to the Commonwealth, depending on an increase or decrease in the average price of diesel fuel or gasoline.

This adjustment will be based on fuel usage factors for various items of work developed by the Highway Research Board in Circular 158, dated July 1974. These factors will be multiplied by the quantities of work done in each item during each monthly period and further multiplied by the variance in price from the Base Price to the Period Price.

The Base Price of Diesel Fuel and Gasoline will be the price as indicated in the Department's web site https://www.mass.gov/service-details/massdot-current-contract-price-adjustments for the month in which the contract was bid, which includes State Tax.

The Period Price will be the average of prices charged to the State, including State Tax for the bulk purchases made during each month.

This adjustment will be effected only if the variance from the Base Price is 5% or more for a monthly period. The complete adjustment will be paid in all cases with no deduction of the 5% from either upward or downward adjustments.

No adjustment will be paid for work done beyond the extended completion date of any contract.

Any adjustment (increase or decrease) to estimated quantities made to each item at the time of final payment will have the fuel price adjustment figured at the average period price for the entire term of the project for the difference of quantity.

The fuel price adjustment will apply only to the following items of work at the fuel factors shown:

| ITEMS COVERED | FUEL FACTORS | |
|---|---|---|
| | **Diesel** | **Gasoline** |
| Excavation: and Borrow Work:<br>Items 120, 120.1, 121, 123, 124, 125, 127, 129.3, 140, 140.1, 141, 142, 143, 144, 150, 150.1, 151 and 151.1<br>(Both Factors used) | 0.29<br>Gallons / CY. | 0.15<br>Gallons / CY |
| Surfacing Work:<br>All Items containing Hot Mix Asphalt | 2.90<br>Gallons / Ton | Does Not Apply |

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DOCUMENT 00813

# SPECIAL PROVISIONS
# PRICE ADJUSTMENTS FOR STRUCTURAL STEEL AND REINFORCING STEEL

September 10, 2026

This special provision applies to all projects containing the use of structural steel and/or reinforcing steel as specified elsewhere in the Contract work. It applies to all structural steel and all reinforcing steel, as defined below, on the project. Compliance with this provision is mandatory, i.e., there are no "opt-in" or "opt-out" clauses. Price adjustments will be handled as described below and shall only apply to unfabricated reinforcing steel bars and unfabricated structural steel material, consisting of rolled shapes, plate steel, sheet piling, pipe piles, steel castings and steel forgings.

Price adjustments will be variances between Base Prices and Period Prices. Base Prices and Period Prices are defined below.

Price adjustments will only be made if the variances between Base Prices and Period Prices are 5% or more. A variance can result in the Period Price being either higher or lower than the Base Price. Once the 5% threshold has been achieved, the adjustment will apply to the full variance between the Base Price and the Period Price.

Price adjustments will be calculated by multiplying the number of pounds of unfabricated structural steel material or unfabricated reinforcing steel bars on a project by the index factor calculated as shown below under Example of a Period Price Calculation.

Price adjustments will *not* include guardrail panels or the costs of shop drawing preparation, handling, fabrication, coatings, transportation, storage, installation, profit, overhead, fuel costs, fuel surcharges, or other such charges not related to the cost of the unfabricated structural steel and unfabricated reinforcing steel.

The weight of steel subject to a price adjustment shall not exceed the final shipping weight of the fabricated part by more than 10%.

Base Prices and Period Prices are defined as follows:

*Base Prices* of unfabricated structural steel and unfabricated reinforcing steel on a project are fixed prices determined by the Department and found in the table below. While it is the intention of the Department to make this table comprehensive, some of a project's unfabricated structural steel and/or unfabricated reinforcing steel may be inadvertently omitted. Should this occur, the Contractor shall bring the omission to the Department's attention so that a contract alteration may be processed that adds the missing steel to the table and its price adjustments to the Contract.

The Base Price Date is the month and year of the most recent finalized period price index at the time that MassDOT opened bids for the project. The Base Price Index for this contract is the Steel PPI listed in the Notice to Contractors.

*Period Prices* of unfabricated structural steel and unfabricated reinforcing steel on a project are variable prices that have been calculated using the Period Price Date and an index of steel prices to adjust the Base Price.

The Period Price Date is the date the steel was delivered to the fabricator as evidenced by an official bill of lading submitted to the Department containing a description of the shipped materials, weights of the shipped materials and the date of shipment. This date is used to select the Period Price Index.

The index used for the calculation of Period Prices is the U.S. Department of Labor Bureau of Labor Statistics Producer Price Index (PPI) Series ID WPU101702 (Not Seasonally Adjusted, Group: Metals and Metal Products, Item: Semi-finished Steel Mill Products.) As this index is subject to revision for a period of up to four (4) months after its original publication, no price adjustments will be made until the index for the period is finalized, i.e., the index is no longer suffixed with a "(P)".

Period Prices are determined as follows:

Period Price = Base Price X Index Factor
Index Factor = Period Price Index / Base Price Index

Example of a Period Price Calculation:

Calculate the Period Price for December 2009 using a Base Price from March 2009 of $0.82/Pound for 1,000 Pounds of ASTM A709 (AASHTO M270) Grade A36 Structural Steel Plate.

The Period Price Date is December 2009. From the PPI website*, the Period Price Index = 218.0.

The Base Price Date is March 2009. From the PPI website*, the Base Price Index = 229.4.

Index Factor = Period Price Index / Base Price Index = 218.0 / 229.4 = 0.950
Period Price = Base Price X Index Factor = $0.82/Pound X 0.950 = $0.78/Pound

Since $0.82 - $0.78 = $0.04 is less than 5% of $0.82, no price adjustment is required.

If the $0.04 difference shown above was greater than 5% of the Base Price, then the price adjustment would be 1,000 Pounds X $0.04/Pound = $40.00. Since the Period Price of $0.78/Pound is less than the Base Price of $0.82/Pound, indicating a drop in the price of steel between the bid and the delivery of material, a credit of $40.00 would be owed to MassDOT. When the Period Price is higher than the Base Price, the price adjustment is owed to the Contractor.

* To access the PPI website and obtain a Base Price Index or a Period Price Index, go to http://data.bls.gov/cgi-bin/srgate

End of example.

The Contractor will be paid for unfabricated structural steel and unfabricated reinforcing steel under the respective contract pay items for all components constructed of either structural steel or reinforced Portland cement concrete under their respective Contract Pay Items.

Price adjustments, as herein provided for, will be paid separately as follows:

Structural Steel
Pay Item Number 999.449 for positive (+) pay adjustments (payments to the Contractor)

Pay Item Number 999.457 for negative (-) pay adjustments (credits to MassDOT Highway Division)

Reinforcing Steel
Pay Item Number 999.466 for positive (+) pay adjustments (payments to the Contractor)

Pay Item Number 999.467 for negative (-) pay adjustments (credits to MassDOT Highway Division)

No price adjustment will be made for price changes after the Contract Completion Date, unless the MassDOT Highway Division has approved an extension of Contract Time for the Contract.

TABLE

| Steel Type | | Price per Pound |
|---|---|---|
| 1 | ASTM A615/A615M Grade 60 (AASHTO M31 Grade 60 or 420) Reinforcing Steel | $0.59 |
| 2 | ASTM A27 (AASHTO M103) Steel Castings, H-Pile Points & Pipe Pile Shoes (See Note below.) | $0.83 |
| 3 | ASTM A668 / A668M (AASHTO M102) Steel Forgings | $0.83 |
| 4 | ASTM A108 (AASHTO M169) Steel Forgings for Shear Studs | $0.85 |
| 5 | ASTM A709/A709M Grade 36 / AASHTO M270M/M270 Grade 36 or 250 Structural Steel Plate | $0.89 |
| 6 | ASTM A709/A709M Grade 36 / AASHTO M270M/M270 Grade 36 or 250 Structural Steel Shapes | $0.84 |
| 7 | ASTM A709/A709M Grade 50 / AASHTO M270M/M270 Grade 50 or 345 Structural Steel Plate | $0.89 |
| 8 | ASTM A709/A709M Grade 50 / AASHTO M270M/M270 Grade 50 or 345 Structural Steel Shapes | $0.84 |
| 9 | ASTM A709/A709M Grade 50WT / AASHTO M270M/M270 Grade 50WT or 345WT Structural Steel Plate | $0.92 |
| 10 | ASTM A709/A709M Grade 50WT / AASHTO M270M/M270 Grade 50WT or 345WT Structural Steel Shapes | $0.85 |
| 11 | ASTM A709/A709M Grade 50W / AASHTO M270M/M270 Grade 50W 345W Structural Steel Plate | $0.92 |
| 12 | ASTM A709/A709M Grade 50W / AASHTO M270M/M270 Grade 50W or 345W Structural Steel Shapes | $0.85 |
| 13 | ASTM A709/A709M Grade HPS 50W / AASHTO M270M/M270 Grade HPS 50W or 345W Structural Steel Plate | $0.97 |
| 14 | ASTM A709/A709M Grade HPS 70W / AASHTO M270M/M270 Grade HPS 70W or 485W Structural Steel Plate | $1.04 |
| 15 | ASTM A514/A514M-05 Grade HPS 100W / AASHTO M270M/M270 Grade HPS 100W or 690W Structural Steel Plate | $1.59 |
| 16 | ASTM A992/A992M Grade 50S / AASHTO M270M/M270 Grade 50S or 345S Structural Steel Plate | $0.92 |
| 17 | ASTM A992/A992M Grade 50S / AASHTO M270M/M270 Grade 50S or 345S Structural Steel Shapes | $0.85 |
| 18 | ASTM A276 Type 316 Stainless Steel | $4.78 |
| 19 | ASTM A240 Type 316 Stainless Steel | $4.78 |
| 20 | ASTM A148 Grade 80/50 Steel Castings (See Note below.) | $1.64 |
| 21 | ASTM A53 Grade B Structural Steel Pipe | $1.04 |
| 22 | ASTM A500 Grades A, B, 36 & 50 Structural Steel Pipe | $1.04 |
| 23 | ASTM A252, Grades 240 (36 KSI) & 414 (60 KSI) Pipe Pile | $0.83 |
| 24 | ASTM 252, Grade 2 Permanent Steel Casing | $0.83 |
| 25 | ASTM A36 (AASHTO M183) for H-piles, steel supports and sign supports | $0.87 |
| 26 | ASTM A328 / A328M, Grade 50 (AASHTO M202) Steel Sheetpiling | $1.57 |
| 27 | ASTM A572 / A572M, Grade 50 Sheetpiling | $1.57 |
| 28 | ASTM A36/36M, Grade 50 | $0.89 |
| 29 | ASTM A570, Grade 50 | $0.87 |
| 30 | ASTM A572 (AASHTO M223), Grade 50 H-Piles | $0.89 |
| 31 | ASTM A1085 Grade A (50 KSI) Steel Hollow Structural Sections (HSS), heat-treated per ASTM A1085 Supplement S1 | $1.04 |
| 32 | AREA 140 LB Rail and Track Accessories | $0.54 |

NOTE: Steel Castings are generally used only on moveable bridges. Cast iron frames, grates and pipe are not “steel” castings and will not be considered for price adjustments.

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DOCUMENT 00814

SPECIAL PROVISIONS
PRICE ADJUSTMENT FOR PORTLAND CEMENT CONCRETE MIXES

January 12, 2009

This provision applies to all projects using greater than 100 Cubic Yards (76 Cubic Meters) of Portland cement concrete containing Portland cement as stipulated in the Notice to Contractors section of the Bid Documents. This Price Adjustment will occur on a monthly basis.

The Price Adjustment will be based on the variance in price for the Portland cement component only from the Base Price to the Period Price. It shall not include transportation or other charges.

The Base Price of Portland cement on a project is a fixed price determined at the time of bid by the Department by using the same method as for the determination of the Period Price (see below) and found in the Notice to Contractors.

The Period Price of Portland cement will be determined by using the latest published price, in dollars per ton (U.S.), for Portland cement (Type I) quoted for Boston, U.S.A. in the **Construction Economics** section of *ENR Engineering News-Record* magazine or at the ENR website http://www.enr.com under **Construction Economics**. The Period Price will be posted on the MassDOT website the Wednesday immediately following the publishing of the monthly price in ENR, which is normally the first week of the month.

The Contract Price of the Portland cement concrete mix will be paid under the respective item in the Contract. The price adjustment, as herein provided, upwards or downwards, will be made after the work has been performed, using the monthly period price for the month during which the work was performed.

The price adjustment applies only to the actual Portland cement content in the mix placed on the job in accordance with the Standard Specifications for Highways and Bridges, Division III, Section M4.02.01. No adjustments will be made for any cement replacement materials such as fly ash or ground granulated blast furnace slag.

The Price Adjustment will be a separate payment item. It will be determined by multiplying the number of cubic yards of Portland cement concrete placed during each monthly period times the Portland cement content percentage times the variance in price between the Base Price and Period Price of Portland cement.

This Price Adjustment will be paid only if the variance from the Base Price is 5% or more for a monthly period. The complete adjustment will be paid in all cases with no deduction of the 5% from either upward or downward adjustments.

No Price Adjustment will be allowed beyond the Completion Date of this Contract, unless there is a Department-approved extension of time.

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DOCUMENT 00820

# THE COMMONWEALTH OF MASSACHUSETTS
# SUPPLEMENTAL EQUAL EMPLOYMENT OPPORTUNITY, NON-DISCRIMINATION AND AFFIRMATIVE ACTION PROGRAM

## I. Definitions

For purposes of this contract,

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

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

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

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

## II. Equal Opportunity, Non-Discrimination and Affirmative Action

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

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

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

The Contractor shall post hereafter in conspicuous places, available for employees and applicants for employment, notices to be provided by the Massachusetts Commission Against Discrimination setting forth the provisions of the Fair Employment Practices Law of the Commonwealth (Massachusetts General Laws Chapter l51 B).

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

## III. Minority and Women Workforce Participation

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

IV. Liaison Committee

At the discretion of the agency that administers the contract for the construction project there may be established for the life of the contract a body to be known as the Liaison Committee. The Liaison Committee shall be composed of one representative each from the agency or agencies administering the contract for the construction project, hereinafter called the administering agency, a representative from the Office of Affirmative action, and such other representatives as may be designated by the administering agency. The Contractor (or his/her agent, if any, designated by him/her as the on-site equal employment opportunity officer) shall recognize the Liaison Committee as an affirmative action body, and shall establish a continuing working relationship with the Liaison Committee, consulting with the Liaison Committee on all matters related to minority recruitment, referral, employment and training.

V. Reports and Records

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

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

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

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

VI. Access to Work Site

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

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

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

VIII. Sanctions

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

Following the referral of a matter by the administering agency to the Massachusetts Commission Against Discrimination, and while the matter is pending before the MCAD, the administering agency may withhold payments from contractors and subcontractors when it has documentation that the contractor or subcontractor has violated the Fair Employment Practices Law with respect to its activities on the Project, or if the administering agency determines that the contractor has materially failed to comply with its obligations and the requirements of this Section. The amount withheld shall not exceed a withhold of payment to the General or Prime Contractor of 1/100 or 1% of the contract award price or $5,000, whichever sum is greater, or, if a subcontractor is in non-compliance, a withhold by the administering agency from the General Contractor, to be assessed by the General Contractor as a charge against the subcontractor, of 1/100 or 1% of the subcontractor price, or $1,000 whichever sum is greater, for each violation of the applicable law or contract requirements. The total withheld from anyone General or Prime Contractor or subcontractor on a Project shall not exceed $20,000 overall. No withhold of payments or investigation by the Commission or its agent shall be initiated without the administering agency providing prior notice to the Contractor.

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

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

IX. Severability

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

X. Contractor's Certification

After award and prior to the execution of any contract for a state construction contract or a state assisted construction contract, the Prime or General Contractor shall certify that it will comply with all provisions of this Document 00820 Supplemental Equal Employment Opportunity, Non-Discrimination and Affirmative Action Program, by executing Document 00859 Contractor/Subcontractor Certification Form.

XI. Subcontractor Requirements

Prior to the award of any subcontract for a state construction contract or a state assisted construction contract, the Prime or General Contractor shall provide all prospective subcontractors with a complete copy of this Document 00820 entitled "Supplemental Equal Employment Opportunity, Non-Discrimination and Affirmative Action Program" and will incorporate the provisions of this Document 00820 into any and all contracts or work orders for all subcontractors providing work on the Project. In order to ensure that the said subcontractor's certification becomes a part of all subcontracts under the prime contract, the Prime or General Contractor shall certify in writing to the administering agency that it has complied with the requirements as set forth in the preceeding paragraph by executing Document 00859 Contractor/Subcontractor Certification Form.

*Rev'd 03/07/14*

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DOCUMENT 00821

# ELECTRONIC REPORTING REQUIREMENTS
# CIVIL RIGHTS PROGRAMS AND CERTIFIED PAYROLL

Implemented on March 2, 2009 Revised June 04, 2019

The Massachusetts Department Of Transportation (MassDOT) has replaced the CHAMP reporting system with Equitable Business Opportunity Solution (EBO), a new web-based civil rights reporting software system. This system is capable of handling both civil rights reporting requirements and certified payrolls. The program's functions include the administration of Equal Employment Opportunity (EEO) requirements, On-The-Job Training requirements (OJT), Disadvantage Business Enterprise (DBE) and/or Minority / Women's Business Enterprise (M/WBE) subcontracting requirements, and the electronic collection of certified payrolls associated with MassDOT projects. In addition, this system is used to generate various data required as part of the American Recovery and Reinvestment Act (ARRA). Contractors are responsible for all coordination with all sub-contractors to ensure timely and accurate electronic submission of all required data.

## Contractor and Sub-Contractor EBO User Certification

All contractors and sub-contractors must use the EBO software system. The software vendor, Internet Government Solutions (IGS), has developed an online EBO Training Module that is available to contractors and sub-contractors. This module is a self-tutorial which allows all users in the company to access the training, complete the tutorial, and become certified as EBO users for a one time fee of $75.00. This is the only cost to contractors and sub-contractors associated with the EBO software system. The online EBO Training Module can be accessed at www.ebotraining.com. Click the "Register My Company" button on the login page to begin your training registration. Questions regarding EBO online training should be directed to Gerry Anguilano, IGS at (440) 238-1684.

MassDOT will track contractors and sub-contractors who have successfully completed the on-line training module. All persons performing civil rights program and/or certified payroll functions should be EBO certified.

## Vetting of Firms and Designated Firm Individuals

Contractors must authorize a Primary Log-In ID Holder who has completed EBO on-line training to have access to the EBO system by completing and submitting the "Request For EBO System Log-In/Password Form" located on the MassDOT website at: https://www.mass.gov/how-to/how-to-get-an-ebo-login
Contractors must also agree to comply with the EBO system user agreement located on the MassDOT website.

All subcontracts entered into on a project must include language that identifies the submission and training requirements that the sub-contractor must perform. Sub-contractors will be approved by the respective District Office of MassDOT through the existing approval process. When new sub-contractors, who have not previously worked for MassDOT, are initially selected by a general contractor, the new sub-contractor must be approved by the District before taking the EBO on-line training module.

## Interim Reporting Requirements

Until MassDOT is satisfied that the EBO system is fully operational and functioning as designed, contractors and sub-contractors will be required to submit certified payrolls manually. There will be a transition period where dual reporting, through manual and electronic submission, will be required. MassDOT, however, will notify contractors and sub-contractors when they may cease manual submission of certified payrolls.

*** END OF DOCUMENT ***

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DOCUMENT 00859

# CONTRACTOR/SUBCONTRACTOR CERTIFICATION FORM ‡

*The contractor shall submit this completed document 00859 to MassDOT for each subcontract.*

_____ **(Contractor)** **Date:**_____

_____**(Subcontractor)** ☐ District Approved Subcontractor

**Contract No:** 136648 **Project No.** 616375 **Federal Aid No.:** EMR/STP/PRC-EMRS(123)X

**Location:** LEOMINSTER

**Project Description:** Culvert Replacement, Culvert Repair and Retaining Wall Replacement and Related Work at Three Locations

**PART 1 CONTRACTOR CERTIFICATION:** I hereby certify, as an authorized official of this company, that to the best of my knowledge, information and belief, the company is in compliance with all applicable federal and state laws, rules, and regulations governing fair labor and employment practices, that the company will not discriminate in their employment practices, that the company will make good faith efforts to comply with the minority employee and women employee workforce participation ratio goals and specific affirmative action steps contained in Contract Document 00820 The Commonwealth of Massachusetts Supplemental Equal Employment Opportunity, Non-Discrimination and Affirmative Action Program, and that the company will comply with the special provisions and documentation indicated below (as checked).

I further hereby certify, as an authorized official of this company, that the special provisions and documentation indicated below (as checked) have been or are included in, and made part of, the Subcontractor Agreement entered into with the firm named above.

☐ **This is not a Federally-aided construction project**

**Document #**

☐ 00718 –Participation By Minority Or Women's Business Enterprises and SDVOBE†
☐ 00761 –Certification Regarding Debarment, Suspension, Ineligibility, and Voluntary Exclusion
☐ 00820 – MA Supplemental Equal Employment Opportunity, Non-Discrimination, and Affirmative Action Program
☐ 00821 – Electronic Reporting Requirements, Civil Rights Programs, and Certified Payroll
☐ 00859 – Contractor/Subcontractor Certification Form (this document)
☐ 00860 – MA Employment Laws
☐ 00861 – Applicable State Wage Rates in the Contract Proposal**
☐ B00842 – MA Schedule of Participation By Minority or Women Business Enterprises (M/WBEs)†
☐ B00843 – MA Letter of Intent – M/WBEs†

** Does not apply to Material Suppliers, unless performing work on-site
† Applies only if Subcontractor is a M/WBE; only include these forms for the particular M/WBE Entity

☐ B00844 - Schedule of Participation By SDVOBE
☐ B00845 - Letter of Intent – SDVOBE
☐ B00846 – M/WBE or SDVOBE Joint Check Arrangement Approval Form
☐ B00847 – Joint Venture Affidavit

☐ **This is a Federally-aided construction project (Federal Aid Number is present)**

**Document #**

☐ 00719 – Special Provisions for Participation by Disadvantaged Business Enterprises†
☐ 00760 - Form FHWA 1273 - Required Contract Provisions for Federal-Aid Construction Contracts
☐ 00820 – MA Supplemental Equal Employment Opportunity, Non-Discrimination and Affirmative Action Program
☐ 00821 – Electronic Reporting Requirements, Civil Rights Programs and Certified Payroll
☐ 00859 – Contractor/Subcontractor Certification Form (this document)
☐ 00860 – MA Employment Laws
☐ 00870 – Standard Federal Equal Employment Opportunity Construction Contract Specifications Executive Order 11246, (41 CFR Parts 60-4.2 and 60-4.3 (Solicitations and Equal Opportunity Clauses)*
☐ 00875 – Federal Trainee Special Provisions

☐ B00853 – Schedule of Participation by Disadvantaged Business Enterprise†
☐ B00854 – Letter of Intent – DBEs†
☐ B00855 – DBE Joint Check Arrangement Approval Form
☐ B00856 – Joint Venture Affidavit
☐ 00861/00880 - Applicable state and federal wage rates from Contract Proposal**

*Applicable only to Contracts or Subcontracts in excess of $10,000
**Does not apply to Material Suppliers, unless performing work on-site
† Applies only if Subcontractor is a DBE; only include these forms for the particular DBE Entity

Signed this _____ Day of _____, 20_____ Under The Pains And Penalties Of Perjury.

_____ _____
(Print Name and Title) (Authorized Signature)

**PART 2**

**PART 2 SUBCONTRACTOR CERTIFICATION:** I hereby certify, as an authorized official of this company, that the required documents in Part 1 above were physically incorporated in our Agreement/Subcontract with the Contractor and give assurance that this company will fully comply or make every good faith effort to comply with the same. I further certify that:

1. This company recognizes that if this is a Federal-Aid Project, then this Contract is covered by the equal employment opportunity laws administered and enforced by the United States Department of Labor ("USDOL"), Office of Federal Contract Compliance Programs ('OFCCP"). By signing below, we acknowledge that this company has certain reporting obligations to the OFCCP, as specified by 41 CFR Part 60-4.2.
2. This company further acknowledges that any contractor with fifty (50) or more employees on a Federal-aid Contract with a value of fifty-thousand ($50,000) dollars or more must annually file an EEO-1 Report (SF 100) to the EEOC, Joint Reporting Committee, on or before September 30th, each year, as specified by 41 CFR Part 60-1.7a.
3. For more information regarding the federal reporting requirements, please contact the USDOL, OFCCP Regional Office, at 1-646-264-3170 or EEO-1, Joint Reporting Committee at 1-866-286-6440.
4. This company ☐ has, ☐ has not, participated in a previous contract or subcontract subject to the Equal Opportunity clauses set forth in 41 CFR Part 60-4 and Executive Order 11246, and where required, has filed with the Joint Reporting Committee, the Director of the Office of Federal Contract Compliance Programs or the EEO Commission all reports due under the applicable filing requirements.
5. This company is in full compliance with applicable Federal and Commonwealth of Massachusetts laws, rules, and regulations and is not currently debarred or disqualified from bidding on or participating in construction contracts in any jurisdiction of the United States. See : https://www.mass.gov/service-details/contractors-and-vendors-suspended-or-debarred-by-massdot
6. This company is properly registered and in good standing with the Office of the Secretary of the Commonwealth.

Signed this _____ Day of _____, 20_____, Under The Pains And Penalties Of Perjury.

Firm: _____
Address: _____
_____
_____
Telephone Number:_____
Federal I.D. Number:_____
Estimated Start Date:_____
Estimated Completion Date:_____
Estimated Dollar Amount:_____

_____
(Print Name and Title)

_____
(Authorized Signature)

_____
(Date)

*Rev'd 09/02/22*

*** END OF DOCUMENT ***

DOCUMENT 00860

# COMMONWEALTH OF MASSACHUSETTS PUBLIC EMPLOYMENT LAWS

Revised February 20, 2019

The Contractor's attention is directed to Massachusetts General Laws, Chapter 149, Sections 26 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 Department of Transportation (MassDOT).

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 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 MassDOT's Resident Engineer, on a weekly basis, a copy of said record, in a form approved by MassDOT 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 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 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.

In addition, each such contractor and subcontractor shall furnish to the MassDOT'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: _____

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 _____
(MassDOT 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 Laws.

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 MassDOT's Resident Engineer for such inspection and copying.

Massachusetts General Laws c. 149, §27, requires annual updates to prevailing wage schedules for all public construction contracts lasting longer than one year. MassDOT will request the required updates and furnish them to the Contractor. The Contractor is required to pay no less than the wage rates indicated on the annual updated wage schedules.

MassDOT will request the updates no later that two week before the anniversary of the Notice to Proceed date of the contract to allow for adequate processing by the Department of Labor Standards (DLS). The effective date for the new rates will be the anniversary date of the contract (i.e. the notice to proceed date), regardless of the date of issuance on the schedule from DLS.

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.

*** END OF DOCUMENT ***

DOCUMENT 00861

# STATE PREVAILING WAGE RATES

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# THE COMMONWEALTH OF MASSACHUSETTS
# EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
# DEPARTMENT OF LABOR STANDARDS
## Prevailing Wage Rates

MAURA HEALEY
Governor
KIM DRISCOLL
Lt. Governor

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

LAUREN JONES
Secretary
MICHAEL FLANAGAN
Director

| | | | |
|---|---|---|---|
| **Awarding Authority:** | Massachusetts Highway | **City/Town:** | LEOMINSTER |
| **Wage Request No:** | 20260926160802 | **Job Location:** | LEOMINSTER - at Three Locations |
| **Description of Work:** | LEOMINSTER – FAP No. EMR/STP/PRC-EMRS(123)X Culvert Replacement, Culvert Repair and Retaining Wall Replacement and Related Work at Three Locations (616375) $4,853,000.00 | | |
| **Contract Number:** | 136648 | | |

### §§ 26-27D Construction Project

This Prevailing Wage Schedule establishes the minimum wage rates that employees on this public works construction project must be paid. The project's Wage Request Number is listed above and on all pages of this Schedule. This schedule applies **only** to this specific project.

#### Awarding Authority Responsibilities

- You must include this Prevailing Wage Schedule (PWS) or an appropriate reference to it in all advertisements and calls for bids.
- The PWS must be incorporated in its entirety into all contracts for this project (G.L. c. 149, § 27).
- The wage rates on this PWS will remain in effect for the duration of the project. **Exception:** You must request an updated schedule for any multi-year construction project no later than 2 weeks before the project's yearly anniversary date.
  - For CM AT RISK projects, the anniversary date is the earlier of the signing date of: (a) the GMP Amendment; or (b) the first amendment to permit procurement of construction services.
  - For all other construction projects, the anniversary date is the date the contract was signed by the Awarding Authority and the General Contractor.
- You must also request an updated PWS if you have not opened bids or selected a contractor within 90 days of the date of issuance on this PWS.
  - For CM AT RISK projects, the earlier of (a) the signing date of the GMP Amendment; or (b) the bid for the first construction scope of work must be within 90 days of the date of issuance on this Schedule.
- You must provide any updated PWS to all contractors working on the project, including general and sub-contractors.
- You must keep the contractors' weekly certified payroll records and Statements of Compliance on file for **3 years.**
- Awarding authorities have other prevailing wage responsibilities not listed above. Learn more at: **[Prevailing wage: for awarding authorities | Mass.gov]** and G.L. c. 149, §§ 26-27D.

#### Contractor Responsibilities

- You must pay all employees who perform construction work on this project at least the wage rate listed on this PWS. **Warning!** If you do not follow this requirement, you can face civil fines, criminal charges, or private lawsuits.
- You must post this PWS at the worksite where it can be easily seen. (G.L. c. 149, § 27)
- You must file weekly payroll reports and a Statement of Compliance with the awarding authority (**not** DLS). You can file payroll reports by mail or email and must keep them on file for 3 years. Each weekly payroll report must include each employees' name, address, occupational classification(s), hours worked, and wages paid. Find a sample report at: mass.gov/dols/pw.
- You cannot pay any employees at the apprentice rates listed on this PWS unless they are registered with the Massachusetts Division of Apprentice Standards (DAS). Qualifying apprentices must be paid at the applicable step rate and must carry their apprentice ID card during all work hours on the project. Apprentices **not** registered with DAS must be paid at the listed journeyworker's rate, even if they are registered with a different federal/state public agency or private entity. For every week in which apprentice rates are paid, a copy of each apprentice's apprentice ID card issued by DAS shall be attached to the certified payroll records.
- If you don't know what classification or rate applies to the work being performed, you must ask DLS; paying the wrong rate subjects you to enforcement.
- Please contact DLS if you have any questions about the Prevailing Wage Schedule: (617) 626-6953 or **DLS.Feedback@mass.gov**

Employees who are **not** paid the wage listed on the Prevailing Wage Schedule (PWS) may file a complaint with the Attorney General's Fair Labor

**Construction**

| Classification | Effective Date | Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| (2 AXLE) DRIVER - EQUIPMENT<br>TEAMSTERS JOINT COUNCIL NO. 10<br>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B | 6/1/2026 | $41.95 | $16.17 | $21.78 | $0.00 | $0.00 | $79.90 |
| | 12/1/2026 | $41.95 | $16.17 | $23.52 | $0.00 | $0.00 | $81.64 |
| | 1/1/2027 | $41.95 | $16.77 | $23.52 | $0.00 | $0.00 | $82.24 |
| (3 AXLE) DRIVER - EQUIPMENT<br>TEAMSTERS JOINT COUNCIL NO. 10<br>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B | 6/1/2026 | $42.02 | $16.17 | $21.78 | $0.00 | $0.00 | $79.97 |
| | 12/1/2026 | $42.02 | $16.17 | $23.52 | $0.00 | $0.00 | $81.71 |
| | 1/1/2027 | $42.02 | $16.77 | $23.52 | $0.00 | $0.00 | $82.31 |
| (4 & 5 AXLE) DRIVER - EQUIPMENT<br>TEAMSTERS JOINT COUNCIL NO. 10<br>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B | 6/1/2026 | $42.14 | $16.17 | $21.78 | $0.00 | $0.00 | $80.09 |
| | 12/1/2026 | $42.14 | $16.17 | $23.52 | $0.00 | $0.00 | $81.83 |
| | 1/1/2027 | $42.14 | $16.77 | $23.52 | $0.00 | $0.00 | $82.43 |
| ADS/SUBMERSIBLE PILOT<br>PILE DRIVER LOCAL 56<br>PILE DRIVER LOCAL 56 (ZONE 2)<br>For apprentice rates see "Apprentice- PILE DRIVER" | 8/1/2024 | $117.16 | $10.08 | $11.62 | $12.67 | $0.00 | $151.53 |
| AIR TRACK OPERATOR<br>LABORERS<br>LABORERS - ZONE 2 | 6/1/2026 | $42.41 | $10.90 | $9.75 | $9.11 | $0.00 | $72.17 |
| | 12/1/2026 | $43.85 | $10.90 | $9.75 | $9.11 | $0.00 | $73.61 |
| | 6/1/2027 | $45.30 | $10.90 | $9.75 | $9.11 | $0.00 | $75.06 |
| | 12/1/2027 | $46.75 | $10.90 | $9.75 | $9.11 | $0.00 | $76.51 |
| | 6/1/2028 | $48.25 | $10.90 | $9.75 | $9.11 | $0.00 | $78.01 |
| | 12/1/2028 | $49.75 | $10.90 | $9.75 | $9.11 | $0.00 | $79.51 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | | |
| AIR TRACK OPERATOR (HEAVY & HIGHWAY)<br>LABORERS<br>LABORERS - ZONE 2 (HEAVY & HIGHWAY) | 6/1/2026 | $42.41 | $10.90 | $9.75 | $9.21 | $0.00 | $72.27 |
| | 12/1/2026 | $43.85 | $10.90 | $9.75 | $9.21 | $0.00 | $73.71 |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway)" | | | | | | | |
| ASBESTOS WORKER (PIPES & TANKS)<br>HEAT & FROST INSULATORS LOCAL 6<br>HEAT & FROST INSULATORS LOCAL 6 (WORCESTER) | 12/1/2025 | $44.80 | $14.50 | $4.30 | $6.75 | $0.00 | $70.35 |
| ASPHALT RAKER<br>LABORERS<br>LABORERS - ZONE 2 | 6/1/2026 | $41.91 | $10.90 | $9.75 | $9.11 | $0.00 | $71.67 |
| | 12/1/2026 | $43.35 | $10.90 | $9.75 | $9.11 | $0.00 | $73.11 |
| | 6/1/2027 | $44.80 | $10.90 | $9.75 | $9.11 | $0.00 | $74.56 |
| | 12/1/2027 | $46.25 | $10.90 | $9.75 | $9.11 | $0.00 | $76.01 |
| | 6/1/2028 | $47.75 | $10.90 | $9.75 | $9.11 | $0.00 | $77.51 |
| | 12/1/2028 | $49.25 | $10.90 | $9.75 | $9.11 | $0.00 | $79.01 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | | |
| ASPHALT RAKER (HEAVY & HIGHWAY)<br>LABORERS<br>LABORERS - ZONE 2 (HEAVY & HIGHWAY) | 6/1/2026 | $41.91 | $10.90 | $9.75 | $9.21 | $0.00 | $71.77 |
| | 12/1/2026 | $43.35 | $10.90 | $9.75 | $9.21 | $0.00 | $73.21 |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway)" | | | | | | | |
| ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE<br>OPERATING ENGINEERS LOCAL 4<br>OPERATING ENGINEERS LOCAL 4 | 6/1/2026 | $59.38 | $17.05 | $13.35 | $3.25 | $0.00 | $93.03 |
| | 12/1/2026 | $60.83 | $17.05 | $13.35 | $3.25 | $0.00 | $94.48 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | | |

**Construction**

| Classification | Effective Date | Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| BACKHOE/FRONT-END LOADER | 6/1/2026 | $59.38 | $17.05 | $13.35 | $3.25 | $0.00 | $93.03 |
| OPERATING ENGINEERS LOCAL 4 | 12/1/2026 | $60.83 | $17.05 | $13.35 | $3.25 | $0.00 | $94.48 |
| OPERATING ENGINEERS LOCAL 4 | | | | | | | |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | | |
| BARCO-TYPE JUMPING TAMPER | 6/1/2026 | $41.91 | $10.90 | $9.75 | $9.11 | $0.00 | $71.67 |
| LABORERS | 12/1/2026 | $43.35 | $10.90 | $9.75 | $9.11 | $0.00 | $73.11 |
| LABORERS - ZONE 2 | 6/1/2027 | $44.80 | $10.90 | $9.75 | $9.11 | $0.00 | $74.56 |
| | 12/1/2027 | $46.25 | $10.90 | $9.75 | $9.11 | $0.00 | $76.01 |
| | 6/1/2028 | $47.75 | $10.90 | $9.75 | $9.11 | $0.00 | $77.51 |
| | 12/1/2028 | $49.25 | $10.90 | $9.75 | $9.11 | $0.00 | $79.01 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | | |
| BLOCK PAVER, RAMMER / CURB SETTER | 6/1/2026 | $42.41 | $10.90 | $9.75 | $9.11 | $0.00 | $72.17 |
| LABORERS | 12/1/2026 | $43.85 | $10.90 | $9.75 | $9.11 | $0.00 | $73.61 |
| LABORERS - ZONE 2 | 6/1/2027 | $45.30 | $10.90 | $9.75 | $9.11 | $0.00 | $75.06 |
| | 12/1/2027 | $46.75 | $10.90 | $9.75 | $9.11 | $0.00 | $76.51 |
| | 6/1/2028 | $48.25 | $10.90 | $9.75 | $9.11 | $0.00 | $78.01 |
| | 12/1/2028 | $49.75 | $10.90 | $9.75 | $9.11 | $0.00 | $79.51 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | | |
| BLOCK PAVER, RAMMER / CURB SETTER (HEAVY & HIGHWAY) | 6/1/2026 | $42.41 | $10.90 | $9.75 | $9.21 | $0.00 | $72.27 |
| LABORERS | 12/1/2026 | $43.85 | $10.90 | $9.75 | $9.21 | $0.00 | $73.71 |
| LABORERS - ZONE 2 (HEAVY & HIGHWAY) | | | | | | | |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway)" | | | | | | | |
| BOILER MAKER | 1/1/2024 | $48.12 | $7.07 | $14.60 | $6.00 | $0.00 | $75.79 |
| BOILERMAKERS LOCAL 29 | | | | | | | |
| BOILERMAKERS LOCAL 29 | | | | | | | |

**Apprentice: BOILER MAKER**

**Effective Date: 1/1/2024**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 65.00 | $31.28 | $7.07 | $9.32 | $3.90 | $0.00 | $51.57 |
| 2 | 65.00 | $31.28 | $7.07 | $9.32 | $3.90 | $0.00 | $51.57 |
| 3 | 70.00 | $33.68 | $7.07 | $10.03 | $4.20 | $0.00 | $54.98 |
| 4 | 75.00 | $36.09 | $7.07 | $10.74 | $4.50 | $0.00 | $58.40 |
| 5 | 80.00 | $38.50 | $7.07 | $11.45 | $4.80 | $0.00 | $61.82 |
| 6 | 85.00 | $40.90 | $7.07 | $12.18 | $5.10 | $0.00 | $65.25 |
| 7 | 90.00 | $43.31 | $7.07 | $12.88 | $5.40 | $0.00 | $68.66 |
| 8 | 95.00 | $45.71 | $7.07 | $13.62 | $5.70 | $0.00 | $72.10 |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) | 8/1/2026 | $68.01 | $12.84 | $15.57 | $7.33 | $0.00 | $103.75 |
| | 2/1/2027 | $69.41 | $12.84 | $15.57 | $7.33 | $0.00 | $105.15 |
| BRICKLAYERS LOCAL 3 | | | | | | | |
| BRICKLAYERS LOCAL 3 (LOWELL) | | | | | | | |

**Construction**

| Classification | Effective Date | Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|

**Apprentice: BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)**

**Effective Date: 8/1/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 50.00 | $34.01 | $12.84 | $15.57 | $7.33 | $0.00 | $69.75 |
| 2 | 60.00 | $40.81 | $12.84 | $15.57 | $7.33 | $0.00 | $76.55 |
| 3 | 70.00 | $47.61 | $12.84 | $15.57 | $7.33 | $0.00 | $83.35 |
| 4 | 80.00 | $54.41 | $12.84 | $15.57 | $7.33 | $0.00 | $90.15 |
| 5 | 90.00 | $61.21 | $12.84 | $15.57 | $7.33 | $0.00 | $96.95 |

**Apprentice: BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)**

**Effective Date: 2/1/2027**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 50.00 | $34.71 | $12.84 | $15.57 | $7.33 | $0.00 | $70.45 |
| 2 | 60.00 | $41.65 | $12.84 | $15.57 | $7.33 | $0.00 | $77.39 |
| 3 | 70.00 | $48.59 | $12.84 | $15.57 | $7.33 | $0.00 | $84.33 |
| 4 | 80.00 | $55.53 | $12.84 | $15.57 | $7.33 | $0.00 | $91.27 |
| 5 | 90.00 | $62.47 | $12.84 | $15.57 | $7.33 | $0.00 | $98.21 |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| BULLDOZER/GRADER/SCRAPER | 6/1/2026 | $58.70 | $17.05 | $13.35 | $3.25 | $0.00 | $92.35 |
| OPERATING ENGINEERS LOCAL 4 | 12/1/2026 | $60.14 | $17.05 | $13.35 | $3.25 | $0.00 | $93.79 |
| OPERATING ENGINEERS LOCAL 4 | | | | | | | |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | | |
| CAISSON & UNDERPINNING BOTTOM MAN | 6/1/2026 | $50.40 | $10.90 | $9.75 | $9.80 | $0.00 | $80.85 |
| LABORERS | 12/1/2026 | $51.90 | $10.90 | $9.75 | $9.80 | $0.00 | $82.35 |
| LABORERS - FOUNDATION AND MARINE | | | | | | | |
| For apprentice rates see "Apprentice- LABORER" | | | | | | | |
| CAISSON & UNDERPINNING LABORER | 6/1/2026 | $49.25 | $10.90 | $9.75 | $9.80 | $0.00 | $79.70 |
| LABORERS | 12/1/2026 | $50.75 | $10.90 | $9.75 | $9.80 | $0.00 | $81.20 |
| LABORERS - FOUNDATION AND MARINE | | | | | | | |
| For apprentice rates see "Apprentice- LABORER" | | | | | | | |
| CAISSON & UNDERPINNING TOP MAN | 6/1/2026 | $49.58 | $10.90 | $9.75 | $9.80 | $0.00 | $80.03 |
| LABORERS | 12/1/2026 | $51.08 | $10.90 | $9.75 | $9.80 | $0.00 | $81.53 |
| LABORERS - FOUNDATION AND MARINE | | | | | | | |
| For apprentice rates see "Apprentice- LABORER" | | | | | | | |
| CARBIDE CORE DRILL OPERATOR | 6/1/2026 | $41.91 | $10.90 | $9.75 | $9.11 | $0.00 | $71.67 |
| LABORERS | 12/1/2026 | $43.35 | $10.90 | $9.75 | $9.11 | $0.00 | $73.11 |
| LABORERS - ZONE 2 | 6/1/2027 | $44.80 | $10.90 | $9.75 | $9.11 | $0.00 | $74.56 |
| | 12/1/2027 | $46.25 | $10.90 | $9.75 | $9.11 | $0.00 | $76.01 |
| | 6/1/2028 | $47.75 | $10.90 | $9.75 | $9.11 | $0.00 | $77.51 |
| | 12/1/2028 | $49.25 | $10.90 | $9.75 | $9.11 | $0.00 | $79.01 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | | |

**Construction**

| Classification | Effective Date | Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| CARPENTER<br>CARPENTERS<br>CARPENTERS -ZONE 2 (Eastern Massachusetts) | 9/1/2026 | $52.10 | $11.08 | $11.47 | $8.50 | $0.00 | $83.15 |
| | 3/1/2027 | $53.35 | $11.08 | $11.47 | $8.50 | $0.00 | $84.40 |

**Apprentice: CARPENTER**

**Effective Date: 9/1/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 45.00 | $23.45 | $11.08 | $0.00 | $1.73 | $0.00 | $36.26 |
| 2 | 45.00 | $23.45 | $11.08 | $0.00 | $1.73 | $0.00 | $36.26 |
| 3 | 55.00 | $28.66 | $11.08 | $0.00 | $3.40 | $0.00 | $43.14 |
| 4 | 55.00 | $28.66 | $11.08 | $0.00 | $3.40 | $0.00 | $43.14 |
| 5 | 70.00 | $36.47 | $11.08 | $11.41 | $5.10 | $0.00 | $64.06 |
| 6 | 70.00 | $36.47 | $11.08 | $11.41 | $5.10 | $0.00 | $64.06 |
| 7 | 80.00 | $41.68 | $11.08 | $11.44 | $6.80 | $0.00 | $71.00 |
| 8 | 80.00 | $41.68 | $11.08 | $11.44 | $6.80 | $0.00 | $71.00 |

**Apprentice: CARPENTER**

**Effective Date: 3/1/2027**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 45.00 | $24.01 | $11.08 | $0.00 | $1.73 | $0.00 | $36.82 |
| 2 | 45.00 | $24.01 | $11.08 | $0.00 | $1.73 | $0.00 | $36.82 |
| 3 | 55.00 | $29.34 | $11.08 | $0.00 | $3.40 | $0.00 | $43.82 |
| 4 | 55.00 | $29.34 | $11.08 | $0.00 | $3.40 | $0.00 | $43.82 |
| 5 | 70.00 | $37.35 | $11.08 | $11.41 | $5.10 | $0.00 | $64.94 |
| 6 | 70.00 | $37.35 | $11.08 | $11.41 | $5.10 | $0.00 | $64.94 |
| 7 | 80.00 | $42.68 | $11.08 | $11.44 | $6.80 | $0.00 | $72.00 |
| 8 | 80.00 | $42.68 | $11.08 | $11.44 | $6.80 | $0.00 | $72.00 |

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

| Classification | Effective Date | Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| CARPENTER WOOD FRAME<br>CARPENTERS<br>CARPENTERS-ZONE 3 (Wood Frame)<br>All Aspects of New Wood Frame Work | 10/1/2025 | $27.37 | $7.38 | $4.47 | $1.00 | $0.00 | $40.22 |
| | 10/1/2026 | $28.47 | $7.38 | $4.47 | $1.00 | $0.00 | $41.32 |

**Apprentice: CARPENTER WOOD FRAME**

**Effective Date: 10/1/2025**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 60.00 | $16.42 | $7.38 | $0.00 | $0.00 | $0.00 | $23.80 |
| 2 | 60.00 | $16.42 | $7.38 | $0.00 | $0.00 | $0.00 | $23.80 |
| 3 | 65.00 | $17.79 | $7.38 | $0.00 | $1.00 | $0.00 | $26.17 |
| 4 | 70.00 | $19.16 | $7.38 | $0.00 | $1.00 | $0.00 | $27.54 |
| 5 | 75.00 | $20.53 | $7.38 | $3.80 | $1.00 | $0.00 | $32.71 |
| 6 | 80.00 | $21.90 | $7.38 | $3.80 | $1.00 | $0.00 | $34.08 |

**Construction**

| Classification | Effective Date | Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|

**Apprentice: CARPENTER WOOD FRAME**

**Effective Date: 10/1/2025**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 7 | 85.00 | $23.26 | $7.38 | $3.80 | $1.00 | $0.00 | $35.44 |
| 8 | 90.00 | $24.63 | $7.38 | $3.80 | $1.00 | $0.00 | $36.81 |

**Apprentice: CARPENTER WOOD FRAME**

**Effective Date: 10/1/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 60.00 | $17.08 | $7.38 | $0.00 | $0.00 | $0.00 | $24.46 |
| 2 | 60.00 | $17.08 | $7.38 | $0.00 | $0.00 | $0.00 | $24.46 |
| 3 | 65.00 | $18.51 | $7.38 | $0.00 | $1.00 | $0.00 | $26.89 |
| 4 | 70.00 | $19.93 | $7.38 | $0.00 | $1.00 | $0.00 | $28.31 |
| 5 | 75.00 | $21.35 | $7.38 | $3.80 | $1.00 | $0.00 | $33.53 |
| 6 | 80.00 | $22.78 | $7.38 | $3.80 | $1.00 | $0.00 | $34.96 |
| 7 | 85.00 | $24.20 | $7.38 | $3.80 | $1.00 | $0.00 | $36.38 |
| 8 | 90.00 | $25.62 | $7.38 | $3.80 | $1.00 | $0.00 | $37.80 |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| CEMENT MASONRY/PLASTERING | 7/1/2026 | $54.49 | $13.35 | $16.43 | $7.78 | $1.80 | $93.85 |
| PLASTERERS AND CEMENT MASONS LOCAL 534 | 1/1/2027 | $55.94 | $13.35 | $16.43 | $7.78 | $1.80 | $95.30 |
| Plasterers and Cement Masons - Zone 1 | 7/1/2027 | $57.29 | $13.35 | $16.43 | $7.78 | $1.80 | $96.65 |
| | 1/1/2028 | $58.64 | $13.35 | $16.43 | $7.78 | $1.80 | $98.00 |

**Apprentice: CEMENT MASONRY/PLASTERING**

**Effective Date: 7/1/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 50.00 | $27.25 | $13.35 | $16.43 | $0.00 | $0.00 | $57.03 |
| 2 | 60.00 | $32.69 | $13.35 | $16.43 | $7.78 | $1.80 | $72.05 |
| 3 | 65.00 | $35.42 | $13.35 | $16.43 | $7.78 | $1.80 | $74.78 |
| 4 | 70.00 | $38.14 | $13.35 | $16.43 | $7.78 | $1.80 | $77.50 |
| 5 | 75.00 | $40.87 | $13.35 | $16.43 | $7.78 | $1.80 | $80.23 |
| 6 | 80.00 | $43.59 | $13.35 | $16.43 | $7.78 | $1.80 | $82.95 |
| 7 | 90.00 | $49.04 | $13.35 | $16.43 | $7.78 | $0.00 | $86.60 |

**Apprentice: CEMENT MASONRY/PLASTERING**

**Effective Date: 1/1/2027**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 50.00 | $27.97 | $13.35 | $16.43 | $0.00 | $0.00 | $57.75 |
| 2 | 60.00 | $33.56 | $13.35 | $16.43 | $7.78 | $1.80 | $72.92 |

**Construction**

| Classification | Effective Date | Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| **Apprentice: CEMENT MASONRY/PLASTERING** | | | | | | | |
| **Effective Date: 1/1/2027** | | | | | | | |
| **Step / Percent** | | **Apprentice Base Wage** | | | | | |
| 3 / 65.00 | | $36.36 | $13.35 | $16.43 | $7.78 | $1.80 | $75.72 |
| 4 / 70.00 | | $39.16 | $13.35 | $16.43 | $7.78 | $1.80 | $78.52 |
| 5 / 75.00 | | $41.96 | $13.35 | $16.43 | $7.78 | $1.80 | $81.32 |
| 6 / 80.00 | | $44.75 | $13.35 | $16.43 | $7.78 | $1.80 | $84.11 |
| 7 / 90.00 | | $50.35 | $13.35 | $16.43 | $0.00 | $0.00 | $80.13 |
| **Apprentice to Journeyworker Ratio: 1:5** | | | | | | | |
| CHAIN SAW OPERATOR | 6/1/2026 | $41.91 | $10.90 | $9.75 | $9.11 | $0.00 | $71.67 |
| LABORERS<br>LABORERS - ZONE 2 | 12/1/2026 | $43.35 | $10.90 | $9.75 | $9.11 | $0.00 | $73.11 |
| | 6/1/2027 | $44.80 | $10.90 | $9.75 | $9.11 | $0.00 | $74.56 |
| | 12/1/2027 | $46.25 | $10.90 | $9.75 | $9.11 | $0.00 | $76.01 |
| | 6/1/2028 | $47.75 | $10.90 | $9.75 | $9.11 | $0.00 | $77.51 |
| | 12/1/2028 | $49.25 | $10.90 | $9.75 | $9.11 | $0.00 | $79.01 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | | |
| CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES | 6/1/2026 | $60.61 | $17.05 | $13.35 | $3.25 | $0.00 | $94.26 |
| OPERATING ENGINEERS LOCAL 4<br>OPERATING ENGINEERS LOCAL 4 | 12/1/2026 | $62.09 | $17.05 | $13.35 | $3.25 | $0.00 | $95.74 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | | |
| COMPRESSOR OPERATOR | 6/1/2026 | $37.63 | $17.05 | $13.35 | $3.25 | $0.00 | $71.28 |
| OPERATING ENGINEERS LOCAL 4<br>OPERATING ENGINEERS LOCAL 4 | 12/1/2026 | $38.58 | $17.05 | $13.35 | $3.25 | $0.00 | $72.23 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | | |
| DELEADER (BRIDGE) | 1/1/2026 | $59.56 | $10.35 | $12.00 | $12.60 | $0.00 | $94.51 |
| PAINTERS LOCAL 35<br>PAINTERS LOCAL 35 - ZONE 2 | | | | | | | |
| **Apprentice: DELEADER (BRIDGE)** | | | | | | | |
| **Effective Date: 1/1/2026** | | | | | | | |
| **Step / Percent** | | **Apprentice Base Wage** | | | | | |
| 1 / 50.00 | | $29.78 | $10.35 | $0.00 | $0.00 | $0.00 | $40.13 |
| 2 / 55.00 | | $32.76 | $10.35 | $0.00 | $6.93 | $0.00 | $50.04 |
| 3 / 60.00 | | $35.74 | $10.35 | $0.00 | $7.56 | $0.00 | $53.65 |
| 4 / 65.00 | | $38.71 | $10.35 | $0.00 | $8.19 | $0.00 | $57.25 |
| 5 / 70.00 | | $41.69 | $10.35 | $12.00 | $8.82 | $0.00 | $72.86 |
| 6 / 75.00 | | $44.67 | $10.35 | $12.00 | $9.45 | $0.00 | $76.47 |
| 7 / 80.00 | | $47.65 | $10.35 | $12.00 | $10.08 | $0.00 | $80.08 |
| 8 / 90.00 | | $53.60 | $10.35 | $12.00 | $11.34 | $0.00 | $87.29 |
| **Apprentice to Journeyworker Ratio: 1:1** | | | | | | | |
| DEMO: ADZEMAN | 6/1/2026 | $49.30 | $10.90 | $9.75 | $9.65 | $0.00 | $79.60 |

**Construction**

| Classification | Effective Date | Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| LABORERS<br>LABORERS - ZONE 2 | 12/7/2026 | $50.80 | $10.90 | $9.75 | $9.65 | $0.00 | $81.10 |
| | 6/7/2027 | $52.40 | $10.90 | $9.75 | $9.65 | $0.00 | $82.70 |
| | 12/6/2027 | $54.00 | $10.90 | $9.75 | $9.65 | $0.00 | $84.30 |
| | 6/5/2028 | $55.68 | $10.90 | $9.75 | $9.65 | $0.00 | $85.98 |
| | 12/4/2028 | $57.35 | $10.90 | $9.75 | $9.65 | $0.00 | $87.65 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | | |
| DEMO: BACKHOE/LOADER/HAMMER OPERATOR<br>LABORERS<br>LABORERS - ZONE 2 | 6/1/2026 | $50.30 | $10.90 | $9.75 | $9.65 | $0.00 | $80.60 |
| | 12/7/2026 | $51.80 | $10.90 | $9.75 | $9.65 | $0.00 | $82.10 |
| | 6/7/2027 | $53.40 | $10.90 | $9.75 | $9.65 | $0.00 | $83.70 |
| | 12/6/2027 | $55.00 | $10.90 | $9.75 | $9.65 | $0.00 | $85.30 |
| | 6/5/2028 | $56.68 | $10.90 | $9.75 | $9.65 | $0.00 | $86.98 |
| | 12/4/2028 | $58.35 | $10.90 | $9.75 | $9.65 | $0.00 | $88.65 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | | |
| DEMO: BURNERS<br>LABORERS<br>LABORERS - ZONE 2 | 6/1/2026 | $50.05 | $10.90 | $9.75 | $9.65 | $0.00 | $80.35 |
| | 12/7/2026 | $51.55 | $10.90 | $9.75 | $9.65 | $0.00 | $81.85 |
| | 6/7/2027 | $53.15 | $10.90 | $9.75 | $9.65 | $0.00 | $83.45 |
| | 12/6/2027 | $54.75 | $10.90 | $9.75 | $9.65 | $0.00 | $85.05 |
| | 6/5/2028 | $56.43 | $10.90 | $9.75 | $9.65 | $0.00 | $86.73 |
| | 12/4/2028 | $58.10 | $10.90 | $9.75 | $9.65 | $0.00 | $88.40 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | | |
| DEMO: CONCRETE CUTTER/SAWYER<br>LABORERS<br>LABORERS - ZONE 2 | 6/1/2026 | $50.30 | $10.90 | $9.75 | $9.65 | $0.00 | $80.60 |
| | 12/7/2026 | $51.80 | $10.90 | $9.75 | $9.65 | $0.00 | $82.10 |
| | 6/7/2027 | $53.40 | $10.90 | $9.75 | $9.65 | $0.00 | $83.70 |
| | 12/6/2027 | $55.00 | $10.90 | $9.75 | $9.65 | $0.00 | $85.30 |
| | 6/5/2028 | $56.68 | $10.90 | $9.75 | $9.65 | $0.00 | $86.98 |
| | 12/4/2028 | $58.35 | $10.90 | $9.75 | $9.65 | $0.00 | $88.65 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | | |
| DEMO: JACKHAMMER OPERATOR<br>LABORERS<br>LABORERS - ZONE 2 | 6/1/2026 | $50.05 | $10.90 | $9.75 | $9.65 | $0.00 | $80.35 |
| | 12/7/2026 | $51.55 | $10.90 | $9.75 | $9.65 | $0.00 | $81.85 |
| | 6/7/2027 | $53.15 | $10.90 | $9.75 | $9.65 | $0.00 | $83.45 |
| | 12/6/2027 | $54.75 | $10.90 | $9.75 | $9.65 | $0.00 | $85.05 |
| | 6/5/2028 | $56.43 | $10.90 | $9.75 | $9.65 | $0.00 | $86.73 |
| | 12/4/2028 | $58.10 | $10.90 | $9.75 | $9.65 | $0.00 | $88.40 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | | |
| DEMO: WRECKING LABORER<br>LABORERS<br>LABORERS - ZONE 2 | 6/1/2026 | $49.30 | $10.90 | $9.75 | $9.65 | $0.00 | $79.60 |
| | 12/7/2026 | $50.80 | $10.90 | $9.75 | $9.65 | $0.00 | $81.10 |
| | 6/7/2027 | $52.40 | $10.90 | $9.75 | $9.65 | $0.00 | $82.70 |
| | 12/6/2027 | $54.00 | $10.90 | $9.75 | $9.65 | $0.00 | $84.30 |
| | 6/5/2028 | $55.68 | $10.90 | $9.75 | $9.65 | $0.00 | $85.98 |
| | 12/4/2028 | $57.35 | $10.90 | $9.75 | $9.65 | $0.00 | $87.65 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | | |
| DIRECTIONAL DRILL MACHINE OPERATOR<br>OPERATING ENGINEERS LOCAL 4<br>OPERATING ENGINEERS LOCAL 4 | 6/1/2026 | $58.70 | $17.05 | $13.35 | $3.25 | $0.00 | $92.35 |
| | 12/1/2026 | $60.14 | $17.05 | $13.35 | $3.25 | $0.00 | $93.79 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | | |

**Construction**

| Classification | Effective Date | Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| DIVER<br>PILE DRIVER LOCAL 56<br>PILE DRIVER LOCAL 56 (ZONE 2) | 8/1/2024 | $78.11 | $10.08 | $11.62 | $12.67 | $0.00 | $112.48 |
| as of 8-1-24, Apprentices with diving licenses begin at second year. % of Diver wage 70/80/90 2A $69.83, 3A $91.79,4A $102.14 Total Rate | | | | | | | |
| DIVER TENDER<br>PILE DRIVER LOCAL 56<br>PILE DRIVER LOCAL 56 (ZONE 2) | 8/1/2024 | $51.97 | $10.08 | $11.62 | $12.67 | $0.00 | $86.34 |
| as of 8-1-24, Apprentices with diving licenses begin at second year. % of Piledriver wage 70/80/90 2A $54.20, 3A $73.93,4A $82.05 Total Rate | | | | | | | |
| DIVER TENDER (EFFLUENT)<br>PILE DRIVER LOCAL 56<br>PILE DRIVER LOCAL 56 (ZONE 2) | 8/1/2024 | $83.69 | $10.08 | $11.62 | $12.67 | $0.00 | $118.06 |
| For apprentice rates see "Apprentice- PILE DRIVER" | | | | | | | |
| DIVER/SLURRY (EFFLUENT)<br>PILE DRIVER LOCAL 56<br>PILE DRIVER LOCAL 56 (ZONE 2) | 8/1/2024 | $117.16 | $10.08 | $11.62 | $12.67 | $0.00 | $151.53 |
| For apprentice rates see "Apprentice- PILE DRIVER" | | | | | | | |
| DRAWBRIDGE OPERATOR (Construction)<br>DRAWBRIDGE - SEIU LOCAL 888<br>DRAWBRIDGE - SEIU LOCAL 888 | 7/1/2020 | $26.77 | $6.67 | $3.93 | $0.00 | $0.16 | $37.53 |
| ELECTRICIAN<br>ELECTRICIANS LOCAL 96<br>ELECTRICIANS LOCAL 96 | 9/6/2026 | $49.38 | $15.96 | $14.57 | $5.43 | $0.00 | $85.34 |

**Apprentice: ELECTRICIAN**

**Effective Date: 9/6/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 40.00 | $19.75 | $15.96 | $0.59 | $0.00 | $0.00 | $36.30 |
| 2 | 45.00 | $22.22 | $15.96 | $0.67 | $0.00 | $0.00 | $38.85 |
| 3 | 48.00 | $23.70 | $15.96 | $13.80 | $2.61 | $0.00 | $56.07 |
| 4 | 55.00 | $27.16 | $15.96 | $13.90 | $2.99 | $0.00 | $60.01 |
| 5 | 65.00 | $32.10 | $15.96 | $14.05 | $3.53 | $0.00 | $65.64 |
| 6 | 80.00 | $39.50 | $15.96 | $14.28 | $4.35 | $0.00 | $74.09 |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ELEVATOR CONSTRUCTOR | 1/1/2026 | $69.23 | $16.38 | $11.06 | $10.70 | $0.00 | $107.37 |
| ELEVATOR CONSTRUCTORS LOCAL 41<br>ELEVATOR CONSTRUCTORS LOCAL 41 | 1/1/2027 | $72.23 | $16.48 | $11.16 | $11.00 | $0.00 | $110.87 |

**Apprentice: ELEVATOR CONSTRUCTOR**

**Effective Date: 1/1/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 50.00 | $34.62 | $16.38 | $0.00 | $0.00 | $0.00 | $51.00 |

**Construction**

| Classification | Effective Date | Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|

**Apprentice: ELEVATOR CONSTRUCTOR**

**Effective Date: 1/1/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 2 | 55.00 | $38.08 | $16.38 | $11.06 | $10.70 | $0.00 | $76.22 |
| 3 | 65.00 | $45.00 | $16.38 | $11.06 | $10.70 | $0.00 | $83.14 |
| 4 | 70.00 | $48.46 | $16.38 | $11.06 | $10.70 | $0.00 | $86.60 |
| 5 | 80.00 | $55.38 | $16.38 | $11.06 | $10.70 | $0.00 | $93.52 |

**Apprentice: ELEVATOR CONSTRUCTOR**

**Effective Date: 1/1/2027**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 50.00 | $36.12 | $16.48 | $0.00 | $0.00 | $0.00 | $52.60 |
| 2 | 55.00 | $39.73 | $16.48 | $11.16 | $11.00 | $0.00 | $78.37 |
| 3 | 65.00 | $46.95 | $16.48 | $11.16 | $11.00 | $0.00 | $85.59 |
| 4 | 70.00 | $50.56 | $16.48 | $11.16 | $11.00 | $0.00 | $89.20 |
| 5 | 80.00 | $57.78 | $16.48 | $11.16 | $11.00 | $0.00 | $96.42 |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ELEVATOR CONSTRUCTOR HELPER<br>ELEVATOR CONSTRUCTORS LOCAL 41<br>ELEVATOR CONSTRUCTORS LOCAL 41 | 1/1/2026 | $48.46 | $16.38 | $11.06 | $10.70 | $0.00 | $86.60 |
| | 1/1/2027 | $50.56 | $16.48 | $11.16 | $11.00 | $0.00 | $89.20 |
| For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR" | | | | | | | |
| FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY)<br>LABORERS<br>LABORERS - ZONE 2 (HEAVY & HIGHWAY) | 6/1/2026 | $41.91 | $10.90 | $9.75 | $9.21 | $0.00 | $71.77 |
| | 12/1/2026 | $43.35 | $10.90 | $9.75 | $9.21 | $0.00 | $73.21 |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway) | | | | | | | |
| FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY<br>OPERATING ENGINEERS LOCAL 4<br>OPERATING ENGINEERS LOCAL 4 | 5/1/2026 | $54.40 | $16.55 | $13.35 | $3.25 | $0.00 | $87.55 |
| | 11/1/2026 | $55.69 | $16.55 | $13.35 | $3.25 | $0.00 | $88.84 |
| | 5/1/2027 | $57.12 | $16.55 | $13.35 | $3.25 | $0.00 | $90.27 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | | |
| FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY<br>OPERATING ENGINEERS LOCAL 4<br>OPERATING ENGINEERS LOCAL 4 | 5/1/2026 | $56.02 | $16.55 | $13.35 | $3.25 | $0.00 | $89.17 |
| | 11/1/2026 | $57.32 | $16.55 | $13.35 | $3.25 | $0.00 | $90.47 |
| | 5/1/2027 | $58.77 | $16.55 | $13.35 | $3.25 | $0.00 | $91.92 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | | |
| FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY<br>OPERATING ENGINEERS LOCAL 4<br>OPERATING ENGINEERS LOCAL 4 | 5/1/2026 | $26.28 | $16.55 | $13.35 | $3.25 | $0.00 | $59.43 |
| | 11/1/2026 | $27.04 | $16.55 | $13.35 | $3.25 | $0.00 | $60.19 |
| | 5/1/2027 | $27.89 | $16.55 | $13.35 | $3.25 | $0.00 | $61.04 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | | |
| FIRE ALARM INSTALLER<br>ELECTRICIANS LOCAL 96<br>ELECTRICIANS LOCAL 96 | 9/6/2026 | $49.38 | $15.96 | $14.57 | $5.43 | $0.00 | $85.34 |

**Construction**

| Classification | Effective Date | Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| For apprentice rates see "Apprentice- ELECTRICIAN" | | | | | | | |
| FIRE ALARM REPAIR / MAINT/COMMISSIONING<br>ELECTRICIANS LOCAL 96<br>ELECTRICIANS LOCAL 96 | 9/6/2026 | $49.38 | $15.96 | $14.57 | $5.43 | $0.00 | $85.34 |
| For apprentice rates see "Apprentice- ELECTRICIAN" | | | | | | | |
| FIREMAN (ASST. ENGINEER)<br>OPERATING ENGINEERS LOCAL 4<br>OPERATING ENGINEERS LOCAL 4 | 6/1/2026 | $47.55 | $17.05 | $13.35 | $3.25 | $0.00 | $81.20 |
| | 12/1/2026 | $48.73 | $17.05 | $13.35 | $3.25 | $0.00 | $82.38 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | | |
| FLAGGER & SIGNALER (HEAVY & HIGHWAY)<br>LABORERS<br>LABORERS - ZONE 2 (HEAVY & HIGHWAY) | 6/1/2026 | $29.21 | $10.90 | $9.75 | $9.21 | $0.00 | $59.07 |
| | 12/1/2026 | $29.21 | $10.90 | $9.75 | $9.21 | $0.00 | $59.07 |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway)" | | | | | | | |
| FLOORCOVERER<br>FLOORCOVERERS LOCAL 2168<br>FLOORCOVERERS LOCAL 2168 ZONE II | 3/1/2024 | $48.93 | $10.33 | $11.47 | $8.80 | $0.00 | $79.53 |

**Apprentice: FLOORCOVERER**

**Effective Date: 3/1/2024**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 50.00 | $24.47 | $10.33 | $0.00 | $1.76 | $0.00 | $36.56 |
| 2 | 55.00 | $26.91 | $10.33 | $0.00 | $1.76 | $0.00 | $39.00 |
| 3 | 60.00 | $29.36 | $10.33 | $0.00 | $3.52 | $0.00 | $43.21 |
| 4 | 65.00 | $31.80 | $10.33 | $0.00 | $3.52 | $0.00 | $45.65 |
| 5 | 70.00 | $34.25 | $10.33 | $11.47 | $5.28 | $0.00 | $61.33 |
| 6 | 75.00 | $36.70 | $10.33 | $11.47 | $5.28 | $0.00 | $63.78 |
| 7 | 80.00 | $39.14 | $10.33 | $11.47 | $7.04 | $0.00 | $67.98 |
| 8 | 85.00 | $41.59 | $10.33 | $11.47 | $7.04 | $0.00 | $70.43 |

**Apprentice Notes**

Steps are 750 hrs.

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| FORK LIFT/CHERRY PICKER<br>OPERATING ENGINEERS LOCAL 4<br>OPERATING ENGINEERS LOCAL 4 | 6/1/2026 | $59.38 | $17.05 | $13.35 | $3.25 | $0.00 | $93.03 |
| | 12/1/2026 | $60.83 | $17.05 | $13.35 | $3.25 | $0.00 | $94.48 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | | |
| GENERATOR/LIGHTING PLANT/HEATERS<br>OPERATING ENGINEERS LOCAL 4<br>OPERATING ENGINEERS LOCAL 4 | 6/1/2026 | $37.63 | $17.05 | $13.35 | $3.25 | $0.00 | $71.28 |
| | 12/1/2026 | $38.58 | $17.05 | $13.35 | $3.25 | $0.00 | $72.23 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | | |
| GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)<br>GLAZIERS LOCAL 35<br>GLAZIERS LOCAL 35 (ZONE 2) | 1/1/2026 | $49.06 | $10.35 | $12.00 | $12.60 | $0.00 | $84.01 |

**Construction**

| Classification | Effective Date | Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| HOISTING ENGINEER/CRANES/GRADALLS | 6/1/2026 | $59.38 | $17.05 | $13.35 | $3.25 | $0.00 | $93.03 |
| OPERATING ENGINEERS LOCAL 4 | 12/1/2026 | $60.83 | $17.05 | $13.35 | $3.25 | $0.00 | $94.48 |
| OPERATING ENGINEERS LOCAL 4 | | | | | | | |

**Apprentice: GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)**

**Effective Date: 1/1/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 50.00 | $24.53 | $10.35 | $0.00 | $0.00 | $0.00 | $34.88 |
| 2 | 55.00 | $26.98 | $10.35 | $0.00 | $6.88 | $0.00 | $44.21 |
| 3 | 60.00 | $29.44 | $10.35 | $0.00 | $7.50 | $0.00 | $47.29 |
| 4 | 65.00 | $31.89 | $10.35 | $0.00 | $8.13 | $0.00 | $50.37 |
| 5 | 70.00 | $34.34 | $10.35 | $12.00 | $8.75 | $0.00 | $65.44 |
| 6 | 75.00 | $36.80 | $10.35 | $12.00 | $9.38 | $0.00 | $68.53 |
| 7 | 80.00 | $39.25 | $10.35 | $12.00 | $10.00 | $0.00 | $71.60 |
| 8 | 90.00 | $44.15 | $10.35 | $12.00 | $11.25 | $0.00 | $77.75 |

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

**Apprentice: HOISTING ENGINEER/CRANES/GRADALLS**

**Effective Date: 6/1/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 55.00 | $32.66 | $0.00 | $0.00 | $0.00 | $0.00 | $32.66 |
| 2 | 60.00 | $35.63 | $17.05 | $13.35 | $3.25 | $0.00 | $69.28 |
| 3 | 65.00 | $38.60 | $17.05 | $13.35 | $3.25 | $0.00 | $72.25 |
| 4 | 70.00 | $41.57 | $17.05 | $13.35 | $3.25 | $0.00 | $75.22 |
| 5 | 75.00 | $44.54 | $17.05 | $13.35 | $3.25 | $0.00 | $78.19 |
| 6 | 80.00 | $47.50 | $17.05 | $13.35 | $3.25 | $0.00 | $81.15 |
| 7 | 85.00 | $50.47 | $17.05 | $13.35 | $3.25 | $0.00 | $84.12 |
| 8 | 90.00 | $53.44 | $17.05 | $13.35 | $3.25 | $0.00 | $87.09 |

**Apprentice: HOISTING ENGINEER/CRANES/GRADALLS**

**Effective Date: 12/1/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 55.00 | $33.46 | $0.00 | $0.00 | $0.00 | $0.00 | $33.46 |
| 2 | 60.00 | $36.50 | $17.05 | $13.35 | $3.25 | $0.00 | $70.15 |
| 3 | 65.00 | $39.54 | $17.05 | $13.35 | $3.25 | $0.00 | $73.19 |
| 4 | 70.00 | $42.58 | $17.05 | $13.35 | $3.25 | $0.00 | $76.23 |
| 5 | 75.00 | $45.62 | $17.05 | $13.35 | $3.25 | $0.00 | $79.27 |
| 6 | 80.00 | $48.66 | $17.05 | $13.35 | $3.25 | $0.00 | $82.31 |
| 7 | 85.00 | $51.71 | $17.05 | $13.35 | $3.25 | $0.00 | $85.36 |
| 8 | 90.00 | $54.75 | $17.05 | $13.35 | $3.25 | $0.00 | $88.40 |

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

**Construction**

| Classification | Effective Date | Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| HVAC (DUCTWORK)<br>SHEETMETAL WORKERS LOCAL 63<br>SHEETMETAL WORKERS LOCAL 63 | 7/1/2026 | $43.48 | $13.24 | $11.01 | $9.92 | $2.13 | $79.78 |
| | 1/1/2027 | $43.48 | $13.54 | $11.01 | $11.12 | $2.13 | $81.28 |
| | 7/1/2027 | $44.98 | $13.54 | $11.01 | $11.12 | $2.13 | $82.78 |
| | 1/1/2028 | $46.48 | $13.54 | $11.01 | $11.12 | $2.13 | $84.28 |
| For apprentice rates see "Apprentice- SHEET METAL WORKER" | | | | | | | |
| HVAC (ELECTRICAL CONTROLS)<br>ELECTRICIANS LOCAL 96<br>ELECTRICIANS LOCAL 96 | 9/6/2026 | $49.38 | $15.96 | $14.57 | $5.43 | $0.00 | $85.34 |
| For apprentice rates see "Apprentice- ELECTRICIAN" | | | | | | | |
| HVAC (TESTING AND BALANCING - AIR)<br>SHEETMETAL WORKERS LOCAL 63<br>SHEETMETAL WORKERS LOCAL 63 | 7/1/2026 | $43.48 | $13.24 | $11.01 | $9.92 | $2.13 | $79.78 |
| | 1/1/2027 | $43.48 | $13.54 | $11.01 | $11.12 | $2.13 | $81.28 |
| | 7/1/2027 | $44.98 | $13.54 | $11.01 | $11.12 | $2.13 | $82.78 |
| | 1/1/2028 | $46.48 | $13.54 | $11.01 | $11.12 | $2.13 | $84.28 |
| For apprentice rates see "Apprentice- SHEET METAL WORKER" | | | | | | | |
| HVAC (TESTING AND BALANCING -WATER)<br>PLUMBERS LOCAL 4<br>PLUMBERS LOCAL 4 | 3/1/2026 | $55.90 | $13.10 | $9.71 | $8.06 | $0.00 | $86.77 |
| For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER" | | | | | | | |
| HVAC MECHANIC<br>PLUMBERS LOCAL 4<br>PLUMBERS LOCAL 4 | 3/1/2026 | $55.90 | $13.10 | $9.71 | $8.06 | $0.00 | $86.77 |
| For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER" | | | | | | | |
| HYDRAULIC DRILLS<br>LABORERS<br>LABORERS - ZONE 2 | 6/1/2026 | $42.41 | $10.90 | $9.75 | $9.11 | $0.00 | $72.17 |
| | 12/1/2026 | $43.85 | $10.90 | $9.75 | $9.11 | $0.00 | $73.61 |
| | 6/1/2027 | $45.30 | $10.90 | $9.75 | $9.11 | $0.00 | $75.06 |
| | 12/1/2027 | $46.75 | $10.90 | $9.75 | $9.11 | $0.00 | $76.51 |
| | 6/1/2028 | $48.25 | $10.90 | $9.75 | $9.11 | $0.00 | $78.01 |
| | 12/1/2028 | $49.75 | $10.90 | $9.75 | $9.11 | $0.00 | $79.51 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | | |
| HYDRAULIC DRILLS (HEAVY & HIGHWAY)<br>LABORERS<br>LABORERS - ZONE 2 (HEAVY & HIGHWAY) | 6/1/2026 | $42.41 | $10.90 | $9.75 | $9.21 | $0.00 | $72.27 |
| | 12/1/2026 | $43.85 | $10.90 | $9.75 | $9.21 | $0.00 | $73.71 |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway)" | | | | | | | |
| INSULATOR (PIPES & TANKS)<br>HEAT & FROST INSULATORS LOCAL 6<br>HEAT & FROST INSULATORS LOCAL 6 (WORCESTER) | 9/1/2026 | $53.12 | $16.15 | $11.46 | $11.49 | $0.00 | $92.22 |

**Apprentice: INSULATOR (PIPES & TANKS)**

**Effective Date: 9/1/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 50.00 | $26.56 | $16.15 | $11.21 | $5.75 | $0.00 | $59.67 |
| 2 | 60.00 | $31.87 | $16.15 | $11.26 | $6.89 | $0.00 | $66.17 |
| 3 | 70.00 | $37.18 | $16.15 | $11.31 | $8.04 | $0.00 | $72.68 |

**Construction**

| Classification | Effective Date | Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|

**Apprentice: INSULATOR (PIPES & TANKS)**

**Effective Date: 9/1/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 4 | 80.00 | $42.50 | $16.15 | $11.36 | $9.19 | $0.00 | $79.20 |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| IRONWORKER/WELDER<br>IRONWORKERS LOCAL 7<br>IRONWORKERS LOCAL 7 (WORCESTER AREA) | 3/16/2026 | $58.35 | $9.25 | $12.75 | $15.00 | $0.00 | $95.35 |

**Apprentice: IRONWORKER/WELDER**

**Effective Date: 3/16/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 70.00 | $40.85 | $9.25 | $12.75 | $5.00 | $0.00 | $67.85 |
| 2 | 80.00 | $46.68 | $9.25 | $12.75 | $5.00 | $0.00 | $73.68 |
| 3 | 90.00 | $52.52 | $9.25 | $12.75 | $5.00 | $0.00 | $79.52 |
| 4 | 0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 |
| 5 | 0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 |
| 6 | 0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| JACKHAMMER & PAVING BREAKER OPERATOR<br>LABORERS<br>LABORERS - ZONE 2 | 6/1/2026 | $41.91 | $10.90 | $9.75 | $9.11 | $0.00 | $71.67 |
| | 12/1/2026 | $43.35 | $10.90 | $9.75 | $9.11 | $0.00 | $73.11 |
| | 6/1/2027 | $44.80 | $10.90 | $9.75 | $9.11 | $0.00 | $74.56 |
| | 12/1/2027 | $46.25 | $10.90 | $9.75 | $9.11 | $0.00 | $76.01 |
| | 6/1/2028 | $47.75 | $10.90 | $9.75 | $9.11 | $0.00 | $77.51 |
| | 12/1/2028 | $49.25 | $10.90 | $9.75 | $9.11 | $0.00 | $79.01 |

For apprentice rates see "Apprentice- LABORER"

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| LABORER<br>LABORERS<br>LABORERS - ZONE 2 | 6/1/2026 | $41.66 | $10.90 | $9.75 | $9.11 | $0.00 | $71.42 |
| | 12/1/2026 | $43.10 | $10.90 | $9.75 | $9.11 | $0.00 | $72.86 |
| | 6/1/2027 | $44.55 | $10.90 | $9.75 | $9.11 | $0.00 | $74.31 |
| | 12/1/2027 | $46.00 | $10.90 | $9.75 | $9.11 | $0.00 | $75.76 |
| | 6/1/2028 | $47.50 | $10.90 | $9.75 | $9.11 | $0.00 | $77.26 |
| | 12/1/2028 | $49.00 | $10.90 | $9.75 | $9.11 | $0.00 | $78.76 |

**Apprentice: LABORER**

**Effective Date: 6/1/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 60.00 | $25.00 | $10.90 | $9.75 | $9.11 | $0.00 | $54.76 |
| 2 | 70.00 | $29.16 | $10.90 | $9.75 | $9.11 | $0.00 | $58.92 |
| 3 | 80.00 | $33.33 | $10.90 | $9.75 | $9.11 | $0.00 | $63.09 |

**Construction**

| Classification | Effective Date | Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|

**Apprentice: LABORER**

**Effective Date: 6/1/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 4 | 90.00 | $37.49 | $10.90 | $9.75 | $9.11 | $0.00 | $67.25 |

**Apprentice: LABORER**

**Effective Date: 12/1/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 60.00 | $25.86 | $10.90 | $9.75 | $9.11 | $0.00 | $55.62 |
| 2 | 70.00 | $30.17 | $10.90 | $9.75 | $9.11 | $0.00 | $59.93 |
| 3 | 80.00 | $34.48 | $10.90 | $9.75 | $9.11 | $0.00 | $64.24 |
| 4 | 90.00 | $38.79 | $10.90 | $9.75 | $9.11 | $0.00 | $68.55 |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| LABORER (HEAVY & HIGHWAY)<br>LABORERS<br>LABORERS - ZONE 2 (HEAVY & HIGHWAY) | 6/1/2026 | $41.66 | $10.90 | $9.75 | $9.21 | $0.00 | $71.52 |
| | 12/1/2026 | $43.10 | $10.90 | $9.75 | $9.21 | $0.00 | $72.96 |

**Apprentice: LABORER (HEAVY & HIGHWAY)**

**Effective Date: 6/1/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 60.00 | $25.00 | $10.90 | $9.75 | $9.21 | $0.00 | $54.86 |
| 2 | 70.00 | $29.16 | $10.90 | $9.75 | $9.21 | $0.00 | $59.02 |
| 3 | 80.00 | $33.33 | $10.90 | $9.75 | $9.21 | $0.00 | $63.19 |
| 4 | 90.00 | $37.49 | $10.90 | $9.75 | $9.10 | $0.00 | $67.24 |

**Apprentice: LABORER (HEAVY & HIGHWAY)**

**Effective Date: 12/1/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 60.00 | $25.86 | $10.90 | $9.75 | $9.21 | $0.00 | $55.72 |
| 2 | 70.00 | $30.17 | $10.90 | $9.75 | $9.21 | $0.00 | $60.03 |
| 3 | 80.00 | $34.48 | $10.90 | $9.75 | $9.21 | $0.00 | $64.34 |
| 4 | 90.00 | $38.79 | $10.90 | $9.75 | $9.21 | $0.00 | $68.65 |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| LABORER: CARPENTER TENDER<br>LABORERS<br>LABORERS - ZONE 2 | 6/1/2026 | $41.66 | $10.90 | $9.75 | $9.11 | $0.00 | $71.42 |
| | 12/1/2026 | $43.10 | $10.90 | $9.75 | $9.11 | $0.00 | $72.86 |
| | 6/1/2027 | $44.55 | $10.90 | $9.75 | $9.11 | $0.00 | $74.31 |
| | 12/1/2027 | $46.00 | $10.90 | $9.75 | $9.11 | $0.00 | $75.76 |
| | 6/1/2028 | $47.50 | $10.90 | $9.75 | $9.11 | $0.00 | $77.26 |

**Construction**

| Classification | Effective Date | Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| | 12/1/2028 | $49.00 | $10.90 | $9.75 | $9.11 | $0.00 | $78.76 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | | |
| LABORER: CEMENT FINISHER TENDER<br>LABORERS<br>LABORERS - ZONE 2 | 6/1/2026 | $41.66 | $10.90 | $9.75 | $9.11 | $0.00 | $71.42 |
| | 12/1/2026 | $43.10 | $10.90 | $9.75 | $9.11 | $0.00 | $72.86 |
| | 6/1/2027 | $44.55 | $10.90 | $9.75 | $9.11 | $0.00 | $74.31 |
| | 12/1/2027 | $46.00 | $10.90 | $9.75 | $9.11 | $0.00 | $75.76 |
| | 6/1/2028 | $47.50 | $10.90 | $9.75 | $9.11 | $0.00 | $77.26 |
| | 12/1/2028 | $49.00 | $10.90 | $9.75 | $9.11 | $0.00 | $78.76 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | | |
| LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER<br>LABORERS<br>LABORERS - ZONE 2 | 6/1/2026 | $41.75 | $10.90 | $9.75 | $9.65 | $0.00 | $72.05 |
| | 12/7/2026 | $43.19 | $10.90 | $9.75 | $9.65 | $0.00 | $73.49 |
| | 6/7/2027 | $44.64 | $10.90 | $9.75 | $9.65 | $0.00 | $74.94 |
| | 12/6/2027 | $46.09 | $10.90 | $9.75 | $9.65 | $0.00 | $76.39 |
| | 6/5/2028 | $47.59 | $10.90 | $9.75 | $9.65 | $0.00 | $77.89 |
| | 12/4/2028 | $49.09 | $10.90 | $9.75 | $9.65 | $0.00 | $79.39 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | | |
| LABORER: MASON TENDER<br>LABORERS<br>LABORERS - ZONE 2 | 6/1/2026 | $41.91 | $10.90 | $9.75 | $9.11 | $0.00 | $71.67 |
| | 12/1/2026 | $43.35 | $10.90 | $9.75 | $9.11 | $0.00 | $73.11 |
| | 6/1/2027 | $44.80 | $10.90 | $9.75 | $9.11 | $0.00 | $74.56 |
| | 12/1/2027 | $46.25 | $10.90 | $9.75 | $9.11 | $0.00 | $76.01 |
| | 6/1/2028 | $47.75 | $10.90 | $9.75 | $9.11 | $0.00 | $77.51 |
| | 12/1/2028 | $49.25 | $10.90 | $9.75 | $9.11 | $0.00 | $79.01 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | | |
| LABORER: MASON TENDER (HEAVY & HIGHWAY)<br>LABORERS<br>LABORERS - ZONE 2 (HEAVY & HIGHWAY) | 6/1/2026 | $41.91 | $10.90 | $9.75 | $9.21 | $0.00 | $71.77 |
| | 12/1/2026 | $43.35 | $10.90 | $9.75 | $9.21 | $0.00 | $73.21 |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway)" | | | | | | | |
| LABORER: MULTI-TRADE TENDER<br>LABORERS<br>LABORERS - ZONE 2 | 6/1/2026 | $41.66 | $10.90 | $9.75 | $9.11 | $0.00 | $71.42 |
| | 12/1/2026 | $43.10 | $10.90 | $9.75 | $9.11 | $0.00 | $72.86 |
| | 6/1/2027 | $44.55 | $10.90 | $9.75 | $9.11 | $0.00 | $74.31 |
| | 12/1/2027 | $46.00 | $10.90 | $9.75 | $9.11 | $0.00 | $75.76 |
| | 6/1/2028 | $47.50 | $10.90 | $9.75 | $9.11 | $0.00 | $77.26 |
| | 12/1/2028 | $49.00 | $10.90 | $9.75 | $9.11 | $0.00 | $78.76 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | | |
| LABORER: TREE REMOVER<br>LABORERS<br>LABORERS - ZONE 2 | 6/1/2026 | $41.66 | $10.90 | $9.75 | $9.11 | $0.00 | $71.42 |
| | 12/1/2026 | $43.10 | $10.90 | $9.75 | $9.11 | $0.00 | $72.86 |
| | 6/1/2027 | $44.55 | $10.90 | $9.75 | $9.11 | $0.00 | $74.31 |
| | 12/1/2027 | $46.00 | $10.90 | $9.75 | $9.11 | $0.00 | $75.76 |
| | 6/1/2028 | $47.50 | $10.90 | $9.75 | $9.11 | $0.00 | $77.26 |
| | 12/1/2028 | $49.00 | $10.90 | $9.75 | $9.11 | $0.00 | $78.76 |
| This classification applies to the removal of standing trees, and the trimming and removal of branches and limbs when related to public works construction or site clearance incidental to construction . For apprentice rates see "Apprentice- LABORER" | | | | | | | |
| LASER BEAM OPERATOR<br>LABORERS | 6/1/2026 | $41.91 | $10.90 | $9.75 | $9.11 | $0.00 | $71.67 |
| | 12/1/2026 | $43.35 | $10.90 | $9.75 | $9.11 | $0.00 | $73.11 |

**Construction**

| Classification | Effective Date | Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| LABORERS - ZONE 2 | 6/1/2027 | $44.80 | $10.90 | $9.75 | $9.11 | $0.00 | $74.56 |
| | 12/1/2027 | $46.25 | $10.90 | $9.75 | $9.11 | $0.00 | $76.01 |
| | 6/1/2028 | $47.75 | $10.90 | $9.75 | $9.11 | $0.00 | $77.51 |
| | 12/1/2028 | $49.25 | $10.90 | $9.75 | $9.11 | $0.00 | $79.01 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | | |
| LASER BEAM OPERATOR (HEAVY & HIGHWAY) | 6/1/2026 | $41.91 | $10.90 | $9.75 | $9.21 | $0.00 | $71.77 |
| LABORERS<br>LABORERS - ZONE 2 (HEAVY & HIGHWAY) | 12/1/2026 | $43.35 | $10.90 | $9.75 | $9.21 | $0.00 | $73.21 |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway)" | | | | | | | |
| MARBLE & TILE FINISHERS | 8/1/2026 | $53.84 | $12.84 | $15.57 | $5.78 | $0.00 | $88.03 |
| BRICKLAYERS LOCAL 3<br>BRICKLAYERS LOCAL 3 - MARBLE & TILE | 2/1/2027 | $54.96 | $12.84 | $15.57 | $5.78 | $0.00 | $89.15 |

**Apprentice: MARBLE & TILE FINISHERS**

**Effective Date: 8/1/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 50.00 | $26.92 | $12.84 | $15.57 | $5.78 | $0.00 | $61.11 |
| 2 | 60.00 | $32.30 | $12.84 | $15.57 | $5.78 | $0.00 | $66.49 |
| 3 | 70.00 | $37.69 | $12.84 | $15.57 | $5.78 | $0.00 | $71.88 |
| 4 | 80.00 | $43.07 | $12.84 | $15.57 | $5.78 | $0.00 | $77.26 |
| 5 | 90.00 | $48.46 | $12.84 | $15.57 | $5.78 | $0.00 | $82.65 |

**Apprentice: MARBLE & TILE FINISHERS**

**Effective Date: 2/1/2027**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 50.00 | $27.48 | $12.84 | $15.57 | $5.78 | $0.00 | $61.67 |
| 2 | 60.00 | $32.98 | $12.84 | $15.57 | $5.78 | $0.00 | $67.17 |
| 3 | 70.00 | $38.47 | $12.84 | $15.57 | $5.78 | $0.00 | $72.66 |
| 4 | 80.00 | $43.97 | $12.84 | $15.57 | $5.78 | $0.00 | $78.16 |
| 5 | 90.00 | $49.46 | $12.84 | $15.57 | $5.78 | $0.00 | $83.65 |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MARBLE MASONS,TILELAYERS & TERRAZZO MECH | 8/1/2026 | $70.17 | $12.84 | $15.57 | $7.99 | $0.00 | $106.57 |
| BRICKLAYERS LOCAL 3<br>BRICKLAYERS LOCAL 3 - MARBLE & TILE | 2/1/2027 | $71.57 | $12.84 | $15.57 | $7.99 | $0.00 | $107.97 |

**Apprentice: MARBLE MASONS,TILELAYERS & TERRAZZO MECH**

**Effective Date: 8/1/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 50.00 | $35.09 | $12.84 | $15.57 | $7.99 | $0.00 | $71.49 |
| 2 | 60.00 | $42.10 | $12.84 | $15.57 | $7.99 | $0.00 | $78.50 |
| 3 | 70.00 | $49.12 | $12.84 | $15.57 | $7.99 | $0.00 | $85.52 |

**Construction**

| Classification | Effective Date | Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|

**Apprentice: MARBLE MASONS,TILELAYERS & TERRAZZO MECH**

**Effective Date: 8/1/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 4 | 80.00 | $56.14 | $12.84 | $15.57 | $7.99 | $0.00 | $92.54 |
| 5 | 90.00 | $63.15 | $12.84 | $15.57 | $7.99 | $0.00 | $99.55 |

**Apprentice: MARBLE MASONS,TILELAYERS & TERRAZZO MECH**

**Effective Date: 2/1/2027**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 50.00 | $35.79 | $12.84 | $15.57 | $7.99 | $0.00 | $72.19 |
| 2 | 60.00 | $42.94 | $12.84 | $15.57 | $7.99 | $0.00 | $79.34 |
| 3 | 70.00 | $50.10 | $12.84 | $15.57 | $7.99 | $0.00 | $86.50 |
| 4 | 80.00 | $57.26 | $12.84 | $15.57 | $7.99 | $0.00 | $93.66 |
| 5 | 90.00 | $64.41 | $12.84 | $15.57 | $7.99 | $0.00 | $100.81 |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MECH. SWEEPER OPERATOR (ON CONST. SITES)<br>OPERATING ENGINEERS LOCAL 4<br>OPERATING ENGINEERS LOCAL 4 | 6/1/2026<br>12/1/2026 | $58.70<br>$60.14 | $17.05<br>$17.05 | $13.35<br>$13.35 | $3.25<br>$3.25 | $0.00<br>$0.00 | $92.35<br>$93.79 |

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MECHANICS MAINTENANCE<br>OPERATING ENGINEERS LOCAL 4<br>OPERATING ENGINEERS LOCAL 4 | 6/1/2026<br>12/1/2026 | $58.70<br>$60.14 | $17.05<br>$17.05 | $13.35<br>$13.35 | $3.25<br>$3.25 | $0.00<br>$0.00 | $92.35<br>$93.79 |

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MILLWRIGHT (Zone 3)<br>MILLWRIGHTS LOCAL 1121<br>MILLWRIGHTS LOCAL 1121 - Zone 3 | 1/5/2026 | $45.20 | $10.58 | $11.47 | $9.75 | $0.00 | $77.00 |

**Apprentice: MILLWRIGHT (Zone 3)**

**Effective Date: 1/5/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 55.00 | $24.86 | $10.58 | $0.00 | $5.36 | $0.00 | $40.80 |
| 2 | 65.00 | $29.38 | $10.58 | $0.00 | $6.34 | $0.00 | $46.30 |
| 3 | 75.00 | $33.90 | $10.58 | $11.47 | $7.31 | $0.00 | $63.26 |
| 4 | 85.00 | $38.42 | $10.58 | $11.47 | $8.29 | $0.00 | $68.76 |

**Apprentice Notes**

Step 1&2 Appr. indentured after 1/6/2020 receive no pension,

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MORTAR MIXER | 6/1/2026 | $41.91 | $10.90 | $9.75 | $9.11 | $0.00 | $71.67 |

**Construction**

| Classification | Effective Date | Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| LABORERS<br>LABORERS - ZONE 2 | 12/1/2026 | $43.35 | $10.90 | $9.75 | $9.11 | $0.00 | $73.11 |
| | 6/1/2027 | $44.80 | $10.90 | $9.75 | $9.11 | $0.00 | $74.56 |
| | 12/1/2027 | $46.25 | $10.90 | $9.75 | $9.11 | $0.00 | $76.01 |
| | 6/1/2028 | $47.75 | $10.90 | $9.75 | $9.11 | $0.00 | $77.51 |
| | 12/1/2028 | $49.25 | $10.90 | $9.75 | $9.11 | $0.00 | $79.01 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | | |
| OILER (OTHER THAN TRUCK CRANES,GRADALLS)<br>OPERATING ENGINEERS LOCAL 4<br>OPERATING ENGINEERS LOCAL 4 | 6/1/2026 | $25.07 | $17.05 | $13.35 | $3.25 | $0.00 | $58.72 |
| | 12/1/2026 | $25.74 | $17.05 | $13.35 | $3.25 | $0.00 | $59.39 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | | |
| OILER (TRUCK CRANES, GRADALLS)<br>OPERATING ENGINEERS LOCAL 4<br>OPERATING ENGINEERS LOCAL 4 | 6/1/2026 | $31.17 | $17.05 | $13.35 | $3.25 | $0.00 | $64.82 |
| | 12/1/2026 | $31.97 | $17.05 | $13.35 | $3.25 | $0.00 | $65.62 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | | |
| OTHER POWER DRIVEN EQUIPMENT - CLASS II<br>OPERATING ENGINEERS LOCAL 4<br>OPERATING ENGINEERS LOCAL 4 | 6/1/2026 | $58.70 | $17.05 | $13.35 | $3.25 | $0.00 | $92.35 |
| | 12/1/2026 | $60.14 | $17.05 | $13.35 | $3.25 | $0.00 | $93.79 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | | |
| PAINTER (BRIDGES/TANKS)<br>PAINTERS LOCAL 35<br>PAINTERS LOCAL 35 - ZONE 2 | 1/1/2026 | $59.56 | $10.35 | $12.00 | $12.50 | $0.00 | $94.41 |

**Apprentice: PAINTER (BRIDGES/TANKS)**

**Effective Date: 1/1/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 50.00 | $29.78 | $10.35 | $0.00 | $0.00 | $0.00 | $40.13 |
| 2 | 55.00 | $32.76 | $10.35 | $0.00 | $6.93 | $0.00 | $50.04 |
| 3 | 60.00 | $35.74 | $10.35 | $0.00 | $7.56 | $0.00 | $53.65 |
| 4 | 65.00 | $38.71 | $10.35 | $0.00 | $8.19 | $0.00 | $57.25 |
| 5 | 70.00 | $41.69 | $10.35 | $12.00 | $8.82 | $0.00 | $72.86 |
| 6 | 75.00 | $44.67 | $10.35 | $12.00 | $9.45 | $0.00 | $76.47 |
| 7 | 80.00 | $47.65 | $10.35 | $12.00 | $10.08 | $0.00 | $80.08 |
| 8 | 90.00 | $53.60 | $10.35 | $12.00 | $11.34 | $0.00 | $87.29 |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PAINTER (SPRAY OR SANDBLAST, NEW) *<br>* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used.<br>PAINTERS LOCAL 35<br>PAINTERS LOCAL 35 - ZONE 2 | 1/1/2026 | $50.46 | $10.35 | $12.00 | $12.60 | $0.00 | $85.41 |

**Apprentice: PAINTER (SPRAY OR SANDBLAST, NEW) ***

**Effective Date: 1/1/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|

**Construction**

| Classification | Effective Date | Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|

**Apprentice: PAINTER (SPRAY OR SANDBLAST, NEW) ***

**Effective Date: 1/1/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 50.00 | $25.23 | $10.35 | $0.00 | $0.00 | $0.00 | $35.58 |
| 2 | 55.00 | $27.75 | $10.35 | $0.00 | $6.93 | $0.00 | $45.03 |
| 3 | 60.00 | $30.28 | $10.35 | $0.00 | $7.56 | $0.00 | $48.19 |
| 4 | 65.00 | $32.80 | $10.35 | $0.00 | $8.19 | $0.00 | $51.34 |
| 5 | 70.00 | $35.32 | $10.35 | $12.00 | $8.82 | $0.00 | $66.49 |
| 6 | 75.00 | $37.85 | $10.35 | $12.00 | $9.45 | $0.00 | $69.65 |
| 7 | 80.00 | $40.37 | $10.35 | $12.00 | $10.08 | $0.00 | $72.80 |
| 8 | 90.00 | $45.41 | $10.35 | $12.00 | $11.34 | $0.00 | $79.10 |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PAINTER (SPRAY OR SANDBLAST, REPAINT)<br>PAINTERS LOCAL 35<br>PAINTERS LOCAL 35 - ZONE 2 | 1/1/2026 | $48.52 | $10.35 | $12.00 | $12.60 | $0.00 | $83.47 |

**Apprentice: PAINTER (SPRAY OR SANDBLAST, REPAINT)**

**Effective Date: 1/1/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 50.00 | $24.26 | $10.35 | $0.00 | $0.00 | $0.00 | $34.61 |
| 2 | 55.00 | $26.69 | $10.35 | $0.00 | $6.93 | $0.00 | $43.97 |
| 3 | 60.00 | $29.11 | $10.35 | $0.00 | $7.56 | $0.00 | $47.02 |
| 4 | 65.00 | $31.54 | $10.35 | $0.00 | $8.19 | $0.00 | $50.08 |
| 5 | 70.00 | $33.96 | $10.35 | $12.00 | $8.82 | $0.00 | $65.13 |
| 6 | 75.00 | $36.39 | $10.35 | $12.00 | $9.45 | $0.00 | $68.19 |
| 7 | 80.00 | $38.82 | $10.35 | $12.00 | $10.08 | $0.00 | $71.25 |
| 8 | 90.00 | $43.67 | $10.35 | $12.00 | $11.34 | $0.00 | $77.36 |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PAINTER / TAPER (BRUSH, NEW) *<br>* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used.<br>PAINTERS LOCAL 35<br>PAINTERS LOCAL 35 - ZONE 2 | 1/1/2026 | $49.06 | $10.35 | $12.00 | $12.60 | $0.00 | $84.01 |

**Apprentice: PAINTER / TAPER (BRUSH, NEW) ***

**Effective Date: 1/1/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 50.00 | $24.53 | $10.35 | $0.00 | $0.00 | $0.00 | $34.88 |
| 2 | 55.00 | $26.98 | $10.35 | $0.00 | $6.93 | $0.00 | $44.26 |
| 3 | 60.00 | $29.44 | $10.35 | $0.00 | $7.56 | $0.00 | $47.35 |
| 4 | 65.00 | $31.89 | $10.35 | $0.00 | $8.19 | $0.00 | $50.43 |

**Construction**

| Classification | Effective Date | Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|

**Apprentice: PAINTER / TAPER (BRUSH, NEW) ***

**Effective Date: 1/1/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 5 | 70.00 | $34.34 | $10.35 | $12.00 | $8.82 | $0.00 | $65.51 |
| 6 | 75.00 | $36.80 | $10.35 | $12.00 | $9.45 | $0.00 | $68.60 |
| 7 | 80.00 | $39.25 | $10.35 | $12.00 | $10.08 | $0.00 | $71.68 |
| 8 | 90.00 | $44.15 | $10.35 | $12.00 | $11.34 | $0.00 | $77.84 |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PAINTER / TAPER (BRUSH, REPAINT)<br>PAINTERS LOCAL 35<br>PAINTERS LOCAL 35 - ZONE 2 | 1/1/2026 | $47.12 | $10.35 | $12.00 | $12.60 | $0.00 | $82.07 |

**Apprentice: PAINTER / TAPER (BRUSH, REPAINT)**

**Effective Date: 1/1/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 50.00 | $23.56 | $10.35 | $0.00 | $0.00 | $0.00 | $33.91 |
| 2 | 55.00 | $25.92 | $10.35 | $0.00 | $6.93 | $0.00 | $43.20 |
| 3 | 60.00 | $28.27 | $10.35 | $0.00 | $7.56 | $0.00 | $46.18 |
| 4 | 65.00 | $30.63 | $10.35 | $0.00 | $8.19 | $0.00 | $49.17 |
| 5 | 70.00 | $32.98 | $10.35 | $12.00 | $8.82 | $0.00 | $64.15 |
| 6 | 75.00 | $35.34 | $10.35 | $12.00 | $9.45 | $0.00 | $67.14 |
| 7 | 80.00 | $37.70 | $10.35 | $12.00 | $10.08 | $0.00 | $70.13 |
| 8 | 90.00 | $42.41 | $10.35 | $12.00 | $11.34 | $0.00 | $76.10 |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| PAINTER TRAFFIC MARKINGS (HEAVY/HIGHWAY) | 6/1/2026 | $41.66 | $10.90 | $9.75 | $9.21 | $0.00 | $71.52 |
| LABORERS<br>LABORERS - ZONE 2 (HEAVY & HIGHWAY) | 12/1/2026 | $43.10 | $10.90 | $9.75 | $9.21 | $0.00 | $72.96 |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway) | | | | | | | |
| PANEL & PICKUP TRUCKS DRIVER | 6/1/2026 | $41.78 | $16.17 | $21.78 | $0.00 | $0.00 | $79.73 |
| TEAMSTERS JOINT COUNCIL NO. 10<br>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B | 12/1/2026 | $41.78 | $16.17 | $23.52 | $0.00 | $0.00 | $81.47 |
| | 1/1/2027 | $41.78 | $16.77 | $23.52 | $0.00 | $0.00 | $82.07 |
| PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK)<br>PILE DRIVER LOCAL 56<br>PILE DRIVER LOCAL 56 (ZONE 2) | 8/1/2024 | $51.97 | $10.08 | $11.62 | $12.67 | $0.00 | $86.34 |
| For apprentice rates see "Apprentice- PILE DRIVER" | | | | | | | |
| PILE DRIVER<br>PILE DRIVER LOCAL 56<br>PILE DRIVER LOCAL 56 (ZONE 2) | 8/1/2024 | $51.97 | $10.08 | $11.62 | $12.67 | $0.00 | $86.34 |

**Construction**

| Classification | Effective Date | Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| **Apprentice: PILE DRIVER** | | | | | | | |
| **Effective Date: 8/1/2024** | | | | | | | |
| **Step / Percent** | | **Apprentice Base Wage** | | | | | |
| 1 / 45.00 | | $23.39 | $10.08 | $0.00 | $2.53 | $0.00 | $36.00 |
| 2 / 55.00 | | $28.58 | $10.08 | $0.00 | $5.07 | $0.00 | $43.73 |
| 3 / 70.00 | | $36.38 | $10.08 | $11.62 | $7.60 | $0.00 | $65.68 |
| 4 / 80.00 | | $41.58 | $10.08 | $11.62 | $10.14 | $0.00 | $73.42 |
| **Apprentice to Journeyworker Ratio: 1:5** | | | | | | | |
| PIPELAYER | 6/1/2026 | $41.91 | $10.90 | $9.75 | $9.11 | $0.00 | $71.67 |
| LABORERS | 12/1/2026 | $43.35 | $10.90 | $9.75 | $9.11 | $0.00 | $73.11 |
| LABORERS - ZONE 2 | 6/1/2027 | $44.80 | $10.90 | $9.75 | $9.11 | $0.00 | $74.56 |
| | 12/1/2027 | $46.25 | $10.90 | $9.75 | $9.11 | $0.00 | $76.01 |
| | 6/1/2028 | $47.75 | $10.90 | $9.75 | $9.11 | $0.00 | $77.51 |
| | 12/1/2028 | $49.25 | $10.90 | $9.75 | $9.11 | $0.00 | $79.01 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | | |
| PIPELAYER (HEAVY & HIGHWAY) | 6/1/2026 | $41.91 | $10.90 | $9.75 | $9.21 | $0.00 | $71.77 |
| LABORERS | 12/1/2026 | $43.35 | $10.90 | $9.75 | $9.21 | $0.00 | $73.21 |
| LABORERS - ZONE 2 (HEAVY & HIGHWAY) | | | | | | | |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway)" | | | | | | | |
| PLUMBER & PIPEFITTER | 3/1/2026 | $55.90 | $13.10 | $9.71 | $8.06 | $0.00 | $86.77 |
| PLUMBERS LOCAL 4 | | | | | | | |
| PLUMBERS LOCAL 4 | | | | | | | |
| **Apprentice: PLUMBER & PIPEFITTER** | | | | | | | |
| **Effective Date: 3/1/2026** | | | | | | | |
| **Step / Percent** | | **Apprentice Base Wage** | | | | | |
| 1 / 40.00 | | $22.36 | $13.10 | $0.00 | $0.00 | $0.00 | $35.46 |
| 2 / 50.00 | | $27.95 | $13.10 | $0.00 | $0.00 | $0.00 | $41.05 |
| 3 / 60.00 | | $33.54 | $13.10 | $0.00 | $0.00 | $0.00 | $46.64 |
| 4 / 70.00 | | $39.13 | $13.10 | $0.00 | $8.06 | $0.00 | $60.29 |
| 5 / 80.00 | | $44.72 | $13.10 | $0.00 | $8.06 | $0.00 | $65.88 |
| **Apprentice to Journeyworker Ratio: 1:3** | | | | | | | |
| PNEUMATIC CONTROLS (TEMP.) | 3/1/2026 | $55.90 | $13.10 | $9.71 | $8.06 | $0.00 | $86.77 |
| PLUMBERS LOCAL 4 | | | | | | | |
| PLUMBERS LOCAL 4 | | | | | | | |
| For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER" | | | | | | | |
| PNEUMATIC DRILL/TOOL OPERATOR | 6/1/2026 | $41.91 | $10.90 | $9.75 | $9.11 | $0.00 | $71.67 |
| LABORERS | 12/1/2026 | $43.35 | $10.90 | $9.75 | $9.11 | $0.00 | $73.11 |
| LABORERS - ZONE 2 | 6/1/2027 | $44.80 | $10.90 | $9.75 | $9.11 | $0.00 | $74.56 |
| | 12/1/2027 | $46.25 | $10.90 | $9.75 | $9.11 | $0.00 | $76.01 |

**Construction**

| Classification | Effective Date | Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| | 6/1/2028 | $47.75 | $10.90 | $9.75 | $9.11 | $0.00 | $77.51 |
| | 12/1/2028 | $49.25 | $10.90 | $9.75 | $9.11 | $0.00 | $79.01 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | | |
| PNEUMATIC DRILL/TOOL OPERATOR (HEAVY & HIGHWAY) | 6/1/2026 | $41.91 | $10.90 | $9.75 | $9.21 | $0.00 | $71.77 |
| LABORERS<br>LABORERS - ZONE 2 (HEAVY & HIGHWAY) | 12/1/2026 | $43.35 | $10.90 | $9.75 | $9.21 | $0.00 | $73.21 |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway) | | | | | | | |
| POWDERMAN & BLASTER | 6/1/2026 | $42.66 | $10.90 | $9.75 | $9.11 | $0.00 | $72.42 |
| LABORERS<br>LABORERS - ZONE 2 | 12/1/2026 | $44.10 | $10.90 | $9.75 | $9.11 | $0.00 | $73.86 |
| | 6/1/2027 | $45.55 | $10.90 | $9.75 | $9.11 | $0.00 | $75.31 |
| | 12/1/2027 | $47.00 | $10.90 | $9.75 | $9.11 | $0.00 | $76.76 |
| | 6/1/2028 | $48.50 | $10.90 | $9.75 | $9.11 | $0.00 | $78.26 |
| | 12/1/2028 | $50.00 | $10.90 | $9.75 | $9.11 | $0.00 | $79.76 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | | |
| POWDERMAN & BLASTER (HEAVY & HIGHWAY) | 6/1/2026 | $42.66 | $10.90 | $9.75 | $9.21 | $0.00 | $72.52 |
| LABORERS<br>LABORERS - ZONE 2 (HEAVY & HIGHWAY) | 12/1/2026 | $44.10 | $10.90 | $9.75 | $9.21 | $0.00 | $73.96 |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway) | | | | | | | |
| POWER SHOVEL/DERRICK/TRENCHING MACHINE | 6/1/2026 | $59.38 | $17.05 | $13.35 | $3.25 | $0.00 | $93.03 |
| OPERATING ENGINEERS LOCAL 4<br>OPERATING ENGINEERS LOCAL 4 | 12/1/2026 | $60.83 | $17.05 | $13.35 | $3.25 | $0.00 | $94.48 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | | |
| PUMP OPERATOR (CONCRETE) | 6/1/2026 | $58.70 | $17.05 | $13.35 | $3.25 | $0.00 | $92.35 |
| OPERATING ENGINEERS LOCAL 4<br>OPERATING ENGINEERS LOCAL 4 | 12/1/2026 | $60.14 | $17.05 | $13.35 | $3.25 | $0.00 | $93.79 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | | |
| PUMP OPERATOR (DEWATERING, OTHER) | 6/1/2026 | $37.63 | $17.05 | $13.35 | $3.25 | $0.00 | $71.28 |
| OPERATING ENGINEERS LOCAL 4<br>OPERATING ENGINEERS LOCAL 4 | 12/1/2026 | $38.58 | $17.05 | $13.35 | $3.25 | $0.00 | $72.23 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | | |
| READY-MIX CONCRETE DRIVER | 2/2/2026 | $29.50 | $12.37 | $8.00 | $0.00 | $0.00 | $49.87 |
| TEAMSTERS 170<br>TEAMSTERS 170 -J.G.MacLellan (Lunenburg) | 1/1/2027 | $30.00 | $12.37 | $8.00 | $0.00 | $0.00 | $50.37 |
| RECLAIMERS | 6/1/2026 | $58.70 | $17.05 | $13.35 | $3.25 | $0.00 | $92.35 |
| OPERATING ENGINEERS LOCAL 4<br>OPERATING ENGINEERS LOCAL 4 | 12/1/2026 | $60.14 | $17.05 | $13.35 | $3.25 | $0.00 | $93.79 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | | |
| RIDE-ON MOTORIZED BUGGY OPERATOR | 6/1/2026 | $41.91 | $10.90 | $9.75 | $9.11 | $0.00 | $71.67 |
| LABORERS<br>LABORERS - ZONE 2 | 12/1/2026 | $43.35 | $10.90 | $9.75 | $9.11 | $0.00 | $73.11 |
| | 6/1/2027 | $44.80 | $10.90 | $9.75 | $9.11 | $0.00 | $74.56 |
| | 12/1/2027 | $46.25 | $10.90 | $9.75 | $9.11 | $0.00 | $76.01 |
| | 6/1/2028 | $47.75 | $10.90 | $9.75 | $9.11 | $0.00 | $77.51 |
| | 12/1/2028 | $49.25 | $10.90 | $9.75 | $9.11 | $0.00 | $79.01 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | | |

**Construction**

| Classification | Effective Date | Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| ROLLER/SPREADER/MULCHING MACHINE | 6/1/2026 | $58.70 | $17.05 | $13.35 | $3.25 | $0.00 | $92.35 |
| OPERATING ENGINEERS LOCAL 4 | 12/1/2026 | $60.14 | $17.05 | $13.35 | $3.25 | $0.00 | $93.79 |
| OPERATING ENGINEERS LOCAL 4 | | | | | | | |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | | |
| ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg) | 8/1/2026 | $55.25 | $14.53 | $12.67 | $9.03 | $0.00 | $91.48 |
| ROOFERS LOCAL 33 | 2/1/2027 | $57.00 | $14.53 | $12.67 | $9.03 | $0.00 | $93.23 |
| ROOFERS LOCAL 33 | 8/1/2027 | $58.75 | $14.53 | $12.67 | $9.03 | $0.00 | $94.98 |
| | 2/1/2028 | $60.50 | $14.53 | $12.67 | $9.03 | $0.00 | $96.73 |
| | 8/1/2028 | $62.25 | $14.53 | $12.67 | $9.03 | $0.00 | $98.48 |
| | 2/1/2029 | $64.00 | $14.53 | $12.67 | $9.03 | $0.00 | $100.23 |
| | 8/1/2029 | $65.65 | $14.53 | $12.67 | $9.03 | $0.00 | $101.88 |
| | 2/1/2030 | $67.40 | $14.53 | $12.67 | $9.03 | $0.00 | $103.63 |

**Apprentice: ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg)**

**Effective Date: 8/1/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 0.00 | $0.00 | $14.53 | $6.34 | $0.00 | $0.00 | $20.87 |
| 2 | 0.00 | $0.00 | $14.53 | $12.67 | $9.03 | $0.00 | $36.23 |
| 3 | 0.00 | $0.00 | $14.53 | $12.67 | $9.03 | $0.00 | $36.23 |
| 4 | 0.00 | $0.00 | $14.53 | $12.67 | $9.03 | $0.00 | $36.23 |
| 5 | 0.00 | $0.00 | $14.53 | $12.67 | $9.03 | $0.00 | $36.23 |

**Apprentice: ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg)**

**Effective Date: 2/1/2027**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 0.00 | $0.00 | $14.53 | $6.34 | $0.00 | $0.00 | $20.87 |
| 2 | 0.00 | $0.00 | $14.53 | $12.67 | $9.03 | $0.00 | $36.23 |
| 3 | 0.00 | $0.00 | $14.53 | $12.67 | $9.03 | $0.00 | $36.23 |
| 4 | 0.00 | $0.00 | $14.53 | $12.67 | $9.03 | $0.00 | $36.23 |
| 5 | 0.00 | $0.00 | $14.53 | $12.67 | $9.03 | $0.00 | $36.23 |

**Apprentice Notes**

** 1:5, 2:6-10, the 1:10; Reroofing: 1:4, then 1:1

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ROOFER SLATE / TILE / PRECAST CONCRETE | 8/1/2026 | $55.50 | $14.53 | $12.67 | $9.03 | $0.00 | $91.73 |
| ROOFERS LOCAL 33 | 2/1/2027 | $57.25 | $14.53 | $12.67 | $9.03 | $0.00 | $93.48 |
| ROOFERS LOCAL 33 | 8/1/2027 | $59.00 | $14.53 | $12.67 | $9.03 | $0.00 | $95.23 |
| | 2/1/2028 | $60.75 | $14.53 | $12.67 | $9.03 | $0.00 | $96.98 |
| | 8/1/2028 | $62.50 | $14.53 | $12.67 | $9.03 | $0.00 | $98.73 |
| | 2/1/2029 | $64.25 | $14.53 | $12.67 | $9.03 | $0.00 | $100.48 |
| | 8/1/2029 | $65.90 | $14.53 | $12.67 | $9.03 | $0.00 | $102.13 |
| | 2/1/2030 | $67.65 | $14.53 | $12.67 | $9.03 | $0.00 | $103.88 |
| For apprentice rates see "Apprentice- ROOFER" | | | | | | | |

**Construction**

| Classification | Effective Date | Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| SHEETMETAL WORKER<br>SHEETMETAL WORKERS LOCAL 63<br>SHEETMETAL WORKERS LOCAL 63 | 7/1/2026 | $43.48 | $13.24 | $11.01 | $9.92 | $2.13 | $79.78 |
| | 1/1/2027 | $43.48 | $13.54 | $11.01 | $11.12 | $2.13 | $81.28 |
| | 7/1/2027 | $44.98 | $13.54 | $11.01 | $11.12 | $2.13 | $82.78 |
| | 1/1/2028 | $46.48 | $13.54 | $11.01 | $11.12 | $2.13 | $84.28 |

**Apprentice: SHEETMETAL WORKER**

**Effective Date: 7/1/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 45.00 | $19.57 | $5.96 | $4.95 | $0.00 | $0.85 | $31.33 |
| 2 | 50.00 | $21.74 | $6.62 | $5.51 | $0.00 | $0.94 | $34.81 |
| 3 | 55.00 | $23.91 | $7.28 | $9.91 | $0.00 | $1.15 | $42.25 |
| 4 | 60.00 | $26.09 | $7.94 | $9.91 | $0.00 | $1.23 | $45.17 |
| 5 | 65.00 | $28.26 | $8.60 | $9.91 | $0.00 | $1.31 | $48.08 |
| 6 | 70.00 | $30.44 | $9.27 | $9.91 | $0.00 | $1.39 | $51.01 |
| 7 | 75.00 | $32.61 | $9.93 | $9.91 | $0.00 | $1.47 | $53.92 |
| 8 | 80.00 | $34.78 | $10.59 | $9.91 | $9.92 | $1.78 | $66.98 |
| 9 | 85.00 | $36.96 | $11.25 | $9.91 | $9.92 | $1.86 | $69.90 |
| 10 | 90.00 | $39.13 | $11.92 | $9.91 | $9.92 | $1.94 | $72.82 |

**Apprentice: SHEETMETAL WORKER**

**Effective Date: 1/1/2027**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 45.00 | $19.57 | $6.09 | $4.95 | $0.00 | $0.85 | $31.46 |
| 2 | 50.00 | $21.74 | $6.77 | $5.51 | $0.00 | $0.94 | $34.96 |
| 3 | 55.00 | $23.91 | $7.45 | $9.91 | $0.00 | $1.15 | $42.42 |
| 4 | 60.00 | $26.09 | $8.36 | $9.91 | $0.00 | $1.23 | $45.59 |
| 5 | 65.00 | $28.26 | $8.86 | $9.91 | $0.00 | $1.31 | $48.34 |
| 6 | 70.00 | $30.44 | $9.48 | $9.91 | $0.00 | $1.39 | $51.22 |
| 7 | 75.00 | $32.61 | $10.15 | $9.91 | $0.00 | $1.47 | $54.14 |
| 8 | 80.00 | $34.78 | $10.83 | $9.91 | $11.12 | $1.78 | $68.42 |
| 9 | 85.00 | $36.96 | $11.51 | $9.91 | $11.12 | $1.86 | $71.36 |
| 10 | 90.00 | $39.13 | $12.18 | $9.91 | $11.12 | $1.94 | $74.28 |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SPECIALIZED EARTH MOVING EQUIP < 35 TONS<br>TEAMSTERS JOINT COUNCIL NO. 10<br>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B | 6/1/2026 | $42.24 | $16.17 | $21.78 | $0.00 | $0.00 | $80.19 |
| | 12/1/2026 | $42.24 | $16.17 | $23.52 | $0.00 | $0.00 | $81.93 |
| | 1/1/2027 | $42.24 | $16.77 | $23.52 | $0.00 | $0.00 | $82.53 |
| SPECIALIZED EARTH MOVING EQUIP > 35 TONS<br>TEAMSTERS JOINT COUNCIL NO. 10<br>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B | 6/1/2026 | $42.53 | $16.17 | $21.78 | $0.00 | $0.00 | $80.48 |
| | 12/1/2026 | $42.53 | $16.17 | $23.52 | $0.00 | $0.00 | $82.22 |
| | 1/1/2027 | $42.53 | $16.77 | $23.52 | $0.00 | $0.00 | $82.82 |
| SPRINKLER FITTER<br>SPRINKLER FITTERS LOCAL 669<br>SPRINKLER FITTERS LOCAL 669 | 7/1/2026 | $56.54 | $13.60 | $7.45 | $9.41 | $0.00 | $87.00 |
| | 10/1/2026 | $56.54 | $13.60 | $7.45 | $9.41 | $0.00 | $87.00 |
| | 1/1/2027 | $56.54 | $14.55 | $7.50 | $9.41 | $0.00 | $88.00 |

**Construction**

| Classification | Effective Date | Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| | 4/1/2027 | $59.83 | $14.55 | $7.50 | $9.41 | $0.00 | $91.29 |
| | 7/1/2027 | $59.83 | $14.55 | $7.50 | $9.41 | $0.00 | $91.29 |
| | 10/1/2027 | $59.83 | $14.55 | $7.50 | $9.41 | $0.00 | $91.29 |
| | 1/1/2028 | $59.83 | $15.50 | $7.55 | $9.41 | $0.00 | $92.29 |

**Apprentice: SPRINKLER FITTER**

**Effective Date: 7/1/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 43.00 | $28.36 | $9.64 | $0.00 | $0.00 | $0.00 | $38.00 |
| 2 | 48.00 | $31.66 | $9.64 | $0.00 | $0.00 | $0.00 | $41.30 |
| 3 | 52.00 | $34.29 | $13.60 | $7.45 | $1.15 | $0.00 | $56.49 |
| 4 | 56.00 | $36.93 | $13.60 | $7.45 | $1.15 | $0.00 | $59.13 |
| 5 | 59.00 | $38.91 | $13.60 | $7.45 | $1.40 | $0.00 | $61.36 |
| 6 | 64.00 | $42.21 | $13.60 | $7.45 | $1.40 | $0.00 | $64.66 |
| 7 | 68.00 | $44.85 | $13.60 | $7.45 | $1.40 | $0.00 | $67.30 |
| 8 | 72.00 | $47.48 | $13.60 | $7.45 | $1.40 | $0.00 | $69.93 |
| 9 | 76.00 | $50.12 | $13.60 | $7.45 | $1.40 | $0.00 | $72.57 |
| 10 | 80.00 | $52.76 | $13.60 | $7.45 | $1.40 | $0.00 | $75.21 |

**Apprentice: SPRINKLER FITTER**

**Effective Date: 10/1/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 43.00 | $28.36 | $0.00 | $0.00 | $0.00 | $0.00 | $28.36 |
| 2 | 48.00 | $31.66 | $0.00 | $0.00 | $0.00 | $0.00 | $31.66 |
| 3 | 52.00 | $34.29 | $0.00 | $0.00 | $1.15 | $0.00 | $35.44 |
| 4 | 56.00 | $36.93 | $0.00 | $0.00 | $1.15 | $0.00 | $38.08 |
| 5 | 59.00 | $38.91 | $0.00 | $0.00 | $1.40 | $0.00 | $40.31 |
| 6 | 64.00 | $42.21 | $0.00 | $0.00 | $1.40 | $0.00 | $43.61 |
| 7 | 68.00 | $44.85 | $0.00 | $0.00 | $1.40 | $0.00 | $46.25 |
| 8 | 72.00 | $47.48 | $0.00 | $0.00 | $1.40 | $0.00 | $48.88 |
| 9 | 76.00 | $50.12 | $0.00 | $0.00 | $1.40 | $0.00 | $51.52 |
| 10 | 80.00 | $52.76 | $0.00 | $0.00 | $1.40 | $0.00 | $54.16 |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| STEAM BOILER OPERATOR | 6/1/2026 | $58.70 | $17.05 | $13.35 | $3.25 | $0.00 | $92.35 |
| OPERATING ENGINEERS LOCAL 4 | 12/1/2026 | $60.14 | $17.05 | $13.35 | $3.25 | $0.00 | $93.79 |
| OPERATING ENGINEERS LOCAL 4 | | | | | | | |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | | |
| TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN | 6/1/2026 | $58.70 | $17.05 | $13.35 | $3.25 | $0.00 | $92.35 |
| OPERATING ENGINEERS LOCAL 4 | 12/1/2026 | $60.14 | $17.05 | $13.35 | $3.25 | $0.00 | $93.79 |
| OPERATING ENGINEERS LOCAL 4 | | | | | | | |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | | |
| TERRAZZO FINISHERS | 8/1/2026 | $69.09 | $12.84 | $15.57 | $8.02 | $0.00 | $105.52 |
| BRICKLAYERS LOCAL 3 | 2/1/2027 | $70.49 | $12.84 | $15.57 | $8.02 | $0.00 | $106.92 |
| BRICKLAYERS LOCAL 3 - MARBLE & TILE | | | | | | | |

**Construction**

| Classification | Effective Date | Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|

**Apprentice: TERRAZZO FINISHERS**

**Effective Date: 8/1/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 50.00 | $34.55 | $12.84 | $15.57 | $8.02 | $0.00 | $70.98 |
| 2 | 60.00 | $41.45 | $12.84 | $15.57 | $8.02 | $0.00 | $77.88 |
| 3 | 70.00 | $48.36 | $12.84 | $15.57 | $8.02 | $0.00 | $84.79 |
| 4 | 80.00 | $55.27 | $12.84 | $15.57 | $8.02 | $0.00 | $91.70 |
| 5 | 90.00 | $62.18 | $12.84 | $15.57 | $8.02 | $0.00 | $98.61 |

**Apprentice: TERRAZZO FINISHERS**

**Effective Date: 2/1/2027**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 50.00 | $35.25 | $12.84 | $15.57 | $8.02 | $0.00 | $71.68 |
| 2 | 60.00 | $42.29 | $12.84 | $15.57 | $8.02 | $0.00 | $78.72 |
| 3 | 70.00 | $49.34 | $12.84 | $15.57 | $8.02 | $0.00 | $85.77 |
| 4 | 80.00 | $56.39 | $12.84 | $15.57 | $8.02 | $0.00 | $92.82 |
| 5 | 90.00 | $63.44 | $12.84 | $15.57 | $8.02 | $0.00 | $99.87 |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| TEST BORING DRILLER | 6/1/2026 | $53.25 | $10.90 | $9.75 | $9.80 | $0.00 | $83.70 |
| LABORERS<br>LABORERS - FOUNDATION AND MARINE | 12/1/2026 | $54.75 | $10.90 | $9.75 | $9.80 | $0.00 | $85.20 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | | |
| TEST BORING DRILLER HELPER | 6/1/2026 | $49.37 | $10.90 | $9.75 | $9.80 | $0.00 | $79.82 |
| LABORERS<br>LABORERS - FOUNDATION AND MARINE | 12/1/2026 | $50.87 | $10.90 | $9.75 | $9.80 | $0.00 | $81.32 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | | |
| TEST BORING LABORER | 6/1/2026 | $49.25 | $10.90 | $9.75 | $9.80 | $0.00 | $79.70 |
| LABORERS<br>LABORERS - FOUNDATION AND MARINE | 12/1/2026 | $50.75 | $10.90 | $9.75 | $9.80 | $0.00 | $81.20 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | | |
| TRACTORS/PORTABLE STEAM GENERATORS | 6/1/2026 | $58.70 | $17.05 | $13.35 | $3.25 | $0.00 | $92.35 |
| OPERATING ENGINEERS LOCAL 4<br>OPERATING ENGINEERS LOCAL 4 | 12/1/2026 | $60.14 | $17.05 | $13.35 | $3.25 | $0.00 | $93.79 |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | | |
| TRAILERS FOR EARTH MOVING EQUIPMENT | 6/1/2026 | $42.82 | $16.17 | $21.78 | $0.00 | $0.00 | $80.77 |
| TEAMSTERS JOINT COUNCIL NO. 10<br>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B | 12/1/2026 | $42.82 | $16.17 | $23.52 | $0.00 | $0.00 | $82.51 |
| | 1/1/2027 | $42.82 | $16.77 | $23.52 | $0.00 | $0.00 | $83.11 |
| TUNNEL WORK - COMPRESSED AIR | 6/1/2026 | $61.48 | $10.90 | $9.75 | $10.25 | $0.00 | $92.38 |
| LABORERS<br>LABORERS (COMPRESSED AIR) | 12/1/2026 | $62.98 | $10.90 | $9.75 | $10.25 | $0.00 | $93.88 |

**Construction**

| Classification | Effective Date | Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| For apprentice rates see "Apprentice- LABORER" | | | | | | | |
| TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) | 6/1/2026 | $63.48 | $10.90 | $9.75 | $10.25 | $0.00 | $94.38 |
| LABORERS | 12/1/2026 | $64.98 | $10.90 | $9.75 | $10.25 | $0.00 | $95.88 |
| LABORERS (COMPRESSED AIR) | | | | | | | |
| For apprentice rates see "Apprentice- LABORER" | | | | | | | |
| TUNNEL WORK - FREE AIR | 6/1/2026 | $53.55 | $10.90 | $9.75 | $10.25 | $0.00 | $84.45 |
| LABORERS | 12/1/2026 | $55.05 | $10.90 | $9.75 | $10.25 | $0.00 | $85.95 |
| LABORERS (FREE AIR TUNNEL) | | | | | | | |
| For apprentice rates see "Apprentice- LABORER" | | | | | | | |
| TUNNEL WORK - FREE AIR (HAZ. WASTE) | 6/1/2026 | $55.55 | $10.90 | $9.75 | $10.25 | $0.00 | $86.45 |
| LABORERS | 12/1/2026 | $57.05 | $10.90 | $9.75 | $10.25 | $0.00 | $87.95 |
| LABORERS (FREE AIR TUNNEL) | | | | | | | |
| For apprentice rates see "Apprentice- LABORER" | | | | | | | |
| VAC-HAUL | 6/1/2026 | $42.24 | $16.17 | $21.78 | $0.00 | $0.00 | $80.19 |
| TEAMSTERS JOINT COUNCIL NO. 10 | 12/1/2026 | $42.24 | $16.17 | $23.52 | $0.00 | $0.00 | $81.93 |
| TEAMSTERS JOINT COUNCIL NO. 10 ZONE B | 1/1/2027 | $42.24 | $16.77 | $23.52 | $0.00 | $0.00 | $82.53 |
| VOICE-DATA-VIDEO TECHNICIAN | 9/6/2026 | $37.04 | $15.96 | $14.20 | $4.07 | $0.00 | $71.27 |
| ELECTRICIANS LOCAL 96 | | | | | | | |
| ELECTRICIANS LOCAL 96 | | | | | | | |

**Apprentice: VOICE-DATA-VIDEO TECHNICIAN**

**Effective Date: 9/6/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 50.00 | $18.52 | $15.96 | $0.56 | $4.07 | $0.00 | $39.11 |
| 2 | 55.00 | $20.37 | $15.96 | $0.61 | $4.07 | $0.00 | $41.01 |
| 3 | 60.00 | $22.22 | $15.96 | $13.76 | $4.07 | $0.00 | $56.01 |
| 4 | 65.00 | $24.08 | $15.96 | $13.81 | $4.07 | $0.00 | $57.92 |
| 5 | 70.00 | $25.93 | $15.96 | $13.87 | $4.07 | $0.00 | $59.83 |
| 6 | 75.00 | $27.78 | $15.96 | $13.92 | $4.07 | $0.00 | $61.73 |
| 7 | 80.00 | $29.63 | $15.96 | $13.98 | $4.07 | $0.00 | $63.64 |
| 8 | 85.00 | $31.48 | $15.96 | $14.03 | $4.07 | $0.00 | $65.54 |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WAGON DRILL OPERATOR | 6/1/2026 | $41.91 | $10.90 | $9.75 | $9.11 | $0.00 | $71.67 |
| LABORERS | 12/1/2026 | $43.35 | $10.90 | $9.75 | $9.11 | $0.00 | $73.11 |
| LABORERS - ZONE 2 | 6/1/2027 | $44.80 | $10.90 | $9.75 | $9.11 | $0.00 | $74.56 |
| | 12/1/2027 | $46.25 | $10.90 | $9.75 | $9.11 | $0.00 | $76.01 |
| | 6/1/2028 | $47.75 | $10.90 | $9.75 | $9.11 | $0.00 | $77.51 |
| | 12/1/2028 | $49.25 | $10.90 | $9.75 | $9.11 | $0.00 | $79.01 |
| For apprentice rates see "Apprentice- LABORER" | | | | | | | |
| WAGON DRILL OPERATOR (HEAVY & HIGHWAY) | 6/1/2026 | $41.91 | $10.90 | $9.75 | $9.21 | $0.00 | $71.77 |
| LABORERS | 12/1/2026 | $43.35 | $10.90 | $9.75 | $9.21 | $0.00 | $73.21 |
| LABORERS - ZONE 2 (HEAVY & HIGHWAY) | | | | | | | |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway)" | | | | | | | |

**Construction**

| Classification | Effective Date | Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| WASTE WATER PUMP OPERATOR | 6/1/2026 | $59.38 | $17.05 | $13.35 | $3.25 | $0.00 | $93.03 |
| OPERATING ENGINEERS LOCAL 4 | 12/1/2026 | $60.83 | $17.05 | $13.35 | $3.25 | $0.00 | $94.48 |
| OPERATING ENGINEERS LOCAL 4 | | | | | | | |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS" | | | | | | | |
| WATER METER INSTALLER | 3/1/2026 | $55.90 | $13.10 | $9.71 | $8.06 | $0.00 | $86.77 |
| PLUMBERS LOCAL 4 | | | | | | | |
| PLUMBERS LOCAL 4 | | | | | | | |
| For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER" | | | | | | | |

**Outside Electrical**

| Classification | Effective Date | Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| CABLE TECHNICIAN (Power Zone) | 8/30/2026 | $38.13 | $11.00 | $1.14 | $1.00 | $0.00 | $51.27 |
| OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 | 8/29/2027 | $39.65 | $11.25 | $1.19 | $1.00 | $0.00 | $53.09 |
| OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 | | | | | | | |
| For apprentice rates see "Apprentice- LINEMAN" | | | | | | | |
| CABLEMAN (Underground Ducts & Cables) | 8/30/2026 | $54.02 | $11.00 | $1.62 | $11.14 | $0.00 | $77.78 |
| OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 | 8/29/2027 | $56.17 | $11.25 | $1.69 | $11.57 | $0.00 | $80.68 |
| OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 | | | | | | | |
| For apprentice rates see "Apprentice- LINEMAN" | | | | | | | |
| DRIVER / GROUNDMAN CDL | 8/30/2026 | $44.49 | $11.00 | $1.33 | $10.80 | $0.00 | $67.62 |
| OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 | 8/29/2027 | $46.26 | $11.25 | $1.39 | $11.15 | $0.00 | $70.05 |
| OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 | | | | | | | |
| For apprentice rates see "Apprentice- LINEMAN" | | | | | | | |
| DRIVER / GROUNDMAN -Inexperienced (<2000 Hrs) | 8/30/2026 | $34.95 | $11.00 | $1.05 | $1.00 | $0.00 | $48.00 |
| OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 | 8/29/2027 | $36.64 | $11.25 | $1.09 | $1.00 | $0.00 | $49.98 |
| OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 | | | | | | | |
| For apprentice rates see "Apprentice- LINEMAN" | | | | | | | |
| EQUIPMENT OPERATOR (Class A CDL) | 8/30/2026 | $54.02 | $11.00 | $1.62 | $15.22 | $0.00 | $81.86 |
| OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 | 8/29/2027 | $56.17 | $11.25 | $1.69 | $15.65 | $0.00 | $84.76 |
| OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 | | | | | | | |
| For apprentice rates see "Apprentice- LINEMAN" | | | | | | | |
| EQUIPMENT OPERATOR (Class B CDL) | 8/30/2026 | $47.66 | $11.00 | $1.43 | $11.65 | $0.00 | $71.74 |
| OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 | 8/29/2027 | $49.56 | $11.25 | $1.49 | $12.03 | $0.00 | $74.33 |
| OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 | | | | | | | |
| For apprentice rates see "Apprentice- LINEMAN" | | | | | | | |
| GROUNDMAN | 8/30/2026 | $34.95 | $11.00 | $1.05 | $1.00 | $0.00 | $48.00 |
| OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 | 8/29/2027 | $36.34 | $11.25 | $1.09 | $1.00 | $0.00 | $49.68 |
| OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 | | | | | | | |
| For apprentice rates see "Apprentice- LINEMAN" | | | | | | | |
| GROUNDMAN -Inexperienced (<2000 Hrs.) | 8/30/2026 | $28.60 | $11.00 | $0.86 | $1.00 | $0.00 | $41.46 |
| OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 | 8/29/2027 | $29.74 | $11.25 | $0.89 | $1.00 | $0.00 | $42.88 |
| OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 | | | | | | | |
| For apprentice rates see "Apprentice- LINEMAN" | | | | | | | |
| JOURNEYMAN LINEMAN | 8/30/2026 | $63.55 | $11.00 | $1.91 | $18.50 | $0.00 | $94.96 |
| OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 | 8/29/2027 | $66.08 | $11.25 | $1.98 | $19.00 | $0.00 | $98.31 |
| OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 | | | | | | | |

**Apprentice: JOURNEYMAN LINEMAN**

**Effective Date: 8/30/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 60.00 | $38.13 | $11.00 | $1.14 | $2.50 | $0.00 | $52.77 |
| 2 | 65.00 | $41.31 | $11.00 | $1.24 | $2.50 | $0.00 | $56.05 |
| 3 | 70.00 | $44.49 | $11.00 | $1.33 | $2.50 | $0.00 | $59.32 |
| 4 | 75.00 | $47.66 | $11.00 | $1.43 | $4.00 | $0.00 | $64.09 |

**Outside Electrical**

| Classification | Effective Date | Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|

**Apprentice: JOURNEYMAN LINEMAN**

**Effective Date: 8/30/2026**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 5 | 80.00 | $50.84 | $11.00 | $1.53 | $4.00 | $0.00 | $67.37 |
| 6 | 85.00 | $54.02 | $11.00 | $1.62 | $4.00 | $0.00 | $70.64 |
| 7 | 90.00 | $57.20 | $11.00 | $1.72 | $6.00 | $0.00 | $75.92 |

**Apprentice: JOURNEYMAN LINEMAN**

**Effective Date: 8/29/2027**

| Step | Percent | Apprentice Base Wage | Health | Pension | Annuity | Supplemental Unemployment | Total Rate |
|---|---|---|---|---|---|---|---|
| 1 | 60.00 | $39.65 | $11.25 | $1.19 | $2.50 | $0.00 | $54.59 |
| 2 | 65.00 | $42.95 | $11.25 | $1.29 | $2.50 | $0.00 | $57.99 |
| 3 | 70.00 | $46.26 | $11.25 | $1.39 | $2.50 | $0.00 | $61.40 |
| 4 | 75.00 | $49.56 | $11.25 | $1.49 | $4.00 | $0.00 | $66.30 |
| 5 | 80.00 | $52.86 | $11.25 | $1.59 | $4.00 | $0.00 | $69.70 |
| 6 | 85.00 | $56.17 | $11.25 | $1.69 | $4.00 | $0.00 | $73.11 |
| 7 | 90.00 | $59.47 | $11.25 | $1.79 | $6.00 | $0.00 | $78.51 |

**Apprentice to Journeyworker Ratio: 1:2**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| TELEDATA CABLE SPLICER<br>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104<br>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 | 2/4/2019 | $30.73 | $4.70 | $0.92 | $2.25 | $0.00 | $38.60 |
| TELEDATA LINEMAN/EQUIPMENT OPERATOR<br>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104<br>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 | 2/4/2019 | $28.93 | $4.70 | $0.89 | $2.25 | $0.00 | $36.77 |
| TELEDATA WIREMAN/INSTALLER/TECHNICIAN<br>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104<br>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 | 2/4/2019 | $28.93 | $4.70 | $0.89 | $2.25 | $0.00 | $36.77 |

**Additional Apprentice Information**

All apprentices must be registered with the Division of Apprenticeship Training(DAS) in accordance with M.G.L.c. 23, §§ 11E-11L. Minimum wage rates for apprentices employed on public works projects are listed above as a percentage of the hourly prevailing wage rate established by the Commissioner under the provisions of M.G.L.c. 149, §§ 26-27D.

Apprentice ratios are established by DAS pursuant to M.G.L.c. 23, §§ 11E-11L. Ratios are expressed as the allowable number of apprentices to journeymen or fraction thereof, unless otherwise specified. The ratios listed herein have been taken from relevant private collective bargaining agreements(CBAs) and are provided for illustrative purposes only. They have not been independently verified as being accurate or continuing to be accurate.

Parties having questions regarding what ratio to use should contact DAS.

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DOCUMENT 00870

STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS
Revised August 19, 2026

1. As used in these specifications:

   a. "Covered area" means the geographical area described in the solicitation from which this contract resulted:

   b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority.

   c. "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.

   d. "Minority" includes:

      (i) Black (all persons having origins in any of the black African racial groups not of Hispanic origin);
      (ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);
      (iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
      (iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $ 10,000 the provisions of the specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3. If the Contractor is participating (41 CFR 60-4.5 and 23 CFR Part 230) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in Paragraphs 7a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. The Contractor is expected to make substantially uniform progress toward its goals in each craft during the period specified.

5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications.

6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

    a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

    b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

    c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefor, along with whatever additional actions the Contractor may have taken.

    d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

    e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.

    f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

    g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with on-site supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

    h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.

i. Direct its recruitment efforts both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's work force.

k. Validate all tests and other selection requirements are in compliance with 41 CFR Part 60-3 and 23 CFR Part 230.

l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are nonsegregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisor's adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these Specifications provided that the Contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female work force participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).

10. The Contractor shall not use the goals and timetables of affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

11 The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts.

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered by the Office of Federal Contract Compliance programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications.

13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8 and 23 CFR Part 230.

14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as many be required by the Government and keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

APPENDIX A

The following goals and timetables for female utilization shall be included in all Federal and federally assisted construction contracts and subcontracts in excess of $ 10,000. The goals are applicable to the Contractor's aggregate on-site construction workforce whether or not part of that workforce is performing work on a Federal or federally-assisted construction contract or subcontract.

Area covered: Goal for Women apply nationwide

Goals and Timetables

| Timetable | Goals (percent) |
|---|---|
| From Apr. 1, 1980 until further notice | 6.9 |

APPENDIX B-80

Until further notice, the following goals for minority utilization in each construction craft and trade shall included in all Federal or federally assisted construction contracts and subcontracts in excess of $ 10,000 to be performed in the respective geographical areas. The goals are applicable to each nonexempt contractor's total on- site construction workforce, regardless of whether or not part of that workforce is performing work on a Federal, federally assisted or nonfederally related project, contract or subcontract.

Construction contractors participating in an approved Hometown Plan (see 41 CFR 6-4.5) are required to comply with the goals of the Hometown Plan with regard to construction work they perform in the area covered by the Hometown Plan. With regard to all their other covered construction work, such contractors are required to comply with the applicable SMSA or EA goal contained in this Appendix B-80.

Economic Areas

| STATE: | Goals (percent) |
|---|---|
| MASSACHUSETTS | |
| 004 Boston MA:<br>SMSA Counties:<br>1123 Boston-Lowell-Brockton-Lawrence-Haverhill, MA-NH | 4.0 |
| MA Essex, MA Middlesex, MA Norfolk, MA Plymouth,<br>MA Suffolk, NH Rockingham. | |
| 5403 Fall River- New Bedford MA, Bristol | 1.6 |
| 9243 Worcester-Fitchburg-Leominster, MA | 1.6 |
| 6323 Springfield-Chicopee-Holyoke MA-CT<br>MA Hampden, MA Hampshire | 4.8 |
| Non-SMSA Counties: MA Barnstable, MA Dukes, MA Nantucket | 3.6 |
| Non-SMSA Counties: MA Franklin | 5.9 |

APPENDIX C

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. **Compliance with Regulations:** The contractor (hereinafter includes consultants) will comply with the Acts and Regulations relative to Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, Federal Highway Administration (FHWA), as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.

2. **Non-discrimination:** The contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, national origin (including limited English proficiency), age, sex, disability, or low-income status in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.

3. **Solicitations for Subcontractors, including Procurements of Materials and Equipment:** In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor's obligations under this contract and the Acts and the Regulations relative to nondiscrimination on the grounds of race, color, national origin (including limited English proficiency), age, sex, disability, or low-income status.

4. **Information and Reports:** The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto, and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Massachusetts Department of Transportation (MassDOT) or FHWA to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish this information, the contractor will so certify to MassDOT or FHWA, as appropriate, and will set forth what efforts it has made to obtain the information.

5. **Sanctions for Noncompliance:** In the event of a contractor's noncompliance with the Nondiscrimination provisions of this contract, MassDOT will impose such contract sanctions as it or FHWA may determine to be appropriate, including, but not limited to:

    a. withholding payments to the contractor under the contract until the contractor complies; and/or
    b. cancelling, terminating, or suspending a control, in whole or in part.

6. **Incorporation of Provisions:** The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations, and directives issued pursuant thereto. The contractor will take action with respect to any subcontract or procurement as MassDOT or FHWA may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the contractor may request MassDOT to enter into any litigation to protect the interests of MassDOT. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

APPENDIX D

During the performance of this contact, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor," which includes consultants) agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

**PERTINENT NON-DISCRIMINATION AUTHORITIES:**

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et seq.*, 78 stat. 252) (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21

- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (42 U.S.C. § 4601) (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-Aid programs and projects)

- Federal-Aid Highway Act of 1973 (23 U.S.C. § 324 *et seq.*) (prohibits discrimination on the basis of sex)

- Section 504 of the Rehabilitation Act of 1973 (29 U.S.C. § 794 *et seq.*), as amended (prohibits discrimination on the basis of disability) and 49 CFR Part 27

- The Age Discrimination Act of 1975, as amended (42 U.S.C. § 6101 *et seq.*) (prohibits discrimination on the basis of age)

- Airport and Airway Improvement Act of 1982 (49 U.S.C. § 471, Section 47123), as amended (prohibits discrimination based on race, creed, color, national origin, or sex)

- The Civil Rights Restoration Act of 1987 (PL 100-209) (broadened the scope, coverage, and applicability of Title VI of the Civil Rights Act of 1964, the Age Discrimination Act of 1975, and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of Federal-Aid recipients, sub-recipients, and contractors, whether such programs or activities are Federally funded or not)

- Titles II and III of the Americans with Disabilities Act (42 U.S.C. §§ 12131-12189), as implemented by Department of Transportation regulations at 49 CFR parts 37 and 38 (prohibits discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities)

- The Federal Aviation Administration's Non-Discrimination Statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex)

- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (ensures discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations)

- Executive Order 13166, Improving Access to Services for People with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100)

- Title IX of the Education Amendments Act of 1972, as amended (20 U.S.C. 1681 *et seq.*) (prohibits discrimination on the basis of sex in education programs or activities)

*** END OF DOCUMENT ***

DOCUMENT 00880

Revised January 12, 2022

# DEPARTMENT OF LABOR

## Employment Standards Administration

# MINIMUM WAGES FOR FEDERAL AND FEDERALLY ASSISTED CONTRACTS

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General Decision Number: MA20260025 05/18/2026

State: Massachusetts

Construction Types: Highway

Counties: Massachusetts Counties of Worcester

| Modification Number | Publication Date |
|---|---|
| 0 | 01/02/2026 |
| 1 | 05/18/2026 |

CARP0336-004 09/01/2025

| | Rates | Fringes |
|---|---|---|
| CARPENTER (INCLUDES FORM WORK) | $ 50.10 | 31.45 |

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ELEC0103-007 09/01/2025

| | Rates | Fringes |
|---|---|---|
| ELECTRICIAN | $ 66.17 | 37.08 |

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ENGI0004-030 06/01/2025

| | Rates | Fringes |
|---|---|---|
| POWER EQUIPMENT OPERATOR GROUP 2 BULLDOZER; GRADER/BLADE; ROLLER FOOTNOTE FOR POWER EQUIPMENT OPERATORS: A. PAID HOLIDAYS: NEW YEAR'S DAY, WASHINGTON'S BIRTHDAY, LABOR DAY, MEMORIAL DAY, INDEPENDENCE DAY, PATRIOT'S DAY, COLUMBUS DAY, VETERAN'S DAY, THANKSGIVING DAY, CHRISTMAS DAY | $ 57.18 | 33.70 |
| POWER EQUIPMENT OPERATOR GROUP 1 BACKHOE/EXCAVATOR/TRACKHOE; BOBCAT/SKID STEER/SKID LOADER; BROOM/SWEEPER; GRADALL; LOADER; PAVER (ASPHALT, AGGREGATE, AND CONCRETE); POST DRIVER (GUARDRAIL/FENCES) FOOTNOTE FOR POWER EQUIPMENT OPERATORS: A. PAID HOLIDAYS: NEW YEAR'S DAY, WASHINGTON'S BIRTHDAY, LABOR DAY, MEMORIAL DAY, INDEPENDENCE DAY, PATRIOT'S DAY, COLUMBUS DAY, VETERAN'S DAY, THANKSGIVING DAY, CHRISTMAS DAY | $ 57.83 | 33.70 |

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ENGI0004-031 06/01/2025

| | Rates | Fringes |
|---|---|---|
| POWER EQUIPMENT OPERATOR: MILLING MACHINE FOOTNOTE FOR POWER EQUIPMENT OPERATORS: A. PAID HOLIDAYS: NEW YEAR'S DAY, WASHINGTON'S BIRTHDAY, LABOR DAY, MEMORIAL DAY, INDEPENDENCE DAY, PATRIOT'S DAY, COLUMBUS DAY, VETERAN'S DAY, | | |

THANKSGIVING DAY, CHRISTMAS DAY.....$ 57.83
33.70
---

IRON0007-028 09/16/2025

Rates
Fringes
IRONWORKER, STRUCTURAL.....$ 57.57
37.67
---

IRON0007-029 09/16/2025

Rates
Fringes
IRONWORKER: ORNAMENTAL.....$ 57.57
37.67
---

LABO0039-003 06/01/2018

Rates
Fringes
LABORER: COMMON OR GENERAL.....$ 33.25
22.92
LABORER: ASPHALT, INCLUDES RAKER, SHOVELER,
SPREADER AND DISTRIBUTOR.....$ 33.50
22.92
LABORER (GUARDRAIL INSTALLATION).....$ 33.50
22.92
---

PAIN0035-023 07/01/2024

Rates
Fringes
PAINTER: STEEL.....$ 56.76
36.00
---

SUMA2014-015 01/11/2017

Rates
Fringes
TRUCK DRIVER: FLATBED TRUCK.....$ 48.53
0.00
TRUCK DRIVER: DUMP TRUCK.....$ 30.38
7.20
TRUCK DRIVER: CONCRETE TRUCK.....$ 33.69
15.79
TRAFFIC CONTROL: LABORER-CONES/
BARRICADES/BARRELS - SETTER/MOVER/SWEEPER.....$ 44.49
12.41
TRAFFIC CONTROL: FLAGGER.....$ 23.00
20.44
PILEDRIVERMAN.....$ 45.65
23.33
PAINTER: SPRAY (LINESTRIPING).....$ 48.00
0.00

OPERATOR: PILEDRIVER.....$ 44.46
16.94
OPERATOR: MECHANIC.....$ 48.14
17.02
OPERATOR: FORKLIFT.....$ 64.67
0.00
OPERATOR: CRANE.....$ 52.14
21.08
LABORER: LANDSCAPE.....$ 40.39
17.68
LABORER: CONCRETE SAW (HAND HELD/WALK BEHIND).....$ 41.78
18.37
IRONWORKER, REINFORCING.....$ 56.48
20.62
CEMENT MASON/CONCRETE FINISHER.....$ 56.70
21.08
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WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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

Note: Executive Order 13658 generally applies to contracts subject to the Davis-Bacon Act that were awarded on or between January 1, 2015 and January 29, 2022, and that have not been renewed or extended on or after January 30, 2022. Executive Order 13658 does not apply to contracts subject only to the Davis-Bacon Related Acts regardless of when they were awarded. If a contract is subject to Executive Order 13658, the contractor must pay all covered workers at least $13.65 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract from May 11, 2026, through December 31, 2026. The applicable Executive Order minimum wage rate will be adjusted annually.

Additional information on contractor requirements and worker protections under Executive Order 13658 is available at www.dol.gov/whd/govcontracts.

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

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

Union Rate Identifiers

A four-letter identifier beginning with characters other than "SU", "UAVG", "SA", or "SC" denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates in the collective bargaining agreement (CBA) governing the classification.

Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE: UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

The "SU" identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

"SU" wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

State Adopted Rate Identifiers

The "SA" identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the "SA" identifier took effect under state law in the state from which the rates were adopted.

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WAGE DETERMINATION APPEALS PROCESS

1) Has there been an initial decision in the matter? This can be:

a) a survey underlying a wage determination
b) an existing published wage determination
c) an initial WHD letter setting forth a position on a wage determination matter
d) an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to davisbaconinfo@dol.gov or by mail to:

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

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations. Requests can be submitted via email to BCWD-Office@dol.gov or by mail to:

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

2) If an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail to:

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

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

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

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

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END OF GENERAL DECISION

DOCUMENT A00801

# SPECIAL PROVISIONS

## LEOMINSTER
## Federal Aid Project No. EMR/STP/PRC-EMRS(123)X
## Culvert Replacement, Culvert Repair and Retaining Wall Replacement and Related Work at Three Locations

Labor participation goals for this Project shall be 15.3% for minorities and 6.9% for women for each job category. The goals are applicable to both Contractor's and SubContractor's on-site construction workforce. Refer to Document 00820 for details.

## SCOPE OF WORK

All work under this Contract shall be done in conformance with the *2026 Standard Specifications for Highways and Bridges, the Supplemental Specifications* contained in this book, the *Construction Standard Details* in effect as of July 2026, the *1990 Standard Drawings for Signs and Supports*, the 2015 *Overhead Signal Structure and Foundation Standard Drawings*, the *11th Edition of the Manual on Uniform Traffic Control Devices (MUTCD)* and the *January 2026 Massachusetts Amendments to the MUTCD*, *the 1968 Standard Drawings for Traffic Signals and Highway Lighting*, the latest edition of The *American Standard for Nursery Stock*, the Plans and these Special Provisions.

At Pleasant Street and Colburn Street, the project consists of replacing the temporary 36" corrugated plastic pipe, installed as an emergency replacement of the previous 5'x 3' box culvert that collapsed during the floods in September 2023. An 8.33' x 7' box culvert and headwalls (Bridge No. L-08-053) will be installed to replace the temporary culvert and meet the required hydraulic opening to the maximum extent practicable. Additionally, this project will include the restoration of the channel downstream of the culvert. The channel will be realigned, and a flood storage area will be provided to mitigate flooding concerns to the condos further downstream. The channel will be armored on the eastern side to protect against the channel migrating and provide a buffer between the stream and the condos. Finally, approximately 500 feet downstream of the culvert, sediment deposits from the flood event in 2023 will be removed to restore the existing wetlands and reestablish a braided wetland system.

Alongside the culvert and stream work, the project proposes improvements to the roadway, sidewalks, fencing, crosswalks, underground utilities, and drainage network that were impacted when the culvert failed in September 2023. Work will extend approximately 200 feet along Pleasant Street, 250 feet along Colburn Street, and 200 feet along Reservoir Brook downstream.

At Union Street, the proposed work includes re-grading embankment slopes along Reservoir Brook downstream of the bridge, installation of soil nails to stabilize the existing wingwalls, and streambed restoration along the Brook. Additional improvements include replacing the chain-link fencing mounted in the top of the culvert headwall, selective demolition of a stone retaining wall, and other incidental work.

**SCOPE OF WORK** (Continued)

At Lancaster Street, the proposed work includes the removal of collapsed retaining wall, construction of a new stone masonry wall with a fence, sidewalk reconstruction, new granite curbing, and adjustment of a drainage structure. Additional improvements include driveway reconstruction at 12 Malburn Street, construction of a pedestrian curb ramp on Malburn Street, full-depth construction of the west shoulder on Lancaster Street, and other incidental work.

## CONTRACTOR QUESTIONS AND ADDENDUM ACKNOWLEDGEMENTS

Prospective bidders are required to submit all questions to the Construction Contracts Engineer by 3:00 P.M. on the Tuesday of the previous week before the scheduled bid opening date. Any questions received after this time will not be considered for review by the Department.

Contractors should email questions and addendum acknowledgements to the following email address massdotspecifications@dot.state.ma.us The MassDOT proposal number and municipality is to be placed in the subject line.

## EQUIVALENT SINGLE AXLE LOADS (ESALS)

The estimated traffic level to be used for SUPERPAVE HMA mixture designs for this contract, expressed in Equivalent Single Axle Loads (ESALs) for the design travel lane over a 20-year period, is **1.16 Million** 18-kip (80-kn) ESALs.

## MATERIAL OPTIONS

The Contractor shall inform the Engineer of his option prior to the installation of the material. Once the option is designated, all material for the option item(s) shall remain the same throughout the job.

OPTIONS

| Item Number | Item Description | Unit |
|---|---|---|
| 234.12 | 12 Inch Drainage Pipe-Option | Foot |

Pipe Options
Reinforced Concrete Pipe
Corrugated Plastic (Polyethylene) Pipe
Corrugated Plastic (Polypropylene) Pipe

## NONCONFORMING COMPRESSIVE STRENGTH OF CEMENT CONCRETE

Concrete with compressive strength test results failing to attain the limits specified in Table 901.64-3 of 901.64.B: Acceptance Testing shall be evaluated for structural adequacy and serviceability at the Contractors' expense. The Department will review all production records, the concrete test records, petrographic analysis report, field notes, and the placement records for the concrete in question. If the Engineer determines the material is found to be adequate to remain in place, payment shall be adjusted in accordance with the following formula:

$$P = \frac{2(fc - f'c)(UP)(Q)}{f'c}$$

Where:

$P$ = pay adjustment for substandard concrete
$f'c$ = specified minimum compressive strength at 28 days
$fc$ = substandard concrete cylinder compressive strength at 56 days
$Q$ = quantity of concrete represented by the acceptance cylinders tested
$UP$ = unit contract price or the lump sum breakdown price per cubic yard for the class of concrete involved complete in place

## HOLIDAY WORK RESTRICTIONS

(Supplementing Subsection 7.09)

The District Highway Director (DHD) may authorize work to continue during these specified time periods if it is determined by the District that the work will not negatively impact the traveling public. DHD may allow work in those areas on a case by case basis and where work is behind barrier and will not impact traffic

Below are the holiday work restrictions:

New Years Day (Federal Holiday)
No work on major arterial roadways from 5:00 AM on the day before until the normal start of business on the next subsequent business day. No work on local roadways on the holiday without permission by the DHD and the local police chief.

Martin Luther King's Birthday (Federal Holiday)
No work restrictions due to traffic concerns, however work on local roadways requires permission by the DHD and local police chief.

President's Day (Federal Holiday)
No work restrictions due to traffic concerns, however work on local roadways requires permission by the DHD and local police chief.

Evacuation Day (Suffolk County State Holiday)
No work restrictions due to traffic concerns.

Patriot's Day (State Holiday)
Work restrictions will be in place for Districts 3 and 6 along the entire Boston Marathon route and any other locations that the DHD in those districts determine are warranted so as not to impact the marathon. All other districts work restrictions will be as per DHD.

Mother’s Day
No work on Western Turnpike and Metropolitan Highway System from 5:00 AM on the Friday before, until the normal start of business on the following day.

Memorial Day (Federal Holiday)
No work on major arterial roadways from 5:00 AM on the Friday before, until the normal start of business on the following day.

Bunker Hill Day (Suffolk County State Holiday)
No work restrictions due to traffic concerns.

Juneteenth
No work restrictions due to traffic concerns, however work on local roadways requires permission by the DHD and local police chief.

**HOLIDAY WORK RESTRICTIONS** (Continued)

Independence Day (Federal Holiday)
No work on major arterial roadways from 5:00 AM on the day before until the normal start of business on the next subsequent business day. No work on local roadways on the holiday without permission by the DHD and the local police chief.

Labor Day (Federal Holiday)
No work on major arterial roadways from 5:00 AM on the Friday before, until the normal start of business on the following day.

Columbus Day (Federal Holiday)
No work on major arterials from 5:00 AM on the Friday before, until the normal start of business on the following day

Veterans' Day (Federal Holiday)
No work restrictions due to traffic concerns.

Thanksgiving Day (Federal Holiday)
No work on major arterials from 5:00 AM two days before until the normal start of business on the following Monday.

Christmas Day (Federal Holiday)
No work on major arterial roadways from 5:00 AM on the day before until the normal start of business on the next subsequent business day.

**SOIL STOCKPILING DIRECTIVE P-22-001**

Any stockpiling of soil must be performed in compliance with Policy Directive P-22-001, Off-Site Stockpiling of Soil from MassDOT Construction Projects. This directive limits the allowable locations for off-site stockpiling of soil generated during MassDOT projects and includes various requirements that must be satisfied by the Contractor prior to off-site stockpiling. The Contractor is responsible for identifying a suitable stockpile location.

**SUBSECTION 8.02 SCHEDULE OF OPERATIONS**
Replace this subsection with the following:

An integrated cost and schedule controls program shall be implemented by the Contractor to track and document the progress of the Work from Notice to Proceed (NTP) through the Contractor Field Completion (CFC) Milestone. The Contractor's schedules will be used by the Engineer to monitor project progress, plan the level-of-effort required by the Department's work force and consultants and as a critical decision-making tool. Accordingly, the Contractor shall ensure that it complies fully with the requirements specified herein and that its schedules are both accurate and updated as required by the specification throughout the life of the project. Detailed requirements are provided in Division II, Section 722 Construction Scheduling.

## TRUCK SAFETY DEVICES

(Supplementing Subsection 7.04: Motor Vehicles)

All motor vehicles subject to Section 7 of Chapter 90 to be operated under this Contract shall be equipped with safety devices as provided therein and in 540 CMR 4.00.

The Contractor shall certify to the Registry of Motor Vehicles, in a manner prescribed by the Registrar, that all applicable vehicles are equipped with Lateral Protective Devices, Convex Mirrors, Cross Over Mirror(s) and Back Up Cameras in accordance with the requirements of 540 CMR 4.00.

The Contractor shall provide evidence satisfactory to the Department to demonstrate compliance with the above certification requirement for all applicable vehicles operated under this Contract by the Contractor and its subContractors and vendors in a manner set forth by the Department. Thereafter, the Contractor shall have an affirmative obligation to continue to provide such evidence of compliance on an ongoing basis and no later than 7 days after certification with the Registry of Motor Vehicles of any additional vehicles operated under this Contract by the Contractor and its subContractors and vendors.

Non-compliance with respect to a vehicle that is subject to 540 CMR 4.00 may subject the Contractor to statutory fines as established in M.G.L. c. 90, § 7 and/or contractual remedies up to and including termination of the Contract.

## WORK SCHEDULE

(Supplementing Subsection 8.02)

The Contractor and all subContractors shall work standard works hours from 7:00 AM to 3:30 PM, Monday thru Friday or as otherwise approved by the Engineer and the City of Leominster. Any lane closures, lane shifts, or work that will disrupt travel on existing roadways shall not be done from 6:00 AM to 9:00 AM and from 3:00 PM to 6:00 PM.

Pleasant Street

The Contractor shall ensure that construction activities do not disrupt access to the Bennett Elementary School at any time. Full closure of Pleasant Street shall be limited to between June 25, 2027 to August 27, 2027 while school is not in session. Pleasant Street shall remain open at all other times while school is in session and in accordance with the above standard work hours and lane restrictions. The Contractor is responsible for notifying the DPW, emergency services, and the school department two weeks ahead of the Pleasant Street closure.

Milestone 1: Pleasant Street shall be reopened to normal traffic operations on or before August 27, 2027. Normal traffic operations will be defined at a minimum as completion of culvert installation, culvert headwalls, sidewalk, pavement surface course, underground utility installation, and temporary markings.

Union Street

Lane restrictions on Union Street are prohibited while Pleasant Street is closed and the Pleasant Street detour is active.

## SUBSECTION 8.14 UTILITY COORDINATION, DOCUMENTATION, AND MONITORING RESPONSIBILITIES

A. GENERAL

In accordance with the provisions of Section 8.00 Prosecution and Progress, utility coordination is a critical aspect to this Contract. This section defines the responsibility of the Contractor and MassDOT, with regard to the initial utility relocation plan and changes that occur as the prosecution of the Work progresses. The Engineer, with assistance from the Contractor shall coordinate with Utility companies that are impacted by the Contractor's operations. To support this effort, the Contractor shall provide routine and accurate schedule updates, provide notification of delays, and provide documentation of the steps taken to resolve any conflicts for the temporary and/or permanent relocations of the impacted utilities. The Contractor shall provide copies to the Engineer of the Contractor communication with the Utility companies, including but not limited to:

- Providing advanced notice, for all utility-related meetings initiated by the Contractor.
- Providing meeting minutes for all utility-related meetings that the Contractor attends.
- Providing all test pit records.
- Request for Early Utility work requirements of this section (see below).
- Notification letters for any proposed changes to Utility start dates and/or sequencing.
- Written notification to the Engineer of all apparent utility delays within seven (7) Calendar Days after a recognized delay to actual work in the field – either caused by a Utility or the Contractor.
- Any communication, initiated by the Contractor, associated with additional Right-of-Way needs in support of utility work.
- Submission of completed Utility Completion Forms.

B. PROJECT UTILITY COORDINATION (PUC) FORM

The utility schedule and sequence information provided in the Project Utility Coordination Form (if applicable) is the best available information at the time of the bid and has been considered in setting the contract duration. The Contractor shall use all of this information in developing the bid price and the Baseline Schedule Submission, inclusive of the individual utility durations sequencing requirements, and any work that has been noted as potentially concurrent utility installations.

C. INITIATION OF UTILITY WORK

The Engineer will issue all initial notice-to-proceed dates to each Utility company based on either the:

1) Contractor's accepted Baseline Schedule
2) An approved Early Utility Request in the form of an Early Utility sub-net schedule (in accordance with the requirements of this Subsection)
3) An approved Proposal Schedule

C.1 - BASELINE SCHEDULE – UTILITY BASIS

The Contractor shall provide a Baseline Schedule submission in accordance with the requirements of Subsection 8.02 and inclusive of all of the information provided in the PUC Form that has been issued in the Contract documents. This is to include the utility durations, sequencing of work, allowable concurrent work, and all applicable considerations that have been depicted on the PUC Form.

**SUBSECTION 8.14** (Continued)

C.2 – EARLY UTILITY REQUEST – (aka SUBNET SCHEDULE) PRIOR TO THE BASELINE

All early utility work is defined as any anticipated/required utility relocations that need to occur prior to the Baseline Schedule acceptance. In all cases of proposed early utility relocation, the Contractor shall present all known information at the pre-construction conference in the form of a 'sub-net' schedule showing when each early utility activity needs to be issued a notice-to-proceed. The Contractor shall provide advance notification of this intent to request early utility work in writing at or prior to the Pre-Construction meeting. Prior to officially requesting approval for early utility work, the Contractor shall also coordinate with MassDOT and all utility companies (private, state or municipal) which may be impacted by the Contract. If this request is acceptable to the Utilities and to MassDOT, the Engineer will issue a notice-to-proceed to the affected Utilities, based on these accepted dates.

C.3 – PROPOSAL SCHEDULE - CHANGES TO THE PUC FORM

If the Contractor intends to submit a schedule (in accordance with MassDOT Standard Specifications, Division I, Subsection 8.02) that contains durations or sequencing that vary from those provided in the Project Utility Coordination (PUC) Form, the Contactor must submit this as an intended change, in the form of a Proposal Schedule and in accordance with MassDOT Standard Specifications, Division I, Subsection 8.02. These proposed changes are subject to the approval of the Engineer and the impacted utilities, in the form of this Proposal Schedule and a proposed revision to the PUC form. The Contractor shall not proceed with any changes of this type without written authorization from the Engineer, that references the approved Proposal Schedule and PUC form changes. The submission of the Baseline Schedule should not include any of these types of proposed utility changes and should not delay the submission of the Baseline Schedule. As a prerequisite to the Proposal Schedule submission, and in advance of the utility notification(s) period, the Contractor shall coordinate the proposed utility changes with the Engineer and the utility companies, to develop a mutually agreed upon schedule, prior to the start of construction.

D. UTILITY DELAYS

The Contractor shall notify the Engineer upon becoming aware that a Utility owner is not advancing the work in accordance with the approved utility schedule. Such notice shall be provided to the Engineer no later than seven (7) calendar days after the occurrence of the event that the Contractor believes to be a utility delay. After such notice, the Engineer and the Contractor shall continue to diligently seek the Utility Owner's cooperation in performing their scope of Work.

In order to demonstrate that a critical path delay has been caused by a third-party Utility, the Contractor must demonstrate, through the requirements of the monthly Progress Schedule submissions and the supporting contract records associated with Subsection 8.02, 8.10 and 8.14, that the delays were beyond the control of the Contractor.

**SUBSECTION 8.14** (Continued)

All documentation provided in this section is subject to the review and verification of the Engineer and, if required, the Utility Owner. In accordance with MassDOT Specifications, Division I, Subsection 8.10, a Time Extension will be granted for a delay caused by a Utility, only if the actual duration of the utility work is in excess of that shown on the Project Utility Coordination Form, and only if;

1) proper Notification of Delay was provided to MassDOT in accordance with the time requirements that are specified in this Section
2) the utility delay is a critical path impact to the Baseline Schedule (or most recently approved Progress Schedule)

E. LOCATION OF UTILITIES

The locations of existing utilities are shown on the Contract drawings as an approximation only. The Contractor shall perform a pre-construction utility survey, including any required test pits, to determine the location of all known utilities no later than thirty (30) calendar days before commencing physical site work in the affected area.

F. POST UTILITY SURVEY – NOTIFICATION

Following completion of a utility survey of existing locations, the Contractor will be responsible to notify the Engineer of any known conflicts associated with the actual location of utilities prior to the start of the work. The Engineer and the Contractor will coordinate with any utility whose assets are to be affected by the Work of this Contract. A partial list of utility contact information is provided in the Project Utility Coordination Form.

G. MEETINGS AND COOPERATION WITH UTILITY OWNERS

The Contractor shall notify the Engineer in advance of any meeting they initiate with a Utility Owner's representative to allow MassDOT to participate in the meeting if needed.

Prior to the Pre-Construction Meeting, the Contractor should meet with all Utility Owners who will be required to perform utility relocations within the first 6 months of the project, to update the affected utilities of the Project Utility Coordination Form and all other applicable Contract requirements that impact the Utilities. The Contractor shall copy the Engineer on any correspondence between the Utility Owner and the Contractor.

H. FORCE ACCOUNT / UTILITY MONITORING REQUIREMENTS

The Engineer will be responsible for recording daily Utility work force reports. The start, suspension, re-start, and completion dates of each of the Utilities, within each phase of the utility relocation work, will be monitored and agreed to by the Engineer and the Contractor as the work progresses.

I. ACCESS AND INSPECTION

The Contractor shall be responsible for allowing Utility owners access to their own utilities to perform the relocations and/or inspections. The Contractor shall schedule their work accordingly so as not to delay or prevent each utility from maintaining their relocation schedule.

## COMPLIANCE WITH THE NATIONAL DEFENSE AUTHORIZATION ACT

(Supplementing Subsection 7.01)

On all projects, the "Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment" Regulation (2 CFR 200.216) prohibits the Contractor from using or furnishing the following telecommunications equipment or services:

- Telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).
- 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).
- Telecommunications or video surveillance services provided by such entities or using such equipment.
- Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

This prohibition applies to all products manufactured by the aforementioned companies, including any individual components or parts.

By submitting a bid on a project, the Contractor certifies that all work will be in compliance with the terms of 2 CFR 200.216. The Contractor shall submit a COC indicating compliance with the above provisions for all telecommunications equipment or services included in the Contract.

Payment for the Item in which the materials are incorporated may be withheld until these COCs are received. Any cost involved in furnishing the certificate(s) shall be borne by the Contractor.

## BIDDERS LIST

Pursuant to the provisions of 49 CFR Part 26.11 all official bidders will be required to report the names, addresses and telephone numbers of all firms that submitted bids or quotes in connection with this project. Failure to comply with a written request for this information within 15 business days may result in a recommendation to the Prequalification Committee that prequalification status be suspended until the information is received.

The Department will survey all firms that have submitted bids or quotes during the previous year prior to setting the annual goal and shall request that each firm report its age and gross receipts for the year.

## BUILD AMERICA BUY AMERICA PREFERENCE

On Federally-aid projects the Buy America (23.CFR § 635.410) and Build America, Buy America Act. requires the following,

(1) all iron and steel used in the project are produced in the United States--this means all manufacturing processes, from the initial melting stage through the application of coatings, must occur in the United States. Foreign steel and iron can be used if the cost of the materials does not exceed 0.1% of the total Contract cost or $2,500, whichever is greater. The action of applying a coating to a covered material (i.e., steel and iron) is deemed a manufacturing process subject to Buy America. Coating includes epoxy coating, galvanizing, painting and any other coating that protects or enhances the value of a material subject to requirements of Build America, Buy America. Steel used for temporary support of excavation, including H piles, soldier piles, and sheeting when the steel is required to be left in place is subject to requirements of Build America, Buy America. Temporary steel, shall remain in place when it falls within the influence zone of the soil supporting any structure or railroad tracks.

(2) all manufactured products used in the project are produced in the United States—this means the manufactured product was manufactured in the United States and

(3) all construction materials are manufactured in the United States—this means that all manufacturing processes for the construction material occurred in the United States. "Construction materials" includes an article, material, or supply—other than an Item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives—that is or consists primarily of:

- non-ferrous metals,
- plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables),
- glass (including optic glass),
- lumber; or
- drywall.

The Buy America preference only applies to articles, materials, and supplies that are consumed in, incorporated into, or affixed to an infrastructure project. As such, it does not apply to tools, equipment, and supplies, such as temporary scaffolding, brought to the construction site and removed at or before the completion of the infrastructure project. Nor does a Buy America preference apply to equipment and furnishings, such as movable chairs, desks, and portable computer equipment, that are used at or within the finished infrastructure project but are not an integral part of the structure or permanently affixed to the infrastructure project.

All articles, materials, and supplies should be classified as an iron or steel product, a manufactured product, or another product as specified by law or in 2 CFR part 184 (such other products specified by law or in 2 CFR part 184 include "excluded materials" and "construction materials"); an article, material, or supply must not be considered to fall into multiple categories.

## NATIONAL GRID EMERGENCY TELEPHONE NUMBERS

GAS:
Emergency: 1-800-233-5325
New Service: 1- 877-696-4743
Customer Support: 1-800-732-3400

ELECTRIC:
Outage/ Emergency: 1-800-465-1212
New Service: 1-800-375-7405
Customer Support: 1-800-322-3223

## NATIONAL GRID – UTILITY POLE HOLD REQUEST INFORMATION

Representative: Amanda Rodriguez
Phone Number: 508-571-4077
Work Request Number: 31214254

## NOTICE TO OWNERS OF UTILITIES

(Supplementing Subsection 7.13)

Written notice shall be given by the Contractor to all public service corporations or municipal and State officials owning or having charge of publicly or privately owned utilities of its intention to commence operations affecting such utilities at least one week in advance of the commencement of such operations. The Contractor shall, at the same time, file a copy of such notice with the Engineer.

Before commencing work on service connections, the Contractor shall be responsible for contacting the Electric Company servicing the area to obtain construction requirements, standards, and to give notice of commencement of work in accordance with the respective utility company policy. The Contractor's attention is further directed to the requirements of work in the immediate vicinity of certain underground structures and poles herein included in these Special Provisions.

A list of public and private utilities can be found on the MassDOT website at:
https://www.mass.gov/info-details/utility-contacts-by-district-and-municipality

Select District 3 on top of the webpage, select the City of Leominster and then locate the utility.

The Contractor shall inform the following officials in each area that he is assigned to work:

Superintendent, Department of Public Works or City Engineer,
Police and Fire Department,
Electric Department

City officials are shown at website http://www.mass.gov/portal/government/cities-and-towns.html
Select “Leominster” from alphabetized listed.

**NOTICE TO OWNERS OF UTILITIES** (Continued)

Select the official Municipality Home Page.

The following are the names of owners and representatives of the principal utilities affected, but completeness of this list is not guaranteed by the Department:

Unitil Electric
357 Electric Avenue
Lunenburg, MA 04162

Mark Frappier
978-353-3217
frappier@unitil.com

National Grid Electric
55 Bearfoot, Road
Northborough, MA 01532

Manny Munoz
401-895-9726
manuel.munoz@nationalgrid.com

National Grid Gas
170 Data Drive
Waltham, MA 02451

Melissa Owens
781-907-2845
Melissa.Owens@nationalgrid.com

Tennessee Gas Pipeline Company
8 Anngina Drive
Enfield, CT 06082

David Wood
860-763-6005
KMEncroachmentsNorth@kingermorgan.com

Verizon (Telephone)
385 Myles Standish Boulevard
Taunton, MA 02780

Karen Mealey
774-409-3160
Karen.m.mealy@verizon.com

Leominster DPW (Water, Sewer)
109 Graham Street
Leominster, MA 01453

Mark F. Piermarini
978-534-7590 Extension 518
MPiermarini@DPW.Leominster-MA.gov

MWRA (Water)
2 Griffin Way
Chelsea, MA 02150

Ralph Francesconi
617-461-3573
Ralph.Francesconi@mwra.com

Comcast Cable Corporation
P.O. Box 6505, 5 Omni Way
Chelmsford, MA 01824

Wendy Brown
978-848-5163
Wendy_Brown@comcast.com

Crown Castle (Cable)
80 Central Street
Boxborough, MA 01719

Mark Bonanno
508-616-7818
mark.bonanno@crowncastle.com

## ENVIRONMENTAL PERMITTING

Pleasant Street

The proposed work occurs in jurisdictional wetland resources subject to section 401 and section 404 of the Clean Water Act; therefore, a Water Quality Certification from the Massachusetts Department of Environmental Protection and authorization from the US Army Corps of Engineers has been obtained. The Contractor is advised that all terms and conditions within said permits shall be strictly adhered to. The proposed work qualifies for the bridge exemption authorized in the Transportation Bond Bill and is therefore not subject to the Massachusetts Wetlands Protection Act, the Massachusetts Public Waterfront Act (Chapter 91), or the Massachusetts Environmental Policy Act. If field conditions and/or Contractor-proposed erection, demolition, staging, or other procedures require work to occur in or otherwise impact water or wetland resource areas, the Contractor is advised that no associated work can occur until all required environmental permits have been obtained allowing such work. The Contractor must notify the District 3 Highway Director and Resident Engineer in writing at least 60 days prior to desire commencement of the proposed activity. All environmental submittals, including any Contract with Local, State, or Federal environmental agencies, must be coordinated with the District 3 Environmental Engineer. The Contractor is expected to fully cooperate with requests for information and provide same in a timely manner. The Contractor is further advised that the Department will not entertain a delay claim due to the time required to obtain the environmental permits.

Union Street/Lancaster Street

The proposed work occurs in jurisdictional wetland resources subject to section 401 or section 404 of the Clean Water Act; therefore, a Water Quality Certification from the Massachusetts Department of Environmental Protection and/or authorization from the US Army Corps of Engineers has been obtained. For non-bridge work, a Negative Determination has been issued by the Leominster Conservation Commission under the Wetlands Protection Act. The Contractor is advised that all terms and conditions within said permits shall be strictly adhered to. The proposed bridge work qualifies for the bridge exemption authorized in the Transportation Bond Bill and is therefore not subject to the Massachusetts Wetlands Protection Act, the Massachusetts Public Waterfront Act (Chapter 91), or the Massachusetts Environmental Policy Act. If field conditions and/or Contractor-proposed erection, demolition, staging, or other procedures require work to occur in, or otherwise impact water or wetland resource areas, the Contractor is advised that no associated work can occur until all required environmental permits have been obtained allowing such work. The Contractor must notify the Highway Director and Resident Engineer in writing at least 60 days prior to desire commencement of the proposed activity. All environmental submittals, including any Contract with Local, State, or Federal environmental agencies, must be coordinated with the Environmental Engineer. The Contractor is expected to fully cooperate with requests for information and provide same in a timely manner. The Contractor is further advised that the Department will not entertain a delay claim due to the time required to obtain the environmental permits.

## CONTAMINATED SOIL

Soil to be removed from the project area shall not be assumed to be uncontaminated and must be evaluated prior to off-site management for potential contamination with hazardous materials. No soil may be disposed of off-site without proper assessment by the Contractor and approval from the Resident Engineer (RE), District Environmental Engineer (DEE), or the project designee.

## EMERALD ASH BORER ADVISORY

To the extent possible, all trees and brush shall be disposed on site, typically chipped and spread in place. When trees or brush must be removed, such as in urban or, otherwise populated areas, Contractor shall identify proposed location for disposal, and provide written notification to the Engineer for approval. Disposal shall be in city of project, or at minimum, within county, of construction operations.

## NORTHERN LONG-EARED BAT AND TRICOLORED BAT PROTECTION

The northern long-eared bat (*Myotis septentrionalis*; NLEB) and tricolored bat (*Perimyotis subflavus*; TCB) are listed as federally endangered or proposed endangered, respectfully, under the Endangered Species Act (ESA). The U.S. Fish and Wildlife Service (USFWS) developed this guidance to address ESA compliance and promote conservation of NLEB and TCB. MassDOT, on behalf of the United States Army Corps of Engineers (USACE), submitted a Northern Long-eared Bat and Tricolored Bat Range-wide Determination Key Consultation through Information for Planning and Consultation (IPaC) and generated a May Affect, Not Likely to Adversely Affect (NLAA) determination (see **Document A00844**). Subsequently, the project has completed Section 7 consultation under the ESA.

In advance of the uplisting of the TCB to endangered under the ESA, the following Avoidance and Minimization Measures (AMMs) must be strictly adhered to in order to protect NLEB and TCB and to be in compliance with the ESA. Contact MassDOT Environmental Services - Wildlife Unit Supervisor for questions about project limits, restrictions, or conservation measures.

### General AMM

- The Contractor shall ensure all personnel working in on the project site are aware of all environmental commitments related to NLEB and TCB, including all applicable AMMs. NLEB and TCB information (https://www.fws.gov/midwest/endangered/mammals/nleb/ and https://www.fws.gov/species/tricolored-bat-perimyotis-subflavus) shall be made available to all personnel.

### Lighting AMMs

- Direct temporary lighting away from suitable habitat during the active season: **April 15 to October 31.**

## NORTHERN LONG-EARED BAT AND TRICOLORED BAT PROTECTION
(Continued)

### Tree Removal AMMs

- *If additional cutting is proposed by the Contractor that is outside the scope of this contract, additional review is required by the MassDOT Highway Division's Environmental Services Section, and additional review and restrictions may be required by the USFWS.*

- Ensure tree removal is limited to that specified in project plans and ensure that Contractors understand clearing limits and how they are marked in the field (e.g., install bright colored flagging/fencing prior to any tree clearing to ensure Contractors stay within clearing limits).

- No tree cutting, trimming, or removal of trees and/or woody vegetation >3-inch in diameter shall be conducted between: **June 1 - August 15**

- The Contractor shall ensure all personnel working in on the project site are aware of all environmental commitments related to NLEB and/or TCB, including the **TOY** restriction.

### Bridge AMM

- Following the March 9th, 2026, guidance from the U.S. Fish and Wildlife Service (the Service) regarding roadway transportation structures in New England, an inspection of the bridge for the presence of, or evidence of use by, bats was not conducted. The MassDOT Wildlife Unit conducted a desktop review that determined the bridge/culvert is not (1) a covered bridge, (2) a bridge with wood/timber as a component of construction, (3) a bridge with stone/masonry construction, (4) a "cave-like" culvert, typically greater than 200 feet long, and/or (5) located on Nantucket County. The bridge/culvert did not meet any of these exceptions, and therefore no survey was required.

**ITEM 100.9 STRUCTURE CONDITION SURVEY LUMP SUM**

The work under this Item shall include performance of a pre-construction and a post-construction condition survey of the adjacent structures and auxiliary structures that are within approximately 200 ft of the construction activities at Structure No. L-08-060 (6RP). These structures are to include but not be limited to:

- 122 Union Street, Leominster, MA 01453
- 127 Union Street, Leominster, MA 01453
- 144 Union Street, Leominster, MA 01453
- 149 Union Street, Leominster, MA 01453
- 10 Crown Street, Leominster, MA 01453

Surveys of additional structures may be required based on zone of influence of temporary work based on the Contractor's means and methods. Work under this Item shall consist of furnishing pre-construction, during, and post-construction building inspections and surveys of the building structures listed above. The pre-construction survey serves to establish the existing conditions of the various properties. Further construction surveys can then be compared to the pre-construction survey to evaluate the impacts (if any) of the construction activities.

The Contractor shall coordinate the construction survey schedule with the Engineer. The Contractor shall arrange for access to the buildings. The construction surveys must be completed under the direction of a professional Engineer licensed in the Commonwealth of Massachusetts.

**PRE-CONSTRUCTION**

1. The pre-construction inspection and condition surveys shall produce baseline documentation which can be used for comparison against future inspections and condition surveys.
2. At least 30 days prior to the start of the Work, the Contractor shall submit the resume of the firm who will be performing the surveys.
3. Prior to beginning the work, the Contractor shall request permission from each property owner, in writing, to conduct the inspection and condition survey of the interior of the property. The intent of the construction survey shall be explained to the property owner.
4. The building exteriors, property and environs shall be observed. The exterior condition of, but not limited to, all structures, sidewalks, curbing, pavements, landscaping features, miscellaneous site improvements, and so forth shall be surveyed. Defects such as, but not limited to, evidence of cracking, damage, discoloration, drainage, ponding and so forth shall be documented. Any existing cracks shall be located, measured and recorded at the time of inspection. All existing deficiencies, major or minor, shall be documented. The Contractor shall prepare documentation in the form of digital photographs with a written detailed log of each photograph and narrated video shall be produced. Any supplementary notes, sketches, or diagrams voluntarily produced at the Contractors' discretion shall be submitted in writing.

**ITEM 100.9** (Continued)

5. Structure interiors including the basement shall be observed (upon approval of property owner). Defects such as, but not limited to, evidence of cracking, damage, discoloration, water intrusion, basement flooding and so forth shall be documented. Any existing cracks shall be located, measured and recorded at the time of inspection. All existing structural deficiencies, major or minor, shall be documented. Documentation in the form of digital photographs with a written detailed log of each photograph and narrated video shall be produced. Any supplementary notes, sketches, diagrams of all walls, partitions, floors and ceilings, voluntarily produced at the Contractors' discretion shall be submitted.
6. The Contractor must provide contingency plans in the event of the property owner limiting/denying access to the property.

**DURING CONSTRUCTION**

1. As construction progresses, the Contractor shall re-inspect and conduct a condition survey at the request of the property owner, in a manner that duplicates the preconstruction inspection in order to compare existing conditions to the pre-construction conditions.
2. Cracks and/or structural damage documented before the start of construction shall be monitored during construction for movement or additional distress.

**POST-CONSTRUCTION**

1. Upon completion of the construction activities, the Contractor shall re-inspect and conduct condition survey, in a manner that duplicates the preconstruction inspection in order to compare existing conditions to the pre-construction conditions.
2. The results of the post-construction inspection and condition survey shall be compared to the results of the pre-construction inspection and condition survey. Specific similarities and differences shall be noted in the post-construction survey report.

**PICTURE AND VIDEO REQUIRMENTS**

1. Digital photographic images shall be stored on a USB.
2. Digital format video recordings shall be stored on a USB and viewable by standard video software such as Windows Media Player or equal.

**SUBMITTALS**

1. Pre-Construction:
   -Firm qualifications, both individual(s) and organization, including approval by the Contractor's insurance carrier. -Data obtained from the pre-construction inspection shall be promptly delivered to the Engineer. Copies of property owner notifications and all subsequent correspondence.
2. During Construction: Data obtained from each re-inspection shall be promptly delivered to the Engineer.

**ITEM 100.9** (Continued)

3. Post-Construction: Data obtained from the post-construction inspection shall be promptly delivered to the Engineer.

## QUALITY ASSURANCE

Inspector Qualifications: Qualified specialists approved by the Contractor's insurance carrier subject to review by the Engineer.

## CERTIFICATIONS

1. All copies of the pre-construction, interim, and post-construction inspection and condition survey reports shall be signed and dated by those taking part in the inspection. The execution of the reports shall be documented by an independent witness, such as the Engineer or property owner.

2. Nothing contained herein shall relieve the Contractor of responsibility for claims arising from the Contractor's construction operations. Failure to inspect any structure, whether or not required under this section, nor the inadequacy of the inspections performed, shall relieve the Contractor of its responsibility.

## DOCUMENTATION

The inspections and surveys shall produce diagrams of all walls, partitions, floors and ceilings showing existing cracks, descriptions of interior basement or foundation cracks, elevations, photographs of exterior cracks or damage and such other data, including narrated videotape, as is applicable to locate and define the amount and extent of existing damage. All existing structural deficiencies, major or minor, shall be as shown.

## BASIS OF PAYMENT

Item 100.9 will be paid for at the contract LUMP SUM price, which price shall be considered full compensation for all labor, tools, materials, equipment, submittals and all incidental costs required to complete the work.

**ITEM 100.91 GEOTECHNICAL INSTRUMENTATION AND MONITORING LUMP SUM**

The work under this Item consists of furnishing, installing, monitoring, reporting data from, and maintaining geotechnical instrumentation; protecting instrumentation from damage; replacing damaged, malfunctioning, or worn-out equipment and materials, and decommissioning of all geotechnical instrumentation at the end of construction at Structure No. L-08-060 (6RP).

The Contractor shall provide a Geotechnical Instrumentation and Monitoring Plan for approval by the Engineer, the Owner's Project Manager, the Owners Civil/Geotechnical EOR, and the Property Owner. At a minimum, the existing culvert retaining walls shall be monitored during the work. Existing utilities, buildings, and other structures that may be impacted (due to vibrations) and/or within the excavation zone of influence (a 1 horizontal to 1 vertical slope extending upwards and outwards from the lowest excavation elevation) due to the Contractor's means and methods shall also be monitored.

The Contractor shall be responsible to determine whether the minimum geotechnical instrumentation and monitoring program specified herein is adequate and available on a timely basis to protect property and provide safety. The minimum instrumentation and monitoring program required by this Item does not relieve the Contractor of responsibility for providing additional instrumentation, if, in the Contractor's opinion, such additional instrumentation is necessary to provide for safety of the personnel and the Work and protection of the adjacent existing utilities, structures, and property. The Contractor shall implement required remedial and precautionary measures based on the instrumentation data. The Contractor shall, at a minimum, meet all requirements for Geotechnical Monitoring contained herein.

Monitoring Geotechnical Instrumentation Includes:

1. Deformation Monitoring Points (DMPs) Type 1 for monitoring vertical and horizontal displacements at the existing culvert retaining walls, as specified herein.
2. Surface Monitoring Points (SMPs) Type 2 for monitoring vertical displacement of existing permanent surfaces such as roadway pavement as specified herein.
3. Vibration Monitoring Points (VMPs) for monitoring of vibrations at adjacent properties located within 200 feet of vibration producing activities.

Monitoring of all geotechnical instrumentation shall be performed continuously throughout the duration of the work, at the intervals/frequency specified herein. The Contractor is responsible for obtaining all baseline readings for each type of monitoring required prior to the start of the work.

**DEFINITIONS**

Instrumentation Engineer: Engineer subcontracted by the Contractor with 5 years' experience in vibration monitoring.

Baseline Readings: Initial readings obtained at each instrument location within 48 hrs. of instrument installation and a minimum for one (1) week prior to the start of construction that may affect the structure.

**ITEM 100.91** (Continued)

Threshold Level: The "Threshold" level is a geotechnical instrument reading that triggers a temporary work stoppage to review and modify work operations and procedures as needed and implement mitigation actions as needed to ensure that the "Limit" level is not exceeded.

Limit Level: The "Limit" level is a maximum permissible geotechnical instrument reading that corresponds to a work stoppage.

Geotechnical Instrumentation: Devices measuring ground surface and subsurface movement, support of excavation movements, building, culvert and structure movements. Includes measurement devices and appurtenant equipment, probes, sensors, cabling, readout devices, and data loggers; including ancillary facilities required for their operation, such as casings, housings, and covers.

## REFERENCED STANDARDS

American Society for Testing and Materials (ASTM):

1. ASTM C150 – Standard Specification for Portland cement.
2. ASTM D3740 – Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
3. ASTM D6026 – Practice for Using Significant Digits in Geotechnical Data

## PREINSTALLATION MEETINGS

Conduct conference at Project site at least thirty days prior to installation of geotechnical instrumentation.

1. At a minimum, pre-installation conference shall be attended by the Civil/Geotechnical EOR, Owner's Project Manager, Contractor's Superintendent, Instrumentation Engineer, excavation support and protection systems installer, and dewatering installer.
2. Verify availability of Instrumentation Engineer's personnel and equipment needed to maintain progress and avoid delays.
3. Review condition of site for installation of all geotechnical instrumentation, including coordination with temporary measures and temporary controls and protections.
4. Review geotechnical report.
5. Review geotechnical instrumentation monitoring requirements.
6. Review proposed site clearing, excavation construction schedule, demolition, pile driving and drilling operations.

## COORDINATION WITH OTHER CONTRACTORS

Coordinate all geotechnical instrumentation installation and monitoring work with the work for demolition, excavation and backfilling, installation of soil nails, soil nail testing and dewatering, as necessary.

**ITEM 100.91** (Continued)

**SUBMITTALS**

Preconstruction: The Contractor shall submit to the Engineer the following prior to commencement of the Work.

1. Submit the following action submittals for review and approval:

   A. Instrumentation Engineer: Contractor's Instrumentation Engineer shall be responsible for furnishing, installing, monitoring, maintaining, and reporting of all geotechnical instrumentation and measurements, and shall have 5 yrs. of direct field experience with the types of instrumentation specified herein.

   B. Surveyor: All surveying activities shall be performed under the direct supervision of a licensed Professional Land Surveyor registered in the Commonwealth of Massachusetts and shall have experience in measurements of the types and accuracies specified herein. The field survey party chief shall also have experience in survey measurements of the types and accuracies specified herein.

2. Geotechnical Instrumentation/Vibration Installation and Monitoring Plan, which shall include, at a minimum, the following:

   A. Manufacturers' product data sheets and calibrations describing all instruments to be installed, including requests for consideration of substitutes.

   B. Detailed step-by-step procedure for installation, together with a sample installation record sheet, for each instrument to be installed, including:

      (a) Deformation Monitoring Points (DMP): Installation on the existing culvert retaining wall.
      (b) Surface Monitoring Points (SMP): Installation on the existing roadway/pavement above the excavations.

   C. Detailed step-by-step procedures for conducting all measurements, including baseline measurements and measurements during construction, to the specified accuracies, including types of surveying instruments or measurement devices (e.g., data loggers), data reduction procedures, summary, and data plotting procedures. Provide sample of summary plots for all anticipated data.

   D. A schedule indicating the proposed Contractor's construction schedule, instrument installation sequence, the proposed monitoring and reporting frequencies for all instruments specified herein.

   E. Access to database with example data showing how data from all monitoring points will be displayed and reported to the various parties involved.

**ITEM 100.91** (Continued)

**Field Quality Control**

Submit the following informational submittals per request of the Civil/Geotechnical EOR during construction. Keep records throughout construction for all of the following:

1. All records of instrumentation, either installation, or readings, shall contain the following information:
   a. Project name.
   b. Contract name and number.
   c. Instrument type, ID, and serial number.
   d. Dates of installation, reading or summary.
   e. Times of installation or reading.
   f. Location Coordinates.
   g. Personnel responsible.
   h. Relevant comments or remarks such as depth of excavation at time of readings.

2. Within five (5) workdays of installation of each instrument at the site, submit the installation record sheet, a copy of the factory calibration for the instrument, and the manufacturer's equipment certification for the instrument. The installation record shall include at a minimum the following:
   a. Existing ground level at the time of installation.
   b. Planned location in plan and elevation including elevation referenced to the North American Vertical Datum 1988 (NAVD 88), and horizontal position referenced Massachusetts State Plane Coordinate System North American Datum 1983 (NAD 83).
   c. Equipment used.
   d. Spaces for necessary measurements or readings required during installation to ensure that all previous steps have been followed correctly, including acceptance tests.
   e. As-built location in plan and elevation including elevation referenced to the North American Vertical Datum 1988 (NAVD 88), and horizontal position referenced Massachusetts State Plane Coordinate System North American Datum 1983 (NAD 83).
   f. As-built orientation.
   g. Weather conditions.
   h. A space for notes including problems encountered, delays, unusual features of the installation, and any events that may have a bearing on instrument behavior.
   i. Any color coding used.
   j. Baseline readings obtained.

3. A minimum of three (3) days prior to the start of any work within 200 ft. of a monitoring point, submit an installation report of all instruments installed. The report shall include a general description of the site and work, types of instruments installed, a copy of all installation record sheets, and an as-built location plan of all installed instrument locations, including benchmark locations and baseline readings.

**ITEM 100.91** (Continued)

4. During construction, report all measured readings in database format, within 24 hrs. of obtaining the measurements. Immediately notify the Civil/Geotechnical EOR and Owner's Project Manager, if threshold or limit values have been exceeded.

5. If Project Threshold or Limiting Values are exceeded formal weekly summary monitoring reports will be required to be submitted within two (2) working days of the end of the week being reported. Each weekly summary monitoring report shall include:

   a. A description of monitoring works which were in operation during the preceding week.
   b. Information on reading anomalies or corrections, and factors which may influence measured data.
   c. Observations or remarks.
   d. Plan showing installed locations of instruments (taken from installation report).
   e. Data tabulations or plots of instrument readings as given below. The Instrumentation Engineer shall have available suitable software for generating the required plots and tabulations. Zero time to be used in all plots and tabulations shall be agreed with the Civil/Geotechnical EOR. The time axis shall be days from 'day zero,' and an indication of date or months shall be included on the axis. The plots and tabulations presented each week shall be an update of the previous plots and tabulations, giving a complete record starting from the time of installation.
   f. Instrument Plots and Summaries required:
      (1) DMPs: Lateral and vertical movement vs. time (tabulation and plot).
      (2) SMPs: Vertical displacement vs. time (tabulation and plot).

**Closeout**

1. Provide the following record documents:
   a. All records from Field Quality Control Program.
   b. Within one week of the end of construction, obtain final readings at each instrument installed. Within one week of obtaining these final measurements, provide a Final Monitoring Report summarizing all the monitoring performed throughout construction and the end-of-construction measurements.

**PROJECT CONDITIONS**

Before bidding the Work, the Instrumentation Engineer shall perform a site visit to assess the site, equipment access conditions, potential interferences with intended equipment, and location of existing structures.

Project Site Information: A geotechnical report has been prepared for this Project.

**ITEM 100.91** (Continued)

## EQUIPMENT AND MATERIALS

All materials shall be new.

### Precision Level Survey Equipment

All vertical monitoring points shall be surveyed with an instrument with accuracy equal to 0.3 mm per 1 km double run or better per DIN 18723.

Use a total station with a minimum 1 second horizontal accuracy per ISO 17123.

All surveying equipment used in conjunction with the monitoring of instrumentation, including measuring tapes, precise levels, and theodolites shall be maintained and calibrated as required by the manufacturers.

### Monitoring Points

The following type of DMP shall be used to monitor deformation:

1. DMPs (Type 1) and SMPs (Type 2) shall consist of a stainless-steel PK nail driven into concrete or asphalt surfaces for vertical and horizontal movement monitoring of the existing culvert retaining wall and the roadway above. The nail shall be domed at top and manufactured from hardened, zinc-plated steel. It shall also have an indent in the center of its head. Alternative and equal DMPs may be utilized at the expressed approval of the Engineer and Owner.
2. Install DMPs at a spacing no greater than 15 feet along the existing culvert retaining wall structure to be monitored (minimum 4 DMPs). Install DMP's at the top of the structure and near the exposed ground surface.
3. Install SMPs located parallel to the existing retaining wall face above the proposed soil nail wall at a maximum center to center spacing 15 feet, 10 feet behind existing culvert retaining wall in the existing roadway pavement (minimum 4 SMPs).

### Vibration Monitoring Points

Where vibration inducing activities (ie demolition, drilling, earth support installation, demolition, backfilling, earthwork etc) within a distance of 200 feet of the existing structures, the Contractor shall provide all labor and equipment to monitor and report vibrations during the Work.

Contractor shall conduct vibration monitoring using a portable seismograph to measure vibration levels resulting from construction activities. Provide at least two seismographs which have been calibrated within the previous six months to a standard that is traceable to the National Bureau of Standards. Seismographs monitoring locations shall be located at properties closest to the work being performed at locations mutually agreed upon by the Engineer and Contractor. Vibrations shall be monitored on a continuous basis during vibration inducing activities. If vibration levels are found to exceed the maximum limits shown below, Contractor shall revise his construction operations as necessary to reduce vibration levels, at no additional cost to the Owner. The Engineer may require that Contractor to perform additional vibration monitoring if, in the opinion of the Engineer, conditions warrant such action.

**ITEM 100.91** (Continued)

Vibration monitoring shall be conducted by persons trained in the use of a seismograph and records shall be analyzed and results reported by persons familiar with analyzing and reporting the frequency content of a seismograph record. Monitoring shall be performed from the existing ground surface or on the structure in accordance with the seismograph manufacturer's recommendations. Contractor shall provide written reports of monitoring results to the Engineer within 24 hours of monitoring.

## CONSTRUCTION METHODS

The Instrumentation Engineer's personnel shall install instruments in accordance with the approved Geotechnical Instrumentation and Monitoring Plan. Install all instrumentation at the approximate locations and depths shown on the Contract Drawings or as required by the Engineer. Contractor and Instrumentation Engineer shall confer with the Civil/Geotechnical EOR as to the suitability of all planned locations.

All electronic readout devices and transducers shall be shaded from direct sunlight during use.

The Contractor shall exercise care during construction so as to avoid damage to instrumentation. All locations shall be flagged and protected. Instrumentation which is damaged as a result of the Contractor's operation shall be repaired or replaced by the Contractor at his own expense. The Civil/Geotechnical EOR will determine whether repair or replacement is required. It may be necessary to stop work until a damaged instrument has been repaired or replaced.

All instruments shall be clearly labeled with their reference number at the location where readings or measurements are taken. The labeling shall be permanent using a method or material to be agreed with the Civil/Geotechnical EOR, and shall be clearly visible.

### Installation of Monitoring Points

Install DMPs and SMPs at the minimum locations described herein, locations within the excavation zone of influence and other locations deemed necessary by the Contractor. After completion of installation of a DMP or SMP, the as-built location in horizontal position and elevation shall be determined.

Installation and initialization of DMPs and SMPs shall be completed a minimum of one week prior to the start of any construction work within 200 ft. of the monitoring points.

**ITEM 100.91** (Continued)

**Monitoring**

Monitoring frequency may be increased as required by the Engineer for some or all of the monitoring points if the threshold or limiting response values are approached or exceeded during the Work, at no additional cost to the Owner.

Initial survey of all displacement and building monitoring points will be made a minimum of 48 hrs. after completing each installation. A minimum of three independent rounds of survey readings will be taken to establish a single initial elevation or plan location and standard deviation for the measurement. Address methods to achieve required accuracy and repeat measurements if error at one standard deviation exceeds 0.01 ft. vertical or 0.01 ft. horizontal for initialization rounds. Monitoring points shall be monitored from the same benchmarks during re-surveys. The location of all monitoring points shall be located within a horizontal accuracy of ±0.01 ft. and an elevation accuracy of ±0.01 ft. at one standard deviation.

Initial survey of monitoring points at top of the earth support systems shall be made a minimum of 48 hrs. after completing the installation, and 48 hrs. before the start of excavation.

In cases where instruments are installed during construction, three sets of readings shall be taken in quick succession and the results compared. These results shall be used to provide base readings in a manner to be agreed with the Civil/Geotechnical EOR.

Measurements shall be obtained at all instruments on a one-time daily basis during all vibration inducing construction activities including typically demolition, excavation, backfilling, installation of soil nails, testing of soil nails, etc. In addition, the following guidelines shall be followed:

1. Obtain measurements at all DMPs and SMPs when work is occurring within 200 ft. of construction activities.

At the discretion of the Owner, or Civil/Geotechnical EOR, data collection may be carried out more frequently than specified herein based on the evaluation of the collected data. Seismographs shall be set up to monitoring vibrations continuously during all vibration inducing activities. Vibration levels shall not exceed the limiting criteria established in USBM RI

Whenever sets of data are measured, they shall be compared to previous sets of data. If anomalous readings are present which differ from the expected value or trend, then further readings shall be taken immediately and the Civil/Geotechnical EOR shall be informed. If the anomalous values persist, then the Civil/Geotechnical EOR shall be informed and an investigation shall be carried out to find the reasons for the anomalous readings.

If there are anomalies or sudden significant changes in the results, the Civil/Geotechnical EOR should be informed within one (1) day after monitoring.

**ITEM 100.91** (Continued)

Instrument data shall be made available to the Civil/Geotechnical EOR within one working day of reading.

**Database for Monitoring Data**

The Contractor shall prepare an online database with all monitoring data. Logins shall be provided for all parties involved to review data. Data shall be available for all data collected within 24 hrs. Data shall be compared to threshold and limiting values.

**Threshold and Limit Levels**

The table provided below establishes the Threshold and Limit levels as defined herein.

| Instrument | Threshold Level | Limit Level |
|---|---|---|
| Deformation monitoring Points [1] (Vertical and Horizontal) Existing Culvert Retaining Wall | 0.25 in. | 0.5 in. |
| Surface monitoring Points (Vertical) Existing Pavement behind Existing Culvert Retaining Wall | 0.25 in. | 0.5 in. |
| Vibration Monitoring Points | 0.5 in./sec. | 1.0 in/sec |

If the Threshold level is reached on any monitoring point, immediately notify the Owner, Civil/Geotechnical EOR, and increase the frequency of movement monitoring as required. Review and modify work operations and procedures as needed to minimize additional movements and prevent reaching the Limit Level. All modifications to the work must be agreed upon with the Civil/Geotechnical EOR before implementation.

If the "Limit" level is reached, immediately halt work activities except those needed to prevent instability from occurring, and notify the Owner, Civil/Geotechnical EOR, Army Corp and Structure Owner (if applicable). Review and modify work operations and procedures, and structure/utility support requirements as needed. Mitigation and repair actions plan shall be submitted for approval by the Owner, Civil/Geotechnical EOR and/or Owner of the impacted structure prior to implementation.

**Damage to Instrumentation**

The Contractor shall protect all monitoring instruments from damage due to construction operations, weather, traffic, and vandalism.

If any monitoring instrument is damaged or inoperative due to inadequate protection by the Contractor, the Contractor's instrumentation personnel shall repair or replace.

**ITEM 100.91** (Continued)

The damaged or inoperative instrument within 72 hrs. at no additional cost to the Owner. The Contractor shall notify the Civil/Geotechnical EOR at least 24 hrs. prior to repairing or replacing a damaged or inoperative monitoring instrument. The Civil/Geotechnical EOR will be the sole judge of whether repair or replacement is required. The Civil/Geotechnical EOR may impose a work stoppage in the vicinity of the damaged or inoperative instrument until it is again operational, at no additional cost to the Owner.

**Disposition of Instruments**

Remove salvageable instruments only when directed by the Owner's Representative. All salvaged instruments shall become the property of the Contractor.

Disturbed or damaged surfaces shall be restored to the condition existing before installation of the instrument to the satisfaction of the Resident Engineer.

**BASIS OF PAYMENT**

Item 100.91 will be paid for at the Contract LUMP SUM price, which price shall be considered full compensation for all labor, materials, equipment, submittals, reports, and all incidental costs required to complete the work.

**ITEM 102.3** **HERBICIDE TREATMENT OF INVASIVE PLANTS** **HOUR**

This work must be performed by persons who meet the qualifications below and are approved by the Landscape Design Section.

Work under this Item consists of herbicide treatment of invasive plants currently existing within the project limits and as directed. An Invasive Plant Management Strategy (IPMS) shall be submitted to the Engineer for review and approval and the IPMS shall be implemented on-site. The IPMS shall be written and submitted per Item102.33 Invasive Plant Management Strategy and shall be measured and paid for under that Item.

Work under this Item shall be coordinated with work and schedule for Selective Clearing, Clearing and Grubbing, Mowing, Tree Removal, Planting, and Wetland Mitigation Items.

Payment is per hour on-site and shall be compensation for a minimum crew of 2 licensed applicators, 2 back-pack sprayers and mist-blowers, a properly equipped spray truck with spray hoses, and a tank with sufficient capacity for a full day of work. If there is only one applicator, hourly payment shall be adjusted to 50 percent of the unit price.

Date and time stamped photos indicating start and stop time of work must be submitted if requested.

This Item is not intended for manual removal of plants.

Management of plants determined to have been introduced to the site via imported loam, compost, mulch, plants, equipment, or other construction activities will be the Contractor's responsibility and at the Contractor's expense.

Herbicide shall be applied during daytime hours only.

Measures to prevent the introduction of invasive plant species to the site and to address introduction due to construction-related activities shall be covered under the Standard Specifications, Division I - Subsections 7.01(D) Plant Pest Control and 7.13 Protection and Restoration of Property as amended in these Special Provisions.

Plant species targeted for management under this Item shall be as determined in the field per the site walk and as specified in the IPMS.

The definition of invasive plant species shall be as described by Massachusetts Invasive Plant Advisory Group (MIPAG): "non-native species that have spread into native or minimally managed plant systems in Massachusetts, causing economic or environmental harm by developing self-sustaining populations and becoming dominant and/or disruptive to those systems."

Control of invasive plants shall begin immediately with the initiation of construction activities and prior to any clearing or site disturbance. Treatment areas shall include stockpile locations and may, upon approval of the Engineer, extend outside the project limit. Treatment shall be done each consecutive year for the duration of the contract unless specified otherwise in the IMPS or unless directed otherwise by the MassDOT invasive species contact. Work shall be done during the growing season from May – October unless otherwise specified in the IPMS.

**ITEM 102.3** (Continued)

Areas identified for vegetation control measures shall be as shown on the plans and as determined in the field by the Engineer and a MassDOT Landscape Architect. Contact at MassDOT Landscape Design Section may be contacted at: tara.mitchell@dot.state.ma.us.

## QUALIFICATIONS

The applicators shall submit and meet the qualifications outlined below. A list of Contractors specializing in invasive management and approved by MassDOT Landscape Design Section is available on the following website: https://www.mass.gov/lists/landscape-design-and-roadside-maintenance under Invasive Plant Management.

Requirements

1. Company must provide proof of qualifications by providing the following:
    a. Narrative describing company, its expertise and experience with invasive plant control.
    b. Demonstrate experience with herbicide treatment as part of restorations and in sensitive areas.
    c. Describe company's technical qualifications and past performance.

2. Company must meet licensing requirements:
    a. All crew applicators must have a Massachusetts Commercial Applicator License (CORE).
    b. At least one or more applicator must have a ROW certification, if required for work.
    c. Company must provide name(s) of applicator(s) and Applicator License/Certification number for all Contractor crew leaders working on the project.
    d. Company must provide documentation of any warnings, penalties or fines received in the last three (3) years.

3. Company must provide proof of experience with invasive plant control and include following:
    a. At least five (5) references from prior invasive plant control work completed in last five (5) years. Provide contact information including address, phone number and email.
    b. Provide a summary of each of these projects including nature of the problem, specific invasive vegetation treated, dates and period of treatment, methodologies used, and summary of success or not in terms of meeting performance objectives. Include summary of equipment used.
    c. Photo documentation of these projects.
    d. GPS coordinates of project locations, if available.

4. Crew leader must have expertise with invasive plant control and provide the following:
    a. Have held Core license for at least five (5) years.
    b. Resume listing five (5) or more years of experience applying pesticides with the company or with another company specializing in vegetation management.

**ITEM 102.3** (Continued)

**SUBMITTALS**

No work shall begin without approval of the submittals.

Submittals include the following Items:

c. Invasive Plant Management Strategy (IPMS)

At least thirty (30) days prior to proposed treatment the IPMS shall be submitted for approval by the Engineer and MassDOT Landscape Architect. All chemicals, methods and work done under this Item shall be consistent with the IPMS. The IPMS shall be as described under Item 102.33.

d. Herbicide Use Report

Within two (2) weeks after each application, the Contractor shall provide to the Engineer and the MassDOT Landscape Architect a completed and signed MassDOT Herbicide Use Report.

e. Photo Documentation

Digital photos with date and time of herbicide application work, showing start time and completion time, are required and must be submitted for measurement of payment upon request.

**MATERIALS**

All proposed herbicides shall be as approved in the IPMS. Herbicides shall be labeled for the method of treatment and shall meet all federal, state and local regulation requirements. Application rates will depend on the herbicide proposed and shall be per the manufacturer's label for specific application.

**METHODS**

All methods used shall be as approved in the IPMS which shall be determined during the Initial Site Walk as described under Item 102.33, Invasive Plant Management Strategy.

The Contractor shall be responsible for marking delineated areas and plants to be preserved, removed, or otherwise treated. Fencing or other materials needed for marking and delineating protected areas shall be incidental to this Item.

The Contractor shall notify the Engineer a minimum of 3 days prior to date of expected herbicide application. Applicators shall notify the Engineer upon arriving on-site and upon leaving the site.

f. Herbicide Applications

All herbicide application shall conform to Massachusetts Pesticide Laws and Regulations per the Massachusetts Department of Agricultural Resources (MDAR) Pesticide Bureau.

**ITEM 102.3** (Continued)

Mixing, applying and/or disposing of herbicides shall always be in accordance with instructions on their labels and all applicable federal, state, and local regulations. Mixing shall not occur within sensitive areas, wetlands, or buffer zones.

Contractor shall not spray 2 hours prior to precipitation, during rain, or during windy conditions. The Contractor shall be responsible for monitoring weather conditions and adjusting the work schedule as appropriate for the herbicide and application method to be used.

Targeted vegetation shall be identified and marked prior to treatment. Plants treated by foliar spray, injection or glove application or other methods that leave standing vegetation, as opposed to cut-stump application, shall remain clearly marked for identification through the contract period.

Desirable vegetation shall be protected from both spray and other physical damage.

Contractor is responsible for any damage to vegetation not designated for removal or treatment. The damaged vegetation shall be restored. Cost of replacement plants and/or restoration shall be borne by the Contractor.

The Contractor shall ensure that the public does not enter a work area while herbicide application or spraying is underway.

g. Disposal Of Invasive Plant Material

All material to be cleared shall become the property of the Contractor. The satisfactory disposal of all cleared plant material (seeds, roots, woody vegetation, associated soils, etc.) shall be the Contractor's responsibility.

The Contractor shall take measures to prevent viable plant material from leading to further infestations (seeds, roots, woody material, etc.) while stockpiled, in transit, or at final disposal locations. All precautions shall be taken to avoid contamination of natural landscapes with invasive plants or invasive plant material.

Chipping, shredding, or on-site burning of plant material must be approved by the Engineer and included in the IMPS.

For plant material taken to an incinerating facility per the IPMS, a receipt from that facility shall be submitted to the Engineer as proof of disposal.

Where feasible, it is preferable to dispose of plants on-site or to bury them on-site with on-going monitoring for re-sprouting. Disposal locations and methods must be approved and included in the IPMS. Site work such as grading and seeding to stabilize and restore disposal area shall be incidental to this Item.

**ITEM 102.3** (Continued)

The Contractor shall be responsible for treating or otherwise managing areas of re-growth due to improper disposal. Treatment shall be at the Contractor's expense.

h. Follow-Up Treatment

Plants and areas shall be re-treated as necessary and as appropriate to the time of year. Treatment shall be for the duration of the contract and per the IPMS.

## MEASURE OF SUCCESS

The expectation is a minimum of 85-95 percent control achieved after the first treatment, depending on plants targeted and extent of population, and based on the expectations laid out in the IPMS. The expectation for the contract duration is 95-100% eradication by the end of the treatment period, unless otherwise specified in the IPMS.

## METHOD OF MEASUREMENT

Item 102.3 will be measured for payment by the HOUR of verified crew time spent on the project doing herbicide application as and where specified herein and in the IPMS. A crew shall be defined as a minimum of two licensed applicators each equipped with (at minimum) back-pack sprayer and mist blower. The crew shall also have a properly equipped spray truck with hoses and a tank with sufficient capacity for a full day of work.

## BASIS OF PAYMENT

Item 102.3 will be paid at the contract unit price per HOUR, which price shall include all labor, materials, equipment, tools, and all incidentals required to complete the work.

Payment will be based upon verified time spent on the project doing herbicide application as and where specified in the IPMS and upon receipt and approval of submittals. Payment will not include travel time to and from the Contractor's place of business and nor time for investigative field trips.

If there is only one applicator, hourly payment shall be adjusted to 50 percent of the unit price.

The Invasive Plant Management Strategy will be paid for under Item 102.33.

## ITEM 102.33 INVASIVE PLANT MANAGEMENT STRATEGY HOUR

This Item consists of providing an Invasive Plant Management Strategy (IPMS) intended to control and prevent the spread of invasive plants currently existing on the project site and/or as directed and shall be coordinated with Item 102.3 Herbicide Treatment of Invasive Plants. Unless otherwise approved, the IPMS shall be submitted in the form of the MassDOT Invasive Plant Management Strategy Report Form.

The IPMS shall be submitted for review and approval by the MassDOT Landscape Design Section or their representative, and the IPMS shall be implemented on-site. Following approval by MassDOT, the IPMS shall be submitted to the Easthampton Conservation Commission for review. Any comments or revisions required by the Conservation Commissions shall be reviewed by the MassDOT Landscape Architect prior to any work implemented on-site.

The Invasive Plant Management Strategy Report Form is available online at https://www.mass.gov/lists/landscape-design-and-roadside-maintenance under Invasive Plant Management.

Herbicide treatment for invasive plants shall be as described under Item 102.3 Herbicide Treatment of Invasive Plants and shall be compensated per that Item.

Work under this Item shall be coordinated with work and schedule for Selective Clearing, Clearing and Grubbing, Mowing, Tree Removal, Planting, and Wetland Mitigation as relevant to the project.

Individuals attending the site walk and determining the Invasive Plant Management Strategy must demonstrate expertise with vegetation management and invasive plant control and submit qualifications as described below.

### QUALIFICATIONS

Individuals shall be from the same company as that providing services for Item 102.3 Herbicide Treatment of Invasive Plants and shall submit the following, if not submitted under Item 102.3:

- Submit copy of current Core license.
- Submit a resume listing five (5) or more years of experience managing invasive plants with a company specializing in vegetation management.
- References shall be submitted if requested.

### SUBMITTALS

Task Summary & Reports

For measurement of payment, the Contractor shall submit the total sum and a breakdown of hours for the tasks performed. At a minimum, the tasks shall include the Initial Site Walk, submittal of an approved IPMS, and if requested to accommodate project or site changes, a Follow-up Site Inspection and accompanying IPMS Amendment.

**ITEM 102.33** (Continued)

Interim Site Monitoring Reports and/or a Final Report shall be submitted if requested by the MassDOT Landscape Design contact. The MassDOT Landscape Design contact must be notified to attend the site inspection walk when an Interim or Final Report has been requested.

Invasive Plant Management Strategy (IPMS)

At least thirty (30) days prior to construction activities and/or any proposed treatment, the Contractor shall submit the IPMS for approval by the Engineer and MassDOT Landscape Architect. All chemicals and methods proposed shall be consistent with applicable Massachusetts Wetlands Protection Act Order of Conditions.

The IPMS shall be completed in coordination with the Prime Contractor and the Engineer and shall include the following as appropriate and applicable to the project and to the IPMS Report Form questions and Guidance:

**I. Project Information**
- a. Company writing the IPMS and performing the herbicide application.
- b. Date of site walk
- c. Attendees at site walk
- d. Expected end date of contract and expected last treatment (month/season)

**II. Brief Description of Conditions**
- a. Provide a free-hand sketch on construction plans or aerial image showing species, location, and as relevant, show or note extent of population as relevant to Strategy (i.e., population extends off ROW preventing eradication, small population and eradication deemed feasible within contract schedule, etc.).

**III. Coordination with Roadway Contractor regarding other work**
- a. Tree Work: Note coordination to be implemented with tree removal, clearing, and clearing and grubbing as applicable to the project.
- b. Wetland Mitigation - Include management proposed for wetland mitigation areas in the IPMS, if and as required.
- c. Planting: If there will be planting in areas proposed for treatment, propose treatment and schedule to avoid herbicide damage to plants.
- d. Mowing: If coordination is required with state mowers, note need in IPMS.

**IV. Soil Management**
- a. Provide specifics on how soil with invasive plant roots (in particular) or seeds will be handled (i.e., separate stockpiles, plant material will be buried on-site, re-used on-site, disposed off-site and if so, where?).
- b. Show stockpile locations on plan and include treatment schedule.
- c. Note measures that will be implemented to avoid spread through equipment, including how and where equipment will be cleaned.

**V. Invasive Plant Treatment & Management**
- a. Proposed chemical and methods of treatment for each species or area.
- b. Time of treatment based on target plant species.
- c. Submit product label including application methods and rates (entire MSDS information need not be submitted if available online).
- d. Proposed performance metrics or measure of treatment success if different from that specified under Item 102.3.

**ITEM 102.33** (Continued)

e. Method for disposing invasive plant material. This includes material that may result in spread (i.e., seeds, roots) and material that has been treated and/or is not viable (foliage, dead wood, etc.). Methods may include grinding in place, stockpiling and treating, and incinerating offsite.
f. Expected follow-up treatment for duration of contract.

**VI. Monitoring Schedule** if requested by MassDOT.

Note: The IPMS is critical for identifying pre-construction conditions as well as strategies for minimizing import or spread of invasive plants. Failure to provide an approved IPMS may jeopardize this Item, in which case, the Contractor will be responsible for management of invasive plants found on-site at no cost to the contract.

Photo Documentation

Digital photos of site conditions, typical species, and extent of infestation must be provided with the IPMS and with any follow-up monitoring or reporting. Photos of follow-up monitoring and reporting must be date and time stamped for acceptance.

**METHODS**

Initial Site Walk

Prior to any construction activities and soil disturbance, the Contractor shall walk the site with the Engineer and the MassDOT Landscape Architect to determine the IPMS. During the site walk the Contractor shall identify limits of work and, as necessary, mark locations of areas designated for treatment and individual plants targeted for treatment or removal. The Contractor shall be responsible for marking delineated areas and plants to be preserved, removed, or otherwise treated. Fencing or other materials needed for marking and delineating protected areas shall be incidental to this Item.

IPMS Follow-up Amendment

The IPMS may be amended to address additional concerns or adjust to conditions if required by the MassDOT Landscape Architect. The amended IPMS shall be submitted to the Engineer and MassDOT Landscape Architect for approval at least fourteen (14) days prior to any proposed treatment.

Interim Site Monitoring Inspection Reports

If required by the MassDOT Landscape Architect and Engineer, Interim Site Monitoring and an accompanying report shall be conducted. Interim Reports must include time and date stamped photos showing treated locations and species.

**ITEM 102.33** (Continued)

Final Inspection

A final inspection and report documenting the status of the invasive control may be required for regulatory purposes or for instances where control will be continued by others. The report shall include photo documentation of pre-construction (existing) and post-treatment conditions, notations on a plan or aerial image of area treated, summary of treatment performed, and control achieved. Final reports submittal must include time and date stamped photos.

## METHOD OF MEASUREMENT

Item 102.33 will be measured for payment by the HOUR. The basis for measurement shall be per the completion of tasks as approved under the Task Summary submittal and acceptance of submittals and photos described above.

## BASIS OF PAYMENT

Item 102.33 will be paid at the contract unit price per HOUR, which price shall be full compensation for all labor, materials, equipment, tools, and all incidentals required to complete the work. Payment shall

## ITEM 102.511 TREE PROTECTION – ARMORING AND PRUNING EACH

The work under this Item shall conform to the relevant provisions of Subsection 771 of the Standard Specifications and the following:

Tree protection – armoring and pruning shall be used for instances where construction activity (the use of heavy equipment), comes within proximity to potentially damage tree trunk(s) or limbs.

The work shall include the furnishing and installing of temporary tree trunk protection, minor limb pruning, or removal of lower tree limbs to prevent injury to the tree from construction equipment and activities; as shown on the Drawings; and/or as required by the Engineer.

### REFERENCES

If requested, the Contractor shall provide to the Engineer one copy of the latest edition of the American National Standards Institute (ANSI) A300 Standard Practices for Tree, Shrub, and Other Woody Plant Maintenance: Part 1-Pruning and Part 5-Construction Management Standard. Provision of reference shall be incidental to this Item.

### MATERIALS

Trunk armoring shall be such that it prevents damage to the trunk from construction equipment. Material used for trunk armoring or mounting shall be such that installation and removal shall not damage the trunk.

Acceptable trunk armoring materials shall include two by four (2x4) wood cladding, mounted with wire or metal strapping, or when duration of construction activities is less than three months, slotted corrugated plastic pipe, mounted with duct tape. Eight (8) once untreated burlap shall be used to wrap the tree trunk prior to installation of cladding.

Alternative armoring methods or materials may be acceptable if approved by the Engineer.

The height of tree trunk cladding shall be measured from the base of the tree (including root flare) to the bottom of the first branch, or to a height of eight (8) feet, or as may be required by the Engineer.

### METHODS OF WORK

Prior to construction activities, the Engineer, Contractor, and the Arborist (if Item is included in the contract), shall review trees noted on the Drawings to be protected. Final decision and selection of trees to be armored and/or pruned shall be per the Engineer.

Care shall be taken to avoid damage to the bark during installation and removal of armoring. Trunk armoring shall be maintained such that it is effective for as long as required or replaced when materials are found to be damaged or ineffective, as determined by the Engineer. Replacement, if required, shall be incidental to the work. Armoring shall be removed immediately upon completion of work activities adjacent to the protected tree(s).

Pruning of limbs shall conform to the techniques and standards of the most recent ANSI A300 standards.

**ITEM102.511** (Continued)

## DAMAGES OR LOSS

If trees designated for protection under this Item are damaged, including root damage from unapproved trespassing onto the root zone, the Contractor shall, at his own expense, secure the services of an Arborist. The Arborist shall be approved by MassDOT.

If, based on the recommendation of the Arborist, the Engineer determines that damages can be remedied by corrective measures, such as repairing trunk or limb injury; soil compaction remediation; pruning; soil injection fertilization; and/or watering; the damage shall be repaired as soon as possible, within the appropriate season for such work and according to industry standards.

If, based on the recommendation of the Arborist, the Engineer determines that damages are irreparable, or that the damages are such that the tree is sufficiently compromised to pose a future safety hazard, the tree shall be removed. Tree removal shall include cleanup of all wood, grinding of the stump to a depth sufficient to plant a replacement tree or plant, removal of all chips from the stump site, and filling the resulting hole with topsoil. Such tree removal(s), grinding, debris removal, and topsoil filling, shall be at the Contractor's expense.

Tree removal from improper or inadequate tree protection shall result in the Engineer assessing the Contractor monetary damages consistent with industry standards for assessed value and/or replacement.

## METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 102.511 will be measured and paid at the contract unit price per EACH tree to be armored and pruned. This will include full compensation for all labor, equipment, materials, and incidentals for the satisfactory completion of the work and the subsequent removal and satisfactory disposal of the protective materials upon completion of the contract or as required by the Engineer.

Payment for work under this Item will be scheduled as follows:

- 40% of the value shall be paid upon installation of trunk armoring and completion of pruning work, if required.

- 60% of the value shall be paid at the end of construction operations that would potentially damage the tree and after protection materials have been removed and properly disposed of by the Contractor. In the event of repairable damages, payment shall be made after the completion of remediation measures.

No separate payment will be made for costs of remedial actions, including Arborist services, tree removal, but all costs in connection therewith shall be included in the Contract unit price bid.

Tree damages assessed, due to lack of or improper tree and plant protective measures being taken, shall be deducted from the contract price of the work.

**ITEM 102.521 TREE AND PLANT PROTECTION FENCE FOOT**

The work under this Item shall conform to the relevant provisions of Sections 644 and 771 of the Standard Specifications and the following:

Work under this Item shall consist of furnishing, installing, and maintaining tree and plant protection fence(s) in a vertical and taut position; removing and resetting fencing as may be required; and final removal of protection fence(s) at the completion of construction activities, or as otherwise required by the Engineer.

The purpose of the fencing is to signify a construction work-free zone and physical barrier, thereby preventing damage to tree roots, tree trunks, soil, and all other vegetation within this delineated Tree and Plant Protection Zone (TPPZ), as shown on the Drawings, as required by the Engineer, and as described herein.

Protection shall be for the duration of the construction activities unless otherwise directed.

## MATERIALS

Tree and plant protection fence(s) shall provide a minimum forty-eight (48) inch tall barrier, that remains vertical and taut. The Fence shall be orange plastic safety fence (recommended where high visibility is necessary), or wooden snow fencing, or other approved material. Posts and anchoring materials shall be incidental to the work.

Per requirements of the Engineer, additional posts, deeper post depths, and/or additional attachments shall be used if the fabric or fence sags, leans or otherwise is not providing visible or physical protection to the TPPZ.

## REFERENCES

If requested, the Contractor shall provide to the Engineer one copy of the American National Standards Institute (ANSI) A300 Standard Practices for Tree, Shrub, and Other Woody Plant Maintenance Part 1, Pruning and Part 5, Construction Management Standard. Provision of reference shall be incidental to this Item.

## ESTABLISHMENT OF TPPZ

Fencing shall be used to delineate and establish the TPPZ, adjacent to construction areas, staging areas, stockpile areas, as shown on the Drawings, and/or as required by the Engineer.

Fencing shall be located as close to the work zone limit and as far from tree trunk(s) and plants as possible to maximize the area to be protected. Fence shall run parallel and adjacent to construction activity to create a barrier between the work zone and the root zone or designated limit of plants and soils to be protected.

When construction activities surround (or have the potential to surround) trees or plants to be protected, a circular enclosure shall be used. In these instances, the TPPZ limit shall be the drip line of each tree or as close as possible to the drip line, and/or as shown on the Drawings. The drip line is defined as the outermost limit of tree canopy.

**ITEM 102.521** (Continued)

The Contractor shall not engage in any construction activity within the TPPZ without the approval of the Engineer. Activities may including operating, moving, or storing equipment, supplies, or materials; and locating temporary facilities, including trailers or portable toilets, Accessing or traversing the TPPZ shall not be permitted.

## METHOD OF WORK

TPPZ fencing shall be installed prior to any construction work or staging activities. Fence(s) shall be repositioned where and as necessary for optimum tree and plant protection. Repositioning shall be incidental to this Item. TPPZ fencing shall not be moved without prior approval by the Engineer.

The TPPZ shall be protected at all times from compaction of the soil; damage of any kind to trunks, bark, branches, leaves, and roots of all plants; and contamination of the soil with construction materials, debris, silt, fuels, oils, and any chemicals substance.

After construction activities are completed, or when required by the Engineer, fencing, stakes, and other anchoring materials, if any, shall be removed and disposed off-site by the Contractor.

## REQUIRED WORK WITHIN THE TPPZ

In the event that grading, trenching, utility work, or storage is unavoidable within the TPPZ, the Engineer shall be notified. Measures may be required for tree protection and preservations, including air spading; the use of six (6) inch depth of wood chips or approved matting for root protection; pruning of branches; and/or trunk protection. These protection measures shall be paid under applicable contract Items.

Landscaping work specified within the TPPZ shall be accomplished by hand tools. Where handwork is not feasible, with permission of the Engineer, work shall be conducted with the smallest mechanized equipment necessary.

## TREE AND PLANT DAMAGES OR LOSS

If the TPPZ is encroached by construction activity without approval, at the discretion of the Engineer, the Contractor may be required to provide a more durable barrier (e.g., Jersey Barriers, chain link fence (if not already in use) to secure the area. Costs of furnishing and installing additional or more durable barrier(s) shall be borne by the Contractor.

In such cases of encroachment, soils shall be considered compacted and tree root injury will be assumed. Action shall be taken as specified below.

In the event that trees designated for protection under this Item are injured, including root injury from unapproved trespassing onto the root zone, the Contractor shall, at his own expense, secure the services of an Arborist, described under Item 102.55. The Arborist shall be approved by MassDOT.

**ITEM 102.521** (Continued)

In the event of spills, compaction or injury, the Contractor shall take corrective action immediately using methods approved by the Engineer, in coordination with the Arborist.

If, based on the recommendations of the Arborist, the Engineer determines that injuries can be remedied by corrective measures, such as repairing trunk or limb injury, soil compaction remediation, pruning, and/or watering; the injury shall be repaired as soon as possible, within the appropriate season for such work, and according to industry standards.

If, based on the recommendations of the Arborist, the Engineer determines that injuries are irreparable, or that the injuries are such that the tree is sufficiently compromised to pose a future safety hazard, the tree shall be removed. Tree removal shall include cleanup of all wood, grinding of the stump to a depth sufficient to plant a replacement tree or plant, removal of all chips from the stump site, and filling the resulting hole with topsoil. Such tree removal(s), grinding, debris removal, and filling, shall be at the Contractor's expense.

Tree removal from improper or inadequate protection of the TPPZ shall result in the Engineer assessing the Contractor monetary damages consistent with industry standards for assessed value and/or replacement.

Shrubs removals from improper or inadequate protection of the TPPZ shall be replaced with plants of similar species and equal size or the largest size plants reasonably available. The Engineer shall approve the size, quality, and quantity of the replacement plant(s). Each replacement shall include a minimum of one year of watering and establishment care, specified under Section 771.

**METHOD OF MEASUREMENT AND BASIS OF PAYMENT**

Tree and Plant Protection Fence will be measured by the FOOT, complete in place, by the length along the top of the fence.

Tree and plant protection fence will be paid for under the contract unit price per FOOT, complete in place and shall include all materials, labor, and equipment required to furnish, install, anchor, maintain, and remove the fence upon completion, as described herein. Posts, temporary footings, anchoring and removal upon completion, shall be incidental to this Item.

No separate payment will be made for costs of remedial actions, including addition of more durable barriers, Arborist services, tree or plant removal, shrub replacement and establishment, but all costs in connection therewith shall be included in the Contract unit price bid.

Tree damages assessed, due to lack of or improper tree and plant protective measures being taken, shall be deducted from the contract price of the work.

Payment for work under this Item will be scheduled as follows:

- Forty (40) percent of the value payment will be made upon installation of fencing.

Sixty (60) percent of the value payment will be made when fencing materials have been maintained to function as specified, for the intended duration, and removed and disposed off-site at the completion of protection measure requirement.

**ITEM 127.11 REINFORCED CONCRETE EXCAVATION LUMP SUM**

The work under this Item shall conform to the applicable provisions of Subsections 120 and 140 of the Standard Specifications and the following:

The work under Item 127.11 shall include the removal and satisfactory disposal of the existing headwall and retaining wall along the northern side of Pleasant Street as indicated on the Plans.

MassDOT does not guarantee or represent that the existing bridge materials will coincide with any descriptions contained herein or represented on plans. The Contractor must satisfy themself by their own investigation and research regarding all conditions and materials affecting the work to be done.

Any reinforcing and all concrete encountered during excavation shall be removed from the site and disposed of off-site by the Contractor.

METHODS

The Contractor shall submit their proposed means and methods for reinforced concrete excavation for Item 127.11.

No debris, tools, or incidental equipment of any kind will be permitted to fall into any resource areas. Any material that accidentally falls into such areas shall be removed immediately. All materials removed under this Item shall be removed from the job site and disposed of in a proper manner.

**BASIS OF PAYMENT**

Item 127.11 will be paid at the Contract LUMP SUM price, which price shall be considered full compensation for all labor, tools, materials, equipment, sawcutting and incidental costs required to complete the work.

The Contractor will not be paid for the excavation of any concrete beyond the limits described under this Item and approved by the Engineer.

**ITEM 146.01 SANITARY STRUCTURE REMOVED EACH**

The work under this Item shall conform to the relevant provisions of Subsection 140 of the Standard Specifications and the following:

The work under this Item shall consist of removing and discarding existing sewer manholes.

**METHOD OF MEASUREMENT**

Item 146.01 will be measured for payment by the EACH sanitary sewer manhole removed.

**BASIS OF PAYMENT**

Item 146.01 will be paid for at the Contract unit price per EACH, which price shall be considered full compensation for all labor, materials, equipment, removal and disposal of the sanitary sewer manhole, and all incidental costs required to complete the work.

**ITEM 148.01 DREDGING AND STOCKPILING OF STREAMBED MATERIAL CUBIC YARD**

GENERAL

The work under this item shall conform to the relevant provisions of Section 148 of the Standard Specifications and the following:

The work under this item shall include dredging of approved native streambed material, which is to be stockpiled for re-use as shown on the Plans and as directed by the Engineer.

Streambed material may be stockpiled on site at a location determined by the Contractor in coordination with the Geomorphologist (for Pleasant Street) and the Resident Engineer. The stockpiled material will be reused on site for streambed restoration. The placement of this material will be paid for under Item 983.521.

**MEASUREMENT OF MEASUREMENT**

Dredging and Stockpiling of Material will be measured for payment by the CUBIC YARD of the actual volume of material dredged and stockpiled, complete in place. Pay limits extend from the bottom of proposed streambed excavation to the top of the existing streambed as shown on the Plans.

BASIS OF PAYMENT

Dredging and Stockpiling of Material - Structure No. L-08-053 will be paid for at the Contract unit price per CUBIC YARD, which price shall include all labor, materials, equipment, and incidental costs required to complete the work.

The re-placement of the stockpiled material shall be included in the bid price for Item 983.521 – Streambed Restoration. Contractor shall only stockpile sufficient streambed material required to re-lay under Item 983.521. Payment for disposal of excess material shall be made under item 148.

## ITEM 180.01 ENVIRONMENTAL HEALTH AND SAFETY PROGRAM LUMP SUM

The work shall consist of ensuring the health and safety of the Contractor's employees and subcontracting personnel, the Engineer, their representatives, the environment, and public welfare from any on-site chemical contamination present in air, soil, water and sediment.

The Contractor shall prepare and implement a site-specific Environmental Health and Safety Plan (EHASP) which has been approved and stamped by a Certified Industrial Hygienist (CIH) and includes the preparer's name and work experience. The EHASP shall include appropriate components required by OSHA Standard 29 CFR 1910.120(b) and the Massachusetts Contingency plan (MCP) 310 CMR 40.0018 and must comply with all applicable state and federal laws, regulations, standards and guidelines, and provide a degree of protection and training appropriate for implementation on the project. The EHASP shall be a dynamic document with provision for change to reflect new information, new practices or procedures, changing site environmental conditions or other situations which may affect site workers and the public. The EHASP shall be developed and implemented independently from the standard construction HASP required to work on all MassDOT construction projects.

Health and safety procedures provided by the Contractor shall comply with all the appropriate regulations that address employee working conditions, including but not limited to standards established by OSHA and National Institute for Occupational Safety and Health (NIOSH). Equipment used for the purpose of health and safety shall be approved by and meet pertinent standards and specifications of the appropriate regulatory agencies.

A copy of the most up-to-date version of the EHASP shall be maintained on-site at all times by the Contractor. The on-site copy shall contain the signature of the Engineer and each on-site employee of the MassDOT, Contractor, and SubContractors involved with on-site activities. The employee's signature on the EHASP shall be deemed prima facie evidence that the employee has read and understands the plan. Updated copies of signature sheets shall be submitted to the Engineer.

**ITEM 180.01 (Continued)**

The EHASP shall specify a Contractor Site Safety and Health Officer responsible for implementation of the EHASP and to oversee all construction activities, including handling, storage, sampling and transport, which require contact with or exposure to potentially hazardous materials.

The level of protection, required to ensure the health and safety of on-site personnel will be stipulated in the EHASP. The Site Safety and Health Officer shall implement the EHASP based on changing site and weather conditions, type of operation or activity, chemical compounds identified on-site, concentration of the chemicals, air monitoring data, physical state of the hazardous materials, potential duration of exposure to hazardous materials, dexterity required to perform work, decontamination procedures, necessary personnel and type of equipment to be utilized.

During implementation of the EHASP, a daily log shall be kept by the Site Safety and Health Officer and a copy shall be provided weekly to the Engineer. This log shall be used to record a description of the weather conditions, levels of personal protection being employed, screening data and any other information relevant to on-site environmental safety conditions. The Site Safety and Health Officer shall sign and date the daily log.

**METHOD OF MEASUREMENT AND BASIS OF PAYMENT**

Preparation and implementation of the Environmental Health and Safety Program, including the monitoring, protection and storage of all contaminated materials, as well as subsequent modifications to the EHASP, will be measured and paid for at the contract LUMP SUM Price.

Payment of 50% of the Environmental Health and Safety Program contract price will be made upon the initial acceptance of the EHASP by the Engineer. Payment of the remaining 50% of the Environmental Health and Safety Program contract price will be made upon completion of the work. The contract price shall include preparation and implementation of the EHASP as well as the cost for its enforcement by the Site Safety and Health Officer along with any necessary revisions and updates. The work of implementing the Environmental Health and Safety Program includes work involving, but not limited to, the monitoring, protection, and storage of all contaminated materials.

**ITEM 180.02 PERSONAL PROTECTION LEVEL C UPGRADE HOUR**

The work shall consist of providing appropriate personal protective equipment (PPE) for all personnel in an area either containing or suspected of containing a hazardous environment.

Contingencies for upgrading the level of protection for on-site workers will be identified in the EHASP and the Contractor shall have the capability to implement the personal protection upgrade in a timely manner. The protective equipment and its use shall be in compliance with the EHASP and all appropriate regulations and/or standards for employee working conditions.

**METHOD OF MEASUREMENT AND BASIS OF PAYMENT**

Personal Protection Level C Upgrade will be measured and paid only upon upgrade to Level C and will be at the contract unit price, per HOUR, per worker, required in Level C personal protection. No payment will be made to the Contractor to provide Level D PPE.

**ITEM 180.03 LICENSED SITE PROFESSIONAL SERVICES HOUR**

Within limited areas of the project site, media (i.e. soils, sediments, surface water and/or groundwater) requiring evaluation and/or management under the Massachusetts Contingency Plan (MCP) may be encountered. A Licensed Site Professional (LSP) shall be required to provide the services necessary to comply with the requirements of the MCP. These services may include a site walk, field screening, sampling, analysis and characterization of potentially contaminated media, preparation and implementation of Immediate Response Action (IRA) Plans, Utility-Related Abatement Measure (URAM) and Release Abatement Measure (RAM) Plans, Imminent Hazard Evaluations, status reports, transmittal forms, release notification forms, risk assessments, completion statements, and related documents required pursuant to the MCP. LSP services shall also be necessary to temporarily move material generated on the project to an off-site storage location.

The name and qualifications of the LSP and all environmental technicians to be assigned to the project shall be submitted to the Engineer for approval at least four weeks prior to initial site activities. The LSP shall have a current, valid license issued by the Massachusetts Board of Registration of Hazardous Waste Site Cleanup Professionals. The LSP shall have significant experience in the oversight of MCP activities at active construction sites. Qualification packages for the LSP and each technician shall include a resume, all recent work assignments with responsibilities identified (previous 5 years), and applicable training and certifications. A list of all Notices of Noncompliance, Notice of Audit Findings and Enforcement Orders issued by the Massachusetts Department of Environmental Protection (DEP) shall be submitted for all work assignments listed for the LSP and environmental technicians. Upon approval of the LSP Qualifications, the LSP will be designated as the LSP of Record unless MassDOT designates in writing otherwise. The LSP of Record will serve as the primary point of contact for all hazardous material matters on the project.

The LSP shall evaluate soil and/or sediment with discoloration, odor, elevated field screening results, presence of petroleum liquid or sheen on the groundwater surface, or any abnormal gas or materials in the ground which are known or suspected to be oil or hazardous materials. Excavated soil and sediment which is suspected of petroleum contamination shall be field screened using the jar headspace procedures according to established DEP Guidance. All field screening equipment must be pre-approved by the Engineer. The LSP shall ensure proper on-site calibration of all field screening instrumentation.

The Engineer shall be contacted immediately when observations or any field screening results verify contamination requiring further analysis, and/or enhanced management of suspect media. Any enhanced management of contaminated soil to ensure proper stockpiling and storage is incidental to the LSP Services Item. The LSP shall evaluate the need for confirmatory sampling prior to backfill in areas where contaminated material has been excavated and disposed off-site for compliance with applicable regulatory requirements. The Engineer shall approve the locations of the testing sites prior to the sampling.

**ITEM 180.03** (Continued)

Contaminated media shall be handled in accordance with all applicable state and federal statutes, regulations, and policies. The LSP shall adequately evaluate contaminated media for compliance with the requirements of the MCP and Department Policies.

The Contractor and the LSP shall be aware of the reporting requirements for releases of oil and/or other hazardous material (OHM) as set forth in federal and state laws and regulations and both shall be held responsible for performing the work in accordance with all applicable Federal and State laws and regulations. The LSP shall maintain written records in a clear and concise tabular format which tracks the excavation, stockpiling, analysis and reuse/disposal of all known/suspect contaminated media. These records shall be up-to-date and submitted to the Engineer on a bi-weekly basis. The LSP shall review and summarize the laboratory data from any analyses performed on contaminated media in a tabular format and compare the results to applicable reporting thresholds. A report shall be delivered to the Engineer outlining the material sampling methods, laboratory analysis results, evaluation of applicable regulatory exemptions, reporting obligations, and proposed course of action. The laboratory report together with Chain of Custody forms for all analytical results shall be submitted to the Engineer within 14 days after completion of such analyses.

The LSP and Contractor shall be held responsible for the submission of all MCP-related documents to the Engineer at least 14 days in advance of any timeframe specified in the MCP and for the timely submission of data and tracking information as noted within this Item. All documents prepared under this Item must be reviewed and signed by the approved LSP. The Contractor and LSP shall be responsible for all fines, damages, and enforcement requirements imposed by applicable regulatory agencies for failure to meet regulatory and contract timeframes. No compensation will be provided for such fines, damages, and enforcement actions.

The Contractor and the LSP shall be aware of the reporting requirements for releases of oil and/or other hazardous material (OHM) as set forth in federal and state laws and regulations and shall both be held responsible for performing the work in accordance with all applicable Federal and State laws and regulations.

If the Contractor causes a release of OHM, the Contractor shall be responsible for assessing and remediating the release in accordance with all pertinent State and Federal regulations, including securing the services of a LSP, at his own expense.

The LSP shall coordinate all activities involving both MassDOT and the DEP through the Engineer. Any notification of release shall be approved by the Engineer before submittal to the DEP, except if an imminent hazard condition exists as defined in 309 CMR 4.03(4)(b).

**ITEM 180.03** (Continued)

## LABORATORY TESTING IN SUPPORT OF LSP SERVICES

Laboratory testing provides for analytical testing in support of LSP services related to maintaining MCP compliance, such as delineating the extent and type of contamination present. Sampling and testing for disposal purposes are not included and are incidental to Items 181.11-181.14.

In order to maintain compliance with the MCP and Department Policies or other regulatory requirements, the LSP shall request approval from the Engineer to obtain samples from various locations and depths within the project area and to perform laboratory analyses on those samples. No sampling shall be conducted without prior approval from the Engineer. The samples shall be delivered to a DEP-certified laboratory using proper chain-of-custody documentation for analyses which, depending upon site conditions and suspected and/or identified contaminants of concern, may include, but are not limited to, metals, polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, polycyclic aromatic hydrocarbons (PAHs), extractable petroleum hydrocarbons (EPHs) and volatile petroleum hydrocarbons (VPHs). Subsequent testing, depending upon initial results, may be required for Toxicity Characteristic Leaching Procedure (TCLP) analyses (EPA Method 1311) for metals.

## METHOD OF MEASUREMENT AND BASIS OF PAYMENT

LSP Services for work under this Item will be measured per person, per HOUR of service provided by LSP, Environmental Technicians and other approved personnel. Travel time shall not be included in the billable hours.

The quantity and type of laboratory tests must be approved by the Engineer beforehand. The Contractor will be reimbursed upon satisfactory written evidence of payment. The Contractor may be required to obtain cost estimates from three DEP certified laboratories for the Engineer to choose the service provider.

LSP Services will be paid at the Contractor bid price for each hour, or fraction thereof, spent to perform the work as described above. The bid price shall be a blended rate that includes the cost of the LSP, environmental technicians and other personnel, the performance of all work tasks and field screening, including required equipment, materials and instrumentation, and production of all documentation described above. All requests for payment must be accompanied by the following information: the names of the personnel associated with the work charged under LSP Services, dates and hours worked, work conducted, including, where appropriate, locations as identified on the construction plans, and a copy of the field diary for the dates submitted.

**ITEM 180.03 (Continued)**

Laboratory testing will be reimbursed upon receipt of paid invoices for testing approved by the Engineer.

This Item is for LSP work for compliance with the MCP and Department Policies. LSP hours and any laboratory testing related to off-site disposal of excess soil and sediment is incidental to Items 181.11-181.14 (including, but not limited to, disposal characterization, disposal package preparation, landfill acceptance, shipment paperwork preparation, field screening, and tracking).

| | | |
|---|---|---|
| **ITEM 181.11** | **DISPOSAL OF UNREGULATED SOIL** | **TON** |
| **ITEM 181.12** | **DISPOSAL OF REGULATED SOIL - IN-STATE FACILITY** | **TON** |
| **ITEM 181.13** | **DISPOSAL OF REGULATED SOIL - OUT-OF-STATE FACILITY** | **TON** |
| **ITEM 181.14** | **DISPOSAL OF HAZARDOUS WASTE** | **TON** |

The work under these Items shall include the transportation and disposal of contaminated material excavated or excavated and stockpiled. It shall also include the cost of any additional laboratory analyses required by a particular disposal facility beyond the standard disposal test set.

Excavation of existing subsurface materials may include the excavation of contaminated soils. The Contractor shall be responsible for the proper coordination of characterization, transport and disposal, recycling or reuse of contaminated soils. Disposal, recycling or reuse will be referred to as "disposal" for the purposes of this specification. However, regardless of the use of the term herein, there will be no compensation under these Items for reuse within the project limits. The Contractor will be responsible for coordinating the activities necessary for characterization, transport and disposal of contaminated soils. Such coordination will include the Engineer and his/her designee overseeing management of contaminated materials. Contaminated soils must be disposed of in a manner appropriate for the soil classification as described below and in accordance with the applicable laws of local, state and federal authorities. The Contractor shall be responsible for identifying disposal facility (ies) licensed to accept the class of contaminated soils to be managed and assure that the facility can accept the anticipated volume of soil contemplated by the project. The Contractor shall be responsible for hiring a Licensed Site Professional (LSP) and all ancillary professional services including laboratories as needed for this work. The Contractor will be responsible for obtaining all permits, approvals, manifests, waste profiles, Bills of Lading, etc. subject to the approval of the Engineer prior to the removal of the contaminated soil from the site. The Contractor and LSP shall prepare and submit to the Engineer for approval all documents required under the Massachusetts Contingency Plan (MCP) and related laws and environmental regulations to conduct characterization, transport, and disposal of contaminated materials.

**ITEMS 181.11 thru 181.14** (Continued)

## CLASSES OF CONTAMINATED SOILS

The Contractor and its LSP shall determine if soil excavated or soil to be excavated is unregulated soil or contaminated soil as defined in this section. Such materials shall be given a designation for purposes of reuse or disposal based on the criteria of the MCP. Soils and sediments which are not suitable for reuse will be given a designation for purposes of off-site disposal based on the characterization data and disposal facility license requirements. The Classes of Contaminated Soils are defined as follows:

UNREGULATED SOIL consists of soil, fill and dredged material with measured levels of oil and hazardous material (OHM) contamination at concentrations below the applicable Reportable Concentrations (RCs) presented in the MCP. Unregulated soil consists of material which may be reused (or otherwise disposed) as fill within the Commonwealth of Massachusetts subject to the non-degradation criteria of the MCP (310 CMR 40.0032(3), in a restricted manner, such that they are sent to a location with equal or higher concentrations of similar contaminants. Disposal areas include licensed disposal facilities, approved industrial settings in areas which will be capped or covered with pavement or loamed and seeded, and for purposes of this project should be reused as fill within the project site construction corridor whenever possible. The material cannot be placed in residential and/or environmentally sensitive (e.g. wetlands) areas. Under no circumstances shall contaminated soils be placed in an uncontaminated or less contaminated area (including the area above the groundwater table if this area shows no sign of contamination).

The Contractor shall submit to MassDOT the proposed disposal location for unregulated soils for approval. If such a disposal location is not a licensed disposal facility, the Contractor shall submit to the Engineer analytical data to characterize the disposal area sufficiently to verify that the unregulated material generated within the MassDOT construction project limits is equal to or less than the contaminant levels at the disposal site and meets the non-degradation requirements of the MCP. In addition, the Contractor shall provide written confirmation from the owner of the proposed disposal location that they have been provided with the analytical data for both the materials to be disposed as well as the disposal site characterization and that s/he agrees to accept this material. A Material Shipping Record or Bill of Lading, as appropriate, shall be used to track the off-site disposal of unregulated soil and a copy, signed by the disposal facility or property owner, shall be provided to the Engineer in order to document legal disposal of the unregulated material.

The cost of on-site disposal of unregulated soil within the project area will be considered incidental to the Item of work to which it pertains.

**ITEMS 181.11 thru 181.14** (Continued)

REGULATED SOIL consists of materials containing measurable levels of OHM that are equal to or exceed the applicable Reportable Concentrations for the site as defined by the MCP, 310 CMR 40.0000. Regulated soil which meets the MCP reuse criteria of the applicable soil/groundwater category for this project area may be reused on site provided that it meets the appropriate geotechnical criteria established by the Engineer. Regulated Soil may be reused (as daily or intermediate cover or pre-cap contouring material) or disposed (as buried waste) at lined landfills within the Commonwealth of Massachusetts or at an unlined landfill that is approved by the Massachusetts Department of Environmental Protection (DEP) for accepting such material, in accordance with DEP Policy #COMM-97-001, or at a similar out-of-state facility. It should be noted that soils which exceed the levels and criteria for disposal at in-state landfills, as outlined in COMM-97-001, may be shipped to an in-state landfill, but require approval from the DEP Division of Solid Waste Management and receiving facility. An additional management alternative for this material is recycling into asphalt. Regulated Soils may also be recycled at a DEP approved recycling facility possessing a Class A recycling permit subject to acceptance by the facility and compliance with DEP Policy #BWSC-94-400. Regulated Soil removed from the site for disposal or treatment must be removed via an LSP approved Bill of Lading, Manifest or applicable material tracking form. This type of facility shall be approved/permitted by the State in which it operates to accept the class of contaminated soil in accordance with all applicable local, state and federal regulations.

HAZARDOUS WASTE consists of materials which must be disposed of at a facility permitted and operated in full compliance with Federal Regulation 40 CFR 260-265, Massachusetts Regulation 310 CMR 30.000, Toxic Substances Control Act (TSCA) regulations, or the equivalent regulations of other states, and all other applicable local, state, and federal regulations. All excavated materials classified as hazardous waste shall be disposed of at an out-of-state permitted facility. This facility shall be a RCRA hazardous waste or TSCA facility, or RCRA hazardous waste incinerator. This type of facility shall be approved/permitted by the State in which it operates to accept hazardous waste in accordance with all applicable local, state and federal regulations and shall be permitted to accept all contamination which may be present in the soil excavate. The Contractor shall ensure that, when needed, the facility can accept TSCA waste materials i.e. polychlorinated biphenyls (PCBs). Hazardous waste must be removed from the site for disposal or treatment via an LSP approved Manifest.

**MONITORING/SAMPLING/TESTING REQUIREMENTS**

The Contractor shall be responsible for monitoring, sampling and testing during and following excavation of contaminated soils to determine the specific class of contaminated material. Monitoring, sampling and testing frequency and techniques should be performed in accordance with Item 180.03 – LSP Services. Additional sampling and analysis may be necessary to meet the requirements of the disposal facility license. The cost of such additional sampling and analysis shall be included in the bid cost for the applicable disposal Items. The Contractor shall obtain sufficient information to demonstrate that the contaminated soil meets the disposal criteria set by the receiving facility that will accept the material.

**ITEMS 181.11 thru 181.14** (Continued)

No excavated material will be permanently placed on-site or removed for off-site disposal until the results of chemical analyses have been received and the materials have been properly classified. The Contractor shall submit to the Engineer results of field and laboratory chemical analyses tests within seven days after their completion, accompanied by the classification of the material determined by the Contractor, and the intended disposition of the material. The Contractor shall submit to the Engineer for review all plans and documents relevant to LSP services, including but not limited to, all documents that must be submitted to the DEP.

## WASTE TRACKING

Copies of the fully executed Weight Slips/Bills of Lading/ Manifests/Material Shipping Records or other material tracking form received by the Contractor from each disposal facility and for each load disposed of at that facility, shall be submitted to Engineer and the Contractor's LSP within three days of receipt by the Contractor. The Contractor is responsible for preparing and submitting such documents for review and signature by the LSP or other appropriate person with signatory authority, three days in advance of transporting soil off-site. The Contractor shall furnish a form attached to each manifest or other material tracking form for all material removed off-site, certifying that the material was delivered to the site approved for the class of material. If the proposed disposition of the material is for reuse within the project construction corridor, the Contractor shall cooperate with MassDOT to obtain a suitable representative sample(s) of the material to establish its structural characteristics in order to meet the applicable structural requirements as fill for the project.

All material transported off-site shall be loaded by the Contractor into properly licensed and permitted vehicles and transported directly to the selected disposal or recycling facility and be accompanied by the applicable shipping paper. At a minimum, truck bodies must be structurally sound with sealed tail gates, and trucks shall be lined and loads covered with a liner, which shall be placed to form a continuous waterproof tarpaulin to protect the load from wind and rain.

## DECONTAMINATION OF EQUIPMENT

Tools and equipment which are to be taken from and reused off site shall be decontaminated in accordance with applicable local, state and federal regulations. This requirement shall include, but not be limited to, all tools, heavy machinery and excavating and hauling equipment used during excavation, stockpiling and handling of contaminated material. Decontamination of equipment is considered incidental to the applicable excavation Item.

## REGULATORY REQUIREMENTS

The Contractor shall be responsible for adhering to regulations, specifications and recognized standard practices related to contaminated material handling during excavation and disposal activities. MassDOT shall not be responsible at any time for the Contractor's violation of pertinent State or Federal regulations or endangerment of laborers and others. The Contractor shall comply with all rules, regulations, laws, permits and ordinances of all authorities having jurisdiction including, but not limited to, Massachusetts DEP, the U.S. Environmental Protection Agency (EPA), Federal Department of Transportation (DOT), Massachusetts Water Resources Authority (MWRA), the Commonwealth of Massachusetts and other applicable local, state and federal agencies governing the disposal of contaminated soils.

**ITEMS 181.11 thru 181.14** (Continued)

All labor, materials, equipment and services necessary to make the work comply with such regulations shall be provided by the Contractor without additional cost to MassDOT. Whenever there is a conflict or overlap within the regulations, the most stringent provisions shall apply. The Contractor shall reimburse MassDOT for all costs it incurs, including damages and/or fines, as a result of the Contractor's failure to adhere to the regulations, specifications, recognized standard practices, etc., that relate to contaminated material handling, transportation and disposal.

**SUBMITTALS**

I. Summary of Sampling Results, Classification of Material and Proposed Disposal Option.

The following information, presented in tabular format, must be submitted to the Engineer for review and approval prior to any reuse on-site or disposal off-site. This requirement is on-going throughout the project duration. At least two weeks prior to the start of any excavation activity, the Contractor shall submit a tracking template to be used to present the information as stipulated below. Excavation will not begin until the format is acceptable to MassDOT.

Characterization Reports will be submitted for all soil, sediment, debris and groundwater characterized through the sampling and analysis program. Each report will include a site plan which identifies the sampling locations represented in the Report. The Construction Plan sheets may be used as a base plan to record this information.

The Sampling Results will be presented in tabular format. Each sample will be identified by appropriate identification matching the sample identification shown on the Chain of Custody Record. The sample must also be identified by location (e.g. grid number or stockpile number). For each sample, the following information must be listed: the classification (unregulated, regulated, etc.), proposed disposal option for the stockpile or unit of material represented, and, all analytical results.

Each Characterization Report will include the laboratory analytical report and Chain of Custody Record for the samples included in the Report.

II. Stockpiling, Transport, and Disposal.

At least two weeks prior to the start of any excavation activity, the Contractor shall submit, in writing, the following for review and shall not begin excavation activity until the entire submittal is acceptable to MassDOT.

Excavation and Stockpiling Protocol:

Provide a written description of the management protocols for performing excavation and stockpiling and/or direct loading for transport, referencing the locations and methods of excavating and stockpiling excavated material.

**ITEMS 181.11 thru 181.14** (Continued)

Disposal and Recycling Facilities:

1. Provide the name, address, applicable licenses and approved waste profile for disposal and/or recycling location(s) where contaminated soil will be disposed. Present information substantiating the suitability of proposed sites to receive classifications of materials intended to be disposed there, including the ability of the facility to accept anticipated volumes of material.

2. Provide a summary of the history of compliance actions for each disposal/recycling facility proposed to be used by the Contractor. The compliance history shall include a comprehensive list of any state or federal citations, notices of non-compliance, consent decrees or violations relative to the management of waste (including remediation waste) at the facility. Material should not be sent to facilities which are actively considered by the DEP, USEPA or other responsible agency to be in violation of federal, state or local hazardous waste or hazardous material regulations. MassDOT reserves the right to reject any facility on the basis of poor compliance history.

Transportation:

The name, address, applicable license and insurance certificates of the licensed hauler(s) and equipment and handling methods to be used in excavation, segregation, transport, disposal or recycling.

III. Material Tracking and Analytical Documentation for Reuse/Disposal.

The following documents are required for all excavation, reuse and disposal operations and shall be in the format described. At least two weeks prior to the start of any excavation or demolition activity, the Contractor shall submit the tracking templates required to present the information as stipulated below. Excavation or demolition will not begin until the format is acceptable to MassDOT.

All soils, sediments and demolition debris must be tracked from the point of excavation to stockpiling to onsite treatment/processing operations to off-site disposal or onsite reuse as applicable.

Demolition Debris:

Demolition debris must be tracked if the debris is stockpiled at a location other than the point of origin or if treatment or material processing is conducted. Identification of locations will be based on the station-offset of the location. The tracking table will identify date and point of generation, any field screening such as PID or dust monitoring, visual observations/comments, quantity, and stockpile ID/processing operation location. For each unit of material tracked, the table will also track reuse of the material on-site, providing reuse date, location of reuse as defined by start and end station, width of reuse location by offset, the fill elevation range, quantity, and finish grade for said location. For demolition debris which is not reused on site, the table will also track disposal of the material as defined by disposal date, quantity and disposal facility. The table must provide a reference to any analytical data generated for the material.

**ITEMS 181.11 thru 181.14** (Continued)

Soil/Sediment:

Soil excavation will be identified based on the station-offset of the excavation location limits. The tracking table will identify date and point of generation, any field screening such as PID or dust monitoring, visual observations, quantity, and stockpile number/location. For each unit of material tracked, the table will also track reuse of the material on-site and disposal of the material off-site using the same categories identified for demolition debris above.

## METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Disposal of contaminated soil shall be measured for payment by the TON of actual and verified weight of contaminated materials removed and disposed of. The quantities will be determined only by weight slips issued by and signed by the disposal facility. The most cost-effective, legal disposal method shall be used. The work of the LSP for disposal under these Items shall be incidental to the work with no additional compensation.

ITEM 181.11 Measurement for Disposal of Unregulated Soil shall be under the Contract Unit Price by the weight, in TONs, of contaminated materials removed from the site and transported to and disposed of at an approved location or licensed facility, and includes all costs for approvals, permits, fees and taxes, additional testing/characterization required by the facility beyond the standard disposal test set, decontamination procedures, transportation and disposal.

ITEM 181.12 Measurement for Disposal of Regulated Soil – In-State Facility shall be under the Contract Unit Price by the weight in TONs of contaminated materials removed from the site and transported to and disposed of at an approved in-state facility, and includes all costs for approvals, permits, fees and taxes, testing/characterization required by the facility beyond the standard disposal test set, decontamination procedures, transportation and disposal.

ITEM 181.13 Measurement for Disposal of Regulated Soil - Out-of-State Facility shall be under the Contract Unit Price by the weight in TONs of contaminated materials removed from the site and transported to and disposed of at an approved out-of-state facility, and includes all costs for approvals, permits, fees and taxes, testing/characterization required by the facility beyond the standard disposal test set, decontamination procedures, transportation and disposal.

ITEM 181.14 Measurement for Disposal of Hazardous Waste shall be under the Contract Unit Price by the weight in TONs of hazardous waste removed from the site and transported to and disposed of at the licensed hazardous waste facility, and includes all costs for approvals, permits, fees and taxes, testing/characterization required by the facility beyond the standard disposal test set, decontamination procedures, transportation and disposal.

**ITEM 210. SANITARY SEWER MANHOLE EACH**

The work shall conform to the relevant provisions of Subsection 201 of the Standard Specifications and the following:

REFERENCES:

ASTM International (ASTM)

| | | |
|---|---|---|
| ASTM | A48 | Gray Iron Castings |
| ASTM | C32 | Sewer and Manhole Brick |
| ASTM | C144 | Aggregate for Masonry Mortar |
| ASTM | C207 | Hydrated Lime for Masonry Purposes |
| ASTM | C478 | Precast Reinforced Concrete Manhole Sections |
| ASTM | C923 | Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures and Pipes |
| ASTM | C1244 | Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test. |

American Association of State Highway and Transportation Officials (AASHTO)

| | |
|---|---|
| AASHTO M198 | Joints for Circular Concrete Sewer and Culvert Pipe Using Flexible Watertight Gaskets |

Occupational Safety and Health Administration

| | |
|---|---|
| OSHA 29 CFR 1910.27 | Fall Prevention Protection |

PRODUCTS

PRECAST CONCRETE SECTIONS:

A. All precast concrete sections shall conform to ASTM C478 with the following exceptions and additional requirements

1. The wall thickness of precast sections shall be as designated on the drawings, meeting the following minimum requirements:

| Section Diameter (Inches) | Minimum Wall Thickness (Inches) |
|---|---|
| 48 | 5 |
| 60 | 6 |
| 72 | 7 |
| 84 | 8 |

2. Type II cement shall be used except as otherwise approved.
3. Sections shall be steam cured and shall not be shipped until at least five days after having been cast.
4. Minimum compressive strength of concrete shall be 4000 psi at 28 days. No more than two lift holes may be cast or drilled in each section.

**ITEM 210.** (Continued)

5. The date of manufacture and the name or trademark of the manufacturer shall be clearly marked on the inside of each precast section.
6. Acceptance of the sections will be on the basis of material tests and inspection of the completed product.
7. Circumferential steel reinforcement in walls and bases shall be a minimum of 0.12 sq. in./lin. ft. for 4-foot diameter sections and 0.15 sq. in./lin. ft. for 5- and 6-foot diameter sections. Reinforcing shall extend into tongue and groove.

B. Conical reducing sections shall have a wall thickness not less than 5-inches at the bottom and wall thickness of 8-inches at the top. Conical sections shall taper from a minimum of 48-inches diameter to 24 or 30-inches diameter at the top, as shown on the drawings.

C. Except where insufficient depth of cover dictates the use of a shorter base, bases shall be a minimum of 4 feet in height.

D. Slab top sections and flat riser sections (Grade Rings) shall conform to the Contract drawings, with particular attention focused upon the reinforcing steel and be designed to meet or exceed an HS-20 Loading requirement.

E. The tops of the bases shall be suitably shaped by means of accurate ring forms to receive the riser sections.

F. Precast sections shall be manufactured to contain wall openings of the minimum size to receive the ends of the pipes, such openings being accurately set to conform with line and grade of the sewer or drain. Subsequent cutting or tampering in the field, for the purpose of creating new openings or altering existing openings, will not be permitted except as required by the Engineer.

G. The exterior surfaces of all precast manhole bases, walls, and cones shall be given a minimum of one shop coat of bituminous dampproofing.

H. The Engineer reserves the right to reject any unsatisfactory precast section and the rejected unit shall be tagged and removed from the job site immediately.

I. The Engineer may also require the testing of concrete sections as outlined under Physical Requirements in ASTM C478 with the Contractor bearing all testing costs.

**ITEM 210.** (Continued)

BRICK MATERIALS:

A. Brick shall be in conformance to MassDOT M4.05.2.
B. Rejected brick shall be immediately removed from the work and brick satisfactory to the Engineer substituted.
C. Mortar shall be in conformance to MassDOT M4.04.3.
D. Cement shall be Type II Portland cement as specified for concrete masonry.
E. Hydrated lime shall be Type S conforming to ASTM C207.
F. The sand shall comply with ASTM C144 specifications for "Fine Aggregate," except that all of the sand shall pass a No. 8 sieve.

STEPS:

A. Manhole steps shall conform to ASTM C478 requirements and shall be fabricated of either extruded aluminum or steel reinforced plastic. Steps shall be uniformly spaced at a maximum of 12-inches unless otherwise shown on the drawings.

SEWER MANHOLE ACCESSORIES:

A. Gasket materials shall be top grade (100% solids, vulcanized) butyl rubber and shall meet or exceed AASHTO M-198.
B. Couplings at the manhole-pipe interface shall be made with a rubber seal system (with or without stainless steel straps) meeting the requirements of ASTM C923 and recommended for this type of connection.

C. Stubs installed as specified and indicated on the drawings shall be short pieces of the same class pipe as that entering the manhole and shall have either stoppers or end caps as shown on the drawings. Stoppers or end caps shall be especially designed for that application.

## METHOD OF MEASUREMENT

Item 210. will be measured for payment by the EACH Sanitary Sewer Manhole installed, complete in place.

## BASIS OF PAYMENT

Item 210. will be paid at the Contract unit price per EACH, which price shall be considered full compensation for all labor, furnishing and installing base, walls, cones, invert channels, steps, gaskets, seals, sealants, connections, couplings, and bricks and grout to grade, connections of pipeline to proposed sewer or manholes, including any additional couplings or piping required, and all incidental costs required to complete the work.

## ITEM 222.3 FRAME AND GRATE (OR COVER) MUNICIPAL STANDARD EACH

The work shall conform to the relevant provisions of Subsections 201 and 220 of the Standard Specifications and the following:

Work under this Item consists of furnishing Frame and Grates (or Covers) Municipal Standard.

Frames and grates shall have a two-directional or "grid-pattern" type and shall be manufactured by a MassDOT approved fabricator listed on the Qualified Construction Materials List (QCML). Casting date shall be listed on the QCML.

Frames and covers shall have a diamond pattern; pick holes and the appropriate word "DRAIN" or "SEWER" cast in 3-inch letters to match the corresponding utility. Frames and covers shall be manufactured by a MassDOT approved fabricator listed on the Qualified Construction Materials List (QCML). Casting date shall be listed on the QCML.

### METHOD OF MEASUREMENT

Item 222.3 will be measured for payment by EACH installed, complete in place.

### BASIS OF PAYMENT

Item 222.3 will be paid at the contract unit price per EACH, which price shall be considered full compensation for all labor, materials, equipment and incidental costs required to complete the work.

**ITEM 223.1 FRAME AND GRATE (OR COVER) REMOVED AND STACKED EACH**

The work shall conform to the relevant provisions of Subsection 220 of the Standard Specifications and the following:

The work shall include removing and stacking of existing frames and grates (or covers). The frames and grates (or covers) shall be stacked on boards at the Leominster Department of Public Works, 109 Graham Street, Leominster, MA; exact location on site shall be as directed by the Engineer, in coordination with the DPW.

If any of the existing frames and/or grates delivered to the DPW are not wanted by the City, that unit shall become the property of the Contractor and shall be removed and discarded, with no additional payment.

If the existing frames and/or grates are damaged by the Contractor's operations during the removal and stacking process, a new frame and grate of the same size and material shall be provided to the City at the Contractor's expense.

Frames and grates (or covers) determined to be unsuitable for reuse shall become the property of the Contractor and shall be carefully removed, transported, and discarded in accordance with all applicable regulations.

**METHOD OF MEASUREMENT**

Item 223.1 will be measured for payment per EACH unit removed and stacked. Each frame and grate or frame and cover removed shall be considered as one unit.

**BASIS OF PAYMENT**

Item 223.1 will be will be paid at the Contract unit price per EACH, which price shall be considered full compensation for all labor, materials, equipment, and incidental costs required to complete the work.

**ITEM 250.10 10 INCH POLYVINYLCHLORIDE SANITARY SEWER PIPE FOOT**

The work shall conform to the relevant provisions of Subsection 230 of the Standard Specifications and the following:

The work under this Item consists of furnishing and installing polyvinyl chloride sanitary sewer pipe and associated fittings for temporary and permanent relocations.

Polyvinyl chloride pipe and fittings shall be Type PSM polyvinyl chloride (PVC) SDR 35 with full diameter dimensions conforming to the specifications for Type PSM Polyvinyl Chloride (PVC) Sewer Pipe and Fittings, ASTM Designation D-3034.

REFERENCES

American Society for Testing and Materials (ASTM)

| | | |
|---|---|---|
| ASTM | D2321 | Recommended Practice for Underground Installation of Flexible Thermoplastic Sewer Pipe |
| ASTM | D3034 | Specification for Type PSM Polyvinyl Chloride (PVC) Sewer Pipe and Fittings |
| ASTM | D3212 | Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals |
| ASTM | F679 | Specification for Polyvinyl Chloride (PVC) Large Diameter Plastic Gravity Sewer Pipe and Fittings |

PRODUCTS

MATERIALS:

1. PVC nonpressure sewer pipe 4-inches through 15-inches diameter shall conform to ASTM D3034, all with SDR of 35 unless noted, and shall meet the specific requirements and exceptions to the aforementioned specifications that follow.

2. PVC nonpressure sewer pipe shall be furnished in standard lengths.

3. One pipe bell consisting of an integral wall section with a solid cross section rubber ring, factory assembled, shall be furnished with each standard, random and short length of pipe. Rubber rings shall be provided to the requirements of ASTM D3212.

4. The rubber ring shall be retained within the bell of the pipe by a precision formed groove or recess designed to resist fishmouthing or creeping during assembly of joints.

**ITEM 250.10** (Continued)

5. Spigot pipe ends shall be supplied with bevels from the manufacturer to ensure proper insertion. Each spigot end shall have an "assembly stripe" imprinted thereon to which the bell end of the mated pipe will extend upon proper jointing of the two pipes.

6. PVC fittings shall be provided with bell and/or spigot configurations with rubber gasketed joints compatible with that of the pipe. Bend fittings with spigot ends shorter than the pipe recess bells will not be allowed. The shorter spigot end would not allow proper seating of the spigot in the mating bell and would permit undesired contact between the mating bell and the outside of the fitting bell.

7. All pipe delivered to the job site shall be accompanied by independent testing laboratory reports certifying that the pipe and fittings conform to the above-mentioned specifications. In addition, the pipe shall be subject to thorough inspection and tests, the right being reserved for the Engineer to apply such of the tests specified as it may from time to time deem necessary.

8. All cutting of pipe shall be done with a machine suitable for cutting PVC pipe. Cut ends shall be beveled when recommended by the pipe manufacturer.

EXECUTION

INSTALLATION:

1. Except as modified herein, installation of the PVC pipe shall be in accordance with ASTM D232l.

2. Each pipe length shall be inspected before being laid to verify that it is not cracked. Pipe shall be laid to conform to the lines and grades indicated on the drawings or given by the Engineer. Each pipe shall be so laid as to form a close joint with the next adjoining pipe and bring the inverts continuously to the required grade.

3. The pipe shall be supported by compacted crushed stone. Crushed stone shall be as specified under Subsection M.2.01.0 of the Standard Specifications.

4. The pipe shall not be driven down to grade by striking it with a shovel handle, timber, rammer, or other unyielding object. When each pipe has been properly bedded, enough of the backfill material shall be placed and compacted between the pipe and the sides of the trench to hold the pipe in correct alignment.

5. Before a joint is made, the pipe shall be checked to assure that a close joint with the next adjoining pipe has been maintained and that inverts are matched and conform to the required line and grade.

**ITEM 250.10** (Continued)

6. For pipe placed on crushed stone, immediately after the joint is made, the jointing area shall be filled with suitable materials so placed and compacted that the ends of either pipe will not settle under backfill load.

7. No pipe or fitting shall be permanently supported on saddles, blocking, or stones.

8. Branches and fittings shall be laid by the Contractor as indicated on the drawings, and/or as required by the Engineer. Open ends of pipe and branches shall be closed with PVC caps secured in place with premolded gasket joints or as required by the Engineer.

9. All pipe joints shall be made as nearly watertight as practicable. There shall be no visible leakage at the joints and there shall be no sand, silt, clay, or soil of any description entering the pipeline at the joints. Where there is evidence of water or soil entering the pipeline, connecting pipes, or structures, the defects shall be repaired to the satisfaction of the Engineer.
10. The Contractor shall build a tight bulkhead in the pipeline where new work enters an existing sewer. This bulkhead shall remain in place until the Engineer authorizes its removal.

11. Care shall be taken to prevent earth, water, and other materials from entering the pipe, and when pipe laying operations are suspended, the Contractor shall maintain a suitable stopper in the end of the pipe and also at openings for manholes.

12. As soon as possible after the pipe and manholes are completed on any street, the Contractor shall flush out the new pipeline using a rubber ball ahead of the water, and none of the flushing water or debris shall be permitted to enter any existing sewer.

QUALITY CONTROL

LEAKAGE TESTING:

1. On completion of a section of sewer, including building connections installed to the property line, the Contractor shall install suitable bulkheads as required, dewater and test the sewer for leakage.

2. Unless otherwise approved, the section shall be tested using low pressure air test procedures. If circumstances permit, the Engineer may allow testing by infiltration or exfiltration in lieu of air testing.

**ITEM 250.10** (Continued)

3. The air test procedures shall conform to the Uni-Bell Recommended Practice for Low Pressure Air Testing of Installed Sewer Pipe, UNI-B-6. The starting air pressure for the test shall be 4 psig (greater than the average groundwater back pressure of any groundwater above the pipe, but not greater than 9.0 psig). The minimum duration permitted for the prescribed low pressure air exfiltration pressure drop between two consecutive manholes shall not be less than provided in Table I or Table II of UNI-B-6. **Note that UNI-B-6 suggests that use of the 0.5 psig pressure drop is more efficient since the time requirements are half of the 1.0 psig-pressure drop.** The two tables are reproduced on the following pages.

4. Using the air pressure test, if there has been no leakage (zero psig drop) after one hour of testing, the section undergoing test shall have passed.

5. If either infiltration or exfiltration testing is permitted by the Engineer, the test shall be conducted for at least 24 hours. The amount of infiltration or exfiltration shall not exceed 100 gallons per inch-diameter per mile of sewer per 24 hours.

6. The infiltration test measures leakage into a section of sewer and may be used only where the groundwater level is one foot or more above the crown of the section of sewer pipe at its upper end and at least one foot above the top of building connections and chimneys. For making the infiltration tests, underdrains, if used, shall be plugged and other groundwater drainage shall be stopped to permit the groundwater to return to its normal level insofar as practicable. Allowances shall be made for water that may enter the sewer through pipe connections and inlets during the infiltration test.

7. Where the groundwater level is less than 1 foot above the top of the pipe at its upper end, the exfiltration test may be used. The sewers shall be subjected to an internal pressure by plugging the pipe at the lower end and then filling the pipelines and manholes with clean water to a height of 2 feet above the highest point in the system to be tested, including main pipeline, service connections and chimneys. When slopes between manholes are steep, the Contractor shall insure that this test can be accomplished without danger of forcing stoppers from wye or tee branches.

8. The rate of exfiltration from the sewers shall be determined by measuring the amount of water required to maintain the water level at the elevation established at the beginning of the test.

9. The Contractor shall construct such weirs or other means of measurements as may be required, shall furnish water and shall do all necessary pumping to enable the test to be properly made.

**ITEM 250.10** (Continued)

10. The Contractor shall be responsible for the satisfactory watertightness of the entire section of sewer. Should the sections under test fail to meet the requirements, the Contractor shall do all work of locating and repairing leaks and retesting as the Engineer may require without additional compensation. A plan of the method of repairing any leaks that are found shall be submitted to the Engineer for review.

11. On completion of a section of sewer, including building connections installed to the property line, the Contractor shall TV inspect the section, Sewer Cleaning, Inspection, Testing and Sealing at no additional cost to the Owner.

12. The Contractor shall be responsible for the satisfactory watertightness of the entire section of the sewer. Should the Engineer determine that the sections inspected are unsatisfactory, the Contractor shall do all work required to locate and repair the defects and re-inspect as the Engineer may require without additional compensation.

13. A plan of the method for repairing any defects that are found shall be submitted to the Engineer for review.

PIPE DEFLECTION MEASUREMENT:

1. In accordance with ASTM D3034, no less than 30 days after completion of the PVC sewer pipe installation, the Contractor shall test the pipeline for deflection using a "go/no-go" deflection mandrel having a minimum of nine evenly spaced arms or prongs. The "go/no-go" gauge shall be hand pulled through all sections of the pipeline by the Contractor. The Contractor shall submit drawings of the "go/no-go" gauge to the Engineer for approval prior to testing. Complete dimensions of the gauge for each diameter of pipe to be tested shall be in accordance with ASTM D3034.

2. Any section of pipe found to exceed 7.5 percent deflection shall be deemed a failed pipe and shall be excavated and replaced by the Contractor at its own expense.

**METHOD OF MEASUREMENT**

Item 250.10 will be measured for payment by the FOOT of temporary and proposed sanitary sewer pipe installed, complete in place.

**BASIS OF PAYMENT**

Item 250.10 will be paid for at the Contract unit price per FOOT, which price shall be considered full compensation for all labor, materials, equipment, saw cutting, excavation regardless of depth (excluding rock), dewatering, caps, bends, fittings, cast iron to PVC adaptor, tees, appurtenances, connection to existing services, stone bedding, testing, replacing existing pipe damaged during construction, removing and disposing of existing pipe, or plugging abandoned pipe ends, and all incidental costs required to complete the work.

For the inside drop connection all anchors, straps and expansion bolts shall be stainless steel.

**ITEM 271.36 36 INCH PIPE REMOVED AND STACKED FOOT**

The work shall conform to the relevant provisions of Subsection 270 of the Standard Specifications and the following:

The work under Item 271.36 shall include the removal and stacking of the existing 36-inch corrugate plastic pipe as directed by the Engineer. The pipe shall be stacked on boards at the Leominster Department of Public Works, 109 Graham Street, Leominster, MA; exact location on site shall be as directed by the Engineer, in coordination with the DPW.

The Contractor shall backfill the void left by the removal of the drainage pipe with suitable material, compacted in lifts no greater than 12 inches up to the bottom of proposed subgrade. When suitable backfilling materials cannot be obtained from excavation, the material shall consist of satisfactory borrow.

## METHOD OF MEASUREMENT

Item 271.36 will be measured for payment per FOOT of pipe removed and stacked.

## BASIS OF PAYMENT

Item 271.36 will be paid at the Contract unit price per FOOT, which price shall be considered full compensation for full compensation for all labor, materials, equipment, and incidental costs required to complete the work, including all excavation, shoring, bracing, and protection of existing utilities.

No separate payment shall be made for the off-site disposal of existing pipes, unless classified as asbestos or other hazardous material, but all costs in connection therewith shall be included in the unit price bid.

**ITEM 375.20 20 INCH INSERTION VALVE AND BOX EACH**

The work shall conform to the relevant provisions of Subsection 360 of the Standard Specifications and the following:

The work to be done under this Item shall consist of the furnishing and installing of 20 inch insertion valve and gate box. Insertion valve shall be a stainless steel body resilient wedge gate valve, designed for permanent use in potable water systems. The design will allow the valve to be installed into an existing pressurized pipeline while maintaining constant pressure and service without system shutdown. All insertion valves shall be rated for 250 psi maximum working pressure and shall by hydrostatically pressure tested to 1.25 times of the system operating pressure or 1.5 times 250 psi maximum working pressure. All other insertion valve requirements shall adhere to the City of Leominster requirements.

**METHOD OF MEASUREMENT**

Item 375.20 will be measured for payment by the EACH, in accordance with the provisions of Subsection 301.80 of the Standard Specifications.

**BASIS OF PAYMENT**

Item 375.20 will be paid in accordance with the provisions of Subsection 301.81 of the Standard Specifications.

**ITEM 657. TEMPORARY FENCE FOOT**

The work shall conform to the relevant provisions of Subsection 644 of the Standard Specifications and the following:

The work includes installation and removal of a chain link fence to protect the safety of the general public or as required by the Engineer:

The temporary 6-foot-high chain link fence shall be placed around the work area to protect areas with excavations as required by the Engineer and shall meet the requirements of the Standard Specifications and the Construction Standards, except the material need not be in new condition but shall not be deteriorated, nor in any way jeopardize the protection purposes intended. All fencing shall meet the approval of the Engineer. Gates shall be used at all locations that are to be opened on a regular basis.

Temporary Fence shall be reset as often as required by Contractor activities to meet the project schedule and to stage the construction, as required by the Engineer. The Contractor shall submit a plan to the Engineer indicating the locations and the lengths of each of these Items that he/she anticipates he/she will provide for the project. The methods of installation(s) and fence detail(s) shall also be submitted for approval by the Engineer.

The Contractor shall inspect the condition of Temporary Fence on a daily basis. Temporary Fence that is damaged shall be promptly replaced.

Fence fabric shall be placed on the face of the post away from the work area. The top edge of the fabric shall be finished with a knuckled selvage. Upon completion of the work, or as required by the Engineer, the fencing and supports shall be removed and disposed of off-site by the Contractor at no additional cost.

**METHOD OF MEASUREMENT**

Item 657. will be measured for payment by the FOOT of temporary fence installed complete in place.

**BASIS OF PAYMENT**

Item 657. will be paid at the Contract unit price per FOOT; which price shall be considered full compensation for all labor, materials, equipment, and incidental costs required to complete the work including posts, fence fabric, gates, bracing, and footings. No additional payment will be made for the final removal and proper disposal of the Temporary Fence or for resetting the fence to new locations.

The Contractor shall replace and/or restore sections of fence damaged due to accidents, vandalism or any other manner for the duration of the project. Damage due to construction activities or the Contractors negligence shall be replaced at no additional cost to the Department.

**ITEM 697.1** **SILT SACK** **EACH**

The work shall conform to the relevant provisions of Subsections 227 and 670 of the Standard Specifications and the following:

The work under this Item includes the furnishing, installation, maintenance, and removal of a reusable fabric sack to be installed in drainage structures for the protection of wetlands and other resource areas and the prevention of silt and sediment from the construction site from entering the storm water collection system. Devices shall be ACF Environmental (800)-448-3636; Reed & Graham, Inc. Geosynthetics (888)-381-0800; The BMP Store (800)-644-9223; or approved equal.

## CONSTRUCTION

A Silt sack shall be installed in existing and proposed catch basins within the project limits to prevent siltation from the entering storm water drainage system and as required by the Resident Engineer.

The silt sack shall be as manufactured to fit the opening of the drainage structure under regular flow conditions and shall be mounted under the grate. The insert shall be secured from the surface such that the grate can be removed without the insert discharging into the structure. The filter material shall be installed and maintained in accordance with the manufacturer's written literature and as required by the Engineer.

Silt sacks shall remain in place until the placement of the pavement overlay or top course and the graded areas have become permanently stabilized by vegetative growth. All materials used for the filter fabric will become the property of the Contractor and shall be removed from the site.

The Contractor shall inspect the condition of silt sacks after each rainstorm and during major rain events. Silt sacks shall be cleaned periodically to remove and disposed of accumulated debris as required. Silt sacks, which become damaged during construction operations, shall be repaired or replaced immediately at no additional cost to the Department.

When emptying the silt sack, the Contractor shall take all due care to prevent sediment from entering the structure. Any silt or other debris found in the drainage system at the end of construction shall be removed at the Contractors expense. The silt and sediment from the silt sack shall be legally disposed of offsite. Under no condition shall silt and sediment from the insert be deposited on site and used in construction.

All curb openings shall be blocked to prevent stormwater from bypassing the device.

All debris accumulated in silt sacks shall be handled and disposed of as specified in Subsection 227 of the Standard Specifications.

## COMPENSATION

Silt sacks will be measured and paid at the Contract unit price per EACH, complete in place; which price shall include all labor, materials, equipment and incidental costs required to complete the work. No separate payment will be made for removal and disposal of the sediment from the insert, but all costs in connection therewith shall be included in the Contract unit price.

**ITEM 697.2 FLOATING SILT FENCE FOOT**

The work shall conform to the relevant provisions of Subsection 670 of the Standard Specifications and the following:

The work under this Item shall include installation, maintenance and removal of a temporary silt fence to prevent any sediment disturbed during construction from reaching adjacent waterways and further dispersion into the Reservoir Brook. This fence shall be installed downstream of the existing culvert Structure No. L-08-060 (2RP) and as shown on the Plans, and as required by the manufacturer and the Engineer.

MATERIALS

Floating silt fence shall be made of a woven polypropylene with a minimum 200 lb. tensile strength. The Contractor shall submit to the Engineer, for review and approval, product specifications and technical data provided by the manufacturer, prior to installation. The fence shall be continuously weighted at the bottom to maintain a vertical submerged position. Anchors shall be placed at both ends of the curtain and at intermediate locations, as necessary, to hold the fence securely in place. The fence shall be installed to withstand the forces of the flow of the waterway.

CONSTRUCTION METHOD

General

When assembling and installing a floating silt fence, the Contractor shall follow all the directions of the floating silt fence manufacturer. All construction activities which generate any sediment or turbidity into the waterway shall be contained within the floating silt fence.

Floating silt fence shall be installed before construction begins and earth is disturbed.

Installation of Floating Silt Fence

The floating silt fence shall be floated into position, attached to the anchor lines, and then unfurled. The Contractor shall securely attach curtain panel ends together using rope lashings. The top lashing shall be securely tied to the anchor line. The Contractor shall place the anchors such that the floating silt fence remains in the Plan location and none of the flotation devices are pulled under the water surface. If required by the Engineer, the Contractor shall supply and place additional anchorage.

**ITEM 697.2** (Continued)

Maintenance of Floating Silt Fence

Throughout the project construction period, the Contractor shall maintain the floating silt fence so that no sediment caused by the project enters the waterway beyond the floating silt fence. All floating silt fence damaged prior to installation, during installation, or during the life of the Contract shall be repaired or replaced to the satisfaction of the Engineer. The Contractor shall remove floating debris at least weekly or as required by the Engineer.

The Contractor shall inspect the silt fence daily to ensure continuous effectiveness. Fence shall be maintained for effective performance at all times. If any fence becomes damaged or dislodged, construction activities shall be halted until all deficiencies are corrected by the Contractor with no additional compensation.

Removal of Floating Silt Fence

The floating silt fence shall remain in place until the project is complete and the turbidity has settled to no more than what existed prior to the start of construction and remaining sediment has sufficiently settled. Sediment may be removed and the original depth (or plan elevation) restored. Any spoils must be taken to upland area and be stabilized. When required by the Engineer, the floating silt fence shall be furled in place, then released from its anchors and towed out of the water. The floating silt fence and all materials incidental to the construction of the floating silt fence shall be removed in such a manner as to minimize turbidity to adjacent waters. The floating silt fence and related components shall become the property of the Contractor and shall be removed from the project.

**METHOD OF MEASUREMENT**

Item 697.2 will be measured for payment per FOOT of silt fence installed complete in place, within the specified limits.

Item 697.2 will be paid at the Contract unit price per FOOT, which price shall be considered full compensation for all labor, materials, equipment, and incidental costs required to complete the work.

No separate payment will be made for any adjustments or repairs that may be required to provide a floating silt fence that is continuously effective for the duration of construction.

No separate payment will be made for the removal of the floating silt fence.

## ITEM 698.1 GEOTEXTILE FABRIC FOR STABILIZATION SQUARE YARD

The work shall conform to the relevant provisions of Subsection M9.50.0 of the Standard Specifications and the following:

The work under this Item includes the furnishing and installation of geotextile fabric under the crushed stone for bridge foundations at Structure No. L-08-053 (74V), in accordance with the details and locations shown on the Plans and as required by the Engineer.

MATERIALS

Geotextile fabric used for stabilization shall be selected from the MassDOT Qualified Construction Materials List (QCML). The geotextile fabric shall conform to the requirements of Subsection M9.50.0 of the Standard Specifications.

The geotextile fabric shall be handled and installed per the manufacturer's recommendations.

The Contractor shall submit proposed fabric to the Engineer for review and approval.

METHODS

Atmospheric exposure of the geotextile fabric to the elements following lay down shall be limited to a maximum of 14 days.

Geotextile shall be placed in intimate contact with soils without wrinkles or folds and shall be anchored on a smooth graded surface approved by the Engineer. The geotextile shall be placed in such a manner that placement of the overlaying materials will not excessively stretch or tear it.

Adjacent geotextile sheets shall be joined by overlapping. At roll ends, overlapped seams shall overlap a minimum of 12 inches, except when placed under water, where they shall overlap a minimum of 3 feet. Adjacent rolls shall overlap a minimum of 12 inches.

Any section of fabric that is damaged shall be repaired in accordance with the manufacturer's requirements and AASHTO M 288 and to the satisfaction of the Engineer or it shall be replaced at the Contractor's expense.

## METHOD OF MEASUREMENT

Item 698.1 will be measured for payment by the SQUARE YARD as shown on the Plans or as directed by the Engineer, complete in place. Overlapping for seams and joints will be measured as one layer of fabric. Any embedment or wrapping at the toe or top of slope, applied per manufacturer's installation recommendations or the Engineer direction will be measured for payment.

## BASIS OF PAYMENT

Item 698.1 will be will be paid at the Contract Unit Price per SQUARE YARD, which price shall be considered full compensation for all labor, equipment, materials, and incidental costs required to complete the work.

## ITEM 698.3 GEOTEXTILE FABRIC FOR SEPARATION SQUARE YARD

The work shall conform to the relevant provisions of Subsection M9.50.0 of the Standard Specifications and the following:

The work under this Item includes the furnishing and installation of geotextile fabric as described below, as shown on the Plans, and as required by the Engineer.

Geotextile fabric for separation shall be used below the riprap/modified rockfill embankment slopes and below the streambed restoration.

Geotextile fabric for separation shall be used below the cast-in-place cement concrete footing and along the back of the existing wall and proposed wall across the joint at Lancaster Street.

### MATERIALS

The geotextile fabric shall be selected from the MassDOT QCML. The geotextile fabric shall conform to the requirements of Subsection M9.50.0 of the Standard Specifications and AASHTO M 288, Class 1, for fabric used for separation. The geotextile fabric shall be installed under the gravel borrow used below the retaining wall foundation.

The geotextile fabric shall be handled and installed per the manufacturer's recommendations.

The Contractor shall submit proposed fabric to the Engineer for review and approval.

### METHODS

Atmospheric exposure of the geotextile fabric to the elements following lay down shall be limited to a maximum of 14 days.

Geotextile shall be placed in intimate contact with soils without wrinkles or folds and shall be anchored on a smooth graded surface approved by the Engineer. The geotextile shall be placed in such a manner that placement of the overlaying materials will not excessively stretch or tear it.

Adjacent geotextile sheets shall be joined by overlapping. At roll ends, overlapped seams shall overlap a minimum of 12 inches, except when placed under water, where they shall overlap a minimum of 3 feet. Adjacent rolls shall overlap a minimum of 12 inches.

Care shall be taken during installation to prevent damage to the geotextile as a result of the installation process. Should the geotextile be damaged, a geotextile patch shall be placed over the damaged area extending a minimum of 3 feet beyond the limits of the damage.

**ITEM 698.3** (Continued)

Any section of fabric that is damaged, at the discretion of the Engineer, shall be repaired in accordance with the manufacturer's requirements and AASHTO M 288 and to the satisfaction of the Engineer or it shall be replaced at the Contractor's expense.

If during construction, including any time prior to final acceptance of the project by the Engineer, the modified rockfill slopes or streambed exhibits signs of failure, the area shall be repaired and the geotextile fabric reinstalled or replaced by the Contractor, as required by the Engineer, at Contractor's expense.

## METHOD OF MEASUREMENT

Item 698.3 shall be measured for payment by the SQUARE YARD as shown on the Plans or as directed by the Engineer, complete in place. Overlapping for seams and joints shall be measured as one layer of fabric. Any embedment or wrapping at the toe or top of slope, applied per manufacturer's installation recommendations or the Engineer direction shall be measured for payment.

## BASIS OF PAYMENT

Item 698.3 shall be paid at the contract unit price per SQUARE YARD, which price shall be considered full compensation for all labor, equipment, materials, and incidental costs required to complete the work.

## ITEM 705.2 STONE PAVERS REMOVED AND RESET SQUARE YARD

The work shall conform to the relevant provisions of Subsections 150, 170, and 700 of the Standard Specifications and the following:

The work includes removing and resetting existing stone pavers in the location shown on the plans. The work shall also include careful removal and stacking of existing excess stones on the adjacent property at no additional compensation, if desired by the property owner; exact location on the property shall be in coordination with the property owner, as approved by the Engineer.

The Contractor shall use the existing stone pavers that have been removed. Any existing stone pavers that are damaged by the Contractor and become unsuitable to be reset, are to be replaced by the Contractor with stone work of similar size, type and color at the expense of the Contractor. The Contractor shall provide a sample of new stone work to be supplied for approval by the Engineer prior to installation. New and reset stone work shall be installed in a pattern consistent with the existing adjacent driveway.

Subsequent to excavation of the area to the approximate subgrade elevation, the subgrade shall be fine graded and compacted, and an 8-inch compacted lift of gravel borrow (Type b) shall be placed as the subbase. A 1.5-inch-deep setting bed of sand borrow, meeting ASTM C33, shall then be placed. Stone work shall be placed with hand tight joints (max. ¾-inch gap). Subsequent to setting stones, the driveway shall be back-sanded with polymeric sand and watered-in according to manufacturer instructions.

### METHOD OF MEASUREMENT

Item 705.2 will be measured for payment per SQUARE YARD of stone pavers removed and reset.

### BASIS OF PAYMENT

Item 705.2 will be paid at the contract unit price per SQUARE YARD, which price shall include all backfill, excavation, transportation, stacking, storage, gravel borrow, sand borrow, labor, materials, equipment and incidental costs required to complete the work.

## ITEM 740. ENGINEER'S FIELD OFFICE AND EQUIPMENT (TYPE A) MONTH

The work Item shall conform to the relevant provisions of Subsection 740 of the Standard Specifications and the following:

Two (2) computer systems and a printer system meeting minimum requirements set forth below including installation, maintenance, power, paper, disks, and other supplies shall be provided at the Resident Engineer's Office:

All equipment shall be UL approved and Energy Star compliant.

The Computer System shall meet the following minimum criteria or better:

| | |
|---|---|
| Processor: | Intel, 3.5 GHz |
| System Memory (RAM): | 12 GB |
| Hard Drive: | 500 GB |
| Optical Drive: | DVD-RW/DVD+RW/CD-RW/CD+RW |
| Graphics Card: | 8 GB |
| Network Adapter: | 10/100 Mbit/s |
| USB Ports: | 6 USB 3.0 ports |
| Keyboard: | Generic |
| Mouse: | Optical mouse with scroll, MS-Mouse compliant |
| Video/Audio | the computer system shall be able to perform video calling and recording: |
| Video camera | shall be High Definition 1080p widescreen capable video calling and recording with built in microphone. The microphone system shall capture natural audio while filtering out background noise. |
| Audio | shall be stereo multimedia speaker system delivering premium sound. |
| OS: | Latest Windows Professional with all security updates |
| Web Browser: | Latest Internet Explorer with all security updates |
| Applications: | Latest MS Office Professional with all security updates<br>Latest Adobe Acrobat Professional with all security updates<br>Latest Autodesk AutoCAD LT<br>Antivirus software with all current security updates maintained through the life of the contract. |
| Monitors: | Two 27" LED with Full HD resolution.<br>Max. resolution 1920 x 1080 |
| Flash drives: | 2 (two) - 128GB USB 3.0 |
| Internet access: | High Speed (min. 24 mbps) internet access with wireless router. |

**ITEM 740.** (Continued)

The Multifunction Printer System shall meet the following minimum criteria or better:

Color laser printer, fax, scanner, email and copier all in one with the following minimum capabilities:

- Estimated volume 8,000 pages per month
- LCD touch panel display
- 50 page reversing automatic document feeder (RADF)
- Reduction/enlargement capability
- Ability to copy and print 11" x 17" paper size
- email and network pc connectivity
- Microsoft and Apple compatibility
- ability to overwrite latent images on hard drive
- 600 x 600 dpi capability
- 30 pages per minute print speed (color),
- 4 Paper Trays Standard (not including the bypass tray)
- Automatic duplexing
- Finisher with staple functions
- Standard Ethernet. Print Controller
- Scan documents to PDF, PC and USB
- ability to print with authenticated access protection

The Contractor shall supply a maintenance contract for next day service, and all supplies (toner, staples, paper) necessary to meet estimated monthly usage.

The Engineer's Field Office and the equipment included herein including the computer system, and printer shall remain the property of the Contractor at the completion of the project. Disks, flash drives, and card readers with cards shall become the property of the Department.

**BASIS OF PAYMENT**

Compensation for this work will be made at the contract unit price per MONTH, which price includes full compensation for all services and equipment, and incidentals necessary to provide equipment, maintenance, insurance as specified and as directed by the Engineer.

**ITEM 751.765 COMPOST AND SEED OVER MODIFIED ROCKFILL CUBIC YARD**

The work shall conform to the relevant provisions of Subsections 751, 765, and 767 of the Standard Specifications and the following.

The work shall consist of furnishing and pneumatically applying compost in conjunction with the specified native seed on designated areas of modified rock and achieving satisfactory establishment of seeded species as specified herein.

QUALIFICATIONS

Compost application and seeding shall be done by a company having a minimum of five years of experience with native seed establishment. Prior to beginning work, the seeding Contractor shall furnish proof of qualifications to the Engineer for approval. Proof of qualifications shall include providing documentation (photos and contacts) to demonstrate knowledge and expertise with native seeding and establishment and proof of having completed successful native seeding projects.

MATERIAL AND SUBMITTALS

Compost

Compost shall meet the relevant provisions for Type 2 Compost, found in Section M1.06 of the Supplemental Standard Specifications.
The Engineer shall approve the Contractor's equipment for application.

Seed Mix

Seed Mixes and Submittals shall be per the Item(s) for the permanent seed mix. Mix shall be:

Item 765.442 – Roadside Riverbank Mix

SEEDING SEASON

The season for seeding native mixes is April 1 - May 15 and October 1 - December 1 for dormant seeding. Written approval must be obtained for seeding outside the seeding season and, if approved, the permanent seed rate shall be increased by 50%

CONSTRUCTION METHODS

Method of application and equipment to be used shall be reviewed and approved by the Engineer prior to placement of material.

**ITEM 751.765** (Continued)

Placement of Compost

Compost shall be placed as shown on the Plans and in the Detail and as required by the Engineer. Material shall be placed so that settled material is at or slightly below the surface plane of the stone. The Contractor shall ensure that there will be adequate quantity, including adjustment for settlement.

For purposes of estimation, required compost quantities should be 300 cubic yards per acre to achieve the target depth.

Seeding

For areas smaller than half an acre, unless otherwise approved by the Engineer, seeding shall be done by broadcast method. Seeding shall be done in conjunction with or immediately following Compost application. Alternative seeding methods must be submitted and approved by the Engineer 14 days in advance of compost and seed application.

Hydroseeding

Hydroseeding may be used for sites over half an acre in size or when the rock slope does not permit safe application via a broadcasting method. Hydroseed shall be per the manufacturer's directions and as follows.

Tank and hoses shall be cleaned from all previous hydroseeding and hydromulching projects. Seed shall be mixed into the slurry immediately before application and slurry applied within 30 minutes after seeds have been placed in the tank. Once seed has been placed in the tank, tank shall be agitated only enough to mix the seeds and keep slurry from separating.

When Seeding Occurs after Application of Compost or after December 1

When seeding is done more than 3 days after Compost application or when Compost is applied after December 1, seeding rate shall be increased by 50%.

Over-Seeding

Large extents of bare area (greater than 5-6 feet and depending on modified rock slope conditions) shall be over-seeded with the specified mix during the appropriate season for seeding. Rates, methods, and submittals shall be as specified under the relevant Seed Mix Item and Materials above.

Over-seeding, mulch, watering, and all work for over-seeding shall be incidental.

**ITEM 751.765** (Continued)

Determining Satisfactory Establishment

A reasonably well-established stand of the specified seeded species as determined by the Engineer and the MassDOT Landscape Architect or designated Specialist will be required for Final Acceptance. The expectation is that an acceptable number and variety of the desired permanent seeded species will be visible. For seeding with compost over modified rock this shall generally be:

- A minimum of 50% coverage by the specified permanent seeded species after one growing season (considered June-September 15). Of that percentage, generally, depending on the mix species:
  - At least 2 types of permanent seeded grass species shall be visible.
  - At least 2 species of wildflowers shall be visible.
- There will be no more than 25% coverage by weed species.
- There will be no invasive or aggressive species within the stand at the time of acceptance.
- There shall be no evidence of seed from non-native mixes (ex., clover) due to using an incorrect or modified mix or due to failure to clean the hydroseeding tank if a hydroseeder is used.

Invasive and aggressive weeds (such as mugwort, vetch, knapweed, and chicory) must be cut, pulled with roots removed, or treated with herbicide by a licensed and approved applicator prior to going to seed for Interim Acceptance. Weed removal shall be coordinated with MassDOT Landscape Architect. No herbicides shall be used without approval and coordination with MassDOT Landscape Design Section.

Acceptance of Seeding and Establishment Work

**Conditional Acceptance** shall be based on approval of seed mix submittals and proper application of seed as specified herein.

**Final Acceptance of Seed Establishment** shall be given upon satisfactory Establishment as described above. If the seeded area fails to meet the requirements of Establishment by the end of the growing season, Contractor shall propose and implement remediations and site shall be inspected during the following growing season after July 1st. Otherwise, Contractor shall forego the payment for Final Acceptance. All remediation shall be at the Contractor's expense.

**ITEM 751.765** (Continued)

## METHOD OF MEASUREMENT

Item 751.765 will be measured for payment per CUBIC YARD of area composted and seeded.

## BASIS OF PAYMENT

Item 751.765 will be at the Contract unit price per CUBIC YARD which price shall be considered full compensation for all labor, materials, equipment, site preparation, and all incidental costs required to complete the work.

Native Seed Mix shall be compensated at the bid price per the specified seed mix Item by pound.

Schedule of payment shall be as follows:

60% upon approval of Compost application and Conditional Acceptance of seeding as specified above

40% upon Final Acceptance of Seed Establishment

**ITEM 755.35 INLAND WETLAND REPLICATION AREA LUMP SUM**

The work shall conform to the relevant provisions of Subsections 120, 770, 771 of the Standard Specifications and the following:

The work shall include furnishing material and the construction and maintenance of inland wetland replication areas as shown on the drawings and as required by the Engineer. Inland Wetland Replication Area shall hereafter be referred to as Replication Area. All work shall be in coordination with an approved Wetland Specialist as specified under that Item.

Wetland Restoration work shall be as specified and compensated under that Item. Construction of tidal wetlands shall be as specified under the appropriate Item for tidal wetland mitigation.

The Replication Area shall be constructed prior to wetland impacts unless otherwise approved by the Engineer, specified herein, or specified in permit conditions and approvals. Construction schedule shall be appropriate to planting and seeding season (see below). Changes to this schedule will require written approval from the Engineer.

DESCRIPTION OF WORK

Construction of the Replication Area shall be completed as shown on the drawings at the following location(s):

Area A at Station: **103+59 to 104+20 RT** Area = **672** sf.

Replication Area shall be constructed to meet the requirements of all associated permits and certifications, including relevant performance standards of the Section 401 Water Quality Certification and Section 404, U.S. Army Corps of Engineers Permit.

The Contractor is responsible for protection and preservation of natural areas adjacent to the Replication Area both within and outside the project limits and for the duration of the Contract; including but not limited to damage to soils or vegetation due to erosion, sedimentation, compaction, trampling, vehicles, storage of materials, or other negligence shall be repaired to the satisfaction of the Engineer and at the Contractor's expense.

The Wetland Specialist overseeing the Wetland Replication construction work shall not be from the same company as that which is performing planting, seeding, or participating in any aspect of the Wetland Replication construction.

**ITEM 755.35** (Continued)

SUBMITTALS - DOCUMENTS

Request for Conditional Acceptance: As specified below, a letter requesting Conditional Acceptance of the work and the site conditions shall be submitted to the Engineer.

Request for Certificate of Compliance (Partial or Full): As specified below, shall be submitted to the Engineer for distribution to appropriate regulatory agencies.

Request for Final Acceptance: As specified below, a letter requesting Final Acceptance of the work and the site conditions shall be submitted to the Engineer.

Monitoring Reports: Reports shall be submitted to the Engineer as specified below. Reports shall be compensated under Item 755.75 and 755.76.

SUBMITTALS - MATERIAL

**Soil and Amendments**

No soil, compost, or other soil amendment imported to the work site shall contain seeds, roots, stems, or other viable parts of invasive plants or other noxious plants.

At least sixty (60) days prior to installation and prior to ordering, the Contractor shall submit for approval sources of soil, compost, and amendments. Submittal shall include the supplier and location of the source. Off-site sources shall be identified and available for inspection by the Wetland Specialist prior to transport of material to the site to verify that they are likely to be free of invasive plant species, including all viable plant parts.

Samples of tested and approved wetland soil and soil amendments for soil texture, organic carbon content or other routine soil analysis parameters (e.g., pH, Cation Exchange Capacity, Percent Base Saturation) and Soil Organic Matter Analysis will be required if requested by the Engineer. The grab samples shall be collected by the Contractor or Wetland Specialist from multiple representative locations in the wetland topsoil mix following the “Umass Soil and Plant Tissue Testing Laboratory Sampling and Collection Protocols” (or equivalent certification paperwork provided by the soil supplier). The lab analysis shall be provided to the Engineer along with written certification from the Contractor or Wetland Specialist that the wetland topsoil was collected per the referenced protocol and meets the desired specification. The analysis and written certification of same shall be provided to the Engineer prior to placing the wetland topsoil in the Replication Area.

**ITEM 755.35** (Continued)

**Seed Mix**

Certificate of Materials from the supplier shall be submitted 30 days prior to seeding and must be approved prior to ordering materials. Seed species listed on the certificate shall include ecotype region (i.e., *Asclepias incarnata*, PA Ecotype).

Seed tag from the bag of seed used shall be submitted to the Engineer at the time of seeding. Seed tag shall include ecotype region and species, guaranteed percentages of purity, weed content and germination of the seed, and the net weight. Seed tag shall match the Certificate of Materials, include the name of the supplier, and date material was sent.

Bill of lading or notarized Certificate of Compliance from the Supplier serving as proof of purchase shall be submitted if requested by the Engineer. Document shall include date of sale, quantity, lot number, and address of Supplier. This shall match the seed tag. Notary shall not work for either the Contractor or seed supplier.

**Plant Certification**

Plant Certification shall be per the applicable requirements of Subsection 771, PLANTING TREES, SHRUBS AND GROUNDCOVER, of the Standard Specifications. The nursery source shall certify the provenance or origin of all plants.

**Other Material:** Submittals shall be per the respective Item.

MATERIALS

**Sediment Control Barrier and Erosion Prevention Measures**
Sediment control barriers shall be per Item 767.121.

Erosion prevention measures for disturbed areas adjacent to the Replication Area shall include but not necessarily be limited to sediment control barrier as approved by the Engineer.

Sediment controls and erosion prevention devices and measures shall be compensated under the respective Items.

**Wetland Soil**

Soil appropriate for the Replication Area may be either hydric soil excavated from the impacted wetland, a manufactured mix of compost and on-site borrow, or a combination thereof, as approved by the Engineer.

**ITEM 755.35** (Continued)

Hydric soil from the impacted wetland area may be spread on the surface of the constructed Replication Area as an inoculant or can be placed in a bulk fashion in a roughly 1:1 ratio of area and depth. Soil shall be handled such that the original soil structure is preserved and shall not be compacted, screened, or otherwise processed.

Hydric soil from the impacted wetland that is infested with invasive plant species identified on the Massachusetts Invasive Plant Advisory Group (MIPAG) shall not be used in the Replication Area unless approved by the Wetland Specialist and Engineer. To the extent possible, infested soil shall be disposed of within the project limits in an upland area outside of regulated areas and as approved by the Invasive Plant Management Strategy Item (if in the contract) or by the Engineer.

A manufactured mix suitable for wetlands shall consist of on-site borrow from the proposed Replication Area (if approved by the Wetland Specialist and Engineer) thoroughly mixed with compost to achieve a target organic carbon content of 10-12% (up to 21% percent organic matter) by dry weight. The organic material used for mixing shall be well or partially decomposed. Clean leaf compost is the preferred soil amendment to achieve these standards though other materials may be used if approved by the Wetland Specialist and Engineer. Note that "clean" refers both to a negligible amount (<1%) of physical contaminants such as plastic and to the lack of chemical contaminants that might pose a hazard to plants or animals. Off-site borrow may be used for mixing if approved in advance by the Engineer.

No soil or soil amendment shall be brought on site without approval of the material source by the Wetland Specialist and the Engineer. Soils used in the replacement area shall be free of rocks greater than 4 inches in diameter.

Seed Mix

Seeding shall conform to the Standard Specifications Section M6, ROADSIDE DEVELOPMENT MATERIALS.

Seed Mix shall be Wetland – Riparian Mix and shall be per Item 765.553 and Wetland – Seasonally Flooded Mix and shall be per Item 765.554. See Plans for areas.

Fertilizers shall not be used.

**ITEM 755.35** (Continued)

**Item 765.553: Wetland – Riparian Mix**

| | Botanical Name | Common Name | % PLS By Weight |
|---|---|---|---|
| Grass | | | |
| | Sorghastrum nutans NY Eco | Indiangrass NY Ecotype | 14.00% |
| | Schizachyrium scoparium | Little Blue Stem | 14.00% |
| | Elymus riparius | Riverbank Wild Rye | 10.00% |
| | Elymus virginicus | Virginia Wild Rye | 10.00% |
| | Panicum clandestinum 'Tioga' | Deer Tongue 'Tioga' | 9.00% |
| | Andropogon gerardii NY Eco | Big Bluestem NY Eco | 8.00% |
| | Carex vulpinoidea | Fox Sedge | 7.00% |
| | Panicum virgatum | Switchgrass | 3.00% |
| | Juncus effusus | Soft Rush | 2.00% |
| | Agrostis perennans | Upland Bentgrass | 2.00% |
| | Scirpus atrovirens | Green Bulrush | 1.00% |
| | | | 80.00% |
| Herb/Forb | | | |
| | Chamaecrista fasciculata | Partridge Pea | 3.00% |
| | Verbena hastata | Blue Vervain | 3.00% |
| | Asclepias incarnata | Swamp Milkweed | 3.00% |
| | Heliopsis helianthoides | Ox-Eye Sunflower | 2.00% |
| | Eupatorium perfoliatum | Boneset | 2.00% |
| | Aster umbellatus | Flat Topped White Aster | 1.00% |
| | Aster prenanthoides | Zig Zag Aster | 1.00% |
| | Aster puniceus | Aster – Swamp | 1.00% |
| | Aster novae-angliae | New England Aster | 1.00% |
| | Eupatorium maculatum | Joe-pye Weed | 1.00% |
| | Monarda fistulosa | Wild Bergamot | 1.00% |
| | Vernonia noveboracensis | New York Ironweed | 1.00% |
| | | | 20.00% |
| | | | 100.00% |

**ITEM 755.35** (Continued)

**Item 765.554: Wetland – Seasonally Flooded Mix**

| | Botanical Name | Common Name | % PLS By Weight |
|---|---|---|---|
| Grass | Elymus riparius | Riverbank Wild Rye | 20.00% |
| | Andropogon gerardii NY Eco | Big Bluestem NY Eco | 12.00% |
| | Carex lupulina | Hop Sedge | 10.00% |
| | Panicum clandestinum 'Tioga' | Deer Tongue 'Tioga' | 10.00% |
| | Carex vulpinoidea | Fox Sedge | 10.00% |
| | Carex scoparia | Broom sedge | 8.00% |
| | Sorghastrum nutans NY Eco | Indiangrass NY Ecotype | 8.00% |
| | Panicum virgatum | Switch Gras | 8.00% |
| | Juncus effusus | Soft Rush | 2.00% |
| | Juncus tenuis | Path Rush | 1.00% |
| | | | 89.00% |
| Herb/Forb | Verbena hastata | Blue Vervain | 4.00% |
| | Desmodium canadense | Showy Tick Trefoil | 2.00% |
| | Eupatorium maculatum | Joe-pye Weed | 1.00% |
| | Asclepias incarnata | Swamp Milkweed | 1.00% |
| | Aster novae-angliae | New England Aster | 1.00% |
| | Eupatorium perfoliatum | Boneset | 0.70% |
| | Helenium autumnale | Common Sneezeweed | 0.50% |
| | Aster puniceus | Aster - Swamp | 0.50% |
| | Mimulus ringens | Monkey Flower | 0.20% |
| | Vernonia noveboracensis | New York Ironweed | 0.10% |
| | | | 11.00% |
| | | | 100.00% |

**Mix 765.553:** 20 lbs/acre PLS.

**Mix 765.554:** 20 lbs/acre PLS.

In addition, apply 30 pounds of cover crop (grain oats or grain rye) as appropriate to the season.

50% Increase Adjustment for Field Conditions

**ITEM 755.35** (Continued)

Seeding under the following conditions requires a 50% increase in the permanent mix at the time of construction:

- Seeding out of season

  OR

- Seeding after Compost Blanket has been applied (unless already increased for out of season).

Water

The Contractor shall provide water and all equipment required at no extra cost. Water shall be suitable for irrigation and free from ingredients harmful to plants and wildlife. Water from the adjacent water bodies or waterways shall not be utilized. It is the Contractor's responsibility to correct injury or damage due to the lack of water, too much water, or use of contaminated water.

Mulch/Compost Blanket for Seeding

Hydromulch shall be per the manufacturer's recommendations and shall be wood fiber or straw mulch only. Mulch shall be incidental to seeding.

Compost Blanket may be used in lieu of mulch for seeding. Compost Blanket shall meet the material and submittal requirements of that Item and shall be applied as specified below. Compost Blanket shall be compensated under that Item.

CONSTRUCTION METHODS & SEQUENCE

**SITE PROTECTION MEASURES**

Minimizing Damage
The Contractor shall plan and execute operations in a manner minimizing the amount of excavated and exposed fill or other foreign materials that could be washed or otherwise carried into Replication Area and nearby resource areas.

Construction of and access to the Replication Area shall minimize damage to existing vegetation and soils as specified herein. Damage to soils or vegetation shall be repaired to the satisfaction of the Engineer and at the Contractor's expense. If required for soil remediation, tilling and the addition of compost shall be at the Contractor's expense.

Wetland topsoil shall be deposited and graded in the Replication Area in a manner that minimizes travel and subsequent compaction of the subgrade (including any specified pit and mound topography) to the extent practicable, including use of track mounted excavators as appropriate. Should soils be compacted, they shall be loosened by a method such as disking, spring-tooth harrowing and/or rototilling. The Contractor shall use boards, timber or composite mats, or other approved materials as necessary, to protect existing and/or new wetlands from compaction due to heavy foot traffic or if equipment is required to travel over wetland soil. All labor and materials required for protection and preservation of site shall be incidental to this Item.

**ITEM 755.35** (Continued)

Stockpiling of Soil

Stockpiling of soil, including hydric soil for replication, shall be at least 100 feet from the edge of the bordering and isolated vegetated wetlands and inland banks, unless approved otherwise by the Engineer. Stockpiled soils shall be securely stabilized and contained. Any areas of exposed soil or stockpiles within and adjacent to the Replication Area that will remain inactive for more than 7 calendar days shall be sown with a mix of rapid germinating annual grasses (e.g., annual rye) covered with a layer of straw mulch applied at a rate of 90 pounds per 1,000 square feet. As necessary, the mulch shall be anchored with a tacking coat (non-tar) applied by a hydro seeder or other method recommended by the Wetland Specialist in consultation with the Engineer. In the event that there is excess borrow, it shall be disposed of under Earth Excavation, Item 120.

Sediment Barriers

***Placement:*** Sediment barriers shall be installed along the downslope perimeter of the Replication Area beginning and ending in the surrounding upland so that no excavated material or disturbed soil can enter adjacent wetlands or waters. Where construction work is immediately upgradient of the wetland, barriers shall be located so as to protect the Replication Area until slopes are stabilized. Sediment barriers shall be in place and approved by the Engineer prior to excavation work. No work shall take place outside the barriers.

***Maintenance:*** The Contractor shall ensure that all sediment barriers function as intended and at all times per the specifications of those respective Items.

Existing Trees to Remain

***Tree protection*** shall be per the relevant specifications and as shown on the plans or as required by the Engineer. To protect root systems of existing trees to remain, the limits of the Replication Area may be adjusted, but, the total area of replication required by the permits shall not be reduced. Access route may be adjusted as required.

***Trees to be retained as snags*** (upright dead or dying trees left for wildlife habitat) within or adjacent to the Replication Area shall be as shown on the plans or as directed by the Wetland Specialist or Landscape Architect during the initial site walk. Trees to remain as snags shall be clearly marked prior to clearing. Trees that pose a potential fall hazard (i.e., are near a roadway) should have limbs and trunk cut such that the tree does not pose a fall hazard.

**ITEM 755.35** (Continued)

***Coarse woody debris*** in the form of cut trees, stumps, logs, and brush shall be incorporated as shown on the plans or as directed by the Wetland Specialist or Landscape Architect. On site material shall be selected and marked by the Wetland Specialist, retained on the project site, and placed as specified below under Placement of Coarse Woody Debris.

All trees, stumps, or brush not specified to remain shall be removed and shall not be stockpiled in the wetland resource areas while awaiting disposal.

Work shall be coordinated with Clearing or Tree Removal Item and compensated under that Item.

**PRE-WETLAND CONSTRUCTION SITE WALK**

***Delineating the Replication Area and Access Route.*** The Contractor shall stake out the Replication Area boundaries and the intended access route and set grade stakes for approval by the Wetland Specialist and Engineer. Following staking and demarcation of areas, the Engineer and Wetland Specialist shall approve or modify as necessary the limits of work, the access route, final location and configuration of replication, grade stake elevations, proposed location of sediment barriers, and review proposed construction methods.

As part of the delineation and approval process, the Wetland Specialist shall mark trees to be converted to snags, select course woody debris to be retained for re-use, and select rocks or other elements to be used for habitat features.

***Invasive Plants:*** As part of the initial site walk, the wetland to be impacted and the proposed replication site shall be inspected for the presence of invasive plants. If invasive plants are found they shall be addressed as described herein under Invasive Plants.

**SOIL WORK**

Final grades in the Replication Area shall meet the target elevations as shown on the Plans or as adjusted by the Wetland Specialist to achieve the desired hydrology and micro-habitat. If adjustments are required, a Request for Information (RFI) shall be submitted to the Engineer for approval. Adjustments shall be documented and included in the As-Built plans (if required) and/or other applicable required documents.

**ITEM 755.35** (Continued)

Excavation & Grading

When required by permits, the Wetland Specialist shall notify MADEP and the ACOE (as applicable) at least 72 hours prior to excavation.

Soil in the proposed wetland areas that must be removed for grades to conform to the proposed elevations shall be stripped and disposed of, or, if suitable for reuse, be stockpiled in an approved location. Stockpiled soils shall be kept wet and not allowed to dry out. Procedures for maintaining appropriate moisture levels shall be documented by the Wetland Specialist and provided to the Engineer and the Contractor.

Replication area shall be excavated as shown on the drawings. Where replication area is adjacent to existing reference wetland, finish grade of replication shall generally match existing grades and micro-topography, notwithstanding any deviations that are necessary to achieve the desired hydrology and habitat in the Replication Area.

Prior to placement of backfill, scarify subgrade to a depth of 4 to 6 inches.

Placement of Wetland Soil

Following excavation, scarification, and grading of sub-grade, and after the sub-grade elevations are approved by the Wetland Specialist, suitable soil previously removed or an evenly mixed organic/mineral soil created on-site shall be spread to the design depth and thickness over the proposed wetland areas as shown on the plans and as directed by the Wetland Specialist.

Vehicles used to transport soil from offsite shall be washed or cleaned with air pressure to prevent exotic or invasive seeds or root fragments from contaminating the Replication Area.

Final Grading

The finished grade of the Replication Area shall be at an elevation that will provide an unrestricted hydrologic connection between the Replication Area and adjacent resource areas. The hydrologic connection should be in keeping with restoring the intended function of the replacement wetland relative to the impacted reference wetland. The Contractor shall verify that this elevation is not at a level that could negatively alter the hydrology of an adjacent wetland. Microtopography in the form of hummocks, pits and mounds shall be as shown on the plans or as adjusted by the Wetland Specialist. Final elevations and grading of wetland soil shall be approved by the Wetland Specialist and the Engineer.

To avoid compaction once soil has been placed, no heavy equipment shall travel across placed soil and no work shall occur in wet or moist soil. Soil that is compacted due to construction activities shall be replaced with soil as specified herein and at the Contractor’s expense.

**ITEM 755.35** (Continued)

**RESTORING VEGETATION**

Placement of Coarse Woody Material

If specified within this Contract or if directed by the Wetland Specialist or Landscape Architect during the initial site walk, woody debris shall be placed in the Replication Area and/or adjacent upland buffer. Material shall be placed as shown on the plans or as directed following placement of wetland soil and prior to application of compost and/or seed. Woody material shall cover a minimum of 5-20 percent of the Replication Area, depending on whether it is a meadow or woodland wetland and how much wood is available from construction clearing. Where trees are cut for construction purposes, logs of a minimum length of 8 feet must comprise a minimum of 50% of the woody material left on site. Brush shall be included along with logs and stumps as directed. Woody material shall be placed in a deliberate and naturalistic manner.

Planting

Following placement of wetland soil and approval of final grade and conditions, Replication Area shall be planted. Planting shall conform to SECTION 771 PLANTING TREES, SHRUBS AND GROUNDCOVER of the Division I Standard Specifications and as amended below.

Planting Season shall be May 15-June 15 and September 1-November 1 unless otherwise specified in applicable permit conditions.

Prior to planting, the Wetland Specialist shall approve the condition of the plant material and the method of installation and shall oversee the planting work. Replication Area shall be planted in the dry. Plants shall be placed according to the planting details and within the range of target elevations and at the spacing shown on the Plans or, if spacing is not indicated on the Plans, at the direction of the Wetland Specialist. Unless otherwise noted on the Plans, final plant locations shall be determined on site and located with regard to expected hydrology, plant growth characteristics, habitat desired, and water protection.

Plant material shall be installed as soon as possible after delivery. Plants stored on-site prior to installation shall be stored in the shade and watered twice daily up until time of installation. Plants showing signs of stress or compromised health may be rejected by the Engineer or Wetland Specialist and shall be replaced at the Contractor’s expense.

**ITEM 755.35** (Continued)

Plant material shall be furnished and installed as indicated including all labor, materials, plants, equipment, incidentals, re-setting of plants (frost heaves, etc), irrigation, re-planting and clean up. If previously approved species are not available at the time of planting, the Wetland Specialist may propose substitutions relative to species, size, and quantities for review and approval by the MassDOT Landscape Architect. Upon approval by MassDOT, substitutions shall be approved by the regulating authority, if and as necessary. Provisions shall be made for a growth warranty of at least two (2) calendar years from the date of Conditional Acceptance as described below or as required by permits.

Seeding

Following placement of wetland soil and planting (if included), the Replication Area shall be seeded using one of the following methods:

- Broadcast by hand or with a hand-held spreader followed by application of straw mulch. If necessary, seed shall be lightly raked to insure good seed-to-soil contact.
- Hydro-seeded with hydro mulch per the Standard Specifications and per the manufacturer's directions.
- Hand broadcast seed with Compost Blanket pneumatically applied at the same time to ensure light cover of soil topdressing over seed.

If spring conditions are drier than usual, supplemental watering may be required. If sowing during the summer months, supplemental watering will likely be required until germination.

If required, seeding limits for different seed mixes shall be determined by the Wetland Specialist.

PLANT ESTABLISHMENT AND INVASIVE MANAGEMENT

*Plants* shall be watered as necessary to maintain healthy establishment. Plants that fail by September 1 after spring planting or by May 15 after fall planting shall be replaced within the immediate or next planting period and at the Contractor's expense.

*Seeding* that fails to established according to the conditions of acceptance below shall be over-seeded as required by the Engineer. Washouts and channels shall be repaired and stabilized prior to overseeding. Excessive weed growth shall be pulled out by the roots or, with approval from the Engineer, cut prior to over-seeding. Soil repair and weed control are incidental to this Item.

*Invasive Plants:* Corrective measures shall be taken to remove or treat invasive plant species in the Replication Areas. Invasive plants shall include those listed as invasive by Massachusetts Invasive Plant Advisory Group (MIPAG) and the US Army Corp of Engineer's New England District's Compensatory Mitigation Guidance

**ITEM 755.35** (Continued)

If chemical treatment of invasive plants is necessary, the strategy for treatment shall be as determined under Item 102.3 Invasive Plant Management Strategy. That strategy shall be coordinated with the Wetland Specialist and all applicable permits and permitting agencies. Chemical application under 102.33 Invasive Plant Management On-site shall be compensated under that Item and shall be for the duration of the contract only.

CONDITIONAL ACCEPTANCE OF WORK

Conditional Acceptance shall indicate approval of the wetland construction work and agreement that work has been done according to plan or modified as approved.

Upon completion of construction, the Contractor shall submit a Request for Conditional Acceptance that includes a brief narrative from the Wetland Specialist demonstrating that the wetland replication construction work was done according to plans (or how modified) and meets required permit conditions. The narrative shall include, photo-documentation of pre-construction conditions as well as soil work, planting, and seeding. Seed tags shall be submitted as part of the Request for Conditional Acceptance.

Upon receipt of a Request for Conditional Acceptance, the Engineer, the Wetland Specialist, and regulatory representative (if required) shall assess the Replication Area and surrounding areas. At a minimum, the following conditions shall be included in the narrative and reviewed as part of the on-site assessment of whether:

- The final finished target elevations have been met and maintained relative to the approved plans and reference wetland. Areas that are too high or too low should be identified along with suggested corrective measures.
- Hydrology meets performance standards.
- Specified seed mix has been seeded. If inspected 30 or more days after seeding, seeded species in the wetland and adjacent upland shall show signs of good germination and healthy growth.
- Planted woody and herbaceous species meet specifications and are establishing well.
- Soils are stabilized and there is no sediment in the wetland and no channeling of slopes.
- There are no invasive plants visible in the replication area.

Upon approval that the work meets the above conditions, MassDOT will issue a letter of Conditional Acceptance. If the Wetland Replication work is not approved, MassDOT will issue a rejection letter requiring corrective actions. The Wetland Specialist shall recommend corrective actions. Work not approved shall be addressed by the Contractor at no extra cost.

Wetland Specialist shall be compensated under Item 755.75.

Erosion of adjacent slopes or the flow of sediments into the wetland between Conditional and Final Acceptance shall be immediately addressed by the Contractor.

**ITEM 755.35** (Continued)

FINAL ACCEPTANCE OF WORK

Following one full growing season, the Contractor shall submit a Request for Final Acceptance. Submittal shall include a brief narrative of conditions. Upon receiving the Request, the Engineer, Contractor, Wetland Specialist and regulatory representative (if required) shall assess the Replication Area. Final Acceptance will initiate the start of the Wetland Monitoring Period.

The following conditions shall be inspected and approved for acceptance and payment.

- Hydrology is functioning as intended.
- The desired seeded species are establishing well and cover at least 95 percent of the Replication Area, excluding areas of open water areas or planned bare soil.
- No sediments have entered the wetland.
- Adjacent slopes are stabilized with desirable vegetation.
- All planted species (if included) are living and establishing well.
- There are no visible invasive plants.
- Silt fence and non-biodegradable sediment barrier materials have been removed.

If the mitigation work does not meet the above condition and is not approved, MassDOT will issue a rejection letter requiring corrective action. The Wetland Specialist shall recommend corrective actions. Work not approved will be addressed by the Contractor at no extra cost.

Wetland Specialist shall be compensated under Item 755.75.

MONITORING REPORTS FOR REGULATORY COMPLIANCE

Post wetland construction Monitoring Reports shall be completed and submitted by the Wetland Specialist as specified and compensated under Item 755.76 Wetland Monitoring Reports.

Generally, the following conditions shall be met upon each inspection:

- Hydrology is functioning as intended.
- The desired seeded species are establishing well and cover 95 percent of the area, excluding areas of open water areas or planned bare soil.
- No sediments have entered into wetland.
- Adjacent slopes are stabilized with desirable vegetation.
- All planted species (if included) are living and establishing well.
- There are no visible invasive plants.

If, at the end of the required monitoring period, the requirements have not been met and success of the wetland replication area has not been achieved as determined by the Monitoring Reports, the Contractor shall provide corrective measures. All costs associated with corrective measures and plant replacement shall be incidental to this Item with no additional compensation.

**ITEM 755.35** (Continued)

## BASIS OF PAYMENT

Item 755.35 will be paid for at the Contract LUMP SUM price, which price shall be considered full compensation for all labor, materials, equipment, submittals, maintenance, all required soil, site preparation, grading, wetland seeding, planting, mulching, watering, as-built plans, Request for Certificate of Compliance, and all incidental costs necessary to complete the work as required. Seed mix for the adjacent flood storage area shall be considered incidental to this Item.

Payment shall be as follows:

- 60% upon Conditional Acceptance.
- 20% after receipt and acceptance of Certificate of Compliance by the Engineer and once all permit construction requirements have been met and approved.
- 20% upon Final Acceptance.

Excavation will be paid under Item 120.

Sediment Control Barrier will be paid under Item 767.121

Wetland Specialist will be paid under Item 755.75

Wetland Monitoring Reports for follow-up monitoring will be paid under Item 755.76

**ITEM 755.45 WETLAND RESTORATION SQUARE YARD**

The work shall conform to the relevant provisions of Subsections 120, 751, 765, 767, and 771 of the Standard Specifications and the following:

The work shall include all labor and furnishing of materials to complete the work specified herein to protect and restore existing inland wetland areas that will be temporarily impacted as shown on the drawings and as required by the Engineer.

Inland Wetland Replication work shall be as specified and compensated under that Item.

Restoration Area shall be constructed to meet the requirements of all associated permits and certifications, including relevant performance standards of the Section 401 Water Quality Certification and Section 404, U.S. Army Corps of Engineers General Permit.

All work shall be in coordination with an approved Wetland Specialist and/or Geomorphologist. Wetland Specialist qualifications and requirements shall be per Item 755.75, Wetland Specialist.

SUBMITTALS – DOCUMENTS

Survey: To establish or confirm pre-construction baseline elevation of temporarily impacted area(s), a survey shall be submitted to the Engineer prior to any fill or other land disturbance.

Request for Conditional Acceptance: As specified below, a letter requesting Conditional Acceptance of the work and the site conditions shall be submitted to the Engineer.

Request for Final Acceptance: As specified below, a letter requesting Final Acceptance of the work and the site conditions shall be submitted to the Engineer.

Request for Certificate of Compliance (Partial or Full): If applicable, request for a Certificate of Compliance shall be submitted to the Engineer for distribution to appropriate regulatory agencies as specified below.

Monitoring Reports: Reports shall be submitted to the Engineer as specified below. Reports shall be compensated under Item 755.76 Wetland Monitoring Reports.

**ITEM 755.45** (Continued)

ASSOCIATED ITEMS AND MATERIALS

**Compost** shall be in accordance with Subsection 751 and M1.06.0 Organic Soil Additives of the Standard Specifications. Compost shall not contain seeds, roots, stems, or other viable parts of invasive plants or other noxious plants. Off-site sources shall be identified and available for inspection prior to transport of material to the site to verify that they are likely to be free of invasive plant species, including all viable plant parts.

**Compost Blanket** shall be as specified under that Item.

**Seed Mix**

Required submittals include:

- Certificate of Materials from the supplier shall be submitted and approved 30 days prior to ordering seed. Seed species listed on the certificate shall include ecotype region (i.e., *Asclepias incarnata*, PA Ecotype).

- Seed tag from the bag of seed used shall be submitted to the Engineer at the time of seeding. Seed tag shall include ecotype region and species, guaranteed percentages of purity, weed content and germination of the seed, and the net weight. Seed tag shall match the Certificate of Materials, include the name of the supplier, and date material was sent.

- Bill of lading or a notarized Certificate of Compliance from the Supplier serving as proof of purchase shall be submitted if requested by the Engineer. Document shall include date of sale, quantity, lot number, and address of Supplier. This shall match the seed tag. Notary shall not work for either the Contractor or seed supplier.

Seed Mix shall be Wetland – Seasonally Flooded Mix and shall be per Item 765.554. See Plans for areas.

Fertilizers shall not be used.

**Straw mulch or hydromulch** shall be per Section M6 of the Standard Specifications.

**ITEM 755.45** (Continued)

**Item 765.554: Wetland – Seasonally Flooded Mix**

| | Botanical Name | Common Name | % PLS By Weight |
|---|---|---|---|
| Grass | Elymus riparius | Riverbank Wild Rye | 20.00% |
| | Andropogon gerardii NY Eco | Big Bluestem NY Eco | 12.00% |
| | Carex lupulina | Hop Sedge | 10.00% |
| | Panicum clandestinum 'Tioga' | Deer Tongue 'Tioga' | 10.00% |
| | Carex vulpinoidea | Fox Sedge | 10.00% |
| | Carex scoparia | Broom sedge | 8.00% |
| | Sorghastrum nutans NY Eco | Indiangrass NY Ecotype | 8.00% |
| | Panicum virgatum | Switch Gras | 8.00% |
| | Juncus effusus | Soft Rush | 2.00% |
| | Juncus tenuis | Path Rush | 1.00% |
| | | | 89.00% |
| Herb/Forb | Verbena hastata | Blue Vervain | 4.00% |
| | Desmodium canadense | Showy Tick Trefoil | 2.00% |
| | Eupatorium maculatum | Joe-pye Weed | 1.00% |
| | Asclepias incarnata | Swamp Milkweed | 1.00% |
| | Aster novae-angliae | New England Aster | 1.00% |
| | Eupatorium perfoliatum | Boneset | 0.70% |
| | Helenium autumnale | Common Sneezeweed | 0.50% |
| | Aster puniceus | Aster - Swamp | 0.50% |
| | Mimulus ringens | Monkey Flower | 0.20% |
| | Vernonia noveboracensis | New York Ironweed | 0.10% |
| | | | 11.00% |
| | | | 100.00% |

**Mix 765.554:** 20 lbs/acre PLS.

In addition, apply 30 pounds of cover crop (grain oats or grain rye) as appropriate to the season.

50% Increase Adjustment for Field Conditions

SEEDING SEASON

The appropriate seeding seasons are:
Spring: April 15 - May 15
Fall: October 1 – November 15 for dormant seeding

**Water**

The Contractor shall provide water and all equipment required at no extra cost. Water shall be suitable for irrigation and free from ingredients harmful to plants and wildlife. Water from the adjacent water bodies or waterways shall not be utilized. It is the Contractor's responsibility to correct injury or damage due to the lack of water, too much water, or use of contaminated water.

**ITEM 755.45** (Continued)

CONSTRUCTION METHODS & SEQUENCE

**Site Protection Prior to Impacts**

Prior to any land work, as part of the initial site-walk, the Wetland Specialist shall photo-document the site and provide a summary report of existing conditions as outlined under Item 755.75 Wetland Specialist.

Where and as required vegetation shall be cut flush and area surveyed to establish pre-construction elevations.

Following the cutting and surveying, temporary separation fabric or timber matting shall be placed as required to protect soil and vegetation from compaction, contamination, and/or other damages. Fabric and timber mats shall be placed as specified under the respective Items and the Engineer shall approval placement.

**Restoration Upon Completion of Roadway Construction Work**

Sediment Barriers

If required for sediment control during Restoration work (i.e, tilling is required to restore soil), sediment barriers shall be installed along the downslope perimeter of the Restoration Area beginning and ending in the surrounding upland so that no disturbed soil can enter adjacent wetlands or waters. Sediment barriers shall be in place and approved by the Engineer prior to any soil disturbance. No work shall take place outside the barriers.

Removal of Fill and Grading

Fill and temporary separation fabric or mats shall be removed and disposed of as specified under the respective Items.

Final elevations shall be approved by the Engineer prior to soil preparation and seeding. Grading shall be incidental to this Item.

Following approval of grading to elevations required, soil shall be prepared and seeded as follows.

Soil Scarification

Compacted soil shall be scarified with equipment approved by the Engineer. Upon approval of soil scarification, the area shall ***seeded with Compost Blanket*** as specified below. Seeding shall immediately follow soil preparation.

**ITEM 755.45** (Continued)

Seeding with Compost Blanket

Application of compost blanket and seed shall be done as one application and shall not begin until the Engineer has approved the site and soil conditions. The Contractor shall notify the Engineer when raked areas are ready for inspection and application of compost blanket and seed.

Compost shall be pneumatically applied (blown on) to a depth of one half to one inch at the same time that seed is broadcast such that seed is covered by a light application of compost.

When planting occurs on projects with compost blankets and seed application, planting shall occur prior to application of compost and seed. Otherwise, compost and seed shall be re-applied to the satisfaction of the Engineer and at not cost to the contract.

Seed tags shall be submitted at time of seeding.

SEED ESTABLISHMENT

*Seeding* that fails to establish according to the conditions of acceptance below shall be over-seeded as required by the Engineer. Washouts and channels shall be repaired and stabilized prior to overseeding. Excessive weed growth shall be pulled out by the roots or, with approval from the Engineer, cut prior to over-seeding. Soil repair and weed control are incidental to this Item.

CONDITIONAL ACCEPTANCE OF WORK

Conditional Acceptance shall indicate approval of the wetland restoration work and agreement that work has been done according to plan or modified as approved.

Upon completion of construction, the Contractor shall submit a Request for Conditional Acceptance that includes a brief narrative from the Wetland Specialist (if applicable to project) demonstrating that the wetland restoration work was done according to plans (or how modified) and meets required permit conditions (if applicable). The narrative shall include, photo-documentation of pre-construction conditions as well as soil work, planting, and seeding. Seed tags shall be submitted as part of the Request for Conditional Acceptance.

**ITEM 755.45** (Continued)

Upon receipt of a Request for Conditional Acceptance, the Engineer, the Wetland Specialist, and regulatory representative (if required) shall assess the Restoration Area and the surrounding areas. At a minimum, the following conditions shall be included in the narrative and reviewed as part of the on-site assessment of whether:

- The target elevations have been restored per the survey or adjusted per the Engineer. Areas that are too high or too low should be identified along with suggested corrective measures.
- Soil compaction has been mitigated.
- Soils are stabilized and there is no sediment in the wetland and no channeling of slopes.
- Hydrology meets performance standards and has been adequately restored.
- Specified seed mix has been seeded and seeded species in the wetland and adjacent upland show signs of good germination and healthy growth.
- Planted woody and herbaceous species (if included) meet specifications and are establishing well.
- There are no invasive plants visible in the restored wetland area.
- Silt fence and non-biodegradable sediment barrier materials have been removed.

Upon approval that the work meets the above conditions, MassDOT will issue a letter of Conditional Acceptance. If the Wetland Restoration work is not approved, MassDOT will issue a rejection letter requiring corrective actions. Work not approved shall be addressed by the Contractor at no extra cost.

Erosion of adjacent slopes or the flow of sediments into the wetland between Conditional and Final Acceptance shall be immediately addressed by the Contractor.

FINAL ACCEPTANCE OF WORK

Following one full growing season, the Contractor shall submit a Request for Final Acceptance. Submittal shall include a brief narrative of conditions. Upon receiving the Request, the Engineer, Wetland Specialist and regulatory representative (if required) shall assess the Restoration Area. Final Acceptance will initiate the start of the Monitoring Period (if required).

The following conditions shall be inspected and approved for acceptance and payment:

- Hydrology is functioning as intended.
- The desired seeded species are establishing well and cover 100 percent of the restoration area, excluding areas of open water, large boulders or planned bare soil.
- No sediments have entered the wetland.
- Adjacent slopes are stabilized with desirable vegetation.
- Planted woody and herbaceous species (if included) meet specifications and are established well.
- There are no visible invasive plants.

**ITEM 755.45** (Continued)

If the restoration work is not approved, MassDOT will issue a rejection letter requiring corrective action. All costs associated with corrective measures and plant replacement shall be incidental to this Item with no additional compensation. Work not approved shall be addressed by the Contractor at no extra cost.

MONITORING REPORTS FOR REGULATORY COMPLIANCE

Post wetland construction Monitoring Reports shall be completed and submitted by the Wetland Specialist as specified and compensated under Item 755.76 Wetland Monitoring Reports.

Generally, the following conditions shall be met upon each inspection:

- Hydrology is functioning as intended, relative to the preexisting condition of the restored wetland.
- Seeded species are establishing well and cover 100 percent of the area, excluding areas of open water areas or planned bare soil.
- No sediments have entered into wetland.
- Adjacent slopes are stabilized with desirable vegetation.
- All planted species (if included) are living and establishing well.
- There are no visible invasive plants.

If, at the end of the required monitoring period, the requirements have not been met and success of the wetland replication area has not been achieved as determined by the Monitoring Reports, the Contractor shall provide corrective measures. All costs associated with corrective measures and plant replacement shall be incidental to this Item with no additional compensation.

**METHOD OF MEASUREMENT**

Item755.45 will be measured for payment per SQUARE YARD of Wetland Restored and accepted, complete.

Item 755.45 will be paid at the Contract unit price per SQUARE YARD, which price shall include all labor, materials, compost and amendments, compost blanket, seed, mulch, equipment, submittals, maintenance, grading, and incidental costs necessary to complete the work as required.

Payment shall be as follows:

- 50% upon completion of soil preparation and seeding
- 25% upon Conditional Acceptance
- 25% upon Final Acceptance or approval of the Engineer

Excavation of existing sediment will be paid under Item 120.

Sediment Control Barrier will be paid under Item 767.121

Timber Matting will be paid under Item 767.91

Wetland Specialist will be paid under Item 755.75

Wetland Monitoring Reports for follow-up monitoring will be paid under Item 755.76

**ITEM 755.75 WETLAND SPECIALIST HOUR**

The work shall be the services of a Wetland Scientist, Wetland Ecologist, Restoration Ecologist, or other professional with similar qualifications hereafter referred to as the "Wetland Specialist."

"Wetland Mitigation" shall be used herein for applicable wetland work. For this project, applicable wetland work is for: ***Item 755.35 Inland Wetland Replication Area*** (creation of a new wetland) ***and/ Item 755.45 Wetland Restoration (restoration after temporary impacts).***

The Wetland Specialist shall demonstrate knowledge and expertise to coordinate and oversee all work associated with the Wetland Mitigation as defined herein, as shown on the Plans, as required by permits, and as specified under the relevant Wetland Mitigation Items.

Regulatory monitoring reports following Final Acceptance of the Wetland Mitigation shall be per Item 755.76, Wetland Monitoring Reports.

For all onsite work, the Wetland Specialist shall sign in and sign out with the Engineer.

The Wetland Specialist shall not be from the same company as the company responsible for planting, seeding, and/or maintaining the wetland.

QUALIFICATIONS

The Wetland Specialist shall have a minimum of five (5) years of experience with construction and monitoring of wetland mitigation areas similar in size, type, and complexity to the Contract mitigation. When required by permits, at least ten (10) years of experience may be required. The Wetland Specialist shall be thoroughly versed in the Commonwealth of Massachusetts Wetlands Protection Act (MGL C.131, s.40), U.S. Army Corps of Engineers New England District Compensatory Mitigation Guidance, and all other relevant regulations of the Massachusetts Department of Environmental Protection and the U.S. Army Corps of Engineers New England District.

SUBMITTALS - QUALIFICATION

Within sixty (60) days following the Notice to Proceed, the Contractor shall provide proof of qualifications for the Wetland Specialist to the Engineer for approval. Submittals shall include, but not be limited to, the following:

- Resume of the individual on-site implementing the Wetland Specialist work. If the Wetland Specialist changes over the course of the project, the new individual shall submit resume and qualifications for approval 30 days prior to doing any work on-site.
- Resume of any personnel working on-site in place of the Wetland Specialist. Individual shall be approved prior to work on-site.
- Narrative describing the company, its expertise, technical qualifications and experience with wetland construction.

**ITEM 755.75** (Continued)

- At least three (3) references from prior work of a similar nature completed in the last five (5) years and by the individuals who will perform the work. Provide contact information for each reference including address, phone number and email.
- A summary of each reference project including nature of the work, project size, dates, and period of construction and monitoring, methodologies used, and summary of success (or not) in terms of meeting performance objectives. Summary shall include a minimum of one before and one after photo for each project.

SUBMITTALS – DOCUMENTATION AND REPORTS

Wetland Construction Oversight

Wetland Specialist shall provide documentation of pre-existing conditions and wetland construction as specified below and as part of fulfilling the Scope of Work described below. Documentation shall include photos that are clear and legible. Photos are incidental to this Item.

- ***Site Walk Prior to Disturbance and Construction of Wetlands:*** Provide brief assessment with photos, including documentation of the existing wetlands to be impacted (both permanent and temporary), proposed wetland replication area, and reference/model wetland areas (typically an adjacent undisturbed wetland or the existing wetland to be impacted). Photos of existing wetlands that will be temporarily impacted shall include a view from at least 3 angles.
- ***Excavation and Grading:*** Documentation shall include minimum of two photos of the excavated wetland and two photos after final grading prior to planting and seeding. For restoration areas, photos shall show soil preparation (i.e, tilling and grading), if applicable.
- ***Approval of Subgrades****:* The Wetland Specialist shall inspect the sub-grade of the Replication Area to ensure that proper hydrology is likely to be established and shall provide the Engineer with written confirmation and photographs upon completion of subgrade excavation work. Written confirmation shall include recommended field adjustments, based on field observations, to achieve the desired hydrology and designed wetland system.
- ***Planting and Seeding:*** Provide assessment and photos of vegetation upon completion of planting and seeding work.

Wetland construction documentation and reports shall be submitted with Request for Conditional Acceptance and for the Order of Conditions, Water Quality Certifications, and other regulatory permits as required.

**ITEM 755.75** (Continued)

Requests for Acceptance of Work & Regulatory Compliance

The Wetland Specialist shall submit the following documents if and as specified herein and under Item the relevant Wetland Mitigation Items:

- Request for Conditional Acceptance.
- Request for Certificate of Compliance (Partial or Full) when applicable.
- Request for Final Acceptance.

SCOPE OF WORK

In the event of discrepancies with the applicable permits, the Wetland Specialist shall submit a Request for Information (RFI) to the Engineer.

General

The Wetland Specialist shall be responsible for the following:

- Review and have a comprehensive knowledge of the environmental permits relevant to the specific mitigation work being done so as to ensure compliance throughout the duration of the contract.
- Identify and inform the Contractor and Engineer of unique site conditions which may require adjustments to the schedule, design, or construction methods. For example, wildlife nesting, illegal dumping, or rare species.
- Identify and inform the Contractor and Engineer of any sediment or erosion control problems observed within mitigation areas.
- Advise so as to avoid impacts to adjacent areas and regulated wetland resources.
- Participate in necessary meetings as required by permits and when requested by the Engineer.

Inspections & Construction Oversight

The Wetland Specialist shall be responsible for, but not limited to, the following:

- Pre-Construction Site Walk
    - Following surveying, flagging, and staking of all relevant boundaries and elevations by the Contractor, the Wetland Specialist shall walk the site with the Engineer and the Contractor to review existing and proposed conditions, recommend changes if necessary, and approve the following: location and boundaries of the Mitigation Area, target elevations and grades, location of tree protection associated with the Mitigation Area, and final layout and limits of clearing for access route.
    - Select and mark snags, logs, and woody material to be retained for placement in the Wetland Mitigation, as appropriate.
    - Note invasive plants in and adjacent to Wetland Mitigation.
    - Provide summary report if and as specified under Wetland Mitigation Items.

**ITEM 755.75** (Continued)

- Excavation, Soil Placement, Grading for Replication Areas
    - Approve excavated depth and grading for appropriate wetland hydrology, subsoil preparation, and finished grade of placed wetland soil.
    - Adjust grades as required and approve microtopography. If grades need to be adjusted, submit an RFI to the Engineer.
    - If requested by the Engineer, the Wetland Specialist shall inspect stockpiled wetland soil for moisture content and signs of undesirable weeds.
- Soil Protection and Restoration Measures for Restoration Areas
    - Review and approve methods of soil protection and restoration if required.
    - Confirm decompaction will adequately restore appropriate wetland hydrology. If decompaction measures need to be adjusted, submit an RFI to the Engineer.
- Re-vegetation of Mitigation Area
    - Placement of woody material to be re-used.
    - Verify seed used complies with specifications and site conditions, determine limits for wetland seeding based on elevations, approve seeding and mulching methods, and collect seed tags to submit with Request for Conditional Acceptance.
    - Review planting methods (if applicable) prior to installation and oversee layout of wetland plants.

Conditional Acceptance

Upon completion of construction of the wetland, as part of the Request for Conditional Acceptance, the Wetland Specialist shall provide a brief narrative demonstrating that the wetland construction work was done according to plans (or how modified) and meets the conditions required for acceptance as specified under the Wetland Mitigation Items. Submittal shall include a report and photo documentation of pre-construction conditions, construction work, seeding, planting, and other work as specified under the Wetland Mitigation Items. Photos of completed Wetland Restoration areas shall include the same views as the pre-construction reference photos.

Upon receipt of a Request for Conditional Acceptance, the Engineer, the Wetland Specialist and regulatory representative (if required) shall assess the Wetland Mitigation and surrounding area to ensure that it meets the conditions specified under the Wetland Mitigation Items.

Upon approval, MassDOT will issue a letter of Conditional Acceptance. If the Wetland Mitigation work is not approved, MassDOT will issue a rejection letter requiring corrective action. The Wetland Specialist shall recommend corrective actions.

Request for Certificate of Compliance

If required, a Request for Certificate of Compliance shall be prepared and submitted to the Engineer immediately following Conditional Acceptance. Request shall be as specified under the relevant Wetland Mitigation Items.

**ITEM 755.75** (Continued)

Request for Final Acceptance

Following one full growing season, the Wetland Specialist shall provide a brief narrative of the status of the Wetland Mitigation to be submitted with the Request for Final Acceptance.

Upon receipt of the Request, the Engineer, the Wetland Specialist and regulatory representative (if required) shall assess the Wetland Mitigation and surrounding area to ensure that it meets the conditions specified under the relevant Wetland Mitigation Items.

If the Wetland Mitigation is not approved, MassDOT will issue a rejection letter requiring corrective action. The Wetland Specialist shall recommend corrective actions.

## METHOD OF MEASUREMENT

Item 755.75 Wetland Specialist shall be measured for payment per HOUR for on-site service provided by the Wetland Specialist.

Work shall include all inspections, photos, submittals, and associated tasks for construction and restoration oversight, narratives for Conditional and Final Acceptance, Request for Certificate of Compliance (Partial or Full) if required, documentation required for permits, and all other work specified above.

## BASIS OF PAYMENT

Item 755.75 Wetland Specialist will be paid at the Contract unit price for each HOUR, or fraction thereof, spent on-site to perform the work as described above. Reports and photo documentation are required for payment.

Post wetland construction reports shall be per Item 755.76, Wetland Monitoring Reports.

**ITEM 755.76 WETLANDS MONITORING REPORTS LUMP SUM**

The work under this Item shall be for the submittal of Wetland Monitoring Reports following the completion of wetland construction and shall include all inspections, photos, and other work required to complete those reports as specified herein.

"Wetland Mitigation" shall be used herein for applicable wetland work, whether Wetland Replication (creation of a new wetland) and/or Wetland Restoration (restoration after temporary impacts).

The Contractor shall retain the services of a Wetland Scientist, Wetland Ecologist, Restoration Ecologist, or other professional with similar qualifications, hereafter referred to as the "Wetland Specialist," to complete the Wetland Monitoring reports. Wetland Specialist shall meet requirements specified under Item 755.75 Wetland Specialist.

All on-site Wetland Specialist services required to complete the construction and revegetation of the wetland replication, including preparation and submission of monitoring reports during construction, shall be per Item 755.75 Wetland Specialist.

SCOPE OF WORK

Post-Construction Wetland Monitoring Reports

Final Acceptance of the wetland construction work as specified under Item 755.35 shall initiate the beginning of the Monitoring Period.

Inspections and reports shall be performed to ensure compliance with mitigation requirements defined under the relevant Wetland Mitigation Items and with all applicable environmental permits. Monitoring reports shall cover the following:

- Identification of all plant species present
- Percent cover for each plant species and overall percent surface area cover by indigenous wetland plant species for replication area and upland
- Description of the viability, health, and vigor of installed plants as well as volunteer plant species within the replication areas
- Description of remedial measures taken to ensure criteria are met
- Depth to apparent water table and/or depth of surface inundation, both as measured from the soil surface and data loggers, as appropriate.
- A conclusion regarding the success of the wetland mitigation area relative to the performance standards at 310 CMR 10.55(4)(b) (unless varied), the design plans, and performance criteria established by MADEP in the variance conditions (when applicable), and the reference wetland.
- Recommendation for a corrective plan of action if needed.

**ITEM 755.76** (Continued)

Reports shall be submitted to the Engineer as a digital copy in Portable Document Format (PDF) unless otherwise requested. Hard copies shall be provided as requested by the Engineer. All reports shall be marked with the applicable permit numbers and identifying information as required in the permits. Reports shall include photo documentation of the wetland/s being monitored and shall include a minimum of 3 views from different orientations. Views shall be labeled.

Spring Reports, when required, shall be submitted to the Engineer by July 1 for dispersal to the appropriate permitting agencies.

End of Year Reports (which may serve as the Fall Report) shall be based on inspections that occur prior to October 15th. Reports shall be submitted to the Engineer no later than November 1 of each year.

Monitoring Reports shall be as follows for **2** years (to be confirmed after permits are filed):

- *MassDEP: 2 Reports - (1 spring and 1 end of year).*
- *ACOE: 2 Reports (1 spring and 1 end of year).*

**BASIS OF PAYMENT**

Item 755.76 Wetland Monitoring Reports will be at the Contract LUMP SUM price, which price shall be full compensation for all labor, materials, equipment, and all incidental costs required to complete the work.

The price will be paid in equal installments of the LUMP SUM divided by the number of reports submitted.

Payment shall be upon submittal and acceptance of each report, based on the following schedule:

- Year 1 = ***2 Reports***
- Year 2 = ***2 Reports***

## ITEM 756. NPDES STORM WATER POLLUTION PREVENTION PLAN LUMP SUM

This Item addresses the preparation and implementation of a Storm Water Pollution Prevention Plan required by the National Pollutant Discharge Elimination System (NPDES) and applicable Construction General Permit (CGP) issued by the U.S. Environmental Protection Agency (EPA).

Pursuant to the Federal Clean Water Act, construction activities which disturb one acre or more are required to apply to the EPA for coverage under the NPDES General Permit for Storm Water Discharges from Construction Activities. The Contractor shall be fully responsible for compliance with the most recently issued CGP and any subsequent revisions. Should a fine or damages be assessed against it, or MassDOT, as a result of a local, state, or federal enforcement action due to non-compliance with the CGP, the Contractor shall take full responsibility.

The NPDES CGP requires the submission of a Notice of Intent (NOI) to the EPA prior to the start of construction (defined as any activity which disturbs land, including clearing and grubbing). There is a fourteen (14) day review period commencing from the date on which EPA enters the Notice into their database. Based on the review of the NOI, EPA may require additional information, including but not limited to, the submission of the Storm Water Pollution Prevention Plan (SWPPP) for review. Work may not commence on the project until final authorization has been granted by EPA. Any additional time required by EPA for review of submittals will not constitute a basis for claim of delay.

In addition, if the project discharges to an Outstanding Resource Water, vernal pool, or is within a coastal ACEC as identified by the Massachusetts Department of Environmental Protection (DEP), a separate notification to DEP is required. DEP may also require submission of the Storm Water Pollution Prevention Plan for review and approval. Filing fees associated with the notification to DEP and, if required, the SWPPP filing to DEP shall be paid by the Contractor.

The CGP also requires the preparation and implementation of a SWPPP in accordance with the afore-mentioned statutes and regulations. The Plan will include the CGP conditions and detailed descriptions of controls of erosion and sedimentation to be implemented during construction. The Contractor shall prepare the SWPPP and update it as necessary. The Contractor shall submit the Plan to the Engineer for approval at least four (4) weeks prior to any site activities. It is the responsibility of the Contractor to comply with the CGP conditions and the conditions of any state Wetlands Protection Act Order, Water Quality Certification, Corps of Engineers Section 404 Permit and other environmental permits applicable to the project and to include in the SWPPP the methods and means necessary to comply with applicable conditions of said permits.

It is the responsibility of the Contractor to complete the SWPPP in accordance with the EPA CGP, provide all information required, and obtain any and all certifications as required by the CGP. Any amendments to the SWPPP required by site conditions, schedule changes, revised work, regulations, construction methodologies, and the like are the responsibility of the Contractor. Amendments will require the approval of the Engineer prior to implementation.

**ITEM 756.** (Continued)

In addition to the CGP requirements for inspections, MassDOT requires inspection of all erosion controls and site conditions on a weekly basis. Inspections are also required at portions of sites that discharge to sediment or nutrient impaired or high quality waters per the CGP when each incidence of rainfall exceeding 0.25 inches in twenty-four hours or after snowmelt discharge from a storm event that produces 3.25 inches or more of snow within twenty-four hours occurs. The CGP requires that inspections be performed by a qualified individual as outlined in the CGP. MassDOT requires proof of completion of a 4 hour minimum sedimentation and erosion control training class current to the latest CGP. This individual can be, but not limited to, someone that is either a certified inspector, certified professional, or certified storm water inspector. The documentation shall be included as an appendix in the SWPPP. The inspector's qualifications shall be submitted to the Engineer for approval prior to beginning any work. This individual shall be on-site during construction to perform these inspections. In addition, if the Engineer determines at any time that the inspector's performance is inadequate, the Contractor shall provide an alternate inspector. Written weekly inspection forms, storm event inspection forms, and Monthly Summary Reports must be completed and provided to the Engineer. Monthly Summary Reports must include a summary of construction activities undertaken during the reporting period, general site conditions, erosion control maintenance and corrective actions taken, the anticipated schedule of construction activities for the next reporting period, any SWPPP amendments, and representative photographs.

The Contractor is responsible for preparation of the Plan, all SWPPP certifications, inspections, reports and any and all corrective actions necessary to comply with the provisions of the CGP. The Standard Specifications require adequate erosion control for the duration of the Contract. All control measures must be properly selected, installed, and maintained in accordance with manufacturer specifications and good Engineering practices. If periodic inspections or other information indicates a control has been used inappropriately or is no longer adequate, it is the responsibility of the Contractor to replace or modify the control for site conditions at no additional cost to the Department. Contractor must maintain all control measures and other protective measures in effective operating conditions and shall consider replacement of erosion controls for each construction season.

The work under this Item shall also include the preparation, submission and implementation of a Flood Contingency Plan. The plan shall address the potential need for the temporary relocation of construction and auxiliary equipment situated within the 1% annual chance of flooding zone to designated upland locations above the Base Flood Elevation during flood events. The Flood Contingency Plan shall address any additional MassDEP-required information requirements, as applicable. The Flood Contingency Plan shall be submitted to the Engineer for review and approval at the same time as the SWPPP.

This Item addresses acceptable completion of the SWPPP, any revisions/amendments required during construction, preparation of monthly reports and Flood Contingency Plan. In addition, any erosion controls beyond those specified in bid Items which are selected by the

**ITEM 7 56.** (Continued)

Contractor to facilitate and/or address the Contractor's schedule, methods and prosecution of the work shall be considered incidental to this Item.

The CGP provides specific requirements for temporary and final stabilization. This shall be incorporated into the project schedule. The permit defines specific deadline requirements for Initial Stabilization ("immediately", i.e., no later than the end of the next work day following the day when earth-disturbing activities have temporarily or permanently ceased) and for Complete Stabilization Activities (no later than 14 calendar days after the initiation of stabilization). Stabilization criteria for vegetative and non-vegetative measures are provided in the CGP.

The CGP requires the submission of a Notice of Termination (NOT) from all operators when final stabilization has been achieved, as well as removal and proper disposal of all construction materials, waste and waste handling devices, removal of all equipment and construction vehicles, removal of all temporary stormwater controls, etc. Approval of final stabilization by the Engineer and confirmation of submission of the NOT will be required prior to submission of the Resident Engineer's Final Estimate. The permittee shall use EPA's website to prepare and submit the NOT.

**BASIS OF PAYMENT**

Item 756 will be paid for at the Contract LUMP SUM price, which price shall be considered full compensation for all labor, materials, equipment, SWPPP & Flood Contingency Plan preparation, revisions/addenda during construction, monthly reports, filing fees, and all incidental costs required to complete the work.

Payment of 50% of the Lump Sum price of this Item will be made upon acceptance of the NPDES Stormwater Pollution Prevention Plan & Flood Contingency Plan.

Payment of 40% of the Lump Sum price of this Item will be will be paid in equal monthly installments distributed across the time remaining in the accepted baseline schedule until substantial completion.

The remaining 10% of the Lump Sum price of this Item will be paid following accepted submission of a Notice of Termination (NOT) when final stabilization has been achieved.

## ITEM 756.1 CONSTRUCTION PERIOD POLLUTION PREVENTION AND EROSION AND SEDIMENTATION CONTROL PLAN LUMP SUM

The work shall be associated with the Union Street and Lancaster Street locations and shall consist of the preparation and implementation of a Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan (CP/PP) as required by a regulatory agency. This Item is applicable to projects that are not subject to the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP) required by the National Pollutant Discharge Elimination System (NPDES) and applicable Construction General Permit (CGP) issued by the U.S. Environmental Protection Agency (EPA).

The work under this Item shall also include the preparation, submission and implementation of a Flood Contingency Plan. The plan shall address the potential need for the temporary relocation of construction and auxiliary equipment situated within the 1% annual chance of flooding zone to designated upland locations above the Base Flood Elevation during flood events. The Flood Contingency Plan shall address any additional MassDEP-required information requirements, as applicable. The Flood Contingency Plan shall be submitted to the Engineer for review and approval at the same time as the CP/PP.

The CP/PP, at a minimum, shall include the following:

- Project & Site Description
- Project Site Contact Information
    - This shall include the phone number for the Contractor Site Superintendent, Project Manager and CP/PP Inspector(s).
- Qualifications of the CP/PP Inspector and documentation of qualifications
    - At a minimum, relevant personnel responsible for erosion and sedimentation control inspections shall have completed the EPA's construction inspection training course and obtained a certificate confirming completion of the training module, or have completed a third-party stormwater course which covers the minimum topics listed in Part 6.3.b of the CGP.
- Reference to and information to address permit Special Conditions relevant to the CP/PP contents
    - These include but are not limited to 401 WQC Filing Number 25-WW26-0020-APP, USACE Application Number NAE-2025-00173
- Construction Sequencing/Phasing
- Erosion Prevention, Sediment Control, and Best Management Practices (BMP s) to be implemented
- Maintenance measures and intended timeline to address maintenance and corrective actions for implemented Erosion Prevention Measures, Sediment Control Devices, and BMPs
- Anticipated inspection schedule and sample inspection report form
    - Use the EPA's Site Inspection Report Template found on the EPA's website.

**ITEM 756.1** (Continued)

- Site Plans
    - This shall depict, at minimum, the project limits, locations of construction phase erosion prevention measures, construction phase sedimentation control measures, limits of disturbance, staging and laydown areas, proposed dewatering locations and proposed stockpile locations. Depict existing jurisdictional wetland resource areas, drainage conveyances and stormwater treatment features.

The Contractor shall prepare the CP/PP, and update/revise as needed upon changes in site conditions, relevant project personnel, construction phase controls, schedule changes, revised work, regulations, and construction methodologies. The Contractor shall submit the CP/PP to the Engineer for approval at least thirty (30) days prior to prior to commencement of any project related activity that disturbs land, including clearing and grubbing. Submission of the CP/PP to a regulatory agency for review and approval may also be required by a Special Condition associated with a permit issued under the Wetlands Protection Act, or Section 401of the Clean Water Act and their implementing Regulations. It is the responsibility of the Contractor to ensure the CP/PP is submitted to reviewers in a timely manner to support the construction schedule.

It is the responsibility of the Contractor to comply with the conditions of any state Wetlands Protection Act Order, Water Quality Certification, Army Corps of Engineers Section 404 Permit and other environmental permits applicable to the project, and to include in the CP/PP the methods and means necessary to comply with applicable conditions of said permits.

Inspection frequency shall occur at least once every seven calendar days and within 24 hours of a storm event that produces 0.5 inches or more of rain within a 24-hour period, or at a more stringent frequency if the CP/PP requires. The inspections shall be performed by an individual that meets the qualifications specified in the permits and proof of the inspector's qualifications shall be included as an Appendix in the CP/PP. CP/PP inspection reports shall be completed and distributed to the Resident Engineer within 24-hours of each inspection. Special conditions associated with permits may also require submittal of reports to regulators at a certain frequency. Reports shall be maintained throughout the duration of the project. In addition, if the Engineer determines at any time that the inspector's performance is inadequate, the Contractor shall provide an alternate inspector.

The Contractor is responsible for preparation of the CP/PP, inspections, and associated reports. The Standard Specifications require adequate erosion and sedimentation control for the duration of the Contract. All control measures must be properly selected, installed, and maintained in accordance with manufacturer specifications, good Engineering practices, and MassDOT standard specifications and special provisions. Contractor must maintain all control measures and other protective measures in effective operating conditions in accordance with the additional Special Provisions herein. If periodic inspections or other information indicates a control has been used inappropriately or is no longer adequate, it is the responsibility of the Contractor to replace or modify the control for site conditions at no additional cost to the Department.

**ITEM 756.1** (Continued)

**BASIS OF PAYMENT**

Item 756.1 will be measured at the contract LUMP SUM price, which price shall include all work detailed above, including CP/PP and Flood Contingency Plan preparation, required revisions, revisions/addenda during construction, inspections and reports.

Work under this Item shall include acceptable completion of the CP/PP, Flood Contingency Plan, site inspections, and revisions/amendments required during construction. In addition, any erosion prevention or sediment control measures beyond those specified in bid Items that are selected by the Contractor to facilitate and/or address the Contractor's schedule, methods and execution of the work shall be considered incidental to this Item.

Payment of thirty (30) % of the contract price shall be made upon acceptance of the CP/PP and Flood Contingency Plan.

Payment of forty (40) % of the contract price shall be made in equal installments over the expected duration of stormwater pollution prevention measures.

Payment of the final thirty (30) % of the contract price shall be paid when final stabilization has been achieved (minimum of 75% total cover of disturbed vegetated areas with perennial ground cover).

## ITEM 765.21 ANNUAL COVER CROP FOR NATIVE SEEDING POUND

The work shall conform to the relevant provisions of Subsection 765 of the Standard Specifications and the following.

The work consists of furnishing and applying the appropriate annual grass to be seeded as a cover crop in conjunction with upland native seeding and at the rate specified herein.

A cover crop shall be used for following conditions:

- when specified under Application Rate for the permanent native upland seed mix
- for slopes 2:1 or steeper and an annual is not already specified as part of the permanent mix
- when seeding out of season and the native seed mix does not already specify an annual
- as required to prevent erosion until the permanent seed establishes.

A cover crop is not necessary for wetland seeding and is not typically necessary for soil stabilization when seeding in conjunction with a compost blanket application.

Annual rye (*Lolium multiflorum*) will not be accepted as an annual cover crop.

Using annual rye or exceeding the application rate such that a dense stand of annual grasses prevents germination of the native grasses will require mowing of annual grasses. In this instance, mowing of cover crop will be incidental to this Item.

### Seed and Application Rate

Add 30 pounds/acre of the following seed based on seeding season:

| | |
|---|---|
| *Avena sativa* (Grain Oats): | 1 January to 31 July |
| *Cecale cereale* (Grain Rye): | 1 August to 31 December |

### METHOD OF MEASUREMENT

Item 765.21 will be measured for payment per POUND of seed applied, complete in place.

### BASIS OF PAYMENT

Item 765.21 will be paid at the contract unit price per POUND upon approval of seed bag tags or other documentation of correct application rate and species, and upon acceptance of a satisfactory stand of annual grasses three weeks following seeding.

Application and care of cover crop will be paid for separately under Item 765.635 Native Seeding and Establishment.

**ITEM 765.442 ROADSIDE RIVERBANK SEED MIX POUND**
**ITEM 765.472 STEEP SLOPE MID-HEIGHT MIX POUND**

The work under these Items shall consist of furnishing the mix(es) specified below in the required quantity.

SUBMITTALS

1) Pre-Verification of Seed Availability. Within 30 days after the Notice to Proceed, the Contractor shall submit to the Engineer the supplier's verification of availability of seed species in the required quantities and for the anticipated date of seeding. Verification shall be on the supplier's letterhead and notarized by the supplier's notary. Species not expected to be available should be noted and substitutions recommended.

2) Final Verification of Seed Availability. No earlier than 21 days prior to ordering, the Contractor shall submit to the Engineer the supplier's verification of availability of seed species and in the required quantities. Verification shall be on the supplier's letterhead and notarized by the supplier's notary. A copy of this submittal shall be forwarded to the MassDOT Landscape Design Section. Substitutions or changes in the mix at this time must be approved by MassDOT Landscape Design Section.

3) Seed Worksheet provided herein shall be submitted to the Engineer prior to ordering seed to determine the number of pounds of Pure Live Seed required.

4) Seed Tags. The Contractor shall submit original seed tags from each bag of seed used on the project or ensure that each tag is photo documented by the Engineer while on the unopened bag.

Number of tags submitted must correspond to number of bags delivered.

Species listed on the seed tag shall match the Final Verification of Seed Availability (Submittal #2) unless approved otherwise. Tag must include: variety and species name; lot number; purity; percentage of inert matter; percentage of weeds, noxious seeds, and other crop seeds; germination, dormant or hard seed; total viability; origin of seed; germination test date, net weight, and name and address of seller. The origin of seed must be listed on the seed tag for all species in the mix to provide verification of original (generation 0) seed source. The smallest known geographic area (township, county, ecotype region, etc.) shall be listed. Ecotypes and cultivars shall be as close to Massachusetts as possible and appropriate to the site conditions.

**ITEM 765.442 & 765.472** (Continued)

A copy of this submittal shall be forwarded to the MassDOT Landscape Design Section.

5) Verification of Seed Delivery. Prior to payment, Contractor shall submit the Seed Delivery Verification form contained within the contract or the Supplier's Verification on company letterhead or a bill of lading. Supplier verification must include all information requested on the Verification form within this contract. The bill of lading must include variety and species name, lot number, net weight shipped, date of sale, invoice, project or seeding location, and name and address of Supplier. All information must be filled in and complete for acceptance. Information must match the seed tags and quantity of seed used on the job. A copy of this submittal shall be forwarded to the MassDOT Landscape Design Section

6) Seed Sample. If requested or if seed is from a previously opened bag, the Contractor may be asked to submit to the Engineer a sample of seed from the seed bag (1-2 cups) at the time of seeding.

SEEDING SEASON

The appropriate seeding seasons are:

| | | |
|---|---|---|
| Spring: | | April 15 - May 15 |
| Fall: | | October 1 - November 15 for dormant seeding |

PERMANENT SEED MIX(ES)

**Calculating Pure Live Seed (PLS)**

Quantities specified are PURE LIVE SEED. Greater quantities of ordered seed may be required to achieve actual specified seeding rates.

Pure Live Seed (PLS) is defined as a percentage calculated by multiplying the percent of pure seed by the percent of viable seed (total germination, hard seed, and dormant seed). For example:

If a seed label indicates 90% purity, 78% germination, 10% hard seed, and 2% dormancy, it is calculated to be 90% x [78 + 10 + 2]% = 81% PLS.

Therefore, each pound of PLS would need 1 pound / 0.81 = 1.2 pounds of seed with a 90% purity and 90% total germination

**Seed Mix(es)** shall be as specified below. Ecotypes and cultivars shall be as close to Massachusetts as possible and appropriate to the site conditions.

**ITEM 765.442 & 765.472** (Continued)

Roadside Riverbank Seed Mix

| Botanical Name | Common Name | % Mix By Weight (PLS) |
|---|---|---|
| **Grass** | | |
| Elymus virginicus | Virginia Wild Rye | 27.0% |
| Schizachyrium scoparium 'Albany Pine' | Little Bluestem 'Albany Pine' | 22.5% |
| Andropogon gerardii NY Eco | Big Bluestem NY Eco | 14.0% |
| Elymus riparius | Riverbank Wild Rye | 14.0% |
| Panicum virgatum | Switch Grass | 5.0% |
| Dichanthelium clandestinum 'Tioga' | Deertongue grass 'Tioga' | 5.0% |
| Carex vulpinoidea | Fox Sedge | 2.5% |
| Agrostis perennans | Upland Bentgrass | 1.5% |
| Poa palustris | Fowl Bluegrass | 0.3% |
| Juncus effusus | Soft Rush | 0.1% |
| Juncus tenuis | Path Rush | 0.1% |
| | | **92.0%** |
| **Herb/Forb** | | |
| Chamaecrista fasciculata | Partridge Pea | 3.0% |
| Penstemon digitalis | Beard-tongue | 1.0% |
| Vernonia noveboracensis | New York Ironweed | 0.6% |
| Helenium autumnale | Common Sneezeweed | 0.5% |
| Verbena hastata | Blue Vervain | 0.4% |
| Aster puniceus | Aster - Swamp | 0.4% |
| Aster cordifolius | Blue Wood Aster | 0.3% |
| Asclepias incarnata | Swamp Milkweed | 0.3% |
| Monarda fistulosa | Wild Bergamot | 0.2% |
| Aster novae-angliae | New England Aster | 0.2% |
| Solidago odora | Licorice Scented Goldenrod | 0.2% |
| Desmodium canadense | Showy Tick Trefoil | 0.2% |
| Eupatorium perfoliatum | Boneset | 0.2% |
| Eupatorium maculatum | Spotted Joe Pye Weed | 0.2% |
| Solidago juncea | Early Goldenrod | 0.1% |
| Euthamia graminifolia | Grass-leaved Goldenrod | 0.1% |
| Lobelia cardinalis | Cardinal Flower | 0.1% |
| | | **8.0%** |
| **Seeding Rate: 15.0 lbs PLS/Acre** | **100.0%** | |

**Application Rate:** 15 lbs/acre PLS. In addition, apply 30 pounds of cover crop (grain oats or grain rye) as appropriate to the season.

**ITEM 765.442 & 765.472** (Continued)

Steep Slope Mid-Height Seed Mix

| Botanical Name | Common Name | % Mix By Weight (PLS) |
|---|---|---|
| **Grass** | | |
| Cover Crop - Secale cereale/Avena | Cover Crop - Grain Oats/Rye | 40.0% |
| Schizachyrium scoparium 'Albany Pine' | Little Bluestem 'Albany Pine' | 30.0% |
| Elymus virginicus | Virginia Wild Rye | 8.0% |
| Elymus canadensis | Canada Wild Rye | 5.0% |
| Panicum virgatum | Switch Grass | 4.5% |
| Agrostis perennans | Upland Bentgrass | 3.0% |
| Dichanthelium clandestinum 'Tioga' | Deertongue grass 'Tioga' | 2.3% |
| | | **92.8%** |
| **Herb/Forb** | | |
| Echinacea purpurea | Purple Coneflower | 3.0% |
| Chamaecrista fasciculata | Partridge Pea | 2.0% |
| Penstemon digitalis | Beard-tongue | 0.7% |
| Monarda fistulosa | Wild Bergamot | 0.3% |
| Asclepias syriaca | Common Milkweed | 0.2% |
| Lespedeza capitata | Roundhead Bush Clover | 0.2% |
| Rudbeckia hirta-VT ecotype | Black-eyed Susan-VT ecotype | 0.1% |
| Aster prenanthoides | Zig Zag Aster | 0.1% |
| Solidago nemoralis | Grey Goldenrod | 0.1% |
| Aster pilosus | Heath Aster | 0.1% |
| Aster laevis NY Ecotype | Smooth Aster NY Ecotype | 0.1% |
| Pycnanthemum tenuifolium | Slender Mountain Mint | 0.1% |
| Solidago juncea | Early Goldenrod | 0.1% |
| Asclepias incarnata | Swamp Milkweed | 0.1% |
| | | **7.2%** |
| **Seeding Rate: 75.0 lbs PLS/Acre** | **100.0%** | |

**Application Rate: 75** lbs/acre PLS. In addition, apply 30 pounds of cover crop (grain oats or grain rye) as appropriate to the season.

**ITEM 765.442 & 765.472** (Continued)

Any species substitutions shall be with a species having similar characteristics and function. Substitutions must be approved by MassDOT Landscape Design Section per the documentation submittal process.

**50% Increase Adjustment for Field Conditions**

Seeding under the following conditions requires a 50% increase in the permanent mix at the time of construction:

- Seeding out of season

OR

- Seeding after Compost Blanket has been applied (unless already increased for out of season).

**METHOD OF MEASUREMENT**

Items 765.442 and 765.472 will be measured for payment by the respective POUNDs of Pure Live Seed delivered, complete and accepted.

**BASIS OF PAYMENT**

Item 765.442 and 765.472 will be paid at their respective contract unit prices per POUND of Pure Live Seed delivered upon approval of all Seed Submittal Documentation.

Cover crop not included as part of the permanent mix composition will be paid for under Item 765.21, Annual Cover Crop.

Application and care of native seed mix will be paid for separately under Item 765.635 Native Seeding and Establishment.

**ITEM 765.442 & 765.472** (Continued)

## *NATIVE SEED WORKSHEET*

Project Description: _____ Project No: _____

Contractor: _____ Contract No: _____

Seed Mix Number & Description: _____

**Contractor: Complete Prior To Ordering**

Pounds of Seed Required Per Contract:

_____lbs./acre for _____Acre(s) OR _____ SY

Additional 50% increase if required (out of season or seeding over compost blanket):

_____**lbs. Total Seed Required**

Calculated Quantity for **P**ure **L**ive **S**eed (PLS[1]):

_____ **Total Pounds PLS**

**Engineer: Verification at Time of Application**

Number pounds delivered to site[2]: _____ Date(s): _____

Actual Seed Bag Tag/s Received or photo documented by Engineer: _____

[1] *PLS=% pure seed x % viable seed (total germination, hard seed, and dormant seed).*
[2]*Quantity delivered should match pounds* ***Total Pounds PLS*** *and* ***Verification of Seed Delivery****. Pounds should be shown on each Seed Tag.*

**ITEM 765.442 & 765.472** (Continued)

## *SUPPLIER VERIFICATION OF SEED DELIVERY FOR MASSDOT PROJECTS*

Date_____

We hereby certify that (*Seed Supplier*):_____

Furnished to (*Contractor*): _____

For use on: (*Project Description*) _____

Project #: _____ Contract #: _____

Pounds of Pure Live Seed: _____

Of Mix (*Description*): _____

Lot Number _____

The material was delivered on (*Date*)_____.

The labels and contents meet all State and Federal regulations. The mixture consists of the following species, including cultivars (as applicable) and ecotype region, and at the following percentages (may be attached separately):

Name (print): _____ Title: _____

Supplier: _____

Signature and Seal: _____

**ITEM 765.635 NATIVE SEEDING AND ESTABLISHMENT SQUARE YARD**

The work shall conform to the relevant provisions of Subsections 765 and 767 of the Standard Specifications and the following:

The work under this Item shall consist of seeding, mowing, and other care to establish a stand of grass in the areas shown on the plans or as required by the Engineer. For the purposes of these specifications, the term "grass" shall apply to all the forbs, grasses, sedges, and rushes included in the materials.

QUALIFICATIONS

Seeding shall be done by a company having a minimum of five years of experience with native seed establishment. Prior to beginning work, the seeding Contractor shall furnish proof of qualifications to the Engineer for approval. Proof of qualifications shall include providing documentation (photos and contacts) to demonstrate knowledge and expertise with native seeding and establishment and proof of having completed successful native seeding projects.

SEEDING SEASON

Seeding seasons for native mixes is April 1 - May 15 and October 1 - December 1 for dormant seeding. Written approval must be obtained for seeding outside the seeding season and, if approved, the permanent seed rate shall be increased by 50%.

Seeding season for cover crops shall be grain oats January 1 – July 31 and grain rye August 1 – December 1.

MATERIAL AND SUBMITTALS

**Seed Mixes and Submittals** shall be per the Item(s) for permanent and annual (cover crop) seed mixes.

**Compost Blanket**, if used, shall meet the material and submittal requirements for that Item.

**Hydromulch** shall be wood fiber or straw applied per the Standard Specifications and at the rates specified below and per the manufacturer.

A certified statement shall be furnished, prior to start of work, to the Engineer by the Contractor as to the number of pounds of hydromulch, tackifier, and seed, per 100 gallons of water and as applicable to products used. This statement should also specify the number of square yards of seeding that can be covered with the solution specified above.

**Fertilizer**

No fertilizers shall be applied.

**ITEM 765.635** (Continued)

**Water**

Water, including hose and all other watering equipment required for the work, shall be furnished by the Contractor to the site at no additional cost. Water shall be suitable for irrigation and free from ingredients harmful to plant life. All plants injured or work damaged due to the lack of water or the use of too much water shall be the Contractor's responsibility to correct.

SEEDING

Hand broadcast method shall be used for all areas smaller than half an acre and when specified on the plans for areas over half an acre.

Seeding shall occur within 72 hours of placement of loam and final grading or the Contractor shall propose a reasonable, alternative schedule that shall be approved by the Engineer.

**Surface Preparation**

No seeding or soil preparation shall be done if soils are muddy or dry and compacted. Bare soils shall be raked to remove large stiff clods, lumps, brush, roots, stumps, litter and other foreign matter. Ruts and depressions shall be filled with additional loam or compost and the soil shall be re-graded to a relatively smooth finish corresponding to the required grades.

When seeding over existing or compacted soil or soil that has sat bare for more than 30 days, surface will be prepared by tilling or raking to a minimum depth of 2 inches prior to seeding and prior to Compost Blanket application (when applied).

Surface preparation shall be compensated for under for loam placement or topsoil rehandled and spread as appropriate to the project.

Jute or coir mesh, when specified in the contract, shall be placed after seeding and per the Standard Specifications and the manufacturer’s instruction.

Surface preparation shall be approved by the Engineer prior to seeding.

**Seeding over Various Substrates**

Loam: Seeding shall occur within 72 hours of loam placement to prevent loss of topsoil. Seed shall be manually broadcast for areas less than half an acre (each area, not cumulative area) and when specified on the plans. Broadcasting shall be immediately followed by hydromulching as specified below. When not specified on the plans, larger areas may be hydroseeded as specified below.

Compost Blanket: Compost Blanket shall be applied as specified under that Item. Seed should be hand broadcast at the same time as compost application to ensure a thin cover of compost over seed.

**ITEM 765.635** (Continued)

When seeding is done after application of Compost Blanket the rate shall be increased by 50%. If the Compost Blanket is applied after December 1, seed shall be broadcast or hydroseeding over the compost in the Spring and the rate increased by 50% specified under Seed Application.

Compost Mulch over Modified Rock: Compost Mulch and seed shall be applied as specified under that Item. No hydromulch is required.

**Cover Crop**

Cover crop shall be used when seeding out of season, when specified with the permanent native seed mix under that Item, and as required to prevent erosion until the permanent seed establishes.

A cover crop should not be used with a steep slope mix or other permanent mix which already contains either cereal rye or oats in the composition of the mix. A cover crop is not necessary for wetland seeding and is not typically necessary for soil stabilization when seeding in conjunction with a compost blanket application.

**Seed Application**

All seed shall be mulched as specified herein.

Seed application shall be by broadcast seeding or by hydroseeding as described below.

Broadcast Seeding

Seed shall be broadcast spread using a cyclone or whirlwind seeder or hand broadcast. Small or light-seeded species such as bluestem may be mixed with approved filler to achieve an even distribution. Seed shall not be broadcast when wind velocities are greater than 15 mph.

Broadcast seeding shall be undertaken in two separate passes at ninety degrees to each other. One-half the seeding rate shall be applied in each direction (horizontally and vertically). To ensure seed to soil contact with broadcasting of seed, seeding shall be followed by rolling or tracking with equipment approved by the Engineer.

Broadcast seed shall be mulched with weed-free straw mulch unless seeding is done as part of Compost Blanket in which case it shall be as specified above under seeding with Compost Blanket application. Hydromulching shall be as specified under Hydromulching.

Hydroseeding and Hydromulching

Hydroseed and mulching shall be per the manufacturer's directions and as follows.

Hydroseeding shall only be used for sites over half an acre in size or with permission of the Engineer.

**ITEM 765.635** (Continued)

Tank and hoses shall be cleaned from all previous hydroseeding and hydromulching projects. Seed shall be mixed into the slurry immediately before application and slurry applied within 30 minutes after seeds have been placed in the tank. Once seed has been placed in the tank, tank shall be agitated only enough to mix the seeds and keep slurry from separating.

A 2-step process shall be used for seeding in conjunction with hydromulch. Seed shall be applied with 500 lbs/acre of hydromulch in the first pass. A second pass with 1,000 lbs/ acre of hydromulch shall be applied in a second pass. Each pass shall be applied in a different direction.

Once the seed has been added to the tank mixture a one-hour time limit is set for spreading the mixture on the soil. Once the one hour has passed the excess mixture must be discarded.

For broadcast seeding, hydromulch shall be applied immediately following seeding at a rate of 1,000 lbs/acre. Tank shall be cleaned from any previous hydroseeding.

CARE DURING GERMINATION AND ESTABLISHMENT

Contractor shall care for seeded areas as necessary for successful germination. Care will include watering and weed control as necessary to achieve establishment of the specified seeded species after one growing season as specified below.

The Contractor shall maintain the stand of grasses to ensure healthy growth of the seeded species. Work shall include mowing or weed-whacking for weed control, watering if necessary, and removal of invasive plants.

Watering shall be sufficient to achieve soil moisture to a depth of 2 inches or more and such moisture is uniform. Method of watering shall not erode or damage soil or grassed surfaces.

General Weed Control: Unless otherwise directed, mowing shall be as specified under Mowing for Weed Control for seed establishment. Weeds shall be mowed prior to weeds setting seed (by the end of July unless otherwise approved).

Control of Invasive and Aggressive Weeds: Invasive and aggressive weeds, including but not limited to mugwort, ragweed, knapweed, foxtail, crabgrass, and chicory must be cut or treated prior to going to seed. Herbicide treatment must be coordinated with MassDOT. Undesired species (such as chicory) introduced due to use of incorrect seed mix shall be removed at the Contractor's expense.

MOWING FOR WEED CONTROL

Mowing for weed control shall be completed after weeds have sprouted and show leaf and bud growth, but prior to setting seed, generally between July 7$^{th}$ and August 1$^{st}$, unless directed otherwise by the MassDOT Landscape Architect and the Engineer.

Mowing height shall be as needed for weed control, generally to a height of 8 inches and not below 4 inches, unless directed otherwise. Mowing shall be with a brush hog mower or string trimmer other approved equipment. Conventional lawn mowers which cannot achieve the appropriate cut shall not be used.

**ITEM 765.635** (Continued)

Contractor shall give 48-hour notice prior to mowing work. Mowing shall only occur in dry sunny weather. Litter pickup should occur prior to mowing in all areas. If required, cut grass shall be raked and removed. Litter pickup and raking and removal of grass shall be incidental to the work.

Mowing equipment shall be approved by the Engineer prior to work.

OVER-SEEDING

Areas of bare ground greater than 2-3 feet in diameter shall be over-seeded with the specified mix during the appropriate season for seeding. Where required for overseeding mowing shall be as close to the soil as possible. Soil that is compacted shall be raked or otherwise roughened prior to over-seeding.

Over-seeding rates and methods shall those specified above under Materials and Methods. Following over-seeding, soil shall be lightly tamped to ensure seed to soil contact and areas shall be mulched with straw mulch and watered with a fine mist to moisten soil to a depth of at least 2 inches.

Over-seeding, mulch, watering, and all work for over-seeding shall be incidental.

DETERMINING SATISFACTORY GRASS ESTABLISHMENT

A well-established stand of the specified seeded species as determined by the Engineer and the MassDOT Landscape Architect will be required for Final Acceptance. The expectation is that an acceptable number and variety of the desired permanent seeded species (not the cover crop) will be visible. Generally:

- A minimum of 75% coverage by the specified permanent seeded species after one growing season. Of that percentage, generally, depending on the mix species:
    - At least 3 types of the permanent seeded grass species shall be visible.
    - At least 3 species of wildflowers shall be visible.
- There will be no significant gaps or bare soil (generally 2-3 feet in diameter or greater).
- There will be no more than 25% coverage by weed species.
- All soil shall be stabilized and there shall be no channeling or erosion.
- There will be no invasive or aggressive species within the stand at the time of acceptance.
- There shall be no evidence of seed from non-native mixes (i.e., clover) due to failure to clean the hydroseeding tank or using incorrect mix.

Invasive and aggressive weeds (such as mugwort, ragweed, knapweed, and chicory) must be cut or treated prior to going to seed for Interim Acceptance. Herbicide treatment must be coordinated with MassDOT.

A warm-season grass mix with perennials will not have uniform growth. A uniform stand of grass may indicate use of an incorrect mix.

**ITEM 765.635** (Continued)

ACCEPTANCE OF SEEDING AND ESTABLISHMENT WORK

Conditional Acceptance shall be based on proper application of seed as specified herein.

Interim Acceptance of Care. Seeding will be inspected by mid-July to assess germination and Establishment conditions as described above. When necessary for Interim Acceptance, areas shall be mowed prior to weed species producing seed and as specified above under Weed Control. ***Areas requiring weed control that are not mowed prior to weed seed dispersal will not be approved for Interim Acceptance.*** Seeding that shows good germination and is determined by the Engineer and Landscape Architect to not require weed control at time of inspection shall be accepted for Interim Acceptance payment.

Final Acceptance of Establishment shall be given upon satisfactory Establishment as described above.

If the seeded area fails to meet the requirements of Establishment by the end of the growing season, Contractor shall propose and implement remediations and site shall be inspected during the following growing season after July 1st. All remediation shall be at the Contractor's expense.

METHOD OF MEASUREMENT

Item 765.635 will be measured for payment by the SQUARE YARD, complete in place.

BASIS OF PAYMENT

Item 765.635 will be paid at the Contract unit price per SQUARE YARD upon Conditional, Interim, and Final Acceptances as described above. This price shall include all submittals, seeding, rolling to ensure seed-to-soil contact, weed control other than mowing, water, over-seeding, labor, materials, equipment, and all incidental costs required to complete the work of establishing a satisfactory stand of grass.

Native seed and cover crop mixes shall be compensated under the respective Items.

Site preparation, including raking, tilling, removal of debris and stones, and other work to the prepare site for seeding shall be compensated under loam placement or topsoil rehandled and spread as relevant to the project.

Mowing for weed control will be incidental to this Item.

Schedule of payment shall be as follows:

30% upon Conditional Acceptance

20% upon Interim Acceptance of Care, except this amount will be reduced to zero and final payment will be reduced accordingly when areas requiring weed control are not mowed as specified in the Interim Acceptance criteria.

50% upon Final Acceptance of Establishment

**ITEM 767.121 SEDIMENT CONTROL BARRIER FOOT**

The work under this Item shall conform to the relevant provisions of Subsections 670, 751 and 767 of the Standard Specifications and shall include the furnishing and placement of a sediment control barrier. Sediment control barrier shall be installed prior to disturbing upslope soil.

The purpose of the sediment control barrier is to slow runoff velocity and filter suspended sediments from storm water flow. Sediment barrier may be used to contain stockpile sediments, to break slope length, and to slow or prevent upgradient water or water off road surfaces from flowing into a work zone. Contractor shall be responsible for ensuring that barriers fulfill the intent of adequately controlling siltation and runoff.

Twelve-inch diameter (after installation) compost filter tubes with biodegradable natural fabric (i.e., cotton, jute, burlap) are intended to be the primary sedimentation control barrier. Photo-biodegradable fabric shall not be used.

For small areas of disturbance with minimal slope and slope length, the Engineer may approve the following sediment control methods:

- 9-inch compost filter tubes
- Straw bales which shall be trenched

No straw wattles may be used. Additional compost filter tubes (adding depth or height) shall be used at specific locations of concentrated flow such as at gully points, steep slopes, or identified failure points in the sediment capture line.

When required by permits, additional sediment barrier shall be stored on-site for Emergency use and replacement for the duration of the contract.

Where shown on the plans or when required by permits, sedimentation fence shall be used in addition to compost filter tubes and straw bales and shall be compensated under that Item.

Sediment control barriers shall be installed in the approximate location as shown on the plans and as required so that no excavated or disturbed soil can enter mitigation areas or adjacent wetlands or waterways. If necessary to accommodate field conditions and to maximize effectiveness, barrier locations may be shifted with approval from the Engineer. Barriers shall be in place prior to excavation work. No work shall take place outside the barriers.

**Materials and Construction**

Prior to initial placement of barriers, the Contractor and the Engineer shall review locations specified on the plans and adjust placement to ensure that the placement will provide maximum effectiveness.

Barriers shall be staked, trenched, and/or wedged as specified herein and according to the Manufacturer's instructions. Barriers shall be securely in contact with existing soil such that there is no flow beneath the barrier.

**ITEM 767.121** (Continued)

**Compost Filter Tube**

Compost material inside the filter tube shall meet M1.06.0, except for the following: no peat, manure or bio-solids shall be used; no kiln-dried wood or construction debris shall be allowed; material shall pass through a 2-inch sieve; and the C:N ratio shall be disregarded.

Outer tube fabric shall be made of 100% biodegradable materials (i.e., cotton, hemp or jute) and shall have a knitted mesh with openings that allow for sufficient water flow and effective sediment capture.

Tubes shall be tamped, but not trenched, to ensure good contact with soil. When reinforcement is necessary, tubes shall be stacked as shown on the detail plans.

**Straw Bales**

Straw bales shall be used if shown on the plans or when specified by Orders of Condition or other permit requirements.

Bales should be placed in a single row, lengthwise on the contour, with ends of adjacent bales tightly abutting one another. All bales should be either wire-bound or string-tied. Straw bales should be installed so that bindings are oriented around the sides (rather than along the tops and bottoms) of the bales in order to prevent deterioration of the bindings.

The barrier should be entrenched and backfilled. A trench should be excavated the width of a bale and the length of the proposed barrier to a minimum depth of 4 inches. The trench must be deep enough to remove all grass and other material which might allow underflow. After the bales are staked and chinked (filled by wedging), the excavated soil should be backfilled against the barrier. Backfill soil should conform to the ground level on the downhill side and should be built up to 4 inches against the uphill side of the barrier.

Each bale should be securely anchored by at least 2 stakes or re-bars driven through the bale. The first stake in each bale should be driven toward the previously laid bale to force the bales together. Stakes or re-bars should be driven deep enough into the ground to securely anchor the bales. For safety reasons, stakes should not extend above the bales but should be driven in flush with the top of the bale.

The gaps between the bales should be chinked (filled by wedging) with straw to prevent water from escaping between the bales. Loose straw scattered over the area immediately uphill from a straw bale barrier tends to increase barrier efficiency. Wedging must be done carefully in order not to separate the bales.

When used in a swale, the barrier should be extended to such a length that the bottoms of the end bales are higher in elevation than the top of the lowest middle bale to assure that sediment-laden runoff will flow either through or over the barrier but not around it.

**ITEM 767.121** (Continued)

**Sedimentation Fence**

Materials and Installation shall be per Subsections 670.40 and 670.60 of the Standard Specifications and the following:

Sedimentation fence shall only be used if shown on the plans or when specified by Orders of Condition or other permit requirements.

When used with compost filter tubes, the tube shall be placed on a minimum of 8 inches of folded fabric on the upslope side of the fence. Fabric does not need to be trenched.

When used with straw bales, an 8-inch deep and 4-inch-wide trench or V-trench shall be dug on the upslope side of the fence line. One foot of fabric shall be placed in the bottom of the trench followed by backfilling with compacted earth or gravel. Stakes shall be on the down slope side of the trench and shall be spaced such that the fence remains vertical and effective.

Width of fabric shall be sufficient to provide a 36-inch-high barrier after fabric is folded or trenched. Sagging fabric will require additional staking or other anchoring.

**Maintenance**

Maintenance of the sediment control barrier shall be per Subsection 670.60 of the Standard Specifications or per the Stormwater Pollution Prevention Plan (SWPPP), whichever is more restrictive.

The Contractor shall inspect the sediment barrier in accordance with relevant permits. At a minimum, barriers shall be inspected at least once every 7 calendar days and after a rain event resulting in 0.25 inches or more of rainfall. Contractor shall be responsible for ensuring that an effective barrier is in place and working effectively for all phases of the Contract.

Barriers that decompose such that they no longer provide the function required shall be repaired or replaced as directed. If the resulting berm of compost within the fabric tube is sufficiently intact (despite fabric decay) and continues to provide effective water and sediment control, barrier does not necessarily require replacement.

**Dismantling & Removing**

Barriers shall be dismantled and/or removed, as required, when construction work is complete and upslope areas have been permanently stabilized and after receiving permission to do so from the Engineer.

Regardless of site context, nonbiodegradable material and components of the sediment barriers, including photo-biodegradable fabric, plastic netting, nylon twine, and sedimentation fence, shall be removed and disposed off-site by the Contractor.

For naturalized areas, biodegradable, natural fabric and material may be left in place to decompose on-site. In urban, residential, or other locations where aesthetics is a concern, the following shall apply:

**ITEM 767.121** (Continued)

- Compost filter tube fabric shall be cut and removed, and compost shall be raked to blend evenly (as would be done with a soil amendment or mulch). No more than a 2-inch depth shall be left on soil substrate.
- Straw bales shall be removed and disposed off-site by the Contractor. Areas of trenching shall be raked smooth and disturbed soils stabilized with a seed mix matching adjacent seeding or existing grasses (i.e., lawn or native grass mix).
- Sedimentation fence, stakes, and other debris shall be removed and disposed off-site. Site shall be restored to a neat and clean condition.

## METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 767.121 will be measured and paid for at the contract unit price per FOOT of sediment control barrier which price shall include all labor, equipment, materials, maintenance, dismantling, removal, restoration of soil, and all incidental costs required to complete the work.

Additional barrier such as double or triple stacking of compost filter tubes, will be paid for per FOOT of tube installed.

Barriers that have been driven over or otherwise damage by construction activities shall be repaired or replaced as required by the Engineer at the Contractors expense.

**ITEM 767.122 COIR LOG BANK FOOT**

The work under this Item shall conform to the relevant provisions of Subsections 101, 120, 170, 751, and 771 of the Standard Specifications and the following:

Coir Log Bank shall be used in locations as shown on the Drawings and/or locations required by the Engineer, placed immediately between the wetland replication area and stream restoration area, to serve as a planted bank feature. Coir Log Bank shall not be used as a sediment control barrier outside of the intended purpose between the streambed restoration area and wetland replication areas.

## MATERIALS

Coir Log: Coir Log shall be biodegradable coir fiber cylindrical bundles. Inner core shall be 100 percent unsorted, well-cleaned, coir fiber uniformly distributed along the length of the log. The stuffed density of the coir fiber shall be a minimum of 9 pounds per cubic foot.

Outer netting shall be constructed from a minimum 3-ply high strength coir bristle twine. The netting shall have 2-inch by 2-inch rhombic openings with hand-knotted junctions. The average breaking strength of the coir twine shall be a minimum of 80 pounds. Production tolerance for all the above parameters shall not exceed plus or minus 10 percent.

Coir log diameter shall be sized as shown on the drawings. Typical lengths are supplied in 10 foot or 20-foot increments. Coir logs or coir netting may not be cut to decrease length and shall maintain the physical properties as supplied by the Manufacturer.

Wood Stakes: Stakes shall be oak or southern pine with dimensions as shown on the Drawings. Stakes shall be free from knots and other defects which would cause splitting.

Coconut Fiber Cord: Coconut fiber cord shall be two-ply braided cord with a breaking strength of 80 pounds, minimum 0.25-inch diameter.

Delivery, Storage and Handling: Protect materials from deterioration during delivery and while stored at site.

## CONSTRUCTION METHODS

General: Prior to placement of the coir log bank, the Contractor and the Engineer shall consult with the Wetland Specialist to review locations specified on the plans and adjust placement, if required, to ensure that the coir log positioning and configuration will provide maximum stability between the wetland replication area and stream restoration area.

Installation: Coir logs shall be staked and secured as shown on the Drawings, as specified herein, and/or as recommended by the Wetland Specialist or Fluvial Geomorphologist. The Contractor shall remove all underlying vegetation or debris to ensure that each coir log is securely in contact with soil, such that there is no flow beneath the log.

**ITEM 767.122** (Continued)

The coir log shall be placed parallel to the flow of the stream and shall be set below the final grade to a depth that allows for a two (2) to four (4) inch reveal of the log above grade, between the final streambed material and the wetland replication soils. The coir log shall be placed directly against the streambed material to provide retainment and structure until the wetland replication soils are backfilled against the opposite side of the log.

Wood stakes shall be driven parallel through both sides of the coir log at a typical spacing of 5 feet on center, unless site conditions warrant a closer spacing distance to ensure logs are firmly secured to the underlying soil. Stakes shall be driven through the coir log such that the stakes pierce the outer netting of the coir log. Stakes shall not extend more than 1 foot beyond the top of the log. The coir log shall be drilled or pierced every two (2) to three (3) feet on center for placement of live cutting stakes in accordance with Item 799.775 Planting – Live Cuttings. Live cuttings shall not be used as a primary means of anchoring the coir log bank nor shall live cuttings be used as a substitute for the wood stakes.

When utilizing multiple logs for sediment control, each coir log shall be laced together end-to-end (creating a seam) with coir twine to create a continuous length. End-to-end lacing may be completed before or after placement, to facilitate handling.

Jute netting or similar erosion control blanketing applied over the wetland replication soils may extend over and toe-in beneath the coir log bank if such netting can be applied without detriment to the Coir Log Bank stability or to the live cuttings, at the approval of the Engineer.

Maintenance: Inspection of the Coir Log Bank shall be in accordance with relevant Wetland Replication and Streambed Restoration monitoring. If a breach or other failure of the barrier occurs, the log shall be immediately restored. Repair shall include replacement of entire defective segments. The Engineer must approve breech repair means and methods as well as outcome.

If the Coir Log Bank is damaged by equipment or undergoes a significant washout or other major failure, the Contractor shall replace the component in its entirety, at the discretion and approval of the Engineer and Wetland Specialist or Geomorphologist.

Disposition/Removal**:** The Coir Log Bank and wooden stakes are intended to be left in place to decompose on-site as a component of the wetland replication and streambed restoration design.

## METHOD OF MEASUREMENT

Item 767.122 will be measured for payment by the FOOT, complete in place.

## BASIS OF PAYMENT

Item 767.122 will be paid for at the Contract unit price per FOOT, which price shall be considered full compensation for all labor, materials, equipment, and incidental costs required to complete the work.

Installation and care of live cuttings will be paid for separately under Item 799.775 Planting – Live Cuttings.

No separate payment will be made for coir log(s) follow-up maintenance and repairs but all costs in connection therewith shall be included in the Contract unit price.

**ITEM 767.91 TIMBER MATTING SQUARE YARD**

The work shall conform to the relevant provisions of Subsection 767 of the Standard Specifications and the following:

Timber Mats shall be used to support construction equipment when operating in wetlands. This Item consists of furnishing, placing, maintaining, and removing Timber Matting as specified herein, as shown on the plans, and as required to protect existing soils during construction. Mats shall be within the area shown on the plans as necessary for construction access and staging. Existing soils shall be protected to the extent feasible.

At a minimum, material and methods shall follow Army Corp of Engineers Best Management Practices:
*https://www.nae.usace.army.mil/Portals/74/docs/regulatory/StateGeneralPermits/MA/ConstructionMatBMPs.pdf*

Relevant permit conditions and approvals shall also be followed.

MATERIALS & SUBMITTALS

Material and methods shall be submitted to the Engineer for approval. Submittal shall include a plan to show the proposed extent of matting, methods of preventing soil or other material from entering the wetland through gaps in the timber, procedure for inspections, method of removal and cleaning, and location of cleaning.

The timber construction mats shall be composed of heavy timbers joined together to form stable platforms installed over the surface of wetlands. Mats shall have all timber and rods intact.

Depending on site specific field conditions at the time of construction, multiple layers of Timber Mats and stringers may be necessary to support heavy equipment and to protect the underlying wetland.

As necessary, sediment control devices such as compost filter tubes shall be placed along edge of the Timber Mats to protect wetlands from sedimentation caused by construction vehicle traffic.

Mats shall be certified clean by the vendor prior to installation. The vendor shall submit proof of compliance. Clean is defined as being free of plant matter (stems, flowers, roots, etc.), soil, or other deleterious materials prior to being brought to the project site.

**ITEM 767.91** (Continued)

METHOD OF WORK

Prior to placement of mats, existing wetland limits and topography shall be assessed. Vegetation shall be cut flush. Care shall be taken to avoid removal of plant roots and to avoid soil disturbance.

Mats shall be spread evenly and smoothly to ensure direct contact with the soil at all points and placed parallel to the drainage flow direction. To the extent possible, mats shall be placed along the travel area so that individual boards are perpendicular to the direction of traffic. There shall be no gaps between the mats. Mats shall be placed on either side of wetland area to rest on firm ground.

For situations where the Contractor determines that stones or boulders shall be removed or relocated within wetland areas in order to install safe and level structure work pads or access roads, the boulders shall be moved in a manner which does not result in significant soil disturbance (i.e., pushing with a bull-dozer is not allowed). When there is a significant number of boulders that shall be removed, the Contractor shall consult with the Engineer prior to undertaking the work.

The stockpiling of stone, drill spoils, and other unconsolidated material on construction mats shall be avoided unless determined necessary due to access and work pad constraints. Under this scenario, composite mats and/or other approved methods and materials shall be placed on top of the timber mats to prevent spoils from migrating through the gaps between timbers or spilling over the sides of the matting. The stockpiled spoil shall be removed from the work zone and properly disposed of in uplands approved by the Engineer or hauled off site for proper disposal. Material that falls into or otherwise enters the wetlands shall be removed by hand following removal of the mats.

Sediment controls and stone or wood chip ramps may be installed to promote a smooth transition to and minimize sediment tracking onto the timber mats. Geotextile may be added beneath stone or wood chip transitions to facilitate removal, as necessitated by site or permit conditions.

Mats shall be placed per the manufacturer’s instruction. If requested by the Engineer, method of installation and final placement of mats shall be approved by the Wetland Specialist.

**ITEM 767.91** (Continued)

MAINTENANCE

Mats shall be monitored to assure that they are functioning correctly and shall be inspected for any defects or structural problems. Mats covered with soils or construction debris shall be cleaned and the materials removed and disposed of in an upland location. The material should not be scraped and shoveled into the resource area. Mats that become imbedded must be reset or layered to prevent mud from covering them or water passing over them. Worn timber or plywood used as a wearing surface shall be replaced as required and to the satisfaction of the Engineer.

REMOVAL OF MATS

Clean mats after use to remove any invasive plant species seed stock. Cleaning methods may include but are not limited to, shaking or dropping mats in a controlled manner with a piece of machinery to knock off attached soil and debris, spraying with water or air, sweeping, or exposing the mats to high temperatures. The location and method of cleaning shall be approved by the Engineer.

Upon completion of construction, mats shall be removed. Matting should be removed by "backing" out of the site, removing mats one at a time.

If rutting or soil compaction following construction mat removal is observed, the area shall be returned to pre-existing conditions consistent with the surrounding area, by light hand raking or by back-blading with machinery. Deeper ruts shall be graded using available, loose soil from the work area.

Care shall be taken to inspect wetland crossings as each mat is removed to ensure any undesirable materials are properly removed and disposed of off- site.

If determined necessary by the Engineer, to enhance the functions of an altered wetland, a wetland seed mix shall be sown throughout the disturbed areas. In most instances, natural re-vegetation is an appropriate means to re-establish the wetland plant community in lieu of seeding.

Proper snow removal on construction mats shall avoid the formation of ice. To avoid the formation of ice, snow shall be removed from construction mats before applying sand. Prior to their removal from wetlands, sand shall be collected from the construction mats and disposed of in an upland area. A round street sweeping brush mounted on the front of a truck may be an effective way to remove snow from construction mats. Propane heaters may also be suitable solutions for snow removal and/or de-icing of swamp mats. Once construction mats are removed, wetlands shall be inspected for build-up of sand that may have fallen through swamp mats, therefore care shall be taken to inspect wetland crossings carefully as each mat is removed to ensure sand is properly removed and disposed of off-site.

**ITEM 767.91** (Continued)

**METHOD OF MEASUREMENT**

Item 767.91 will be measured for payment by the SQUARE YARD, installed complete in place, maintained and removed. Overlapped matting will not be measured for payment.

**BASIS OF PAYMENT**

Item 767.91 will be paid at the Contract unit price per SQUARE YARD, which price shall be considered full compensation for all labor, materials, equipment, sediment barriers specific to matting, geotextile, stone, wood chips, cutting of existing vegetation, and incidental costs required to complete the work of installation, maintenance, removal, and restoration of soil and vegetation, if required.

**ITEM 799.775 PLANTING – LIVE CUTTINGS EACH**

The work shall conform to the relevant provisions of Subsection 771 of the Standard Specifications and the following:

MATERIAL

A variety of plant species shall be used, depending on availability. Mix shall be determined by the Landscape Architect and/or Wetland Specialist. Species shall be 1) native species; 2) most appropriate for conditions; and 3) appropriate for use as a live cutting. Species may include, but not be limited to:

| | |
|---|---|
| *Salix discolor* (Pussy Willow) | |
| *Salix nigra* (Black Willow) | |
| *Cornus sericea* (Redosier Dogwood) | |
| *Cornus amomum* (Silky Dogwood) | |

**Planting Season:** Stakes shall be planted only during dormancy, prior to any growth or blooms. The season of planting shall be November 1 to December 15; and February 15 to March 31. Stakes shall not be planted in frozen ground.

**Live cuttings:** referred to herein shall be dormant live stakes. The stakes shall be a minimum three to four feet (3'-4') in length, longer preferred, and a minimum of one half inch (½") in diameter. Provide live stakes harvested locally, within the same physiographic ecoregion and plant hardiness zone. Stakes shall have side branches removed and bark intact. Any leaves and branches on stakes shall be removed prior to planting. Basel ends shall be cut at a 30 to 45-degree angle for insertion into the soil, tops shall be cut square. At least two to five (2-5) bud scars are required near the top to facilitate branch development. Live stakes shall not be stored for more than two (2) weeks after they have been prepared for installation.

**ITEM 799.775** (Continued)

Stakes must be fresh when brought to site and shall be planted within two (2) days of arriving on site. If stored on site after arrival, the stakes shall be cool, moist, and shaded until planted, with the bottoms of the stakes soaked in water. Dried stakes shall be rejected.

CONSTRUCTION METHODS

Care shall be taken to ensure the correct end of the stake is planted in the coir log and ground. Pilot holes shall be drilled into the coir log every 2-3 feet apart on center prior to installation of the live stakes. one-fifth to two-fifths of the length of the live stake should be installed into the ground beneath the coir log with a minimum of eight-inch reveal of the stake above the surface of the coir log. Do not split the stakes during installation. Stakes that split should be removed and replaced. Stakes may be driven into the ground with a rubber mallet, and pilot holes may be made in harder soils with a metal bar or re-bar, prior to inserting the stakes. Stakes shall be planted at 90-degrees to surrounding grade. Live cutting stakes shall not serve as the primary anchoring method of the coir log to the ground.

The layout of species shall be in groupings of three (3), depending on species available or per the Landscape Architect or Wetland Specialist. Spacing shall be two to three (2-3) feet between stakes throughout the length of the coir log bank.

**METHOD OF MEASUREMENT**

Item 799.775 will be measured for payment per EACH cutting planted.

**BASIS OF PAYMENT**

Item 799.775 will be paid at the contract unit price per EACH, which price shall be considered full compensation for all labor, materials, equipment and incidental costs required to complete the work.

**ITEM 801.412 4 INCH ELECTRICAL CONDUIT – TYPE NM (12 BANK) FOOT**

The work shall conform to the relevant provisions of Subsection 801 of the Standard Specifications and the following:

The work under this Item shall consist of the furnishing and installing of a 4-inch electrical conduit duct bank as shown on the Plans.

**METHOD OF MEASUREMENT**

Item 801.412 will be measured for payment by the FOOT of conduit bank installed, complete in place.

**BASIS OF PAYMENT**

Item 801.412 will be will be paid at the Contract unit price per FOOT, in accordance with the provisions of subsection 801.81 of the Standard Specifications.

**ITEM 853.22** **JERSEY BARRIER REMOVED AND STACKED** **FOOT**

The work shall conform to the relevant provisions of Subsection 120 of the Standard Specifications and the following:

The work shall include removing and stacking of existing jersey barriers. The jersey barriers (or covers) shall be stacked on boards at the Leominster Department of Public Works, 109 Graham Street, Leominster, MA; exact location on site shall be as directed by the Engineer, in coordination with the DPW.

If any of the jersey barriers delivered to the DPW are not wanted by the City, that unit shall become the property of the Contractor and shall be removed and discarded, with no additional payment.

If the jersey barriers are damaged by the Contractor's operations during the removal and stacking process, a jersey barrier of the same size and material shall be provided to the City at the Contractor's expense.

Jersey barriers determined to be unsuitable for reuse shall become the property of the Contractor and shall be carefully removed, transported, and discarded in accordance with all applicable regulations.

## METHOD OF MEASUREMENT

Item 853.22 will be measured for payment by the FOOT of barrier removed and stacked.

## BASIS OF PAYMENT

Item 853.22 will be paid at the Contract unit price per FOOT, which price shall be considered full compensation for all labor, materials, equipment, and incidental costs required to complete the work.

## ITEM 859.1 REFLECTORIZED DRUMS WITH SEQUENTIAL FLASHING WARNING LIGHTS DAY

The work under this Item shall conform the relevant provisions of Subsection 850 of the Standard Specifications and the following:

Work under this Item consists of furnishing, installing, maintaining in proper operating conditions, and removing reflectorized drums, and any necessary ballast, equipped with sequential flashing warning lights.

MATERIALS

Reflectorized drums shall be listed on the MassDOT Qualified Traffic Control Equipment List.

Reflective sheeting on drums shall meet or exceed ASTM D4956 Type VIII. All drums shall be maintained in a satisfactory manner including the removal of oils, dirt, and debris that may cause reduced retroreflectivity.

The Contractor shall use one of the following sequential flashing warning light systems unless otherwise approved by the Engineer:

1. Empco-Lite LWCSD.
2. pi-Lit® Sequential Barricade-Style Lamp; or
3. Unipart Dorman SynchroGUIDE.

Sequential flashing warning lights shall be secured to reflectorized drums per the light manufacturer's specifications.

CONSTRUCTION METHODS

The first ten (10) drums in any merging or shifting taper as designated in the Temporary Traffic Control Plan shall be equipped with sequential flashing warning lights. These lights shall be operating, at a minimum, between dusk and dawn when the taper is deployed.

The successive flashing of the sequential warning lights shall occur from the upstream end of the merging or shifting taper to the downstream end of the taper in order to identify the desired vehicle path. Each warning light in the sequence shall be flashed at a rate of not less than 55, nor more than 75 times per minute.

Warning lights shall be powered off when drums are not deployed in a taper.

## METHOD OF MEASUREMENT

A group of ten (10) reflectorized drums with sequential flashing warning lights is considered one (1) unit and will be measured by the DAY. Each period of up to 24 hours during which this unit is in use will be measured as one day regardless of the number of times that the drums are positioned, repositioned, removed, or returned to service.

## BASIS OF PAYMENT

Reflectorized Drums with Sequential Flashing Warning Lights will be paid for at the contract unit price per DAY, which price shall be considered full compensation for furnishing, positioning, repositioning, and removing the group of ten (10) drums as directed by the Engineer.

**ITEM 874.2 TRAFFIC SIGN REMOVED AND RESET EACH**

The work shall conform to the relevant provisions of Subsections 828 & 840 of the Standard Specifications and the following:

The Contractor shall carefully remove and reset all designated existing signs including attachment hardware and sign support posts located as needed and where directed by the Engineer.

Work shall include the dismantling, removal, transporting, storing, and resetting of existing traffic signs at the locations shown on the plans. The Contractor shall completely remove the sign and post and reset said sign and post at the new location. If existing sign and/or post are not suitable for reuse as determined by the Engineer, the Contractor shall provide new sign and/or post under Items 832. and/or 847.1 respectively. New attachment hardware shall be furnished as necessary to replace any missing or unusable existing hardware.

Existing sign and/or post damaged by the Contractor's operations shall be replaced in-kind by the Contractor at no additional compensation

Included under this Item are warning, regulatory, and route marker signs and miscellaneous directional signs.

The Contractor shall backfill with compacted gravel all holes resulting from the removal of the existing signs and their foundations and restore the area to match existing conditions of adjacent areas.

**METHOD OF MEASUREMENT**

Item 874.2 will be measured for payment by EACH traffic sign removed and reset.

**BASIS OF PAYMENT**

Item 874.2 will be paid for by EACH traffic sign removed and reset, which price shall be full compensation for all labor, materials, equipment and incidental costs required to complete the work.

No separate payment will be made for gravel backfill, excavation and disposal of existing footings, if required, or all material required to restore the damage area to its existing conditions but all costs in connection therewith shall be included in the Contract unit price bid.

No separate payment will be made for furnishing and installing new attachment hardware, as requited, but all costs in connection therewith shall be included in the Contract unit price bid.

**ITEM 874.4 TRAFFIC SIGN REMOVED AND STACKED EACH**

The work shall conform to the relevant provisions of Subsection 828 of the Standard Specifications and the following:

The work includes removing, transporting, protection, temporary storage and stacking of signs, posts and hardware. The signs, posts and hardware shall be stacked on boards at the Leominster Department of Public Works, 109 Graham Street, Leominster, MA; exact location on site shall be as directed by the Engineer, in coordination with the DPW. Work shall also include the removal and disposal of footings, if present, up to a depth of 12 inches below the proposed surface of sidewalks and driveways as well as up to 36 inches below the proposed roadway.

Traffic signs determined to be unsuitable for reuse shall become the property of the Contractor and shall be removed and discarded.

The Contractor shall completely remove the sign and post. If existing sign and/or post are damaged by the Contractor's operations, a new sign and/or post of the same size and material shall be provided to the City at the Contractor's expense.

The Contractor shall backfill with compacted gravel all holes resulting from the removal of the existing signs and their foundations and restore the area to match existing conditions of adjacent areas.

**METHOD OF MEASUREMENT**

Item 874.4 will be measured for payment per EACH sign removed and stacked.

**BASIS OF PAYMENT**

Item 874.4 will be paid at the contract unit price per EACH, which price shall be considered full compensation for all labor, materials, equipment, and incidental costs required to complete the work.

No separate payment will be made for gravel backfill or excavation and disposal of existing footings, if required, but all costs in connection therewith shall be included in the Contract unit price bid.

**ITEM 983.521 STREAMBED RESTORATION CUBIC YARD**

This work shall consist of replacing riverbed material in the proposed culvert replacement and channel restoration areas. The streambed restoration shall replicate the existing natural channel bed outside the work area in terms of material, roughness, shape, profile, and appearance. The ultimate product will, to the extent possible, replicate the function and appearance of the natural stream channel, as illustrated by photo-documentation herein.

The Contractor shall coordinate with his/her sub-Contractors to ensure all required equipment is available on-site to complete the work in this manner. The streambed restoration is required to comply with environmental permits issued for the project. MassDOT Environmental Services will provide a Fluvial Geomorphologist (Geomorphologist) to provide a pre-construction meeting, on-site oversight during construction, and assistance during streambed restoration construction to ensure the restoration is constructed as shown on the Plans, as required by these Special Provisions, and in accordance with permit requirements.

At least 30 days prior to the commencement of construction, the Contractor shall coordinate with David Paulson (MassDOT Wildlife Unit Supervisor, (508) 389-6366 / david.j.paulson@state.ma.us) to set up an initial (virtual or in-person) meeting with MassDOT's Geomorphologist, Contractor, and Resident Engineer. At this meeting, the Geomorphologist will provide an overview of the restoration work and material requirements. The Contractor should be prepared to discuss the anticipated means, methods, and schedule.

Process Approval:

In lieu of a mockup, the Contractor shall schedule an onsite meeting to discuss the streambed restoration with the Geomorphologist and respective parties from MassDOT within two weeks of initiating work on the streambed. The Geomorphologist shall be onsite to review the initial streambed restoration. The Contractor shall provide the Geomorphologist adequate access to observe, direct, and inspect the channel restoration work throughout the duration of the removal, stockpile, and reinstallation of the existing streambed material. If material is being brought to the site for streambed restoration, the Contractor shall provide the Geomorphologist with photographs to see the material prior to the site visit.

MATERIAL

The streambed material excavated from the existing streambed shall be removed and stockpiled to facilitate reinstallation and replication of the natural streambed. Removal and stockpiling shall be per Item 148.01. The excavated streambed material shall also be reused to fill the voids in any proposed scour protection.

**ITEM 983.521** (Continued)

In the event that the excavated material is not suitable and there is not enough available suitable material, additional streambed restoration material shall be locally sourced that matches the composition of the existing native river bed. The following gradation sampled from a similar streambed surface shall be used as a guide.

Stream Bed Material Gradation

| Particle | Percent (%) Composition |
|---|---|
| Boulder | 5 |
| Cobble | 80 |
| Gravel | 10 |
| Sand | 5 |

The streambed material shall be approved by the Resident Engineer and Geomorphologist prior to use.

CONSTRUCTION

The streambed material shall be installed in the channel, as depicted on the plans, to an average thickness of 1.0 feet, with variations in thickness as necessary to replicate existing channel conditions. If voids exist, the initial placement of streambed material shall fill the voids in the underlying material. Fill voids by shaking stone with the teeth of an excavator bucket, hand tamping with metal tamping rods, and by spraying water to settle fines between large stones. Plate compactors shall not be used. The purpose of filling the voids is to prevent subsurface flow where surface water disappears into large voids between the stone fill below the channel bed surface during low flow conditions. The final streambed shape and appearance shall be finalized in the field as directed by the Geomorphologist.

Reinstallation of the stockpiled streambed material shall be placed to restore streambed habitat and fish passage. The streambed materials shall be installed during normal low-water conditions behind cofferdams in accordance with the environmental permits.

Once all material has been placed in the stream channel and approved by the Geomorphologist and Resident Engineer, the Contractor shall remove the cofferdams in such a way as to slowly wet the stream to minimize the initial sediment pulse. Every attempt shall be made to minimize the downstream movement of sediment.

**ITEM 983.521** (Continued)

The final streambed shall maintain the general configuration of the existing streambed bedform and there shall be minimal subsurface flow upon final inspection by the Resident Engineer and Geomorphologist. The project must be passable by fish, other aquatic organisms, and wildlife following construction.

The streambed restoration to be measured for payment will be the complete and accepted work for restoration of the streambed within the limits shown on the Plans as approved by the Resident Engineer and Geomorphologist.

## METHOD OF MEASUREMENT

Item 983.521 will be measured for payment by the CUBIC YARD of material restored, complete in place.

## BASIS OF PAYMENT

Item 983.521 will be paid at the contract unit price per CUBIC YARD, which price will be considered full compensation for transporting, and placing the material specified and for furnishing all labor, tools, equipment, testing, and incidentals necessary to complete the work. Additional streambed restoration material required beyond existing to be re-used, shall be compensated under this Item.

The Geomorphologist will be provided by MassDOT at no cost to the Contractor.

Related Items

Riprap Stone shall conform to the requirements of Item 983.1 and shall be paid for under that Item.

Disposal of excess streambed material will be paid for under Item 148.

Removal and stockpiling existing streambed material will be paid for under Item 148.01.

**ITEM 983.521** (Continued)

FIGURES (Pleasant Street)



***Figure A: Natural channel upstream of the culvert under low flow (looking upstream).***

**ITEM 983.521** (Continued)



***Figure B: Natural channel downstream of the culvert under low flow (looking downstream).***

**ITEM 983.521** (Continued)



***Figure C: Deposited cobble and boulder after the flood some of which will be harvested and stockpiled for streambed restoration.***

**ITEM 991.1 CONTROL OF WATER – STRUCTURE NO. L-08-060 LUMP SUM**

The work under this Item shall conform to the relevant provisions of Subsection 140.60 of the Standard Specifications and the following:

The work under this Item shall include all work and dewatering necessary to control water during the construction of the soil nail wall, modified rockfill and riprap slopes, and streambed restoration downstream of the Union Street Bridge. Stream water shall be diverted and controlled in such a way that all soil nail walls, slopes and streambed are excavated and constructed completely in the dry.

The operations of Control of Water shall not cause the accumulation of siltation nor any adverse effect to the water or the environment. As much work as possible shall be conducted from outside the stream banks.

The temporary control of water system shall be non-permanent. The system shall be comprised of bulk sand bags or portable cofferdams or other approved impervious curtains and dewatering to facilitate construction activities. Operations of Control of Water shall not adversely affect the quality of the required construction.

Work under this Item also includes pumping operations for dewatering, sandbags, portable cofferdams, filter fabrics, stone, sedimentation/retention tanks and all other means to collect, settle, and discharge water into the Reservoir Brook during construction.

As part of the work under this Item, it is the responsibility of the Contractor to determine the need and extent of dewatering required.

Special care shall be given to minimize disturbance to the stream and adjacent banks. All in-stream work shall take place during the stream's low flow period.

SUBMITTALS

Prior to the commencement of any work at the site, the Contractor shall submit to the Engineer for review and approval, a detailed plan for water control, including the construction of the water control system, the methods for ensuring that soil nail wall construction (under Item 996.319) will occur in the dry, slope and streambed restoration sequence plan with a timetable, and details specific to each of the phases of construction in relation to the control of water system. The submittals shall include working drawings and calculations, detailing the methods and materials proposed to account for all anticipated loads and construction conditions necessary to permit the work while maintaining a safe work area and protecting property from damage.

Any drawings and calculations prepared as part of the submittal must be prepared and stamped by a Professional Engineer registered in the Commonwealth of Massachusetts.

**ITEM 991.1** (Continued)

The Water Control Plan shall include a Sedimentation and Erosion Control Plan and a Water Flow Diversion and Containment Plan. The plans shall be adequate in detail to define specifics regarding materials, sizes, connections and incidental Items associated with the work. The furnishing of such plans shall not serve to relieve the Contractor's responsibility for the safety of the work or his/her responsibility for the successful completion of the project. The proposed plans submitted shall be designed and stamped by a Professional Engineer registered in the Commonwealth of Massachusetts.

The Contractor shall make his/her own evaluation of existing conditions, groundwater level, water flow, the effects of his/her proposed temporary works and construction methods and shall provide in his/her design for all loads and construction conditions necessary to permit construction of the specified structures while maintaining public safety, and protecting completed work and all third party property from damage due to his operations.

Sedimentation and Erosion Control Plan:

The Contractor shall submit to the Engineer, plans and details of the intended sedimentation/retention tank system that will be used along with dewatering techniques, and its location at the bridge site. All discharges resulting from dewatering activities shall be directed to temporary sedimentation/retention tank at locations approved by the Engineer. At no time shall said discharge be directly released into the stream. The proposed plan shall include methods and equipment necessary to discharge water from the sedimentation treatment basins. Sedimentation/retention tank shall be sized appropriately to adequately dewater from the proposed work zone while allowing sufficient time for sediments to settle out of the water, and with a depth such that a minimum of 18 inches of freeboard is maintained throughout its use.

Water Flow Diversion and Containment Plan:

The Contractor shall submit plans and details along with a complete description showing any proposed systems for control of water and dewatering plan to the Engineer for his approval prior to the start of the work. The proposed plan shall include methods and equipment necessary to perform the work and shall include water discharge methods and equipment to bring water from the work zone to sedimentation/retention tank.

METHODS

This work shall also include dewatering the area downstream of the Union Street Bridge as needed to conduct the work.

The system shall be designed so that there are no adverse effects on the adjacent properties. The control of water system shall be sized in such a way that the system is overtopped with elevated stream water before any adjacent properties are inundated.

**ITEM 991.1** (Continued)

Where sandbags are used, the bags shall not decay nor rip or tear during the installation, its service life within the waterway, or during the removal process. The Contractor shall not disturb the streambed in order to avoid migration of silts and sands further downstream. All in-stream work required to install, adjust and remove the control of water system must be performed by hand or by hoisting equipment positioned upland.

The Contractor is responsible for researching the seasonal groundwater levels and flow characteristics of the Reservoir Brook to determine appropriate details.

Measures to control the discharge of sediment or pollutants into the water resource areas shall include, but not be limited to the following:

1. Site construction areas outside the buffer zones and on relatively flat ground.
2. Management of construction operations involving hazardous materials, such as refueling and maintenance of equipment within the resource areas.
3. Formulation of contingency plans to control accidental spillage from potentially hazardous materials.
4. Installation and continuous maintenance of water control measures throughout the project.
5. Treatment of all discharge resulting from dewatering activities through a sedimentation/retention tank to control turbidity. At no time shall the discharge from dewatering activities be directly released into a resource area.
6. Perform as much work as possible outside the stream banks.
7. Scheduling of work within the resource areas to avoid periods of high flood (e.g., spring floods) and inclement weather.

These measures shall be maintained for the duration of the contract.

The locations of any sedimentation/retention tank will be determined by the Contractor based on the selected methods of construction. Placement of the tank shall be in an upland area that is within the existing right of way and temporary easements.

A sumping basin shall be constructed to collect any stream waters able to bypass the diversion system that may enter any work areas. The basin shall be equipped with a pump to convey waters to a sedimentation/retention tank. Water shall be discharged downstream once passing through the sumping basin and sedimentation/retention tank. No waters pumped from the work areas shall be discharged back to the stream until sediment is filtered using the sedimentation/retention tank.

All dewatering and related water control work shall be conducted in such a manner as to prevent siltation or contamination of the waterway. At a minimum, the sedimentation/retention tank shall be constructed of a sediment filter bag placed on crushed stone and surrounded by sandbags. The tank shall meet or exceed the following criteria:

**ITEM 991.1** (Continued)

1. The size and location of the tank shall be determined based on the size of the Contractor's pump and the anticipated groundwater levels.
2. The outlet/weir of the sedimentation/retention tank shall not cause erosion of the surrounding area. An approved method of controlling erosion, such as an erosion control blanket, stone, etc., shall be used at the outlet of the tank.
3. The Contractor shall not allow any sediment within the sedimentation/retention tank to accumulate to a depth of greater than 12 inches at any point in the tank, nor shall the water level be allowed to rise to a height of more than 24 inches.
4. The sedimentation/retention tank shall be designed with a minimum of 18 inches of freeboard, which must be maintained at all times.
5. The Contractor shall inspect the sedimentation/retention tank at least daily when in operation.
6. Damages shall be repaired immediately.
7. The sedimentation/retention outlet shall be cleaned daily.
8. The sediments within the sedimentation/retention tank shall be disposed of as approved by the Engineer.

Upon completion of water control, the materials and equipment used to maintain the cofferdam(s) (if needed) and sumping basin(s) and sedimentation/retention tank (including the temporary riprap for dewatering discharge) shall become the property of the Contractor and shall be removed by the Contractor from the site. The area affected shall be restored to its natural condition in a manner subject to the Engineer's approval.

The Contractor is advised that the effectiveness of the water control method used will vary based on the field conditions and the time at which the actual excavation work is being performed. The Engineer has the right to order the Contractor to stop all excavation operations when in his judgment the Contractor's water control operations are failing to produce adequate results or are posing a threat to the environment.

**ITEM 991.1** (Continued)

BASIS OF PAYMENT

Item 991.1 will be paid for at the contract Lump Sum bid price, which price shall include pumping operations for dewatering, sandbags, portable cofferdams, filter fabrics, stone, sedimentation/retention tanks, temporary stilling areas, and all other means to collect, settle, and discharge water into the Reservoir Brook, all labor, materials, equipment, Engineering, and incidental costs required to complete the work as indicated on the Contract Documents. Any riprap used for dewatering discharge shall be considered incidental to the work and shall be paid for under this Item.

The partial payment schedule will be as follows:

- The first payment of Item 991.1 (60% of the Lump Sum bid price) will be made upon complete installation of the water control system to the satisfaction and approval of the Engineer.
- The final payment of Item 991.1 (40% of the Lump Sum bid price) will be made upon the satisfactory removal of the water control system after bridge construction is complete.

All adjustments and repositioning of water control shall be considered as included under this Item.

No separate payment will be made for Engineering or any adjustments and repositioning of the control of water, but all costs in connection therewith shall be included in the Lump Sum bid price.

**ITEM 991.11 CONTROL OF WATER – STRUCTURE NO. L-08-053 LUMP SUM**
**ITEM 991.12 CONTROL OF WATER – STREAM RELOCATION LUMP SUM**

The work under these Items shall conform to the relevant provisions of Subsection 140.60 of the Standard Specifications and the following:

The work under Item 991.11 shall include all work necessary to control water during demolition of the existing culvert and the construction of the proposed culvert. Stream water shall be diverted and controlled in such a way that all existing and proposed culvert and wingwall elements are removed and constructed completely in the dry.

The work under Item 991.12 shall include all work necessary to control water to construct the downstream relocation work as shown on the Plans. All downstream relocation work (i.e. streambed restoration, wetland replication, wetland restoration, excavation, and grading) shall be completed in the dry.

The Contractor shall design, furnish, install, maintain, and remove all temporary control of water systems required to perform the construction of Structure No. L-08-053 and downstream stream relocation activities. The Contractor shall determine all means and methods, sequencing, and temporary works necessary to divert, convey, or otherwise control water and stream flows to complete the work in a safe and dry condition.

The operations of Control of Water neither shall cause the accumulation of siltation nor any adverse effect to the water or the environment. As much work as possible shall be conducted from outside the stream banks.

The system shall be comprised of bulk sandbags or portable cofferdams or other approved impervious curtains. If required by the Contractor's design, Item 991.11 shall also include a stream bypass system designed to handle the 2-year flood discharge, and dewatering to facilitate construction activities. Work under this Item also includes filter fabrics, stone, sedimentation/retention tanks and all other means to collect, settle, and discharge water into the Reservoir Brook during construction.

Special care shall be given to minimize disturbance to the stream and adjacent banks. All in-stream and culvert work shall take place during the stream's low flow period (July 1 – September 30).

**ITEM 991.11 & 991.12** (Continued)

SUBMITTALS

Prior to the commencement of any work at the site, the Contractor shall submit to the Engineer for review and approval, a detailed plan for water control for the entire project (i.e. culvert construction and downstream relocation construction), including a timetable and details specific to each critical phase of construction (i.e. timing temporary/permanent utility moves, culvert/wingwall erection, phasing of culvert/downstream work, etc.). The submittal shall include working drawings and calculations, detailing the methods and materials proposed to account for all anticipated loads and construction conditions necessary to permit the work while maintaining a safe work area and protecting property from damage.

The water control plan (including all drawings and calculations) must be prepared and stamped by a Professional Engineer registered in the Commonwealth of Massachusetts.

The Water Control Plan shall include a Sedimentation and Erosion Control Plan and a Water Flow Diversion and Containment Plan. The plans shall be adequate in detail to define specifics regarding materials, sizes, connections and incidental Items associated with the work. The furnishing of such plans shall not serve to relieve the Contractor's responsibility for the safety of the work or his/her responsibility for the successful completion of the project. The proposed plans submitted shall be designed and stamped by a Professional Engineer registered in the Commonwealth of Massachusetts.

The Contractor shall make his/her own evaluation of existing conditions, groundwater level, water flow, the effects of his/her proposed temporary works and construction methods, and shall provide in his/her design for all loads and construction conditions necessary to permit construction of the specified improvements while maintaining public safety, and protecting completed work and all third party property from damage due to his operations.

Sedimentation and Erosion Control Plan:

The Contractor shall submit to the Engineer, plans and details of the intended sedimentation/retention tank system that will be used along with dewatering techniques, and its location at the site. All discharges resulting from dewatering activities shall be directed to temporary sedimentation/retention tank at locations approved by the Engineer. At no time shall said discharge be directly released into the stream. The proposed plan shall include methods and equipment necessary to discharge water from the sedimentation treatment basins. Sedimentation/retention tank shall be sized appropriately to adequately dewater from the proposed work zone while allowing sufficient time for sediments to settle out of the water, and with a depth such that a minimum of 18 inches of freeboard is maintained throughout its use.

**ITEM 991.11 & 991.12** (Continued)

Water Flow Diversion and Containment Plan:

The Contractor shall submit plans and details along with a complete description showing any proposed systems for control of water and dewatering plan to the Engineer for his approval prior to the start of the work. The proposed plan shall include methods and equipment necessary to perform the work and shall include water discharge methods and equipment to bring water from the work zone to sedimentation/retention tank.

METHODS

The system shall be designed so that there are no adverse effects on the adjacent properties. The control of water system shall be sized in such a way that the system is overtopped with elevated stream water before any adjacent properties are inundated.

Where sandbags are used, the bags shall not decay nor rip or tear during the installation, its service life within the waterway, or during the removal process. The Contractor shall not disturb the stream bed in order to avoid migration of silts and sands further downstream. All in-stream work required to install, adjust and remove the control of water system must be performed by hand or by hoisting equipment positioned upland.

The Contractor is responsible for researching the seasonal groundwater levels and flow characteristics of the Reservoir Brook to determine appropriate details.

Measures to control the discharge of sediment or pollutants into the water resource areas shall include, but not be limited to the following:

1. Site construction areas outside the buffer zones and on relatively flat ground.
2. Management of construction operations involving hazardous materials, such as refueling and maintenance of equipment within the resource areas.
3. Formulation of contingency plans to control accidental spillage from potentially hazardous materials.
4. Installation and continuous maintenance of water control measures throughout the project.
5. Treatment of all discharge resulting from dewatering activities through a sedimentation/retention tank to control turbidity. At no time shall the discharge from dewatering activities be directly released into a resource area.
6. Perform as much work as possible outside the stream banks.
7. Scheduling of work within the resource areas to avoid periods of high flood (e.g., spring floods) and inclement weather.

**ITEM 991.11 & 991.12** (Continued)

These measures shall be maintained for the duration of the contract.

The locations of any sedimentation/retention tank will be determined by the Contractor based on the selected methods of construction. Placement of the tank shall be in an upland area that is within the existing right of way and temporary easements.

A sumping basin shall be constructed to collect any stream waters able to bypass the diversion system that may enter any work areas. The basin shall be equipped with a pump to convey waters to a sedimentation/retention tank. Water shall be discharged downstream once passing through the sumping basin and sedimentation/retention tank. No waters pumped from the work areas shall be discharged back to the stream until sediment is filtered using the sedimentation/retention tank.

All dewatering and related water control work shall be conducted in such a manner as to prevent siltation or contamination of the waterway. At a minimum, the sedimentation/retention tank shall be constructed of an earthen berm lined with geotextile fabric and surrounded by staked hay bales. The tank shall meet or exceed the following criteria:

1. The size and location of the tank shall be determined based on the size of the Contractor's pump and the anticipated groundwater levels.
2. The outlet/weir of the sedimentation/retention tank shall not cause erosion of the surrounding area. An approved method of controlling erosion, such as an erosion control blanket, stone, etc., shall be used at the outlet of the tank.
3. The Contractor shall not allow any sediment within the sedimentation/retention tank to accumulate to a depth of greater than 12 inches at any point in the tank, nor shall the water level be allowed to rise to a height of more than 24 inches.
4. The sedimentation/retention tank shall be designed with a minimum of 18 inches of freeboard, which must be maintained at all times.
5. The Contractor shall inspect the sedimentation/retention tank at least daily when in operation.
6. Damages shall be repaired immediately.
7. The sedimentation/retention outlet shall be cleaned daily.
8. The sediments within the sedimentation/retention tank shall be disposed of as approved by the Engineer.

Upon completion of water control, the materials and equipment used to maintain the cofferdam(s) (if needed) and sumping basin(s) and sedimentation/retention tank (including the temporary riprap for dewatering discharge) shall become the property of the Contractor and shall be removed by the Contractor from the site. The area affected shall be restored to its natural condition in a manner subject to the Engineer's approval.

The Contractor is advised that the effectiveness of the water control method used will vary based on the field conditions and the time at which the actual excavation work is being performed. The Engineer has the right to order the Contractor to stop all excavation operations when in his judgment the Contractor's water control operations are failing to produce adequate results or are posing a threat to the environment.

**ITEM 991.11 & 991.12** (Continued)

## BASIS OF PAYMENT

Items 991.11 & 991.12 will be paid for at their respective Contract LUMP SUM prices, which prices shall include all labor, materials, equipment, Engineering, submittals, and incidental costs required to complete the work.

The partial payment schedule will be as follows:

- The first payment of Items 991.11 and 991.12 (60% of the Lump Sum bid price) will be made upon complete installation of the water control system to the satisfaction and approval of the Engineer.
- The final payment of Items 991.11 and 991.12 (40% of the Lump Sum bid price) will be made upon the satisfactory removal of the water control system after bridge construction is complete.

All adjustments and repositioning of water control shall be considered as included under this Item.

No separate payment will be made for Engineering or any adjustments and repositioning of the control of water, but all costs in connection therewith shall be included in the respective Contract Lump Sum prices.

Any riprap used for dewatering discharge will be considered incidental to the work and will be paid for under this Item.

**ITEM 995.011 CULVERT STRUCTURE, CULVERT NO. L-08-053 LUMP SUM**

The work under this Item shall conform to the relevant provisions of Subsection 995 of the Standard Specifications and the following:

The work shall include all materials, equipment and labor needed to construct the following:

- Cast-in-place concrete wingwalls (footings and wall stems)
- Epoxy coated reinforcing steel
- Damp proofing
- Precast concrete 4-sided box culvert 8'-4" X 7'-0" (culvert, cut-off walls, and headwalls)

The work does not include any Items listed separately in the proposal. Payment for materials shown on the Plans as being part of the bridge structure or which may be incidental to its construction and are not specifically included for payment under another Item shall be considered incidental to the work performed under this Item and shall be included in the unit price of the component of which they are a part.

CAST-IN-PLACE CONCRETE

All work to be done under this heading shall conform to the applicable provisions of Section 901 of the Standard Specifications, supplemented and amended as follows:

The concrete to be used for all cast-in-place concrete elements shall be as follows:

5000 PSI, ¾", 685 HP cement concrete shall be used for the CIP wingwall footings and CIP wingwall stems.

Included in the work are the furnishing and installing of preformed fillers, joints, joint filler material, PVC pipes for weepholes, water stops, galvanized pipe sleeve for chain link fence, and any other Items incidental to the furnishing and placing of concrete.

STEEL REINFORCEMENT FOR STRUCTURES – EPOXY COATED

All reinforcing steel shall be epoxy coated Grade 60 unless otherwise noted on the plans. All accessories to support rebar shall be epoxy coated.

**ITEM 995.011** (Continued)

DAMP-PROOFING

All work to be done under this heading shall conform to the applicable provisions of Section 970 of the Standard Specifications.

Damp-proofing shall be installed on the outside face of the culvert roof and walls, the inside face of the wingwall stems, headwalls, and on the top of wingwall footings to the limits shown on the Plans.

PRECAST CONCRETE ELEMENTS – FOUR-SIDED PRECAST CONCRETE CULVERT CUT-OFF WALLS AND HEADWALLS

**A. General.**

The work under this Heading consists of fabricating, transporting and installing four sided precast concrete culvert cut-off walls and headwalls and includes all necessary labor, materials, and equipment to complete the work as shown on the Plans. The Precast Concrete Bridge Elements shall meet the requirements of Section M4: Cement Concrete and Related Materials.

**MATERIALS**

**A. Materials.**

Materials shall conform to M4.09.1 and the following:

| | |
|---|---|
| Non-Shrink Grout Products | M4.04.5 |
| Controlled Low-Strength Material – Structural Non-Excavatable | M4.08.0 |
| Welded Steel Wire Fabric | M8.01.2 |
| Mechanical Reinforcing Bar Splicer | M8.01.9 |
| Lifting Devices | PCI MNL-116 |
| Corrugated Metal Pipe | AASHTO M 36 |

**1. Vertical Adjustment Assembly.**

Vertical Adjustment Assembly details and material requirements shall be as shown on the plans. Alternate devices may be used provided that they are adjustable and can support the anticipated loads. The design of the leveling devices, with necessary calculations, shall be submitted to the Engineer of Record for approval.

**2. Threaded Inserts.**

Threaded inserts are permissible to facilitate forming the keyway pours. Threaded inserts shall be hot dip galvanized or made of stainless steel. The number of threaded inserts shall be minimized, and the inserts shall not come in contact with the reinforcing steel.

**3. Corrugated Metal Pipe.**

Corrugated Metal Pipe to be used for forming voids as specified on the plans shall be fabricated from steel and shall have a protective metallic coating of zinc (galvanizing).

**ITEM 995.011** (Continued)

## CONSTRUCTION METHODS – PLANT FABRICATION

**A. Box Culverts.**

The Contractor shall submit design computations for the box culvert to the Engineer for review and approval. The computations shall be prepared in accordance with the latest AASHTO LRFD Bridge Design Specifications, the MassDOT Bridge Manual (Hundreth Anniversary Edition), and the Plans using English units and HL-93 live loading. The design computations shall consider all Strength, Extreme Event and Service Limit States as are appropriate for each stage of fabrication, shipment, construction, and for the final in-service condition. Design computations and shop drawings shall be prepared and stamped by a Professional Engineer licensed to practice in the Commonwealth of Massachusetts. The shop drawings shall be prepared and submitted in accordance with M4.09.2B.

The culvert dimensions provided on the plans are shown to establish the size of the proposed opening. The width and thickness of each frame unit may vary depending upon the manufacturer's specifications provided that the opening size is maintained. The Contractor shall be responsible for modifying the dimensions of the culvert elements to compensate for elastic shortening, shrinkage, grade corrections, and other phenomena that make in-process fabricating dimensions different from those shown on the drawings. Approval of the shop drawings shall not relieve the Contractor from responsibility for the correctness of the dimensions shown.

**1. Joints.**

The precast reinforced concrete box culvert shall be produced with grout-filled keyways per the details on the plans, the manufacturer's recommendations, and as approved by the Engineer. The ends shall be manufactured such that when the sections are laid together they will make a continuous line of frames with a smooth interior surface free of appreciable irregularities, and in compliance with the permissible variations.

**2. Marking.**

The following information shall be clearly marked on the interior of each frame by indentation, waterproof paint, or other approved means:

(a) Box culvert span and rise
(b) Date of manufacture and lot number
(c) Name and trademark of the manufacturer

**B. Pre-Production Meeting.**

The Contractor shall notify the MassDOT Research and Materials Section to determine if a pre-production meeting will be required to review the specification, shop drawings, curing plan, schedule, and discuss any specific requirements. The meeting shall be held prior to scheduling a MassDOT Inspector (refer to M4.09.4 *Department Acceptance*), and at least seven (7) days prior to the scheduled casting of any Precast Concrete Bridge Element or control section. The Contractor shall schedule the meeting, which shall include representatives of the Fabricator and MassDOT.

**C. Reinforcement.**

The reinforcing bars shall be installed in accordance with Subsection 901.35, including tolerances for cover and horizontal spacing of bars. Components of mechanical reinforcing bar splicers shall be set with the tolerances shown on the plans. The reinforcing bars and mechanical reinforcing bar splicers shall be assembled into a rigid cage that will maintain its shape in the form and which will not allow individual reinforcing bars to move during the placement of concrete. This cage shall be secured in the form so that the clearances to all faces of the concrete, as shown on the plans, shall be maintained.

**ITEM 995.011** (Continued)

Where reinforcing bars are to protrude from one Precast Concrete Bridge Element in order to mate with reinforcing bar splicers in a second precast concrete element, the fabricator shall set the reinforcing bars and the reinforcing bar splicers with a template in order to ensure proper fit up within the tolerances specified on the plans.

**D. Tolerances.**

Fabrication shall comply with tolerances specified on the plans. Tolerances for steel reinforcement placement shall be in accordance with Subsection 901.35. In the absence of specifications on the plans, tolerances shall comply with the latest version of the PCI MNL 135, Precast Tolerance Manual.

**E. Forms.**

Concrete shall be cast in rigidly constructed forms, which will maintain the Precast Concrete Bridge Elements within specified tolerances to the shapes, lines and dimensions shown on the approved fabrication drawings. Forms shall be constructed from flat, smooth, non-absorbent material and shall be sufficiently tight to prevent the leakage of the plastic concrete. When wood forms are used, all faces in contact with the concrete shall be laminated or coated with a non-absorbent material. All worn or damaged forms, which cause irregularities on the concrete surface or damage to the concrete during form removal, shall be repaired or replaced before being reused. If threaded inserts are cast into the elements for support of formwork, the inserts shall be recessed a minimum of 1 inch and shall be plugged after use with a grout of the same color as that of the precast cement concrete.

## CONSTRUCTION METHODS – FIELD CONSTRUCTION

**A. General.**

All of the Contractor's field personnel involved in the erection and assembly of the Precast Concrete Bridge Elements shall have knowledge of and follow the approved Erection Procedure and Quality Control Plan for Precast Concrete Bridge Element Assembly.

Prior to installation, the following documentation shall be reviewed and confirmed by the MassDOT Resident Engineer or designee:

(a) QC Compressive Strength Test Report Forms attaining Design Strength, f'c for the Precast Concrete Bridge Element's representative sublot.
(b) Certificate of Compliance generated by the Fabricator as described under the Fabricator Quality Control section.
(c) QC Inspection Reports signed by the Quality Control Manager.

Field construction staff shall verify that the Resident Engineer has accepted all Precast Concrete Bridge Elements prior to installation.

**B. Erection Procedure and Quality Control Plan for Precast Concrete Bridge Element Assembly.**

Prior to the erection, the Contractor shall submit an Erection Procedure and a Quality Control Plan for Precast Concrete Bridge Element Assembly for approval by the Engineer. This submittal shall include computations and drawings for the transport, hoisting, erection and handling of the Precast Concrete Bridge Elements. The Erection Procedure and Quality Control Plan for Precast Concrete Bridge Element Assembly shall be prepared and stamped by a Professional Engineer registered in the Commonwealth of Massachusetts with working knowledge of the Contractor's equipment, approved shop drawings, and materials to build the bridge. The Erection Procedure and Quality Control Plan for Precast Concrete Bridge Element Assembly shall, at a minimum, include the following:

**ITEM 995.011** (Continued)

1. **Erection Procedure**

The Erection Procedure shall be prepared to conform to the requirements of 960.61, Design, Fabrication and Erection and the applicable sections in Chapter 8 of the PCI Design Handbook (eighth edition) for handling, erection, and bracing requirements. At a minimum, the Erection Procedure shall provide:

(a) Minimum concrete compressive strength for handling the Precast Concrete Bridge Elements.
(b) Concrete stresses during handling, transport, and erection.
(c) Crane capacities, pick radii, sling geometry, and lifting hardware.
(d) Verification that the equipment can handle all pick loads and weights with the required factor of safety.
(e) Evaluation of construction sequence and evaluation of any geometric conflicts in the lifting of the Precast Concrete Bridge Elements and setting them as shown on the plans.
(f) Design of crane supports including verification of subgrade for support.
(g) Location and design of all temporary bracing that will be required during erection.

Non-shrink grout and concrete materials, approved by the Engineer, shall be placed as shown on the plans. Fill joints, keyways, and voids, in strict accordance with the specifications and manufacturer's recommendations and instructions.

For footings, approach slabs and highway guardrail transitions, once these Precast Concrete Bridge Elements have been set to the correct horizontal and vertical alignment, the void between them and the supporting soil shall be filled with Controlled Low-Strength Material – Structural Non-Excavatable to the limits as shown on the plans. Add additional grout ports in the footings to facilitate the bedding process if required.

Except in approach slabs, joints shall be filled flush to the top with non-shrink grout, and any vertical misalignment between adjacent elements shall be feathered out on a slope of 1 to 12.

Curing of grout or concrete shall be performed in strict accordance with the specifications and manufacturer's recommendations. Filling shall not be completed in cold weather when either the ambient temperature or the precast member's temperature is below the manufacturer's recommendation. No localized heating of either the precast members or of the air surrounding the element will be permitted in an attempt to reach application temperatures.

If the joints or voids are not filled within five days after the Precast Bridge Elements are erected, the Contractor shall cover and protect the openings from weather and debris until they are filled.

2. **Quality Control Plan for Precast Concrete Bridge Element Assembly**

The Quality Control Plan for Precast Concrete Bridge Element Assembly is a document prepared and submitted by the Contractor prior to the start of work which requires the Contractor to identify and detail the sequence of construction in accordance with the project schedule and which clearly identifies all stages of field construction. The assembly procedures for the Precast Concrete Bridge Elements shall be submitted in PDF format on 24”x36” sheets. This document will be treated as a Construction Procedure and will be reviewed by both the Designer and the District Construction Office. The approval of this document will serve as a guideline for setting interim concrete and grout strengths and curing procedures to allow construction to proceed without waiting for the final in-service strengths to be achieved.

The following list details the minimum criteria that should be included in the Quality Control Plan for Precast Concrete Bridge Element Assembly:

(a) A detailed schedule showing the sequence of operations that the Contractor will follow. The schedule shall include a timeline for installation of all major elements of the bridge accounting for the installation of temporary works and cure times of grouts or closure pour concrete and other selected materials.

**ITEM 995.011** (Continued)

(b) Calculations that support the schedule outlined above should be included verifying that the selected materials have adequate interim strength to proceed from one step to another. Final material strengths are not normally required until the bridge is opened to vehicular traffic. The minimum factor of safety of two (2) will be required for the interim strength of grouts and closure pour concrete before construction is allowed to proceed to subsequent steps. The factor of safety is applied to the service loads that are supported by the elements and materials during various stages of construction. For example, if the Contractor calculates that the grout between the precast pier cap and pier wall requires a strength of 100 psi to support the dead load of the beams in the next step, a cylinder break of 200 psi will be required prior to allowing the pier cap to be loaded with the beams. The required strength of materials for subsequent construction stages shall also be calculated and the material strength verified.

(c) The Contractor is responsible for determining the center of gravity for all elements. Special care shall be used for unusual elements that are not symmetric. These elements may require special lifting hardware to allow for installation in a plumb or flat position.

(d) Plan of the work area, depicting Items such as temporary earth support, utilities within the immediate vicinity of the work, drainage structures, etc. The Contractor shall coordinate the various subContractors that will need to occupy the same area and shall ensure that there are no conflicts. For example, if the Contractor is having different SubContractors prepare and submit plans for temporary earth support and demolition, and the earth support is required to be installed prior to the demolition, it shall be the Contractor's responsibility to ensure that the Quality Control Plan for Precast Concrete Bridge Element Assembly submission allows both operations to be performed without field modification.

(e) Details of all equipment that shall be employed for the construction of the bridge.

(f) Methods of providing temporary support of the elements. Include methods of adjusting and securing the element after placement.

(g) Vertical Adjustment Assemblies to be used as a means of setting precast concrete footings to the correct elevations.

(h) Procedures for controlling the overall horizontal dimensions and the vertical elevations as each precast concrete bridge element is erected by using the tolerance limits of the joints as detailed on the plans.

(i) Methods for curing grout.

(j) Proposed methods for installing non-shrink grout and the sequence and equipment for the grouting operation.

(k) Methods for sealing the keyways in preparation for filling with non-shrink grout, including the use of backer rods. The Contractor shall not assume that the backer rods will restrain the pressure from the grout in vertical grout joints. Provide additional forming to retain the backer rod.

**C. Survey and Layout.**

Working points, working lines, and benchmark elevations shall be established prior to placement of all elements. The Contractor is responsible for field survey as necessary to complete the work. MassDOT reserves the right to perform additional independent survey. If discrepancies are found, the Contractor may be required to verify previous survey data.

**D. Preparation of Grouted Keyways.**

Immediately prior to erecting the Precast Concrete Bridge Elements, the grouted keyways shall be cleaned at the job site of all dust, dirt, carbonation, laitance, and other potentially detrimental materials which may interfere with the bonding of the grout and precast concrete using a high-pressure water blast. Any exposed reinforcing steel in the precast concrete shall be protected from damage during the cleaning of the keyways. Damaged epoxy coating of steel reinforcement shall be repaired, and the reinforcing steel shall be cleaned as directed by the Engineer.

**ITEM 995.011** (Continued)

The surfaces of the grouted keyways shall be wetted so that the surfaces shall have a Saturated Surface Dry (SSD) condition for at least 24 hours prior to the placement of the closure pour concrete.

**E. Erection.**

The elements shall be placed in the sequence and according to the methods outlined in the Erection Procedure and Quality Control Plan for Precast Concrete Bridge Element Assembly. As the erection proceeds, the Contractor shall constantly monitor the assembly to ensure that the precast concrete bridge element is within proper horizontal and vertical location and tolerances prior to releasing it from the crane and setting the next unit. The Contractor may use shims to maintain proper setting tolerances.

The concrete elements shall be lifted only by the lifting devices, and the utmost care shall be taken to prevent distortion of the elements during handling, transportation or storage.

This approval will be contingent on the Contractor demonstrating by calculations, prepared by a Professional Engineer registered in Massachusetts, that the elements will not be damaged by the non-vertical lifting force and by documentation that the capacity of the lifting devices is adequate for the non-vertical lifting force.

After all Precast Concrete Bridge Elements have been placed, the actual overall dimensions of the structure both horizontal and vertical, as laid out shall not deviate from the nominal dimensions shown on the plans beyond a tolerance of +0 inches and -1 inches. Once the layout of Precast Concrete Bridge Elements has been accepted by the Engineer, the Contractor shall cut all lifting devices off below the surfaces of the elements.

**F. Box Culverts.**

Backfilling operations shall not begin until the following checks have been made:

(a) The frame to footing key joints are grouted as shown on the plans;
(b) The joints between exterior frame bridge elements and wingwall stems are complete as shown on the plans;
(c) All joint seals are properly placed.

Backfill shall be paid for under separate Items. The backfilling procedures shall be in accordance with Sections 120, 150, and 170 of the Standard Specifications and Supplemental Specifications modified as follows:

(a) Fill shall be placed and compacted in layers not exceeding one foot in depth;
(b) Dumping of fill shall not be allowed any nearer to the structure than 3.25 feet from a vertical plane extending from the back of the footing;
(c) Backfill shall be placed as symmetrically as possible around the structure with differential depths of backfill on each side of the structure not exceeding 1.5 feet with respect to each other;
(d) Compaction shall be achieved using hand compaction equipment for all fill within one foot of the structure;
(e) The bare structure shall not be crossed by any equipment heavier than that specified by the frame manufacturer. All damage resulting from equipment damage shall be rectified to the satisfaction of the Engineer at no cost to the Department;
(f) Construction equipment will not be permitted atop an uncompleted structure;
(g) Construction equipment whose weight exceeds the design capacity shall not be permitted atop the completed structure under any circumstances;
(h) The use of vibratory rollers for compaction purposes will not be permitted.

**ITEM 995.011** (Continued)

A representative of the manufacturer shall be on site at the commencement of the installation, at no cost to the Department, to assist the Contractor. The representative shall offer advisory assistance only and shall not supplant the Contractor's representative, or the Engineer.

**G. Filling of Blockouts for Lifting Devices and Threaded inserts.**

If the blockouts in the Precast Concrete Bridge Elements where the lifting devices were located will be exposed and visible after assembly is complete, the Contractor shall fill these blockouts with Mortar (M4.04.5).

After the formwork has been removed, all threaded inserts that have been cast into the precast concrete bridge deck for support of the formwork shall be filled with a grout of the same color as that of the precast concrete.

SCHEDULE OF BASIS FOR PARITAL PAYMENT

Within ten (10) days after the Notice to Proceed, the Contractor shall submit a schedule of unit prices for the major component Sub-Items that make up Item 995.011 as well as his/her total bridge structure Lump Sum cost for Bridge Structure No. L-08-053 (74V). The bridge structure Lump Sum breakdown quantities provided in the proposal form are estimated and not guaranteed. The total of all partial payments to the Contractor shall equal the Lump Sum contract price regardless of the accuracy of the quantities furnished by the Engineer for the individual bridge components. The cost of labor and materials for any Item not listed but required to complete the work shall be considered incidental to Item 995.011 and no further compensation will be allowed.

The schedule applies only to Bridge Structure No. L-08-053 (74V). Payment for similar materials and construction at locations other than at this bridge structure shall not be included under this Item. Sub-Item numbering is presented for information only in coordination with MassDOT Standard Nomenclature.

| Sub-Item | Description | Quantity | Unit | Unit Price | Total |
|---|---|---|---|---|---|
| 156. | Crushed Stone | 5 | TON | | |
| 904.3 | 5000 PSI, 3/4 IN., 685 HP Cement Concrete | 70 | CY | | |
| 910.1 | Steel Reinforcement for Structures - Epoxy Coated | 13000 | LB | | |
| 916.1 | Precast Concrete Culvert (8.33 FT Span – 7 FT Height) | 87.5 | FT | | |
| 970. | Damp-Proofing | 750 | SF | | |

Subtotal =

**Total Lump Sum Price of Item 995.011 =**

**ITEM 996.319** **SOIL NAIL WALL** **LUMP SUM**

The work under this Item shall consist of design, fabrication, furnishing, transportation, and erection of a permanent Soil Nail (SN) Wall of the required type, including excavation and miscellaneous Items necessary for a complete installation, at Structure No. L-08-060 (2RP).

Soil nailing work shall include the following elements: performing test pits as an early action Item to locate the existing retaining wall footing and roadway utilities, install the soil-nail wall in stages; install temporary casing and place soil nails to the diameter and length required; grout the soil nails; supply and install the specified drainage features; supply and install bearing plates, washers, nuts, and other required hardware and miscellaneous materials; construct the shotcrete wall facing; and perform nail testing.

The wall shall be constructed in general accordance with these specifications and in conformity with the lines, grades, design criteria, and dimensions shown on the Plans or established by the Engineer. The final quantity and location of soil nails is subject to change based on the findings of the proposed test pits.

Related Work

Portions of the wall shown on the Plans are to be constructed in coordination with the proposed grading and earthwork.

SUBMITTALS

At least 30 days before starting soil nail retaining wall work, the Contractor shall submit the following:

A. The Contractor shall have a minimum of 5 years of soil nail wall construction experience with at least 3 projects completed in the last 5 years. A detailed listing of Soil Nail walls that the Contractor has constructed including a brief description of each project and a listing of personnel who will construct the walls demonstrating their experience in construction of similar walls. A reference shall be included for each project listed. As a minimum, the reference shall include an individual's name, address, and current phone number.

B. Shop Drawing showing the configuration and all details, dimensions, quantities, and cross-sections necessary to construct the wall, including but not limited to the following:
    a. Start date.
    b. Method of excavation to ensure wall and slope stability.
    c. Retaining wall construction sequence.
    d. Soil nail types, sizes, spacings, depths, and installation angles, bond zone lengths, and ultimate tendon strengths for the range of material to be encountered.
    e. Tendons, couplers, bearing plates, facing Items, and additional hardware with manufacturer's product data sheets, specifications, catalog cuts, and mill certificates.

**ITEM 996.319** (Continued)

f. Manufacturer recommendations for tendon and hardware handling, storing, assembly, and working temperature ranges.
g. Grout type, mix design, mixing equipment, placement procedures, and 3-day and 28-day grout compressive strength test results.
h. Procedures and material for repairing corrosion protection coatings in the field and for applying epoxy finish coatings on end hardware.
i. Drilling methods and equipment.
j. Drill hole diameter to achieve the specified pullout resistance.
k. Alternative drilling and grouting methods such as grout additives.
l. Additional material needed to achieve required bond capacities such as grout socks.
m. Methods to ensure borehole stability during excavation and grout placement.
n. Soil nail testing methods and equipment including type and capacity of reaction load system, drawings, and supporting calculations for structural components of the soil nail load test apparatus; and
o. Identification number and calibration test certification for each jack, pressure gauge, and electronic load cell. Clearly indicate the serial number of each component of the testing assembly on calibration graphs. Submit results from calibration tests conducted by an independent testing laboratory within the previous 60 days.

C. Site Specific Work Plan (SSWP): The Contractor shall describe the soil nail wall installation methods and equipment in the SSWP, including horizontal and vertical clearance compared to clearance available, manufacturer's information, model, size and type of equipment, schedule, track protection personnel required, and approved work shifts.

The SSWP shall describe the methods to be used for installation of the soil nails, including the consecutive steps and the approximate time required for each step and labor and equipment usage schedule, any interference to any existing structures, facilities, or utilities as a result of the soil nail installation, methods to be used to control and verify soil nail position and battered alignment, procedures for proper removal and disposal of all wastes including groundwater and spoils including drilling fluid, cuttings, and grout, details of centralizers, and the procedures for placing the grout. The SSWP shall describe methods proposed to maintain drill hole stability during soil nail installation and proposed methods to prevent or mitigate ground loss if subsidence is observed.

The SSWP shall include details for grouting, including the method, grouting pressure if used, procedure and equipment to be used, methods to flush the drilled hole, methods and equipment for measuring volumes of grout placed in each hole, depths, and pressures, and estimated curing time for grout to achieve specified strength. The grouting rate shall be calculated based on the initial pump pressures or static head on the grout and losses throughout the placing system, including anticipated head of drilling fluid (if applicable) to be displaced. Additionally, the grouting rate shall be calculated by counting the number of throws it takes for the pump to fill a 55-gallon drum.

**ITEM 996.319** (Continued)

Divide the volume of drum by the total number of throws to determine the volume of grout per throw. The SSWP shall include details, descriptions, equipment setup and locations of the Verification Load Tests and Proof Load Tests. The Verification load test shall be located along the facing footprint of the wall. A calibration table and graph of force vs. gauge pressure for the load testing equipment shall be submitted. Calibration records shall include the date tested, the device identification number, and the calibration test results, and shall be certified for an accuracy of at least 2 percent of the applied certification loads by a qualified independent testing laboratory within 90 calendar days of submittal.

MATERIALS

The Contractor shall furnish to the Engineer the appropriate Certificates of Compliance certifying that the applicable wall materials meet the requirements of the specifications. All materials used in the construction of the wall shall meet the requirements specified in the subsections of Division III, Materials Specifications of MassDOT Standard Specifications and as specified herein.

Delivery, Storage and Handling

The Contractor shall check the material upon delivery to assure that the proper material has been received. A product certification shall be provided with each shipment.

All wall materials shall be stored elevated from the ground and protected to prevent all mud, wet cement, and epoxy and like substances which may affix themselves to the materials.

Facing

a. Shotcrete
All materials, methods, and control procedures for initial shotcrete shall be submitted for review and approval. Shotcrete shall have a minimum 28-day compressive strength of 4,000 psi. and a minimum 3-day strength of 2,500 psi. The shotcrete mix shall conform to Section M4.06.12 of Division III, Materials Specifications of MassDOT Standard Specifications.

b. Reinforcing Steel
Reinforcing steel shall meet the requirements of AASHTO M31/ASTM A615, Grade 60, deformed. The reinforcing steel shall conform to Section M8.01.0 of Division III, Materials Specifications of MassDOT Standard Specifications.

c. Welded-Wire Mesh
Welded wire mesh (WWM) shall meet the requirements of Section M8.01.2 of Division III, Materials Specifications of MassDOT Standard Specifications.

**ITEM 996.319** (Continued)

Soil Nails

a. Solid Bar Nail (Tendon)
Tendons shall meet the requirements of AASHTO M31/ASTM A615 for 80 steel bars, and ASTM A722 for Grade 150 steel. Tendons shall be continuous without splices or welds, new, straight, undamaged, and galvanized, as shown on the Contract Drawings. The length of the threaded portion of the bar at the wall anchorage shall be as needed to allow proper attachment of the bearing plate and nut. If threads are cut into a tendon, the Contractor shall verify that the bar meets the minimum capacity required at the threaded section.

b. Bar Couplers
Bar couplers shall develop the full nominal tensile capacity of the tendon as certified by the manufacturer.

c. Corrosion Protection – Soil nail bars shall have Class B Corrosion Protection in accordance with FHWA-NHI-14-007 Soil Nail Reference Manual utilizing one the following.

1. Fusion-Bonded Epoxy Coating: Coating shall meet the requirements of ASTMA775 and have a minimum thickness of 12 mils up to a maximum of 17 mils as applied electrostatically. Bend test requirements are waived.

2. Zinc Galvanized Coating: Coating shall have a minimum of 2.0 oz/square foot or 3.4 mil thickness applied in accordance with ASTM A123 for bars and structural steel shapes and ASTM A153 for nuts, plates and other hardware.

Soil Nail Components

a. Centralizers
Centralizers shall be manufactured from Schedule 40 PVC pipe or other materials not detrimental to the soil nail steel bar. Wood shall not be used. Centralizers shall be securely attached to the tendon and shall be sized to allow: (i) positioning of the soil nail bar within 1 in. of the center of the hole; (ii) tremie pipe insertion to the bottom of the hole; and (iii) grout to freely flow up the hole. They shall be installed at regular intervals not to exceed 10 ft along the length of the nail and 1.5 feet from each end of the nail.

b. Nails Grout
Grout shall be neat cement or sand/cement mixture with a minimum 3-day compressive strength of 1,500 psi and a minimum 28-day compressive strength of 4,000 psi, meeting the requirements of AASHTO T106/ASTM C109. The specific gravity of the freshly prepared neat cement grout shall range between 1.8 and 1.9.

c. Sand
Sand for grout and/or shotcrete shall meet the requirements of AASHTO M6/ASTM C33.

**ITEM 996.319** (Continued)

d. Portland Cement
Portland cement for grout and/or shotcrete shall meet the requirements of AASHTO M85/ASTM C150, Types I, II, III, V, or Type I/II and shall be the product of one manufacturer. Portland cement shall conform to Section M4.01.1 of Division III, Materials Specifications of MassDOT Standard Specifications. If the brand or type of cement is changed during the project, additional grout mix tests shall be conducted to ensure consistency of quality and performance in situ.

e. Admixtures
If admixtures are used, they shall meet the requirements of AASHTO M194/ASTM C494 and shall conform to Section M4.01.4 of Division III, Materials Specifications of MassDOT Standard Specifications. Admixtures shall be compatible with the grout and mixed in accordance with the manufacturer's recommendations. Accelerators shall not be permitted. Expansive admixtures shall not be permitted except where the grout is used as part of corrosion protecting encapsulation.

f. Film Protection
Polyethylene film for moisture loss control shall meet the requirements of AASHTO M171.

g. Bondbreaker
The bondbreaker shall be fabricated from a smooth plastic tube or pipe having the following properties:

1. Resistant to grout, or corrosion inhibiting compound;
2. Resistant to aging and by ultra-violet light;
3. Nondetrimental to the reinforcing bar;
4. Capable of withstanding handling and installation methods;
5. Enable the reinforcing bar to elongate during testing and stressing; and
6. Allow the reinforcing bar to remain unbonded after lock-off.

Connection Components

a. Bearing Plates
Bearing plates shall meet requirements of AASHTO M183/ASTM A36 or ASTM A572 Grade 50.

b. Nuts
Nuts shall meet the requirements of AASHTO M291/ASTM A563, Grade B, hexagonal, and fitted with beveled washer or spherical seat to provide uniform bearing.

c. Rebar Studs
Rebar studs of the existing retaining wall shall consist of ASTM A615 for Grade 60 rebars installed with cement grout with a minimum compressive strength of 4,000 psi or approved equal.

**ITEM 996.319** (Continued)

d. Zinc Coating
Zinc galvanized coating shall meet the requirements of Article 11.10.6.4.2a (AASHTO 2014 or current edition) and have a minimum of 2.0 oz/ft2 or 3.4 mil thickness applied in accordance with ASTM A123 for bars and structural steel shapes, and ASTM A153 for nuts, plates, and other hardware.

Drainage Components

a. Geocomposite Strip Drain
Geocomposite strip drain shall be manufactured with a drainage core (e.g., geonet) and a filtration geotextile attached to or encapsulating the core. Drainage core shall be manufactured from long- chain synthetic polymers composed of at least 85 percent by mass of polypropylenes, polyester, polyamine, polyvinyl chloride, polyolefin, or polystyrene, and have a minimum compressive strength of 40 psi when tested in accordance with ASTM D1621 Procedure A. The drainage core shall have a minimum flow rate of 0.1 gallons per second per foot of strip width under a gradient of 1.0 tested in accordance with ASTM D4716.

b. Underdrain Pipe
Underdrain and perforated pipe shall meet the requirements of ASTM D1785 Schedule 40 PVC solid and perforated wall; cell classification 12454-B or 12454-C, wall thickness SDR 35, with solvent weld or elastomeric joints.

c. Underdrain Fittings
Fittings for underdrain and perforated pipe shall meet the requirements of ASTM D3034, Cell classification 12454-B or 12454-C, wall thickness SDR 35, with solvent or elastomeric joints.

CONSTRUCTION METHODS

A. Test Pits

Four test pits are required to locate the bottom of the existing retaining wall. The test pits shall be performed directly in front of the existing retaining wall and approximately 3 feet wide and sloped as required. Prior to the construction of the soil nail wall, the Contractor shall coordinate and perform the required test pits. The Engineer shall perform test pit observation to determine if soil nails are required to be adjusted. The test pits are anticipated to be up to 8 feet deep. After the bottom of the existing retaining wall is located, the Contractor shall survey the retaining wall and provide the elevation of the bottom of the existing retaining wall to the Engineer. The Contractor shall provide equipment to excavate test pits. Contractor shall take care to not undermine the existing retaining wall. Additional test pits shall be completed in the roadway to verify utility depths prior to installation of the soil nails. If required, the Engineer will modify the location of the soil nails accordingly based on the test pit observations. The Contractor will allow for two weeks after test pit observations for the Engineer to evaluate the soil nail locations.

**ITEM 996.319** (Continued)

B. Site Drainage Control

The Contractor shall control and properly dispose of drill flush and construction related waste, including excess grout, in accordance with MassDOT Standard Specifications, any related Special Provisions in the Contract, and all applicable codes and regulations. The Contractor shall provide positive control and discharge of all surface water that will affect construction of the soil nail wall; maintain all pipes or conduits used to control surface water during construction; and repair any damage caused by surface water at no additional cost to the Department. All runoff during construction shall be directed away from soil nail wall and areas above and behind the wall.

Grout overflow and drilling spoils shall be controlled from running down into Reservoir Brook at all times. Positive protection shall be installed in accordance with the Contract and accepted submittals. The spoils management shall be done in conjunction with the SWWP.

The Contractor shall immediately contact the Engineer if unanticipated existing subsurface drainage structures or other utilities are discovered during excavation or drilling; and shall suspend work in such areas until remedial measures meeting the Engineer's approval are implemented.

C. Excavation

Perform the wall construction and excavation sequence in accordance with approved Plans and Submittals. Excavate in staged horizontal lifts with no negative batter (excavation face leaning forward). The height of exposed unsupported excavation face cut shall be established by the Contractor and shall not exceed the vertical nail spacing plus the required reinforcing overlap or the short-term stand-up height of the ground, whichever is less. During construction, at the end of each day, the excavation shall be bermed against the existing soil face until the shotcrete is placed. Contractor shall limit exposed soil face such that no more wall length is to be excavated than can be fully shotcreted during one shift. If soil nails are not installed within the shotcrete face within 24 hours, the cured shotcrete should be backfilled/bermed at the end of each shift until all soil nails in that lift are completed. Shotcrete is required to be placed prior to nail installation.

Work at the next lift shall not proceed until nail installation, reinforced shotcrete placement, attachment of bearing plates and nuts and nail testing has been completed and accepted in the current lift. Nail grout and shotcrete shall have cured for at least 72 hours or attained at least their specified 3-day compressive strength.

The Contractor and inspector shall watch for early signs of instability during construction, such as bulging, sloughing, and excessive deformation of the excavated soil face. If early signs of wall instability are observed, the exposed face shall be backfilled quickly with a temporary berm.

Fill all voids encountered with shotcrete. If any excavation becomes unstable at any time, suspend soil nail wall construction and temporarily stabilize the excavation by immediately placing an earth berm up against the unstable excavation face. When this occurs, repair walls with an approved method and additional nails may be required.

Excavation below the existing retaining wall (bottom located via test pits), shall be limited to 18 inches.

**ITEM 996.319** (Continued)

D. Soil Nail Installation

No installation of production nails will be permitted until successful pre-production verification testing of nails is completed and approved by the Engineer. The soil nail length and hole diameter necessary to develop the load capacity and to satisfy the acceptance criteria for the design load required shall be provided, but not less than the lengths or diameters shown on the Plans. Where a soil nail location is within the limits of the existing retaining wall, the Contractor shall core through the existing concrete retaining wall to provide 6-inch diameter core hole prior to drilling soil nail.

Contractor to confirm casing to be used to drill soil nails can fit within 6-inch diameter core hole.

Centralizers shall be provided and sized to position the soil nail bars to within 1 inch of the center of the hole. Centralizers shall be positioned so that their maximum center-to-center spacing does not exceed 10 ft, and shall be located to within 1.5 ft from each end of the nail bar.

The locations of the soil nails may need to be modified due to the findings of the exploratory test pits, obstructions encountered, etc. Field modifications of up to 1 foot from the design soil nail location (vertical or horizontal) may be made by the Contractor, and reported to the Engineer, such that the maximum on-center distance between any two soil nails does not exceed 5 feet. If the soil nail location modifications require an on-center distance greater than 5 feet, the Contractor must notify the Engineer for approval of the proposed modified soil nail location.

Angle of nail installation shall maintain a tolerance within 2 degrees of inclination shown on the Contract Drawings.

Drill holes shall be stabilized with temporary casing.

E. Grouting

The hole shall be grouted after installation of the soil nail bar and within 2 hours of completion of installation. The grout shall be injected at the lowest point of each hole through a grout tube, casing, hollow-stem auger, or rods. The outlet end of the conduit shall deliver grout below the surface of the grout as the conduit is withdrawn to prevent the creation of voids. The hole shall be filled in one continuous operation. Cold joints in the grout column shall not be allowed except at the top of the test bond length of proof-tested production nails.

F. Wall Drainage Network

General

All elements of the soil nail wall drainage network shall be installed and secured as shown on the Contract Drawings. The drainage network shall consist of geocomposite drain strips, PVC connection pipes, soil nail wall footing drains, and weepholes. The drainage network shall provide a continuous and unrestricted flow path to discharge the water collected behind the wall face.

**ITEM 996.319** (Continued)

Geocomposite Drain Strips

Geocomposite drain strips shall be centered between the columns of soil nails. Drain strips shall be at least 12 in. wide and placed with the geotextile side against the ground. Contamination of the geotextile with shotcrete shall be prevented. Drain strips shall be vertically continuous.

Footing Drains

Footing drains shall be installed at the bottom of the wall. The drainage geotextile shall envelope the footing drain aggregate and pipe and shall conform to the dimensions of the trench. The drainage geotextile shall overlap on top of the drainage aggregate. Damaged or defective drainage geotextile shall be repaired or replaced.

G. Shotcrete

General

Shotcrete for facing shall be provided as required in Subsection 901 of the MassDOT Standard Specifications.

Attachment of Nail Head Bearing Plate and Nut

A bearing plate, washers, and nut shall be attached to each nail head as shown on the drawings. While the construction facing is still plastic and before its initial set, the plate shall be uniformly seated on the shotcrete by hand-wrench tightening the nut. Where uniform contact between the plate and the shotcrete cannot be provided, the plate shall be set in a bed of grout. After grout has set for 24 hours, re-tighten the nut by hand with a wrench.

H. Construction Records

Provide 2 copies of soil nail wall construction records within 24 hours of completing each lift. Include the following in construction records:

1. * Names of Soil Nail Wall Contractor, Superintendent, Nozzleman, Rig Operator, Project Manager and Design Engineer;
2. * Wall station and number and lift location, dimensions, elevations and description;
3. * Nail locations, dimensions and inclinations, bar types, sizes and grades, corrosion protection and temporary casing information; Installation; Date and time begins and ends, steel bars inserted into holes, grout and shotcrete mixed and arrived on-site, grout placement, and shotcrete application begins and ends;
4. * Grout volume, temperature, flow and density records;
5. * Ground and surface water conditions and elevations if applicable;
6. * Weather conditions including air temperature at time of grout placement and shotcrete application;
7. * Other pertinent details related to soil nail wall construction.

**ITEM 996.319** (Continued)

Soil Nail Testing

A. General

The Contractor shall perform both verification and proof testing of designated test soil nails. Verification tests on sacrificial test nails shall be conducted at locations as shown on the Plans. Proof tests on production nails shall be conducted at locations selected by the Resident Engineer. Testing of any nail shall not be performed until the nail grout and shotcrete facing have cured for at least 72 hours, or attained their specified 3-day compressive strength. Do not apply loads greater than 80 percent of the minimum guaranteed ultimate tensile strength of the tendon for Grade 150 bars, or 90 percent of the yield strength of the tendon for Grade 75 bars.

B. Equipment

Testing equipment shall include dial gauges, dial gauge support, jack and pressure gauge, load cell, and a reaction frame. The pressure gauge shall be graduated in 50 psi increments or less. The dial gauges shall be supported by a frame that is independent from the jacking and wall. Nail head movement shall be measured with a minimum of 2 dial gauges capable of measuring to 0.001 in.

C. Verification Testing

The Contractor shall perform two (2) verification tests per side of the culvert (four total) on a sacrificial soil nail (locations shown in the Contract Drawings) to confirm the appropriateness of the Contractor's casing and installation methods, and to verify the required nail pullout resistance. Verification testing shall be conducted prior to installation of production soil nails.

a. Methods

The verification tests shall be conducted on nails of the same design and constructed with the same construction methods to be used on production nails. Soils nails in verification test shall have both a bonded length and an unbonded length. The nail bar shall not be grouted along the unbonded length.

b. Schedule

Two verification tests shall be conducted by incrementally loading the verification test nail to pullout or a maximum test load of 200 percent of the Design Load (DL), and in accordance with the loading schedule presented below. The Contractor shall record soil nail movements at each load increment and at each time step. The measured displacement shall be based on the movement occurring after the alignment load has been applied. Each load increment shall be held for at least 10 minutes.

All verification test nails shall be monitored for creep at a load of 1.5 DL. Nail movements shall be measured and recorded during the creep portion of the test in increments of 1 minute, 2, 3, 5, 6, 10, 20, 30, 50, and 60 minutes. The load shall be maintained during the creep test to within 2 percent of the intended load by use of a load cell. Repump jack as needed to maintain load during hold times.

**ITEM 996.319** (Continued)

Verification Test Loading Schedule

| Load | Hold Time, in minutes |
|---|---|
| AL (0.05 DL max) | 1 |
| 0.25 DL | 10 (record soil nail movement at 1, 2, 5, 10) |
| 0.50 DL | 10 (record soil nail movement at 1, 2, 5, 10) |
| 0.75 DL | 10 (record soil nail movement at 1, 2, 5, 10) |
| 1.00 DL | 10 (record soil nail movement at 1, 2, 5, 10) |
| 1.25 DL | 10 (record soil nail movement at 1, 2, 5, 10) |
| 1.50 DL (Creep Test) | 60 (record at 1, 2, 3, 5, 6, 10, 20, 30, 50, 60) |
| 1.75 DL | 10 |
| 2.00 DL (max. Test Load) | 10 |
| AL | 1 |

D. Proof Testing

Successful proof testing shall be demonstrated on 5 percent of production soil nails in each nail row or a minimum of one (1) per row. The Resident Engineer shall determine the locations and number of proof tests prior to nail installation in each row.

a. Methods

Proof test nails shall have a bonded length and a temporary unbonded length. The temporary unbonded length in proof tests shall be at least 3 feet. The bonded length of the test nail shall be determined based on the production nail bar grade and size such that the allowable bar structural load is not exceeded during testing, but shall not be less than 10 ft.

b. Schedule

Proof tests shall be conducted by incrementally loading the proof test nail according to the test loading schedule shown below.

Proof Test Loading Schedule

| Load | Hold Time, in minutes |
|---|---|
| AL (0.05 DL max.) | 1 |
| 0.25 DL | until movement stabilizes |
| 0.50 DL | until movement stabilizes |
| 0.75 DL | until movement stabilizes |
| 1.00 DL | until movement stabilizes |
| 1.25 DL | until movement stabilizes |
| 1.50 DL (Creep Test) | 10 (record at 1, 2, 5, 6, 10) |
| AL | 1 |

Note: If the nail movement measured between 1 and 10 minutes exceeds 0.04 in., the load shall be maintained for 50 more minutes and movements shall be recorded at 20, 30, 50, and 60 minutes. Record permanent soil movement.

**ITEM 996.319** (Continued)

Hold each load increment until stabilized and record soil nail movements at each load increment and time interval shown in the schedule. All load increments shall be maintained to within 5 percent of the intended load. Repump jack as needed to maintain load during hold times.

E. Acceptance Criteria of Test Soil Nails

a. Verification Tests

Pullout is defined as the load at which attempts to further increase the test load increments result in continued movement of the tested nail. A test nail shall be considered acceptable when all of the following criteria are met:

(1) The total creep movement is less than 0.08 in. between the 6- and 60-minute readings, and the creep rate is linear or decreasing throughout the creep test load hold period.

(2) The total movement measured at the maximum test load exceeds 80 percent of the theoretical elastic elongation of the unbonded length of the test nail.

(3) Pullout does not occur at the maximum test load.

b. Proof Tests

(1) The creep movement between the 1- and the 10-minute readings is less than 0.04 in.

(2) In cases when the creep movement between the 1- and the 10-minute readings is greater than 0.04 in., the creep movement between the 6- and the 60-minute readings is less than 0.08 in., and the creep rate is linear or decreasing throughout the creep test load hold period.

(3)The total soil nail movement measured at the maximum test load exceeds 80 percent of the theoretical elastic elongation of the unbonded length.

(4) Pullout does not occur at the maximum test load.

Successful proof tested nails meeting the above test acceptance criteria can be incorporated as production nails, provided that (1) the unbonded length of the test nail hole has not collapsed during testing, (2) the minimum required hole diameter has been maintained, (3) the specified corrosion protection is provided, and (4) the test nail length is equal to or greater than the scheduled production nail length.

Test nails meeting these requirements shall be completed by satisfactorily grouting up the unbonded test length. If the unbonded test length of production proof test nails cannot be satisfactorily grouted subsequent to testing, the proof test nail shall become sacrificial and shall be replaced with an additional production nail installed at no additional cost.

**ITEM 996.319** (Continued)

F. Rejection of Test Soil Nails

a. Verification Test Soil Nails

MassDOT and the Engineer of Record will evaluate the results of the verification test. Installation methods that do not satisfy the nail testing requirements shall be rejected. The Contractor shall propose alternative methods for review by the Engineer and shall install replacement verification test nails.

b. Proof Test Soil Nails

MassDOT and the Engineer of Record will evaluate the results of each proof test. For proof test nails, the Engineer may require the installation and testing of additional proof test nails to verify that adjacent previously installed production nails have sufficient nominal pullout resistance.

## BASIS OF PAYMENT

Item 996.319 will paid for at the contract LUMP SUM price, which price shall be considered full compensation for all administrative and procedural requirements, installation, materials, Engineering services, submittals, equipment, tools, proper disposal of drilling spoil and labor incidental thereto.

The price shall be full compensation for providing soil nail wall, submittals, labor, tools, equipment and materials, excavating, hauling and removing excavated materials, installing, tensioning and proof testing soil nails, grouting, shotcreting, supplying drain strips and foundation drains, and any incidentals necessary to construct soil nail walls. Rebar studs shall be considered incidental to soil nail wall construction. Test pits completed to verify the location of the existing retaining wall footing and roadway utilities shall be considered incidental. No separate payment shall be paid for soil nail tensioning, proof testing, or liftoff testing. No additional payment shall be made and no extension of completion date or time shall be allowed for repairing property damage, over excavations or unstable excavations, including methods to stabilize excavated soil face/wall if needed as stated in these Special Provisions, unacceptable test nails or thicker shotcrete.

No payment shall be made and considered incidental to this Item for soil nail wall not shown in the plans or required by the Engineer including shoring for OSHA reasons or the Contractor's convenience. No value Engineering proposals shall be accepted based solely on revising or eliminating shoring locations shown in the plans or estimated quantities shown in the bid Item sheets as a result of actual field measurements or site conditions.

Verification Tests and Proof Tests for Soil Nails and Soil Nail Length Adjustments shall also be included in the contract Lump Sum bid price for Item 996.319, which price shall include all administrative and procedural requirements, materials, testing equipment, tools, test reports, removal of test piles and labor incidental thereto.

*** END OF DOCUMENT ***

DOCUMENT A00802

# DETAIL SHEETS

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THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF TRANSPORATATION – HIGHWAY DIVISION
TEN PARK PLAZA, BOSTON, MA

# -ESTIMATE OF QUANTITIES - DETAIL SHEET-

TOWN Leominster
STA. 10+50.00 to 12+55.00 +/- Pleasant Street
STA. 50+10.00 to 50+95.00 +/- Union Street
STA. 9+85.00 to 11+75.00 +/- Lancaster Street
Type of Project Culvert Replacement

YEAR 2026
ROAD
CLASS
DATE August 12, 2026

| | | | |
|---|---|---|---|
| Earth Excavation | 2850 Cu Yards | Gravel for Subbase | 268 Cu Yards |
| Class “A” Rock Excavation | 100 Cu Yards | Gravel for Driveways | 33 Cu Yards |
| Class “A” Trench Excavation | 975 Cu Yards | Gravel for Sidewalks & Ramps | 100 Cu Yards |
| Class “B” Rock Excavation | 3 Cu Yards | Embankment + 15% | 50 Cu Yards |
| Class “B” Trench Excavation | 5 Cu Yards | Dense Graded Crushed Stone | 15 Cu Yards |
| Bridge Excavation | 750 Cu Yards | Dredge | 379 Cu Yards |

PAVEMENT NOTES

PROPOSED HMA & MILL OVERLAY (PLEASANT STREET)
SURFACE: 1¾” SUPERPAVE SURFACE COURSE – 12.5 (SSC – 12.5) OVER
1¾”PAVEMENT FINE MILLING

PROPOSED FULL DEPTH PAVEMENT (PLEASANT STREET)
SURFACE: 1¾” SUPERPAVE SURFACE COURSE – 12.5 (SSC – 12.5) OVER
2¼” SUPERPAVE INTERMEDIATE COURSE – 19.0 (SIC – 19.0) OVER

BASE: 3½” SUPERPAVE BASE COURSE – 37.5 (SBC – 37.5) OVER

SUBBASE: 12” GRAVEL BORROW, TYPE b

PROPOSED FULL DEPTH PAVEMENT (LANCASTER STREET)
SURFACE: 1¾" SUPERPAVE SURFACE COURSE - 12.5 (SSC - 12.5) OVER
2¼" SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC - 19.0) OVER

BASE: 3½" SUPERPAVE BASE COURSE - 37.5 (SBC - 37.5) OVER

SUBBASE: 4" DENSE GRADED CRUSHED STONE FOR SUBBASE OVER
8" GRAVEL BORROW, TYPE b

PROPOSED HMA SIDEWALK / WALKWAYS

SURFACE: 1¼" SUPERPAVE SURFACE COURSE - 9.5 (SSC - 9.5) OVER
1¾" SUPERPAVE SURFACE COURSE - 12.5 (SSC - 12.5) OVER

BASE: 8" GRAVEL BORROW, TYPE b

PROPOSED HMA DRIVEWAY (RESIDENTIAL)

SURFACE: 1½" SUPERPAVE SURFACE COURSE - 12.5 (SSC - 12.5) OVER
2½" SUPERPAVE SURFACE COURSE - 12.5 (SSC - 12.5) OVER

BASE: 8" GRAVEL BORROW, TYPE b

PROPOSED CEMENT CONCRETE CURB RAMPS

SURFACE: 4" CEMENT CONCRETE (4000 PSI, 3/4", 610) OVER

BASE: 8" GRAVEL BORROW, TYPE b

PROPOSED CEMENT CONCRETE SIDEWALKS AT DRIVEWAYS

SURFACE: 6" CEMENT CONCRETE (AIR ENTRAINED, 4000 PSI, ¾", 610)

BASE: 8" GRAVEL BORROW, TYPE b

PROPOSED PERMANENT PAVEMENT TRENCH PATCH (PAID FOR UNDER ITEM 451.)

SURFACE: 1¾" SUPERPAVE SURFACE COURSE – 12.5 (SSC – 12.5) OVER
2¼" SUPERPAVE INTERMEDIATE COURSE – 19.0 (SIC – 19.0) OVER
VARIABLE DEPTH SUPERPAVE INTERMEDIATE COURSE – 19.0 (SIC – 19.0) (COMPACTED IN 2¼" (MIN) TO 3½" (MAX) LIFTS TO MATCH EXIST PAVEMENT THICKNESS) OVER

BASE: 12" GRAVEL BORROW, TYPE b OVER

SUBBASE: EXISTING MATERIAL SUITABLE FOR RE-USE SUPPLEMENTED WITH GRAVEL BORROW AS NECESSARY TO MATCH GRADE
(SEE VARIOUS TRENCH DETAILS)

PROPOSED TEMPORARY PAVEMENT TRENCH PATCH (PAID FOR UNDER ITEM 472.)

SURFACE: 2½" HMA FOR TEMPORARY ASPHALT PATCHING

BASE: EXISTING MATERIAL SUITABLE FOR RE-USE (SEE VARIOUS TRENCH DETAILS)

GENERAL PAVEMENT NOTES:

1. ASPHALT EMULSION FOR TACK COAT SHALL BE APPLIED BETWEEN ALL ASPHALT SURFACES AND SAWCUT JOINTS BEFORE PAVING. HMA JOINT ADHESIVE SHALL BE APPLIED TO ALL COLD JOINTS (LONGITUDINAL AND TRANSVERSE) BEFORE PAVING SURFACE COURSE. ASPHALT EMULSION FOR TACK COAT SHALL BE APPLIED AT A RATE CONSISTENT WITH STANDARD SPECIFICATION 450.43G2. ALL SURFACES SHALL BE CLEAN OF ALL ORGANICS, DEBRIS, AND SAND PRIOR TO PAVING.

2. ASPHALT EMULSION FOR TACK COAT SHALL BE ANIONIC EMULSION GRADE RS-1H TO RESIST TRACKING OF TACK BY HAUL VEHICLES.

Plan No.'s _____ Estimated by _____
Profile No.'s _____ Reviewed by _____
Calc. Book No. _____ Submitted by _____
District Highway Director _____

**ITEM 100.9 STRUCTURE CONDITION SURVEY**

To be used for pre- and post-construction condition surveys of the adjacent structures and auxiliary structures for structures on or around Union Street.

**ITEM 100.91 GEOTECHNICAL INSTRUMENTATION AND MONITORING**

To be used for geotechnical monitoring of existing culvert walls and other structures that may be impacted on or around Union Street.

**ITEM 101. CLEARING AND GRUBBING**

Pleasant Street

| Station | Offset |
|---|---|
| 10+79 to 12+17 | LT |

Reservoir Brook

| Station | Offset |
|---|---|
| 103+12 to 103+71 | LT/RT |
| 103+62 to 104+31 | LT/RT |

Union Street

| Station | Offset |
|---|---|
| 50+17 to 50+92 | LT |

**ITEM 102. SELECTIVE CLEARING AND THINNING**

Colburn Street

| Station | Offset |
|---|---|
| 23+15 to 24+65 | LT |

**ITEM 102.1 TREE TRIMMING**

Union Street

| Station | Offset |
|---|---|
| 50+17 to 50+54 | RT |
| 50+56 to 50+92 | RT |

**ITEM 102.511 TREE PROTECTION – ARMORING & PRUNING**

Colburn Street

| Station | Offset |
|---|---|
| 22+27 | 34’ LT |

Reservoir Brook

| Station | Offset |
|---|---|
| 103+44 | 15’ LT |

Union Street

| Station | Offset |
|---|---|
| 50+13 | 37’ RT |

**ITEM 102.521 TREE AND PLANT PROTECTION FENCE**

Colburn Street

| Station | Offset |
|---|---|
| 23+15 to 24+55 | LT |

**ITEM 103. TREE REMOVED – DIAMETER UNDER 24 INCHES**

Pleasant Street

| Station | Offset | Diameter (in.) |
|---|---|---|
| 11+87 | 29’ LT | 16 |

Reservoir Brook

| Station | Offset | Diameter (in.) |
|---|---|---|
| 103+36 | 20’ RT | 18 |
| 103+52 | 15’ LT | 12 |

**ITEM 104. TREE REMOVED – DIAMETER 24 INCHES AND OVER**

Colburn Street

| Station | Offset | Diameter (in.) |
|---|---|---|
| 21+29 | 39’ LT | 32 |
| 21+59 | 40’ LT | 48 |

Reservoir Brook

| Station | Offset | Diameter (in.) |
|---|---|---|
| 103+18 | 20’ RT | 26 |
| 103+42 | 32’ RT | 28 |

**ITEM 105. STUMP REMOVED**

Colburn Street

| Station | Offset |
|---|---|
| 21+57 | 40’ LT |
| 21+62 | 38’ LT |

Reservoir Brook

| Station | Offset |
|---|---|
| 103+38 | 44’ RT |
| 103+51 | 37’ RT |
| 103+65 | 10’ RT |
| 103+66 | 10’ RT |

**ITEM 127.11 REINFORCED CONCRETE EXCAVATION**

To be used for excavation of headwall and retaining wall north of the culvert at Pleasant Street.

**ITEM 146. DRAINAGE STRUCTURE REMOVED**

Pleasant Street

| Station | Offset | Type |
|---|---|---|
| 11+21 | 16’ RT | Exist CB |
| 11+38 | 14’ LT | Exist DMH |
| 11+54 | 19’ LT | Exist DCB |

Lancaster Street (Malburn Street Baseline)

| Station | Offset |
|---|---|
| 20+38 | 17’ LT |

**ITEM 146.01 SANITARY STRUCTURE REMOVED**

Pleasant Street

| Station | Offset |
|---|---|
| 11+52 | 1' LT |

**ITEM 148. DREDGING AND DISPOSING OF MATERIAL**

To be used for removal of excess streambed material that cannot be reused on-site.

**ITEM 148.01 DREDGING AND STOCKPILING OF STREAMBED MATERIAL**

To be used as for removal and stockpiling of existing streambed material for reuse on-site.

**ITEM 151.1 GRAVEL BORROW FOR BRIDGE FOUNDATION**

To be used for base material for the proposed wall at Lancaster Street.

**ITEM 151.2 GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES**

To be used for backfill for proposed walls, culverts, and drainage pipes and manholes.

**ITEM 156. CRUSHED STONE**

To be used for proposed catch basins, drainage manhole, sanitary sewer manhole, wingwall weepholes, and under modified rockfill.

**ITEM 156.1 CRUSHED STONE FOR BRIDGE FOUNDATIONS**

To be used for proposed culvert foundations at Pleasant Street.

**ITEM 160.2 CONTROLLED LOW-STRENGTH MATERIAL – MECHANICAL EXCAVATABLE (101-300 PSI)**

To be used for backfilling drainage trenches in areas of mill and overlay.

**ITEM 201. CATCH BASIN**

Pleasant Street

| Station | Offset | Struct. |
|---|---|---|
| 11+22 | 15.5' RT | 1 |
| 12+09 | 16.0' LT | 4 |
| 12+10 | 16.0' RT | 6 |

Lancaster Street (Malburn Street Baseline)

| Station | Offset |
|---|---|
| 20+36.4 | 13.1' LT |

**ITEM 202. MANHOLE**

Pleasant Street

| Station | Offset | Struct. |
|---|---|---|
| 11+22 | 14.2' LT | 2 |

**ITEM 210. SANITARY SWER MANHOLE**

Pleasant Street

| Station | Offset | Struct. |
|---|---|---|
| 11+52 | 0.6' LT | 8 |
| 12+30 | 0.6' LT | 9 |

**ITEM 222.3 FRAME AND GRATE (OR COVER) MUNICIPAL STANDARD**

Pleasant Street

| Station | Offset | Type |
|---|---|---|
| 11+22 | 15' RT | FRAME & GRATE – CB |
| 11+22 | 14' LT | FRAME & COVER – DMH |
| 11+52 | 1' LT | FRAME & COVER – SMH |
| 12+09 | 16' LT | FRAME & GRATE – CB |
| 12+10 | 16' RT | FRAME & GRATE – CB |
| 12+30 | 1' LT | FRAME & COVER – SMH |

Lancaster Street (Malburn Street Baseline)

| Station | Offset | Type |
|---|---|---|
| 20+36.9 | 14.5' LT | FRAME & GRATE – CB |

**ITEM 223.1 FRAME AND GRATE (OR COVER) REMOVED AND STACKED**

Pleasant Street

| Station | Offset | Type |
|---|---|---|
| 11+54 | 19' LT | FRAME & GRATE – CB |
| 11+38 | 14' LT | FRAME & COVER – DMH |
| 11+52 | 1' LT | FRAME & COVER – SMH |

Lancaster Street (Malburn Street Baseline)

| Station | Offset | Type |
|---|---|---|
| 20+38 | 17' LT | FRAME & GRATE |

**ITEM 224.12 12 INCH HOOD**

Pleasant Street

| Station | Offset | Struct. |
|---|---|---|
| 11+22 | 15.5' RT | 1 |
| 12+09 | 16.0' LT | 4 |
| 12+10 | 16.0' RT | 6 |

**ITEM 238.10 10 INCH DUCTILE IRON PIPE**

Pleasant Street

| From Structure | To Structure |
|---|---|
| 1 | 2 |

**ITEM 241.12 12 INCH REINFORCED CONCRETE PIPE CLASS III**

Pleasant Street

| From Structure | To Structure |
|---|---|
| 2 | 3 |
| 4 | 5 |
| 6 | Culvert |

**ITEM 242.12 12 INCH REINFORCED CONCRETE PIPE FLARED END**

Pleasant Street
Structure No.
2
3

**ITEM 250.10 10 INCH POLYVINYLCHLORIDE SANITARY SEWER PIPE**

Pleasant Street

| Station | Type |
|---|---|
| 11+00 to 12+31 | Prop |
| 11+00 to 12+31 | Temp |

**ITEM 258. STONE FOR PIPE ENDS**

Pleasant Street

| Station | Offset |
|---|---|
| 11+29 | 36’ LT |
| 11+71 | 35’ LT |

**ITEM 271.36 36 INCH PIPE REMOVED AND STACKED**

Reservoir Brook

| Station | Type |
|---|---|
| 101+56 to 102+18 | CPP |

**ITEM 303.08 8 INCH DUCTILE IRON WATER PIPE (MECHANICAL JOINT)**

Colburn Street
Station
20+05 to 20+18
20+05 to 20+18

**ITEM 303.12 12 INCH DUCTILE IRON WATER PIPE (MECHANICAL JOINT)**

To be used for temporary water pipe relocation.

Pleasant Street
Station
11+37 to 12+30

**ITEM 303.20 20 INCH DUCTILE IRON WATER PIPE (MECHANICAL JOINT)**

Pleasant Street
Station
11+28 to 12+40

**ITEM 309. DUCTILE IRON FITTINGS FOR WATER PIPE**

To be used for temporary and permanent water pipe relocations.

**ITEM 358. GATE BOX ADJUSTED**

Colburn Street

| Station | Offset | Type |
|---|---|---|
| 20+18 | 7’ RT | WG |
| 20+47 | 6’ RT | WG |

**ITEM 373.12 12 INCH WATER PIPE INSULATION**

Pleasant Street

| Station | Type |
|---|---|
| 11+37 to 12+30 | Temp |

**ITEM 373.20 20 INCH WATER PIPE INSULATION**

Pleasant Street

| Station | Type |
|---|---|
| 11+55 to 12+00 | Prop |

**ITEM 375.20 20 INCH INSERTION VALVE AND BOX**

Pleasant Street

| Station | Offset |
|---|---|
| 11+33 | 5' RT |
| 12+37 | 5' RT |

**ITEM 381.3 SERVICE BOX ADJUSTED**

Pleasant Street

| Station | Offset | Type |
|---|---|---|
| 10+72 | 20' RT | WSO |

**ITEM 415.2 PAVEMENT FINE MILLING**

To be used for HMA mill and overlay at Pleasant Street.

**ITEM 452. ASPHALT EMULSION FOR TACK COAT**

To be used between HMA surfaces and on concrete under HMA at curb, and along the faces of drainage and sewer structures.

**ITEM 453. HMA JOINT ADHESIVE**

To be used on longitudinal and transverse pavement joints.

**ITEM 472. TEMPORARY ASPHALT PATCHING**

To be used for temporary pavement for access at driveways, temporary utility patching, temporary curb ramps and as required for temporary traffic control.

**ITEM 506. GRANITE CURB TYPE VB- STRAIGHT**

Pleasant Street

| Station | Offset |
|---|---|
| 10+66 to 11+04 | RT |
| 10+88 to 10+97 | LT |
| 11+20 to 11+24 | RT |
| 11+22 to 12+49 | LT |
| 11+84 to 12+50 | RT |

Colburn Street

| Station | Offset |
|---|---|
| 20+31 to 22+61 | LT |

Lancaster Street

| Station | Offset |
|---|---|
| 10+56 to 11+08 | LT |

**ITEM 506.1 GRANITE CURB TYPE VB – CURVED**

Lancaster Street

| Station | Offset |
|---|---|
| 11+08 to 11+32 | LT |

**ITEM 509. GRANITE TRANSITION CURB FOR PEDESTRIAN CURB RAMPS-STRAIGHT**

Pleasant Street

| Station | Offset | PCR # | DWY # |
|---|---|---|---|
| 10+57 to 10+88 | LT | | 1 |
| 10+97 to 11+22 | LT | 1 | |
| 11+04 to 11+20 | RT | 2 | |

Pleasant Street (other transitions)

| Station | Offset |
|---|---|
| 10+50 to 10+56 | LT |
| 10+50 to 10+59 | RT |
| 12+44 to 12+50 | LT |

Colburn Street

| Station | Offset | PCR # |
|---|---|---|
| 20+16 to 20+31 | LT | 4 |

Colburn Street (other transitions)

| Station | Offset |
|---|---|
| 22+61 to 22+67 | LT |

Lancaster Street

| Station | Offset | DWY # |
|---|---|---|
| 10+21 | 20’ LT | 1 |

Lancaster Street (Malburn Street Baseline)

| Station | Offset | PCR # |
|---|---|---|
| 20+52 | 12’ LT | 1 |

**ITEM 509.1 GRANITE TRANSITION CURB FOR PEDESTRIAN CURB RAMPS – CURVED**

Pleasant Street

| Station | Offset | PCR # |
|---|---|---|
| 11+25 to 11+30 | RT | 3 |

Colburn Street

| Station | Offset | PCR # |
|---|---|---|
| 20+16 to 20+31 | LT | 4 |

Lancaster Street (Malburn Street Baseline)

| Station | Offset | PCR # |
|---|---|---|
| 20+52 | 12’ LT | 1 |

**ITEM 514. GRANITE CURB INLET - STRAIGHT**

Pleasant Street

| Station | Offset |
|---|---|
| 12+09 | RT |
| 12+10 | LT |

**ITEM 515. GRANITE CURB INLET – CURVED**

Lancaster Street (Malburn Street Baseline)

| Station | Offset |
|---|---|
| 20+34 to 20+40 | LT |

**ITEM 645.172 72 INCH CHAIN LINK FENCE (PIPE TOP RAIL) VINYL COATED (LINE POST OPTION)**

Pleasant Street

| Station | Offset |
|---|---|
| 10+81 to 12+20 | LT |

Union Street

| Station | Offset |
|---|---|
| 50+16 to 50+87 | RT |

Lancaster Street

| Station | Offset |
|---|---|
| 10+54 to 10+56 | LT |
| 10+56 to 11+29 | LT |

**ITEM 657. TEMPORARY FENCE**

To be used for the protection of work zones as directed by the Engineer.

Pleasant Street

| Station | Offset |
|---|---|
| 10+85 to 12+50 | LT |

Colburn Street

| Station | Offset |
|---|---|
| 20+15 to 22+30 | LT |
| 20+16 to 22+38 | RT |

Union Street

| Station | Offset |
|---|---|
| 50+12 to 50+95 | RT |

Lancaster Street

| Station | Offset |
|---|---|
| 10+56 to 11+43 | LT |

**ITEM 665. CHAIN LINK FENCE REMOVED AND STACKED**

Pleasant Street

| Station | Offset |
|---|---|
| 10+88 to 11+30 | LT |
| 11+19 to 12+17 | LT |

Union Street

| Station | Offset |
|---|---|
| 50+33 to 50+79 | RT |

Lancaster Street

| Station | Offset |
|---|---|
| 10+54 to 10+57 | LT |

**ITEM 669. FENCE REMOVED AND STACKED**

Pleasant street

| Station | Offset |
|---|---|
| 12+19 to 12+55 | LT |

Colburn Street

| Station | Offset |
|---|---|
| 20+38 to 20+65 | LT |
| 22+24 to 22+24 | LT |
| 22+24 to 22+25 | LT |

Reservoir Brook

| Station | Offset |
|---|---|
| 102+60 to 103+02 | LT |
| 103+08 to 103+17 | LT |

**ITEM 685. STONE MASONRY WALL IN CEMENT MORTAR**

Lancaster Street (Wall Alignment)
Station
0+00 to 0+56
0+56 to 0+78
0+78 to 0+90

Lancaster Street (Wall Alignment)
Station
0+00 to 0+90
0+00 to 0+58
0+56 to 0+79
0+78 to 0+90

**ITEM 697.1 SILT SACK**

To be used as directed by the Engineer for catch basins.

Union Street

| Station | Offset |
|---|---|
| 50+45 to 50+47 | 16' RT |
| 50+49 to 50+51 | 16' LT |

Lancaster Street

| Station | Offset |
|---|---|
| 20+34 to 20+38 | 12' LT |

**ITEM 697.2 FLOATING SILT FENCE**

To be used for erosion control and installed downstream, ten feet beyond the limit of work at Union Street.

**ITEM 698.1 GEOTEXTILE FABRIC FOR STABILIZATION**

To be used under foundations.

**ITEM 698.3 GEOTEXTILE FABRIC FOR SEPARATION**

To be used for modified rockfill and riprap areas.

**ITEM 705.2 STONE PAVERS REMOVED AND RESET**

Pleasant Street
Station
10+64 to 10+79

**ITEM 711. BOUND REMOVED AND RESET**

Lancaster Street

| Station | Offset |
|---|---|
| 11+19 | 33' LT |

**ITEM 751.765 COMPOST AND SEED OVER MODIFIED ROCK**

To be used over modified rockfill at the streambed restoration areas.

**ITEM 755.35 INLAND WETLAND REPLICATION AREA**

Reservoir Brook

| Station | Offset |
|---|---|
| 103+59 to 104+20 | RT |

**ITEM 755.45 WETLAND RESTORATION**

Downstream Auxiliary Channel

| Station | Offset |
|---|---|
| 200+05 to 201+40 | LT/RT |

**ITEM 765.21 ANNUAL CROP COVER FOR NATIVE SEEDING**

To be used along with roadside riverbank seed mix, steep slope mid-height mix and in areas of compost and seed over modified rockfill.

**ITEM 765.442 ROADSIDE RIVERBANK SEED MIX**

Pleasant Street

| Station | Offset |
|---|---|
| 11+46 to 12+55 | LT |

Colburn Street

| Station | Offset |
|---|---|
| 20+20 to 22+25 | LT |

**ITEM 765.472 STEEP SLOPE MID-HEIGHT MIX**

Pleasant Street

| Station | Offset |
|---|---|
| 10+80 to 11+31 | LT |

**ITEM 765.635 NATIVE SEEDING AND ESTABLISHMENT**

To be used along with riverbank seed mix and in areas of compost and seed over modified rockfill.

**ITEM 767.121 SEDIMENT CONTROL BARRIER**

Pleasant Street

| Station | Offset |
|---|---|
| 10+79 to 11+23 | LT |
| 11+32 to 12+56 | LT |

Reservoir Brook

| Station | Offset |
|---|---|
| 102+45 to 104+27 | RT |

Downstream Auxiliary Channel

| Station | Offset |
|---|---|
| 200+32 to 201+40 | LT |

Union Street

| Station | Offset |
|---|---|
| 50+10 to 50+68 | RT |
| 50+84 to 50+98 | RT |

**ITEM 767.91 TIMBER MATTING**

To be used to minimize impacts to wetland areas.

**ITEM 801.412 4 INCH ELECTRICAL CONDUIT – TYPE NM (12 BANK)**

Pleasant Street

| Station | Offset |
|---|---|
| 10+94 to 12+26 | LT |

**ITEM 832. WARNING-REGULATORY AND ROUTE MARKER – ALUMINUM PANEL (TYPE A)**

Pleasant Street

| Sign | Station | Offset |
|---|---|---|
| W11-2 | 11+08 | 24’ LT |
| | 11+19 | 23’ RT |
| W16-7pL | 11+08 | 24’ LT |
| | 11+19 | 23’ RT |
| W16-7pR | 11+08 | 24’ LT |
| | 11+19 | 23’ RT |
| W16-9P | -- | -- |

Colburn Street

| Sign | Station | Offset |
|---|---|---|
| R1-1 | 20+32 | 18’ LT |

Lancaster Street

| Sign | Station | Offset |
|---|---|---|
| W14-1 | 11+71 | 30’ LT |

**ITEM 847.1 SIGN SUP (N/GUIDE)+RTE MKR W/1 BRKWAY POST ASSEMBLY – STEEL**

Pleasant Street

| Station | Offset | Type |
|---|---|---|
| -- | RT | New |
| 11+08 | 24’ LT | New |
| 11+19 | 23’ RT | New |

Colburn Street

| Station | Offset | Type |
|---|---|---|
| 20+32 | 18’ LT | R&R |

Lancaster Street

| Station | Offset | Type |
|---|---|---|
| 11+27 | 30’ LT | R&R |
| 11+71 | 30’ LT | New |

**ITEM 853.22 JERSEY BARRIERS REMOVED AND STACKED**

Pleasant Street

| Station | Offset |
|---|---|
| 11+63 to 12+07 | LT |
| 11+64 to 12+28 | RT |

**ITEM 854.1 PAVEMENT MARKING REMOVAL**

Lancaster Street

| Station | Type |
|---|---|
| 11+32 to 11+49 | SL |

**ITEM 866.106 6 INCH REFELCTORIZED WHITE LINE (THERMOPLASTIC)**

Pleasant Street

| Station | Type |
|---|---|
| 10+50 to 11+06 | SWL |
| 11+22 to 12+55 | SWL |
| 11+76 to 12+55 | SWL |

Colburn Street

| Station | Type |
|---|---|
| 20+29 to 22+67 | SWL |

Lancaster Street

| Station | Type |
|---|---|
| 9+99 to 11+19 | SWL |

**ITEM 866.112 12 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)**

Pleasant Street

| Station | Type |
|---|---|
| 11+10 to 11+18 | CW |
| 11+28 to 11+76 | CW |
| 11+35 to 11+68 | CW |
| 11+50 to 11+66 | SL |

Lancaster Street

| Station | Type |
|---|---|
| 11+32 to 11+49 | SL |

**ITEM 867.106 6 INCH REFLECTORIZED YELLOW LINE (THERMOPLASTIC)**

Pleasant Street

| Station | Type |
|---|---|
| 10+50 to 11+06 | DBYL |
| 11+22 to 11+35 | DBYL |
| 11+66 to 12+55 | DBYL |

Colburn Street

| Station | Type |
|---|---|
| 20+29 to 22+67 | DBYL |

**ITEM 874. STREET NAME SIGN**

Colburn Street

| Sign | Station | Offset |
|---|---|---|
| MA-D3-1a, MA-D3-1b | 20+31 | 18’ LT |

Lancaster Street

| Sign | Station | Offset |
|---|---|---|
| MA-D3-1a | 11+27 | 30’ LT |
| MA-D3-1b | 11+27 | 30’ LT |

**ITEM 874.2** **TRAFFIC SIGN REMOVED AND RESET**

Lancaster Street

| Sign | Station | Offset |
|---|---|---|
| R1-1 | 11+27 | 30’ LT |
| “DEAD END” | 11+71 | 30’ LT |

**ITEM 874.4** **TRAFFIC SIGN REMOVED AND STACKED**

Colburn Street

| Sign | Station | Offset |
|---|---|---|
| R1-1, “COLBURN ST” | 20+34 | 16’ LT |

Lancaster Street

| Sign | Station | Offset |
|---|---|---|
| “MALBURN ST” | 11+26 | 28’ LT |

**ITEM 983.1** **RIPRAP**

To be used within proposed culvert and for streambed restoration.

**ITEM 983.521** **STREAMBED RESTORATION**

To be used for restoration of Reservoir Brook at Pleasant Street and Union Street.

**ITEM 986.** **MODIFIED ROCKFILL**

To be used for slope stabilization of slopes greater than 2:1.

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DOCUMENT A00808

# PROJECT UTILITY COORDINATION FORM

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# Project Utilities Coordination (PUC) Form

CONTACTS AND GENERAL UTILITY INFORMATION

Revision Date:

| City/Town: | Project File #: | PUC Completed by: | Utility Pole Set: |
|---|---|---|---|
| Leominster | 616375 | Ross Goodale | National Grid Electric |

| Route/Street: | Resident Engineer: | Mass DOT PM: | Scheduled Ad Date: | Total Poles Relocated: |
|---|---|---|---|---|
| Pleasant Street, Lancaster Street, Union Street | *TBD* | Greg Frazier | 9/5/2026 | **Temp** - 2 R&R 2 Upgrade, 1 new temp 1 Temp Push brace<br>**Permanent** - 2 R&R |

7/8/2026
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| Consultant: | Contact: | Office # | Cell # | Email |
|---|---|---|---|---|
| TEC | Robert Niccoli | 978-794-1792 | 440-655-9515 | rniccoli@theengineeringcorp.com |

| Utility Company | Contact | Office # | Cell # | Email | Scope, Budget, Duration Submitted | | Reimbursement | | | Potential for District Initiated Early Relocation * | | Utilities On Bridge/Structure | | Utilities Underground (UG) /Aerial (OH) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Yes | No | Agreement | Non-Reimb'le | Notes | YES | NO | YES | NO | UG | OH |
| National Grid Electric | Manny Munoz | 401-895-9726 | | manuel.munoz@nationalgrid.com | X | | X | | | | X | | X | | X |
| Zayo (formerly Crown Castle) | Mark Bonanno | 508-616-7818 | 617-828-1415 | mark.bonanno@zayo.com | | X | n/a | | Only present at Lancaster Street. No relocations as this is pole hold only for NGRID Electric | | X | | X | | X |
| Comcast | Julio Medina | 603-765-3221 | | julio_medina@comcast.com | X | | X | | | | X | | X | | X |
| Verizon | Paul Styspeck | 413-787-1845 | | paul.m.styspeck@verizon.com | X | | X | | | | X | | X | X | X |
| Leominster DPW | John Roseberry | 978-537-7590 | | jroseberry@dpw.leominster-ma.gov | | | | | Contact info only | | | | | | |
| National Grid Gas | Melissa Owens | 781-907-2845 | | melissa.owens@nationalgrid.com | X | | X | | | | X | | X | X | |
| National Grid Gas | Deepa Gangadhar | | | deepa.gangadhar@nationalgrid.com | X | | X | | | | X | | X | X | |
| | | | | | | | | | | | | | | | |

**Utility Relocation Notes for MassDOT Contractor**

Unless otherwise noted by Contract, the MassDOT Contractor is to provide the District Construction Office with 7 Calendar Days advance notification in order to validate the current progress and provide the required 30 Days advance notice-to-proceed for the first Utility - and each subsequent Utility. These advance notifications are to be identified in the Contractor's Schedules (Pre-Con preparation, Baseline, Subnets, and Updated/Monthly Schedules) as specified in Subsection 8.02 (for DBB Contracts) and/or Section 9 (of DB Contracts). Note: The durations included below do not include these lead-times. See Additional 'Important Basis notes for Contractor' - on last PUC Form page.

Additional notes:

**Pleasant and Coburn Street Culvert Replacement**
-Temporary utility relocations to accommodate construction
-Permanent utility relocations after culvert construction

**Union Street Culvert Stabilization**
•No utility pole relocations are required
•A pole hold and guy anchor installation are required

**Lancaster Street and Melburn Street Wall Reconstruction**
•No utility relocations are required

**Suggested Sequence of Relocation ( Based on Consultant proposed construction staging)**

*The sequence as detailed on the following pages is based on the consultants proposed staging plan. This information was compiled through meetings that included all of the utilities listed below along with the designer and the City of Leominster. The information provided is the best available information prior to project advertisement.*



Proposal No. 616375-136648

| Is 'enabling' (prep) work, by the Contractor, necessary prior to the start of the first series of utility relocations: | Yes | No |
|---|---|---|
| | X | |

| Has any of the Utility work been identified to work concurrently | Yes | No |
|---|---|---|
| | | X |

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massDOT Massachusetts Department of Transportation Highway Division

| | RESPONSIBLE PARTY | | DESCRIPTION - Utility Relocation Phases, Tasks and Activities | Estimated Duration (Work Days) by Utilities (Lead time not included) | Concurrent / Exclusive Utility Work<br>Contractor note: In planning and executing the work, the Access Restraints listed in the Special Provisions, takes precedence over the checklist in these 4 columns. | | | | Access Restraint & Limitations of Operations Notes<br>Should an AR be considered for the Contractor ? | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Exclusive Utility on site | Concurrent Utilities | Contractor Off-Site | Contractor Concurrent | | |
| | C = Contractor | U = Utility Co. | | | Utility working with no other Utilities in vicinity | Utility working with other Utilities on site | No Contractor physical construction operations on-site (while Utility is | Contractor and Utility are working on-site - but NOT in the same vicinity | Potential Access Restraint (Yes/No) | Reason/Note (optional) |
| Pleasant Street Temporary Utility Relocation Plan | C | | Enabling' work by the Contractor - For overhead streetlight relocations (which will be done by the contractor since they are owned by the City of Leominster), contractor can email streetlightsNE@nationalgrid.com to coordinate de-energizing & re-energizing of the lights. Prior to temporary overhead utility relocations, contractor will need to perform any necessary clearing & grubbing and tree removal as specified in Contract Documents. Additionally, Survey will need to stake utility pole locations prior to utility walkthrough. The existing utility poles and associated overhead wires will need to be relocated temporarily (per plan) prior to any culvert or retaining wall work. Existing water and sewer lines shall remain in their current position until the downstream portion of the proposed culvert can be installed to support the temporary bypasses. Only once the temporary bypasses are in place and active may the contractor remove the existing water and sewer lines. The contractor's culvert design and erection procedure shall consider the installation of the temporary bypass pipes when sizing culvert units. Note: Verizon has an existing 12 - 4-inch duct bank present in the Northern sidewalk. During coordination Verizon indicated that there is cable in the duct bank currently. Active cable will be moved aerially under Verizon force account. Once that is clear, the Contractor for Pleasant street can cut the conduits where needed (at the edge of excavation limits and coordinated with Verizon). Upon completion of the culvert, a new 12-4" duct bank will be placed in the same location by the contractor. Proposed gas main to be installed prior to construction. Proposed gas to remain cut and capped on either side of the culvert during construction. Culvert construction cannot begin until existing gas line has been confirmed abandoned. Contractor to coordinate with National Grid Gas. Main can be cut/capped only between 5/1 and 10/15. | | | | | | | |
| | | | **UTILITY OPERATIONS - Temporary Overhead** | | | | | | | |
| Task: 1 | | | ***National Grid Electric*** | | | | | | | |
| | | u | Site readiness, dig safe, pre-checks, veg management (if required) | 15 | x | | | x | No | |
| | | u | Poles and anchors, 5 poles and 1 push brace and associated anchors | 7 | x | | | x | No | |
| | | u | Reconductor overhead primary cable | 14 | x | | | x | No | |
| | | u | Reconductor overhead secondary cable | 2 | x | | | x | No | |
| | | u | Replace transformers | 2 | x | | | x | No | |
| | | | **Sub-Total** | **40** | | | | | | |
| Task: 2 | | | ***Comcast*** | | | | | | | |
| | | u | Coburn St- build 500' strand trunk and feeder, activate, delash 1500' fiber move slack to reach temp path, relash and wreck out old plant | 10 | x | | | x | No | |
| | | | **Sub-Total** | **10** | | | | | | |
| Task: 3 | | | ***Verizon*** | | | | | | | |
| | | u | Place guy wires | 1 | x | | | x | No | |
| | | u | *Transfer aerial fiber cables* | 3 | x | | | x | No | |
| | | u | place new aerial fiber cable | 4 | x | | | x | No | |
| | | u | rod conduit/place new UG fiber cable | 3 | x | | | x | No | |
| | | u | Splice fiber cable | 3 | x | | | x | No | |
| | | u | Conformance Test new fiber cable | 2 | x | | | x | No | |
| | | u | Splice/Modularize CU cables | 9 | x | | | x | No | |
| | | u | Remove old poles | 1 | x | | | x | No | |
| | | | **Sub-Total** | **26** | | | | | | |
| | | | **UTILITY OPERATIONS - Underground** | | | | | | | |
| Task: 4 | | | ***National Grid Gas*** | | | | | | | |
| | | u | Excavate and shore | 2 | x | | x | | Yes | |
| | | u | Cut/cap/abandon ~315-ft of 4"/8" 2psig PL | 2 | x | | x | | Yes | |
| | | u | Backfill | 1 | x | | x | | Yes | |
| | | | **Sub-Total** | **5** | | | | | | |
| Pleasant Street - Final Utility Relocation Plan | C | | Enabling' work by the Contractor - After culvert construction coordinate with Verizon for installation of new 12-4" duct bank will be placed in the same location by the contractor. Coordinate installation of final gas connection over the culvert with National Grid Gas. Gas line to be installed per plan and prior to sidewalk construction. Contractor to install new sewer and water line. Prior to permanent overhead utility relocations survey will need to stake the final utility pole locations. Recommend a follow up utility meeting prior to setting the final poles. | | | | | | | |
| | | | **UTILITY OPERATIONS - Permanent Overhead** | | | | | | | |
| Task: 1 | | | ***National Grid Electric*** | | | | | | | |
| | | u | Site readiness, dig safe, pre-checks, veg management (if required) | 15 | x | | | x | No | |
| | | u | Poles and anchors, 2 poles and associated anchors | 3 | x | | | x | No | |

| | RESPONSIBLE PARTY | | DESCRIPTION - Utility Relocation Phases, Tasks and Activities | Estimated Duration (Work Days) by Utilities (Lead time not included) | Concurrent / Exclusive Utility Work<br>Contractor note: In planning and executing the work, the Access Restraints listed in the Special Provisions, takes precedence over the checklist in these 4 columns. | | | | Access Restraint & Limitations of Operations Notes<br>Should an AR be considered for the Contractor ? | |
|---|---|---|---|---|---|---|---|---|---|---|
| | C = Contractor | U = Utility Co. | | | Exclusive Utility on site: Utility working with no other Utilities in vicinity | Concurrent Utilities: Utility working with other Utilities on site | Contractor Off-Site: No Contractor physical construction operations on-site (while Utility is | Contractor Concurrent: Contractor and Utility are working on-site - but NOT in the same vicinity | Potential Access Restraint (Yes/No) | Reason/Note (optional) |
| | | u | Reconductor overhead primary cable | 9 | x | | | x | No | |
| | | u | Reconductor overhead secondary cable | 2 | x | | | x | No | |
| | | | **Sub-Total** | **29** | | | | | | |
| Task: 2 | | | ***Comcast*** | | | | | | | |
| | | u | Colburn St--second phase-once bridge construction is completed revert cable back to original path then wreck out. Move fiber slack | 10 | x | | | x | No | |
| | | | **Sub-Total** | **10** | | | | | | |
| Task: 3 | | | ***Verizon*** | | | | | | | |
| | | u | Trimout aerial cables | 2 | x | | | x | No | |
| | | u | *Removal aerial cables/transfer aerial ables* | 5 | x | | | x | No | |
| | | u | cut/trimout/remove UG CU cables | 3 | x | | | x | No | |
| | | u | Remove UG fiber calbe and associated equipment | 2 | x | | | x | No | |
| | | u | Remove poles | 4 | x | | | x | No | |
| | | | **Sub-Total** | **16** | | | | | No | |
| | | | **UTILITY OPERATIONS - Underground** | | | | | | | |
| Task: 4 | | | ***National Grid Gas*** | | | | | | | |
| | | u | Excavate and shore | 2 | x | | | x | No | |
| | | u | Trench and install ~315-ft of 4"/8" 2psig PL | 10 | x | | | x | No | |
| | | u | Main Connections/tie ins | 5 | x | | | x | No | |
| | | u | Stop/tap/purge/cap | 2 | x | | | x | No | |
| | | u | Backfill | 1 | x | | | x | No | |
| | | | **Sub-Total** | **20** | | | | | | |
| Union Street | C | | Enabling' work by the Contractor - Contractor to coordinate with NGRD Electric on timing of pole hold and anchor adjustment. Contractor shall be referred to pole hold section in the special provisions and reference the NGRID Electric Work Request Number: 31214254. This is not reimbursable work but covered under the contract documents. Durations provided were estimated by NGRDI Electric. Contractor to also design soil nail wall stabilization to avoid the existing UP 19 for STA 50+75±RT. | | | | | | | |
| | | | **UTILITY OPERATIONS -** | | | | | | | |
| Task: 1 | | | ***National Grid Electric*** | | | | | | | |
| | | u | Pole hold | 2 | x | | | x | No | |
| | | u | Anchor adjustment | 1 | x | | | x | No | |
| | | | **Sub-Total** | **3** | | | | | | |

**IMPORTANT BASIS NOTES - FOR CONTRACTOR**

| | |
|---|---|
| 1 | Unless otherwise specified in the MassDOT Construction Contract, or unless specifically noted within this PUC Form, these durations (herein) are based upon the Contractor providing *unimpeded access* to the Utility company to perform Utility relocations (see Note 5 - Access). |
| 2 | "Concurrent Utilities" operations noted herein, are to signify those Utility Company operations that can be worked concurrently (e.g. Utility A and Utility B work on-site together) - MassDOT and the Contractor are to prepare NTPs to Utilities accordingly. |
| 3 | "Potential Access Restraints" noted within this PUC Form are for planning purposes. See MassDOT Contract for Contractual Access Restraints (refer to Subsections 8.02, 8.03, and/or 8.06 for Design Bid Build Contracts and Volume II Section 9 for Design Build Contracts). |
| 4 | Utility non-work periods - For planning purposes, the durations above contain some non work days (contingency) for New England conditions (precipitation, high temperatures, low temperatures, snow, ice). Gas line work however, typically has a seasonal restriction and can NOT be installed from 15-November to 15-March. Municipally Owned Electric and Gas Utilities are also restricted from proceeding from 15-November to 15-March. The Contractor shall (and the CTD plan) reflect this calendar restriction within the schedule (unless otherwise note). |
| 5 | Access - Unless otherwise noted in the Contract, and in addition to the 'enabling' notes above, the Contractor must provide safe and unimpeded access (for trucks, lifts, cranes, etc.) to the Utilities, to allow for the proposed relocation(s) - including but not limited to snow removal, clearing and grubbing, guard rail removal, barrier removal, tree removal, and grading. Any costs associated with these tasks are deemed to be incidental to the project. |
| 6 | For all MassDOT construction contracts issued after January 2014, the new Utility Coordination/documentation specification is required. This is Section 8.14 in Design-Bid-Build Contracts (see Design-Build index reference for applicable section #). |
| 7 | Prior to starting any and all enabling work for Utilities, the Contractor is to plan in advance with submittals and approved durations. |
| 8 | * Potential District Initiated Early Utility Relocation - if noted herein, the District reserves the right to initiate early utility relocation in advance of the Contract NTP. In submitting a bid price and in the development/basis of the Baseline Schedule, the Contractor shall not plan the Work with the potential benefit of any form of 'early utility relocation.' As a requirement of the Baseline submission, unless otherwise noted in this Specification, the earliest that the first Utility company is to receive the 30 days advance notification to mobilize to the site, will be 7 calendar days after the pre-construction meeting and never sooner than 7 days after the Contract NTP. |

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DOCUMENT A00810

# MassDOT Herbicide Use Report

Proposal No. 616375-136648

# MassDOT Herbicide Use Report

**Date Submitted:**

*Use multiple sheets for multiple application techniques or sites as needed.*

**Contractor Performing Work:**

**Project or Contract No:**

**Town/s:**

**Associated Route:**

**Project Description:**

**MDAR ALERT*:**

**Treatment Description:**

**Area Treated (as applicable)**

**Acres:** **Sq Yds:** **Miles:**

**Weeds Targeted:**

**Gallons Formula Used:**

**Application Method:**

**Date/Time Began:**

**Date/Time End:**

**Product Used:**

| | | |
|---|---|---|
| Name: _____ | Name: _____ | Name: _____ |
| EPA Reg. No: _____ | EPA Reg. No: _____ | EPA Reg. No: _____ |
| % Active Ingredient | % Active Ingredient | % Active Ingredient |
| Dry: _____ | Dry: _____ | Dry: _____ |
| Liquid: _____ | Liquid: _____ | Liquid: _____ |
| Formulation (dilution rate): _____ | Formulation (dilution rate): _____ | Formulation (dilution rate): _____ |

**Additional products used (surfactants, etc.) or other information:**

**Applicators:** **License Numbers:**

* Please note:
EDRR Species (MAM, Hogweed, Pepperweed, Kudzu, etc.)
Tree of Heaven 1) stands of >20 trees; 2) >5 trees near nursery, landscape company, or highway rest area where trucks stop

*Upon completion, please submit form to MassDOT District Engineer and Landscape Design Section in Boston office.*

07/18/2018

DOCUMENT A00811

# WATERING LOG
# for
# MassDOT Plantings

# Watering Log for MassDOT Plantings

**Project Description:**

**Contract No:**

**Project No:**

**Plant Locations/s: (Attach planting plan/s as necessary)**

**Notes:**

| | **Separate logs shall be kept to track areas or plants with different watering schedules. Trees shall receive a minimum of 10 gallons with each watering and shrubs a minimum of 5 gallons. Provide note that if watering is not performed as scheduled due to rain. Record date of rainfall and amount.** | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date Watered | | | | | | | | | | | | | |
| Landscape Contractor Initial | | | | | | | | | | | | | |
| Prime Contractor Initial | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| Date Watered | | | | | | | | | | | | | |
| Landscape Contractor Initial | | | | | | | | | | | | | |
| Prime Contractor Initial | | | | | | | | | | | | | |

Each week, following watering, Log shall be submitted to the MassDOT Engineer.

6/15/2018

DOCUMENT A00820

**Massachusetts Department of Transportation**
**Conditions of Custody**

REQUEST FOR RELEASE OF MASSDOT AUTOCAD FILES FORM
(Only to be used following award of contract)

City/Town: LEOMINSTER Project File Number: 616375

Contract Number: 136648

Project Description: Culvert Replacement, Culvert Repair and Retaining Wall Replacement and Related Work at Three Locations

All AutoCAD files are provided solely as a courtesy to facilitate public access to information. MassDOT attempts to provide current and accurate information but cannot guarantee so. MassDOT provides such documents, files or other data "as is" without any warranty of any kind, either expressed or implied, including but not limited to, accuracy, reliability, omissions, completeness and currentness. The Commonwealth of Massachusetts and its Consultants shall not be liable for any claim for damages, including lost profits or other consequential, exemplary, incidental, indirect or special damages, relating in any way to the documents, files or other data accessible from this file, including, but not limited to, claims arising out of or related to electronic access or transmission of data or viruses. Because data stored on electronic media can deteriorate undetected or be modified without our knowledge, MassDOT cannot be held liable for its completeness or correctness. MassDOT makes no representation as to the compatibility of these files beyond the version of the stated CAD software.

By signing this form, I agree that it shall be my responsibility to reconcile this electronic data with the conformed contract documents, and that only the conformed contract documents shall be regarded as legal documents for this Project. I understand that this authorization does not give me the right to distribute the files. I agree to the terms above and wish to receive the AutoCAD files.

This signed form shall be emailed to the Highway Design Engineer at the MassDOT -Highway Division at the following email address:

DOTHighwayDesign@dot.state.ma.us
Attn: AutoCAD Files

Name of person requesting AutoCAD files: _____

Affiliation/Company: _____

Address: _____

_____

Telephone number: _____

Email address: _____

Signature/Date: _____

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DOCUMENT A00830

# JOINT SECTION 401
# MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
# WATER QUALITY CERTIFICATE (WQC) &

# SECTION 404
# U.S. ARMY CORPS OF ENGINEERS (ACOE)
# GENERAL PERMIT -
# PRE-CONSTRUCTION NOTIFICATION (PCN)
# APPLICATION

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Jacobs

# Leominster- Culvert Replacement, #L-08-053

## Pleasant Street and Colburn Street

Leominster, Massachusetts

*MassDOT Project No. 613865*

## Joint 401 WQC / Section 404 Nationwide Permit Pre-Construction Notification

Prepared by: Jacobs Engineering
Prepared for: Massachusetts Department of Transportation – Highway Division

April 2026

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5th Floor
Boston, MA 02116
United States

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F +1.617.242.9824
www.jacobs.com

April 22, 2026

Dan Vasconcelos, Environmental Scientist
U.S. Army Corps of Engineers, Regulatory Division
New England District
696 Virginia Road
Concord, MA 01742-2751

**Subject:** MassDOT Project #613865
Pleasant Street over Reservoir Brook (#L-08-053)
Culvert Replacement Project
Leominster, Massachusetts
Amended Joint 401 WQC and Section 404 Nationwide Permit Pre-Construction Notification

Dear Mr. Vasconcelos,

On behalf of the Massachusetts Department of Transportation (MassDOT), Jacobs Engineering (Jacobs) is submitting this amended application for a Massachusetts Section 401 Water Quality Certification (401 WQC) (BRP WW 26 – Combined Application) and Section 404 Pre-Construction Notification (PCN) under the Federal Clean Water Act (CWA). This amended joint 401/404 application is being submitted concurrently to the Massachusetts Department of Environmental Protection (MassDEP) and the U.S. Army Corps of Engineers (USACE) to request authorization for project activities associated with the replacement of a culvert that carries Pleasant Street over the Reservoir Brook in Leominster, MA. This project is being filed under the MassDOT Bridge Exemption as specified in the 2014 Transportation Bond Bill. The bridge replacement design is substantially the functional equivalent of, and in similar alignment to, the existing bridge. A prefiling meeting with MassDEP and the USACE occurred on December 23, 2024, and a joint 401/404 application was previously submitted in March 2025 (NAE-2025-00175).

The PCN is being submitted under Nationwide Permit 14 – Linear Transportation Projects and Nationwide Permit 33 – Temporary Construction, Access, and Dewatering under the Nationwide Permits (NWPs) for activities resulting in permanent fill to jurisdictional Waters of the United States (WOTUS).

The proposed work will result in both temporary and permanent impacts to Waters of the United States (WOTUS) and Vegetated Wetlands due to streambed restoration, installation of the new culvert, establishment of a flood storage area, and fill areas that had been excavated out for the temporary culvert. Efforts have been made to avoid, minimize, and mitigate impacts where possible.

The project proponent hereby certifies that all information contained herein is true, accurate, and complete to the best of my knowledge and belief. The project proponent hereby requests that the

22 April 2026

MassDOT Project #613865
Pleasant Street over Reservoir Brook (#L-08-053)
Culvert Replacement Project
Leominster, Massachusetts
Amended Joint 401 WQC and Section 404 Nationwide Permit Pre-Construction Notification

certifying authority review and take action on this CWA 404 authorization request within the applicable reasonable period of time.

Should you have any questions or comments regarding this application, please feel free to contact myself at Kim.Ciaramicoli@jacobs.com, (774) 529-7432 or Courtney Walker at Courtney.L.Walker@dot.state.ma.us or (857) 262-0757.

Thank you,





Clay Hutchinson
Environmental Scientist

Kim Ciaramicoli, PWS
Deputy Northeast Environmental Coordinator

Copies to: Courtney Walker, MassDOT
Ryan Wilcox, MassDOT
Kevin Newton, USACE
Heidi Davis, MassDEP
Tyler Lewis, MassDEP
Ryan Hale, MassDEP
Jaime Iannelli, MassDEP
Jesse Averka, Leominster Conservation Commission

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United States

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April 22, 2026

Heidi Davis, Senior Environmental Analyst & Highway Unit Supervisor
Massachusetts Department of Environmental Protection
Wetlands and Waterways Program
100 Cambridge Street, Suite 900
Boston, MA 02114

**Subject:** MassDOT Project #613865
Pleasant Street over Reservoir Brook (#L-08-053)
Culvert Replacement Project
Leominster, Massachusetts
Amended Joint 401 WQC and Section 404 Nationwide Permit Pre-Construction Notification

Dear Ms. Davis,

On behalf of the Massachusetts Department of Transportation (MassDOT), Jacobs Engineering (Jacobs) is submitting this amended application for a Massachusetts Section 401 Water Quality Certification (401 WQC) (BRP WW 26 – Combined Application) and Section 404 Pre-Construction Notification (PCN) under the Federal Clean Water Act (CWA). This amended joint 401/404 application is being submitted concurrently to the Massachusetts Department of Environmental Protection (MassDEP) and the U.S. Army Corps of Engineers (USACE) to request authorization for project activities associated with the replacement of a culvert that carries Pleasant Street over the Reservoir Brook in Leominster, MA. This project is being filed under the MassDOT Bridge Exemption as specified in the 2014 Transportation Bond Bill. The bridge replacement design is substantially the functional equivalent of, and in similar alignment to, the existing bridge. A prefiling meeting with MassDEP and the USACE occurred on December 23, 2024, and a joint 401/404 application was previously submitted in March 2025 (NAE-2025-00175).

The PCN is being submitted under Nationwide Permit 14 – Linear Transportation Projects and Nationwide Permit 33 – Temporary Construction, Access, and Dewatering under the Nationwide Permits (NWPs) for activities resulting in permanent fill to jurisdictional Waters of the United States (WOTUS).

The proposed work will result in both temporary and permanent impacts to Land Under Water (LUW) and Bordering Vegetated Wetlands due to streambed restoration, installation of the new culvert, and fill areas that had been excavated out for the temporary culvert. Efforts have been made to avoid, minimize, and mitigate impacts where possible.

The project proponent hereby certifies that all information contained herein is true, accurate, and complete to the best of my knowledge and belief. The project proponent hereby requests that the

22 April 2026

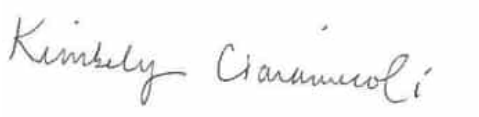
MassDOT Project #613865
Pleasant Street over Reservoir Brook (#L-08-053)
Culvert Replacement Project
Leominster, Massachusetts
Amended Joint 401 WQC and Section 404 Nationwide Permit Pre-Construction Notification

certifying authority review and take action on this CWA 401 certification request within the applicable reasonable period of time.

Should you have any questions or comments regarding this application, please feel free to contact myself at Kim.Ciaramicoli@jacobs.com, (774) 529-7432 or Courtney Walker at Courtney.L.Walker@dot.state.ma.us or (857) 262-0757.

Thank you,





Clay Hutchinson
Environmental Scientist

Kim Ciaramicoli, PWS
Deputy Northeast Environmental Coordinator

Copies to: Courtney Walker, MassDOT
Ryan Wilcox, MassDOT
Tyler Lewis, MassDEP
Ryan Hale, MassDEP
Jaime Iannelli, MassDEP
Dan Vasconcelos, USACE
Kevin Newton, USACE
Jesse Averka, Leominster Conservation Commission

**Public Notice**

Massachusetts Department of Environmental Protection
Division of Wetlands and Waterways
MassDEP Boston Office
100 Cambridge Street, Suite 900
Boston, MA 02114

Pursuant to 33 U.S.C. 1341 M.G.L. c. 21 §§ 26 - 53, and 33 U.S.C. 1341 and M.G.L. c. 21 §43, notice is given of a 401 Water Quality Certification application for project activities associated with the replacement of a culvert that carries Pleasant Street over the Reservoir Brook in Leominster, Massachusetts by the Massachusetts Department of Transportation – Highway Division, Ten Park Plaza, Room 7360, Boston, MA 02116. The purpose of the project is to replace the existing 3' x 5' box culvert with an upgraded 8'-4" x 4' embedded box culvert in the original crossing location. In addition, work includes construction of a new headwall as well as permanent stabilization and realignment of the stream channel at the downstream outlet of the box culvert. Additional information may be obtained from the Massachusetts Department of Transportation – Highway Division at the above address, Attention Courtney Walker or by emailing courtney.l.walker@dot.state.ma.us. Written comments should be sent to MassDEP Wetlands Program, Attention Heidi Davis, 100 Cambridge Street, Suite 900, Boston, MA 02114 or heidi.davis@mass.gov within 21 days of this notice.

Any group of ten persons, any aggrieved person, or any governmental body or private organization with a mandate to protect the environment who submits written comments may appeal the Department's Certification. Failure to submit written comments before the end of the public comment period may result in the waiver of any right to an adjudicatory hearing.

## Contents

401 WQC – BRP WW26 Combined Application Form

USACE Application Form – Pre-Construction Notification

**Attachment A - Project Narrative**

**1. Introduction ..... 2**

**2. Existing Conditions ..... 3**

2.1 Culvert Crossing ..... 3

2.2 Downstream Areas ..... 4

2.3 Wetland Resource Areas ..... 4

2.4 Environmental Constraints ..... 6

2.5 Fisheries and Wildlife/Natural Heritage Endangered Species/Vernal Pools ..... 6

**3. Purpose and Need ..... 7**

**4. Proposed Work ..... 7**

4.1 Culvert Replacement ..... 7

4.2 Reservoir Brook Restoration and Re-alignment ..... 8

4.3 Stormwater ..... 8

4.4 Project Impacts to Vegetated Wetlands and Other Waters of the United States (WOTUS) ..... 9

4.5 Sediment Sampling Plan ..... 10

**5. Alternatives Analysis ..... 10**

**6. Anticipated Construction Sequencing ..... 11**

**7. Stormwater Management ..... 12**

**8. Stream Crossing Standards ..... 12**

**9. Avoidance and Mitigation Measures ..... 13**

9.1 Construction Best Management Practices ..... 13

9.2 Minimization and Avoidance Measures ..... 14

**10. Compliance ..... 16**

10.1 Compliance with 314 CMR 9.06 ..... 16

**11. Summary ..... 18**

**Attachment B – Figures**

**Attachment C – Wetland Resource Evaluation**

**Attachment D - Photos**

**Attachment E – USFW Programmatic Biological Opinion (NLAA)**

**Attachment F – Section 106 Coordination**

**Attachment G – Stormwater Management Report**

**Attachment H – Special Provisions**

**Attachment I – Sediment Sampling Plan**

**Attachment J – Sediment Analysis**

**Attachment K – Site Plans**

An Official website of the Commonwealth of Massachusetts

**EEA ePLACE Portal**

**Need Help?** For technical assistance in using this web application, please call the ePLACE Help Desk Team at (844) 733-7522 or (844) 73-ePLAC between the hours of 7:30 AM-5:00 PM Monday-Friday, with the exception of all Commonwealth and Federally observed holidays. If you prefer, you can also e-mail us at ePLACE_helpdesk@mass.gov. For assistance with non-technical questions, please contact the issuing Agency directly using the links below.

Contact:
Energy and Environmental Affairs, MASSDEP
Energy and Environmental Affairs, MDAR
Energy and Environmental Affairs, DCR

Convenience Fee: Please note there will be a convenience fee for all online credit card transactions. There is also a nominal fee for online payment by check.

Home

DEP Applications

**WW26 - Combined Licenses/Permits for Waterways and Water Quality Certification Application**

| 1 | 2 | 3 | 4 401 Dredge Information | 5 401 Fill Information | 6 Documents and Special Fees | 7 Review | 8 Application Submitted |
|---|---|---|---|---|---|---|---|

***Step 7: Review***

Continue Application » Save and resume later

Please review the information below prior to submission. After the application has been submitted, you will not be able to make changes. To make changes after submittal you must contact the Department directly.

# Review and Certification

Edit Application

## Pre-Consultation Information

| | |
|---|---|
| Have you consulted with MassDEP about the combined application process?: | Yes |
| Date you consulted with MassDEP: | 12/23/2024 |

## Application Information

| | |
|---|---|
| Please select the Chapter 91 Water-Dependent Application (if applicable): | |
| Please select the 401 Water Quality Certification for Dredging Application (if applicable): | WW08 - 401 Minor Dredging - Minor < 5000 cubic yards |
| Please select the 401 Water Quality Certification for Fill/Excavation Application (if applicable): | WW11 - 401 Minor Fill and Excavation - Minor < 5000 square feet |

## Primary Project Location

Reservoir Brook | 0 Pleasant Street Leominster MA 01453

## Other Primary Location Info

| | |
|---|---|
| Parcel ID: | 339-2 |
| Municipality : | LEOMINSTER |

## Project Location Info

Will the project occur in multiple municipalities?: No

## Additional Project Sites

Additional Project Sites
No Custom Lists data for the sub group above.

## Permittee

Individual
MassDOT Highway Division
10 Park Plaza, Room 7360
Boston, MA, 02116
United States

**Use Login Information:** No

Telephone #:857-262-0757
E-mail:Courtney.L.Walker@dot.state.ma.us
PINnull

## Application Contacts

Showing 0-0 of 0

| | Contact Type | Name | Organization Name | Contact Person | Action |
|---|---|---|---|---|---|
| No records found. | | | | | |

## Application Prepared By

Showing 1-1 of 1

| | Contact Type | Name | Organization Name | Contact Person | Action |
|---|---|---|---|---|---|
| | Application Prepared By | CLAYTON HUTCHINSON | | | Edit/View |

## Dredging Information

| | |
|---|---|
| Please select the type: | Improvement dredging |
| What is the volume of the material to be dredged? (cubic yards): | 379 |
| What is the area of the dredge foot print? (square feet): | 4263 |
| What is the maximum dredge depth including over-dredge (referenced to Mean Low Water)?: | 3 |
| Describe dredge spoil disposal location/method: | Chapter 91 Exempt. |
| Is the dredge spoil compatible for beach nourishment?: | No |

## Dredging Method

| | |
|---|---|
| Hydraulic: | No |
| Mechanical: | Yes |
| Other: | No |

## Pre-Application Information

| | |
|---|---|
| Has the DEP Agency specified that you are exempt from this process?: | No |
| Has the project's Sampling Analysis Plan been approved by the DEP Agency? If yes, please attach a document 'DEP Sampling Analysis Plan' in the document section.: | Yes |

## Project Information

| | |
|---|---|
| Project Name: | Culvert Replacement, #L-08-053 Pleasant Street and Colburn Street |
| Have you completed the Public Notice as per 314 CMR 9.00? If yes, please attach a completed 'Proof of Public Notice' document in the document section.: | No |
| Will the proposed project occur in any wetlands or waters designated as 'Outstanding Resource Waters'?: | No |
| Identify the loss, or alteration, in square feet for Land under water: | 4263 |
| Identify the loss, or alteration, in square feet for Other Resources: | 2328 |

## Material to be Dredged

| | |
|---|---|
| Briefly describe in general the proposed project or activity, including the purpose and intended use of the project, and the duration of the work within any waterbody: | In 2023, a flood event caused the culvert conveying Reservoir Brook under Pleasant Street to collapse and altered the course of the stream channel. The purpose of the project is to replace the Pleasant Street crossing culvert, remove sediments deposited by the flood event, and restore the stream channel. Please see attached Project Narrative for additional information. |
| Proposed Start Date: | 09/01/2026 |
| What is the expected frequency of maintenance dredging of this project?: | N/A - one-time repair project |
| Length of the proposed project (If applicable, please include the maximum and minimum): | 460 feet |
| Width of the proposed project (If applicable, please include the maximum and minimum): | Maximum 46 feet; minimum 20 feet. |
| Depth of the proposed project (If applicable, please include the maximum and minimum): | 3 feet |
| Volume of the proposed project(Cubic yards): | 379 |
| Type of proposed project: | Improvement dredging |
| Briefly describe the physical dredging operation (such as., dredging methods), the method of release of the dredged material into the disposal site, and the name of the contractor if other than the applicant. (Please attach a detailed document - "Dredging and Disposal Operation" in the document section of the application): | Means and methods will be determined by the Contractor, and shall follow the MassDOT Special Provisions provided in the Application Materials. Please see the attached Project Narrative and Application Materials for additional information. |
| Briefly describe all measures designed to avoid and minimize adverse impacts of the project on aquatic life and the aquatic ecosystem. Where impacts cannot be avoided or minimized, what mitigation measures are proposed? (If necessary, please attach a document - "Performance Standard to avoid and minimize and mitigate impact" in the document section of the application): | Construction phase BMPs, Control of Water Methodology, and engineered replication designs have been implemented as part of this Application. Please refer to Section 9 - Avoidance and Mitigation Measures of the Attached Project Narrative for details on the avoidance and mitigation measures explored and proposed for this project. |
| Does the proposed project have any past history of chemical or oil spills of discharge?: | No |
| Does the proposed project have any past history of Upstream or on-site industrial or municipal discharge within 1,000 feet of the proposed project?: | No |
| Does the proposed project have any past history of chronic pollutant loading from port or harbor use and/or other sources of pollutants? (eg. CSO or POTW discharges): | No |

## Proposed Ocean Site

| | |
|---|---|
| Location of proposed disposal site and its physical boundaries: | N/A |
| Has the site been designated by the State or E.P.A. as a dredge disposal site?: | No |
| If no, give a brief description of the characteristics of the proposed disposal site and an explanation as to why no currently designated site is feasible for this project. : | N/A |
| Is the anticipated disposal site located within a designated ocean sanctuary as established by federal law or G.L.c. 132A, sec. 13?: | No |

## Disposal/Dewatering Land Site

| | |
|---|---|
| Location of proposed disposal and dewatering sites and physical boundaries: | Material will be stockpiled within the same drainage area as the Project Site. Means, methods, and locations will be determined by the Contractor with oversight by the Project Resident Engineer. Please see the Control of Water Plans and Special Provisions in the attached Application materials. |
| Indicate drainage characteristics of dewatering and disposal sites from the | Material will be stockpiled within the same drainage area as |

| | |
|---|---|
| results of test pits, borings, and percolation tests as applicable: | the Project Site. Means, methods, and locations will be determined by the Contractor with oversight by the Project Resident Engineer. Please see the Control of Water Plans in the attached Application materials. |
| How long are the dewatering and disposal sites estimated to be in use from this project?: | TBD |

## Proposed Barge Site

| | |
|---|---|
| Are you proposing dewatering of dredged sediment on a barge? If yes, please attach a document 'Plans for adequate containment' in the document section.: | No |

## Grain Size Analysis

Grain Size Analysis

| Number of Sieve | Percentage of total by weight passing |
|---|---|
| 200 | 17.5 |
| 200 | 23.4 |
| 200 | 13.8 |

## Chemical Analysis of Sediment

Chemical Analysis Of Sediment
No Custom Lists data for the sub group above.

## Additional Information

| | |
|---|---|
| Is your project subject to U.S. Army Corps of Engineers – Section 404 of Federal Clean Water Act? If yes, please attach a document 'USACE Authorization' in the document section.: | Yes |
| USACE File Number: | NAE-2025-00175 |
| Is your project subject to Massachusetts Environmental Policy Act (MEPA)? If yes, application cannot be submitted until 1) the MEPA process is completed and 2) a Final certificate issued by MEPA is submitted to the "Document(s)" Tab. If no, please attach a document with justification that this project is not subject to MEPA review in the document section (including addressing the applicability of the MEPA review thresholds at 301 CMR 11.03): | No |
| Is your project subject to Massachusetts Wetlands Protection Act?: | No |
| Is the project going to impact Eelgrass bed? If yes, please attach a document 'Eelgrass Management Plan' in the document section.: | No |
| Does this project contain an attached written Alternatives Analysis? If yes, please attach a document 'Alternatives Analysis' in the document section.: | Yes |
| If yes, does this Alternatives Analysis screen all practicable alternatives to the proposed discharge that would have less adverse impact on the aquatic ecosystem?: | Yes |
| Does this project require a license from the Federal Energy Regulatory Commission?: | No |
| Is any of your proposed work exempt from the Massachusetts Wetlands Protection Act or taking place in a federal non-state wetland?: | Yes |
| If yes, please provide additional information: | This project is being filed under the MassDOT Bridge Exemption as specified in the 2014 Transportation Bond Bill. |

## Statement and Disclosures

| | |
|---|---|
| Proposed dredging activity or dredged material management might occur within Rare Species Habitat as defined at 314 CMR 9.02. By checking this box, you agree that you have consulted with the Natural Heritage and Endangered Species Program of the Massachusetts Division of Fisheries and Wildlife. Please attach a 'NHESP Determination Letter or Conservation Management Permit' in the document section.: | Yes |
| Date of NHESP Determination Letter: | 03/11/2025 |
| Any in-water activity may effect fish or shellfish, spawning and/or habitat. By checking this box, you agree that you have consulted with Massachusetts Division of Marine Fisheries (DMF) and/or Massachusetts Division of Fisheries | Yes |

| | |
|---|---|
| Division of Marine Fisheries (DMF) and/or Massachusetts Division of Fisheries and Wildlife (DFW) about Time of Year Restriction (TOY). Please attach Consultation Letter from DMF and/or DFW in the document section.: | |
| Date on Letter from DMF and/or DFW: | 03/11/2025 |

## Project Information

| | |
|---|---|
| Project Name: | Culvert Replacement, #L-08-053 Pleasant Street and Colburn Street |
| Proposed Activity: | In 2023, a flood event caused the culvert conveying Reservoir Brook under Pleasant Street to collapse and altered the course of the stream channel. The purpose of the project is to replace the Pleasant Street crossing culvert, remove sediments deposited by the flood event, and restore the stream channel. Please see attached Project Narrative for additional information. |

## Project Type

| | |
|---|---|
| Industrial: | No |
| Utility: | No |
| Real Estate Subdivision: | No |
| Institutional: | No |
| Other: | Yes |
| Please provide additional information for the selection of your project major type: | Infrastructure - replacement of a collapsed culvert and associated streambed restoration. Please see attached Project Narrative for additional information. |

## Proposed Areal Extent Info

| | |
|---|---|
| Bordering Vegetated Wetland (sqft): | 662 |
| Isolated Vegetated Wetland (sqft): | 0 |
| Non-tidal Land Under Water (sqft): | 294 |
| Salt Marsh (sqft): | 0 |
| Land Under the Ocean (sqft): | 0 |
| Intertidal Zone (sqft): | 0 |
| Total cumulative loss (sqft): | 956 |

## Compliance with 314 CMR 9.00

| | |
|---|---|
| Does the proposed project meet the definition of a Single and Complete Project at 314 CMR 9.02?: | Yes |
| Does the proposed project include "multi-phased activities"?: | No |
| Does the proposed project meet the definition of an Ecological Restoration Project?: | No |
| Have you completed the Public Notice as per 314 CMR 9.05(3)? If yes, please attach a completed 'Proof of Public Notice' document in the document section.: | No |
| Does the required Alternatives Analysis screen all practicable alternatives to the proposed discharge that would have less adverse impact on the aquatic ecosystem?: | Yes |
| Does this proposed project meet the definition of Water-Dependent at 314 CMR 9.02?: | Yes |
| Is the proposed project restricted to access to one dwelling unit?: | No |
| Will the cumulative discharges of dredged or fill material to Waters of the United States within the Commonwealth exceed 1 acre in areal extent?: | No |
| Report the areal extent, as expressed in square feet, of all proposed restoration or replication of Bordering Vegetated Wetlands and/or Isolated Vegetated Wetlands: | 672 |
| Will any proposed discharges of dredged or fill material or any proposed restoration or replication occur within Rare Species Habitat as defined at 314 CMR 9.02?: | No |
| Will the proposed project include or consist of the construction of a new non-tidal crossing of any Land Under Water? : | No |

| | |
|---|---|
| Will the proposed project include or consist of the construction of a new tidal crossing of any Land Under Water?: | No |
| Will the proposed project include or consist of the repair, replacement, and/or expansion of an existing non-tidal crossing of any Land Under Water? : | Yes |
| If yes, will such repair, replacement, and/or expansion of an existing crossing comply with the Massachusetts River and Stream Crossing Standards (March 8, 2012) to the maximum extent practicable (see Practicable at 314 CMR 9.02)?: | Yes |
| Will the proposed project include or consist of the repair, replacement, and/or expansion of an existing tidal crossing of any Land Under Water?: | No |
| Does the proposed project include any amount of discharges of dredged or fill material to any Outstanding Resource Water?: | No |
| Will any proposed "discharge of dredged or fill materials" occur within any certified Vernal Pool (as defined at 314 CMR 9.02)? : | No |

## Additional Information

| | |
|---|---|
| Is your project subject to Massachusetts Environmental Policy Act (MEPA)?: | No |
| Is your project subject to Massachusetts Wetlands Protection Act?: | No |
| Is your project subject to Massachusetts Public Waterfront Act?: | No |
| Is your project subject to Massachusetts Historical Commission?: | Yes |
| MHC File Number (if available): | |
| Date of MHC Determination Letter (if available): | |
| Is your project subject to Massachusetts Bureau of Underwater Archeological Resources?: | Yes |
| BUAR File Number (if available): | |
| Date of BUAR Determination Letter (if available): | |
| Is your project subject to U.S. Army Corps of Engineers – Section 404 of Federal Clean Water Act?: | Yes |
| USACE File Number (if available): | NAE-2025-00175 |
| Date of USACE PCN Authorization (if available): | |

## List of Documents

| | |
|---|---|
| Documents: | Required Documents: 1. Alternatives Analysis 2. Characteristics of the proposed ocean disposal site 3. Consultation Letter from DMF and/or DFW 4. DEP Sampling Analysis Approval 5. Dredging and Disposal Operation 6. Grain Size Analysis 7. NHESP Determination Letter or Conservation Management Permit 8. Plans for adequate containment during dewatering on a barge 9. Project Narrative 10. Project Plan Set 11. Site Plans 12. USGS Quadrangle Map |

## Attachment

**When uploading file document(s) the maximum file size allowed is 50 MB.**
**The 'File Name' (including file extension) MUST NOT exceed 75 characters in length.**
**The document 'Description' MUST NOT exceed 50 characters in length.**
**Documents that exceed any of these limits will be removed by the system, and cannot be retrieved, which may delay the review process.**
**.bat;.bin;.dll;.exe;.js;.msi;.sql;.vbs;ade;adp;chm;cmd;com;cpl;hta;ins;isp;jar;jse;lib;lnk;mde;msc;msp;mst;php;pif;scr;sct;shb;sys;vb;vbe;vxd;wsc;wsf;wsh are disallowed file types to upload.**

| Name | Type | Size | Latest Update | Description | Action |
|---|---|---|---|---|---|
| 01_613865 - Joint 401 404 Permit-PleasantSt_REV3_04-23-2026.pdf | Alternatives Analysis | 316.98 KB | 04/23/2026 | Alternative Analysis (Section 5 of narrative). | Actions |
| 2026-04-23_613865 - Joint 401 WQC and Section 404 NWP PCN Submittal_Leominster Pleasant St_REV3_(sans forms).pdf | Project Narrative | 18.27 MB | 04/23/2026 | Project Narrative including al... read more | Actions |
| Attachment E - 20250311 USFWS NLAA Concurrence | Consultation Letter from DMF | 241.19 KB | 04/23/2026 | USFWS NLAA Concurrenc... read more | Actions |

| | | | | | |
|---|---|---|---|---|---|
| Verification 613865 Leominster 1.pdf | and/or DFW | | | | |
| Attachment I - RE Leominster - Pleasant Street - Sediment Sampling Plan (DEP Approval Email 02-11-2026).pdf | DEP Sampling Analysis Approval | 74.39 KB | 04/23/2026 | Results will be submitted once returned from lab. | Actions |
| Attachment J - 616375_Environmental Plans_20260422.pdf | Project Plan Set | 6.43 MB | 04/23/2026 | Project Plan Set incl Impacts Plan and details. | Actions |

< Prev 1 2 3 Next >

## Special Fee Provision

Exemption: Yes

Exemption Type: State Agency (only applicable if fee < or = to $100)

## Application Submitter

Individual
CLAYTON HUTCHINSON
Dover, NH, 03820
United States

Telephone #:508-868-2115
E-mail:clay.hutchinson@jacobs.com

I certify that I have read and understand the instructions that accompany this application and that the statements made as part of this application are true, complete, and correct and that no material information has been omitted. By checking the box below, I understand and agree that I am electronically signing and filing this application.

☐ By checking this box, I agree to the above certification.

Date:

Continue Application »

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U.S. Army Corps of Engineers (USACE)

**NATIONWIDE PERMIT PRE-CONSTRUCTION NOTIFICATION (PCN)**

For use of this form, see 33 CFR 330; the proponent agency is CECW-COR.

***Form Approved - OMB No. 0710-0003 Expires: 2027-10-31***

**DATA REQUIRED BY THE PRIVACY ACT OF 1974**

| | |
|---|---|
| **Authority** | Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Regulatory Program of the Corps of Engineers (Corps); Final Rule 33 CFR 320-332. |
| **Principal Purpose** | Information provided on this form will be used in evaluating the nationwide permit pre-construction notification. |
| **Routine Uses** | This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of the agency coordination process. |
| **Disclosure** | Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. |

The public reporting burden for this collection of information, 0710-0003, is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

**PLEASE DO NOT RETURN YOUR RESPONSE TO THE ABOVE EMAIL.**

One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (*see sample drawings and/or instructions*) and be submitted to the district engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

**(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)**

| 1. APPLICATION NO. | 2. FIELD OFFICE CODE | 3. DATE RECEIVED | 4. DATE APPLICATION COMPLETE |
|---|---|---|---|
| | | | |

**(ITEMS BELOW TO BE FILLED BY APPLICANT)**

| 5. APPLICANT'S NAME | 8. AUTHORIZED AGENT'S NAME AND TITLE (*agent is not required*) |
|---|---|
| First - Courtney Middle - Last - Walker | First - Kim Middle - Last - Ciaramicoli |
| Company - MassDOT - Highway Division | Company - Jacobs Engineering |
| Company Title - | E-mail Address - kim.ciaramicoli@jacobs.com |
| E-mail Address - Courtney.L.Walker@dot.state.ma.us | |
| **6. APPLICANT'S ADDRESS** | **9. AGENT'S ADDRESS** |
| Address- 10 Park Plz, Room 7360 | Address- 120 Saint James Ave 5th Floor |
| City - Boston State - MA ZIP - 02116 Country - US | City - Boston State - MA ZIP - 02116 Country - US |
| **7. APPLICANT'S PHONE NOs. with AREA CODE** | **10. AGENT'S PHONE NOs. with AREA CODE** |
| a. Residence b. Business +18572620757 c. Fax d. Mobile | a. Residence b. Business c. Fax d. Mobile +7745297432 |

**STATEMENT OF AUTHORIZATION**

11. I hereby authorize, Kim Ciaramicoli to act in my behalf as my agent in the processing of this nationwide permit pre-construction notification and to furnish, upon request, supplemental information in support of this nationwide permit pre-construction notification.

Courtney Walker — SIGNATURE OF APPLICANT

2026-05-08 — DATE

**NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY**

12. PROJECT NAME or TITLE (*see instructions*)

Leominster Pleasant Street Culvert Replacement

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**NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY**

13. NAME OF WATERBODY, IF KNOWN (*if applicable*)
Reservoir Brook

14. PROPOSED ACTIVITY STREET ADDRESS (*if applicable*)
208 Pleasant St

15. LOCATION OF PROPOSED ACTIVITY (*see instructions*)

| Latitude | °N | Longitude | °W |
|---|---|---|---|
| | 42.5201985 | | -71.7670328 |

City: Leominster | State: MA | ZIP: 01453

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (*see instructions*)

State Tax Parcel ID: 339-2

Municipality: Leominster, MA

Section: County - Worcester County

Township: Project Area – 0.509322 Acres

Range:

17. DIRECTIONS TO THE SITE
Take exit 99 from MA Route 2 eastbound or exit 99B from MA Route 2 westbound, and turn south on Route 12 N Main St. Continue 0.5 miles and turn right onto Washington St. Continue 0.9 miles and turn left onto West St for 358 feet and turn sharp right onto Pond St, Continue 0.4 miles and turn right onto Pleasant St. Project site is 80 feet from the turn from Pond St.

18. IDENTIFY THE SPECIFIC NATIONWIDE PERMIT(S) YOU PROPOSE TO USE
NWP 14 Linear Transportation Projects, NWP 33 Temporary Construction, Access, and Dewatering

19. DESCRIPTION OF PROPOSED NATIONWIDE PERMIT ACTIVITY (*see instructions*)
In September, 2023, a severe flooding event caused significant damage to the City of Leominster's existing infrastructure, leading to a collapse of an existing box culvert beneath Pleasant Street (L-08-053) and a single-family dwelling at 208 Pleasant Street. A temporary corrugated plastic culvert was installed to maintain stream connectivity and the dwelling was demolished until permanent repairs to the roadway and stream crossing can be completed. The project proposes to replace the box culvert beneath Pleasant Street, restore the streambed, and make improvements to flood storage capacity downstream from the crossing. Please refer to the Project Narrative (attached) for additional information.

The Project proposes to replace the collapsed 5'x3' box culvert with an upgraded 8'-4"x4' box culvert. Replacement of the culvert will require the construction of a new headwall, removal of a temporary plastic culvert pipe, restoration of temporary riprap streambed stabilization, and creation of additional downstream flood storage. Project components will result in temporary and permanent impacts to WOTUS and Vegetated Wetlands. Please see the attached Project Narrative and Application documents for additional details.

20. DESCRIPTION OF PROPOSED MITIGATION MEASURES (*see instructions*)
Avoidance and Minimization measures include implementation of construction BMPs, improvements to existing stormwater management systems, and wetland replication. Please see Section 9 - Avoidance and Minimization Measures in the attached Project Narrative for a full review of project components.

21. PURPOSE OF NATIONWIDE PERMIT ACTIVITY (*Describe the reason or purpose of the project, see instructions*)
The purpose of the proposed work is to replace and improve the damaged stream crossing and roadway infrastructure that was impacted by the 2023 flood event.

The collapsed box culvert is proposed to be replaced in-place with an upgraded box culvert to restore long-term stream flow beneath Pleasant Street. To mitigate the upgraded culvert replacement, stream channel restoration and compensatory flood storage is proposed immediately downstream of the culvert outlet to accommodate the new box culvert and mitigate for increased stream flow. Please refer to Section 3: Purpose and Need of the Project Narrative (attached) for additional information.

22. QUANTITY OF WETLANDS, STREAMS, OR OTHER TYPES OF WATERS DIRECTLY AFFECTED BY PROPOSED NATIONWIDE PERMIT ACTIVITY (*see instructions*)

| Acres | Linear Feet | Cubic Yards Dredged or Discharged |
|---|---|---|
| 0.1595 ac | 630 lf | 379 cu yd |

**Each PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site.**

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23. List any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. (*see instructions*)

24. If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and/or the loss of greater than 3/100-acre of stream bed and requires pre-construction notification, explain how the compensatory mitigation requirement in paragraph (c) and/or paragraph (d) of general condition 23 will be satisfied, or explain why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required for the proposed activity.

N/A

25. Is any portion of the nationwide permit activity already complete? ☐ Yes ☒ No If Yes, describe the completed work:

26. List the name(s) of any species listed as endangered or threatened under the Endangered Species Act that might be affected by the proposed NWP activity or utilize the designated critical habitat that might be affected by the proposed NWP activity. (*see instructions*)

Monarch butterfly, Tricolored bat

ADDITIONAL AFFECTED SPECIES:

None.

27. List any historic properties that have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic property or properties. (*see instructions*)

None.

28. For a proposed NWP activity that will 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, identify the Wild and Scenic River or the "study river":

N/A

29. If the proposed NWP activity also requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, have you submitted a written request for section 408 permission from the Corps district having jurisdiction over that project? ☐ Yes ☒ No

If "yes", please provide the date your request was submitted to the Corps district:

30. If the terms of the NWP(s) you want to use require additional information to be included in the PCN, please include that information in this space or provide it on an additional sheet of paper marked Block 30. (*see instructions*)

Please see the Control of Water, Environmental Impacts, and Proposed Conditions plan sheets of the attached Site Plans for details on dewatering and final site conditions.

31. Pre-construction notification is hereby made for one or more nationwide permit(s) to authorize the work described in this notification. I certify that the information in this pre-construction notification is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

| Courtney Walker | 2026-05-08 | Kimberly Ciaramitaro | 05/08/2026 |
|---|---|---|---|
| SIGNATURE OF APPLICANT | DATE | SIGNATURE OF AGENT | DATE |

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The pre-construction notification must be signed by the person who desires to undertake the proposed activity (applicant) and, if the statement in Block 11 has been filled out and signed, the authorized agent.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

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**Instructions for Preparing a**

**Department of the Army**

**Nationwide Permit (NWP) Pre - Construction Notification (PCN)**

**Blocks 1 through 4.** To be completed by the Corps of Engineers.

**Block 5. Applicant's Name.** Enter the name and the e - mail address of the responsible party or parties. If the responsible party is an agency, company, corporation, or other organization, indicate the name of the organization and responsible officer and title. If more than one party is associated with the preconstruction notification, please attach a sheet of paper with the necessary information marked Block 5.

**Block 6. Address of Applicant.** Please provide the full address of the party or parties responsible for the PCN. If more space is needed, attach an extra sheet of paper marked Block 6.

**Block 7. Applicant's Telephone Number(s).** Please provide the telephone number where you can usually be reached during normal business hours.

**Blocks 8 through 11.** To be completed, if you choose to have an agent.

**Block 8. Authorized Agent's Name and Title.** Indicate name of individual or agency, designated by you, to represent you in this process. An agent can be an attorney, builder, contractor, engineer, consultant, or any other person or organization. Note: An agent is not required.

**Blocks 9 and 10. Agent's Address and Telephone Number.** Please provide the complete mailing address of the agent, along with the telephone number where he / she can be reached during normal business hours.

**Block 11. Statement of Authorization.** To be completed by the applicant, if an agent is to be employed.

**Block 12. Proposed Nationwide Permit Activity Name or Title.** Please provide a name identifying the proposed NWP activity, e.g., Windward Marina, Rolling Hills Subdivision, or Smith Commercial Center.

**Block 13. Name of Waterbody.** Please provide the name (if it has a name) of any stream, lake, marsh, or other waterway to be directly impacted by the NWP activity. If it is a minor (no name) stream, identify the waterbody the minor stream enters.

**Block 14. Proposed Activity Street Address.** If the proposed NWP activity is located at a site having a street address (not a box number), please enter it in Block 14.

**Block 15. Location of Proposed Activity.** Enter the latitude and longitude of where the proposed NWP activity is located. Indicate whether the project location provided is the center of the project or whether the project location is provided as the latitude and longitude for each of the "corners" of the project area requiring evaluation. If there are multiple sites, please list the latitude and longitude of each site (center or corners) on a separate sheet of paper and mark as Block 15.

**Block 16. Other Location Descriptions.** If available, provide the Tax Parcel Identification number of the site, Section, Township, and Range of the site (if known), and / or local Municipality where the site is located.

**Block 17. Directions to the Site.** Provide directions to the site from a known location or landmark. Include highway and street numbers as well as names. Also provide distances from known locations and any other information that would assist in locating the site. You may also provide a description of the location of the proposed NWP activity, such as lot numbers, tract numbers, or you may choose to locate the proposed NWP activity site from a known point (such as the right descending bank of Smith Creek, one mile downstream from the Highway 14 bridge). If a large river or stream, include the river mile of the proposed NWP activity site if known. If there are multiple locations, please indicate directions to each location on a separate sheet of paper and mark as Block 17.

**Block 18. Identify the Specific Nationwide Permit(s) You Propose to Use.** List the number(s) of the Nationwide Permit(s) you want to use to authorize the proposed activity (e.g., NWP 29).

**Block 19. Description of the Proposed Nationwide Permit Activity.** Describe the proposed NWP activity, including the direct and indirect adverse environmental effects the activity would cause. The description of the proposed activity should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal. Identify the materials to be used in construction, as well as the methods by which the work is to be done.

Provide sketches when necessary to show that the proposed NWP activity complies with the terms of the applicable NWP(s). Sketches usually clarify the activity and result in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed NWP activity (e.g.,a conceptual plan), but do not need to be detailed engineering plans.

The written descriptions and illustrations are an important part of the application. Please describe, in detail, what you wish to do. If more space is needed, attach an extra sheet of paper marked Block 19.

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**Block 20. Description of Proposed Mitigation Measures.** Describe any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed NWP activity. The description of any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for compensatory mitigation or additional mitigation measures.

**Block 21. Purpose of Nationwide Permit Activity.** Describe the purpose and need for the proposed NWP activity. What will it be used for and why? Also include a brief description of any related activities associated with the proposed project. Provide the approximate dates you plan to begin and complete all work.

**Block 22. Quantity of Wetlands, Streams, or Other Types of Waters Directly Affected by the Proposed Nationwide Permit Activity.** For discharges of dredged or fill material into waters of the United States, provide the amount of wetlands, streams, or other types of waters filled, flooded, excavated, or drained by the proposed NWP activity. For structures or work in navigable waters of the United States subject to Section 10 of the Rivers and Harbors Act of 1899, provide the amount of navigable waters filled, dredged, or occupied by one or more structures (e.g., aids to navigation, mooring buoys) by the proposed NWP activity.

For multiple NWPs, or for separate and distant crossings of waters of the United States authorized by NWPs 12 or 14, attach an extra sheet of paper marked Block 21 to provide the quantities of wetlands, streams, or other types of waters filled, flooded, excavated, or drained (or dredged or occupied by structures, if in waters subject to Section 10 of the Rivers and Harbors Act of 1899) for each NWP. For NWPs 12 and 14, include the amount of wetlands, streams, or other types of waters filled, flooded, excavated, or drained for each separate and distant crossing of waters or wetlands. If more space is needed, attach an extra sheet of paper marked Block 22.

**Block 23. Identify Any Other Nationwide Permit(s), Regional General Permit(s), or Individual Permit(s) Used to Authorize Any Part of Proposed Activity or Any Related Activity.** List any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. For linear projects, list other separate and distant crossings of waters and wetlands authorized by NWPs 12 or 14 that do not require PCNs. If more space is needed, attach an extra sheet of paper marked Block 23.

**Block 24. Compensatory Mitigation Statement for Losses of Greater Than 1/10-Acre of Wetlands and/or of Greater Than 3/100-Acre of Stream Bed When Pre-Construction Notification is Required.** Paragraphs (c) and (d) of NWP general condition 23 require compensatory mitigation at a minimum one-for-one replacement ratio for all wetland losses that exceed 1/10-acre and/or for all losses of stream bed that exceed 3/100-acre, unless the district engineer determines in writing that either some other form of mitigation is more environmentally appropriate or the adverse environmental effects of the proposed NWP activity are no more than minimal without compensatory mitigation, and provides an activity-specific waiver of this requirement. Describe the proposed compensatory mitigation for wetland losses greater than 1/10 acre and/or for losses of stream bed that exceed 3/100-acre, or provide an explanation of why the district engineer should not require wetland and/or stream compensatory mitigation for the proposed NWP activity. If more space is needed, attach an extra sheet of paper marked Block 24.

**Block 25. Is Any Portion of the Nationwide Permit Activity Already Complete?** Describe any work that has already been completed for the NWP activity.

**Block 26. List the Name(s) of Any Species Listed As Endangered or Threatened under the Endangered Species Act that Might be Affected by the Nationwide Permit Activity.** If you are not a federal agency, and if any listed species or designated critical habitat might be affected or is in the vicinity of the proposed NWP activity, or if the proposed NWP activity is located in designated critical habitat, list the name(s) of those endangered or threatened species that might be affected by the proposed NWP activity or utilize the designated critical habitat that might be affected by the proposed NWP activity. If you are a Federal agency, and the proposed NWP activity requires a PCN, you must provide documentation demonstrating compliance with Section 7 of the Endangered Species Act.

**Block 27. List Any Historic Properties that Have the Potential to be Affected by the Nationwide Permit Activity.** If you are not a Federal agency, and if any historic properties have the potential to be affected by the proposed NWP activity, list the name(s) of those historic properties that have the potential to be affected by the proposed NWP activity. If you are a Federal agency, and the proposed NWP activity requires a PCN, you must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.

**Block 28. List the Wild and Scenic River or Congressionally Designated Study River if the Nationwide Permit Activity Would Occur in such a River.** If the proposed NWP activity will occur in a river in the National Wild and Scenic River System or in a river officially designated by Congress as a “study river” under the Wild and Scenic Rivers Act, provide the name of the river. For a list of Wild and Scenic Rivers and study rivers, please visit http://www.rivers.gov/.

**Block 29. Nationwide Permit Activities that also Require Permission from the Corps Under 33 U.S.C. 408.** If the proposed NWP activity also requires permission from the Corps under 33 U.S.C. 408 because it will temporarily or permanently alter, occupy, or use a Corps federal authorized civil works project, indicate whether you have submitted a written request for section 408 permission from the Corps district having jurisdiction over that project.

Print Form Save As

**Block 30. Other Information Required For Nationwide Permit Pre - Construction Notifications.** The terms of some of the Nationwide Permits include additional information requirements for preconstruction notifications:

* NWP 3, Maintenance –information regarding the original design capacities and configurations of the outfalls, intakes, small impoundments, and canals.
* NWP 31, Maintenance of Existing Flood Control Facilities –a description of the maintenance baseline and the dredged material disposal site.
* NWP 33, Temporary Construction, Access, and Dewatering –a restoration plan showing how all temporary fills and structures will be removed and the area restored to pre - project conditions.
* NWP 44, Mining Activities –if reclamation is required by other statutes, then a copy of the final reclamation plan must be submitted with the pre - construction notification.
* NWP 45, Repair of Uplands Damaged by Discrete Events –documentation, such as a recent topographic survey or photographs, to justify the extent of the proposed restoration.
* NWP 48, Commercial Shellfish Aquaculture Activities –(1) a map showing the boundaries of the project area, with latitude and longitude coordinates for each corner of the project area; (2) the name(s) of the species that will be cultivated during the period this NWP is in effect; (3) whether canopy predator nets will be used; (4) whether suspended cultivation techniques will be used; and (5) general water depths in the project area (a detailed survey is not required).
* NWP 49, Coal Remining Activities –a document describing how the overall mining plan will result in a net increase in aquatic resource functions must be submitted to the district engineer and receive written authorization prior to commencing the activity.
* NWP 50, Underground Coal Mining Activities –if reclamation is required by other statutes, then a copy of the reclamation plan must be submitted with the pre - construction notification.

If more space is needed, attach an extra sheet of paper marked Block 30.

**Block 31. Signature of Applicant or Agent.** The PCN must be signed by the person proposing to undertake the NWP activity, and if applicable, the authorized party (agent) that prepared the PCN. The signature of the person proposing to undertake the NWP activity shall be an affirmation that the party submitting the PCN possesses the requisite property rights to undertake the NWP activity (including compliance with special conditions, mitigation, etc.).

**DELINEATION OF WETLANDS, OTHER SPECIAL AQUATIC SITES, AND OTHER WATERS**

Each PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current wetland delineation manual and regional supplement published by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. The 45 day PCN review period will not start until the delineation is submitted or has been completed by the Corps.

**DRAWINGS AND ILLUSTRATIONS**

**General Information.**

Three types of illustrations are needed to properly depict the work to be undertaken. These illustrations or drawings are identified as a Vicinity Map, a Plan View or a Typical Cross - Section Map. Identify each illustration with a figure or attachment number. For linear projects (e.g. roads, subsurface utility lines, etc.) gradient drawings should also be included. Please submit one original, or good quality copy, of all drawings on 8½x11 inch plain white paper (electronic media may be substituted). Use the fewest number of sheets necessary for your drawings or illustrations. Each illustration should identify the project, the applicant, and the type of illustration (vicinity map, plan view, or cross - section). While illustrations need not be professional (many small, private project illustrations are prepared by
hand), they should be clear, accurate, and contain all necessary information.

**ADDITIONAL INFORMATION AND REQUIREMENTS**

For proposed NWP activities that involve discharges into waters of the United States, water quality certification from the State, Tribe, or EPA must be obtained or waived (see NWP general condition 25). Some States, Tribes, or EPA have issued water quality certification for one or more NWPs. Please check the appropriate Corps district web site to see if water quality certification has already been issued for the NWP(s) you wish to use. For proposed NWP activities in coastal states, state Coastal Zone Management Act consistency concurrence must be obtained, or a presumption of concurrence must occur (see NWP general condition 26). Some States have issued Coastal Zone Management Act consistency concurrences for one or more NWPs. Please check the appropriate Corps district web site to see if Coastal Zone Management Act consistency concurrence has already been issued for the NWP(s) you wish to use.

U.S. Army Corps of Engineers (USACE)

# AUTHORIZATION TO ACT AS AN AGENT

For use of this form, see Section 404 of the Clean Water Act, Section 10 of the Rivers and Harbors Act of 1899, and Section 103 of the Marine Protection, Research, and Sanctuaries Act, the proponent agency is CECW-COR.

***Form Approved - OMB No. 0710-0003 Expires 2027-10-31***

**The Agency Disclosure Notice (ADN)**

The Public reporting burden for this collection of information, 0710-003, is estimated to average 5 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

**Purpose**: This form is used by members of the public to authorize an agent (for example - a private consultant) to act on their behalf in all matters relating to all dealings with the USACE regarding the project. This includes taking all necessary actions for the application, processing, issuance, and/or acceptance of a Clean Water Act and/or Rivers and Harbors Act delineations, determinations, and/or permits.

This form is a component in the Corps Regulatory Request System (RRS), which is an online permitting application portal for the Regulatory Program.

**ITEMS 1 THRU 3 - FOR USACE USE ONLY**

| 1. APPLICATION NO. | 2. FIELD OFFICE CODE | 3. DATE RECEIVED |
|---|---|---|
| | | |

**ITEMS 4 THRU 14 - COMPLETD BY THE APPLICANT or REQUESTOR**

| | |
|---|---|
| 4. PROJECT NAME<br>Leominster Pleasant Street Culvert | 5. PROJECT LOCATION<br>208 Pleasant St, Leominster, MA 01453 |
| 6. APPLICANT NAME (*first, middle, last*)<br>Courtney Walker | 7. AGENT NAME<br>Kimberly Ciaramicoli |
| Company (*if applicable*):<br>MassDOT - Highway Division | Company:<br>Jacobs Engineering |
| E-mail Address:<br>Courtney.L.Walker@dot.state.ma.us | E-mail Address:<br>kim.ciaramicoli@jacobs.com |
| 8. APPLICANT ADDRESS (*if applicable*) | 9. AGENT ADDRESS (*if applicable*) |
| Address<br>10 Park Plz, Room 7360 | Address<br>120 Saint James Ave, 5th Floor |
| City: Boston / State: MA | City: Boston / State: MA |

| 10. APPLICANT PHONE NUMBERS. w/AREA CODE | | | 11. AGENT PHONE NUMBERS. w/AREA CODE | | |
|---|---|---|---|---|---|
| a. Residence | b. Business<br>+18572620757 | c. Fax | a. Residence | b. Business<br>+17745297432 | c. Fax |

12. APPLICANT/AGENT CERTIFICATION

By signing below, I hereby authorize the agent listed above, to act on my behalf in all matters relating to all dealings with the USACE regarding the project and properties listed above, including taking all necessary actions for the application, processing, issuance, and/or acceptance of a Clean Water Act and/or Rivers and Harbors Act delineations, determinations, and/or permits. Any and all acts carried out by my agent on my behalf as it relates to this project and property shall have the same effect as acts of my own.

I agree to review all information submitted to the USACE on my behalf by my agent and certify that any information submitted on my behalf is true and correct.

| 13. SIGNATURE of APPLICANT or REQUESTOR | 14. DATE |
|---|---|
| Courtney Walker Digitally signed by Courtney Walker Date: 2026.05.08 11:57:38 -04'00' | 2026-05-08 |

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

**ENG FORM 6295, JAN 2025** PREVIOUS EDITIONS ARE OBSOLETE.

# Attachment A - Narrative

# 1. Introduction

The Massachusetts Department of Transportation – Highway Division (MassDOT) (the Applicant) is submitting this amended application for a Massachusetts 401 Water Quality Certification (401 WQC) BRP WW 26 – Combined Application and Section 404 Pre-Construction Notification under the Federal Clean Water Act (CWA). This joint 401/404 application is being submitted concurrently to the Massachusetts Department of Environmental Protection (MassDEP) and the U.S. Army Corps of Engineers (USACE), to request authorization for project activities associated with the replacement of the culvert that carries Pleasant Street over Reservoir Brook (Bridge No. L-08-053) in Leominster, MA (**Attachment B - Figures**).

In September 2023, the City of Leominster experienced a severe flooding event that caused significant damage to the City's existing infrastructure, including the collapse of the existing box culvert beneath Pleasant Street (L-08-053). In an emergency response to the collapsed culvert, the City of Leominster immediately installed a temporary 36-inch corrugated plastic pipe slightly east of the failed culvert to restore basic flowage and open Pleasant Street to vehicular traffic. The collapse of the box culvert also severely impacted the residential structure at 208 Pleasant Street, which was located directly over the culvert on the South side of Pleasant Street, resulting in the condemnation of the house structure and washout of the foundation and yard area. The City of Leominster acquired the property at 208 Pleasant Street and in 2025 demolished the structure and installed a rip-rap lined drainage channel as a temporary stabilization measure within the footprint of the demolished structure, until permanent repairs and culvert replacement can commence.

In March 2025, MassDOT submitted a joint 401/404 application (NAE-2025-00175) to replace the box culvert in kind. Work under the March 2025 application included:

- Replacement of the 3′ x 5′ box culvert in-kind with the original, pre-existing culvert;
- Construction of a new headwall at the downstream outlet of the box culvert;
- Permanent restoration and daylighting of the stream channel from within the house footprint; and
- Removal of the temporary plastic pipe and emergency stabilization measures.

Since the submission of the original March 2025 joint 401/404 application, the scope of work has expanded to address existing flooding concerns at the Pleasant Street crossing location as well as novel concerns regarding downstream flooding and stream channel alignment caused by, and observed during, the 2023 flood event. This updated joint 401/404 application includes the following work:

- Replacement of the 3′ x 5′ box culvert with an upgraded 8′-4″ x 4′ embedded box culvert in the original crossing location;
- Construction of a new headwall at the downstream outlet of the box culvert;
- Permanent stabilization and realignment of the stream channel at the downstream culvert outlet;
- Realignment of the downstream channel and establishment of compensatory flood storage and wetland replication; and
- Removal of the temporary plastic pipe and emergency stabilization measures.

Details on the proposed work and project needs can be found under **Section 3 – Purpose and Need** and **Section 4 – Proposed Work** in the narrative below.

The proposed replacement of the Pleasant Street culvert and establishment of the flood storage area will result in unavoidable impacts to Land Under Water (LUW)/Waters of the U.S. (WOTUS)associated with Reservoir Brook and associated Vegetated Wetlands. Efforts have been made to avoid and minimize impacts where possible. Mitigation measures will be implemented to minimize disturbance during construction. This project requires a written determination of PCN eligibility under the Nationwide Permit (NWP) by the United States Army Corps of Engineers (USACE). As such, the Applicant is seeking authorization under NWP 14 ("Linear Transportation Projects") and NWP 33 ("Temporary Construction, Access, and Dewatering").

This project is being filed under the MassDOT Bridge Exemption as specified in the 2014 Transportation Bond Bill. The design of the new box culvert is substantially the functional equivalent of, and in similar alignment to the pre-existing structure. As such, this project is exempt from review under the Massachusetts Environmental Policy Act (MEPA) Regulations (301 CMR 11.00), the Massachusetts Wetlands Protection Act (M.G.L. c.131 § 40), its implementing regulations (310 CMR 10.00), and the Chapter 91 Waterways Regulations (310 CMR 9.00).

# 2. Existing Conditions

The Project Site includes the culvert at the Pleasant Street over Reservoir Brook crossing, City-owned land located at address 208 Pleasant St, and the extent of Reservoir Brook approximately 400 linear feet southeast of the crossing.

## 2.1 Culvert Crossing

The culvert is located adjacent to the northern terminus of Colburn Street with Pleasant Street, approximately .45 miles west of Route 12. The pre-existing culvert was a 3-sided 3' x 5' concrete box culvert. After the 2023 flooding event critically damaged the structure, a 36-inch corrugated plastic pipe was temporarily installed by the City to facilitate the movement of Reservoir Brook under the roadway. At this time, the culvert was realigned to facilitate flow under the roadway while the channel was blocked. Chain-link fencing has been installed at the top of the slope for safety purposes. Representative photographs show the headwall, pipe, the damaged residential structure prior to demolition, and the rip-rap lined channel that was installed following the house demolition (**Attachment D – Photos**).

Pleasant Street is a paved, two lane (one in each direction) roadway that runs in an east/west direction. The surrounding area is generally characterized by low-density residential development. There is a 5-foot-wide sidewalk on both sides of the roadway. Overhead wires connecting to utility poles run along the north side of the roadway, over the sidewalk.

The roadway is served by a storm drain system that captures runoff in a catch basin/drain manhole/concrete piping system which conveys the runoff to the stream. A catch basin is located at the west corner of the intersection of Colburn Street and Pleasant Street. Two additional catch basins are located on each side of Pleasant Street, over the culvert.

## 2.2 Downstream Areas

Reservoir Brook immediately downstream of the Pleasant Street crossing was directly impacted by the 2023 flooding event. The flooding event resulted in stream channel realignment and sediment deposits from roadway blow-out, altering the stream course from pre-flood conditions. The stream channel immediately downstream of the Pleasant Street crossing was artificially realigned to facilitate the placement of the temporary corrugated plastic pipe and newly daylighted stream channel on the parcel at 208 Pleasant Street. This portion of the stream channel consists of riprap lining for stabilization within the footprint of the demolished house structure, which connects to the original stream channel approximately 80 feet downstream of Pleasant Street.

The 2023 blowout of the Pleasant Street culvert resulted in sediment from the roadway being washed downstream and deposited approximately 290 feet downstream of Pleasant Street, east of address 20 Colburn Street, approximately between the existing residential structure and the existing condominium structures. The flood event caused a redirection of the stream channel which carved a new flow path slightly east of the original alignment, closer to the condo buildings at 192 Pleasant Street. The new stream channel alignment is contained withing a broader vegetated wetland (Wetland D), where it connects to the original stream channel approximately 380 feet downstream of Pleasant Street, before Reservoir Brook empties into an emergent wetland system.

## 2.3 Wetland Resource Areas

Jurisdictional Resource Areas were delineated at the project site by EcoTec, Inc., on September 30, 2024, in pursuit of the original project scope to replace the culvert. At the time of the delineation, the temporary corrugated plastic pipe had been installed but the house structure at 208 Pleasant Street was still standing and the riprap stabilization channel had not yet been created. The scope of the September 30th delineation was limited to the Reservoir Brook stream channel immediately north of Pleasant Street and the stream channel and Wetland A on the parcel at 208 Pleasant Street.

On June 2, 2025, EcoTec, Inc., returned to the site and expanded the delineation to incorporate the upstream and downstream areas, including Reservoir Brook and the associated Vegetated Wetlands extending approximately 450 feet to the north of Pleasant Street and 650 feet to the south of Pleasant Street, in service of the revised scope of work. Jurisdictional Resource Areas are further described below and in **Attachment C, Wetland Resource Evaluation**.

### 2.3.1 Reservoir Brook

Reservoir Brook is a perennial stream that is shown on the USGS maps for Leominster. It flows in a southerly direction, has a drainage area of .53 square miles, and a bankfull width of 12.4 feet. The Ordinary High Water line was identified and delineated by EcoTech on September 30, 2024, and June 2, 2025. Red survey flags were placed in the field to demarcate boundaries Ordinary High Water. Flags RA1 to RA16 were placed on the river right of the stream and RA17 to RA32 on the river left of the stream. Ordinary High Water on the downstream side of the Pleasant Street crossing (south of the crossing) was flagged with red survey flagging RB1 to RB11 and RD1 to RD36 on the river right of the stream and RB12 to RB60 on the river left of the stream, delineated from the end of the riprap stabilization channel. The Ordinary High Water was extrapolated from mean elevation within the riprap stabilization channel due to the altered site conditions.

**Table 2-1: Reservoir Brook OHW Boundary Flags**

| Project Location | Flagging Series | Description / Notes |
|---|---|---|
| Reservoir Brook – Upstream | RA1 to RA32<br><br>(Right Bank – RA1 to RA16 /<br><br>Left Bank – RA17 to RA32) | Mean Annual High-Water Line (MAHWL) / Top of Bank of Reservoir Brook along the upstream Project limits, north of the crossing under Pleasant Street, was delineated along the river right and river left banks. The river right MAHWL boundary begins at flag RA1 and continues to the temporary culvert under Pleasant Street at flag RA16. The river left MAHWL boundary continues from the culvert at flag RA17 and extends north upstream to flag RA32. |
| Reservoir Brook – Center of the Project Area and Downstream | RB1 to RB60<br><br>(Right Bank – RB1 to RB11 /<br><br>Left Bank – RB12 to RB60) | Mean Annual High-Water Line (MAHWL) / Top of Bank of Reservoir Brook within the center of the Project limits, south of the crossing under Pleasant Street from the end of the riprap channel, was delineated along the river right and river left banks. The river right MAHWL boundary begins at flag RB1 and continues to the riprap channel at flag RB11. The river left MAHWL boundary continues from the riprap channel at flag RB12 and extends south to flag RB60 where Reservoir Brook enters an emergent wetland beyond the southern extent of the Project limits. |
| Reservoir Brook – Downstream River Right | RD1 to RD36<br><br>(Right Bank only – extension of RB Right) | The Mean Annual High-Water Line (MAHWL) / Top of Bank of Reservoir Brook flags were extended along the river right bank from RB1 downstream to the emergent wetland beyond the southern extent of the Project limits. Only the river right MAHWL boundary was delineated in the RD flag series to extend the delineation downstream to address the revised scope of work. |

### 2.3.2 Vegetated Wetlands

Vegetated Wetlands were flagged on the west side of the stream with blue survey flagging. Flags A1 to A10 demarcate Wetland A along the Bank of Reservoir Brook between flags B3 and B10, within the parcel at 208 Pleasant Street. Additional Vegetated Wetlands were flagged bordering on the west side of the Bank to Reservoir Brook behind 20 Colburn Street with blue survey flagging B1 to B14 and on the east side of Reservoir Brook with blue survey flagging D1 to D31. The original stream channel prior to the 2023 storm event is believed to have flowed through Vegetated Wetland B, before the storm surge carved a new channel along the RD flags. Refer to Table 2-2, below, for a description of each vegetated wetland identified at the Project location.

**Table 2-2: Vegetated Wetland Boundary Flags**

| Project Location | Flagging Series | Description / Notes |
|---|---|---|
| Wetland A – Downstream of Pleasant St | A1 to A10 | Wetland A consists of a wet meadow bordering on the western bank of Reservoir Brook immediately downstream of the Pleasant Street culvert at 208 Pleasant Street. Dominant wetland vegetation found throughout the wetland included red maple (*Acer rubrum*) and American elm (*Ulmus americana*) in the tree and sapling layer, and spotted touch-me-not (*Impatiens capensis*), aster (*Aster* Sp.), beggar-ticks (*Biden* Sp.), false nettle (*Boehmeria cylindrica*), and smartweed (*Polygonum* Sp.) in the herbaceous and ground cover layer. |
| Wetland B – Downstream of Pleasant St | B1 to B14 | Wetland B consists of a wooded swamp on the western bank of Reservoir Brook downstream of the Pleasant Street culvert, between 192 Pleasant Street and 20 Colburn Street. Dominant vegetation found throughout the wetland included red maple (*Acer rubrum*) and American elm (*Ulmus americana*) in the tree layer, poison ivy (*Toxicodendron radicans*) in the woody vine layer, highbush blueberry (*Vaccinium corymbosum*), common winterberry (*Ilex verticillata*), arrow-wood (*Viburnum dentatum*), and silky dogwood *(Cornus amomum*) in the shrub layer, and sensitive fern |

| Project Location | Flagging Series | Description / Notes |
|---|---|---|
| | | (*Onoclea sensibilis*), subarctic lady fern (*Athyrium filix-femina*), spotted touch-me-not *(Impatiens capensis*), and golden-rods (*Solidago* Sp.) in the herbaceous and ground cover layer. |
| Wetland D – Downstream of Pleasant St | D1 to D31 | Wetland D consists of a wooded swamp bordering on the eastern bank of Reservoir Brook downstream of the Pleasant Street culvert behind the condominiums at 192 Pleasant Street. Similar to Wetland B, dominant vegetation found throughout the wetland included red maple (*Acer rubrum*) and American elm (*Ulmus americana*) in the tree layer, poison ivy (*Toxicodendron radicans*) in the woody vine layer, highbush blueberry (*Vaccinium corymbosum*), common winterberry (*Ilex verticillata*), arrow-wood (*Viburnum dentatum*), and silky dogwood *(Cornus amomum*) in the shrub layer, and sensitive fern (*Onoclea sensibilis*), subarctic lady fern (*Athyrium filix-femina*), spotted touch-me-not *(Impatiens capensis*), and golden-rods (*Solidago* Sp.) in the herbaceous and ground cover layer. |

## 2.4 Environmental Constraints

A desktop review of the Site was conducted using available resources such as MassGIS data layers, USGS 7.5 Minute Quadrangle, aerial photography, and FEMA Flood Insurance Rate Maps. According to publicly available mapping, The Site is not located within Outstanding Resource Waters, Areas of Critical Environmental Concern, Coldwater Fisheries or Wellhead Protection Areas. According to the FEMA Flood Insurance Rate Maps for Leominster (Community Panel Number 2503140006B dated 9/16/2982), the project site lies outside of the 100-year floodplain. According to the Natural Resources Conservation Service, Worcester County-Northeast (MA613), soils found within the project limits include Sudbury fine sandy loam, 0 to 3% slopes. These soils are moderately well drained with a water table from 18 to 36 inches. The Site is not on or adjacent to any Article 97 lands.

## 2.5 Fisheries and Wildlife/Natural Heritage Endangered Species/Vernal Pools

A review of the current MassGIS data layer for the Massachusetts Natural Heritage Atlas (effective August 1, 2021) under the Natural Heritage and Endangered Species Program (NHESP) indicates that the Site is not located within Priority Habitat of Rare Species or within Estimated Habitat of Rare Wildlife. No Certified or mapped Potential Vernal Pools under the jurisdiction of the Wetlands Protection Act Regulations (310 CMR 10.00 et seq.) or the Massachusetts Endangered Species Act (321 CMR 10.00 et. seq.) occur at or adjacent to the Site.

According to the U.S. Fish & Wildlife Service Information for Planning and Consultation (IPAC) system, the following two federally threatened species may occur within the Project limits:

- Tricolored Bat (*Perimyotis subflavus*) – Proposed Endangered and the
- Monarch Butterfly (*Danaus plexippus*) –Proposed Threatened.

Although the two federally threatened species listed above may occur within the project limits, there are no identified critical habitats within this area.

# 3. Purpose and Need

In 2023, the City of Leominster experienced a severe flood event that collapsed the box culvert that conveyed Reservoir Brook under Pleasant Street and realigned the stream channel downstream of the Pleasant Street crossing. The flood related damage also compromised the house structure at 208 Pleasant Street beyond repair, which was situated over the culvert. A temporary corrugated plastic pipe was immediately installed under Pleasant Street as an emergency response to restore flow to the stream and reopen Pleasant Street to vehicular traffic. In 2025, the City of Leominster demolished the house structure and installed riprap material to stabilize the stream channel between the plastic pipe outlet and the natural stream channel downstream.

The purpose of the Project is to replace the collapsed box culvert and remove the temporary corrugated plastic pipe to permanently restore the conveyance of Reservoir Brook under Pleasant Street. To mitigate for future flood events, the new box culvert will be increased in size over the original box culvert. To facilitate the increased capacity of the upgraded box culvert, additional flood storage capacity will be provided immediately downstream of the crossing, to prevent adverse impacts downstream. Additionally, downstream hydrologic connections that were severed due to sediment deposition from the culvert blowout during the 2023 flood event will be restored. Restoration will prevent further stream channel undercutting during future flood events and allow for stream channel overflow away from established residential structures in close proximity to Reservoir Brook. Removal of the sediment deposits and construction of flood storage is necessary to address vulnerabilities created by the altered stream channel alignment, to mitigate the upgraded box culvert capacity, and to protect against future flood events to the greatest extent practicable.

# 4. Proposed Work

Work activities will include the following:

- Replacement of the three-sided 3′ x 5′ box culvert with an upgraded four-sided 8′-4″ x 4′ embedded box culvert in the original crossing location;
- Construction of a new headwall at the downstream outlet of the box culvert;
- Permanent stabilization and realignment of the stream channel at the downstream culvert outlet;
- Realignment of the downstream channel and establishment of compensatory flood storage and wetland replication; and
- Removal of the temporary plastic pipe and emergency stabilization measures.

The total length of the project area is approximately 460-feet along Pleasant Street and Colbern Street. The full sequence of project construction activities will take one construction season to complete. Please refer to Project Site Plans (**Attachment K – Site Plans**) for additional details.

## 4.1 Culvert Replacement

After the flood event of 2023 damaged the pre-existing box culvert, the City excavated an upland area to facilitate river flow into the newly installed temporary black plastic corrugated culvert at its upstream end. At the downstream of the culvert, the channel was widened as a result of flooding. These areas at

both the upstream and downstream ends of the proposed culvert will be permanently filled to restore the stream alignment at the crossing site to match pre-existing conditions. The Project will replace the temporary corrugated plastic culvert pipe and collapsed 3'x5' box culvert that conveyed the flow of Reservoir Brook under Pleasant Street. The proposed culvert is a 8'-4" by 4', 4-sided concrete box structure with a natural embedded streambed with a 4-foot clearance that will follow a similar horizontal and vertical alignment as the pre-existing structure. At the downstream end, the culvert will be extended (approximately 25-feet from the back of the sidewalk). On the upstream end, the new culvert will tie into the existing headwall. At the downstream end of the culvert, a new concrete headwall will be constructed. The stone lined channel that was placed following the demolition of the house will tie into the southern headwall at the outlet slopes to prevent erosion. Compost topped with native seed will be applied over the rock filled slopes above the Ordinary High Water line.

## 4.2 Reservoir Brook Restoration and Re-alignment

A temporary riprap channel conveying Reservoir Brook was installed following the placement of the temporary corrugated plastic pipe under Pleasant Street and the demolition of the house structure at 208 Pleasant Street. The Project proposes to realign and stabilize the stream channel from the current riprap channel to a modified flow path to connect the outlet of the new box culvert to the existing stream channel downstream of the temporary measures. The realigned stream channel from the outlet of the box culvert to the existing stream channel at OHW Flag RB-20 will be excavated to remove sediment and riprap material and natural streambed material will be restored within the realigned channel.

Additionally, Wetland A will be excavated to a lower elevation within the greater flood storage area at 208 Pleasant Street to create compensatory flood storage capacity. The flood storage area will be graded in such a manner as to allow for overland flow from Reservoir Brook during high-flow conditions. A wetland replication area will be created in the same vicinity to offset the unavoidable impacts to Wetland A, as explained in **Section 8.2.1 – Wetland Replication Area Overview**.

As a result of the 2023 flood event, the alignment of Reservoir Brook carved a new stream channel approximately 300 feet downstream of the Pleasant Street Crossing (STA 105), through the wetland system mapped as Wetland D. Sediments were deposited by flood waters in the previous stream channel within Wetland B. The Project proposes to excavate the deposited sediments from the previous stream channel to restore an overland hydrologic connection to Wetland B and allow for overland flow of overflow water during high-flow conditions from Reservoir Brook while retaining the new stream channel alignment through Wetland D. The discontinued stream channel at Wetland B will be graded to allow flood conditions to overtop into Wetland B. See **Attachment H – Special Provision** for the Stream Restoration Provision and **Attachment K – Site Plans** for additional details. Work within Wetland B will be accessed from the upland at Colburn St.

## 4.3 Stormwater

The Project is considered a redevelopment project. Impacts to WOTUS are unavoidable, however, the impacts are necessary to install the new box culvert and provide compensatory flood storage to accommodate the upgraded crossing hydraulics. Upon completion of the project, slopes will be stabilized and temporary impacts to streambank, streambed, and Vegetated Wetlands will be restored.

Within the roadway of Pleasant Street, the two existing catch basins will be replaced with deep sump catch basins, which will be diverted to upland discharge points to mitigate long term impacts to the

stream channel. Overall, impervious area within the project area will be slightly increased. Refer to **Section 5 Stormwater Management** for additional details.

## 4.4 Project Impacts to Vegetated Wetlands and Other Waters of the United States (WOTUS)

The proposed work will result in approximately 4138 square feet (sf) of permanent impacts to WOTUS associated with Reservoir Brook. Unavoidable impacts are the result of restoration of the natural river alignment at the culvert crossing with Pleasant Street and restoration of Reservoir Brook downstream of the crossing. Additionally, the Project will permanently impact approximately 662 sf of Vegetated Wetlands. A total of 1666 sf of Vegetated Wetlands will be temporarily impacted during construction. Compensatory mitigation for permanent impact to Vegetated Wetlands will be accomplished with the construction of a 672 sf Vegetated Wetland replication area, and temporary impacts will be restored in-kind. Refer to Table 3-1 Wetland Resource Impacts, below.

**Table 3-1 Wetland Resource Impacts**

| Resource Area | Impacts | Surface Area (SF) Linear Feet (LF) Cubic Yards (CY) | Comments |
|---|---|---|---|
| Land Under Waters of the US/WOTUS | Permanent | 4263 SF, 379 CY | Impacts to Land Under Waters of the US (WOTUS) is the result of restoring the stream channel to pre-existing conditions. |
| Vegetated Wetlands | Temporary<br>Permanent | 1666 SF temp<br>662 SF perm | Impacts to Vegetated Wetlands bordering on Reservoir Brook to create improved hydrologic connection and compensatory flood storage, and for temporary placement of timber mats for Project site access. |
| Inland Bank/OHW | Permanent | 630 LF | Impacts to Bank/OHW are a result of installation of the new culvert and filling of LUW to realign the stream channel. 602 lf of impacts to inland bank/OHW are the result of the re-alignment and naturalization of the rip-rap channel created by the City when the residential structure at address 208 Pleasant Street was removed. |

### 4.5 Sediment Sampling Plan

On December 31, 2025, a Sediment Sampling Plan was submitted to DEP to support the Dredge Water Quality Certification (BRP WW 08 - Minor Project Certification) as the proposed work will result in excavation within Waters of the United States (WOTUS) within the commonwealth in excess of 100 cubic yards of material. The Sediment Sampling Plan was approved by DEP on February 11, 2026. On March 10, 2026, sediment sampling was conducted in the field in accordance with the approved plan. A copy of the **Sediment Sampling Plan**, including sample methodology and sample locations, can be found in **Attachment I.**

Lab results from the sediment sampling can be found in **Attachment J -Sediment Analysis**. Please refer to **Special Provisions** 181.11-14 **in Attachment H** for dredged material disposal.

Work activities will also include handling and management of upland soils excavated to create the flood storage area. Soil removed from the area shall not be assumed to be uncontaminated and will be evaluated prior to off-site management for potential contamination with hazardous materials. No soils will be disposed of off-site without proper assessment by the contractor and approval from the Project Licensed Site Professional and Resident Engineer. Excavated soils will be managed in accordance with **Special Provisions** 148.01 and 181.11-14 (**Attachment H**).

## 5. Alternatives Analysis

This section provides a discussion of the site selection process implemented and a summary of the alternative project layouts considered during the design process for this site. An analysis on different bridge replacement structures to evaluate different options to satisfy MassDOT criteria and improve traffic safety was conducted. The evaluation considered key constraints including access, safety, topography, utilities, hydraulics, surficial geology, constructability, and impacts to wetland resource areas.

- Alternative 1: No Build

  Under this alternative, the existing plastic pipe would remain in place. This is not viable as the plastic pipe is not meant to withstand another large storm. This was a temporary solution and not robust enough to remain in place long term.

- Alternative 2: Large culvert or bridge structure that meets MA Stream Crossing Standards

  This alternative was rejected due to flooding concerns. The condominium building directly downstream of this location often experiences flooding. Therefore, adding a larger hydraulic opening, passing additional flows could exacerbate this flooding. Additionally, replacing this structure with a structure meeting the optimal Stream Crossing Design Standards would result in significant roadway/intersection realignment (and property impacts) at the Colburn Street interchange.

- Alternative 3 (Originally Proposed): Culvert Replacement matching existing opening in-kind.

This alternative was originally proposed in the March 2025 joint 401/404 application before the Project scope was expanded. This alternative would replace the collapsed box culvert in-kind with the original culvert and would not address or mitigate for future flood events.

- Alternative 4 (Preferred): Upgraded culvert that improves the crossing over the existing conditions

  This alternative is preferred as it replaces the original culvert in the same location but increases the flow capacity and improves the crossing conditions to the maximum extent practicable while mitigating for flood risk to downstream areas. By increasing the culvert opening, this alternative allows a greater openness ratio and includes streambed material to the culvert, in greater compliance with the Stream Crossing Standards as practicable, while providing downstream compensatory flood storage, resource area restoration, and replication to accommodate greater flows during peak and high-flow events. While the upgraded crossing cannot meet the Stream Crossing Standards entirely, this alternative balances the stream crossing improvements against the site constraints and flood potential, while remaining compliant with the existing roadway layouts.

  This alternative limits construction impacts and permanent easements to abutting residents.

## 6. Anticipated Construction Sequencing

The following sequence is a general overview of the proposed project, however, this may be modified as the project design advances during construction. Ultimately the means and methods are up to the contractor.

- Install erosion controls including floating silt fence
- Install control of water system upstream and downstream including bypass pipe. The bypass pipe shall be installed using a weekend nighttime closure
- Cut and cap existing gas line.
- Close the road and implement detour plan
- Dewater the work area using pumps and sedimentation basin
- Excavate and install culvert pieces including downstream headwall/wingwalls, and any downstream culvert pieces required to support temporary utility moves
- Reroute utilities (water and sewer) atop newly installed downstream culvert sections
- Excavate and remove the existing temporary 36" CPP which currently carries stream flow
- Excavate and install remaining culvert sections
- Form and pour concrete for upstream headwall and wingwalls
- Backfill culvert sections, restore disturbed streambed (US&DS), regrade upstream embankments, install riprap slope in front of wingwalls
- Remove control of water measures to restore streamflow through new culvert
- Install control of water system downstream of Pleasant Street for flood storage and wetland replication work
- Conduct downstream excavation work in Wetland A and Wetland Replication areas
- Conduct downstream excavation and regrading upstream of Wetland B
- Conduct streambed restoration within Reservoir Brook between Wetland A and Wetland B
- Remove control of water measures to restore streamflow through the Reservoir Brook channel

- Install proposed drainage structures
- Reroute utilities to their final locations
- Place sidewalks
- Install traffic safety features over culvert and at culvert approaches
- Final paving and striping
- Open the road to traffic
- Reseed disturbed areas
- Remove erosion control measures once seeding has been established

# 7. Stormwater Management

The roadway is served by a storm drain system that captures runoff in a catch basin/drain manhole/concrete piping system which conveys the runoff directly to Reservoir Brook. A catch basin is located at the north side of Pleasant Street near the intersection with Colburn Street. Another catch basin was located on the south side of the roadway but was washed away during the 2023 storm event. This catch basin on the south side of the roadway is proposed to be replaced. Both catch basins will no longer discharge directly into the brook but will provide water quality treatment such as deep sumps and will redirect discharge to areas on the slope. Refer to **Attachment G – Stormwater Management Report** for a detailed description of how the Project complies with Section 401 of the Clean Water Act, including the Stormwater Standards pursuant to 314 CMR 9.00.

# 8. Stream Crossing Standards

The proposed project design complies with the Massachusetts Stream Crossing Standards to the maximum extent practicable given the site constraints at this crossing.

- *Spans: (bridges, 3-sided box culverts, open-bottom culverts or arches) that preserve the natural stream channel are strongly preferred*.

  The pre-existing and proposed structures are box culverts. However, the proposed replacement culvert will be enlarged and will allow for one foot of embedded streambed material over two feet of riprap throughout the length of the crossing. (Meets Standard to the Maximum Extent Practicable).

- *Embedment: If a culvert, then it should be embedded • a minimum of 2 feet for all culverts, a minimum of 2 feet and at least 25 percent for round pipe culverts*

  The proposed culvert will be embedded a total of three feet, with one foot of streambed material over two feet of stabilizing riprap material. (Meets the Standard to the Maximum Extent Practicable).

- *Spans channel width (a minimum of 1.2 times the bankfull width).*

  According to field measurements, the bankfull width of Reservoir Brook is 12.4-feet. To meet this Standard, the crossing would need to be approximately 15-feet wide. The proposed culvert

will be 8 feet, 4 inches wide due to site constraints around the Pleasant Street and Colburn Street roadway layouts. (Does Not Meet Standard)

- *Natural bottom substrate within the structure.*

  One foot depth of natural streambed material is proposed to be placed within the bottom of the structure over two feet of stabilizing riprap material. The improved culvert will be embedded a total of three feet below the streambed surface through the length of the culvert. (Meets the Standard).

- *Designed with appropriate bed forms and streambed characteristics so that water depths and velocities are comparable to those found in the natural channel at a variety of flows.*

  The proposed streambed immediately upstream and downstream of the culvert will be restored with appropriate natural streambed material to match pre-existing conditions and characteristics to the maximum extent practicable, and streambed material will be installed within the culvert through the entire length. (Meets Standard)

- *Openness> 0.82 feet (0.25 meters).*

  The openness ratio falls below the optimal .82 feet (8'-4"x4' / 84'-1.5" = 0.39). (Does Not Meet Standard)

- *Banks should be present on each side of the stream matching the horizontal profile of the existing stream and banks.*

  The Bank of Reservoir Brook will be restored to its pre-existing conditions to the maximum extent practicable, matching the horizontal profile. (Meets Standard)

# 9. Avoidance and Mitigation Measures

## 9.1 Construction Best Management Practices

The proposed project has been designed to incorporate construction Best Management Practices (BMPs) to ensure adequate protection to jurisdictional areas within the project limits. This will be achieved specifically by limiting alteration within resource areas to the maximum extent practicable. Disturbed areas within affected resources will be stabilized and restored following the completion of project activities.

### 9.1.1 Erosion and Sedimentation Control

The project incorporates accepted erosion control practices to minimize and mitigate adverse impacts to the adjacent wetland resource areas during project activities. Prior to the start of work, an erosion control barrier consisting of compost filter tubes or equivalent will be installed at the down-gradient limits of work.

The erosion control barrier will be inspected after every storm event. Any sediment that collects behind the barrier will be removed and will be either reused at the site or disposed of at a suitable off-site location. Any damaged sections of the barrier will be repaired or replaced with appropriate erosion controls measures from the stockpile maintained on site during construction. The barrier will be maintained until the site has been stabilized following the completion of the project.

Erosion control blankets consisting of jute mesh or equivalent will be installed over all disturbed soils within the wetland replication area and flood storage areas after seeding. A silt curtain shall be installed downstream within the City owned property during construction to capture any incidental sediment from travelling downstream.

#### 9.1.2 Dewatering

All material excavated from the stream channel will be dewatered, covered, and stored on-site until it is ready to be either re-used or disposed of in accordance with applicable state and local regulations and MassDOT **Special Provisions** 148.01 and 181.11-14. All dredging will occur within water control structures (i.e., floating silt fence or sandbags) and water will be pumped in order to create a dry condition within the section of work area. A Control of Water plan has been established for the Project and is included in **Attachment K – Site Plans** and Items 991.1 and 991.12 of **Attachment H - Special Provisions**. Excavated materials will be stored on site in an adequately protected containment area, covered, and then either disposed of off-site or re-used during construction.

#### 9.1.3 Timber Matting

Timber matting will be deployed in areas where construction equipment will require access to operate within the limits of Vegetated Wetlands, to protect soils and prevent compaction and rutting. Timber mats will be placed tightly together perpendicular to drainage flow directions and shall be spread evenly to ensure direct contact with the soil at all points of the mat. Matting will be inspected prior to installation to ensure each mat is clean and free of invasive vegetation and seeds. Timber mat installation, maintenance, and removal can be found in Special Provision 767.91 of **Attachment H**.

#### 9.1.4 Construction Stockpiling and Staging Areas

All stockpile and staging areas will be located within the existing roadway layout or within MassDOT approved locations; and while locations are to be determined by the Contractor, they will all require approval by MassDOT prior to use. In the event stockpiled materials must be left on site overnight, the piles will be covered with tarps and surrounded by sediment control measures (e.g. compost filter tubes). Staging and storage areas will be outside of all jurisdictional resource areas where feasible and practicable.

### 9.2 Minimization and Avoidance Measures

In addition to the Construction Best Management Practices, the Project has been designed with key avoidance, minimization, and mitigation measures, including:

- Reconfiguration of stormwater system outfalls to riprapped upland areas to avoid discharges directly into Jurisdictional Resources.

- Creation of a flood storage area to minimize downstream flooding during high-flow periods and mitigate increased peak flows downstream of the upgraded box culvert.

- Establishment of a wetland replication area to mitigate permanent Vegetated Wetland impacts created by the stream restoration activities, with greater hydrologic connectivity to flood storage areas.

#### 9.2.1 Flood Storage Area

The project proposes to construct a flood storage area along the river right bank of Reservoir Brook, immediately downstream of the crossing. Existing grades within the upland area adjacent to the stream will be lowered to create a flat floodplain shelf capable of receiving overflow waters during high and peak flow conditions. The floodplain area is designed to attenuate downstream flooding relative to existing conditions. The flood storage area will be topographically located approximately two feet above the low flow channel elevation of Reservoir Brook and will extend approximately 42 feet from the stream bank toward Colburn Street. The created floodplain feature will be seeded with a Wetland Seed - Seasonally Flooded seed mix in accordance with **Special Provision Item** 765.554 in **Attachment H**.

#### 9.2.2 Wetland Replication Area

The Project proposes to construct a 672 square foot wetland replication area to replicate the 662 square foot Vegetated Wetland area that will be permanently impacted as a result of the Project. The wetland mitigation area is proposed along the river right bank of Reservoir Brook at the base of the larger flood storage area. The replication area is designed to be hydrologically connected to the Reservoir Brook and to function in a manner similar to the vegetated wetland that will be permanently impacted. Topographic positioning of the wetland replication area will allow for surficial connectivity to Reservoir Brook. The replication area will receive surficial flows when stream flows exceed bank full width and is positioned such that newly planted area will be protected from in-flooding and prolonged standing water. The surface elevation of the replication area will be set within one foot of the low flow elevation of the streambed channel to maintain groundwater connectivity during periods of low flow within Reservoir Brook.

The wetland replication area will be hydraulically connected to Reservoir Brook. The wetland replication area will be excavated under the supervision of a professional wetland scientist and backfilled with high organic content loam consistent with Item 755.35 in **Attachment H – Special Provisions**. The surface of the replication area will be fine graded to create micro-topography and woody debris will be added to the surface to create habitat features and encourage nutrient retention. The planting schedule for the wetland replication area has been designed to reflect existing wetland plant communities present within the Project area while prioritizing habitat function, ecological value, plant availability, and soil stabilization. Proposed plantings include red maple (*Acer rubrum*), black willow (*Salix nigra*), speckled alder (*Alnus incana*), silky dogwood (*Cornus amomum*), buttonbush (*Cephalanthus occidenatlis*), and winterberry (*Ilex verticillata*), to be planted in conjunction with a riparian wetland seed mix. Please see **Attachment K – Site Plans** for cross sections and replication area details.

Wetland soils excavated from Wetland A may be reused for establishment of the wetland replication area at the discretion of the approved Wetland Scientist and Resident Engineer if the soils are free from

infestation of invasive plant species and preserved in their original soil structures. Imported soils or soil amendments may be used subject to the approval of the approved Wetland Scientist and Resident Engineer and shall meet the requirements of Special Provision 755.35 (**Attachment H**).

A bioengineered bank is proposed to create an interface between the streambed and the replication area. The bioengineered bank will consist of an embedded coir log with a 6-inch reveal above final surface-level. The coir log bank will be planted with live-cutting stakes consisting of black willow (*Salix nigra*) or a similar native species in accordance with **Special Provisions** 767.122 and 799.775 (**Attachment H**) to establish a fast-growing root anchor.

Following seeding, wetland soils within the replication area will be stabilized using an erosion control blanket to prevent erosion from flood waters until native seedings and plant roots have established. The erosion control blanket will be toed-in at the coir log bank to ensure stability until root masses are fully established.

The wetland replication area will be monitored by a qualified wetland scientist for a period of two growing seasons following construction. Annual written wetland replication monitoring reports will be submitted to MassDEP.

Refer to the Wetland Replication Plans and specifications, included in **Attachment K – Site Plans** and **Attachment H – Special Provisions**.

# 10. Compliance

The Project will require work within jurisdictional wetland resource areas and WOTUS. As demonstrated below, the proposed work complies with applicable evaluation criteria for discharges of dredged or fill material (314 CMR 9.06(2)).

## 10.1 Compliance with 314 CMR 9.06

1. *314 CMR 9.06(1) (in part) - No discharge of dredge or fill material shall be permitted if there is a practicable alternative to the proposed discharge that would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences …*

As discussed in Section 5.0, an alternatives analysis was completed to demonstrate there is no practicable alternative to the proposed discharge that would have less adverse impact on the aquatic ecosystem. Additionally, as discussed in Section 3.0, the purpose of the Project is to replace a box culvert which was critically damaged during a flood event and create additional flood storage capacity immediately downstream of the crossing.

2. *314 CMR 9.06(2) - No discharge of dredged or fill material shall be permitted unless appropriate and practicable steps have been taken which will avoid and minimize potential adverse impacts to the bordering or isolated vegetated wetlands, land under the water or ocean, or the intertidal zone. For discharges to bordering or isolated vegetated wetlands, such steps shall include a minimum of 1:1 restoration or replication. The Department may waive the requirement for 1:1*

*restoration or replication for projects which will restore or otherwise improve the natural capacity of any wetland or other water of the Commonwealth pursuant to 314 CMR 9.06(8). However, no such project may be permitted which will have any adverse effect on specified habitat sites of rare vertebrate or invertebrate species as specified in 310 CMR 10.00.*

The Project has been designed to minimize impacts to resource areas to the maximum extent practicable. Wetland replication will be provided for unavoidable discharges of fill to Vegetated Wetlands (i.e., WOTUS). In compliance with 314 CMR 9.06(2)(a), MassDOT proposes wetland replication of 1:1 to replace 662 sf of vegetated wetland loss. The Project is not located within NHESP mapped Estimated or Priority Habitat of rare vertebrate or invertebrate species.

3. *314 CMR 9.06(3)(a) through (k) (in part) – No discharge of dredged or fill material shall be permitted to Outstanding Resource Waters, except for the activities specified in 314 CMR9.06(3)(a) through (k), which remain subject to an alternatives analysis and other requirements of 314 CMR 9.06 and/or 314 CMR 9.07 …*

The Project is not located within or in proximity to Outstanding Resource Waters.

4. *"The discharge of dredged or fill material into wetlands or waters of the Commonwealth within 400 feet of the high water mark of a Class A surface water (exclusive of tributaries) requires a variance issued by the Department pursuant to 314 CMR 9.08 unless the discharge of dredged or fill material is associated with an activity conducted by a public water system under 310 CMR 22.00: Drinking Water or by a public agency or authority for the maintenance or repair of existing public roads or railways. The discharge of dredged or fill material to a vernal pool certified by the Division of Fisheries and Wildlife required a variance pursuant to 314 CMR 9.08."*

The Project and related work are not within 400 feet of the high water mark of a Class A surface water.

5. *"No discharge of dredged or fill material is permitted for the impoundment or detention of stormwater for purposes of controlling sedimentation or other pollutant attenuation. Discharge of dredged or fill material may be permitted to manage stormwater for flood control purposes only where there is no practicable alternative and provided that best management practices are implemented to prevent sedimentation or other pollution. No discharge of dredged or fill material is permitted for the impoundment or detention of stormwater in Outstanding Resource waters for any purpose."*

The Project does not propose any discharge of dredge or fill material for the impoundment or detention of stormwater for purposes of controlling sedimentation or other pollutant attenuation.

6. *"Except as otherwise provided in 314 CMR 9.06, stormwater discharges shall be provided with best management practices to attenuate pollutants and to provide a setback from the receiving water or wetlands in accordance with [ten] Stormwater Management Standards as further defined and specified in the Massachusetts Stormwater Handbook,"*

The Project is a redevelopment Project which will comply with the MassDEP Stormwater Standards to the maximum extent practicable. The **Stormwater Management Report** for the Project is included in **Attachment G**.

7. *"No discharge of dredged or fill material shall be permitted in the rare circumstances where the activity meets the criteria for evaluation but will result in substantial adverse impacts to the physical, chemical, or biological integrity of surface Waters of the Commonwealth."*

As discussed in this narrative, the Project is not anticipated to have substantial adverse impacts to the physical, chemical, or biological integrity or function of the surrounding surface Waters of the Commonwealth. The Project has been designed to limit impacts to resource areas to the maximum extent practicable and appropriate mitigation is provided to offset the proposed impacts.

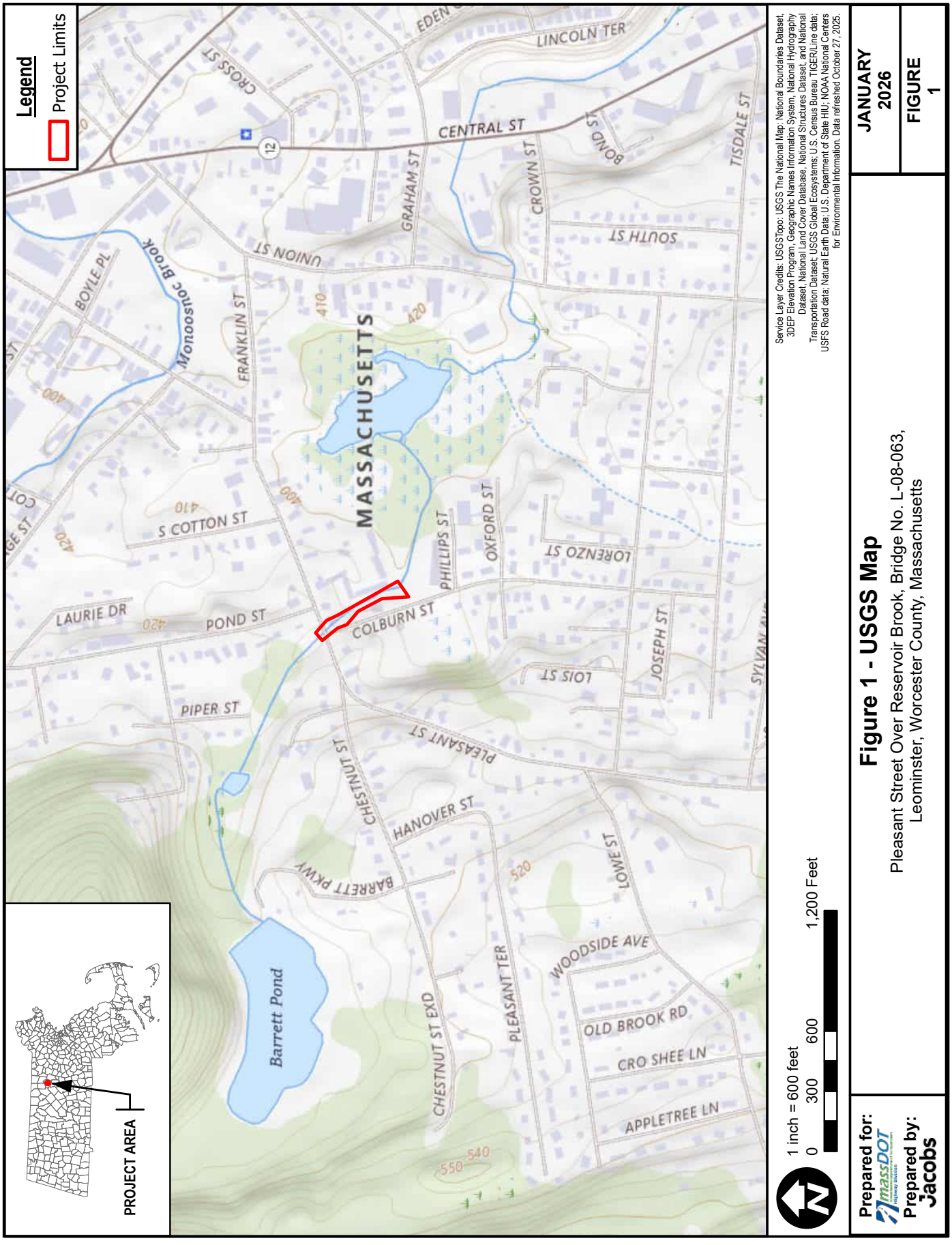
# 11. Summary

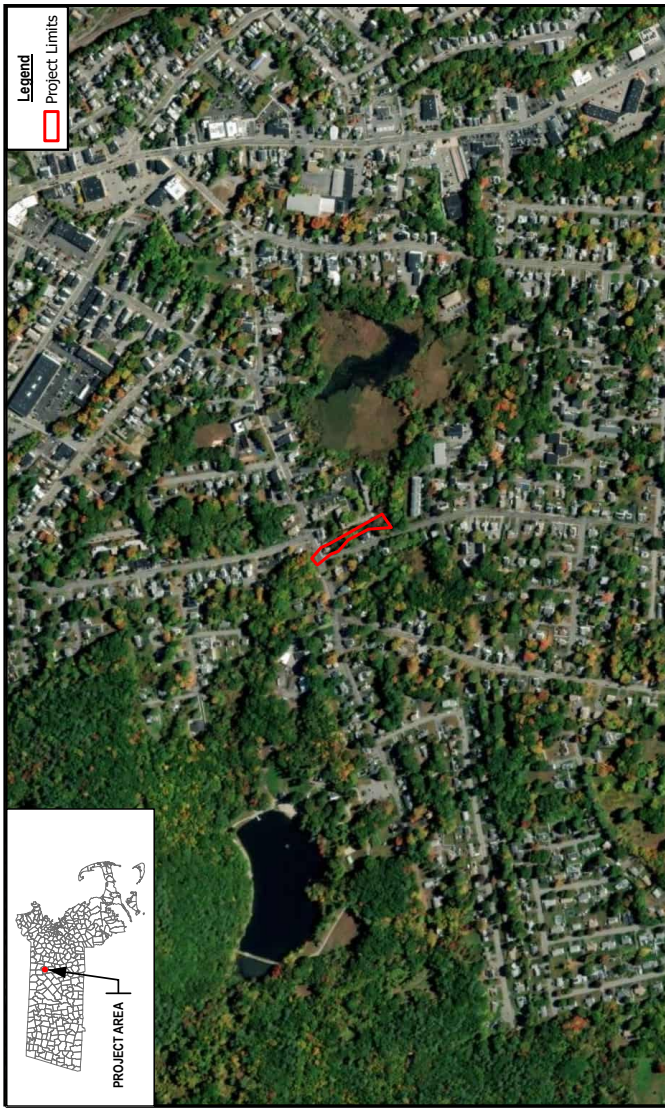
In 2023, a flooding event resulted in the blowout of a culvert which carries Reservoir Brook under Pleasant Street. The critical damage to the street, culvert, and adjacent residential structure at 208 Pleasant Street caused erosion and sediment deposition that re-aligned Reservoir Brook immediately downstream. MassDOT is proposing to replace the culvert with a permanent solution, re-align the stream to a more natural alignment, and create additional flood storage capacity immediately downstream. The design approach taken was to first avoid impacts to WOTUS where feasible, and where unavoidable, to minimize the impacts to the extent practicable and mitigate where applicable.

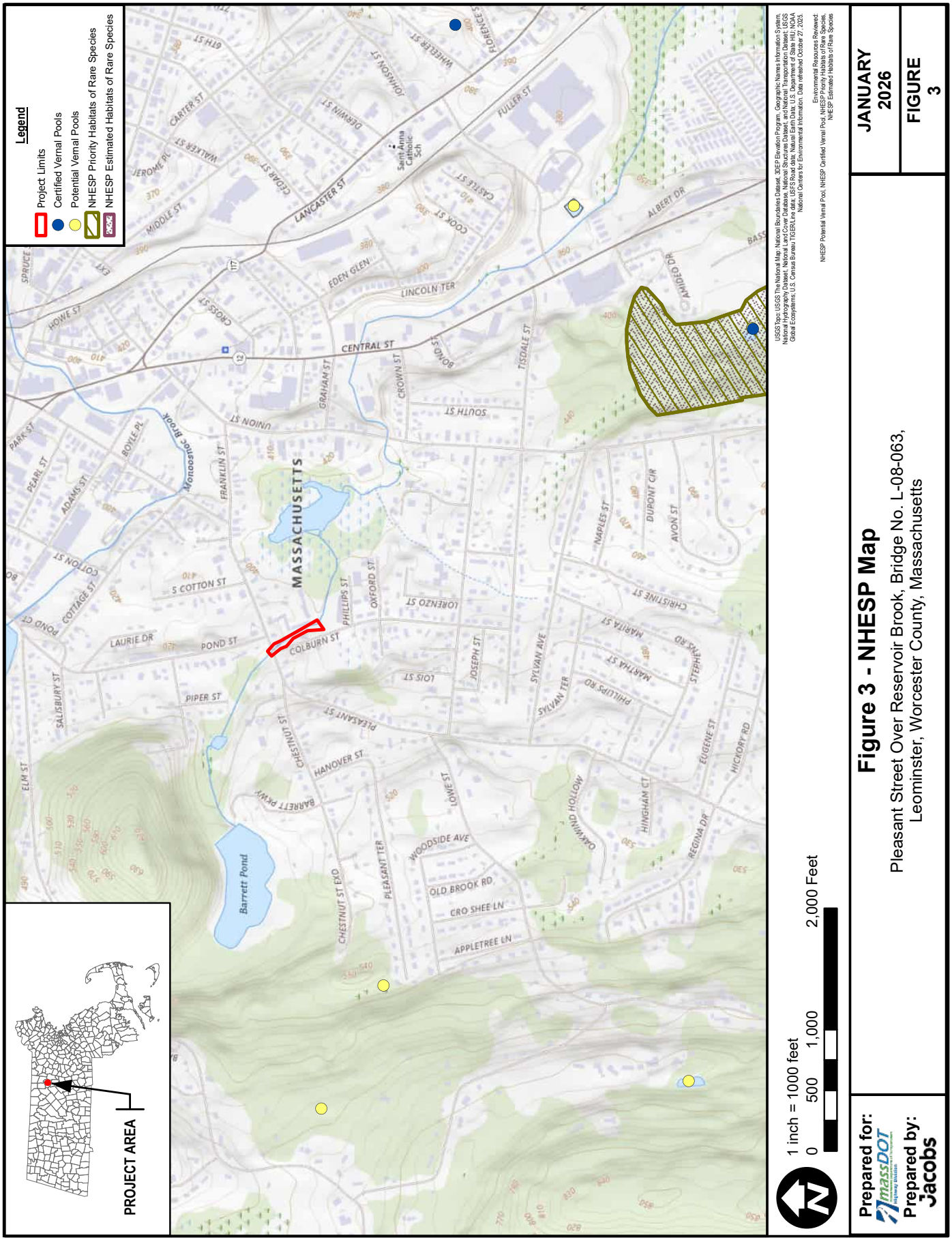
Throughout the project design process, the project team has carefully considered development alternatives and has moved forward with the alternative that has the least impact to WOTUS while satisfying the project goals. Reasonable measures have been taken to avoid, minimize, and mitigate potential adverse impacts.

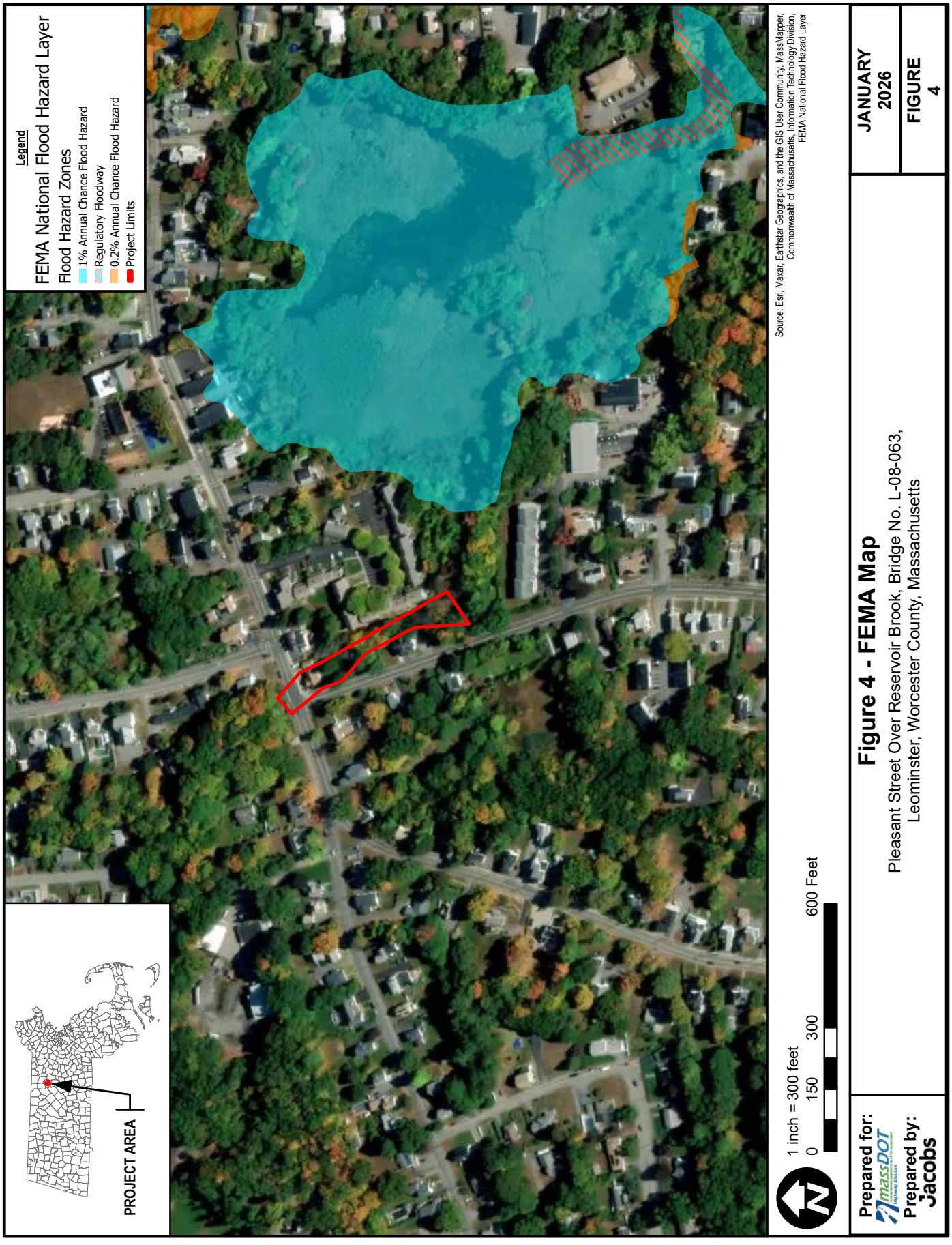
# Attachment B - Figures

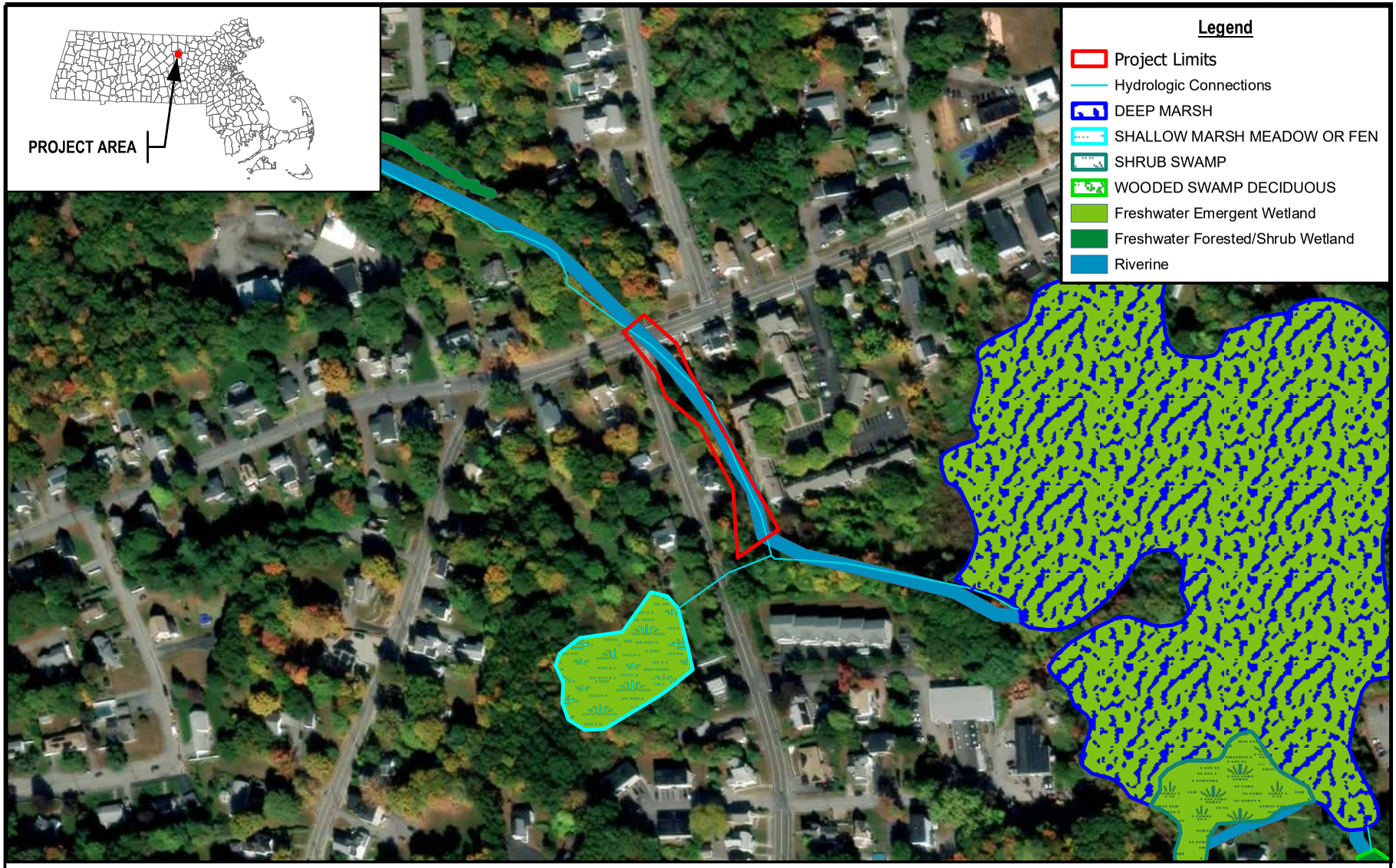
- USGS Site Locus Map
- Aerial Map
- Natural Heritage and Endangered Species Map
- FEMA/FIRM Map
- Critical Resources Map
- Historic Aerial Imagery of Project Site


Legend
Project Limits
PROJECT AREA
MASSACHUSETTS
Barrett Pond
Monoosnoc Brook
CENTRAL ST
LINCOLN TER
CROSS ST
EDEN
GRAHAM ST
CROWN ST
BOND ST
TISDALE ST
SOUTH ST
UNION ST
BOYLE PL
FRANKLIN ST
S COTTON ST
LAURIE DR
POND ST
PIPER ST
COLBURN ST
PHILLIPS ST
OXFORD ST
LORENZO ST
LOIS ST
JOSEPH ST
SYLVAN
PLEASANT ST
CHESTNUT ST
HANOVER ST
BARRETT PKWY
LOWE ST
WOODSIDE AVE
PLEASANT TER
CHESTNUT ST EXD
OLD BROOK RD
CRO SHEE LN
APPLETREE LN
410
420
400
520
540
550
12
1 inch = 600 feet
0 300 600 1,200 Feet
Service Layer Credits: USGSTopo: USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road data; Natural Earth Data; U.S. Department of State HIU; NOAA National Centers for Environmental Information. Data refreshed October 27, 2025.
Figure 1 - USGS Map
Pleasant Street Over Reservoir Brook, Bridge No. L-08-063,
Leominster, Worcester County, Massachusetts
Prepared for: massDOT Highway Division
Prepared by: Jacobs
JANUARY 2026
FIGURE 1


Legend
Project Limits
PROJECT AREA


Legend
Project Limits
Certified Vernal Pools
Potential Vernal Pools
NHESP Priority Habitats of Rare Species
NHESP Estimated Habitats of Rare Species
PROJECT AREA
MASSACHUSETTS
Barrett Pond
Saint Anna Catholic Sch
1 inch = 1000 feet
0
500
1,000
2,000 Feet
USGS Topo; USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; U.S. Department of State Publication 10, Publications of the Board on Geographic Names; National Centers for Environmental Information. Data refreshed October 27, 2025.
Environmental Resources Reviewed:
NHESP Potential Vernal Pool, NHESP Certified Vernal Pool, NHESP Priority Habitats of Rare Species, NHESP Estimated Habitats of Rare Species
Figure 3 - NHESP Map
Pleasant Street Over Reservoir Brook, Bridge No. L-08-063,
Leominster, Worcester County, Massachusetts
Prepared for:
massDOT
Highway Division
Prepared by:
Jacobs
JANUARY 2026
FIGURE 3


Legend
FEMA National Flood Hazard Layer
Flood Hazard Zones
1% Annual Chance Flood Hazard
Regulatory Floodway
0.2% Annual Chance Flood Hazard
Project Limits
PROJECT AREA
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community, MassMapper, Commonwealth of Massachusetts, Information Technology Division, FEMA National Flood Hazard Layer
1 inch = 300 feet
0
150
300
600 Feet
Figure 4 - FEMA Map
Pleasant Street Over Reservoir Brook, Bridge No. L-08-063,
Leominster, Worcester County, Massachusetts
Prepared for:
massDOT
Highway Division
Prepared by:
Jacobs
JANUARY 2026
FIGURE 4




Prepared for: massDOT Highway Division

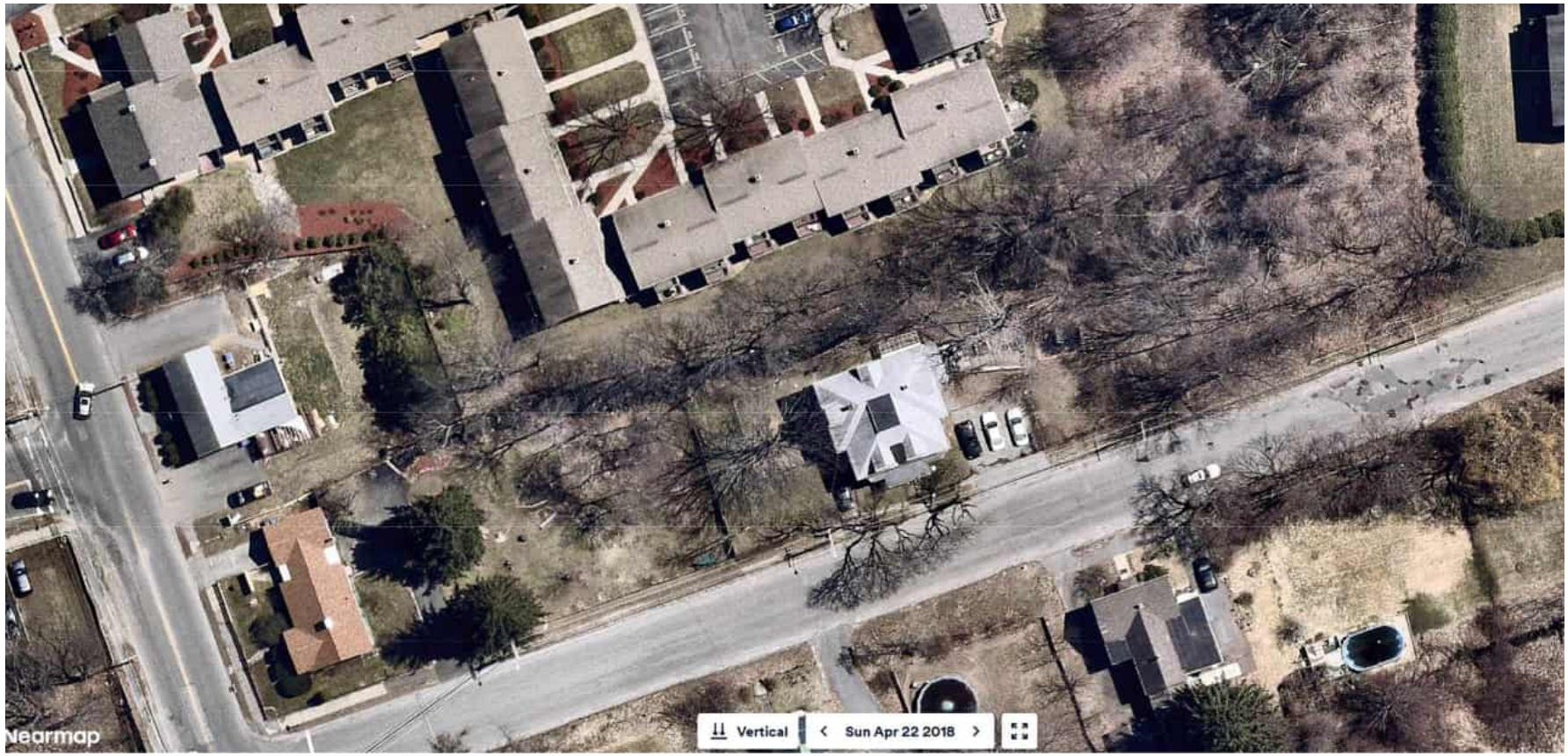
Prepared by: Jacobs

# Figure 5 - Critical Resources Map

Pleasant Street Over Reservoir Brook, Bridge No. L-08-063,
Leominster, Worcester County, Massachusetts

JANUARY 2026

FIGURE 5




*Date taken:* April 22, 2018



A00830 - 51

Proposal No. 616375-136648




*Date taken:* *April 3, 2021*



A00830 - 52

Proposal No. 616375-136648

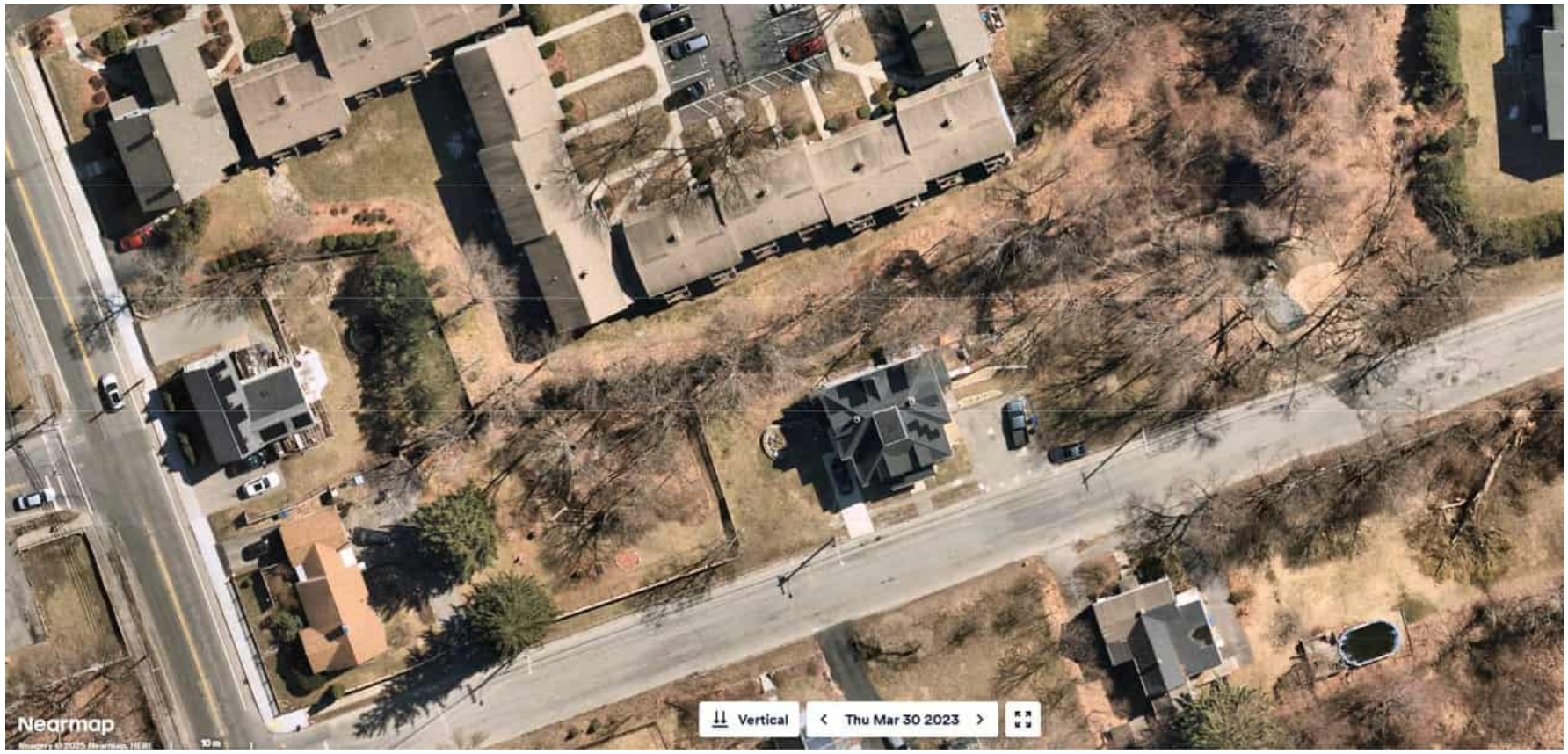



*Date taken:* *March 30, 2022*



A00830 - 53

Proposal No. 616375-136648




*Date taken:* *March 30, 2023*



A00830 - 54

Proposal No. 616375-136648




*Date taken:* *April 17, 2024*



A00830 - 55

Proposal No. 616375-136648




*Date taken:* *April 10, 2025*



A00830 - 56

Proposal No. 616375-136648

# Attachment C – Wetland Resource Evaluation

June 23, 2025

William Tirrell, PLS
Chappell Engineering Associates
201 Boston Post Road West, Suite 101
Marlborough, MA 01752

RE: Wetland Resource Evaluation, Pleasant Street Culvert (near #208-219 Pleasant St.), Leominster, MA.

Dear Mr. Tirrell:

On September 30, 2024, and June 2, 2025, EcoTec, Inc. inspected the area in the vicinity of the existing Reservoir Brook culvert located at 208 and 219 Pleasant Street in Leominster (see attached locus) for the presence of wetland resources as defined by: (1) the Massachusetts Wetlands Protection Act (M.G.L. Ch. 131, § 40; the "Act") and its implementing regulations (310 CMR 10.00 *et seq.*; the "Regulations"); (2) the U.S. Clean Water Act (i.e., Section 404 and 401 wetlands); and (3) the Lexington Wetland Protection Code (Chapter 130; the "Bylaw"). Kate O'Donnell, WPIT conducted the inspection.

The subject site consists of the Reservoir Brook culvert and areas proximate to the culvert located at 192, 208, and 219 Pleasant Street in Leominster (see attached locus). The upland portions of the site consist of the Pleasant Street roadway, existing single-family homes, an existing condominium complex, paved driveways and parking areas, lawn, landscaped areas, and undeveloped forested land. Plant species observed include black locust (*Robinia pseudoacacia*), red maple (*Acer rubrum*), sugar maple (*Acer saccharum*), northern red oak (*Quercus rubra*), black cherry (*Prunus serotina*), black birch (*Betula lenta*), Norway maple (*Acer platanoides*), tree-of-heaven (*Ailanthus altissima*) and apple (*Pyrus malus*) trees and/or saplings; oriental bitter-sweet (*Celastrus orbiculata*) and Virginia creeper (*Parthenocissus quinquefolia*) climbing woody vines; honeysuckle (*Lonicera sp*.), multiflora rose (*Rosa multiflora*), and Japanese barberry (*Berberis thunbergii*) shrubs; and ground ivy (*Glecoma hederacea*), white clover (*Trifolium repens*), wild sarsaparilla (*Aralia nudicaulis*), bracken fern (*Pteridium aquilinum*), feather false-Solomon's-seal (*Smilacina racemosa*), and common dandelion (*Taraxacum officinale*) ground cover. The wetland resources observed on the site are described below.

**Methodology**
The site was inspected, and areas suspected to qualify as wetland resources were identified. The boundaries of Bordering Vegetated Wetlands and, in the absence of Bordering Vegetated

Wetlands, Bank was delineated in the field in accordance with the definitions set forth in the regulations at 310 CMR 10.55(2)(c) and 310 CMR 10.54(2). Section 10.55(2)(c) states that "The boundary of Bordering Vegetated Wetlands is the line within which 50% or more of the vegetational community consists of wetland indicator plants and saturated or inundated conditions exist." Section 10.54(2)(c) states that "The upper boundary of Bank is the first observable break in the slope or the mean annual flood level, whichever is lower." The methodology used to delineate Bordering Vegetated Wetlands is further described in the *Massachusetts Handbook for Delineation of Bordering Vegetated Wetlands*, Second Edition, produced by the Massachusetts Department of Environmental Protection, dated September 2022.The plant taxonomy used in this report is based on the *National List of Plant Species that Occur in Wetlands: Massachusetts* (Fish and Wildlife Service, U.S. Department of the Interior, 1988). Federal wetlands were presumed to have boundaries conterminous with the delineated Bordering Vegetated Wetlands and Bank. One set of DEP Bordering Vegetated Wetland Delineation Field Data Forms completed for observation plots located in the wetlands and uplands near flag A5 is attached. The table below provides the Flag Numbers, Flag Type, and Wetland Types and Locations for the delineated wetland resources.

| Flag Numbers | Flag Type | Wetland Types and Locations |
|---|---|---|
| Start A1 to A10 Stop<br>(A1 Connects to RB10.5)<br>(A10 connects to RB2) | Blue Flags | Boundary of Bordering Vegetated Wetlands located in the central portion of the site that is associated with an mapped perennial stream, Reservoir Brook. |
| Start B1 to B14 Stop<br>(culvert between B9-B11) | Blue Flags | Boundary of Bordering Vegetated Wetlands located in the southwestern portion of the site that is associated with an mapped perennial stream, Reservoir Brook and an unmapped intermittent stream. |
| Start C1 to C23 Stop | Blue Flags | Boundary of Bordering Vegetated Wetlands located in the southeastern portion of the site that is associated with an mapped perennial stream, Reservoir Brook. |
| Start D1 to D31 Stop | Blue Flags | Boundary of Bordering Vegetated Wetlands located in the southeastern portion of the site that is associated with an mapped perennial stream, Reservoir Brook. |
| Start E1 to E7 Stop<br>(E1 connect to RA36) | Blue Flags | Boundary of Bordering Vegetated Wetlands located in the northwestern portion of the site that is associated with an mapped perennial stream, Reservoir Brook. |
| Start F1 to F6 Stop | Blue Flags | Boundary of Bordering Vegetated Wetlands located in the northwestern portion of the site that is associated with an mapped perennial stream, Reservoir Brook. |
| Start RA1 to RA48 Stop<br>(RA15+RA16 Connect to Culvert) | Red Flags | Mean Annual High-water Line (MAHWL)/Top of Bank of Reservoir Brook located in the northern portion of |

| | | |
|---|---|---|
| | | the site. |
| Start RB1 to RB60 Stop (RB11 stop connect to RC stream, RB12 start) | Red Flags | Mean Annual High-water Line (MAHWL)/Top of Bank of Reservoir Brook located in the southern portion of the site. |
| RC1 @ Pleasant Street culvert ****surveyors should locate edge of riprap/bank of recently daylighted channel between RC1 and RB11-12** | Red Flags | **Surveyors should locate** Mean Annual High-water Line (MAHWL)/Top of Bank of the recently daylighted portion of Reservoir Brook located in the central portion of the site. |
| Start RD1 to RD36 Stop (RD36 connect to RB1) | Red Flags | Mean Annual High-water Line (MAHWL)/Top of Bank of Reservoir Brook located in the southeastern portion of the site. |
| Start RE1 to RE18 Stop (RE18 connect to RA1) | Red Flags | Mean Annual High-water Line (MAHWL)/Top of Bank of Reservoir Brook located in the northwestern portion of the site. |

**Findings**

Bordering Vegetated Wetlands:

Wetland A (i.e., flags A1 – A9) consists of a wet meadow, located in the southern portion of the site, at the 208 Pleasant Street property that is associated with a perennial stream, Reservoir Brook. Plant species observed include red maple (*Acer rubrum*) and American elm (*Ulmus americana*) trees, saplings, and/or shrubs; and spotted touch-me-not (*Impatiens capensis*), aster (Aster sp.), beggar-tick's (Bidens sp.), false nettle (*Boehmeria cylindrica*) and smartweed (Polygonum sp.) ground cover.

Wetlands C and D (i.e. flags C1-C23 and D1-D31) consist of a wooded swamp, located in the southern portion of the site at the 192 Pleasant Street property that is associated with a perennial stream, Reservoir Brook. Plant species observed include red maple (*Acer rubrum*) and American elm (*Ulmus americana*) trees and/or saplings; poison ivy (*Toxicodendron radicans*) climbing woody vines; highbush blueberry (*Vaccinium corymbosum*), common winterberry (*Ilex verticillata*), arrow-wood (*Viburnum dentatum*), and silky dogwood (*Cornus amomum*) shrubs; and sensitive fern (*Onoclea sensibilis*), subarctic lady fern (*Athyrium filix-femina*), spotted touch-me-not (*Impatiens capensis*), and golden-rods (*Solidago sp*.) ground cover.

Wetlands E and F (i.e. flags E1-E7 and F1-F6) consist of a wooded swamp, located in the northern portion of the site at the 219 Pleasant Street property that is associated with a perennial stream, Reservoir Brook. Plant species observed include similar species to those listed above.

Evidence of wetland hydrology, including hydric soils, saturated soils, evidence of flooding, and drainage patterns, was observed within the delineated wetlands. These vegetated wetlands border a perennial stream, Reservoir Brook; accordingly, the vegetated wetlands would be regulated as Bordering Vegetated Wetlands and the perennial stream would be regulated as Bank and Land Under Water Bodies and Waterways under the Act. A 100-foot Buffer Zone

extends horizontally outward from the edge of Bordering Vegetated Wetlands and Bank under the Act and Bylaw.

Wetland B (i.e., flags B1 – B9) consists of a wooded swamp, located in the southern portion of the site, at the 192 Pleasant Street property that is associated with a perennial stream, Reservoir Brook. Plant species observed include similar species to those listed above. This vegetated wetland borders an intermittent stream and a perennial stream, Reservoir Brook; accordingly, the vegetated wetlands would be regulated as Bordering Vegetated Wetlands and the intermittent stream would be regulated as Bank, and the perennial stream would be regulated at Bank and Land Under Water Bodies and Waterways under the Act. A 100-foot Buffer Zone extends horizontally outward from the edge of Bordering Vegetated Wetlands and Bank under the Act and Bylaw.

Bordering Land Subject to Flooding:

Bordering Land Subject to Flooding is an area that floods due to a rise in floodwaters from a bordering waterway or water body. Where flood studies have been completed, the boundary of Bordering Land Subject to Flooding is based upon flood profile data prepared by the National Flood Insurance Program. Section 10.57(2)(a)3. states that "The boundary of Bordering Land Subject to Flooding is the estimated maximum lateral extent of flood water which will theoretically result from the statistical 100-year frequency storm." Based upon a review of the Flood Insurance Rate Map, Community Panel 2503140006B, Effective Date September 16, 1982, the site is mapped as Zone C, which is defined as areas of minimal flooding / areas located outside of the 0.2% annual chance flood (i.e., outside the 500-year floodplain). There is a mapped Zone B, which is defined as areas located within the 500-year floodplain, located in the southern portion of the site and to the south of the site. The project engineer should evaluate the most recent National Flood Insurance Program flood profile data to confirm the absence of Bordering Land Subject to Flooding on the site. Bordering Land Subject to Flooding would occur in areas where the 100-year flood elevation is located outside of or upgradient of the delineated Bordering Vegetated Wetlands or Bank boundary. Bordering Land Subject to Flooding does not have a Buffer Zone under the Act.

Riverfront Area:

The Massachusetts Rivers Protection Act amended the Act to establish an additional wetland resource area: Riverfront Area. Based upon a review of the current USGS Map (i.e., Fitchburg Quadrangle, dated 2024, attached), a stream, Reservoir Brook, that is shown as perennial is located at the site. Streams that are shown as perennial on the current USGS map are designated perennial under the Massachusetts Wetlands Protection Act regulations. Unless this perennial designation is overcome, Riverfront Area is presumed to extend 200 feet horizontally upgradient from the mean annual high-water line of the stream. Section 10.58(2)(a)2. states that the "Mean annual high-water line of a river is the line that is apparent from visible markings or changes in the character of soils or vegetation due to prolonged presence of water and that distinguishes between predominantly aquatic and predominantly terrestrial land. Field

indicators of bankfull conditions shall be used to determine the mean annual high-water line. Bankfull field indicators include but are not limited to: changes in slope, changes in vegetation, stain lines, top of pointbars, changes in bank materials, or bank undercuts." Section 10.58(2)(a)2.a. states that "In most rivers, the first observable break in slope is coincident with bankfull conditions and the mean annual high-water line." The mean annual high-water line of Reservoir Brook was delineated in the field with flags RA1 to RA32, RB1 to RB21, RC1, RD1-RD36, and RE1-RE18 based upon the above-referenced regulation. The reader should note that the mean annual high-water line of the stream at 219 Pleasant street could not be delineated on the date of the evaluation. Accordingly, the surveyors should locate the edge of the riprap bank/mean-annual high-water line of the apparently recently daylighted portion of the stream near 208 Pleasant Street.

Additionally, based upon a review of the current USGS Map and observations made during the site inspection, a stream that is not shown on the USGS Map is located in the southwestern portion of the property (within the B-flagging series). The watershed area for this stream at the site was determined to be 0.04 square miles, which is significantly less than 0.5 square miles (see attached watershed calculations). As such, the stream would be designated intermittent under the Massachusetts Wetlands Protection Act regulations.

Furthermore, based upon a review of the current USGS Map and observations made during the site inspection, there are no other mapped or unmapped streams located within 200 feet of the site. Accordingly, Riverfront Area on the site is associated only with the perennially designated stream, Reservoir Brook. Riverfront Area does not have a Buffer Zone under the Act but may overlap other wetland resources and their Buffer Zones. The site also contains areas of Riverfront Area that qualify as "previously developed" and "degraded" in accordance with the Regulations: "A previously developed riverfront area contains areas degraded prior to August 7, 1996 by impervious surfaces from existing structures or pavement, absence of topsoil, junkyards, or abandoned dumping grounds" [310 CMR 10.58(5)]. Degraded areas at the site include the existing buildings and pavement.

<u>Priority Habitats, Estimated Habitats, and Certified Vernal Pools:</u>

The Regulations require that no project may be permitted that will have any adverse effect on specified habitat sites of rare vertebrate or invertebrate species, as identified by procedures set forth at 310 CMR 10.59. Based upon a review of the *Massachusetts Natural Heritage Atlas*, 15th edition, Priority Habitats and Estimated Habitats from the NHESP Interactive Viewer, valid from August 1, 2021, and viewed on September 26, 2024, and Certified Vernal Pools from MassGIS, there are no Estimated Habitats [for use with the Act and Regulations (310 CMR 10.00 *et seq*.)], Priority Habitats [for use with Massachusetts Endangered Species Act (M.G.L. Ch. 131A; "MESA") and MESA Regulations (321 CMR 10.00 *et seq*.)], or Certified Vernal Pools on or in the immediate vicinity of the site. A copy of this map is attached.

The reader should be aware that the regulatory authority for determining wetland jurisdiction rests with local, state, and federal authorities. A brief description of my experience and qualifications is attached. If you have any questions, please feel free to contact me at any time.

Cordially,
ECOTEC, INC.



Kate O'Donnell, WPIT
EcoTec, Inc.

Attachments (14 pages)

KO/E/P/LeominsterPleasantStculvert_WetlandReport


Expanded Locus - apx
5.68 add'l acres
apx. 2024 original locus
apx. 1.6 acres - flagged
2024
Google Earth - Edit Polyg
Name:
Leominster 3rd limit
Description
Style, Color
Perimeter:
Area:

**BORDERING VEGETATED WETLAND DETERMINATION FORM**

Project/Site: Pleasant Street Culvert City/Town: Leominster Sampling Date: 9/30/2024

Applicant/Owner: N/A Sampling Point or Zone: A5 - UPLAND

Investigator(s): Kate O'Donnell, WPIT, EcoTec, Inc. Latitude / Longitude: 42.5202, -71.7671

Soil Map Unit Name: Sudbury NWI or DEP Classification: UPLAND

Are climatic/hydrologic conditions on the site typical for this time of year? Yes [✓] No [ ] (If no, explain in Remarks)

Are Vegetation [ ], Soil [ ], or Hydrology [ ] significantly disturbed? (If yes, explain in Remarks)

Are Vegetation [ ], Soil [ ], or Hydrology [ ] naturally problematic? (If yes, explain in Remarks)

**SUMMARY OF FINDINGS – Attach site map and photograph log showing sampling locations, transects, etc.**

| | | |
|---|---|---|
| Wetland vegetation criterion met? | Yes [ ] No [✓] | **Is the Sampled Area within a Wetland?** Yes [ ] No [✓] |
| Hydric Soils criterion met? | Yes [ ] No [✓] | |
| Wetlands hydrology present? | Yes [ ] No [✓] | |

Remarks, Photo Details, Flagging, etc.:

**HYDROLOGY**

| **Field Observations:** | | | |
|---|---|---|---|
| Surface Water Present? | Yes [ ] | No [✓] | Depth (inches)_____ |
| Water Table Present? | Yes [ ] | No [✓] | Depth (inches)_____ |
| Saturation Present (including capillary fringe)? | Yes [ ] | No [✓] | Depth (inches)_____ |

**Wetland Hydrology Indicators**

| Reliable Indicators of Wetlands Hydrology | Indicators that can be Reliable with Proper Interpretation | Indicators of the Influence of Water |
|---|---|---|
| [ ] Water-stained leaves | [ ] Hydrological records | [ ] Direct observation of inundation |
| [ ] Evidence of aquatic fauna | [ ] Free water in a soil test hole | [ ] Drainage patterns |
| [ ] Iron deposits | [ ] Saturated soil | [ ] Drift lines |
| [ ] Algal mats or crusts | [ ] Water marks | [ ] Scoured areas |
| [ ] Oxidized rhizospheres/pore linings | [ ] Moss trim lines | [ ] Sediment deposits |
| [ ] Thin muck surfaces | [ ] Presence of reduced iron | [ ] Surface soil cracks |
| [ ] Plants with air-filled tissue (aerenchyma) | [ ] Woody plants with adventitious roots | [ ] Sparsely vegetated concave surface |
| [ ] Plants with polymorphic leaves | [ ] Trees with shallow root systems | [ ] Microtopographic relief |
| [ ] Plants with floating leaves | [ ] Woody plants with enlarged lenticels | [ ] Geographic position (depression, toe of slope, fringing lowland |
| [ ] Hydrogen sulfide odor | | |

Remarks (describe recorded data from stream gauge, monitoring well, aerial photos, previous inspections, if available):

This form is only for BVW delineations. Other wetland resource areas may be present and should be delineated according to the applicable regulatory provisions.

Form Revised July 2023

Sampling Point A5 - UPLAND

**VEGETATION –** Use both common and scientific names of plants.

Tree Stratum Plot size 30' radius

| Common name | Scientific name | Indicator Status | Absolute % Cover | Dominant? (yes/no) | Wetland Indictor? (yes/no) |
|---|---|---|---|---|---|
| 1. apple | Malus sp. | NL | 40.0 | Yes | No |
| 2. white/red spruce | Picea glauca/rubens | FACU | 10.0 | Yes | No |
| 3. | | | | | |
| 4. | | | | | |
| 5. | | | | | |
| 6. | | | | | |
| 7. | | | | | |
| 8. | | | | | |
| 9. | | | | | |

50.0 = Total Cover

Shrub/Sapling Stratum Plot size 15' radius

| Common name | Scientific name | Indicator Status | Absolute % Cover | Dominant? (yes/no) | Wetland Indictor? (yes/no) |
|---|---|---|---|---|---|
| 1. black locust | Robinia pseudoacacia | FACU | 10.0 | Yes | No |
| 2. | | | | | |
| 3. | | | | | |
| 4. | | | | | |
| 5. | | | | | |
| 6. | | | | | |
| 7. | | | | | |
| 8. | | | | | |
| 9. | | | | | |

10.0 = Total Cover

Herb Stratum Plot size 5' radius

| Common name | Scientific name | Indicator Status | Absolute % Cover | Dominant? (yes/no) | Wetland Indictor? (yes/no) |
|---|---|---|---|---|---|
| 1. un ID grass | Graminae sp. | NL | 20.0 | Yes | No |
| 2. Wood aster | Aster macrophyllus | NL | 20.0 | Yes | No |
| 3. Red clover | Trifolium pratense | FACU | 10.0 | No | No |
| 4. ground ivy | Glecoma hederacea | FACU | 10.0 | No | No |
| 5. | | | | | |
| 6. | | | | | |
| 7. | | | | | |
| 8. | | | | | |
| 9. | | | | | |
| 10. | | | | | |
| 11. | | | | | |
| 12. | | | | | |

60.0 = Total Cover

Sampling Point A5 - UPLAND

**VEGETATION –** continued.

| Woody Vine Stratum | Plot size 30' radius | | | | |
|---|---|---|---|---|---|
| Common name | Scientific name | Indicator Status | Absolute % Cover | Dominant? (yes/no) | Wetland Indictor? (yes/no) |
| 1. | | | | | |
| 2. | | | | | |
| 3. | | | | | |
| 4. | | | | | |
| | | | 0.0 = Total Cover | | |

| Rapid Test: Do all dominant species have an indicator status of OBL or FACW? | | | | Yes ☐ No ☑ |
|---|---|---|---|---|
| Dominance Test: | Number of dominant species | Number of dominant species that are wetland indicator plants | | Do wetland indicator plants make up ≥ 50% of dominant plant species? Yes ☐ No ☑ |
| | 5 | 0 | | |
| Prevalence Index: | | Total % Cover (all strata) | Multiply by: | Result |
| | OBL species | 0 | X 1 | = 0.00 |
| | FACW species | 0 | X 2 | = 0.00 |
| | FAC species | 0 | X 3 | = 0.00 |
| | FACU species | 40 | X 4 | = 160.00 |
| | UPL species | 0 | X 5 | = 0.00 |
| | Column Totals | (A) 40 | | (B) 160 |
| Prevalence Index | | B/A = 4.00 | | Is the Prevalence Index ≤ 3.0? Yes ☐ No ☑ |
| **Wetland vegetation criterion met?** | | **Yes** ☐ | **No** ☑ | |

**Definitions of Vegetation Strata**

Tree - Woody plants 3 in. (7.62 cm) or more in diameter at breast height (DBH), regardless of height

Shrub / Sapling - Woody plants less than 3 in. (7.62 cm) DBH and greater than or equal to 3.3 ft. (1 m) tall

Herb - All herbaceous (non-woody plants, regardless of size, and woody plants less than 3.3 ft. (1 m) tall

Woody vines - All woody vines greater than 3.3 ft. (1 m) in height

| **Cover Ranges** | |
|---|---|
| Range | Midpoint |
| 1-5 % | 3.0 % |
| 6-15 % | 10.5 % |
| 15-25 % | 20.5 % |
| 26-50 % | 38.0 % |
| 51-75 % | 63.0 % |
| 76-95 % | 85.5 % |
| 96-100 % | 98.0 % |

Sampling Point A5 - UPLAND

**SOIL**

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators)

| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| | Color (moist) | % | Color (moist) | % | Type[1] | Location[2] | | |
| A: 0-24" | 10YR2/2 | 100.00 | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
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| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

| **Hydric Soil Indicators** (Check all that apply) | | **Indicators for Problematic Hydric Soils** |
|---|---|---|
| ☐ Histosol (A1) | ☐ Polyvalue Below Surface (S8) | ☐ 2 cm Muck (A10) |
| ☐ Histic Epipedon (A2) | ☐ Thin Dark Surface (S9) | ☐ 5 cm Mucky Peat or Peat (S3) |
| ☐ Black Histic (A3) | ☐ Loamy Gleyed Matrix (F2) | ☐ Iron-Manganese Masses (F12) |
| ☐ Hydrogen Sulfide (A4) | ☐ Depleted Matrix (F3) | ☐ Mesic Spodic (A17) |
| ☐ Stratified Layers (A5) | ☐ Redox Dark Surface (F6) | ☐ Red Parent Material (F21) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Depleted Dark Surface (F7) | ☐ Very Shallow Dark Surface (F22) |
| ☐ Thick Dark Surface (A12) | ☐ Redox Depressions (F8) | |
| ☐ Sandy Mucky Mineral (S1) | | |
| ☐ Sandy Gleyed Matrix (S4) | | |
| ☐ Sandy Redox (S5) | | ☐ Other (Include Explanation in Remarks) |
| ☐ Stripped Matrix (S6) | | |
| ☐ Dark Surface (S7) | | |

**Restrictive Layer (if observed)** Type: _____ Depth (inches): _____

Remarks:

**Hydric Soils criterion met?** **Yes** ☐ **No** ☑

**BORDERING VEGETATED WETLAND DETERMINATION FORM**

Project/Site: Pleasant Street Culvert City/Town: Leominster Sampling Date: 9/30/2024

Applicant/Owner: N/A Sampling Point or Zone: A5 - WETLAND

Investigator(s): Kate O'Donnell, WPIT, EcoTec, Inc. Latitude / Longitude: 42.5202, -71.7671

Soil Map Unit Name: Sudbury NWI or DEP Classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes [✓] No [ ] (If no, explain in Remarks)

Are Vegetation [ ], Soil [ ], or Hydrology [ ] significantly disturbed? (If yes, explain in Remarks)

Are Vegetation [ ], Soil [ ], or Hydrology [ ] naturally problematic? (If yes, explain in Remarks)

**SUMMARY OF FINDINGS – Attach site map and photograph log showing sampling locations, transects, etc.**

| | | | |
|---|---|---|---|
| Wetland vegetation criterion met? | Yes [✓] No [ ] | **Is the Sampled Area within a Wetland?** | **Yes** [✓] **No** [ ] |
| Hydric Soils criterion met? | Yes [✓] No [ ] | | |
| Wetlands hydrology present? | Yes [✓] No [ ] | | |

Remarks, Photo Details, Flagging, etc.:

**HYDROLOGY**

| **Field Observations:** | | | |
|---|---|---|---|
| Surface Water Present? | Yes [ ] | No [✓] | Depth (inches) |
| Water Table Present? | Yes [ ] | No [✓] | Depth (inches) |
| Saturation Present (including capillary fringe)? | Yes [✓] | No [ ] | Depth (inches) 0.00 |

**Wetland Hydrology Indicators**

| Reliable Indicators of Wetlands Hydrology | Indicators that can be Reliable with Proper Interpretation | Indicators of the Influence of Water |
|---|---|---|
| [ ] Water-stained leaves | [ ] Hydrological records | [ ] Direct observation of inundation |
| [ ] Evidence of aquatic fauna | [ ] Free water in a soil test hole | [ ] Drainage patterns |
| [ ] Iron deposits | [✓] Saturated soil | [ ] Drift lines |
| [ ] Algal mats or crusts | [ ] Water marks | [ ] Scoured areas |
| [ ] Oxidized rhizospheres/pore linings | [ ] Moss trim lines | [ ] Sediment deposits |
| [ ] Thin muck surfaces | [ ] Presence of reduced iron | [ ] Surface soil cracks |
| [ ] Plants with air-filled tissue (aerenchyma) | [ ] Woody plants with adventitious roots | [ ] Sparsely vegetated concave surface |
| [ ] Plants with polymorphic leaves | [ ] Trees with shallow root systems | [ ] Microtopographic relief |
| [ ] Plants with floating leaves | [ ] Woody plants with enlarged lenticels | [ ] Geographic position (depression, toe of slope, fringing lowland |
| [ ] Hydrogen sulfide odor | | |

Remarks (describe recorded data from stream gauge, monitoring well, aerial photos, previous inspections, if available):

This form is only for BVW delineations. Other wetland resource areas may be present and should be delineated according to the applicable regulatory provisions.

Form Revised July 2023

Sampling Point A5 - WETLAND

**VEGETATION –** Use both common and scientific names of plants.

Tree Stratum Plot size 30' radius

| Common name | Scientific name | Indicator Status | Absolute % Cover | Dominant? (yes/no) | Wetland Indictor? (yes/no) |
|---|---|---|---|---|---|
| 1. red maple | Acer rubrum | FAC | 10.0 | Yes | Yes |
| 2. sugar maple | Acer saccharum | FACU | 10.0 | Yes | No |
| 3. | | | | | |
| 4. | | | | | |
| 5. | | | | | |
| 6. | | | | | |
| 7. | | | | | |
| 8. | | | | | |
| 9. | | | | | |

20.0 = Total Cover

Shrub/Sapling Stratum Plot size 15' radius

| Common name | Scientific name | Indicator Status | Absolute % Cover | Dominant? (yes/no) | Wetland Indictor? (yes/no) |
|---|---|---|---|---|---|
| 1. American elm | Ulmus americana | FACW | 20.0 | Yes | Yes |
| 2. | | | | | |
| 3. | | | | | |
| 4. | | | | | |
| 5. | | | | | |
| 6. | | | | | |
| 7. | | | | | |
| 8. | | | | | |
| 9. | | | | | |

20.0 = Total Cover

Herb Stratum Plot size 5' radius

| Common name | Scientific name | Indicator Status | Absolute % Cover | Dominant? (yes/no) | Wetland Indictor? (yes/no) |
|---|---|---|---|---|---|
| 1. beggar-ticks | Bidens frondosa | FACW | 30.0 | Yes | Yes |
| 2. rice cutgrass | Leersia oryzoides | FACW | 30.0 | Yes | Yes |
| 3. jewelweed | Impatiens capensis | FACW | 10.0 | No | Yes |
| 4. False nettle | Boehmeria cylindrica | FACW | 5.0 | No | Yes |
| 5. smartweed | Polygonum pensylvanicum | FACW | 5.0 | No | Yes |
| 6. | | | | | |
| 7. | | | | | |
| 8. | | | | | |
| 9. | | | | | |
| 10. | | | | | |
| 11. | | | | | |
| 12. | | | | | |

80.0 = Total Cover

Sampling Point A5 - WETLAND

**VEGETATION –** continued.

| Woody Vine Stratum | Plot size 30' radius | | | | |
|---|---|---|---|---|---|
| Common name | Scientific name | Indicator Status | Absolute % Cover | Dominant? (yes/no) | Wetland Indictor? (yes/no) |
| 1. N/A | | | | | |
| 2. | | | | | |
| 3. | | | | | |
| 4. | | | | | |
| | | | 0.0 = Total Cover | | |

| Rapid Test: Do all dominant species have an indicator status of OBL or FACW? | | | | Yes ☐ No ☑ |
|---|---|---|---|---|
| Dominance Test: | Number of dominant species | Number of dominant species that are wetland indicator plants | | Do wetland indicator plants make up ≥ 50% of dominant plant species? Yes ☑ No ☐ |
| | 5 | 4 | | |
| Prevalence Index: | | Total % Cover (all strata) | Multiply by: | Result |
| | OBL species | 0 | X 1 | = 0.00 |
| | FACW species | 100 | X 2 | = 200.00 |
| | FAC species | 10 | X 3 | = 30.00 |
| | FACU species | 10 | X 4 | = 40.00 |
| | UPL species | 0 | X 5 | = 0.00 |
| | Column Totals | (A) 120 | | (B) 270 |
| Prevalence Index | | B/A = 2.25 | | Is the Prevalence Index ≤ 3.0? Yes ☑ No ☐ |
| **Wetland vegetation criterion met?** | | **Yes** ☑ | **No** ☐ | |

**Definitions of Vegetation Strata**

Tree - Woody plants 3 in. (7.62 cm) or more in diameter at breast height (DBH), regardless of height

Shrub / Sapling - Woody plants less than 3 in. (7.62 cm) DBH and greater than or equal to 3.3 ft. (1 m) tall

Herb - All herbaceous (non-woody plants, regardless of size, and woody plants less than 3.3 ft. (1 m) tall

Woody vines - All woody vines greater than 3.3 ft. (1 m) in height

| **Cover Ranges** | |
|---|---|
| Range | Midpoint |
| 1-5 % | 3.0 % |
| 6-15 % | 10.5 % |
| 15-25 % | 20.5 % |
| 26-50 % | 38.0 % |
| 51-75 % | 63.0 % |
| 76-95 % | 85.5 % |
| 96-100 % | 98.0 % |

Sampling Point A5 - WETLAND

**SOIL**

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators)

| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| | Color (moist) | % | Color (moist) | % | Type[1] | Location[2] | | |
| A: 0-12" | 10YR 2/1 | 100.00 | | | | | fine sandy loam | |
| Bg: 12-16"+ | 7.5YR 7/2 | 80.00 | 10YR5/1 | 20.00 | D | M | fine sandy loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

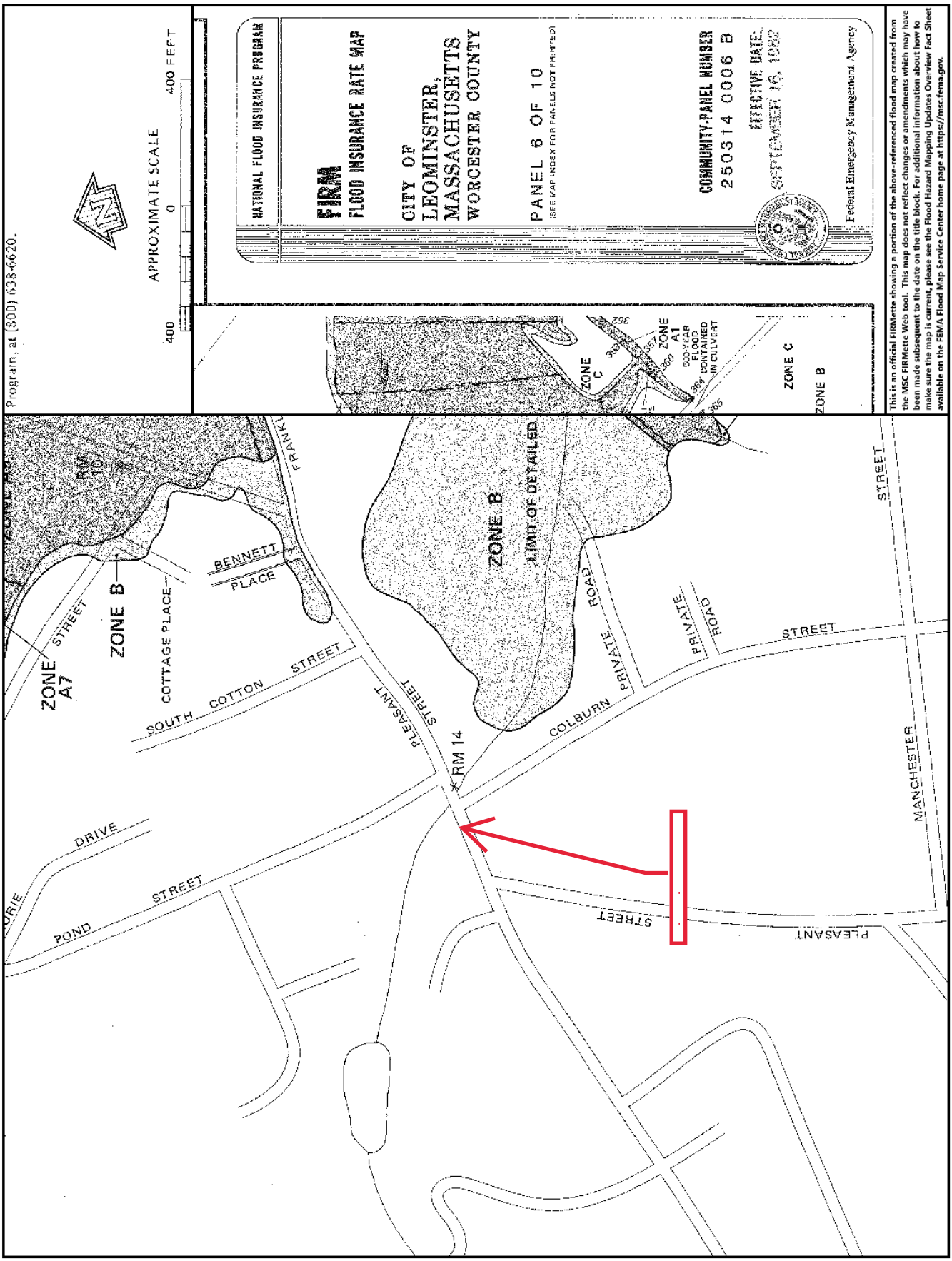
[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

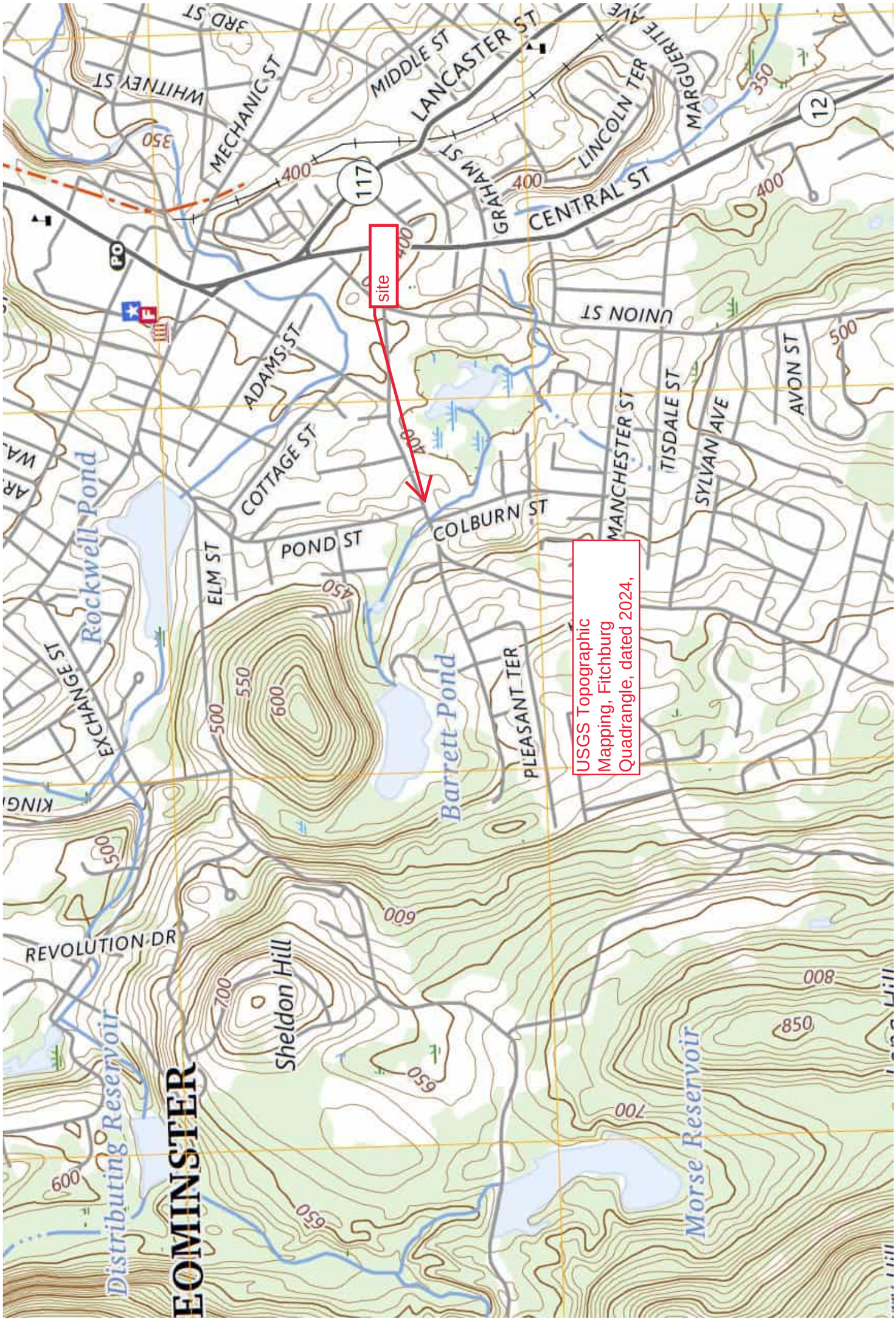
| **Hydric Soil Indicators** (Check all that apply) | | **Indicators for Problematic Hydric Soils** |
|---|---|---|
| ☐ Histosol (A1) | ☐ Polyvalue Below Surface (S8) | ☐ 2 cm Muck (A10) |
| ☐ Histic Epipedon (A2) | ☐ Thin Dark Surface (S9) | ☐ 5 cm Mucky Peat or Peat (S3) |
| ☐ Black Histic (A3) | ☐ Loamy Gleyed Matrix (F2) | ☐ Iron-Manganese Masses (F12) |
| ☐ Hydrogen Sulfide (A4) | ☑ Depleted Matrix (F3) | ☐ Mesic Spodic (A17) |
| ☐ Stratified Layers (A5) | ☐ Redox Dark Surface (F6) | ☐ Red Parent Material (F21) |
| ☑ Depleted Below Dark Surface (A11) | ☐ Depleted Dark Surface (F7) | ☐ Very Shallow Dark Surface (F22) |
| ☑ Thick Dark Surface (A12) | ☐ Redox Depressions (F8) | |
| ☐ Sandy Mucky Mineral (S1) | | |
| ☐ Sandy Gleyed Matrix (S4) | | |
| ☐ Sandy Redox (S5) | | ☐ Other (Include Explanation in Remarks) |
| ☐ Stripped Matrix (S6) | | |
| ☐ Dark Surface (S7) | | |

**Restrictive Layer (if observed)** Type: _____ Depth (inches): _____

Remarks:

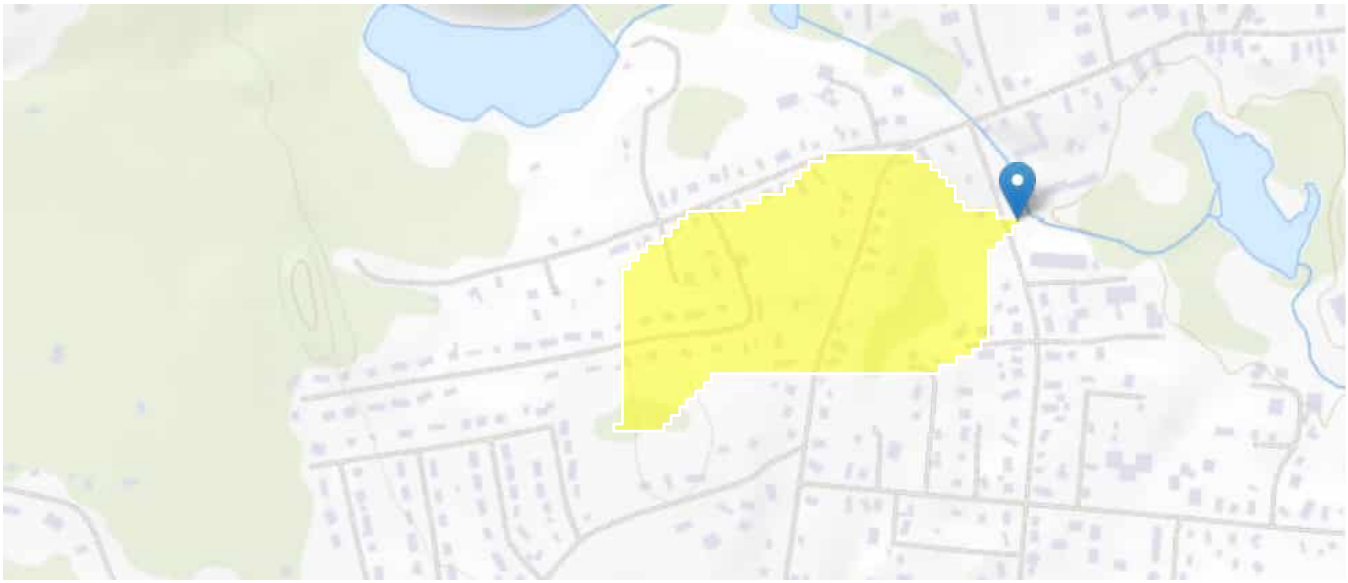
**Hydric Soils criterion met?** **Yes** ☑ **No** ☐


NATIONAL FLOOD INSURANCE PROGRAM
FIRM
FLOOD INSURANCE RATE MAP
CITY OF LEOMINSTER, MASSACHUSETTS WORCESTER COUNTY
PANEL 6 OF 10
(SEE MAP INDEX FOR PANELS NOT PRINTED)
COMMUNITY-PANEL NUMBER 250314 0006 B
EFFECTIVE DATE: SEPTEMBER 16, 1982
Federal Emergency Management Agency
APPROXIMATE SCALE
0
400
400 FEET
Program, at (800) 638-6620.
This is an official FIRMette showing a portion of the above-referenced flood map created from the MSC FIRMette Web tool. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For additional information about how to make sure the map is current, please see the Flood Hazard Mapping Updates Overview Fact Sheet available on the FEMA Flood Map Service Center home page at https://msc.fema.gov.
ZONE A7
ZONE B
ZONE B
LIMIT OF DETAILED
ZONE C
ZONE A1
100-YEAR FLOOD CONTAINED IN CULVERT
ZONE C
ZONE B
RM 10
RM 14
FRANK STREET
BENNETT PLACE
COTTAGE PLACE
SOUTH COTTON STREET
PLEASANT STREET
COLBURN PRIVATE ROAD
PRIVATE ROAD
STREET
MANCHESTER
DRIVE
POND STREET
STREET
PLEASANT


site
USGS Topographic Mapping, Fitchburg Quadrangle, dated 2024,
3RD ST
WHITNEY ST
MECHANIC ST
MIDDLE ST
LANCASTER ST
MARGUERITE AVE
LINCOLN TER
GRAHAM ST
CENTRAL ST
117
12
UNION ST
ADAMS ST
COTTAGE ST
MANCHESTER ST
TISDALE ST
SYLVAN AVE
AVON ST
POND ST
COLBURN ST
ELM ST
EXCHANGE ST
PLEASANT TER
REVOLUTION DR
Rockwell Pond
Barrett Pond
Sheldon Hill
Distributing Reservoir
Morse Reservoir
FEOMINSTER

# StreamStats Report

**Region ID:** MA
**Workspace ID:** MA20250602195232043000
**Clicked Point (Latitude, Longitude):** 42.51950, -71.76688
**Time:** 2025-06-02 15:55:06 -0400



Collapse All

## Basin Characteristics

| Parameter Code | Parameter Description | Value | Unit |
|---|---|---|---|
| DRNAREA | Area that drains to a point on a stream | 0.0408 | square miles |
| FOREST | Percentage of area covered by forest | 12.77 | percent |
| MAREGION | Region of Massachusetts 0 for Eastern 1 for Western | 0 | dimensionless |
| PCTSNDGRV | Percentage of land surface underlain by sand and gravel deposits | 1.7 | percent |

## Probability Statistics

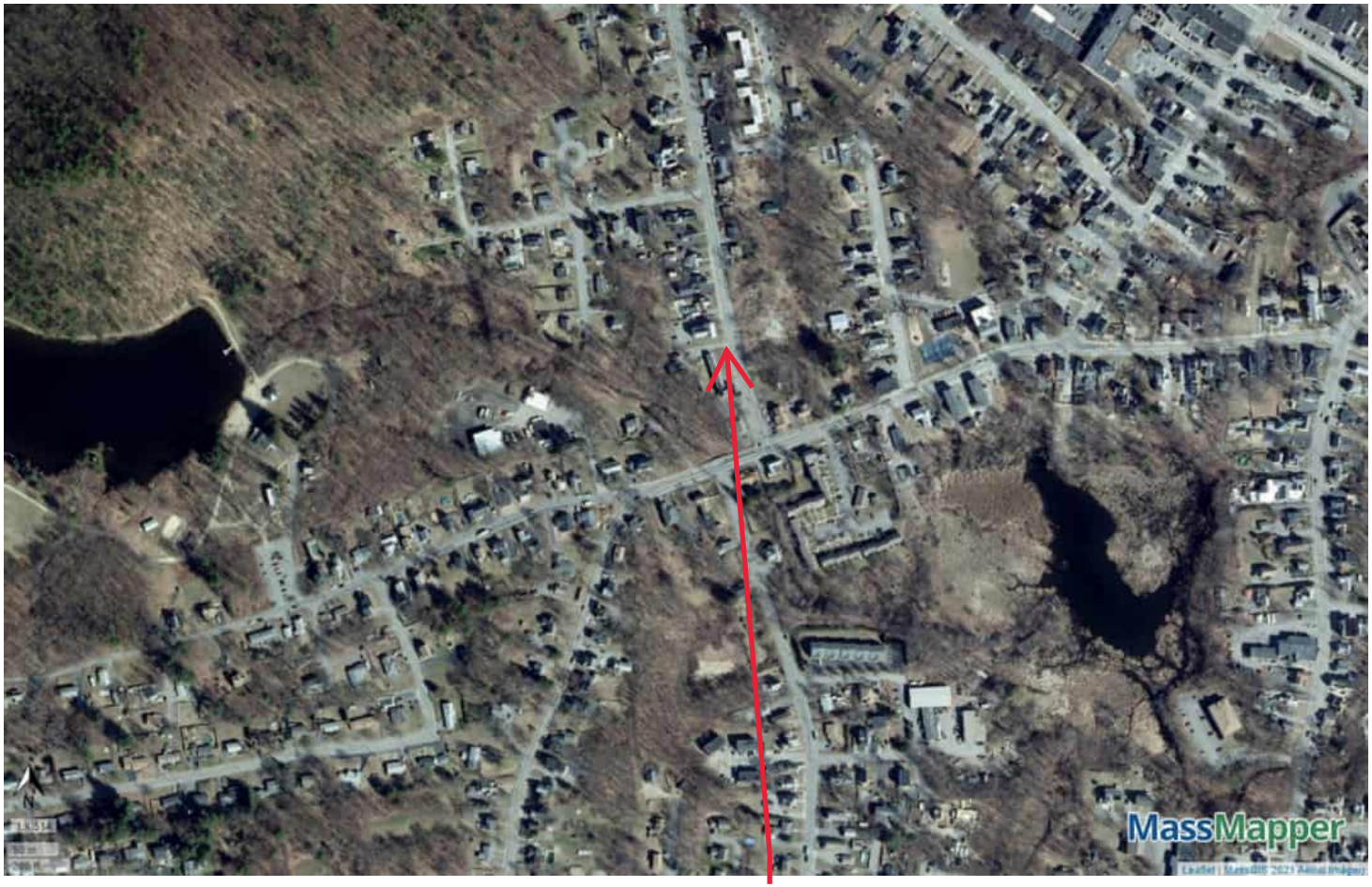
### Probability Statistics Parameters [Perennial Flow Probability]

| Parameter Code | Parameter Name | Value | Units | Min Limit | Max Limit |
|---|---|---|---|---|---|
| DRNAREA | Drainage Area | 0.0408 | square miles | 0.01 | 1.99 |
| FOREST | Percent Forest | 12.77 | percent | 0 | 100 |
| MAREGION | Massachusetts Region | 0 | dimensionless | 0 | 1 |
| PCTSNDGRV | Percent Underlain By Sand And Gravel | 1.7 | percent | 0 | 100 |

### Probability Statistics Flow Report [Perennial Flow Probability]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

# Pleasant Street, Leominster - NHESP




NHESP Priority Habitats of Rare Species

NHESP Estimated Habitats of Rare Wildlife

NHESP Certified Vernal Pools

Natural Heritage Atlas Online Data Viewer, 15th edition, valid August 1, 2021
created: 9/26/2024
Pleasant Street Culvert, Leominster

approximate site

**Kate O'Donnell, WPIT**
**Environmental Scientist**

Kate O'Donnell is an Environmental Scientist at EcoTec, Inc. Since joining EcoTec in June of 2021, her project experience includes wetland resource evaluation and delineation, as well as environmental permitting at the local, state, and federal level. She received certification as a Wetland Professional In Training (WPIT) from the International Society of Wetland Scientists (SWS) in September of 2021. Additionally, Ms. O'Donnell has experience in turbidity and erosion control monitoring, salinity sampling, wildlife habitat evaluation, stream evaluation, vernal pool evaluation and certification, preconstruction sweeps for rare species including the eastern box turtle, Stormwater Pollution Prevention Plan (SWPPP) preparation, Turtle Protection Plan preparation, Massachusetts Endangered Species Act (MESA) Project Review Checklists, and Massachusetts Environmental Policy Act (MEPA) documentation. Prior to starting at EcoTec, Ms. O'Donnell was a student at the College of the Holy Cross, where she received degrees in Biology and Environmental Studies. Her educational background includes with extensive coursework in ecology and environmental science, as well as courses in geoscience, biology, chemistry, and environmental law. During her time at Holy Cross, she conducted hydrologic and water quality research to investigate the impacts of road salt on the salinity of the Middle River in Worcester, MA.

**Education:**

Bachelor of Arts in Biology (Ecology emphasis) and Bachelor of Arts in Environmental Studies, College of the Holy Cross, 2021

**Professional Affiliations:**

Society of Wetland Scientists
Massachusetts Association of Conservation Commissioners

**Certifications:**

Society of Wetland Scientists Wetland Professional In Training
EPA Construction General Permit Site Inspector Certification

ResumeKODonnell

# Attachment D – Photos

Jacobs

## PHOTOGRAPHIC LOG

**Site Location:** Pleasant Street Over Reservoir Brook, Leominster, Worcester County, Massachusetts | **Project No. 613865**

| Photo No. | Date: |
|---|---|
| 1 | 1/30/2025 |

**Direction Photo Taken:**
Southeast

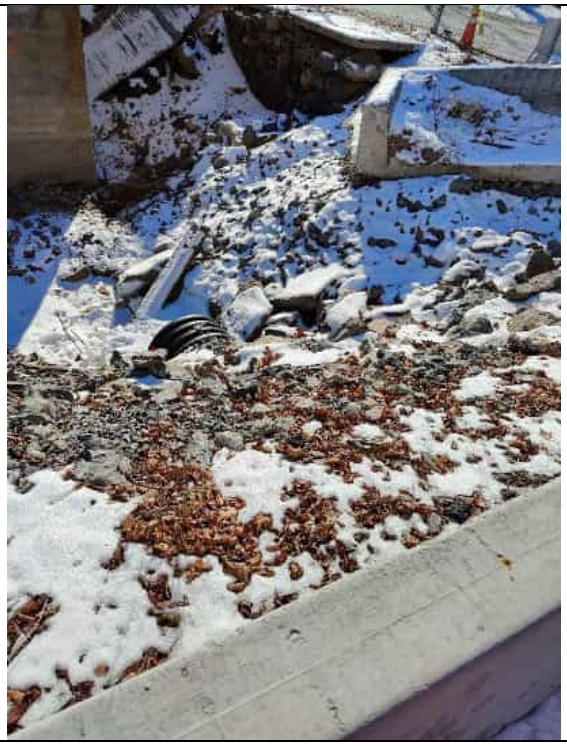
**Description:**
View of residential property damage and culvert collapse at 208 Pleasant St (as viewed from the Pleasant St – Colburn St intersection).



| Photo No. | Date: |
|---|---|
| 2 | 1/30/2025 |

**Direction Photo Taken:**
South

**Description:**
View of box culvert collapse and temporary corrugated plastic culvert outlet.



Jacobs

## PHOTOGRAPHIC LOG

**Site Location:** Pleasant Street Over Reservoir Brook, Leominster, Worcester County, Massachusetts | **Project No. 613865**

| **Photo No.** | **Date:** |
|---|---|
| 3 | 1/30/2025 |

**Direction Photo Taken:**
Southeast

**Description:**
View from the Pleasant Street sidewalk looking towards Colburn Street and the damaged residential property.



| **Photo No.** | **Date:** |
|---|---|
| 4 | 1/30/2025 |

**Direction Photo Taken:**
Southeast

**Description:**
View of the concrete upstream headwall at the Pleasant Street crossing from the Bank of Reservoir Brook.



Jacobs

## PHOTOGRAPHIC LOG

**Site Location:** Pleasant Street Over Reservoir Brook, Leominster, Worcester County, Massachusetts | **Project No. 613865**

| **Photo No.** | **Date:** |
|---|---|
| 5 | 5/30/2025 |

**Direction Photo Taken:**
Southwest

**Description:**
View of culvert outflow and chain-link fence following the demolition of the residential structure at 208 Pleasant Street.



| **Photo No.** | **Date:** |
|---|---|
| 6 | 5/30/2025 |

**Direction Photo Taken:**
West

**Description:**
View of the temporary corrugated plastic outflow and rip-rap stabilization channel at 208 Pleasant Street.



Jacobs

## PHOTOGRAPHIC LOG

**Site Location:** Pleasant Street Over Reservoir Brook, Leominster, Worcester County, Massachusetts | **Project No. 613865**

| **Photo No.** | **Date:** |
|---|---|
| 7 | 5/30/2025 |

**Direction Photo Taken:**
South

**Description:**
View of the rip-rap stabilization channel immediately downstream of the Pleasant Street crossing of Reservoir Brook.



| **Photo No.** | **Date:** |
|---|---|
| 8 | 5/30/2025 |

**Direction Photo Taken:**
North

**Description:**
View of Pleasant Street and the terminus of the temporary rip-rap stabilization channel of Reservoir Brook.



Jacobs

## PHOTOGRAPHIC LOG

**Site Location:** Pleasant Street Over Reservoir Brook, Leominster, Worcester County, Massachusetts | **Project No. 613865**

| **Photo No.** | **Date:** |
|---|---|
| 9 | 5/30/2025 |

**Direction Photo Taken:**
North

**Description:**
View of Reservoir Brook downstream of the Pleasant Street Crossing, adjacent to the residential structures at 192 Pleasant Street.



| **Photo No.** | **Date:** |
|---|---|
| 10 | 5/30/2025 |

**Direction Photo Taken:**
North

**Description:**
View of the sediment deposits (foreground) and discontinued stream channel in Wetland B, with the residential structures at 192 Pleasant Street (background).



Jacobs

## PHOTOGRAPHIC LOG

**Site Location:** Pleasant Street Over Reservoir Brook, Leominster, Worcester County, Massachusetts | **Project No. 613865**

| **Photo No.** | **Date:** |
|---|---|
| 11 | 5/30/2025 |

**Direction Photo Taken:**
South

**Description:**
View of Reservoir Brook downstream of the Pleasant Street crossing, at the location of the new channel carved by the 2023 flood event (192 Pleasant Street to the left).



| **Photo No.** | **Date:** |
|---|---|
| 12 | 5/30/2025 |

**Direction Photo Taken:**
West

**Description:**
View of the downstream culvert under Colburn St into Wetland B, at the downstream terminus of the project limits.



Jacobs

## PHOTOGRAPHIC LOG

**Site Location:** Pleasant Street Over Reservoir Brook, Leominster, Worcester County, Massachusetts | **Project No. 613865**

| **Photo No.** | **Date:** |
|---|---|
| 13 | 5/30/2025 |

**Direction Photo Taken:**
Southeast

**Description:**
View of concrete headwall and temporary corrugated plastic drainpipe at the upstream inlet of the temporary Pleasant Street crossing.



# Attachment E – USFW Programmatic Biological Opinion (NLAA)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To: 03/11/2025 20:59:31 UTC
Project code: 2025-0067572
Project Name: 613865 LEOMINSTER- CULVERT REPLACEMENT, L-08-053, AT PLEASANT STREET AND COLBURN STREET

Federal Nexus: yes
Federal Action Agency (if applicable): Federal Highway Administration

**Subject:** Federal agency coordination under the Endangered Species Act, Section 7 for '613865 LEOMINSTER- CULVERT REPLACEMENT, L-08-053, AT PLEASANT STREET AND COLBURN STREET'

Dear Trevor Burns:

This letter records your determination using the Information for Planning and Consultation (IPaC) system provided to the U.S. Fish and Wildlife Service (Service) on March 11, 2025, for '613865 LEOMINSTER- CULVERT REPLACEMENT, L-08-053, AT PLEASANT STREET AND COLBURN STREET' (here forward, Project). This project has been assigned Project Code 2025-0067572 and all future correspondence should clearly reference this number. **Please carefully review this letter. Your Endangered Species Act (Act) requirements may not be complete.**

**Ensuring Accurate Determinations When Using IPaC**

The Service developed the IPaC system and associated species' determination keys in accordance with the Endangered Species Act of 1973 (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and based on a standing analysis. All information submitted by the Project proponent into IPaC must accurately represent the full scope and details of the Project.

Failure to accurately represent or implement the Project as detailed in IPaC or the Northern Long-eared Bat and Tricolored Bat Range-wide Determination Key (DKey), invalidates this letter. ***Answers to certain questions in the DKey commit the project proponent to implementation of conservation measures that must be followed for the ESA determination to remain valid. Note that conservation measures for northern long-eared bat and tricolored bat may differ. If both bat species are present in the action area and the key suggests more conservative measures for one of the species for your Project, the Project may need to apply***

***the most conservative measures in order to avoid adverse effects. If unsure which conservation measures should be applied, please contact the appropriate Ecological Services Field Office.***

**Determination for the Northern Long-Eared Bat and Tricolored Bat**

Based on your IPaC submission and a standing analysis completed by the Service, you determined the proposed Project will have the following effect determinations:

| Species | Listing Status | Determination |
|---|---|---|
| Tricolored Bat (*Perimyotis subflavus*) | Proposed Endangered | NLAA |

Federal agencies must consult with U.S. Fish and Wildlife Service under section 7(a)(2) of the Endangered Species Act (ESA) when an action *may affect* a listed species. Tricolored bat is proposed for listing as endangered under the ESA, but not yet listed. For actions that may affect a proposed species, agencies cannot consult, but they can *confer* under the authority of section 7(a)(4) of the ESA. Such conferences can follow the procedures for a consultation and be adopted as such if and when the proposed species is listed. Should the tricolored bat be listed, agencies must review projects that are not yet complete, or projects with ongoing effects within the tricolored bat range that previously received a NE or NLAA determination from the key to confirm that the determination is still accurate.

Unless the Service advises you within 15 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that consultation on the Action is complete for northern long-eared bat and/or tricolored bat and no further action is necessary unless either of the following occurs:

- new information reveals effects of the action that may affect the northern long-eared bat or tricolored bat in a manner or to an extent not previously considered; or,
- the identified action is subsequently modified in a manner that causes an effect to the northern long-eared bat or tricolored bat that was not considered when completing the determination key.

**15-Day Review Period**

As indicated above, the Service will notify you within 15 calendar days if we determine that this proposed Action does not meet the criteria for a “may affect, not likely to adversely affect” (NLAA) determination for the northern long-eared bat and/or tricolored bat. If we do not notify you within that timeframe, you may proceed with the Action under the terms of the NLAA concurrence provided here. This verification period allows the identified Ecological Services Field Office to apply local knowledge to evaluation of the Action, as we may identify a small subset of actions having impacts that we did not anticipate when developing the key. In such cases, the identified Ecological Services Field Office may request additional information to verify the effects determination reached through the Northern Long-eared Bat and Tricolored Bat DKey.

**Other Species and Critical Habitat that May be Present in the Action Area**

The IPaC-assisted determination key for the northern long-eared bat and tricolored bat does not apply to the following ESA-protected species and/or critical habitat that also may occur in your Action area:

- Monarch Butterfly *Danaus plexippus* Proposed Threatened

You may coordinate with our Office to determine whether the Action may affect the species and/or critical habitat listed above. Note that reinitiation of consultation would be necessary if a new species is listed or critical habitat designated that may be affected by the identified action before it is complete.

If you have any questions regarding this letter or need further assistance, please contact the New England Ecological Services Field Office and reference Project Code 2025-0067572 associated with this Project.

**Action Description**
You provided to IPaC the following name and description for the subject Action.

**1. Name**

613865 LEOMINSTER- CULVERT REPLACEMENT, L-08-053, AT PLEASANT STREET AND COLBURN STREET

**2. Description**

The following description was provided for the project '613865 LEOMINSTER- CULVERT REPLACEMENT, L-08-053, AT PLEASANT STREET AND COLBURN STREET':

> 613865 LEOMINSTER- CULVERT REPLACEMENT, L-08-053, AT PLEASANT STREET AND COLBURN STREET
> The proposed improvements involves replacing the existing culvert under Pleasant Street between the original headwall inlet location and daylighting adjacent to condemned property. Additional work involves sidewalk reconstruction and replacement of a fence reconstruction.
> Monarch Butterfly: Proposed Species only. The project action will not jeopardize the continued existence of a proposed species.

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.520617849999994,-71.76748474354737,14z



# DETERMINATION KEY RESULT

Based on the answers provided, the proposed Action is consistent with a determination of “may affect, but not likely to adversely affect” for a least one species covered by this determination key.

## QUALIFICATION INTERVIEW

1. Does the proposed project include, or is it reasonably certain to cause, intentional take of listed bats or any other listed species?

   **Note:** Intentional take is defined as take that is the intended result of a project. Intentional take could refer to research, direct species management, surveys, and/or studies that include intentional handling/encountering, harassment, collection, or capturing of any individual of a federally listed threatened, endangered or proposed species?

   *No*

2. Is the action area wholly within Zone 2 of the year-round active area for northern long-eared bat and/or tricolored bat?

   **Automatically answered**
   *No*

3. Does the action area intersect Zone 1 of the year-round active area for northern long-eared bat and/or tricolored bat?

   **Automatically answered**
   *No*

4. Does any component of the action involve leasing, construction or operation of wind turbines? Answer 'yes' if the activities considered are conducted with the intention of gathering survey information to inform the leasing, construction, or operation of wind turbines.

   **Note:** For federal actions, answer ‘yes’ if the construction or operation of wind power facilities is either (1) part of the federal action or (2) would not occur but for a federal agency action (federal permit, funding, etc.).

   *No*

5. Is the proposed action authorized, permitted, licensed, funded, or being carried out by a Federal agency in whole or in part?

   *Yes*

6. Is the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), or Federal Transit Administration (FTA) funding or authorizing the proposed action, in whole or in part?

   *Yes*

7. FHWA, FRA, and FTA have completed a range-wide programmatic consultation for transportation- related actions within the range of the Indiana bat, northern long-eared bat and tricolored bat.

   Does your proposed action fall within the scope of this programmatic consultation?

   **Note:** If you are unsure, but your action is transportation related, please select "Yes" and use the FHWA, FRA, FTA Assisted Determination Key (FHWA DKey) in IPaC to determine if the programmatic consultation is applicable to your action. Return to this key and answer 'no' to this question if it is not.

   *No*

8. Are you an employee of the federal action agency or have you been officially designated in writing by the agency as its designated non-federal representative for the purposes of Endangered Species Act Section 7 informal consultation per 50 CFR § 402.08?

   **Note:** This key may be used for federal actions and for non-federal actions to facilitate section 7 consultation and to help determine whether an incidental take permit may be needed, respectively. This question is for information purposes only.

   *Yes*

9. Is the lead federal action agency the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC)? Is the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC) funding or authorizing the proposed action, in whole or in part?

   *No*

10. Is the lead federal action agency the Federal Energy Regulatory Commission (FERC)?

    *No*

11. [Semantic] Is the action area located within 0.5 miles of a known bat hibernaculum?

    **Note:** The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

    **Automatically answered**
    *No*

12. Does the action area contain any winter roosts or caves (or associated sinkholes, fissures, or other karst features), mines, rocky outcroppings, or tunnels that could provide habitat for hibernating bats?

    *No*

13. Does the action area contain (1) talus or (2) anthropogenic or naturally formed rock shelters or crevices in rocky outcrops, rock faces or cliffs?

    *No*

14. Will the action cause effects to a bridge?

    **Note:** Covered bridges should be considered as bridges in this question.

    *No*

15. Will the action result in effects to a culvert or tunnel at any time of year?

    *Yes*

16. Does the culvert or tunnel equal or exceed 23 feet (7.0 meters) in length?

    *Yes*

17. Do the interior dimensions of the culvert or tunnel **equal or exceed 3.0 feet (0.9 meters) in height (minimum height for tricolored bat)**?

    *Yes*

18. Has a site-specific culvert assessment following USFWS guidelines been completed?

    **Note:** For information on conducting a bridge/structure assessment, please see Appendix K in the USFWS' Range-wide Indiana Bat and Northern Long-eared Bat Survey Guidelines at:https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines Additional resources can be found at: https://www.fws.gov/media/bats-and-transportation-structures-references-and-additional-resources and a training video is located at: https://www.youtube.com/watch?v=iuFwkT7q8Ws.

    *Yes*

    ***SUBMITTED DOCUMENTS***

    - *613865 culvert assessment combined.pdf https://ipac.ecosphere.fws.gov/project/MHMRWWZORNEWBCIEAMSPKYHEXA/projectDocuments/158726375*

19. Was evidence of bat use found during the bridge/structure (e.g., culvert) assessment?

    *No*

20. Did you coordinate with your local Ecological Services Field Office (ESFO) and receive approval of culvert assessment results? If NO, please contact the appropriate local ESFO before completing this determination key.

    *Yes*

21. Are trees present within 1000 feet of the action area?

    **Note:** If there are trees within the action area that are of a sufficient size to be potential roosts for bats answer "Yes". If unsure, additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    *Yes*

22. Does the action include the intentional exclusion of bats from a building or structure?

    **Note:** Exclusion is conducted to deny bats' entry or reentry into a building. To be effective and to avoid harming bats, it should be done according to established standards. If your action includes bat exclusion and you are unsure whether northern long-eared bats or tricolored bats are present, answer "Yes." Answer "No" if there are no signs of bat use in the building/structure. If unsure, contact your local Ecological Services Field Office to help assess whether northern long-eared bats or tricolored bats may be present. Contact a Nuisance Wildlife Control Operator (NWCO) for help in how to exclude bats from a structure safely without causing harm to the bats (to find a NWCO certified in bat standards, search the Internet using the search term "National Wildlife Control Operators Association bats"). Also see the White-Nose Syndrome Response Team's guide for bat control in structures.

    *No*

23. Does the action involve removal, modification, or maintenance of a human-made structure (barn, house, or other building) **known or suspected to contain roosting bats?**

    *No*

24. Will the action cause construction of one or more new roads open to the public?

    For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.).

    *No*

25. Will the action include or cause any construction or other activity that is reasonably certain to increase average daily traffic permanently or temporarily on one or more existing roads?

    **Note:** For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.). .

    *No*

26. Will the action include or cause any construction or other activity that is reasonably certain to increase the number of travel lanes on an existing thoroughfare?

    For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.).

    *No*

27. Will the proposed Action involve the creation of a new water-borne contaminant source (e.g., leachate pond, pits containing chemicals that are not NSF/ANSI 60 compliant)?

    **Note:** For information regarding NSF/ANSI 60 please visit https://www.nsf.org/knowledge-library/nsf-ansi-standard-60-drinking-water-treatment-chemicals-health-effects

    *No*

28. Will the proposed action involve the creation of a new point source discharge from a facility other than a water treatment plant or storm water system?

    *No*

29. Will the action include drilling or blasting?

    *No*

30. Will the action involve military training (e.g., smoke operations, obscurant operations, exploding munitions, artillery fire, range use, helicopter or fixed wing aircraft use)?

    *No*

31. Will the proposed action involve the use of herbicides or other pesticides other than herbicides (e.g., fungicides, insecticides, or rodenticides)?

    *No*

32. Will the action include or cause activities that are reasonably certain to cause chronic or intense nighttime noise (above current levels of ambient noise in the area) in suitable summer habitat for the northern long-eared bat or tricolored bat during the active season?

    Chronic noise is noise that is continuous or occurs repeatedly again and again for a long time. Sources of chronic or intense noise that could cause adverse effects to bats may include, but are not limited to: road traffic; trains; aircraft; industrial activities; gas compressor stations; loud music; crowds; oil and gas extraction; construction; and mining.

    **Note:** Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    *No*

33. Does the action include, or is it reasonably certain to cause, the use of permanent or temporary artificial lighting within 1000 feet of suitable northern long-eared bat or tricolored bat roosting habitat?

    **Note:** Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    *Yes*

34. Will the action cause an increase in the extent of suitable forested habitat exposed to artificial lighting?

    *No*

35. Will the action include tree cutting or other means of knocking down or bringing down trees, tree topping, or tree trimming?

    *Yes*

36. Will the proposed action occur exclusively in an already established and currently maintained utility right-of-way?

    *No*

37. Does the action include emergency cutting or trimming of hazard trees in order to remove an imminent threat to human safety or property? See hazard tree note at the bottom of the key for text that will be added to response letters

    **Note:** A "hazard tree" is a tree that is an immediate threat to lives, public health and safety, or improved property.

    *No*

38. Does the project intersect with the 0- 9.9% forest density category?

    **Automatically answered**
    *No*

39. Does the project intersect with the 10.0- 19.9% forest density category map?

    **Automatically answered**
    *No*

40. Does the project intersect with the 20.0- 29.9% forest density category map?

    **Automatically answered**
    *No*

41. Does the project intersect with the 30.0- 100% forest density category map?

    **Automatically answered**
    *Yes*

42. Will the action cause trees to be cut, knocked down, or otherwise brought down across an area greater than 100 acres in total extent?

    *No*

43. Will the proposed action result in the use of prescribed fire?

    **Note:** If the prescribed fire action includes other activities than application of fire (e.g., tree cutting, fire line preparation) please consider impacts from those activities within the previous representative questions in the key. This set of questions only considers impacts from flame and smoke.

    *No*

44. Does the action area intersect the tricolored bat species list area?

    **Automatically answered**
    *Yes*

45. [Semantic] Is the action area located within 0.25 miles of a culvert that is known to be occupied by northern long-eared or tricolored bats?

    **Note:** The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

    **Automatically answered**
    *No*

46. Is suitable summer habitat for the tricolored bat present within 1000 feet of project activities?
(If unsure, answer ""Yes."")

    **Note:** If there are trees within the action area that may provide potential roosts for tricolored bats (e.g., clusters of leaves in live and dead deciduous trees, Spanish moss (Tillandsia usneoides), clusters of dead pine needles of large live pines) answer ""Yes."" For a complete definition of suitable summer habitat for the tricolored bat, please see Appendix A in the Service's Range-wide Indiana Bat and Northern long-eared Bat Survey Guidelines.

    *Yes*

47. Do any of the trees proposed for cutting or other means of knocking down, bringing down, topping, or trimming provide potential roosts for tricolored bats (e.g., clusters of leaves in live and dead deciduous trees, Spanish moss (*Tillandsia usneoides*), clusters of dead pine needles of large live pine trees)?

    **Note:** Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    *Yes*

48. Will any tree cutting/trimming or other knocking or bringing down of trees be conducted during the Pup Season for tricolored bat?

    **Note:** Bat activity periods for your state can be found in Appendix L of the Service's Range-wide Indiana Bat and Northern long-eared Bat Survey Guidelines.

    *No*

49. Do you have any documents that you want to include with this submission?

    *No*

## PROJECT QUESTIONNAIRE

Enter the extent of the action area (in acres) from which trees will be removed - round up to the nearest tenth of an acre. For this question, include the entire area where tree removal will take place, even if some live or dead trees will be left standing.

*0.1*

## IPAC USER CONTACT INFORMATION

Agency: Massachusetts Department of Transportation
Name: Trevor Burns
Address: 10 Park Plaza
City: Boston
State: MA
Zip: 02116
Email trevor.b.burns@dot.state.ma.us
Phone: 8573010759

## LEAD AGENCY CONTACT INFORMATION

Lead Agency: Federal Highway Administration

# Attachment F – Section 106 Coordination

**MassDOT - Cultural Resources Unit (Project #613865)**

**Section 106 Notification Checklist for USACOE Section 404 Permit - Project Notification Forms (PNF)**

## 1. State Historic Preservation Office (SHPO)

- ☒ PNF submitted by certified mail (receipt attached)
- ☒ SHPO stamped PNF received (attached)
- ☐ No comments received within 30-day review period
- ☐ No PNF submitted in accordance with 2013 letter from USACOE, MassDOT in-house Section 106 clearance attached
- ☐ Section 106 No Adverse Effect or Adverse Effect documentation attached

## 2. Board of Underwater Archaeological Resources (BUAR)

- ☒ PNF submitted by e-mail with delivery receipt (attached)
- ☐ Comments received within 30-day review period (attached)
- ☒ No comments received within 30-day review period

## 3. Mashpee Wampanoag Tribe (MTHPO)

- ☒ PNF submitted by e-mail with delivery receipt (attached)
- ☐ Comments received within 30-day review period (attached)
- ☒ No comments received within 30-day review period

## 4. Wampanoag Tribe of Gay Head Aquinnah (ATHPO)

- ☒ PNF submitted by e-mail with delivery receipt (attached)
- ☐ Comments received within 30-day review period (attached)
- ☒ No comments received within 30-day review period

## 5. Stockbridge-Munsee Community (SMTHPO)

- ☐ PNF submitted by e-mail with delivery receipt (attached)
- ☐ Comments received within 30-day review period (attached)
- ☐ No comments received within 30-day review period
- ☒ N/A (Project not within tribe's area of interest)

## 6. Narragansett Indian Tribe (NTHPO)

- ☒ PNF submitted by e-mail with delivery receipt (attached)
- ☐ Comments received within 30-day review period (attached)
- ☒ No comments received within 30-day review period

950 CMR: OFFICE OF THE SECRETARY OF THE COMMONWEALTH

APPENDIX A
MASSACHUSETTS HISTORICAL COMMISSION
220 MORRISSEY BOULEVARD
BOSTON, MASS. 02125
617-727-8470, FAX: 617-727-5128

RC. 76375
RECEIVED
APR 11 2025
MASS. HIST. COMM

**PROJECT NOTIFICATION FORM**

**Project Name:** L-08-053 culvert replacement (MassDOT Project #613865)
**Location /Address:** Pleasant St. and Colburn St.
**City/Town:** Leominster

**Project Proponent**
**Name:** Massachusetts Department of Transportation
**Address:** 10 Park Plaza – Room 7130
**City/Town/Zip/Telephone:** Boston, MA 02116

Agency license or funding for the project (list all licenses, permits, approvals, grants or other entitlements being sought from state and federal agencies).

| Agency Name | Type of License or funding (specify) |
|---|---|
| MassDOT | state funding |
| USACOE (lead federal agency) | Section 404 permit |

After review of MHC files and the materials you submitted, it has been determined that this project is unlikely to affect significant historic or archaeological resources.

Caitriona Parker 5/7/25
Caitriona Parker RC.76275 Date
Preservation Planner
Massachusetts Historical Commission

**Project Description (narrative):**

MassDOT proposes to complete emergency drainage repairs on Bridge L-08-053, a culvert located at Pleasant St. and Colburn St in Leominster (City). The culvert collapsed during a flooding episode in September 2023 and a temporary 36" diameter corrugated plastic drainage pipe was installed to reopen the road. The proposed improvements involve removing the existing plastic pipe and installing a new box culvert under Pleasant St. between the original headwall inlet location (north side of roadway) and the condemned property at 208 Pleasant St. (south side of roadway). The size of the new box culvert will match the 3'x5' box culvert that collapsed. A new retaining wall will be installed adjacent to Colburn St. to minimize grading between the roadway and the new culvert opening. The Pleasant St. roadway within the project area will be resurfaced and new guardrail and crosswalks installed. The sidewalks will be reconstructed in the project area. Buried utilities will be relocated to accommodate the removal of the existing drainage pipe.

The condemned house located adjacent to the culvert at 208 Pleasant St. was purchased by the City in 2024 and will be removed by the municipality prior to the installation of the replacement culvert. The house demolition will not be a part of the MassDOT project. The City will be installing an open stone channel on the site of the house.

**Does the project include demolition? If so, specify nature of demolition and describe the building(s) which are proposed for demolition.**

N/A

**950 CMR: OFFICE OF THE SECRETARY OF THE COMMONWEALTH**

**APPENDIX A (continued)**

**Does the project include rehabilitation of any existing buildings? If so, specify nature of rehabilitation and describe the building(s) which are proposed for rehabilitation.**

N/A

**Does the project include new construction? If so, describe (attach plans and elevations if necessary).**

See plans

**To the best of your knowledge, are any historic or archaeological properties known to exist within the project's area of potential impact? If so, specify.**

A review of MACRIS revealed no NR-listed or eligible properties or districts within the project's area of potential effect (APE). Although the project's APE is within the inventoried South Leominster area (LEO.F), there are no inventoried properties associated with this residential area near the project's APE. The closest inventoried property, Benjamin Blodgett House (LEO.170), is located at 192 Pleasant St. approximately 150' east of the culvert location. This property is outside the project's APE and will not be impacted by the proposed project work.

A review of the archaeological maps in MACRIS revealed no recorded sites in the vicinity of the project's APE. It is the opinion of the MassDOT Archaeologist that low sensitivity can be ascribed to the project's direct APE based on the impacts of previously roadway, culvert, and utility construction, roadside development, and the 2023 flooding episode.

**What is the total acreage of the project area?**

| | | | Productive Resources: | | |
|---|---|---|---|---|---|
| Woodland | _____ | acres | | | |
| Wetland | _____ | acres | Agriculture | _____ | acres |
| Floodplain | _____ | acres | Forestry | _____ | acres |
| Open Space | _____ | acres | Mining/Extraction | _____ | acres |
| Developed | _____ | acres | Total Project Acreage | _____ | acres |

**What is the acreage of the proposed new construction?** _____ acres

**What is the present land use of the project area?**

Residential development is located along Pleasant St.

**Please attach a copy of the section of the USGS quadrangle map which clearly marks the project location.**

This Project Notification Form has been submitted to the MHC in compliance with 950 CMR 71.00.

**Signature of person submitting this** Jameson Harwood **Date:** 4/11/2025

**950 CMR: OFFICE OF THE SECRETARY OF THE COMMONWEALTH**

**APPENDIX A (continued)**

**form:**

| | |
|---|---|
| **Name:** | Jameson Harwood |
| **Address:** | 10 Park Plaza – Room 7130 |
| **City/Town/Zip:** | Boston, MA 02717 |
| **Telephone:** | Email: jameson.harwood@dot.state.ma.us |

**REGULATORY AUTHORITY**

**950 CMR 71.00: M.G.L. c. 9, §§ 26-27C as amended by St. 1988, c. 254.**



CC BUAR, ATHPO, MTHPO, NTHPO, SHPO
CC:

**Harwood, Jameson (DOT)**

| | |
|---|---|
| **From:** | Microsoft Outlook |
| **To:** | Bettina Washington |
| **Sent:** | Thursday, January 30, 2025 9:55 AM |
| **Subject:** | Relayed: MassDOT 613865: Leominster L-08-053 culvert (Project Notification) |

**Delivery to these recipients or groups is complete, but no delivery notification was sent by the destination server:**

Bettina Washington (thpo@wampanoagtribe-nsn.gov)

Subject: MassDOT 613865: Leominster L-08-053 culvert (Project Notification)

## Harwood, Jameson (DOT)

**From:** Harwood, Jameson (DOT)
**Sent:** Thursday, January 30, 2025 9:55 AM
**To:** Bettina Washington
**Subject:** MassDOT 613865: Leominster L-08-053 culvert (Project Notification)
**Attachments:** Leominster, L-08-053 culvert PNF (613865).pdf

Ms. Washington,

MassDOT is submitting information for the above-referenced project to the THPO to meet the Section 106 consultation requirements of FHWA (lead federal agency) and US Army Corps of Engineers. Please submit any written comments or concerns regarding historic or archaeological properties that may be affected by this project to Carrie Lavallee, P.E., Chief Engineer, Massachusetts Department of Transportation, 10 Park Plaza, Boston, MA 02116-3973, Attn: Jameson Harwood.

You also may send comments, questions, or requests for more information by email to Jameson.Harwood@dot.state.ma.us

Thank you,
Jamie

***Jameson M. Harwood, Cultural Resources Supervisor***
**Environmental Services Section**
***MassDOT* – Highway Division**
***10 Park Plaza***
***Boston, MA 02116***

**Harwood, Jameson (DOT)**

**From:** Microsoft Outlook
**To:** Robinson, David S (EEA)
**Sent:** Thursday, January 30, 2025 9:44 AM
**Subject:** Delivered: MassDOT 613865: Leominster L-08-053 culvert (Project Notification)

## Your message has been delivered to the following recipients:

Robinson, David S (EEA) (David.S.Robinson@mass.gov)

Subject: MassDOT 613865: Leominster L-08-053 culvert (Project Notification)

## Harwood, Jameson (DOT)

**From:** Harwood, Jameson (DOT)
**Sent:** Thursday, January 30, 2025 9:44 AM
**To:** Robinson, David S (EEA)
**Subject:** MassDOT 613865: Leominster L-08-053 culvert (Project Notification)
**Attachments:** Leominster, L-08-053 culvert PNF (613865).pdf

David,

MassDOT is submitting information for the above-referenced project to the BUAR to meet the Section 106 consultation requirements of FHWA (lead federal agency) and US Army Corps of Engineers. Please submit any written comments or concerns regarding historic or archaeological properties that may be affected by this project to Carrie Lavallee, P.E., Chief Engineer, Massachusetts Department of Transportation, 10 Park Plaza, Boston, MA 02116-3973, Attn: Jameson Harwood.

You also may send comments, questions, or requests for more information by email to Jameson.Harwood@dot.state.ma.us

Thank you,
Jamie

***Jameson M. Harwood, Cultural Resources Supervisor***
**Environmental Services Section**
***MassDOT* – Highway Division**
***10 Park Plaza***
***Boston, MA 02116***

**Harwood, Jameson (DOT)**

| | |
|---|---|
| **From:** | Microsoft Outlook |
| **To:** | David Weeden (David.Weeden@mwtribe-nsn.gov); 106Review |
| **Sent:** | Thursday, January 30, 2025 9:54 AM |
| **Subject:** | Relayed: MassDOT 613865: Leominster L-08-053 culvert (Project Notification) |

**Delivery to these recipients or groups is complete, but no delivery notification was sent by the destination server:**

David Weeden (David.Weeden@mwtribe-nsn.gov) (David.Weeden@mwtribe-nsn.gov)

106Review (106Review@mwtribe-nsn.gov)

Subject: MassDOT 613865: Leominster L-08-053 culvert (Project Notification)

## Harwood, Jameson (DOT)

**From:** Harwood, Jameson (DOT)
**Sent:** Thursday, January 30, 2025 9:54 AM
**To:** David Weeden (David.Weeden@mwtribe-nsn.gov); 106Review
**Subject:** MassDOT 613865: Leominster L-08-053 culvert (Project Notification)
**Attachments:** Leominster, L-08-053 culvert PNF (613865).pdf

David,

MassDOT is submitting information for the above-referenced project to the THPO to meet the Section 106 consultation requirements of FHWA (lead federal agency) and US Army Corps of Engineers. Please submit any written comments or concerns regarding historic or archaeological properties that may be affected by this project to Carrie Lavallee, P.E., Chief Engineer, Massachusetts Department of Transportation, 10 Park Plaza, Boston, MA 02116-3973, Attn: Jameson Harwood.

You also may send comments, questions, or requests for more information by email to Jameson.Harwood@dot.state.ma.us

Thank you,
Jamie

***Jameson M. Harwood, Cultural Resources Supervisor***
**Environmental Services Section**
***MassDOT* – Highway Division**
***10 Park Plaza***
***Boston, MA 02116***

**Harwood, Jameson (DOT)**

| | |
|---|---|
| **From:** | Microsoft Outlook |
| **To:** | Tashtesook@aol.com; markandrews0563@outlook.com |
| **Sent:** | Thursday, January 30, 2025 9:56 AM |
| **Subject:** | Relayed: MassDOT 613865: Leominster L-08-053 culvert (Project Notification) |

**Delivery to these recipients or groups is complete, but no delivery notification was sent by the destination server:**

Tashtesook@aol.com (Tashtesook@aol.com)

markandrews0563@outlook.com (markandrews0563@outlook.com)

Subject: MassDOT 613865: Leominster L-08-053 culvert (Project Notification)

## Harwood, Jameson (DOT)

**From:** Harwood, Jameson (DOT)
**Sent:** Thursday, January 30, 2025 9:56 AM
**To:** Tashtesook@aol.com
**Cc:** markandrews0563@outlook.com
**Subject:** MassDOT 613865: Leominster L-08-053 culvert (Project Notification)
**Attachments:** Leominster, L-08-053 culvert PNF (613865).pdf

Mr. Brown,

MassDOT is submitting information for the above-referenced project to the THPO to meet the Section 106 consultation requirements of FHWA (lead federal agency) and US Army Corps of Engineers. Please submit any written comments or concerns regarding historic or archaeological properties that may be affected by this project to Carrie Lavallee, P.E., Chief Engineer, Massachusetts Department of Transportation, 10 Park Plaza, Boston, MA 02116-3973, Attn: Jameson Harwood.

You also may send comments, questions, or requests for more information by email to Jameson.Harwood@dot.state.ma.us

Thank you,
Jamie

***Jameson M. Harwood, Cultural Resources Supervisor***
**Environmental Services Section**
***MassDOT* – Highway Division**
***10 Park Plaza***
***Boston, MA 02116***

January 30, 2025

Leominster Historical Commission
City Hall
25 West Street
Leominster, MA 01453

**RE: LEOMINSTER: Culvert Replacement, L-08-053, Pleasant St. and Colburn St.**
**MassDOT Highway Division – Project Number #613865**
**Section 106 Review – Early Environmental Coordination**

Dear Commission Members:

The Massachusetts Department of Transportation – Highway Division (MassDOT) proposes to complete emergency drainage repairs on L-08-053, a culvert located at Pleasant St. and Colburn St in Leominster. The culvert collapsed during a flooding episode in September 2023 and a temporary 36" diameter corrugated plastic drainage pipe was installed to reopen the road. The proposed improvements involve removing the existing plastic pipe and installing a new box culvert under Pleasant St. between the original headwall inlet location (north side of roadway) and the condemned property at 208 Pleasant St. (south side of roadway). The size of the new box culvert will match the 3'x5' box culvert that collapsed. A new retaining wall will be installed adjacent to Colburn St. to minimize grading between the roadway and the new culvert opening. The Pleasant St. roadway within the project area will be resurfaced and new guardrail and crosswalks installed. The sidewalks will be reconstructed in the project area. Buried utilities will be relocated to accommodate the removal of the existing drainage pipe.

This project will be supported in part with federal funds dispersed through MassDOT. The project, therefore, will require review under Section 106 of the National Historic Preservation Act of 1966 as amended (36 CFR 800). The enclosed project information is provided to the Leominster Historical Commission to initiate consultation with appropriate representatives of local government in compliance with the regulations governing Section 106.

MassDOT requests that the Commission review the enclosed materials at their earliest convenience. Please submit written comments to: Carrie Lavallee, P.E., Chief Engineer, MassDOT, Highway Division, 10 Park Plaza, Room 4260, Boston, MA 02116, Attn: Jameson Harwood.

If you have any questions, please feel free to contact me at jameson.harwood@dot.state.ma.us.

Sincerely,

Jameson Harwood

Jameson Harwood
Cultural Resources Supervisor
Environmental Services

atts: Locus/Aerial
cc: B. Simon, MHC w/atts.




LEOMINSTER (MassDOT Project #613865)
CULVERT REPLACEMENT, L-08-053
PLEASANT STREET AND COLBURN STREET

# Attachment G – Stormwater Management Report

Stormwater Management Report

# 613865-Pleasant Street Over Reservoir Brook

## Leominster

PREPARED FOR

massDOT

10 Park Plaza
Boston, MA 02116

PREPARED BY

TEC, Inc.
282 Merrimack Street, 2nd Floor
Lawrence, MA, 01843

1/14/2026

# Table of Contents

1 Introduction ..... 1

2 Project Summary ..... 2

3 Existing Conditions ..... 5

4 Proposed Conditions ..... 10

5 Impaired Waters and TMDLs ..... 13

6 Stormwater Management Standards ..... 14

# List of Figures

| Figure No. | Description | Page |
|---|---|---|
| Figure 1 | Locus Figure | 4 |
| Figure 2 | Existing Drainage Patterns | 7 |
| Figure 3 | Existing Key Features and Wetland Resource Areas | 8 |
| Figure 4 | NRCS Soils Information | 9 |
| Figure 5 | Proposed Drainage Patterns | 12 |

# List of Tables

| Table No. | Description | Page |
|---|---|---|
| Table 1 | Existing Drainage Areas | 5 |
| Table 2 | Existing SCMs | 6 |
| Table 3 | Impervious Area | 10 |
| Table 4 | Proposed Drainage Areas | 11 |
| Table 5 | Proposed SCMs | 11 |

Table 6 Impaired Waters and TMDL Information ..... 13
Table 7 Nutrient Removal for Project ..... 13
Table 8 Rainfall Depths (in) ..... 15
Table 9 Peak Discharge Rates (cfs) ..... 15
Table 10 Required Recharge Volume for Project ..... 16
Table 11 Provided Recharge Volumes at Each Design Point ..... 16
Table 12 WQV at Each Design Point ..... 17
Table 13 WQV Provided by the SCMs at Each Design Point ..... 17

## Attachments

Appendix A: MassDEP Checklist for Stormwater Report

Appendix B: Soils and FEMA Information

Appendix C: Supporting Calculations

Appendix D: Hydraulic and Hydrologic Data

Appendix E: O&M Plan and LTPPP

# 1

# Introduction

This Stormwater Management Report has been prepared to demonstrate compliance with the Massachusetts Stormwater Management Standards (the Standards) in accordance with the Massachusetts Wetlands Protection Act Regulations (310 CMR 10.00) and Water Quality Certification Regulations (314 CMR 9.00). Appendix A includes a completed Massachusetts Department of Environmental Protection (MassDEP) Checklist for Stormwater Report, stamped by a Massachusetts registered professional engineer.

The Project follows the guidance presented in the MassDOT Stormwater Design Guide (SDG), and stormwater management systems are designed in accordance with the Standards.

# 2

# Project Summary

The Applicant, MassDOT, is proposing Project 613865 Pleasant Street over Reservoir Brook in Leominster, MA to replace the temporary culvert and rebuild the existing stream downstream of the culvert.

The Project consists of replacing the temporary 36" corrugated plastic pipe, installed as an emergency replacement of the previous 5'x 3' box culvert that collapsed during the floods in September 2023. A 8'-4" x 4' box culvert will be installed to replace the temporary culvert and meet the required hydraulic opening to the maximum extent practicable. Additionally, this project will include the restoration of the channel downstream of the culvert. The channel will be realigned and a flood storage area will be provided to mitigate flooding concerns to the condos further downstream. The channel will be armored on the eastern side to protect against the channel migrating and provide a buffer between the stream and the condos. Finally, approximately 500 feet downstream of the culvert, sediment deposits from the flood event in 2023 will be removed to restore the existing wetlands and reestablish a braided wetland system.

Alongside the culvert and stream work, the project proposes improvements to the roadway, sidewalks, fencing, crosswalks, underground utilities, and drainage network that were impacted when the culvert failed in September 2023. Work will extend approximately 200 feet along Pleasant Street, 250 feet along Colburn Street, and 200 feet along Reservoir Brook downstream.

This drainage study was performed to assess the potential impacts of the proposed improvements and to provide measures to mitigate any impacts to resource areas near the Project. The limits of disturbance for this Project are primarily in the existing footprints of the Pleasant Street and Colburn Street and within the existing channel of Reservoir Brook.

Under existing conditions, runoff from the roadway and sidewalks is caught in the existing drainage system or flows overland. Both types of runoff enter Reservoir Brook. This project is considered redevelopment project and therefore is subject to meet the Massachusetts Stormwater Standards to the maximum extent practicable. The project includes maintenance and improvements of existing roadways and the addition of footpaths. This analysis has been prepared to verify that the Project will result equivalent stormwater collection and treatment as compared to existing conditions.

The Project proposes to match the existing stormwater collection system. The stormwater management system outlined in this report remains designed to meet the Stormwater Standards identified in the Massachusetts Department of Environmental Protection (DEP)

Figure 1 Locus Figure

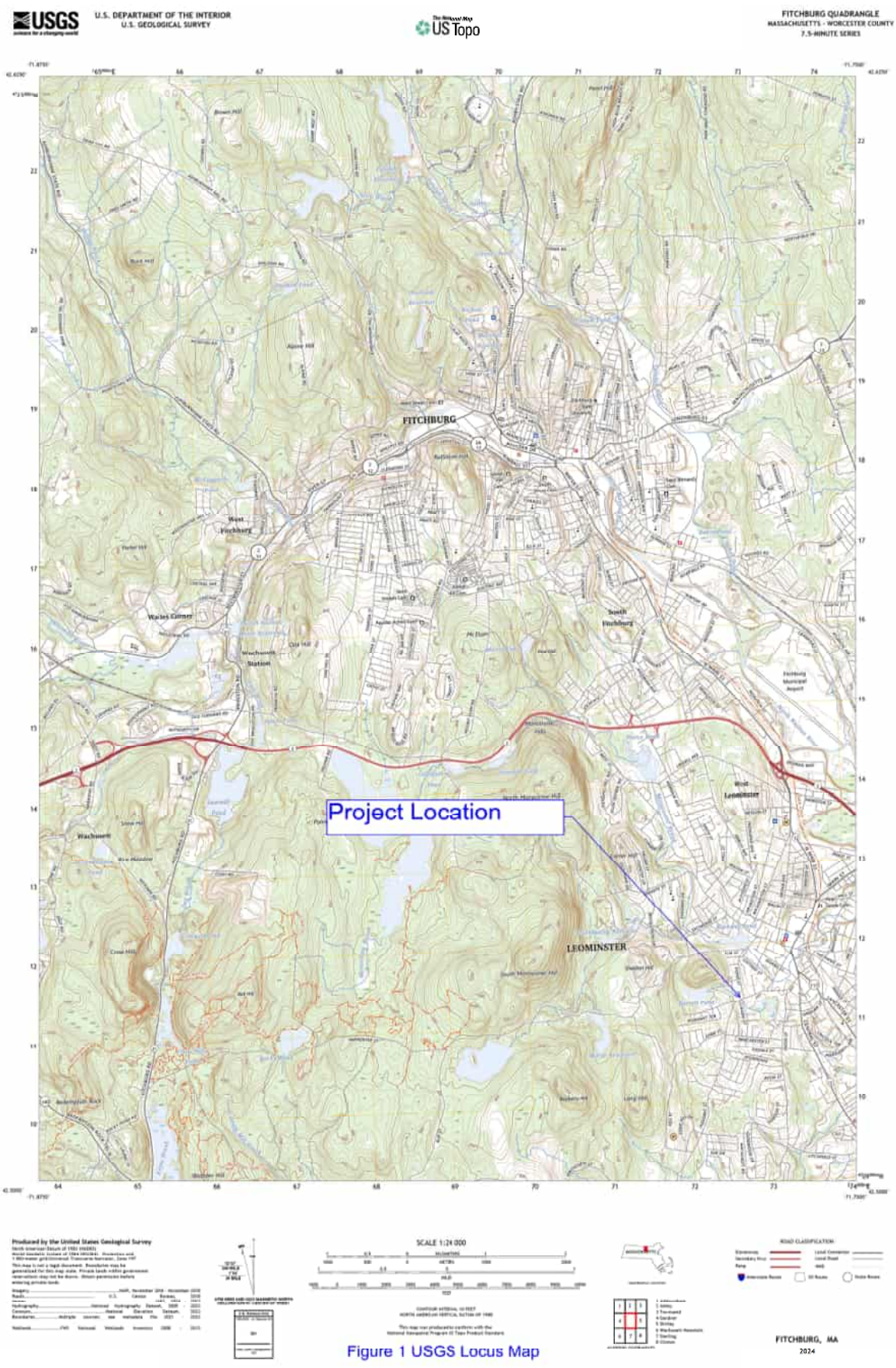



Figure 1 USGS Locus Map

# 3

# Existing Conditions

The project is currently in a temporarily restored condition after the historic rainfall event in September 2023 that washed out the previous culvert and roadway. A 36" corrugated plastic pipe is currently in place to carry Reservoir Brook from north to south under Pleasant Street. Reservoir Brook connects the Colburn reservoir to the north to a large wetland network to the south within the Nashua Major Watershed. From there it flows into Fall Brook and then the North Nashua River.

Land cover within the project area is predominantly impervious roadway and sidewalk area, with pervious areas limited to grading slopes and streambed. There is a catch basin on the north side of Pleasant Street that picks up drainage from that side of the crowned roadway. The catch basin on the south side was washed away during the same event that took the culvert, leaving stormwater to sheet flow over the roadway embankment down to the brook. The existing basins do not have deep sumps. The entire project area discharges to Reservoir Brook on the south side of Pleasant Street. There are currently no existing Stormwater Control Measures (SCMs), nor were there any prior to the emergency repair.

The Pre-Development Drainage Figure is depicted in Figure 2 of this report. This figure presents the delineation of the existing subcatchment area and the Design Point. There is one existing subcatchment area which is outlined below:

Existing Subcatchment Area 1 (EX-1) is comprised of 4,361 SF of pervious land area consisting of grassed roadway shoulder and river embankment and 17,659 SF of impervious paved roadway. Stormwater within EX-1 currently flows into the existing drainage structures along Pleasant Street, which discharge to the brook, or sheet flows directly to Reservoir Brook (DP-A).

Table 1 presents the existing drainage areas and their characteristics. **Error! Reference source not found.** and existing SCMs by design point.

**Table 1 Existing Drainage Areas**

| Drainage Area | Design Point | Area (acres) | Curve Number |
|---|---|---|---|
| Ex-A1 | DP-A | 0.506 | 88 |
| | | | |
| | | | |

**Table 2 lists the existing SCMs and provides a description of each.**

**Table 2 Existing SCMs**

| SCM | Description |
|---|---|
| N/A | No existing SCMs are located within the project limits |
| | |
| | |

Key features in and around the project area include Reservoir Brook and its associated resource areas and buffer zones and are shown on Figure 3.

The Project is not located within a flood zone per FIRM 2503140006B, effective date September 16, 1982. The Pleasant Street crossing over Reservoir Brook is located approximately 680 feet upstream of the Zone A associated with the downstream wetland.

Review of the NRCS Soil Survey map of the project area Windsor loamy sandy (HDG-A) and Sudbury fine sandy loam (HSG-B) and are shown on Figure 4. On-site subsurface investigations performed at the project area included borings to a depth of 42 feet, which discovered granular fill, over sand, over glacial till. Appendix B provides detailed soils information, including the NRCS soil survey data for the project area and results of on-site subsurface investigations.

Figure 2 Existing Drainage Patterns

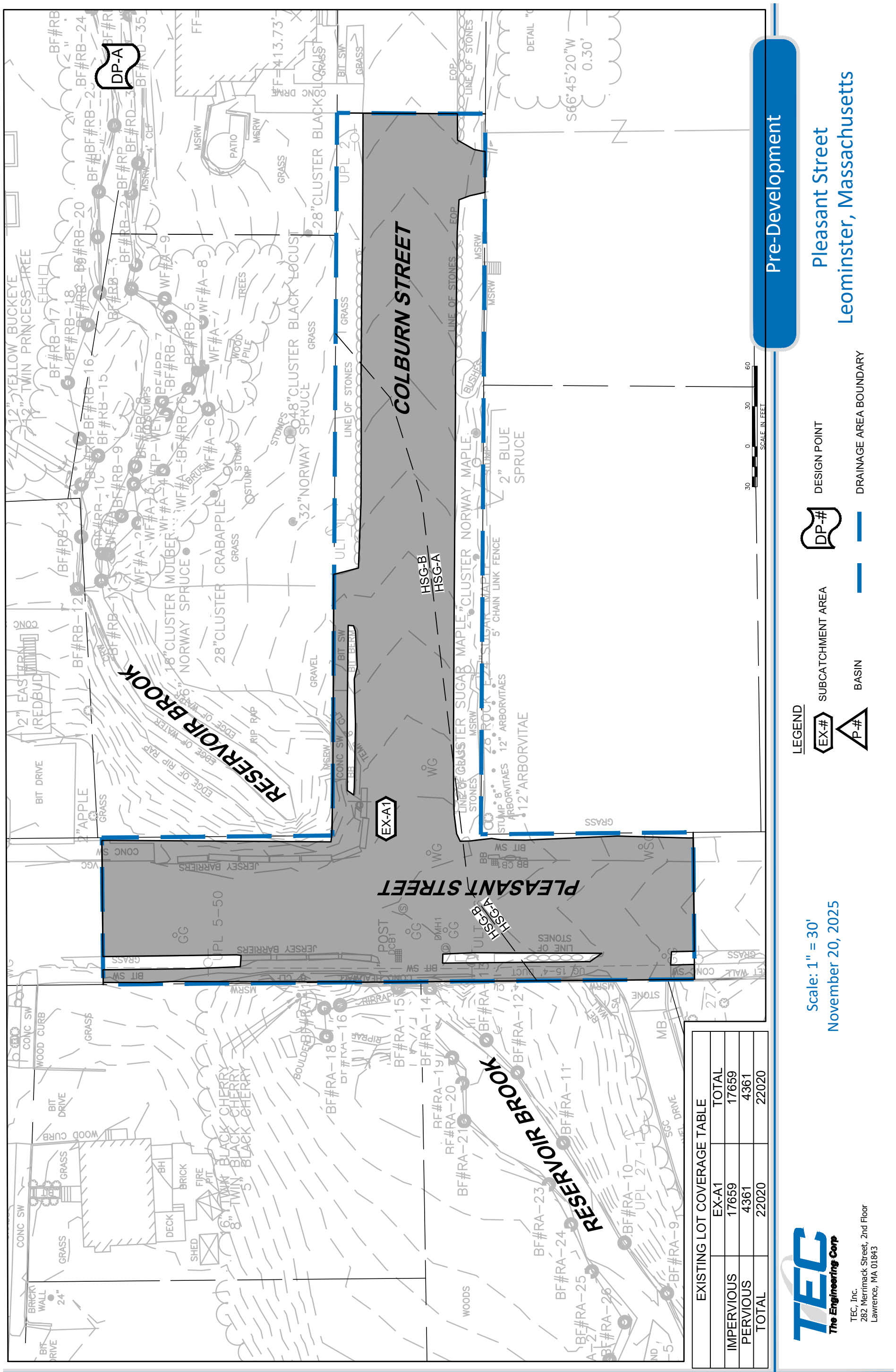
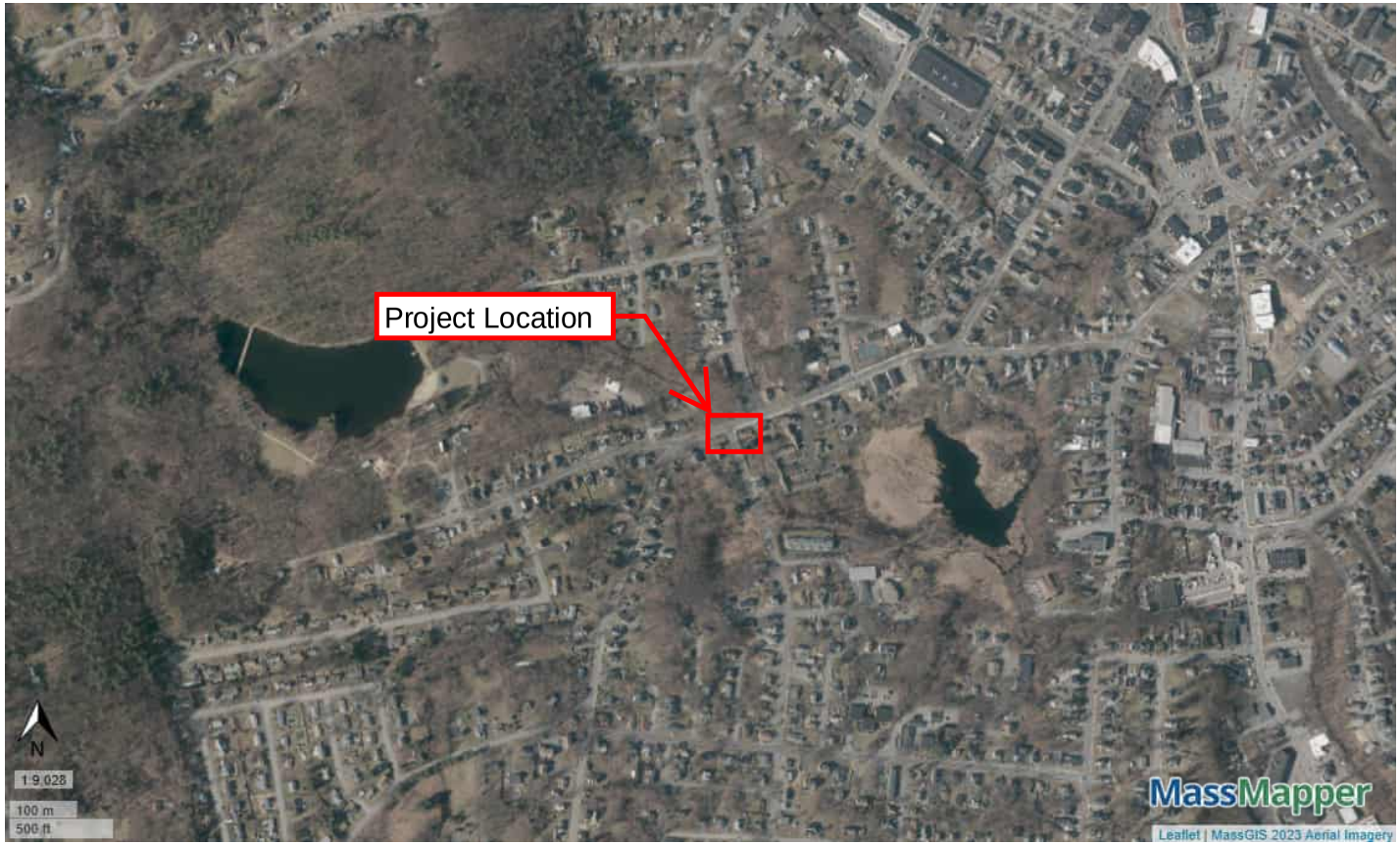

Pre-Development
Pleasant Street
Leominster, Massachusetts
COLBURN STREET
RESERVOIR BROOK
PLEASANT STREET
DP-A
EX-A1
HSG-A
HSG-B
LEGEND
SUBCATCHMENT AREA
DESIGN POINT
BASIN
DRAINAGE AREA BOUNDARY
SCALE IN FEET
Scale: 1" = 30'
November 20, 2025
EXISTING LOT COVERAGE TABLE
EX-A1
TOTAL
IMPERVIOUS 17659 17659
PERVIOUS 4361 4361
TOTAL 22020 22020
TEC
The Engineering Corp
TEC, Inc.
282 Merrimack Street, 2nd Floor
Lawrence, MA 01843

Figure 3 Existing Key Features and Wetland Resource Areas

# Key Features




Surface Water Supply Watersheds
- Surface Water (Active or Inactive)
- Emergency Surface Water
- Rhode Island Source

Public Water Supplies
- Communtiy Groundwater Well
- Non-Communtiy Groundwater Well
- Surface Water Intake
- Emergency Surface Water Intake
- Community Labels
- Non-Community Labels

Areas of Critical Environmental Concern
ACECs

Zone Is

Zone IIs

Zone C

Zone B

Zone A

DFW Coldwater Fisheries Resources

NHESP Priority Habitats of Rare Species

NHESP Estimated Habitats of Rare Wildlife

Note:
None of the above listed critical areas are present within the limit of work or nearby surrounding area.

A00830 - 128

Proposal No. 616375-136648

Printed Nov 21, 2025

Figure 4 NRCS Soils Information

Custom Soil Resource Report
Soil Map



# 4

# Proposed Conditions

The Project proposes the construction of a new box culvert to convey Reservoir Brook under Pleasant Street along with the restoration of the roadway, crosswalks, sidewalks, and fences to their previous condition before the September 2023 failure. The sidewalks and landscape strips on Pleasant Street will be resized and redesigned to improve pedestrian safety. Additional sidewalk is proposed on Colburn Street, which increases impervious area within the limit of work.

Additionally, the stormwater collection and conveyance network within Pleasant Street will be restored and brought up to current MassDOT standards to the greatest extent that is practicable. The catch basins will no longer outfall directly into the box culvert as the previous design employed but will use deep sump catch basins to provide water quality treatment and outfall locations that are as far from resource areas as possible. The outfall locations for stormwater collection network will be proximate to the new culvert opening in order to maintain existing drainage patterns. There will also be temporary impacts to the streambed of Reservoir Brook in order to restore the original depth, alignment, and geometry.

The proposed design seeks to further improve water quality by including non-structural SCMs within the Operation and Maintenance Plan like catch basin cleaning and street sweeping schedules. All impacts to key features and natural resources in this Project are temporary and minimized to the greatest extent practicable.

Table 3 provides a breakdown of the impervious area for the Project. The proposed improvements reduce impervious area within Pleasant Street, and the proposed sidewalk on Colburn Street creates additional impervious area. The result is a negligible net increase within the limit of work.

**Table 3 Impervious Area**

| Condition | Impervious Area (sq. ft) |
|---|---|
| Existing | 17,659 |
| Proposed | 18,078 |
| Net | +419 |

The proposed stormwater management system is designed to match existing drainage patterns and reduce the risk of erosion within the nearby resource area. In the proposed

conditions analysis, the same design point identified and analyzed under the existing conditions was considered. The post-development subcatchment areas are identified in *Figure 5, Proposed Drainage Patterns*.

Table 4 presents the proposed drainage areas and their characteristics under proposed conditions. Figure 5 shows proposed drainage patterns and drainage area delineations by design point.

Proposed Subcatchment Area 1 (PR-A1) is comprised of 3,942 SF of pervious land area consisting of grassed roadway shoulder and river embankment and 18,078 SF of impervious paved roadway, bridge structure, and water surface. Stormwater within PR-A1 will continue to flow into the drainage structures along Pleasant Street or sheet flow to Reservoir Brook. Stormwater caught in the drainage structures will be conveyed into Reservoir Brook (DP-A1).

**Table 4 Proposed Drainage Areas**

| Drainage Area | Design Point | Area (acres) | Curve Numbers |
|---|---|---|---|
| PR-A1 | DP-A | 0.506 | 89 |
| | | | |
| | | | |

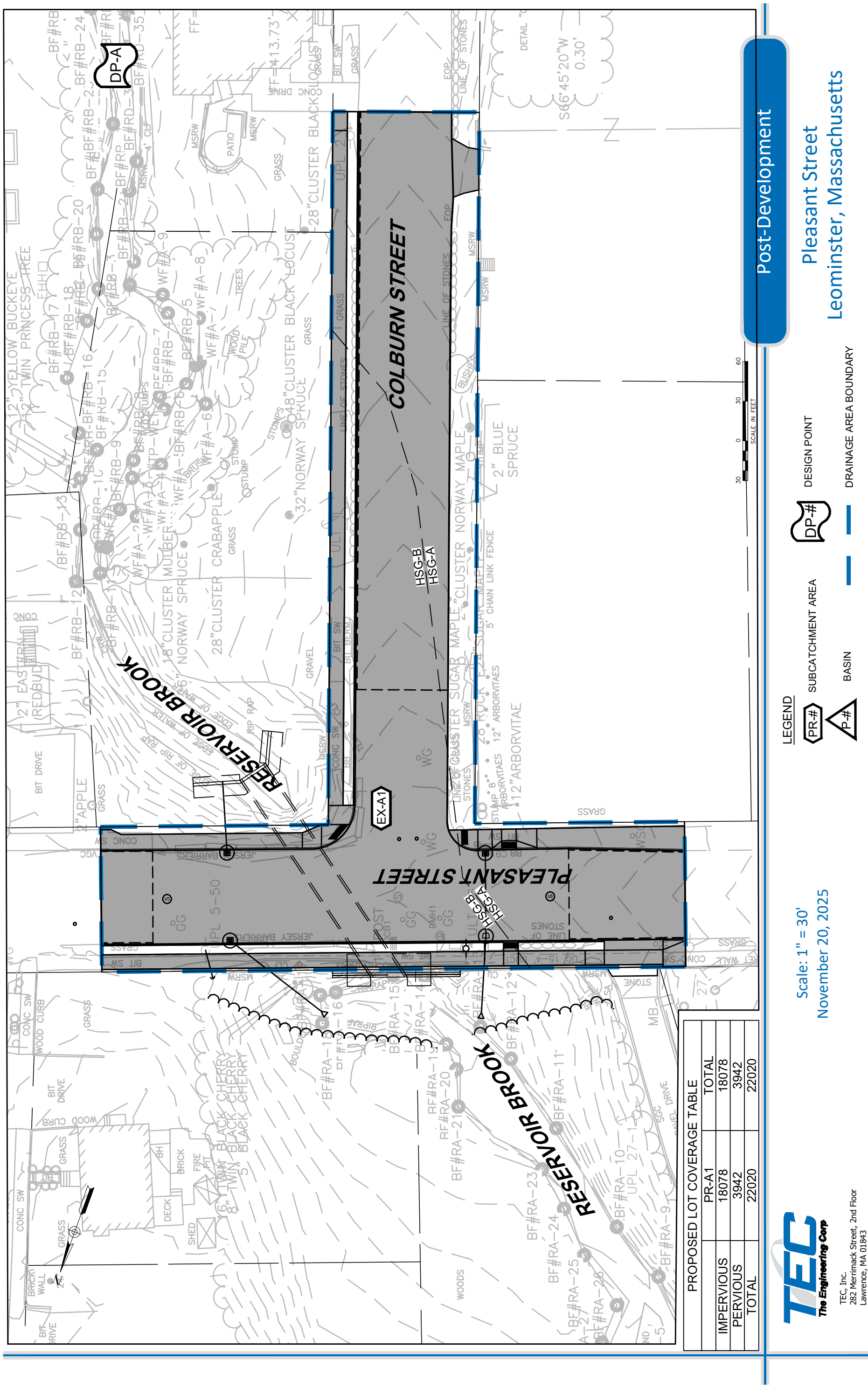
See Figure 5 for proposed drainage areas and proposed SCMs by design point.

Table 5 lists the proposed SCMs and provides a description of each.

**Table 5 Proposed SCMs**

| SCM | Description |
|---|---|
| Deep sump catch basin | The project proposes three deep sump catch basins |
| | |
| | |

Figure 5 Proposed Drainage Patterns


Post-Development
Pleasant Street
Leominster, Massachusetts
COLBURN STREET
PLEASANT STREET
RESERVOIR BROOK
RESERVOIR BROOK
DP-A
EX-A1
HSG-A
HSG-B
LEGEND
PR-# SUBCATCHMENT AREA
P-# BASIN
DP-# DESIGN POINT
DRAINAGE AREA BOUNDARY
SCALE IN FEET
60
30
0
30
Scale: 1" = 30'
November 20, 2025
PROPOSED LOT COVERAGE TABLE
PR-A1 TOTAL
IMPERVIOUS 18078 18078
PERVIOUS 3942 3942
TOTAL 22020 22020
TEC
The Engineering Corp
TEC, Inc.
282 Merrimack Street, 2nd Floor
Lawrence, MA 01843

# 5

# Impaired Waters and TMDLs

As described under the Proposed Conditions section, the Project will discharge Reservoir Brook, which is not listed on the Final 2022 Integrated List of Waters.

Table 6 lists the receiving water bodies that are impaired and if the water body has a TMDL. MassDOT is expecting to receive a Transportation Separate Storm Sewer System (TS4) Permit from EPA, which will require that pollutant reductions presented in the TMDL be met on the watershed scale. As a result, the TMDL reductions do not need to be met by MassDOT on a project-by-project basis, but rather, MassDOT strives to make incremental progress towards achieving the required TMDL pollutant reductions with each project. Incremental progress is achieved through the implementation of SCMs designed to treat for the specific pollutants of concern for waterbodies within the watershed.

**Table 6 Impaired Waters and TMDL Information**

| Water Body | 303(d) Category | 303(d) Impairments | TMDL | TMDL Pollutant | TMDL Report Name |
|---|---|---|---|---|---|
| *Reservoir Brook* | *N/A* | *N/A* | *N/A* | *N/A* | *N/A* |
| | | | | | |
| | | | | | |

With no TMDL present, the Project does not propose SCMs to specifically treat for pollutants.

Table 7 lists each water body, the proposed SCMs that drain to it, and each SCM's estimated pollutant removal per year.

**Table 7 Nutrient Removal for Project**

| Water Body | SCM | *Nutrient* Removal (lbs/yr) |
|---|---|---|
| *Reservoir Brook* | | |
| | N/A | 0 |
| | | |
| | Total Provided by SCMs | 0 |

See Standard 4 in Section 6 below for more water quality calculations and discussion.

# 6

# Stormwater Management Standards

As demonstrated below, the proposed Project complies with the MassDEP Stormwater Management Standards (the Standards). The Project is a redevelopment, footpath project, and maintenance and improvement of existing roadways project and meets certain standards to the maximum extent practicable (MEP).

The proposed stormwater management system closely matches the existing system and proposes minimal adjustments to outlet locations. Drainage pipes will outlet within the embankment to energy dissipation bowls rather than outletting through the culvert headwall.

The Project will follow existing drainage patterns. The negligible increase in impervious area is associated with pedestrian safety improvements. The stormwater management plan controls the flow of stormwater and provides water quality treatment that complies with MassDEP Stormwater Standards to the maximum extent practicable.

## Standard 1: No New Untreated Discharges

*No new stormwater conveyances may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.*

The Project has been designed to comply with Standard 1. All new and replacement outfalls are designed with flared end sections and rip rap energy dissipation bowls to prevent erosion. The outlets will continue to discharge to Reservoir Brook. Appendix C provides supporting calculations for the outlet protection design.

Stormwater runoff will be treated by deep sump catch basins before discharging off-site. See Standard 4 for the water quality treatment provided by the Project.

## Standard 2: Peak Rate Attenuation

*Stormwater management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates. This Standard may be waived for discharges to land subject to coastal storm flowage as defined in 310 CMR 10.04.*

The Project has been designed to comply with Standard 2 to the maximum extent practicable. This project causes a negligible increase to the post-development peak runoff rates for the 2-year, 10-year, and 100-year 24-hour design storm events based on NOAA Atlas 14 precipitation data as shown in Table 8.

**Table 8 Rainfall Depths (in)**

| Design Storm Event | Rainfall Depth (in) |
|---|---|
| 2-year | 3.15 |
| 10-year | 4.77 |
| 100-year | 7.34 |

Table 9 provides a summary of peak rates for each design point under existing and proposed conditions. The project causes an average 2% increase in peak flow in the storm events. Appendix D provides computations and supporting information regarding the hydraulic and hydrologic modeling.

**Table 9 Peak Discharge Rates (cfs)**

| Design Point | Existing | | | Proposed | | |
|---|---|---|---|---|---|---|
| | 2-year | 10-year | 100-year | 2-year | 10-year | 100-year |
| DP-A | 1.25 | 1.93 | 3.05 | 1.27 | 1.97 | 3.11 |
| | | | | | | |
| | | | | | | |
| | | | | | | |

## Standard 3: Recharge

*Loss of annual recharge to groundwater shall be eliminated or minimized through the use of infiltration measures, including environmentally sensitive site design, low impact development techniques, stormwater best management practices, and good operation and maintenance. At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil type. This Standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook.*

The Project has been designed to comply with Standard 3 to the maximum extent practicable. Stormwater recharge is not a feasible option due to the 100-foot infiltration

setbacks of associated with the Reservoir Brook, steep slopes, and retaining walls. There is limited space within the right-of-way to site a recharge SCM. As a roadway and footpath redevelopment project, The Project has been designed to comply with Standard 3 to the maximum extent practicable.

Table 10 provides the required recharge volume for the Project, and Table 11 provides the recharge volumes proposed for each design point.

**Table 10 Required Recharge Volume for Project**

| | HSG A | HSG B | HSG C | HSG D | Total |
|---|---|---|---|---|---|
| Existing Impervious (sq. ft.) | 7,396 | 10,263 | - | - | 17,659 |
| Proposed Impervious (sq. ft.) | 7,790 | 10,288 | - | - | 18,078 |
| Net Impervious Area (sq. ft.) | +394 | +25 | - | - | +419 |
| Target depth, F (in) | 0.60 | 0.35 | 0.25 | 0.10 | - |
| Required Recharge Volume, ReV (cf) | 19.70 | 0.73 | - | - | 20.43 |

**Table 11 Provided Recharge Volumes at Each Design Point**

| | HSG A | HSG B | HSG C | HSG D | Total |
|---|---|---|---|---|---|
| DP-1 | | | | | |
| Net Impervious Area (sf) | +394 | +25 | - | - | +419 |
| Required Recharge Volume, ReV (cf) | 19.70 | 0.73 | - | - | 20.43 |
| Provided Recharge Volume (cf) | 0 | 0 | - | - | 0 |

Appendix B provides soil evaluation information (including the geotechnical report if applicable), and Appendix C provides computations and supporting information.

## Standard 4: Water Quality Treatment

*Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS). This Standard is met when:*

- *Suitable practices for source control and pollution prevention are identified in a long-term pollution prevention plan, and thereafter are implemented and maintained.*
- *Structural stormwater best management practices are sized to capture the required water quality volume determined in accordance with the Massachusetts Stormwater Handbook.*
- *Pretreatment is provided in accordance with the Massachusetts Stormwater Handbook.*

The Project has been designed to comply with Standard 4 to the maximum extent practicable as a roadway and footpath redevelopment project. The proposed deep sump catch basins provide 25% TSS removal, improving upon existing conditions.

Table 12 shows the WQV to be treated for both new and existing impervious area within each drainage area, organized by design point.

**Table 12 WQV at Each Design Point**

| Design Point | WQV for New IA (cf) | WQV for Existing IA (cf) | Total WQV (cf) |
|---|---|---|---|
| DP-1 | | | |
| DA-1 | 0 | 0 | 0 |
| Project Total | 0 | 0 | 0 |

Table 13 shows the WQV provided by the SCMs at each design point.

**Table 13 WQV Provided by the SCMs at Each Design Point**

| Design Point | Pretreatment (y/n) | WQV Provided (cf) | Meets Total WQV | Meets Required WQV for New IA |
|---|---|---|---|---|
| DP-1 | | | | |
| Deep sump catch basins | n | 0 | no | no |
| Project Total | | 0 | no | no |

The site as a whole is a constrained corridor between two intersections and above Reservoir Brook. In addition, due to the extreme topography adjacent to the stream and limited right-of-way alternatives such as water quality swales and bioretention basins were ruled out as infeasible options. The majority of the site is located within the 100-foot setback distance for infiltration near foundations, due to the culvert foundations, retaining walls, and adjacent buildings, deeming infiltration measures to be infeasible within the Right-Of-Way. The project site also has several underground utilities and limited space within the Right-of-Way to install additional SCMs. Ultimately, deep sump catch basins will improve drainage conditions to the maximum extent practical at this location.

The project provides no water quality volume due to the constraints listed above. As a redevelopment roadway project, the stormwater system meets Standard 4 to the maximum extent practicable. Appendix C provides the MassDEP TSS Removal Calculation Worksheets.

## Standard 5: Land Uses with Higher Potential Pollutant Loads

For Land Uses with Higher Potential Pollutant Loads (LUHPPLs), source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to

*the maximum extent practicable. If through source control and/or pollution prevention all LHPPLs cannot be completely protected from exposure to rain, snow, snow melt, and stormwater runoff, the proponent shall use the specific structural stormwater BMPs determined by the Department to be suitable for such uses as provided in the Massachusetts Stormwater Handbook. Stormwater discharges from LUHPPLs shall also comply with the requirements of the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53 and the regulations promulgated thereunder at 314 CMR 3.00, 314 CMR 4.00 and 314 CMR 5.00.*

Standard 5 does not apply to the Project. There are no Land Uses with Higher Potential Pollutant Loads within the project area.

## Standard 6: Critical Areas

*Stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply and stormwater discharges near or to any other critical area require the use of the specific source control and pollution prevention measures and the specific structural stormwater best management practices determined by the Department to be suitable for managing discharges to such areas as provided in the Massachusetts Stormwater Handbook. A discharge is near a critical area if there is a strong likelihood of a significant impact occurring to said area, taking into account site-specific factors. Stormwater discharges to Outstanding Resource Waters and Special Resource Waters shall be removed and set back from the receiving water or wetland and receive the highest and best practical method of treatment. A "stormwater discharge" as defined in 314 CMR 3.04(2)(a)1 or (b), to an Outstanding Resource Water or Special Resource Water shall comply with 314 CMR 3.00 and 314 CMR 4.00. Stormwater discharges to a Zone I or Zone A are prohibited unless essential to the operation of a public water supply.*

Standard 6 does not apply to the Project. There are no Critical Areas near the project area.

## Standard 7: Redevelopment

*A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural best management practice requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.*

The Project is a redevelopment project. The Stormwater Management Standards 2, 3, & 4 were met to the maximum extent practicable. The project proposes to increase impervious

area on site slightly with the addition of sidewalk throughout the intersection of Colburn Street and Pleasant Street. As redevelopment project, the improvements meet the standards to the maximum extent practicable. It should be noted that Standards 1, 8, 9, and 10 were fully met. Standards 5 and 6 are not applicable to the project.

## Standard 8: Erosion and Sediment Control

*A plan to control construction related impacts, including erosion, sedimentation and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan) shall be developed and implemented.*

The implementation of erosion and sediment (E&S) controls during construction is considered a standard practice for all MassDOT projects. E&S controls will be installed before any land disturbance begins for the Project and will remain in place for the duration of the Project. The E&S controls for the Project are shown on the project plans and include compost filter socks, silt fences and inlet protection devices or similar. A floating silt fence will be implemented within the brook for the duration of construction.

## Standard 9: Operation and Maintenance Plan

*A long-term operation and maintenance plan shall be developed and implemented to ensure that stormwater management systems function as designed..*

Pleasant Street and Colburn Street are not owned by MassDOT. The activities included in the O&M Plan will be implemented by the municipality. Appendix E includes the O&M Plan for this project.

## Standard 10: Prohibition of Illicit Discharges

*All illicit discharges to the stormwater management system are prohibited.*

Illicit Discharge Statement

The project's stormwater management system, as shown on the plans submitted with this report, has been designed in full compliance with Standard 10. The project area does not have any known illicit connections. Any illicit connections to the stormwater management system found in the project limit of work during construction will be removed and/or resolved through MassDOT's Illicit Discharge Detention and Elimination (IDDE) Program. The Long-Term Pollution Prevention Plan, provided in Appendix E, includes measures to prevent illicit discharges.

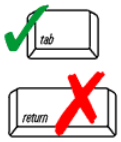
# Appendix A: MassDEP Checklist for Stormwater Report

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

# Checklist for Stormwater Report

## A. Introduction

**Important:** When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.




A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the Massachusetts Stormwater Handbook. The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.[1] This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8[2]
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

[1] The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

[2] For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.



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

# Checklist for Stormwater Report

## B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

*Note:* Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

## Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature

Signature and Date

## Checklist

**Project Type:** Is the application for new development, redevelopment, or a mix of new and redevelopment?

☐ New development

☒ Redevelopment

☐ Mix of New Development and Redevelopment



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# Checklist for Stormwater Report

## Checklist (continued)

**LID Measures:** Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- ☐ No disturbance to any Wetland Resource Areas
- ☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- ☐ Reduced Impervious Area (Redevelopment Only)
- ☒ Minimizing disturbance to existing trees and shrubs
- ☐ LID Site Design Credit Requested:
  - ☐ Credit 1
  - ☐ Credit 2
  - ☐ Credit 3
- ☐ Use of “country drainage” versus curb and gutter conveyance and pipe
- ☐ Bioretention Cells (includes Rain Gardens)
- ☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- ☐ Treebox Filter
- ☐ Water Quality Swale
- ☐ Grass Channel
- ☐ Green Roof
- ☐ Other (describe): _____

**Standard 1: No New Untreated Discharges**

- ☒ No new untreated discharges
- ☒ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- ☐ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.



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# Checklist for Stormwater Report

## Checklist (continued)

**Standard 2: Peak Rate Attenuation**

☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.

☒ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

☐ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

**Standard 3: Recharge**

☒ Soil Analysis provided.

☒ Required Recharge Volume calculation provided.

☐ Required Recharge volume reduced through use of the LID site Design Credits.

☐ Sizing the infiltration, BMPs is based on the following method: Check the method used.

☐ Static ☐ Simple Dynamic ☐ Dynamic Field[1]

☐ Runoff from all impervious areas at the site discharging to the infiltration BMP.

☐ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.

☒ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:

- ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
- ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
- ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
- ☒ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

☐ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.

☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

[1] 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.



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# Checklist for Stormwater Report

## Checklist (continued)

**Standard 3: Recharge** (continued)

☐ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.

☐ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

**Standard 4: Water Quality**

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☒ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☐ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☐ is within the Zone II or Interim Wellhead Protection Area
- ☐ is near or to other critical areas
- ☐ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☐ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☐ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.



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# Checklist for Stormwater Report

## Checklist (continued)

**Standard 4: Water Quality** (continued)

☐ The BMP is sized (and calculations provided) based on:

- ☐ The ½" or 1" Water Quality Volume or
- ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☐ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

**Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)**

☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☐ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated.

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.

☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

**Standard 6: Critical Areas**

☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.

☐ Critical areas and BMPs are identified in the Stormwater Report.



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# Checklist for Stormwater Report

## Checklist (continued)

**Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable**

☒ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:

- ☐ Limited Project
- ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
- ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
- ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- ☐ Bike Path and/or Foot Path
- ☒ Redevelopment Project
- ☐ Redevelopment portion of mix of new and redevelopment.

☒ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☒ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

**Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control**

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☐ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.



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# Checklist for Stormwater Report

## Checklist (continued)

**Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control** (continued)

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☐ The project is ***not*** covered by a NPDES Construction General Permit.

☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☒ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

**Standard 9: Operation and Maintenance Plan**

☒ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☒ Name of the stormwater management system owners;
- ☒ Party responsible for operation and maintenance;
- ☒ Schedule for implementation of routine and non-routine maintenance tasks;
- ☒ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☒ Description and delineation of public safety features;
- ☒ Estimated operation and maintenance budget; and
- ☒ Operation and Maintenance Log Form.

☐ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

**Standard 10: Prohibition of Illicit Discharges**

☒ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;

☐ An Illicit Discharge Compliance Statement is attached;

☒ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

# Appendix B: Soils and FEMA Information

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

# Custom Soil Resource Report for Worcester County, Massachusetts, Northeastern Part




November 18, 2025

# Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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# Contents

**Preface**.....2
**How Soil Surveys Are Made**.....5
**Soil Map**.....8
Soil Map.....9
Legend.....10
Map Unit Legend.....12
Map Unit Descriptions.....12
Worcester County, Massachusetts, Northeastern Part.....14
255C—Windsor loamy sand, 8 to 15 percent slopes.....14
260A—Sudbury fine sandy loam, 0 to 3 percent slopes.....15
**References**.....17

# How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

# Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



## MAP LEGEND

**Area of Interest (AOI)**
- Area of Interest (AOI)

**Soils**
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

**Special Point Features**
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

**Water Features**
- Streams and Canals

**Transportation**
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

**Background**
- Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Worcester County, Massachusetts, Northeastern Part
Survey Area Data: Version 20, Sep 5, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 22, 2022—Jun 5, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background



A00830 - 161

Proposal No. 616375-136648

| MAP LEGEND | MAP INFORMATION |
| --- | --- |
| | imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident. |

A00830 - 162

Proposal No. 616375-136648

# Map Unit Legend

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|---|---|---|---|
| 255C | Windsor loamy sand, 8 to 15 percent slopes | 0.2 | 47.3% |
| 260A | Sudbury fine sandy loam, 0 to 3 percent slopes | 0.3 | 52.7% |
| **Totals for Area of Interest** | | **0.5** | **100.0%** |

# Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

# Worcester County, Massachusetts, Northeastern Part

## 255C—Windsor loamy sand, 8 to 15 percent slopes

### Map Unit Setting

*National map unit symbol:* 2svkq
*Elevation:* 0 to 1,260 feet
*Mean annual precipitation:* 36 to 71 inches
*Mean annual air temperature:* 39 to 55 degrees F
*Frost-free period:* 140 to 240 days
*Farmland classification:* Farmland of statewide importance

### Map Unit Composition

*Windsor and similar soils:* 85 percent
*Minor components:* 15 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Windsor

#### Setting

*Landform:* — error in exists on —
*Landform position (two-dimensional):* Summit, shoulder, backslope
*Landform position (three-dimensional):* Side slope, riser
*Down-slope shape:* Convex
*Across-slope shape:* Convex, linear
*Parent material:* Loose sandy glaciofluvial deposits derived from granite and/or loose sandy glaciofluvial deposits derived from schist and/or loose sandy glaciofluvial deposits derived from gneiss

#### Typical profile

*Oe - 0 to 1 inches:* moderately decomposed plant material
*Ap - 1 to 11 inches:* loamy sand
*Bw - 11 to 31 inches:* loamy sand
*C - 31 to 65 inches:* sand

#### Properties and qualities

*Slope:* 8 to 15 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Excessively drained
*Runoff class:* Low
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to very high (1.42 to 99.90 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Maximum salinity:* Nonsaline (0.0 to 1.9 mmhos/cm)
*Available water supply, 0 to 60 inches:* Low (about 4.2 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 3e
*Hydrologic Soil Group:* A
*Ecological site:* F144AY022MA - Dry Outwash
*Hydric soil rating:* No

**Minor Components**

**Hinckley**

*Percent of map unit:* 10 percent
*Landform:* Deltas, kames, eskers, outwash plains
*Landform position (two-dimensional):* Summit, shoulder, backslope
*Landform position (three-dimensional):* Head slope, crest, side slope, nose slope, rise
*Down-slope shape:* Convex
*Across-slope shape:* Convex, linear
*Hydric soil rating:* No

**Deerfield**

*Percent of map unit:* 5 percent
*Landform:* Deltas, terraces, outwash plains
*Landform position (two-dimensional):* Footslope
*Landform position (three-dimensional):* Tread, talf
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Hydric soil rating:* No

## 260A—Sudbury fine sandy loam, 0 to 3 percent slopes

**Map Unit Setting**

*National map unit symbol:* w3pq
*Elevation:* 0 to 2,100 feet
*Mean annual precipitation:* 32 to 50 inches
*Mean annual air temperature:* 45 to 50 degrees F
*Frost-free period:* 145 to 240 days
*Farmland classification:* All areas are prime farmland

**Map Unit Composition**

*Sudbury and similar soils:* 80 percent
*Minor components:* 20 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Sudbury**

**Setting**

*Landform:* Depressions
*Landform position (two-dimensional):* Footslope
*Landform position (three-dimensional):* Dip
*Down-slope shape:* Concave
*Across-slope shape:* Concave
*Parent material:* Friable coarse-loamy eolian deposits over loose sandy glaciofluvial deposits

**Typical profile**

*H1 - 0 to 9 inches:* fine sandy loam
*H2 - 9 to 18 inches:* fine sandy loam

*H3 - 18 to 25 inches:* gravelly loamy sand
*H4 - 25 to 60 inches:* gravelly sand

**Properties and qualities**

*Slope:* 0 to 3 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Moderately well drained
*Runoff class:* Very low
*Capacity of the most limiting layer to transmit water (Ksat):* High (2.00 to 6.00 in/hr)
*Depth to water table:* About 18 to 36 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Available water supply, 0 to 60 inches:* Moderate (about 6.5 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 2w
*Hydrologic Soil Group:* B
*Ecological site:* F144AY027MA - Moist Sandy Outwash
*Hydric soil rating:* No

**Minor Components**

**Walpole**

*Percent of map unit:* 5 percent
*Landform:* Terraces
*Hydric soil rating:* Yes

**Agawam**

*Percent of map unit:* 5 percent
*Hydric soil rating:* No

**Merrimac**

*Percent of map unit:* 5 percent
*Hydric soil rating:* No

**Ninigret**

*Percent of map unit:* 5 percent
*Hydric soil rating:* No

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# GEOSCIENCES TESTING AND RESEARCH, INC.

55 Middlesex Street, Suite 225, North Chelmsford, MA.
Phone: (978) 251-9395 www.gtrinc.net


Boring No. BB-1
Page: 1 of 2
GTR Job #: 24.379
GTR Rep: P. Dion
Reviewer: C. George

Project Name: Pleasant Street
Location: Leominster, MA

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Drilling Co. | Carr-Dee Corp. | | | Equipment | Casing | Sampler | Core | Groundwater | | Depth (ft) | | |
| Driller: | Joe Desimone | Helper(s): | Sean | Type | HW | SS | NX | Date | Time | Water | Casing | Hole |
| Start Date: | 2/5/2025 | End Date: | 2/7/2025 | Size I.D. | 4.00" | 1.375" | 2.16" | 2/5 | 2:26 | 12 | 20 | 22 |
| Ground Surface Elev (ft): | ~+420 ft | | | Hammer Wt. | 300 lb | 140 lb | - | 2/7 | 9:42 | 9 | 40 | 42 |
| Boring Location: | N3014862.8447, E584065.7377 | | | Hammer Fall | 30" | 30" | - | | | | | |
| Note: | Diedrich D-50 truck rig; auto hammer | | | | | | | | | | | |

| Depth | Casing BPF | Sample Data: No. | Pen/ Recovery | Depth (ft.) | Blows per 6in | Field Test | Description and Classification | Stratum Description | Additional Data | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | | | | | 1,2,3 |
| | | | | | | | | RECLAIMED GRANULAR FILL | | |
| 5 | | S-1 | 24/12 | 5-7 | 6-5 | | Loose, brown/black, RECLAIMED FILL, some f-m Sand, trace Silt, dry | | | |
| | | | | | 4-7 | | | | | |
| | | | | | | | | 8.5' | | |
| 10 | | S-2 | 24/13 | 10-12 | 12-16 | | Dense, brown, GRAVEL and f-c Sand, trace Silt, wet | | | 4 |
| | | | | | 15-15 | | | GRANULAR FILL | | |
| 15 | | S-3 | 1/0 | 15-15.1 | 50/1" | | | | | |
| | | S-4 | 24/12 | 16-18 | 61-41 | | Very dense, gray, f-m SAND, little Gravel, little Silt | 16' | | 5 |
| | | | | | 42-39 | | | | | |
| 20 | | S-5 | 24/14 | 20-22 | 44-30 | | Very dense, gray, f-m SAND, little Silt, trace Gravel | | | |
| | | | | | 44-32 | | | SAND | | |
| 25 | | S-6 | 24/17 | 25-27 | 12-8 | | Medium dense, gray, f- SAND, some Silt, trace Gravel | | | |
| | | | | | 7-11 | | | | | |

NOTES:
1. 6" of Asphalt.
2. Vacuum Excavated to 5' below grade. Material consisted of COBBLES, some Reclaimed Fill, little f-m SAND, trace Silt
3. Reclaimed Granular Fill consisted primarily of varying sized Concrete, Brick, and Asphalt.
4. Switched from hollow stem augers to HW casing after sampling from 10'-12'.
5. Increased drilling resistance starting at approximately 16'.

**Order of Sample Description (Modified Burmister)**
1. Moisture Content: Dry, Moist, Wet
2. Soil Relative Density or Consistency
3. Color
4. Major Component: Should be capitalized
5. Minor Component: "and" - 35% to 50% minor grain size
   "some" - 20% to 35% minor grain size
   "little" - 10% to 20% minor grain size
   "trace" - < 10% of minor grain size

**PENETRATION RESISTANCE (N) GUIDE**

| Cohesionless Soils (Sands) | Cohesive Soils (Clays) |
|---|---|
| Relative Density / Blows per Foot | Consistency / Blows per Foot |
| Very Loose >> 0 - 4 | Very Soft >> Below 2 |
| Loose >> 4 - 10 | Soft >> 2 - 4 |
| Medium Dense >> 10 - 30 | Medium Stiff >> 4 - 8 |
| Dense >> 30 - 50 | Stiff >> 8 - 15 |
| Very Dense >> Over 50 | Very Stiff >> 15 - 30 |
| | Hard >> Over 30 |

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Boring No. BB-1
Page: 2 of 2
GTR Job #: 24.379
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Project Name: Pleasant Street
Location: Leominster, MA

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Drilling Co. | Carr-Dee Corp. | | | Equipment | Casing | Sampler | Core | Groundwater | | Depth (ft) | | |
| Driller: | Joe Desimone | Helper(s): | Sean | Type | HW | SS | NX | Date | Time | Water | Casing | Hole |
| Start Date: | 2/5/2025 | End Date: | 2/7/2025 | Size I.D. | 4.00" | 1.375" | 2.16" | 2/5 | 2:26 | 12 | 20 | 22 |
| Ground Surface Elev (ft): | ~+420 ft | | | Hammer Wt. | 300 lb | 140 lb | - | 2/7 | 9:42 | 9 | 40 | 42 |
| Boring Location: | N3014862.8447, E584065.7377 | | | Hammer Fall | 30" | 30" | - | | | | | |
| Note: | Diedrich D-50 truck rig; auto hammer | | | | | | | | | | | |

| Depth | Casing BPF | Sample Data No. | Pen/ Recovery | Depth (ft.) | Blows per 6in | Field Test | Description and Classification | Stratum Description | Additional Data | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| 30 | | S-7 | 24/20 | 30-32 | 12-23 | | Dense, gray, f- SAND, little Silt, trace Gravel | | | |
| | | | | | 21-27 | | | | | |
| | | | | | | | | SAND | | |
| 35 | | S-8 | 24/16 | 35-37 | 29-18 | | Dense, gray, f- SAND, little Silt, trace Gravel | | | |
| | | | | | 20-16 | | | | | |
| | | | | | | | | 38.5' | | |
| 40 | | S-9 | 24/11 | 40-42 | 57-87 | | Very dense, brown, f- SAND, some Gravel, little Clayey Silt | GLACIAL TILL | | |
| | | | | | 71-77 | | | | | |
| | | | | | | | Bottom of boring at 42 ft below ground surface with no refusal encountered | 42' | | |
| 45 | | | | | | | | | | |
| 50 | | | | | | | | | | |
| 55 | | | | | | | | | | |

NOTES:

**Order of Sample Description (Modified Burmister)**

1. Moisture Content: Dry, Moist, Wet
2. Soil Relative Density or Consistency
3. Color
4. Major Component: Should be capitalized
5. Minor Component: "and" - 35% to 50% minor grain size
   "some" - 20% to 35% minor grain size
   "little" - 10% to 20% minor grain size
   "trace" - < 10% of minor grain size

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|---|---|
| Relative Density / Blows per Foot | Consistency / Blows per Foot |
| Very Loose >> 0 - 4 | Very Soft >> Below 2 |
| Loose >> 4 - 10 | Soft >> 2 - 4 |
| Medium Dense >> 10 - 30 | Medium Stiff >> 4 - 8 |
| Dense >> 30 - 50 | Stiff >> 8 - 15 |
| Very Dense >> Over 50 | Very Stiff >> 15 - 30 |
| | Hard >> Over 30 |

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| | |
|---|---|
| Boring No. | BB-2 |
| Page: | 1 of 2 |
| Project Name: | Pleasant Street |
| Location: | Leominster, MA |
| GTR Job #: | 24.379 |
| GTR Rep: | P. Dion |
| Reviewer: | C. George |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Drilling Co. | Carr-Dee Corp. | | | Equipment | Casing | Sampler | Core | Groundwater | | Depth (ft) | | |
| Driller: | Joe Desimone | Helper(s): | Sean | Type | HW | SS | NX | Date | Time | Water | Casing | Hole |
| Start Date: | 2/7/2025 | End Date: | 2/10/2025 | Size I.D. | 4.00" | 1.375" | 2.16" | 2/7 | 2:26 | 11 | 15 | 17 |
| Ground Surface Elev (ft): | ~+420 ft | | | Hammer Wt. | 300 lb | 140 lb | - | 2/11 | 11:36 | 9 | 35 | 42 |
| Boring Location: | N3014848.7930, E584078.9537 | | | Hammer Fall | 30" | 30" | - | | | | | |
| Note: | Diedrich D-50 truck rig; auto hammer | | | | | | | | | | | |

| Depth | Casing BPF | Sample Data: No. | Pen/ Recovery | Depth (ft.) | Blows per 6in | Field Test | Description and Classification | Stratum Description | Additional Data | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | | | | | 1,2,3 |
| | | | | | | | | RECLAIMED GRANULAR FILL | | |
| 5 | | S-1 | 24/6 | 5-7 | 11-10 | | Medium dense, brown/black, f-c SAND and Reclaimed Fill, trace Silt, dry | | | |
| | | | | | 7-4 | | | | | |
| | | | | | | | | 8.5' | | |
| 10 | | S-2 | 24/7 | 10-12 | 3-3 | | Medium dense, gray, GRAVEL and f-c Sand, trace Silt, wet | | | 4 |
| | | | | | 11-17 | | | GRANULAR FILL | | |
| 15 | | S-3 | 24/15 | 15-17 | 16-18 | | Dense, brown, f-m SAND, little Gravel, trace Silt | 15' | | 5 |
| | | | | | 19-21 | | | | | |
| 20 | | S-4 | 24/17 | 20-22 | 31-44 | | Very dense, brown, f-m SAND, little Gravel, little Silt | | | |
| | | | | | 50-47 | | | SAND | | |
| 25 | | S-5 | 24/5 | 25-27 | 45-32 | | Very dense, gray, f-c SAND, little Gravel, trace Silt | | | |
| | | | | | 26-30 | | | | | |

NOTES:
1. 6" of Asphalt.
2. Vacuum Excavated to 5' below grade. Material consisted of COBBLES, little Reclaimed Fill, little f-m Sand, trace Silt
3. Reclaimed Granular Fill consisted primarily of varying sized Concrete, Brick, and Asphalt.
4. Switched from hollow stem augers to HW casing after sampling from 10'-12'.
5. Increased drill resistance starting at approximately 15'.

**Order of Sample Description (Modified Burmister)**
1. Moisture Content: Dry, Moist, Wet
2. Soil Relative Density or Consistency
3. Color
4. Major Component: Should be capitalized
5. Minor Component: "and" - 35% to 50% minor grain size
   "some" - 20% to 35% minor grain size
   "little" - 10% to 20% minor grain size
   "trace" - < 10% of minor grain size

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| Cohesionless Soils (Sands) | Cohesive Soils (Clays) |
|---|---|
| Relative Density / Blows per Foot | Consistency / Blows per Foot |
| Very Loose >> 0 - 4 | Very Soft >> Below 2 |
| Loose >> 4 - 10 | Soft >> 2 - 4 |
| Medium Dense >> 10 - 30 | Medium Stiff >> 4 - 8 |
| Dense >> 30 - 50 | Stiff >> 8 - 15 |
| Very Dense >> Over 50 | Very Stiff >> 15 - 30 |
| | Hard >> Over 30 |

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Boring No. BB-2
Page: 2 of 2
GTR Job #: 24.379
GTR Rep: P. Dion
Reviewer: C. George

Project Name: Pleasant Street
Location: Leominster, MA

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Drilling Co. | Carr-Dee Corp. | | | Equipment | Casing | Sampler | Core | Groundwater | | Depth (ft) | | |
| Driller: | Joe Desimone | Helper(s): | Sean | Type | HW | SS | NX | Date | Time | Water | Casing | Hole |
| Start Date: | 2/7/2025 | End Date: | 2/10/2025 | Size I.D. | 4.00" | 1.375" | 2.16" | 2/7 | 2:26 | 11 | 15 | 17 |
| Ground Surface Elev (ft): | ~+420 ft | | | Hammer Wt. | 300 lb | 140 lb | - | 2/11 | 11:36 | 9 | 35 | 42 |
| Boring Location: | N3014848.7930, E584078.9537 | | | Hammer Fall | 30" | 30" | - | | | | | |
| Note: | Diedrich D-50 truck rig; auto hammer | | | | | | | | | | | |

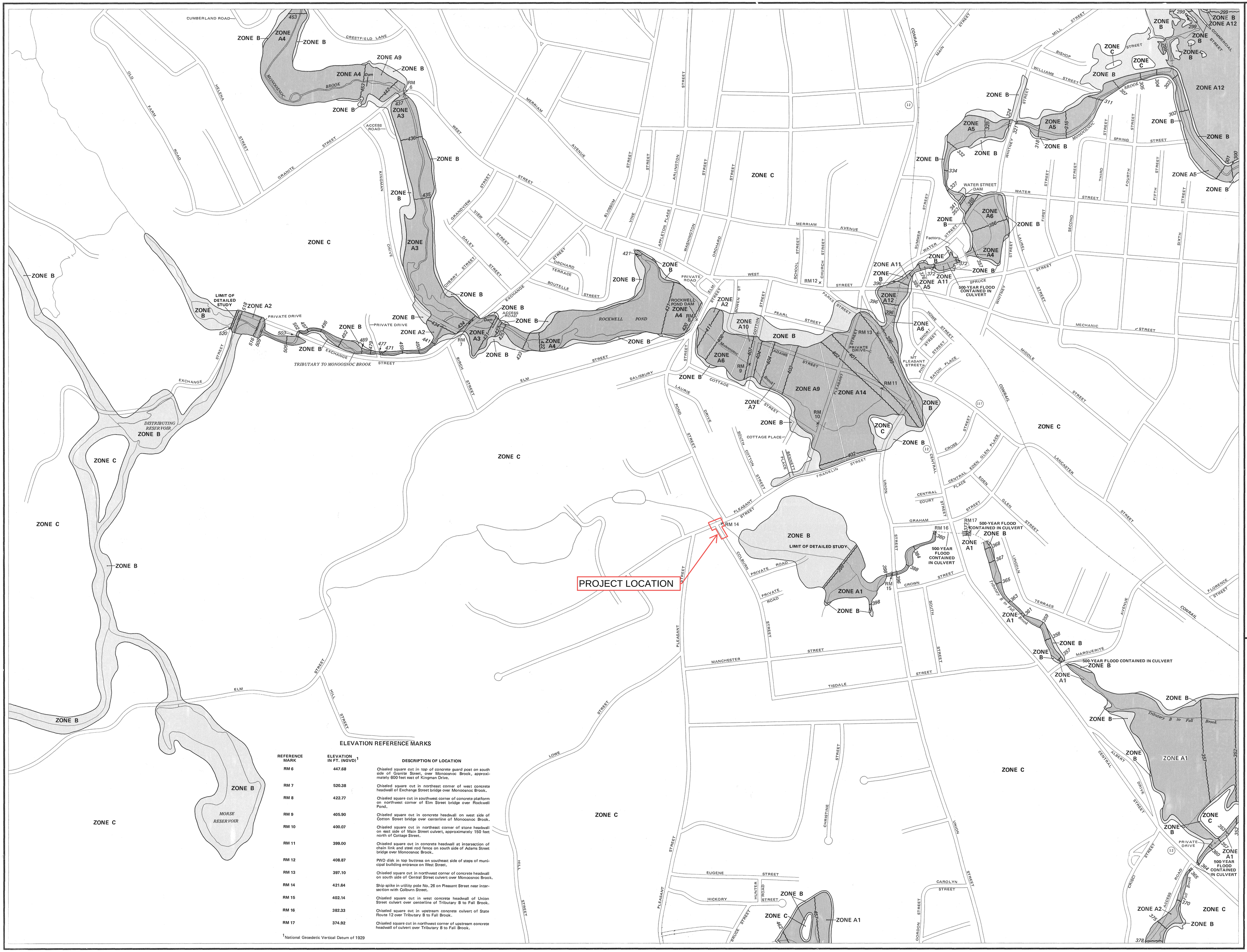
| Depth | Casing BPF | Sample Data No. | Pen/ Recovery | Depth (ft.) | Blows per 6in | Field Test | Description and Classification | Stratum Description | Additional Data | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| 30 | | S-6 | 24/14 | 30-32 | 18-21 | | Dense, brown, f-m SAND, trace Silt, trace Gravel | SAND | | |
| | | | | | 28-24 | | | | | |
| 35 | | S-7 | 24/21 | 35-37 | 25-33 | | Very dense, gray, f-m SAND, some Clayey Silt, trace Gravel | 34' GLACIAL TILL | | 5 |
| | | | | | 28-44 | | | | | |
| 40 | | S-8 | 24/16 | 40-42 | 17-24 | | Very dense, brown, f- SAND, little Clayey Silt | | | |
| | | | | | 35-63 | | | | | |
| 45 | | | | | | | Bottom of boring at 42 ft below ground surface with no refusal encountered | 42' | | |
| 50 | | | | | | | | | | |
| 55 | | | | | | | | | | |

NOTES:
5. Increase in casing/rollerbit resistance at 34'.

**Order of Sample Description (Modified Burmister)**
1. Moisture Content: Dry, Moist, Wet
2. Soil Relative Density or Consistency
3. Color
4. Major Component: Should be capitalized
5. Minor Component: "and" - 35% to 50% minor grain size
   "some" - 20% to 35% minor grain size
   "little" - 10% to 20% minor grain size
   "trace" - < 10% of minor grain size

**PENETRATION RESISTANCE (N) GUIDE**

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|---|---|
| Relative Density / Blows per Foot | Consistency / Blows per Foot |
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| Loose >> 4 - 10 | Soft >> 2 - 4 |
| Medium Dense >> 10 - 30 | Medium Stiff >> 4 - 8 |
| Dense >> 30 - 50 | Stiff >> 8 - 15 |
| Very Dense >> Over 50 | Very Stiff >> 15 - 30 |
| | Hard >> Over 30 |




## ELEVATION REFERENCE MARKS

| REFERENCE MARK | ELEVATION IN FT. (NGVD) [1] | DESCRIPTION OF LOCATION |
|---|---|---|
| RM 6 | 447.68 | Chiseled square cut in top of concrete guard post on south side of Granite Street, over Monoosnoc Brook, approximately 600 feet east of Kingman Drive. |
| RM 7 | 520.38 | Chiseled square cut in northeast corner of west concrete headwall of Exchange Street bridge over Monoosnoc Brook. |
| RM 8 | 422.77 | Chiseled square cut in southwest corner of concrete platform on northwest corner of Elm Street bridge over Rockwell Pond. |
| RM 9 | 405.90 | Chiseled square cut in concrete headwall on west side of Cotton Street bridge over centerline of Monoosnoc Brook. |
| RM 10 | 400.07 | Chiseled square cut in northeast corner of stone headwall on east side of Main Street culvert, approximately 150 feet north of Cottage Street. |
| RM 11 | 399.00 | Chiseled square cut in concrete headwall at intersection of chain link and steel rod fence on south side of Adams Street bridge over Monoosnoc Brook. |
| RM 12 | 408.87 | PWD disk in top buttress on southeast side of steps of municipal building entrance on West Street. |
| RM 13 | 397.10 | Chiseled square cut in northwest corner of concrete headwall on south side of Central Street culvert over Monoosnoc Brook. |
| RM 14 | 421.64 | Ship spike in utility pole No. 26 on Pleasant Street near intersection with Colburn Street. |
| RM 15 | 402.14 | Chiseled square cut in west concrete headwall of Union Street culvert over centerline of Tributary B to Fall Brook. |
| RM 16 | 382.33 | Chiseled square cut in upstream concrete culvert of State Route 12 over Tributary B to Fall Brook. |
| RM 17 | 374.92 | Chiseled square cut in northwest corner of upstream concrete headwall of culvert over Tributary B to Fall Brook. |

[1] National Geodetic Vertical Datum of 1929

## KEY TO MAP

500-Year Flood Boundary
100-Year Flood Boundary
Zone Designations*
100-Year Flood Boundary
500-Year Flood Boundary
Base Flood Elevation Line With Elevation In Feet**
Base Flood Elevation in Feet Where Uniform Within Zone**
Elevation Reference Mark
Zone D Boundary
River Mile

**Referenced to the National Geodetic Vertical Datu

## *EXPLANATION OF ZONE DESIGN.

| ZONE | EXPLANATION |
|---|---|
| A | Areas of 100-year flood; base flood el flood hazard factors not determined. |
| A0 | Areas of 100-year shallow flooding v are between one (1) and three (3) feet; a of inundation are shown, but no flood h are determined. |
| AH | Areas of 100-year shallow flooding v are between one (1) and three (3) fee elevations are shown, but no flood h are determined. |
| A1-A30 | Areas of 100-year flood; base flood el flood hazard factors determined. |
| A99 | Areas of 100-year flood to be protect protection system under construction; elevations and flood hazard factors not |
| B | Areas between limits of the 100-year fl year flood; or certain areas subject to 10 ing with average depths less than one (1) f the contributing drainage area is less tha mile; or areas protected by levees from th (Medium shading) |
| C | Areas of minimal flooding. (No shading) |
| D | Areas of undetermined, but possible, fl |
| V | Areas of 100-year coastal flood with ve action); base flood elevations and flood h not determined. |
| V1-V30 | Areas of 100-year coastal flood with ve action); base flood elevations and flood h determined. |

## NOTES TO USER

Certain areas not in the special flood hazard areas (zo may be protected by flood control structures.

This map is for flood insurance purposes only; it do sarily show all areas subject to flooding in the co all planimetric features outside special flood hazard ar

For adjoining map panels, see separately printed In Panels.

INITIAL IDENTIFICATION:
MARCH 22, 1974
FLOOD HAZARD BOUNDARY MAP REVIS
OCTOBER 17, 1975

FLOOD INSURANCE RATE MAP EFFECT
SEPTEMBER 16, 1982
FLOOD INSURANCE RATE MAP REVISIC

Refer to the FLOOD INSURANCE RATE MAP EFF shown on this map to determine when actuarial ra structures in the zones where elevations or depths hav lished.

To determine if flood insurance is available in this contact your insurance agent, or call the National Flo Program, at (800) 638-6620.

APPROXIMATE SCALE
400 0 40

NATIONAL FLOOD INSURAN

# FIRM
## FLOOD INSURANCE RA

CITY OF
LEOMINSTER
MASSACHUS
WORCESTER CO

PANEL 6 OF
(SEE MAP INDEX FOR PANELS

COMMUNITY-PANEL
250314 0

EFFECTI
SEPTEMBER 1

Federal Emergency Managen

# Appendix C: Supporting Calculations

# TSS Removal Calculation Worksheet

Location: Pleasant Street Leominster, MA

| A<br>BMP[1] | B<br>TSS Removal Rate[1] | C<br>Starting TSS Load* | D<br>Amount Removed (B*C) | E<br>Remaining Load (C-D) |
|---|---|---|---|---|
| Deep Sump Catch Basin | 25% | 1.00 | 0.25 | 0.75 |
| | | | | |
| | | | | |
| | | | | |

**Total TSS Removal =** 25%

Project: 613865
Prepared By: TEC, Inc.
Date: 11/17/2025

*Equals remaining load from previous BMP (E) which enters the BMP

**Riprap Apron Sizing Computation**

Sizing calculations based on guidance from Federal Highway Administration Hydraulic Engineering Circular No. 14, 3rd edition, dated July 2006

By: SNL
TEC, Inc.
11/20/2025

Equation 10.4:

$$D_{50} = 0.2D\left(\frac{Q}{\sqrt{g}D^{2.5}}\right)^{4/3}\left(\frac{D}{TW}\right)$$

$$D_{50} = riprap\ size\ (ft)$$

$$Q = design\ discharge\ \left(\frac{ft^3}{s}\right)$$

$$D = culvert\ diameter\ (ft)$$

$$TW = tailwater\ depth\ (ft)$$

(min 0.4*D)

$$g = acceleration\ due\ to\ gravity\ \left(32.2\ \frac{ft}{s^2}\right)$$

**Table 10.1. Example Riprap Classes and Apron Dimensions**

| Class | $D_{50}$ (mm) | $D_{50}$ (in) | Apron Length[1] | Apron Depth |
|---|---|---|---|---|
| 1 | 125 | 5 | 4D | $3.5D_{50}$ |
| 2 | 150 | 6 | 4D | $3.3D_{50}$ |
| 3 | 250 | 10 | 5D | $2.4D_{50}$ |
| 4 | 350 | 14 | 6D | $2.2D_{50}$ |
| 5 | 500 | 20 | 7D | $2.0D_{50}$ |
| 6 | 550 | 22 | 8D | $2.0D_{50}$ |

[1]D is the culvert rise.

Proposed Outlets: Reservoir Brook

$$D_{50} = 0.2(1\ ft)\left(\frac{1.97\ \frac{ft^3}{s}}{\sqrt{(32.2\ \frac{ft}{s^2})(1ft)^{2.5}}}\right)^{4/3}\left(\frac{1ft}{0.4(1ft)}\right) = 0.12\ ft = 1.46\ inches$$
$$= Class\ 1\ (Table\ 10.1)$$

$$Length = 4D = 4(1ft) = 4\ ft$$

$$Depth = 3.5(D_{50}) = 3.5(5\ in) = 17.5\ inches$$

Note: Design flow from the pipe sizing model was estimated to be 1.97 cfs (toward the riprap, during a 10-year storm). Based on this low flow rate, FES has been designed with the minimum recommended length and depth of rip rap apron.

# Appendix D: Hydraulic and Hydrologic Data

**NOAA Atlas 14, Volume 10, Version 3**
**Location name: Leominster, Massachusetts, USA***
**Latitude: 42.5206°, Longitude: -71.7674°**
**Elevation: 420 ft****
* source: ESRI Maps
** source: USGS

**POINT PRECIPITATION FREQUENCY ESTIMATES**

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

## PF tabular

**PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]**

| Duration | Average recurrence interval (years) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 5 | 10 | 25 | 50 | 100 | 200 | 500 | 1000 |
| 5-min | 0.338 (0.262-0.427) | 0.397 (0.307-0.501) | 0.493 (0.380-0.624) | 0.573 (0.440-0.727) | 0.682 (0.507-0.893) | 0.765 (0.557-1.02) | 0.851 (0.601-1.16) | 0.944 (0.636-1.31) | 1.07 (0.696-1.53) | 1.18 (0.744-1.70) |
| 10-min | 0.479 (0.371-0.604) | 0.562 (0.435-0.710) | 0.698 (0.539-0.884) | 0.811 (0.623-1.03) | 0.967 (0.718-1.26) | 1.08 (0.790-1.44) | 1.21 (0.852-1.64) | 1.34 (0.901-1.86) | 1.52 (0.986-2.16) | 1.67 (1.05-2.40) |
| 15-min | 0.563 (0.437-0.711) | 0.661 (0.512-0.835) | 0.821 (0.634-1.04) | 0.954 (0.733-1.21) | 1.14 (0.845-1.49) | 1.28 (0.929-1.69) | 1.42 (1.00-1.93) | 1.57 (1.06-2.18) | 1.79 (1.16-2.54) | 1.96 (1.24-2.83) |
| 30-min | 0.749 (0.581-0.945) | 0.880 (0.681-1.11) | 1.09 (0.844-1.38) | 1.27 (0.976-1.62) | 1.52 (1.13-1.98) | 1.70 (1.24-2.26) | 1.89 (1.34-2.58) | 2.10 (1.41-2.91) | 2.38 (1.54-3.39) | 2.61 (1.65-3.77) |
| 60-min | 0.935 (0.725-1.18) | 1.10 (0.851-1.39) | 1.37 (1.06-1.73) | 1.59 (1.22-2.02) | 1.90 (1.41-2.48) | 2.13 (1.55-2.82) | 2.37 (1.67-3.22) | 2.62 (1.77-3.64) | 2.98 (1.93-4.23) | 3.26 (2.06-4.70) |
| 2-hr | 1.16 (0.907-1.45) | 1.39 (1.09-1.74) | 1.76 (1.38-2.21) | 2.08 (1.61-2.61) | 2.51 (1.89-3.27) | 2.82 (2.09-3.75) | 3.17 (2.28-4.35) | 3.58 (2.42-4.93) | 4.20 (2.73-5.94) | 4.73 (3.00-6.78) |
| 3-hr | 1.32 (1.04-1.64) | 1.60 (1.26-1.99) | 2.05 (1.61-2.55) | 2.42 (1.89-3.03) | 2.94 (2.23-3.82) | 3.32 (2.47-4.40) | 3.73 (2.71-5.12) | 4.24 (2.88-5.82) | 5.03 (3.28-7.09) | 5.72 (3.64-8.17) |
| 6-hr | 1.68 (1.35-2.08) | 2.05 (1.63-2.52) | 2.64 (2.10-3.26) | 3.12 (2.47-3.88) | 3.80 (2.91-4.91) | 4.30 (3.23-5.66) | 4.84 (3.55-6.60) | 5.52 (3.76-7.52) | 6.57 (4.31-9.19) | 7.49 (4.80-10.6) |
| 12-hr | 2.16 (1.74-2.63) | 2.61 (2.10-3.18) | 3.34 (2.69-4.10) | 3.96 (3.16-4.86) | 4.80 (3.71-6.13) | 5.42 (4.10-7.06) | 6.09 (4.49-8.21) | 6.91 (4.75-9.34) | 8.16 (5.38-11.3) | 9.23 (5.94-13.0) |
| 24-hr | 2.61 (2.13-3.15) | 3.15 (2.57-3.81) | 4.04 (3.28-4.90) | 4.77 (3.86-5.81) | 5.78 (4.51-7.32) | 6.54 (4.99-8.43) | 7.34 (5.44-9.79) | 8.31 (5.75-11.1) | 9.76 (6.47-13.4) | 11.0 (7.10-15.4) |
| 2-day | 2.96 (2.45-3.54) | 3.59 (2.97-4.30) | 4.63 (3.81-5.56) | 5.49 (4.48-6.62) | 6.67 (5.26-8.37) | 7.55 (5.82-9.65) | 8.49 (6.35-11.2) | 9.63 (6.70-12.8) | 11.3 (7.55-15.5) | 12.8 (8.30-17.8) |
| 3-day | 3.22 (2.68-3.83) | 3.90 (3.25-4.65) | 5.02 (4.16-6.00) | 5.94 (4.89-7.14) | 7.22 (5.73-9.01) | 8.16 (6.33-10.4) | 9.18 (6.90-12.1) | 10.4 (7.27-13.8) | 12.2 (8.18-16.7) | 13.8 (8.98-19.1) |
| 4-day | 3.46 (2.89-4.10) | 4.17 (3.49-4.95) | 5.34 (4.45-6.35) | 6.31 (5.22-7.54) | 7.64 (6.09-9.50) | 8.63 (6.72-10.9) | 9.70 (7.30-12.7) | 11.0 (7.69-14.5) | 12.9 (8.62-17.5) | 14.5 (9.43-20.0) |
| 7-day | 4.11 (3.48-4.84) | 4.88 (4.12-5.74) | 6.13 (5.15-7.24) | 7.17 (5.98-8.50) | 8.60 (6.90-10.6) | 9.66 (7.57-12.1) | 10.8 (8.16-14.0) | 12.1 (8.55-15.9) | 14.1 (9.46-19.0) | 15.7 (10.3-21.5) |
| 10-day | 4.76 (4.06-5.58) | 5.56 (4.72-6.51) | 6.85 (5.80-8.05) | 7.93 (6.66-9.36) | 9.40 (7.58-11.5) | 10.5 (8.26-13.1) | 11.7 (8.83-15.0) | 13.0 (9.21-17.0) | 14.9 (10.1-20.0) | 16.4 (10.8-22.5) |
| 20-day | 6.81 (5.87-7.90) | 7.65 (6.58-8.88) | 9.01 (7.72-10.5) | 10.1 (8.63-11.9) | 11.7 (9.52-14.1) | 12.9 (10.2-15.8) | 14.1 (10.7-17.7) | 15.3 (11.0-19.9) | 17.0 (11.6-22.7) | 18.2 (12.0-24.8) |
| 30-day | 8.53 (7.41-9.84) | 9.40 (8.15-10.8) | 10.8 (9.33-12.5) | 12.0 (10.3-13.9) | 13.6 (11.1-16.3) | 14.9 (11.8-18.0) | 16.1 (12.2-20.0) | 17.3 (12.4-22.2) | 18.7 (12.8-24.8) | 19.8 (13.0-26.7) |
| 45-day | 10.7 (9.32-12.2) | 11.6 (10.1-13.3) | 13.1 (11.3-15.0) | 14.3 (12.3-16.5) | 16.0 (13.2-19.0) | 17.3 (13.8-20.9) | 18.6 (14.1-22.9) | 19.7 (14.2-25.2) | 21.0 (14.4-27.8) | 21.9 (14.5-29.5) |
| 60-day | 12.4 (10.9-14.2) | 13.4 (11.7-15.3) | 14.9 (13.1-17.1) | 16.2 (14.1-18.7) | 18.0 (14.9-21.2) | 19.4 (15.6-23.3) | 20.7 (15.8-25.4) | 21.8 (15.8-27.8) | 23.1 (15.9-30.4) | 23.8 (16.0-32.0) |

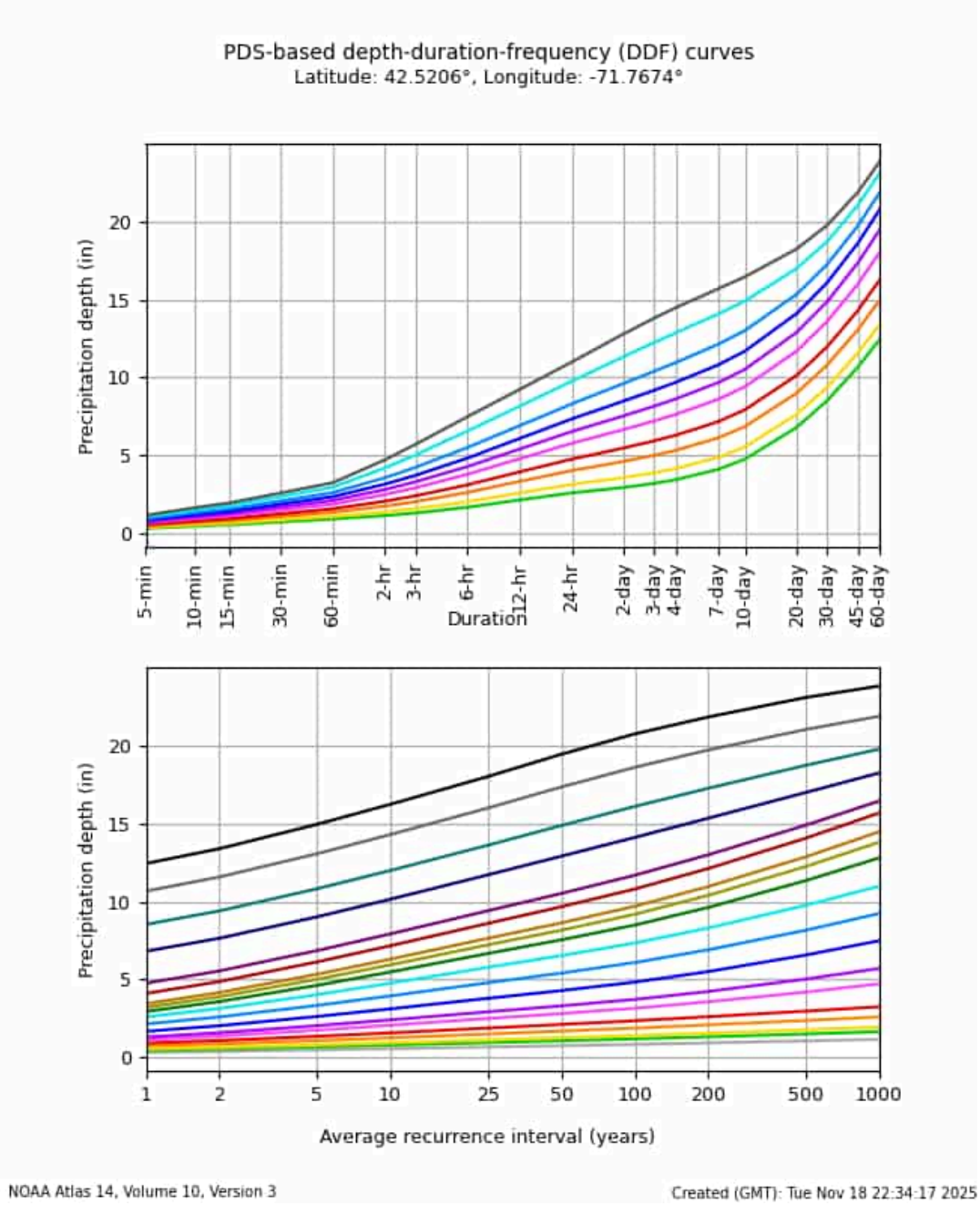
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Back to Top

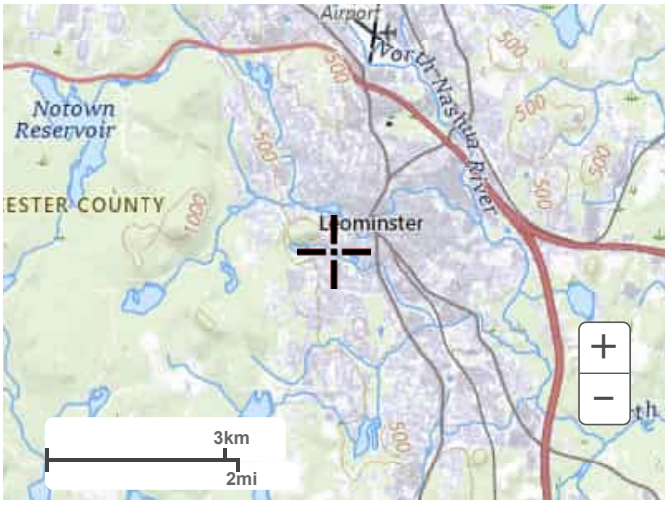
## PF graphical




Back to Top

## Maps & aerials

**Small scale terrain**




**Large scale terrain**




**Large scale map**




**Large scale aerial**

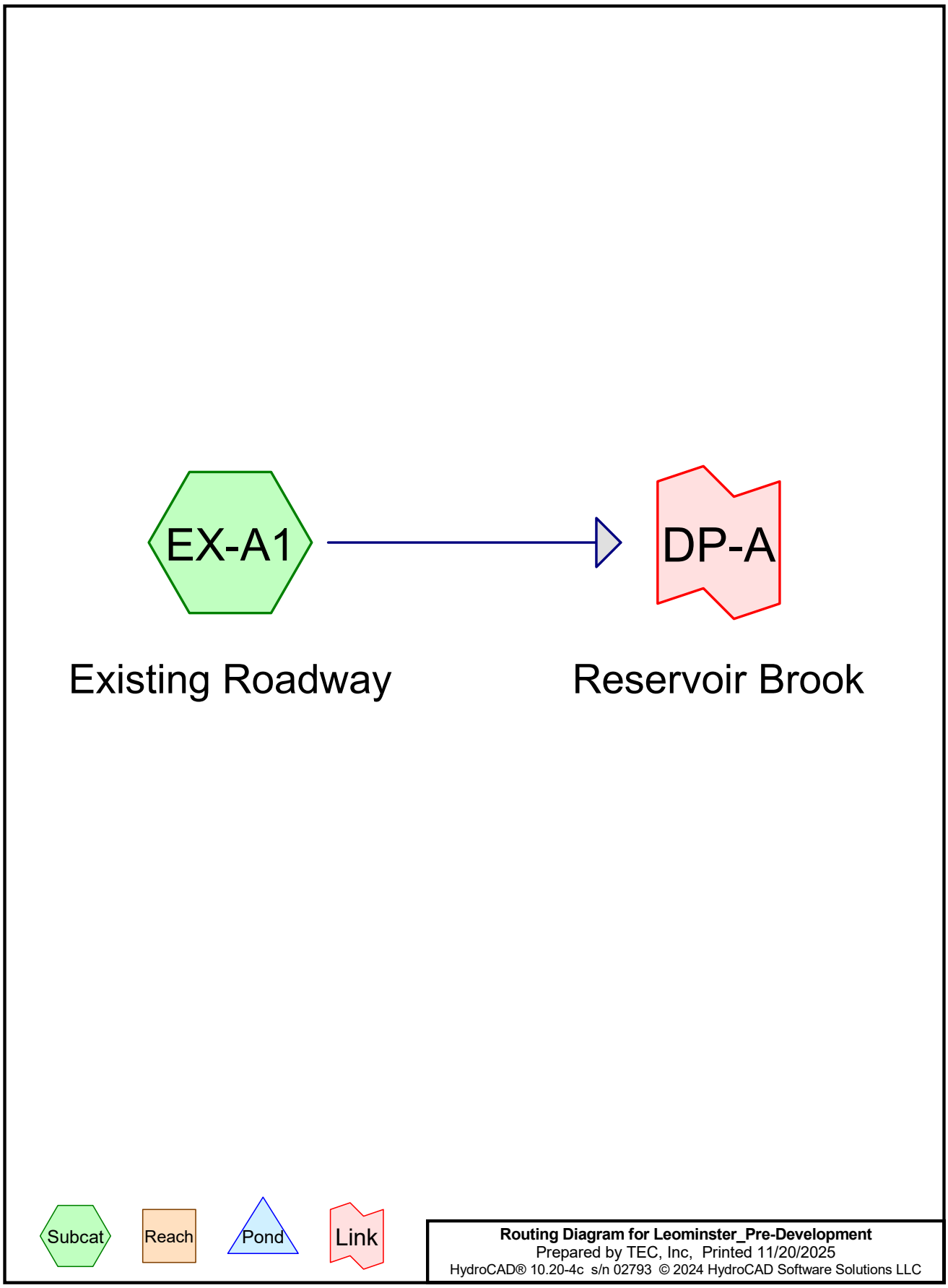



Back to Top

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National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer


EX-A1
DP-A
Existing Roadway
Reservoir Brook
Subcat
Reach
Pond
Link
Routing Diagram for Leominster_Pre-Development
Prepared by TEC, Inc, Printed 11/20/2025
HydroCAD® 10.20-4c s/n 02793 © 2024 HydroCAD Software Solutions LLC

## Rainfall Events Listing

| Event# | Event Name | Storm Type | Curve | Mode | Duration (hours) | B/B | Depth (inches) | AMC |
|---|---|---|---|---|---|---|---|---|
| 1 | 2-Year | Type III 24-hr | | Default | 24.00 | 1 | 3.15 | 2 |
| 2 | 10-Year | Type III 24-hr | | Default | 24.00 | 1 | 4.77 | 2 |
| 3 | 100-Year | Type III 24-hr | | Default | 24.00 | 1 | 7.34 | 2 |

## Area Listing (all nodes)

| Area (sq-ft) | CN | Description (subcatchment-numbers) |
|---|---|---|
| 3,030 | 39 | >75% Grass cover, Good, HSG A (EX-A1) |
| 1,331 | 61 | >75% Grass cover, Good, HSG B (EX-A1) |
| 7,396 | 98 | Paved roads w/curbs & sewers, HSG A (EX-A1) |
| 10,263 | 98 | Paved roads w/curbs & sewers, HSG B (EX-A1) |
| **22,020** | **88** | **TOTAL AREA** |

## Soil Listing (all nodes)

| Area (sq-ft) | Soil Group | Subcatchment Numbers |
|---|---|---|
| 10,426 | HSG A | EX-A1 |
| 11,594 | HSG B | EX-A1 |
| 0 | HSG C | |
| 0 | HSG D | |
| 0 | Other | |
| **22,020** | | **TOTAL AREA** |

Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment EX-A1: Existing Roadway** Runoff Area=22,020 sf 80.20% Impervious Runoff Depth=2.37"
Tc=6.0 min CN=WQ Runoff=1.25 cfs 4,341 cf

**Link DP-A: Reservoir Brook** Inflow=1.25 cfs 4,341 cf
Primary=1.25 cfs 4,341 cf

**Total Runoff Area = 22,020 sf Runoff Volume = 4,341 cf Average Runoff Depth = 2.37"**
**19.80% Pervious = 4,361 sf 80.20% Impervious = 17,659 sf**

## Summary for Subcatchment EX-A1: Existing Roadway

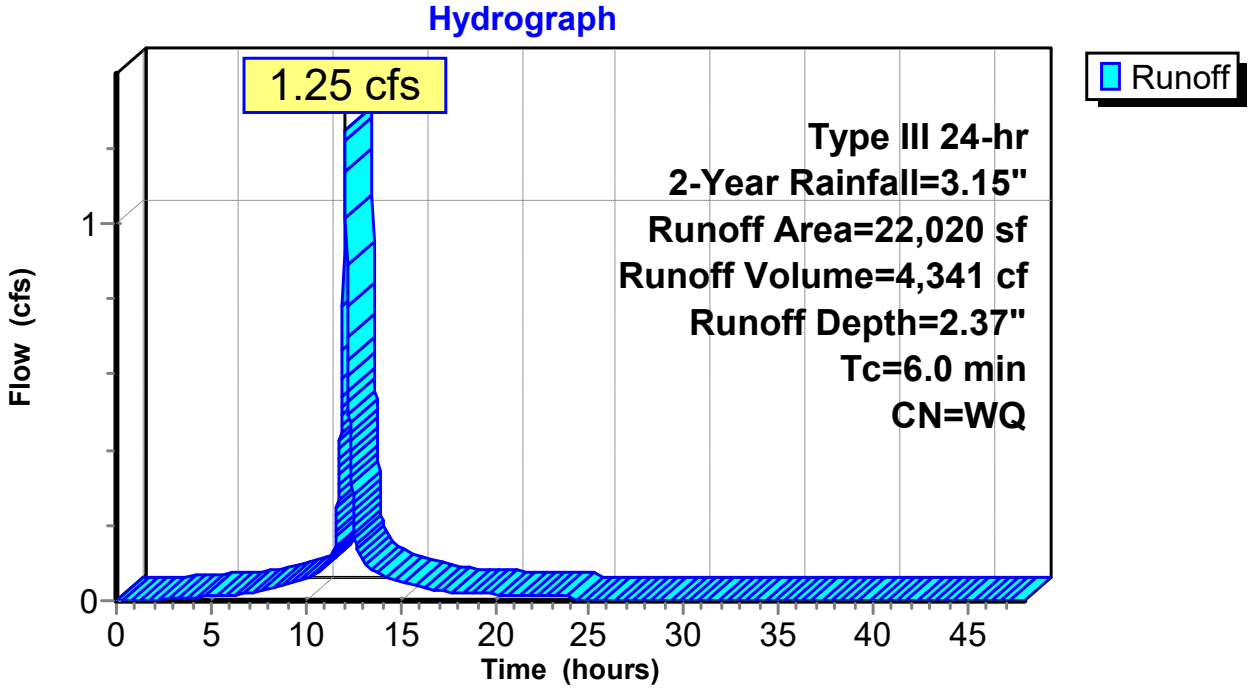
Runoff = 1.25 cfs @ 12.08 hrs, Volume= 4,341 cf, Depth= 2.37"
Routed to Link DP-A : Reservoir Brook

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Year Rainfall=3.15"

| Area (sf) | CN | Description |
|---|---|---|
| 7,396 | 98 | Paved roads w/curbs & sewers, HSG A |
| 10,263 | 98 | Paved roads w/curbs & sewers, HSG B |
| 3,030 | 39 | >75% Grass cover, Good, HSG A |
| 1,331 | 61 | >75% Grass cover, Good, HSG B |
| 22,020 | | Weighted Average |
| 4,361 | | 19.80% Pervious Area |
| 17,659 | | 80.20% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

### Subcatchment EX-A1: Existing Roadway

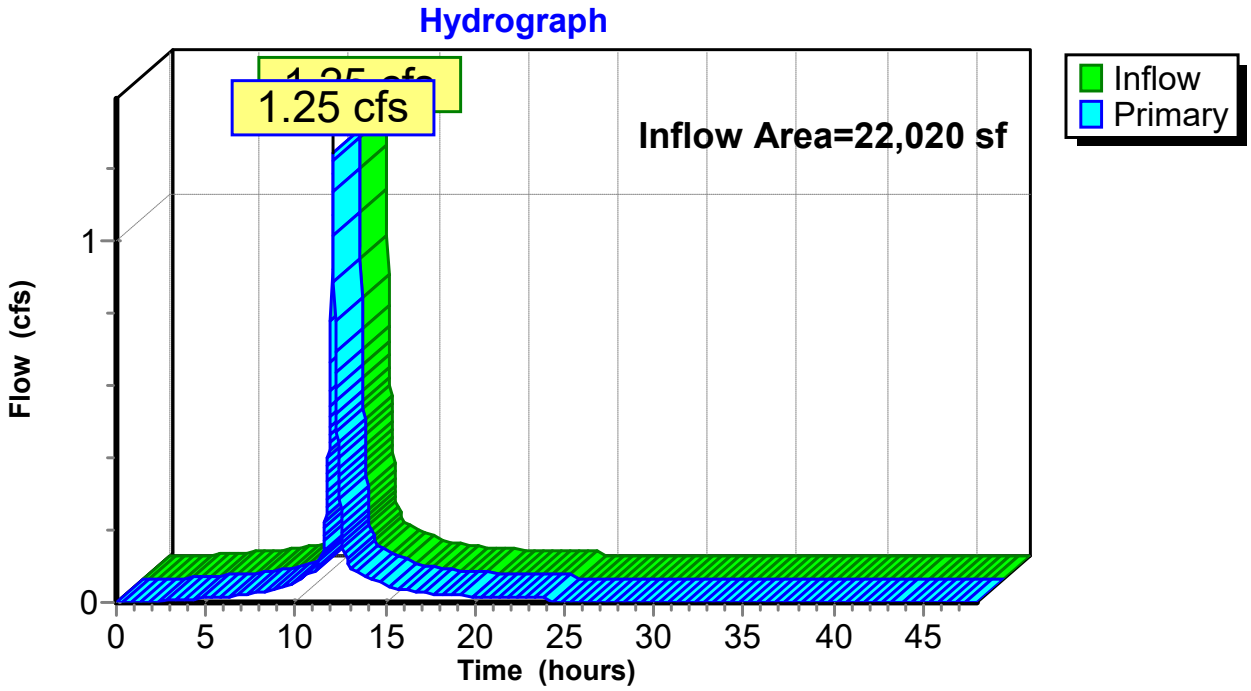


## Summary for Link DP-A: Reservoir Brook

Inflow Area = 22,020 sf, 80.20% Impervious, Inflow Depth = 2.37" for 2-Year event
Inflow = 1.25 cfs @ 12.08 hrs, Volume= 4,341 cf
Primary = 1.25 cfs @ 12.08 hrs, Volume= 4,341 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

### Link DP-A: Reservoir Brook



Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment EX-A1: Existing Roadway** Runoff Area=22,020 sf 80.20% Impervious Runoff Depth=3.73"
Tc=6.0 min CN=WQ Runoff=1.93 cfs 6,848 cf

**Link DP-A: Reservoir Brook** Inflow=1.93 cfs 6,848 cf
Primary=1.93 cfs 6,848 cf

**Total Runoff Area = 22,020 sf Runoff Volume = 6,848 cf Average Runoff Depth = 3.73"**
**19.80% Pervious = 4,361 sf 80.20% Impervious = 17,659 sf**

## Summary for Subcatchment EX-A1: Existing Roadway

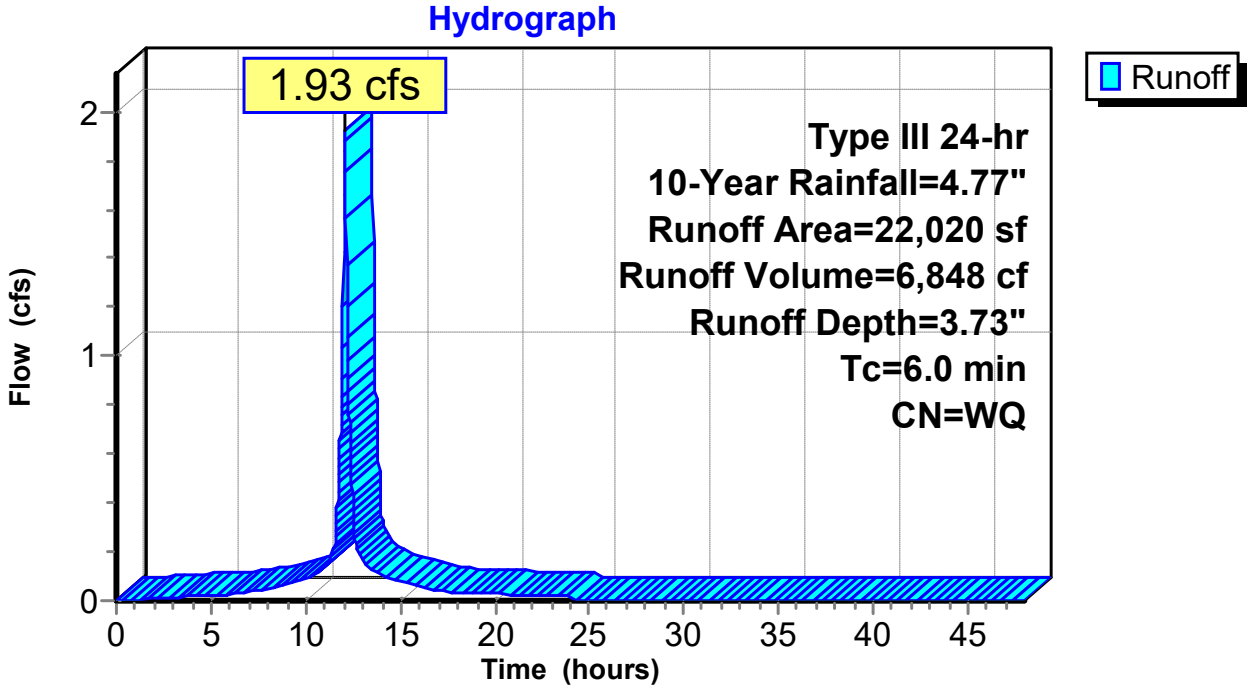
Runoff = 1.93 cfs @ 12.08 hrs, Volume= 6,848 cf, Depth= 3.73"
Routed to Link DP-A : Reservoir Brook

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=4.77"

| Area (sf) | CN | Description |
|---|---|---|
| 7,396 | 98 | Paved roads w/curbs & sewers, HSG A |
| 10,263 | 98 | Paved roads w/curbs & sewers, HSG B |
| 3,030 | 39 | >75% Grass cover, Good, HSG A |
| 1,331 | 61 | >75% Grass cover, Good, HSG B |
| 22,020 | | Weighted Average |
| 4,361 | | 19.80% Pervious Area |
| 17,659 | | 80.20% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

### Subcatchment EX-A1: Existing Roadway

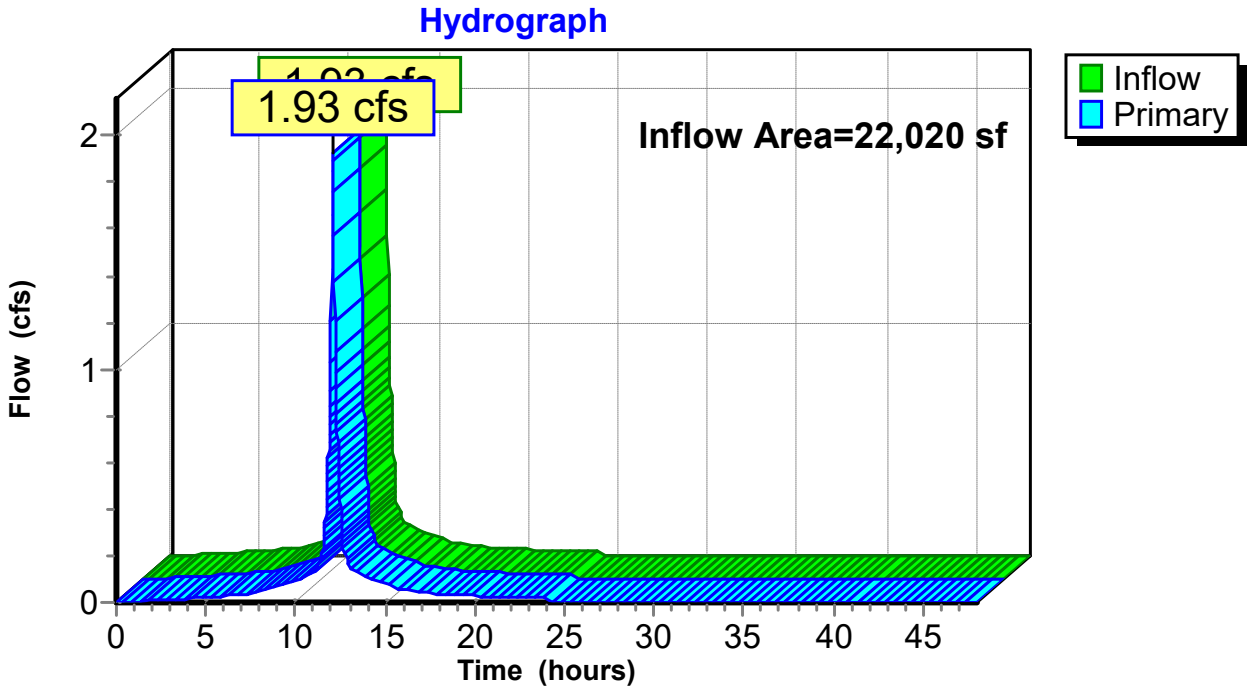


## Summary for Link DP-A: Reservoir Brook

Inflow Area = 22,020 sf, 80.20% Impervious, Inflow Depth = 3.73" for 10-Year event
Inflow = 1.93 cfs @ 12.08 hrs, Volume= 6,848 cf
Primary = 1.93 cfs @ 12.08 hrs, Volume= 6,848 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

### Link DP-A: Reservoir Brook



Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment EX-A1: Existing Roadway** Runoff Area=22,020 sf 80.20% Impervious Runoff Depth=6.00"
Tc=6.0 min CN=WQ Runoff=3.05 cfs 11,002 cf

**Link DP-A: Reservoir Brook** Inflow=3.05 cfs 11,002 cf
Primary=3.05 cfs 11,002 cf

**Total Runoff Area = 22,020 sf Runoff Volume = 11,002 cf Average Runoff Depth = 6.00"**
**19.80% Pervious = 4,361 sf 80.20% Impervious = 17,659 sf**

## Summary for Subcatchment EX-A1: Existing Roadway

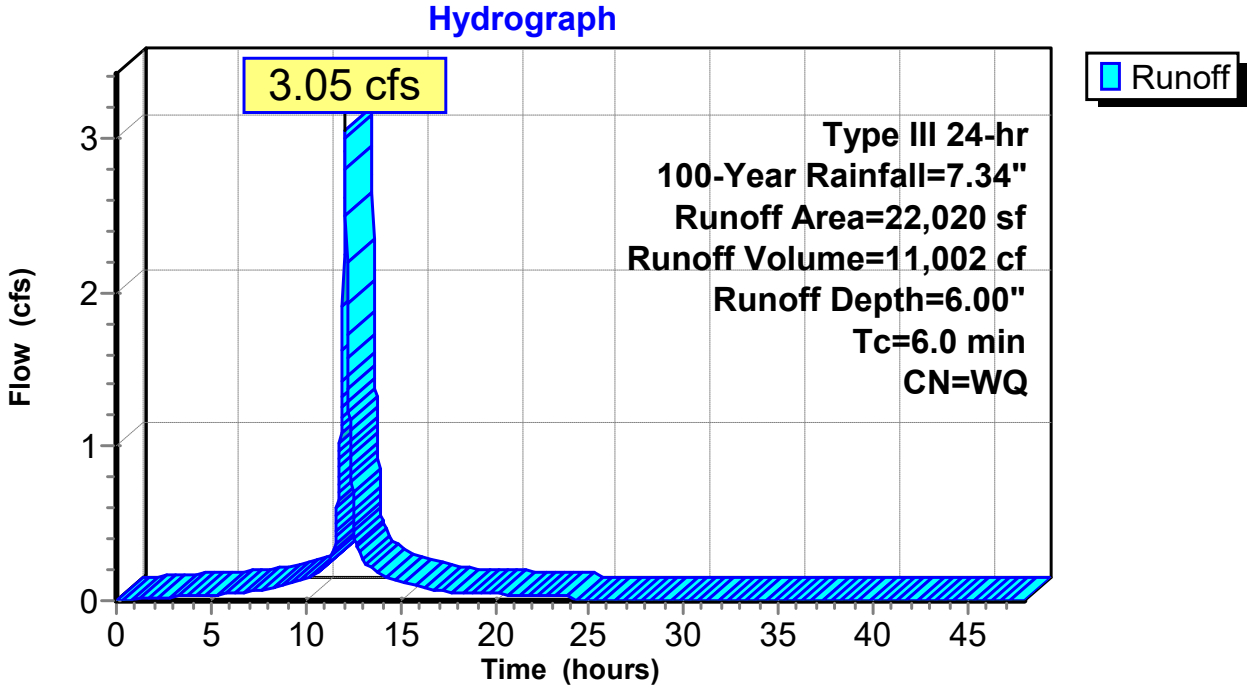
Runoff = 3.05 cfs @ 12.08 hrs, Volume= 11,002 cf, Depth= 6.00"
Routed to Link DP-A : Reservoir Brook

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=7.34"

| Area (sf) | CN | Description |
|---|---|---|
| 7,396 | 98 | Paved roads w/curbs & sewers, HSG A |
| 10,263 | 98 | Paved roads w/curbs & sewers, HSG B |
| 3,030 | 39 | >75% Grass cover, Good, HSG A |
| 1,331 | 61 | >75% Grass cover, Good, HSG B |
| 22,020 | | Weighted Average |
| 4,361 | | 19.80% Pervious Area |
| 17,659 | | 80.20% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

### Subcatchment EX-A1: Existing Roadway

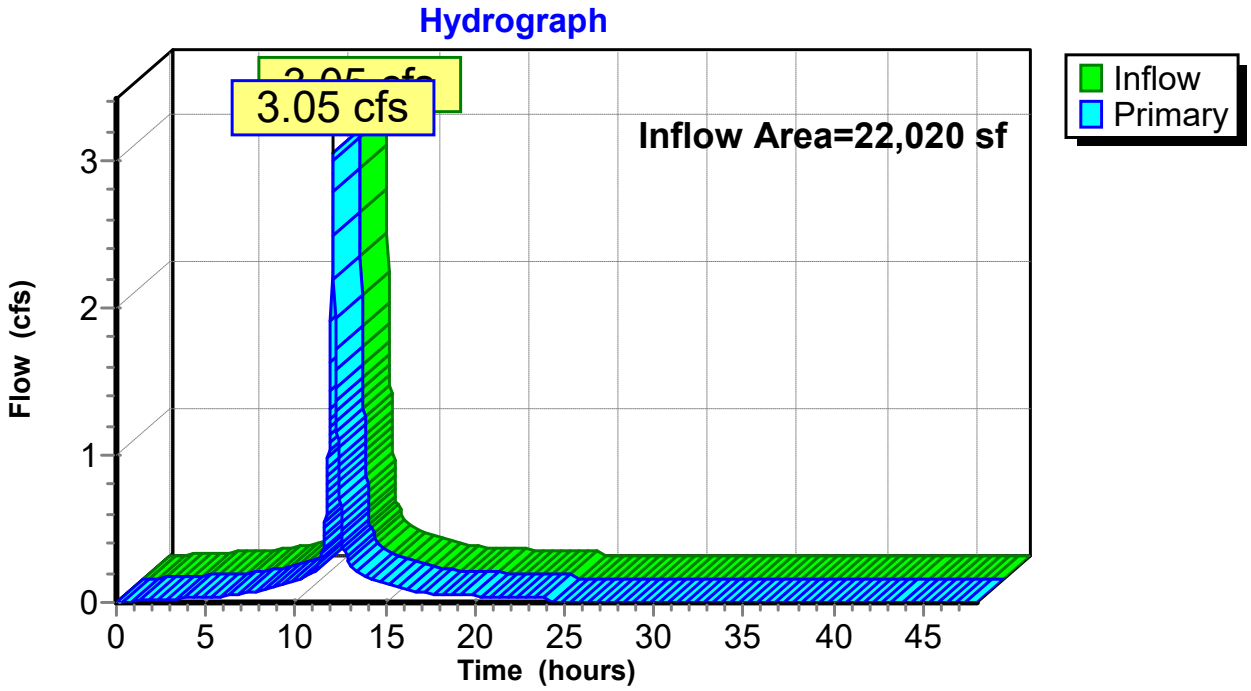


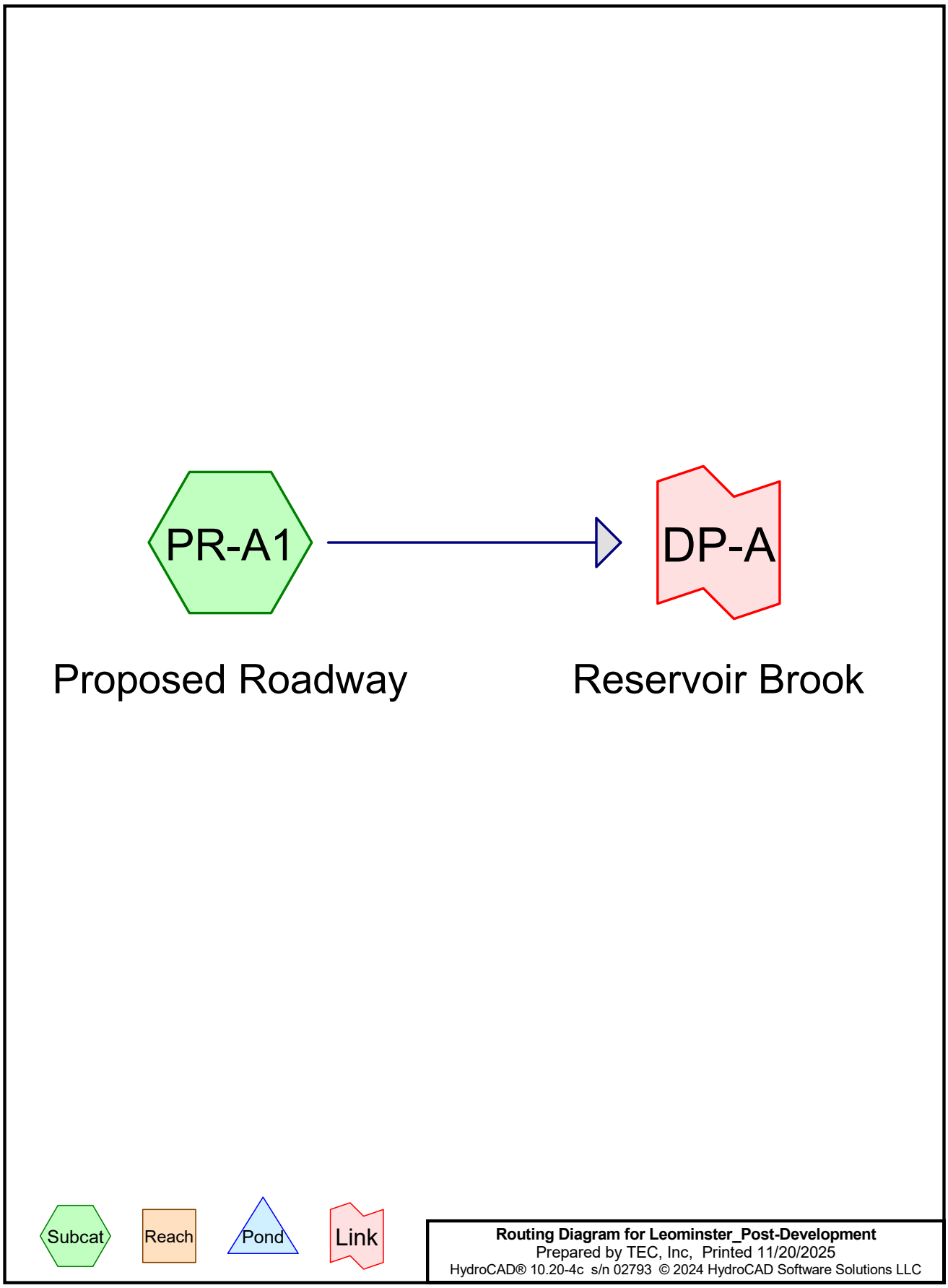
## Summary for Link DP-A: Reservoir Brook

Inflow Area = 22,020 sf, 80.20% Impervious, Inflow Depth = 6.00" for 100-Year event
Inflow = 3.05 cfs @ 12.08 hrs, Volume= 11,002 cf
Primary = 3.05 cfs @ 12.08 hrs, Volume= 11,002 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

### Link DP-A: Reservoir Brook




PR-A1
DP-A
Proposed Roadway
Reservoir Brook
Subcat
Reach
Pond
Link
Routing Diagram for Leominster_Post-Development
Prepared by TEC, Inc, Printed 11/20/2025
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## Rainfall Events Listing

| Event# | Event Name | Storm Type | Curve | Mode | Duration (hours) | B/B | Depth (inches) | AMC |
|---|---|---|---|---|---|---|---|---|
| 1 | 2-Year | Type III 24-hr | | Default | 24.00 | 1 | 3.15 | 2 |
| 2 | 10-Year | Type III 24-hr | | Default | 24.00 | 1 | 4.77 | 2 |
| 3 | 100-Year | Type III 24-hr | | Default | 24.00 | 1 | 7.34 | 2 |

## Area Listing (all nodes)

| Area (sq-ft) | CN | Description (subcatchment-numbers) |
|---|---|---|
| 2,635 | 39 | >75% Grass cover, Good, HSG A (PR-A1) |
| 1,307 | 61 | >75% Grass cover, Good, HSG B (PR-A1) |
| 7,790 | 98 | Paved roads w/curbs & sewers, HSG A (PR-A1) |
| 10,288 | 98 | Paved roads w/curbs & sewers, HSG B (PR-A1) |
| **22,020** | **89** | **TOTAL AREA** |

## Soil Listing (all nodes)

| Area (sq-ft) | Soil Group | Subcatchment Numbers |
|---|---|---|
| 10,425 | HSG A | PR-A1 |
| 11,595 | HSG B | PR-A1 |
| 0 | HSG C | |
| 0 | HSG D | |
| 0 | Other | |
| **22,020** | | **TOTAL AREA** |

Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment PR-A1: Proposed Roadway** Runoff Area=22,020 sf 82.10% Impervious Runoff Depth=2.42"
Tc=6.0 min CN=WQ Runoff=1.27 cfs 4,442 cf

**Link DP-A: Reservoir Brook** Inflow=1.27 cfs 4,442 cf
Primary=1.27 cfs 4,442 cf

**Total Runoff Area = 22,020 sf Runoff Volume = 4,442 cf Average Runoff Depth = 2.42"**
**17.90% Pervious = 3,942 sf 82.10% Impervious = 18,078 sf**

## Summary for Subcatchment PR-A1: Proposed Roadway

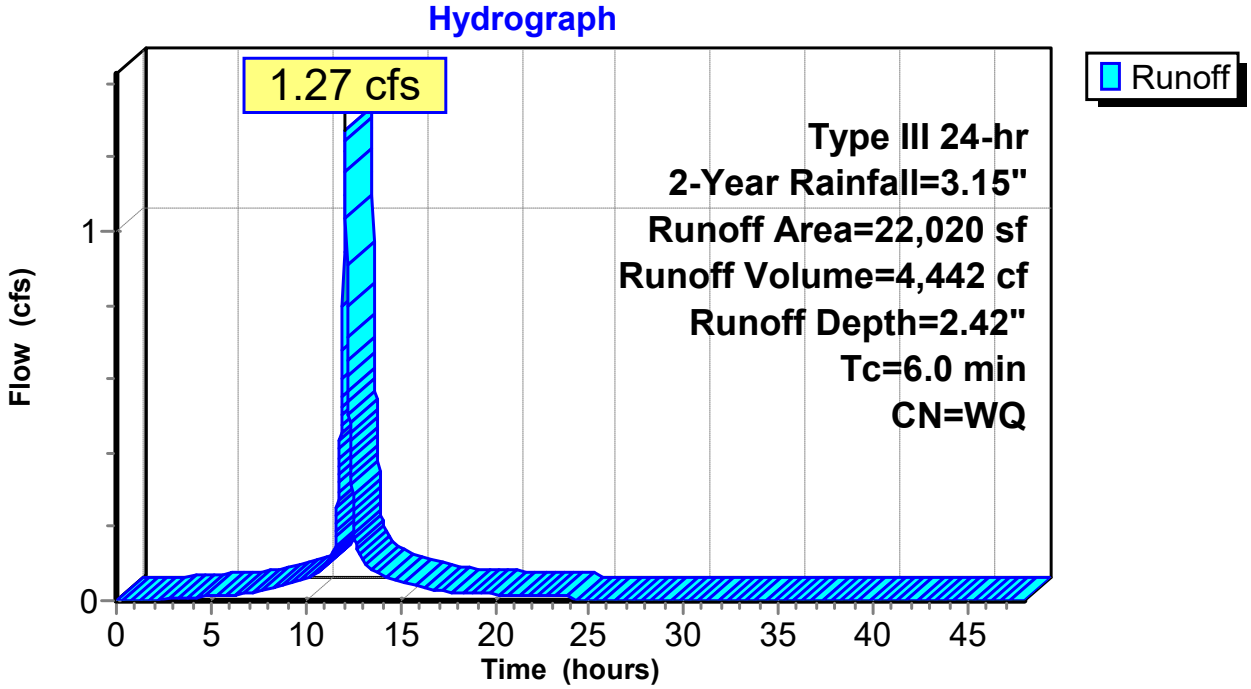
Runoff = 1.27 cfs @ 12.08 hrs, Volume= 4,442 cf, Depth= 2.42"
Routed to Link DP-A : Reservoir Brook

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Year Rainfall=3.15"

| Area (sf) | CN | Description |
|---|---|---|
| 7,790 | 98 | Paved roads w/curbs & sewers, HSG A |
| 10,288 | 98 | Paved roads w/curbs & sewers, HSG B |
| 2,635 | 39 | >75% Grass cover, Good, HSG A |
| 1,307 | 61 | >75% Grass cover, Good, HSG B |
| 22,020 | | Weighted Average |
| 3,942 | | 17.90% Pervious Area |
| 18,078 | | 82.10% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

### Subcatchment PR-A1: Proposed Roadway

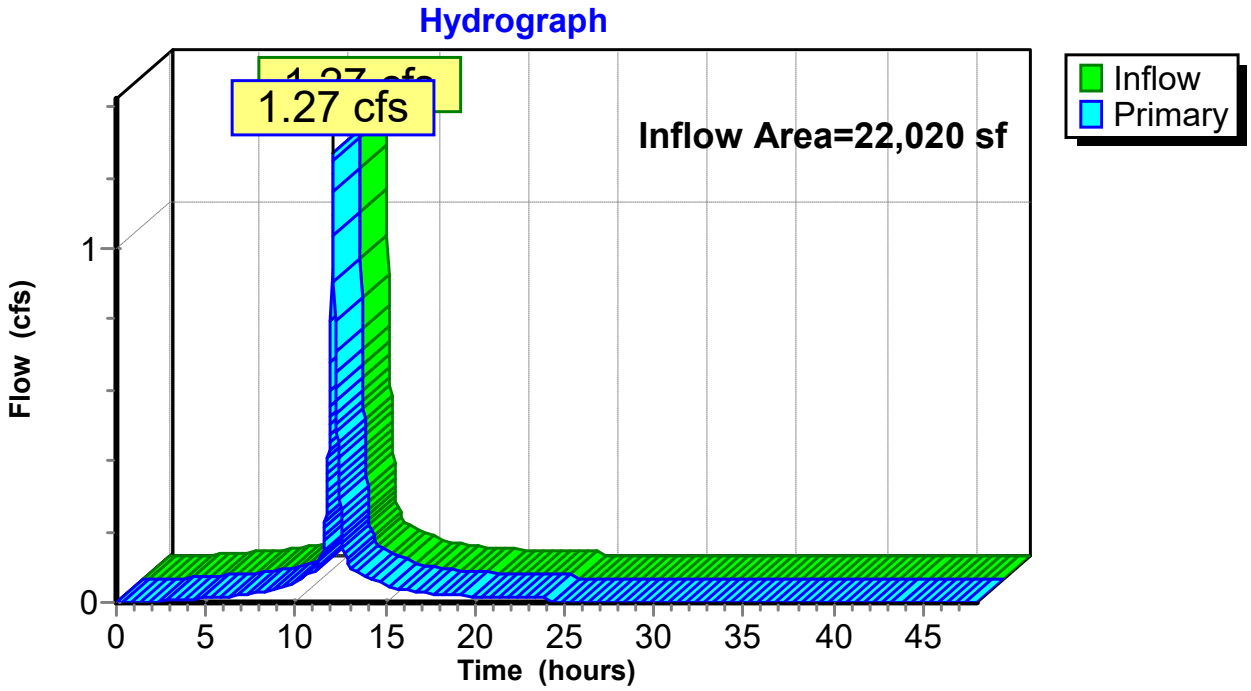


## Summary for Link DP-A: Reservoir Brook

Inflow Area = 22,020 sf, 82.10% Impervious, Inflow Depth = 2.42" for 2-Year event
Inflow = 1.27 cfs @ 12.08 hrs, Volume= 4,442 cf
Primary = 1.27 cfs @ 12.08 hrs, Volume= 4,442 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

### Link DP-A: Reservoir Brook



Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment PR-A1: Proposed Roadway** Runoff Area=22,020 sf 82.10% Impervious Runoff Depth=3.81"
Tc=6.0 min CN=WQ Runoff=1.97 cfs 6,998 cf

**Link DP-A: Reservoir Brook** Inflow=1.97 cfs 6,998 cf
Primary=1.97 cfs 6,998 cf

**Total Runoff Area = 22,020 sf Runoff Volume = 6,998 cf Average Runoff Depth = 3.81"**
**17.90% Pervious = 3,942 sf 82.10% Impervious = 18,078 sf**

## Summary for Subcatchment PR-A1: Proposed Roadway

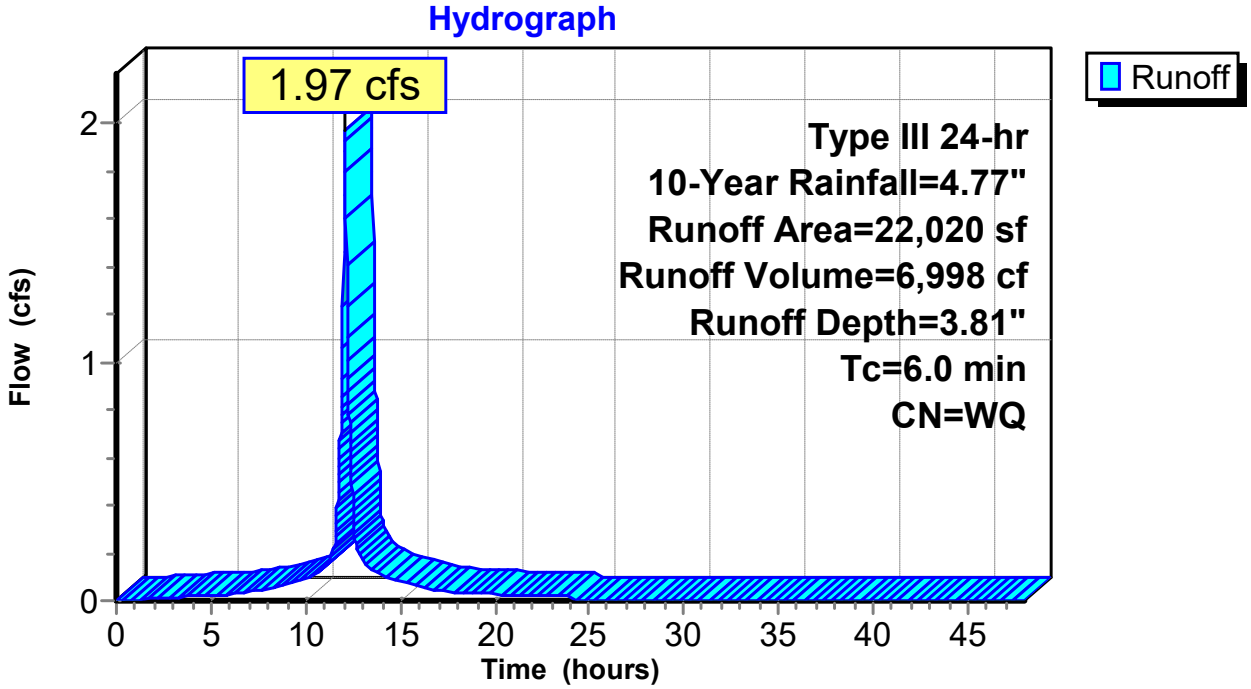
Runoff = 1.97 cfs @ 12.08 hrs, Volume= 6,998 cf, Depth= 3.81"
Routed to Link DP-A : Reservoir Brook

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=4.77"

| Area (sf) | CN | Description |
|---|---|---|
| 7,790 | 98 | Paved roads w/curbs & sewers, HSG A |
| 10,288 | 98 | Paved roads w/curbs & sewers, HSG B |
| 2,635 | 39 | >75% Grass cover, Good, HSG A |
| 1,307 | 61 | >75% Grass cover, Good, HSG B |
| 22,020 | | Weighted Average |
| 3,942 | | 17.90% Pervious Area |
| 18,078 | | 82.10% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

### Subcatchment PR-A1: Proposed Roadway

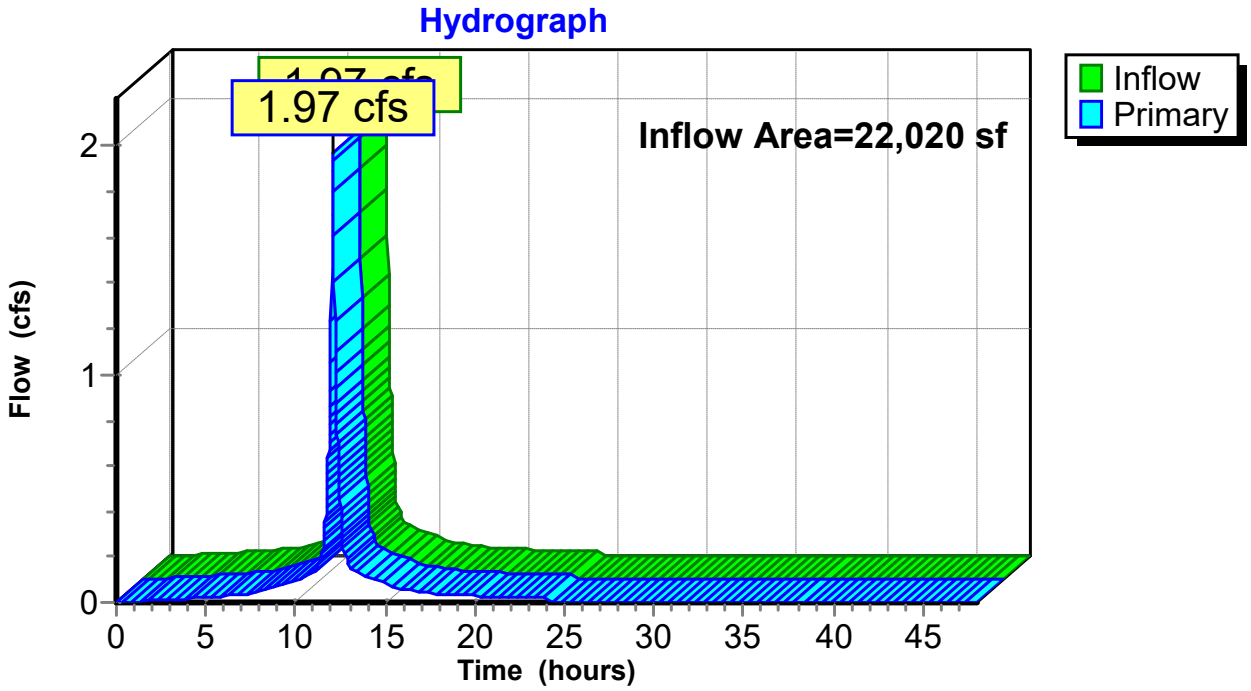


## Summary for Link DP-A: Reservoir Brook

Inflow Area = 22,020 sf, 82.10% Impervious, Inflow Depth = 3.81" for 10-Year event
Inflow = 1.97 cfs @ 12.08 hrs, Volume= 6,998 cf
Primary = 1.97 cfs @ 12.08 hrs, Volume= 6,998 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

### Link DP-A: Reservoir Brook



Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment PR-A1: Proposed Roadway** Runoff Area=22,020 sf 82.10% Impervious Runoff Depth=6.11"
Tc=6.0 min CN=WQ Runoff=3.11 cfs 11,215 cf

**Link DP-A: Reservoir Brook** Inflow=3.11 cfs 11,215 cf
Primary=3.11 cfs 11,215 cf

**Total Runoff Area = 22,020 sf Runoff Volume = 11,215 cf Average Runoff Depth = 6.11"**
**17.90% Pervious = 3,942 sf 82.10% Impervious = 18,078 sf**

## Summary for Subcatchment PR-A1: Proposed Roadway

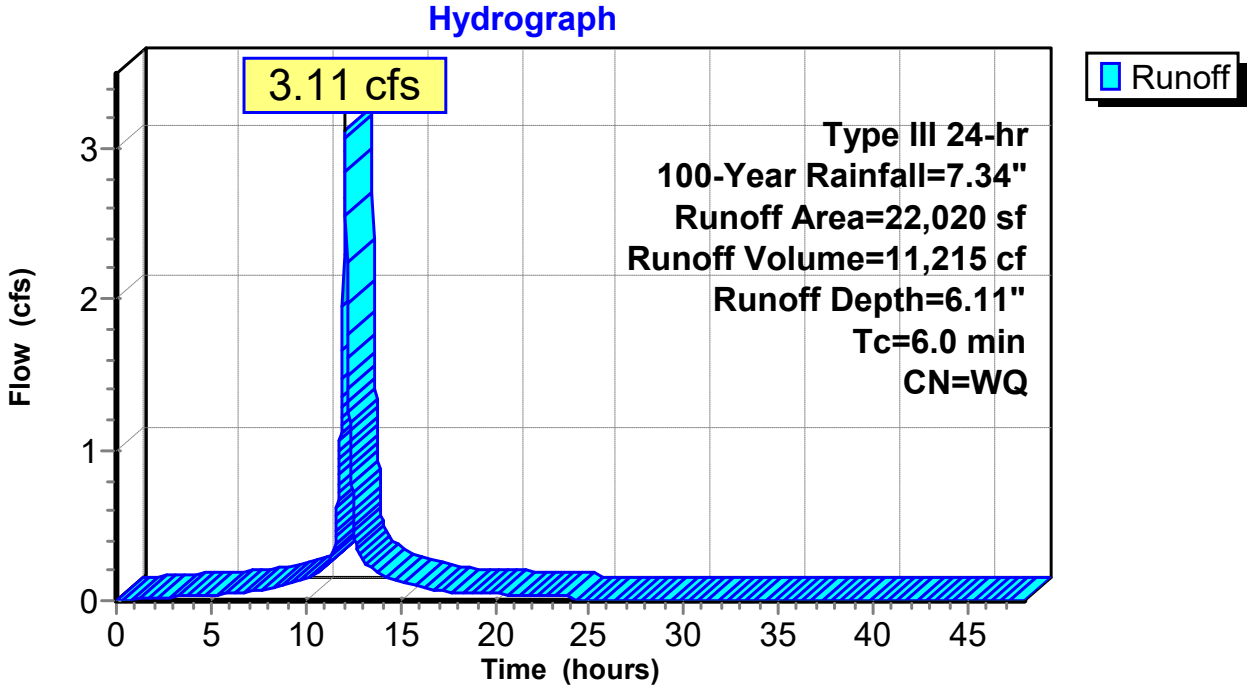
Runoff = 3.11 cfs @ 12.08 hrs, Volume= 11,215 cf, Depth= 6.11"
Routed to Link DP-A : Reservoir Brook

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=7.34"

| Area (sf) | CN | Description |
|---|---|---|
| 7,790 | 98 | Paved roads w/curbs & sewers, HSG A |
| 10,288 | 98 | Paved roads w/curbs & sewers, HSG B |
| 2,635 | 39 | >75% Grass cover, Good, HSG A |
| 1,307 | 61 | >75% Grass cover, Good, HSG B |
| 22,020 | | Weighted Average |
| 3,942 | | 17.90% Pervious Area |
| 18,078 | | 82.10% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

### Subcatchment PR-A1: Proposed Roadway

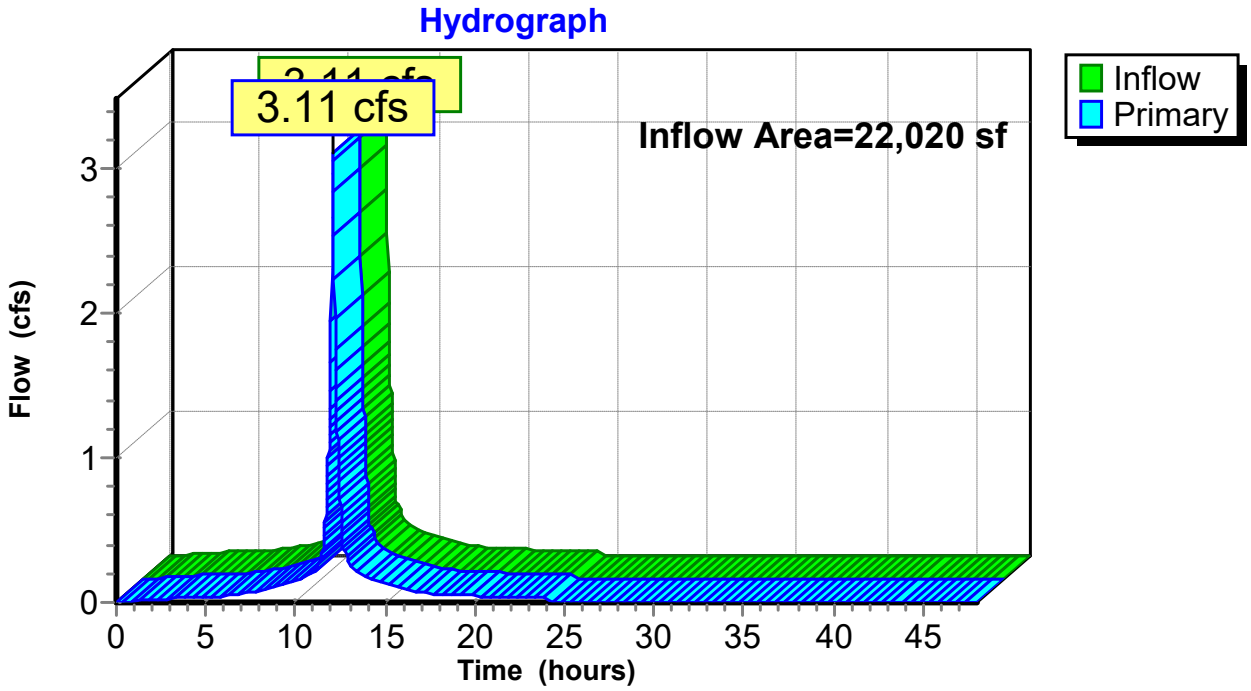


## Summary for Link DP-A: Reservoir Brook

Inflow Area = 22,020 sf, 82.10% Impervious, Inflow Depth = 6.11" for 100-Year event
Inflow = 3.11 cfs @ 12.08 hrs, Volume= 11,215 cf
Primary = 3.11 cfs @ 12.08 hrs, Volume= 11,215 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs

### Link DP-A: Reservoir Brook



# Appendix E: O&M Plan and LTPPP

# *613865-Pleasant Street Over Reservoir Brook*

## Stormwater Management System Operation and Maintenance Plan and Long-Term Pollution Prevention Plan

*Leominster, MA*

PREPARED FOR




10 Park Plaza
Boston, MA 02116

PREPARED BY




TEC, Inc.
282 Merrimack Street, 2nd Floor
Lawrence, MA, 01843

11/20/2025

# Table of Contents

**1 Stormwater Management System Operation and Maintenance (O&M) Plan ..... 1**

1.1 Responsible Party ..... 1
1.2 Inspection and Maintenance Measures and Record-Keeping ..... 1
1.3 Erosion and Sediment Control Measures during Maintenance Activities ..... 3
1.4 O&M Budget ..... 4

**2 Long-Term Pollution Prevention Plan ..... 5**

2.1 Practices for Long-Term Pollution Prevention ..... 5
2.1.1 Litter Pick-up ..... 5
2.1.2 Inspection and Maintenance of Stormwater Assets ..... 5
2.1.3 Maintenance of Landscaped Areas ..... 6
2.1.4 Snow and Ice Management ..... 6
2.1.5 Street Sweeping ..... 6
2.1.6 Prohibition of Illicit Discharges ..... 6
2.1.7 Spill Prevention and Response ..... 7

# 1

# Stormwater Management System Operation and Maintenance (O&M) Plan

This Stormwater Management System Operation and Maintenance (O&M) Plan describes the approach for inspection and maintenance of drainage infrastructure and structural stormwater control measures (SCMs) to minimize contaminant loading for Pleasant Street in Leominster. In general, inspection and maintenance activities will be conducted consistent with the National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer System (MS4) and MassDOT's anticipated NPDES Transportation Separate Storm Sewer System (TS4) Permit.

This document has been prepared per the requirements of Massachusetts Department of Environmental Protection (MassDEP) Regulations 310 CMR 10.05 (6)(k)(9) and satisfies the requirements of Massachusetts Stormwater Standard 9.

## 1.1 Responsible Party

The City of Leominster will be responsible for the operation and maintenance of all stormwater management systems within the project area. Questions or concerns regarding activities associated with this O&M Plan should be address to City of Leominster Department of Public Works located at 109 Graham Street, Leominster MA 01453, phone (978) 534-7590.

## 1.2 Inspection and Maintenance Measures and Record-Keeping

See the Post-Development Drainage Figure in Appendix D of the Stormwater Management Report for the proposed stormwater system within the project limits. The stormwater management system covered by this O&M Plan consists of the following measures:

- Catch Basins
- Drainage Pipes and Manholes

The City of Lawrence will continue to follow its standard City inspection and maintenance program compliance with the Small Municipal Separate Storm Sewer System (MS4) permit. Catch basin inspection shall occur annually, and will include visual checks for structural issues, pollutants, and sediment depth in the sump less than 50% full. Documentation of the inspection and follow-up maintenance actions shall follow the inspections.

Pleasant Street Over Reservoir Brook (Project No. 613865)

The City has previously retained vendors in multi-year contract periods to provide cleaning of existing catch basins and drainage pipes. The City Department of Public Works also performs additional inspections and service as necessary. Each catch basin is thoroughly cleaned or silt, sand, and debris from the basin sump (or basin bottom, if it lacks a sump), by mechanical means or hand labor. Typically cleanings are performed by vacuum truck. Damage to grates, frames, pipe connections, and any deficiencies shall be reported to the Utilities Superintendent.

The table below summarizes data that is generally collected for each asset type. For all assets, the inspector and inspection date are recorded.

| Inspection Form | Applicable Stormwater Assets | Information Collected |
|---|---|---|
| Inlets | › Catch basins | › Sediment accumulation<br>› Trash/Debris accumulation<br>› Signs of contamination<br>› Frame and grate condition<br>› Overall structure condition |
| SCMs | › Drainage Pipes & Manholes | › Presence of standing water<br>› Sediment accumulation<br>› Trash/Debris accumulation<br>› Overall SCM condition |
| Storm Discharge Points | › Outlets to SCMs | › Presence of flow<br>› Signs of contaminated flow<br>› Sediment accumulation<br>› Level of erosion<br>› Pipe condition<br>› Scour protection condition<br>› Overall structure condition |

Inspection and maintenance records will be kept with the City of Leominster Department of Public Works. Representatives of the City of Leominster's Conservation Commission, MassDEP, and US EPA may obtain access to these records, upon request. Additionally, City of Leominster will allow members and agents of MassDEP and the Conservation Commission to enter and inspect the premises, upon request, to evaluate and ensure that the Operation and Maintenance Plan requirements for each SCM are being followed.

Maintenance to be performed on the stormwater system includes:

Pleasant Street Over Reservoir Brook (Project No. 613865)

| Stormwater Feature | Potential Maintenance Actions | |
|---|---|---|
| Underground SCMs | • Remove and properly dispose of trash, sediment, debris, and root intrusions<br>• Clean out sumps at an interval to maintain functionality (less than 50% full of sediment)<br>• Jet and repair pipes | • Stabilize and replace deteriorated structures<br>• Perform evaluations (e.g., test pits) to evaluate subsurface conditions |
| Inlets and Outlets to SCMs | • Clear inlet and remove and properly dispose of sediment, trash, leaf litter, debris, and vegetation<br>• Regrade areas that show signs of ponding and channelization<br>• Repair or replace structural components<br>• Repair damaged or eroded areas | • Provide or rehabilitate erosion control at the outlet<br>• Regrade and replace the channel materials<br>• Remove woody growth<br>• Stabilize or reconstruct eroded areas<br>• Treat invasive plants according to MassDOT Vegetation Management Plan |

Based on the results of the inspection, repairs will be made in accordance with City of Leominster standard practices. Maintenance will be prioritized given the urgency of the required maintenance and availability of staff, contracts, etc. More intensive remedial activities may require permitting and/or an engineering solution.

## 1.3 Erosion and Sediment Control Measures during Maintenance Activities

For maintenance activities that could result in discharges of sediments or other contaminants into wetlands, waterways, or other resource areas regulated under 310 CMR 10.00, the responsible maintenance personnel will employ measures to prevent migration of these sediments/contaminants. Such temporary measures may include, but are not necessarily limited to, the use of siltation barriers, catch basin silt sacks/filter bags, pipe plugs, cofferdams deployed within the stormwater structure, turbidity curtains, or other practices designed to prevent such discharges.

Where maintenance occurs in areas that are confined, with no risk of discharge to adjacent water bodies, no special measures may be needed. Examples include, but are not limited to: (1) cleaning of a forebay under dry conditions when the work can be completed and exposed surfaces stabilized prior to placing it back into service; and (2) catch basin cleaning where the activity is limited to removing material from a sump below the elevation of the outlet pipe.

## 1.4 O&M Budget

City of Leominster performs maintenance for stormwater management systems as part of their routine operation and maintenance budget. Budgets vary by fiscal year.

# 2

# Long-Term Pollution Prevention Plan

This Long-Term Pollution Prevention Plan (LTPPP) describes the approach for pollution prevention and related maintenance activities for Pleasant Street in Leominster, MA. In general, long-term pollution prevention and related maintenance activities will be conducted consistent with The National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer System (MS4):

This LTPPP satisfies the requirements related to pollution prevention under Massachusetts Stormwater Standards 4, 5, 6, and 10.

## 2.1 Practices for Long-Term Pollution Prevention

For the facilities covered, long-term pollution prevention includes the following measures.

- good housekeeping;
- storing materials and waste products inside or under cover;
- vehicle washing;
- routine inspections and maintenance of SCMs;
- spill prevention and response;
- maintenance of lawns, gardens, and other landscaped areas;
- storage and use of fertilizers, herbicides, and pesticides;
- pet waste management;
- operation and management of septic systems; and
- proper management of deicing chemicals and snow.

### 2.1.1 Litter Pick-up

City of Leominster will conduct litter pick-up from the stormwater management facilities in conjunction with routine road maintenance activities.

### 2.1.2 Inspection and Maintenance of Stormwater Assets

City of Leominster will conduct inspection and maintenance of drainage infrastructure and the stormwater control measures (SCMs) in accordance with the O&M Plan, as described in Section 1.

### 2.1.3 Maintenance of Landscaped Areas

Routine mowing will be conducted according to standard City of Leominster practices.

Local Conservation Commission may require the use of fertilizers, herbicides, and pesticides. Applications include using fertilizer to ensure the survival of new plantings and herbicides to control invasive plants. Use of fertilizers and herbicides shall be reviewed and approved by the Local Conservation Commission prior to application.

### 2.1.4 Snow and Ice Management

Snow and Ice Management will be conducted consistent with City of Leominster standard practices.

### 2.1.5 Street Sweeping

Routine highway cleaning, with a brush-type street sweeper, will be conducted in accordance with standard City of Leominster practices.

### 2.1.6 Prohibition of Illicit Discharges

The MassDEP Stormwater Management Standard 10 prohibits illicit discharges to the stormwater management system. Illicit discharges are discharges that do not consist entirely of stormwater, except for certain specified non-stormwater discharges.

In accordance with the existing MS4 permit and anticipated TS4 permit requirements, examples of discharges from the following sources are not considered illicit discharges:

- Firefighting activities*
- Foundation drains
- Water line flushing
- Footing drains
- Landscape irrigation
- Individual residential car washing
- Uncontaminated groundwater
- Rising groundwater
- Diverted stream flows
- Flows from riparian habitats/wetlands
- Potable water sources
- Dechlorinated swimming pool water
- Street wash waters
- Wash water from residential buildings (no detergents)
- Condensation from air conditioning units
- Run-on from private driveways caused by precipitation
- Lawn watering
- Water from crawl space pumps

*Water from firefighting activities is allowed and need only be addressed where they are identified as significant sources of pollutants to waters of the United States.

Based on plan review and confirmation in the field, there are no known or proposed illicit connections associated with the Pleasant Street Project. Should an interconnection to the stormwater management system be identified, the MassDOT PM will coordinate with the District Permits Engineer to confirm if the connections are authorized. For unauthorized connections, the project PM and/or applicable City departments will investigate the connections and if they are determined to be illicit, the connections will be managed

through MassDOT's Illicit Discharge Detection and Elimination (IDDE) program and/or through other agencies.

### 2.1.7 Spill Prevention and Response

Response procedures will be implemented at the existing discharge point that the proposed drainage system will be connecting into for any significant release of hazardous materials such as fuels, oils, or chemical materials that have the potential of discharging to the Spicket River. Spill containment measures will include, but limited to, the use of caps, covers, pneumatic plugs and/or absorbent material.

Reportable quantities will immediately be reported to the applicable Federal, State, and local agencies as required by law. Reportable quantities of chemical, fuels, or oils are established under the Clean Water Act and enforced through MassDEP. The MassDEP Emergency Response Program shall be immediately notified in accordance with required procedures for the report of a release (telephone (888) 304-1133).

The City of Leominster works with first responders and/or public water supply owners to determine the best approach to protect water supplies, and provides training and materials to carry out action plans. In the case of a spill, applicable containment and clean-up procedures will be performed immediately. These procedures are implemented in accordance with the Unified Response Manual at the local level by first responders, which includes the City of Leominster's local public safety departments (e.g., fire, police, public works, board of health). Spill material collected during the response will be promptly removed and disposed of in accordance with Federal, State, and local requirements. If necessary, a licensed emergency response contractor will assist in cleanup of releases depending on the amount of the release and the ability of the responsible party to perform the required response. See *Construction Period Pollution Prevention Plan* within the Drainage Report (Appendix C) for further information on Spill Prevention and Control.

# Attachment H – Special Provisions

**ITEM 102.3 HERBICIDE TREATMENT OF INVASIVE PLANTS HOUR**

This work must be performed by persons who meet the qualifications below and are approved by the Landscape Design Section.

Work under this item consists of herbicide treatment of invasive plants currently existing within the project limits and as directed. An Invasive Plant Management Strategy (IPMS) shall be submitted to the Engineer for review and approval and the IPMS shall be implemented on-site. The IPMS shall be written and submitted per Item 102.33 Invasive Plant Management Strategy and shall be measured and paid for under that Item.

Work under this item shall be coordinated with work and schedule for Selective Clearing, Clearing and Grubbing, Mowing, Tree Removal, Planting, and Wetland Mitigation items.

Payment is per hour on-site and shall be compensation for a minimum crew of 2 licensed applicators, 2 back-pack sprayers and mist-blowers, a properly equipped spray truck with spray hoses, and a tank with sufficient capacity for a full day of work. If there is only one applicator, hourly payment shall be adjusted to 50 percent of the unit price.

Date and time stamped photos indicating start and stop time of work must be submitted if requested.

This item is not intended for manual removal of plants.

Management of plants determined to have been introduced to the site via imported loam, compost, mulch, plants, equipment, or other construction activities will be the Contractor’s responsibility and at the Contractor’s expense.

Herbicide shall be applied during daytime hours only.

Measures to prevent the introduction of invasive plant species to the site and to address introduction due to construction-related activities shall be covered under the Standard Specifications, Division I - Subsections 7.01(D) Plant Pest Control and 7.13 Protection and Restoration of Property as amended in these Special Provisions.

Plant species targeted for management under this item shall be as determined in the field per the site walk and as specified in the IPMS.

The definition of invasive plant species shall be as described by Massachusetts Invasive Plant Advisory Group (MIPAG): “non-native species that have spread into native or minimally managed plant systems in Massachusetts, causing economic or environmental harm by developing self-sustaining populations and becoming dominant and/or disruptive to those systems.”

**ITEM 102.3** (Continued)

Control of invasive plants shall begin immediately with the initiation of construction activities and prior to any clearing or site disturbance. Treatment areas shall include stockpile locations and may, upon approval of the Engineer, extend outside the project limit. Treatment shall be done each consecutive year for the duration of the contract unless specified otherwise in the IMPS or unless directed otherwise by the MassDOT invasive species contact. Work shall be done during the growing season from May – October unless otherwise specified in the IPMS.

Areas identified for vegetation control measures shall be as shown on the plans and as determined in the field by the Engineer and a MassDOT Landscape Architect. Contact at MassDOT Landscape Design Section may be contacted at: Tara.Mitchell@dot.state.ma.us

**QUALIFICATIONS**

The applicators shall submit and meet the qualifications outlined below. A list of contractors specializing in invasive management and approved by MassDOT Landscape Design Section is available on the following website: https://www.mass.gov/lists/landscape-design-and-roadside-maintenance under Invasive Plant Management.

Requirements

1. Company must provide proof of qualifications by providing the following:
   a. Narrative describing company, its expertise and experience with invasive plant control.
   b. Demonstrate experience with herbicide treatment as part of restorations and in sensitive areas.
   c. Describe company's technical qualifications and past performance.

2. Company must meet licensing requirements:
   a. All crew applicators must have a Massachusetts Commercial Applicator License (CORE).
   b. At least one or more applicator must have a ROW certification, if required for work.
   c. Company must provide name(s) of applicator(s) and Applicator License/Certification number for all contractor crew leaders working on the project.
   d. Company must provide documentation of any warnings, penalties or fines received in the last three (3) years.

3. Company must provide proof of experience with invasive plant control and include following:
   a. At least five (5) references from prior invasive plant control work completed in last five (5) years. Provide contact information including address, phone number and email.
   b. Provide a summary of each of these projects including nature of the problem, specific invasive vegetation treated, dates and period of treatment, methodologies used, and summary of success or not in terms of meeting performance objectives. Include summary of equipment used.
   c. Photo documentation of these projects.
   d. GPS coordinates of project locations, if available.

**ITEM 102.3** (Continued)

4. Crew leader must have expertise with invasive plant control and provide the following:
   a. Have held Core license for at least five (5) years.
   b. Resume listing five (5) or more years of experience applying pesticides with the company or with another company specializing in vegetation management.

## SUBMITTALS

No work shall begin without approval of the submittals. Submittals include the following items:

Invasive Plant Management Strategy (IPMS)

At least thirty (30) days prior to proposed treatment the IPMS shall be submitted for approval by the Engineer and MassDOT Landscape Architect. All chemicals, methods and work done under this item shall be consistent with the IPMS. The IPMS shall be as described under Item 102.33.

Herbicide Use Report

Within two (2) weeks after each application, the Contractor shall provide to the Engineer and the MassDOT Landscape Architect a completed and signed MassDOT Herbicide Use Report.

Photo Documentation

Digital photos with date and time of herbicide application work, showing start time and completion time, are required and must be submitted for measurement of payment upon request.

## MATERIALS

All proposed herbicides shall be as approved in the IPMS. Herbicides shall be labeled for the method of treatment and shall meet all federal, state and local regulation requirements. Application rates will depend on herbicide proposed and shall be per the manufacturer's label for specific application.

## METHODS

All methods used shall be as approved in the IPMS which shall be determined during the Initial Site Walk as described under Item 102.33 Invasive Plant Management Strategy.

The Contractor shall be responsible for marking delineated areas and plants to be preserved, removed, or otherwise treated. Fencing or other materials needed for marking and delineating protected areas shall be incidental to this item.

The Contractor shall notify the Engineer a minimum of 3 days prior to date of expected herbicide application. Applicators shall notify the Engineer upon arriving on-site and upon leaving the site.

**ITEM 102.3** (Continued)

Herbicide Applications

All herbicide application shall conform to Massachusetts Pesticide Laws and Regulations per the Massachusetts Department of Agricultural Resources (MDAR) Pesticide Bureau.

Mixing, applying and/or disposing of herbicides shall always be in accordance with instructions on their labels and all applicable federal, state, and local regulations. Mixing shall not occur within sensitive areas, wetlands, or buffer zones.

Contractor shall not spray 2 hours prior to precipitation, during rain, or during windy conditions. The Contractor shall be responsible for monitoring weather conditions and adjusting the work schedule as appropriate for the herbicide and application method to be used.

Targeted vegetation shall be identified and marked prior to treatment. Plants treated by foliar spray, injection or glove application or other methods that leave standing vegetation, as opposed to cut-stump application, shall remain clearly marked for identification through the contract period.

Desirable vegetation shall be protected from both spray and other physical damage.

Contractor is responsible for any damage to vegetation not designated for removal or treatment. Vegetation damaged shall be restored. Cost of replacement plants and/or restoration shall be borne by the Contractor.

Contractor shall ensure that the public does not enter a work area while herbicide application or spraying is underway.

Disposal Of Invasive Plant Material

All material to be cleared shall become the property of the Contractor. The satisfactory disposal of all cleared plant material (seeds, roots, woody vegetation, associated soils, etc.) shall be the Contractor's responsibility.

The Contractor shall take measures to prevent viable plant material from leading to further infestations (seeds, roots, woody material, etc.) while stockpiled, in transit, or at final disposal locations. All precautions shall be taken to avoid contamination of natural landscapes with invasive plants or invasive plant material.

Chipping, shredding, or on-site burning of plant material must be approved by the Engineer and included in the IMPS.

For plant material taken to an incinerating facility per the IPMS, a receipt from that facility shall be submitted to the Engineer as proof of disposal.

**ITEM 102.3** (Continued)

Where feasible, it is preferable to dispose of plants on-site or to bury them on-site with on-going monitoring for re-sprouting. Disposal locations and methods must be approved and included in the IPMS. Site work such as grading and seeding to stabilize and restore disposal area shall be incidental to this item.

The Contractor shall be responsible for treating or otherwise managing areas of re-growth due to improper disposal. Treatment shall be at the Contractor's expense.

Follow-Up Treatment

Plants and areas shall be re-treated as necessary and as appropriate to the time of year. Treatment shall be for the duration of the contract and per the IPMS.

**MEASURE OF SUCCESS**

The expectation is a minimum of 85-95 percent control achieved after the first treatment, depending on plants targeted and extent of population, and based on the expectations laid out in the IPMS. The expectation for the contract duration is 95-100% eradication by the end of the treatment period, unless otherwise specified in the IPMS.

METHOD OF MEASUREMENT

Item 102.3 will be measured for payment by the Hour of verified crew time spent on the project doing herbicide application as and where specified herein and in the IPMS. A crew shall be defined as a minimum of two licensed applicators each equipped with (at minimum) back-pack sprayer and mist blower. The crew shall also have a properly equipped spray truck with hoses and a tank with sufficient capacity for a full day of work.

BASIS OF PAYMENT

Item 102.3 will be paid at the contract unit price per Hour, which price shall include all labor, materials, equipment, tools, and all incidentals required to complete the work.

Payment will be based upon verified time spent on the project doing herbicide application as and where specified in the IPMS and upon receipt and approval of submittals. Payment will not include travel time to and from the Contractor's place of business and nor time for investigative field trips.

If there is only one applicator, hourly payment shall be adjusted to 50 percent of the unit price.

The Invasive Plant Management Strategy will be paid for under Item 102.33.

**ITEM 102.33 INVASIVE PLANT MANAGEMENT STRATEGY HOUR**

This item consists of providing an Invasive Plant Management Strategy (IPMS) for the control of invasive plants currently existing on the project site and/or as directed and shall be coordinated with Item 102.3 Herbicide Treatment of Invasive Plants. Unless otherwise approved, the IPMS shall be submitted in the form of the MassDOT Invasive Plant Management Strategy Report Form.

The IPMS shall be submitted for review and approval by the MassDOT Landscape Design Section or their representative, and the IPMS shall be implemented on-site.

The Invasive Plant Management Strategy Report Form is available online at https://www.mass.gov/lists/landscape-design-and-roadside-maintenance under Invasive Plant Management.

Herbicide treatment for invasive plants shall be as described under Item 102.3 Herbicide Treatment of Invasive Plants and shall be compensated per that Item.

Work under this item shall be coordinated with work and schedule for Selective Clearing, Clearing and Grubbing, Mowing, Tree Removal, Planting, and Wetland Mitigation as relevant to the project.

Individual attending the site walk and determining the Invasive Plant Management Strategy must demonstrate expertise with vegetation management and invasive plant control and submit qualifications as described below.

QUALIFICATIONS

Individual shall be from the same company as that providing services for Item 102.3 Herbicide Treatment of Invasive Plants and shall submit the following, if not submitted under Item 102.3:

- Submit copy of current Core license.
- Submit a resume listing five (5) or more years of experience managing invasive plants with a company specializing in vegetation management.
- References shall be submitted if requested.

SUBMITTALS

Task Summary & Reports

For measurement of payment, the contractor shall submit the total sum and a breakdown of hours for the tasks performed. At a minimum, the tasks shall include the Initial Site Walk, submittal of an approved IPMS, and if requested to accommodate project or site changes, a Follow-up Site Inspection and accompanying IPMS Amendment.

Interim Site Monitoring Reports and/or a Final Report shall be submitted if requested by the MassDOT Landscape Design contact. The MassDOT Landscape Design contact must be notified to attend the site inspection walk when an Interim or Final Report has been requested.

**ITEM 102.33** (Continued)

Invasive Plant Management Strategy (IPMS)

At least thirty (30) days prior to construction activities and/or any proposed treatment, the contractor shall submit the IPMS for approval by the Engineer and MassDOT Landscape Architect. All chemicals and methods proposed shall be consistent with applicable Massachusetts Wetlands Protection Act Order of Conditions.

The IPMS shall be completed in coordination with the Prime Contractor and the Engineer and shall include the following as appropriate and applicable to the project and to the IPMS Report Form questions and Guidance:

**I. Project Information**

a. Company writing the IPMS and performing the herbicide application.
b. Date of site walk
c. Attendees at site walk
d. Expected end date of contract and expected last treatment (month/season)

**II. Brief Description of Conditions**

a. Provide a free-hand sketch on construction plans or aerial image showing species, location, and as relevant, show or note extent of population as relevant to Strategy (i.e., population extends off ROW preventing eradication, small population and eradication deemed feasible within contract schedule, etc.).

**III. Coordination with Roadway Contractor regarding other work**

a. Tree Work: Note coordination to be implemented with tree removal, clearing, and clearing and grubbing as applicable to the project.
b. Wetland Mitigation - Include management proposed for wetland mitigation areas in the IPMS, if and as required.
c. Planting: If there will be planting in areas proposed for treatment, propose treatment and schedule to avoid herbicide damage to plants.
d. Mowing: If coordination is required with state mowers, note need in IPMS.

**IV. Soil Management**

a. Provide specifics on how soil with invasive plant roots (in particular) or seeds will be handled (i.e., separate stockpiles, plant material will be buried on-site, re-used on-site, disposed off-site and if so, where?).
b. Show stockpile locations on plan and include treatment schedule.
c. Note measures that will be implemented to avoid spread through equipment, including how and where equipment will be cleaned.

**ITEM 102.33** (Continued)

**V. Invasive Plant Treatment & Management**

a. Proposed chemical and methods of treatment for each species or area.
b. Time of treatment based on target plant species.
c. Submit product label including application methods and rates (entire MSDS information need not be submitted if available online).
d. Proposed performance metrics or measure of treatment success if different from that specified under Item 102.3.
e. Method for disposing invasive plant material. This includes material that may result in spread (i.e., seeds, roots) and material that has been treated and/or is not viable (foliage, dead wood, etc.). Methods may include grinding in place, stockpiling and treating, and incinerating offsite.
f. Expected follow-up treatment for duration of contract.

**VI. Monitoring Schedule** if requested by MassDOT.

Note: The IPMS is critical for identifying pre-construction conditions as well as strategies for minimizing import or spread of invasive plants. Failure to provide an approved IPMS may jeopardize this item, in which case, the contractor will be responsible for management of invasive plants found on-site at no cost to the contract.

Photo Documentation

Digital photos of site conditions, typical species, and extent of infestation must be provided with the IPMS and with any follow-up monitoring or reporting. Photos of follow-up monitoring and reporting must be date and time stamped for acceptance.

METHODS

Initial Site Walk

Prior to any construction activities and soil disturbance, the Contractor shall walk the site with the Engineer and the MassDOT Landscape Architect to determine the IPMS. During the site walk the Contractor shall identify limits of work and, as necessary, mark locations of areas designated for treatment and individual plants targeted for treatment or removal. The Contractor shall be responsible for marking delineated areas and plants to be preserved, removed, or otherwise treated. Fencing or other materials needed for marking and delineating protected areas shall be incidental to this item.

IPMS Follow-up Amendment

The IPMS may be amended to address additional concerns or adjust to conditions if required by the MassDOT Landscape Architect. The amended IPMS shall be submitted to the Engineer and MassDOT Landscape Architect for approval at least fourteen (14) days prior to any proposed treatment.

**ITEM 102.33** (Continued)

Interim Site Monitoring Inspection Reports

If required by the MassDOT Landscape Architect and Engineer, Interim Site Monitoring and an accompanying report shall be conducted. Interim Reports must include time and date stamped photos showing treated locations and species.

Final Inspection

A final inspection and report documenting the status of the invasive control may be required for regulatory purposes or for instances where control will be continued by others. The report shall include photo documentation of pre-construction (existing) and post-treatment conditions, notations on a plan or aerial image of area treated, summary of treatment performed, and control achieved. Final reports submittal must include time and date stamped photos.

METHOD OF MEASUREMENT

Item 102.33 will be measured for payment by the Hour. The basis for measurement shall be per the completion of tasks as approved under the Task Summary submittal and acceptance of submittals and photos described above.

BASIS OF PAYMENT

Item 102.33 will be paid at the contract unit price per Hour, which price shall include all labor, materials, equipment, tools, and all incidentals required to complete the work. Payment shall not include travel time to and from the Contractor's place of business.

**ITEM 102.511 TREE PROTECTION – ARMORING & PRUNING EACH**

The work under this item shall conform to the relevant provisions of Sections 771 of the Standard Specifications and the following:

Tree protection – armoring and pruning shall be used for instances where construction activity (the use of heavy equipment), comes within proximity to potentially damage tree trunk(s) or limbs.

The work shall include the furnishing and installing of temporary tree trunk protection, minor limb pruning, or removal of lower tree limbs to prevent injury to the tree from construction equipment and activities; as shown on the Drawings; and/or as required by the Engineer.

**REFERENCES**

If requested, the Contractor shall provide to the Engineer one copy of the latest edition of the American National Standards Institute (ANSI) A300 Standard Practices for Tree, Shrub, and Other Woody Plant Maintenance: Part 1-Pruning and Part 5-Construction Management Standard. Provision of reference shall be incidental to this item.

**MATERIALS**

Trunk armoring shall be such that it prevents damage to the trunk from construction equipment. Material used for trunk armoring or mounting shall be such that installation and removal shall not damage the trunk.

Acceptable trunk armoring materials shall include two by four (2x4) wood cladding, mounted with wire or metal strapping, or when duration of construction activities is less than three months, slotted corrugated plastic pipe, mounted with duct tape. Eight (8) once untreated burlap shall be used to wrap the tree trunk prior to installation of cladding.

Alternative armoring methods or materials may be acceptable if approved by the Engineer.

The height of tree trunk cladding shall be measured from the base of the tree (including root flare) to the bottom of the first branch, or to a height of eight (8) feet, or as may be required by the Engineer.

**METHODS OF WORK**

Prior to construction activities, the Engineer, Contractor, and the Arborist (if item is included in the contract), shall review trees noted on the Drawings to be protected. Final decision and selection of trees to be armored and/or pruned shall be per the Engineer.

**ITEM 102.511** (Continued)

Care shall be taken to avoid damage to the bark during installation and removal of armoring. Trunk armoring shall be maintained such that it is effective for as long as required or replaced when materials are found to be damaged or ineffective, as determined by the Engineer. Replacement, if required, shall be incidental to the work. Armoring shall be removed immediately upon completion of work activities adjacent to the protected tree(s).

Pruning of limbs shall conform to the techniques and standards of the most recent ANSI A300 standards.

**DAMAGES OR LOSS**

If trees designated for protection under this item are damaged, including root damage from unapproved trespassing onto the root zone, the Contractor shall, at his own expense, secure the services of an Arborist, described in Item 102.55. The Arborist shall be approved by MassDOT.

If, based on the recommendation of the Arborist, the Engineer determines that damages can be remedied by corrective measures, such as repairing trunk or limb injury; soil compaction remediation; pruning; soil injection fertilization; and/or watering; the damage shall be repaired as soon as possible, within the appropriate season for such work and according to industry standards.

If, based on the recommendation of the Arborist, the Engineer determines that damages are irreparable, or that the damages are such that the tree is sufficiently compromised to pose a future safety hazard, the tree shall be removed. Tree removal shall include cleanup of all wood, grinding of the stump to a depth sufficient to plant a replacement tree or plant, removal of all chips from the stump site, and filling the resulting hole with topsoil. Such tree removal(s), grinding, debris removal, and topsoil filling, shall be at the Contractor's expense.

Tree removal from improper or inadequate tree protection shall result in the Engineer assessing the Contractor monetary damages consistent with industry standards for assessed value and/or replacement.

**METHOD OF MEASUREMENT**

Item 102.511 will be measured for payment by EACH tree to be armored and pruned.

**BASIS OF PAYMENT**

Item 102.511 will be paid for at the contract unit price per EACH, which price shall include full compensation for all labor, equipment, materials, and incidentals for the satisfactory completion of the work and the subsequent removal and satisfactory disposal of the protective materials upon completion of the contract or as required by the Engineer.

**ITEM 102.511** (Continued)

Payment for work under this item will be scheduled as follows:

- 40% of the value will be paid upon installation of trunk armoring and completion of pruning work, if required.

- 60% of the value will be paid at the end of construction operations that would potentially damage the tree and after protection materials have been removed and properly disposed of by the Contractor. In the event of repairable damages, payment shall be made after the completion of remediation measures.

No separate payment will be made for costs of remedial actions, including Arborist services, tree removal, but all costs in connection therewith shall be included in the Contract unit price bid.

Tree damages assessed, due to lack of or improper tree and plant protective measures being taken, shall be deducted from the contract price of the work.

**ITEM 102.521 TREE AND PLANT PROTECTION FENCE FOOT**

The work under this Item shall conform to the relevant provisions of Sections 644 and 771 of the Standard Specifications and the following:

Work under this item shall consist of furnishing, installing, and maintaining tree and plant protection fence(s) in a vertical and taut position; removing and resetting fencing as may be required; and final removal of protection fence(s) at the completion of construction activities, or as otherwise required by the Engineer.

The purpose of the fencing is to signify a construction work-free zone and physical barrier, thereby preventing damage to tree roots, tree trunks, soil, and all other vegetation within this delineated Tree and Plant Protection Zone (TPPZ), as shown on the Drawings, as required by the Engineer, and as described herein.

Protection shall be for the duration of the construction activities unless otherwise required by the Engineer.

MATERIALS

Tree and plant protection fence(s) shall provide a minimum forty-eight (48) inch tall barrier, that remains vertical and taut. The Fence shall be orange plastic safety fence (recommended where high visibility is necessary), or wooden snow fencing, or other approved material. Posts and anchoring materials shall be incidental to the work.

Per requirements of the Engineer, additional posts, deeper post depths, and/or additional attachments shall be used if the fabric or fence sags, leans or otherwise is not providing visible or physical protection to the TPPZ.

REFERENCES

If requested, the Contractor shall provide to the Engineer one copy of the American National Standards Institute (ANSI) A300 Standard Practices for Tree, Shrub, and Other Woody Plant Maintenance Part 1, Pruning and Part 5, Construction Management Standard. Provision of reference shall be incidental to this item.

ESTABLISHMENT OF THE TPPZ

Fencing shall be used to delineate and establish the TPPZ, adjacent to construction areas, staging areas, stockpile areas, as shown on the Drawings, and/or as required by the Engineer.

Fencing shall be located as close to the work zone limit and as far from tree trunk(s) and plants as possible to maximize the area to be protected. Fence shall run parallel and adjacent to construction activity to create a barrier between the work zone and the root zone or designated limit of plants and soils to be protected.

**ITEM 102.521** (Continued)

When construction activities surround (or have the potential to surround) trees or plants to be protected, a circular enclosure shall be used. In these instances, the TPPZ limit shall be the drip line of each tree or as close as possible to the drip line, and/or as shown on the Drawings. The drip line is defined as the outermost limit of tree canopy.

The Contractor shall not engage in any construction activity within the TPPZ without the approval of the Engineer. Activities may including operating, moving, or storing equipment, supplies, or materials; and locating temporary facilities, including trailers or portable toilets, Accessing or traversing the TPPZ shall not be permitted.

METHOD OF WORK

TPPZ fencing shall be installed prior to any construction work or staging activities. Fence(s) shall be repositioned where and as necessary for optimum tree and plant protection. Repositioning shall be incidental to this item. TPPZ fencing shall not be moved without prior approval by the Engineer.

The TPPZ shall be protected at all times from compaction of the soil; damage of any kind to trunks, bark, branches, leaves, and roots of all plants; and contamination of the soil with construction materials, debris, silt, fuels, oils, and any chemicals substance.

After construction activities are completed, or when required by the Engineer, fencing, stakes, and other anchoring materials, if any, shall be removed and disposed off-site by the Contractor.

REQUIRED WORK WITHIN THE TPPZ

In the event that grading, trenching, utility work, or storage is unavoidable within the TPPZ, the Engineer shall be notified. Measures may be required for tree protection and preservations, including air spading; the use of six (6) inch depth of wood chips or approved matting for root protection; pruning of branches; and/or trunk protection. These protection measures will be paid for under applicable contract items.

Landscaping work specified within the TPPZ shall be accomplished by hand tools. Where handwork is not feasible, with permission of the Engineer, work shall be conducted with the smallest mechanized equipment necessary.

TREE AND PLANT INJURY OR LOSS

If the TPPZ is encroached by construction activity without approval, at the discretion of the Engineer, the Contractor may be required to provide a more durable barrier (e.g., Jersey Barriers, chain link fence (if not already in use) to secure the area. Costs of furnishing and installing additional or more durable barrier(s) shall be borne by the Contractor.

In such cases of encroachment, soils shall be considered compacted and tree root injury will be assumed. Action shall be taken as specified below.

**ITEM 102.521** (Continued)

In the event that trees designated for protection under this item are injured, including root injury from unapproved trespassing onto the root zone, the Contractor shall, at his own expense, secure the services of an Arborist, described under Item 102.55. The Arborist shall be approved by MassDOT.

In the event of spills, compaction or injury, the Contractor shall take corrective action immediately using methods approved by the Engineer, in coordination with the Arborist.

If, based on the recommendations of the Arborist, the Engineer determines that injuries can be remedied by corrective measures, such as repairing trunk or limb injury, soil compaction remediation, pruning, and/or watering; the injury shall be repaired as soon as possible, within the appropriate season for such work, and according to industry standards.

If, based on the recommendations of the Arborist, the Engineer determines that injuries are irreparable, or that the injuries are such that the tree is sufficiently compromised to pose a future safety hazard, the tree shall be removed. Tree removal shall include cleanup of all wood, grinding of the stump to a depth sufficient to plant a replacement tree or plant, removal of all chips from the stump site, and filling the resulting hole with topsoil. Such tree removal(s), grinding, debris removal, and filling, shall be at the Contractor's expense.

Tree removal from improper or inadequate protection of the TPPZ shall result in the Engineer assessing the Contractor monetary damages consistent with industry standards for assessed value and/or replacement.

Shrubs removals from improper or inadequate protection of the TPPZ shall be replaced with plants of similar species and equal size or the largest size plants reasonably available. The Engineer shall approve the size, quality, and quantity of the replacement plant(s). Each replacement shall include a minimum of one year of watering and establishment care, specified under Section 771.

METHOD OF MEASUREMENT

Tree and Plant Protection Fence will be measured by the FOOT, complete in place, by the length along the top of the fence.

BASIS OF PAYMENT

Tree and plant protection Fence will be paid for under the contract unit price per FOOT, complete in place and shall include all materials, labor, and equipment required to furnish, install, anchor, maintain, and remove the fence upon completion, as described herein. Posts, temporary footings, anchoring and removal upon completion, shall be incidental to this item.

**ITEM 102.521** (Continued)

No separate payment will be made for costs of remedial actions, including addition of more durable barriers, Arborist services, tree or plant removal, shrub replacement and establishment, but all costs in connection therewith shall be included in the Contract unit price bid.

Tree damages assessed, due to lack of or improper tree and plant protective measures being taken, shall be deducted from the contract price of the work.

Payment for work under this item will be scheduled as follows:

- Forty (40) percent of the value payment will be made upon installation of TPPZ fencing.

- Sixty (60) percent of the value payment will be made when TPPZ fencing materials have been maintained to function as specified for the intended duration and removed and disposed off-site at the completion of protection measure requirement.

**ITEM 148.01** **DREDGING AND STOCKPILING OF STREAMBED MATERIAL** **CUBIC YARD**

GENERAL

The work under this item shall conform to the relevant provisions of Section 148 of the Standard Specifications and the following:

The work under this item shall include dredging of approved native streambed material to be stockpiled for re-use as shown on the Plans and as directed by the Engineer.

Streambed material may be stockpiled on site at a location determined by the Contractor in coordination with the Geomorphologist and the Resident Engineer. The stockpiled material will be reused on site for streambed restoration. The placement of this material will be paid for under Item 983.521.

MEASUREMENT OF MEASUREMENT

Dredging and Stockpiling of Material will be measured for payment by the Cubic Yard of the actual volume of material dredged and stockpiled, complete in place. Pay limits extend from the bottom of proposed streambed excavation to the top of the existing streambed as shown on the Plans.

BASIS OF PAYMENT

Dredging and Stockpiling of Material will be paid for at the Contract unit price per Cubic Yard, which price shall include all labor, materials, equipment, and incidental costs required to complete the work.

The re-placement of the stockpiled material shall be included in the bid price for Item 983.521 – Streambed Restoration. Contractor shall only stockpile sufficient streambed material required to re-lay under Item 983.521. Payment for disposal of excess material shall be made under item 148.

**ITEM 180.01 ENVIRONMENTAL HEALTH AND SAFETY PROGRAM LUMP SUM**

The work shall consist of ensuring the health and safety of the Contractor's employees and subcontracting personnel, the Engineer, their representatives, the environment, and public welfare from any on-site chemical contamination present in air, soil, water and sediment.

The Contractor shall prepare and implement a site-specific Environmental Health and Safety Plan (EHASP) which has been approved and stamped by a Certified Industrial Hygienist (CIH) and includes the preparer's name and work experience. The EHASP shall include appropriate components required by OSHA Standard 29 CFR 1910.120(b) and the Massachusetts Contingency plan (MCP) 310 CMR 40.0018 and must comply with all applicable state and federal laws, regulations, standards and guidelines, and provide a degree of protection and training appropriate for implementation on the project. The EHASP shall be a dynamic document with provision for change to reflect new information, new practices or procedures, changing site environmental conditions or other situations which may affect site workers and the public. The EHASP shall be developed and implemented independently from the standard construction HASP required to work on all MassDOT construction projects.

Health and safety procedures provided by the Contractor shall comply with all the appropriate regulations that address employee working conditions, including but not limited to standards established by OSHA and National Institute for Occupational Safety and Health (NIOSH). Equipment used for the purpose of health and safety shall be approved by and meet pertinent standards and specifications of the appropriate regulatory agencies.

A copy of the most up-to-date version of the EHASP shall be maintained on-site at all times by the Contractor. The on-site copy shall contain the signature of the Engineer and each on-site employee of the MassDOT, Contractor, and Subcontractors involved with on-site activities. The employee's signature on the EHASP shall be deemed prima facie evidence that the employee has read and understands the plan. Updated copies of signature sheets shall be submitted to the Engineer.

The EHASP shall specify a Contractor Site Safety and Health Officer responsible for implementation of the EHASP and to oversee all construction activities, including handling, storage, sampling and transport, which require contact with or exposure to potentially hazardous materials.

The level of protection, required to ensure the health and safety of on-site personnel will be stipulated in the EHASP. The Site Safety and Health Officer shall implement the EHASP based on changing site and weather conditions, type of operation or activity, chemical compounds identified on-site, concentration of the chemicals, air monitoring data, physical state of the hazardous materials, potential duration of exposure to hazardous materials, dexterity required to perform work, decontamination procedures, necessary personnel and type of equipment to be utilized.

**ITEM 180.01** (Continued)

During implementation of the EHASP, a daily log shall be kept by the Site Safety and Health Officer and a copy shall be provided weekly to the Engineer. This log shall be used to record a description of the weather conditions, levels of personal protection being employed, screening data and any other information relevant to on-site environmental safety conditions. The Site Safety and Health Officer shall sign and date the daily log.

METHOD OF MEASUREMENT

Preparation and implementation of the Environmental Health and Safety Program, including the monitoring, protection and storage of all contaminated materials, as well as subsequent modifications to the EHASP, will be measured for payment at the Lump Sum Bid Price.

BASIS OF PAYMENT

Payment of 50% of the Environmental Health and Safety Program contract price will be made upon the initial acceptance of the EHASP by the Engineer. Payment of the remaining 50% of the Environmental Health and Safety Program contract price will be made upon completion of the work. The bid price shall include preparation and implementation of the EHASP as well as the cost for its enforcement by the Site Safety and Health Officer along with any necessary revisions and updates. The work of implementing the Environmental Health and Safety Program includes work involving, but not limited to, the monitoring, protection, and storage of all contaminated materials.

**ITEM 180.02 PERSONAL PROTECTION LEVEL C UPGRADE HOUR**

The work shall consist of providing appropriate personal protective equipment (PPE) for all personnel in an area either containing or suspected of containing a hazardous environment.

Contingencies for upgrading the level of protection for on-site workers will be identified in the EHASP and the Contractor shall have the capability to implement the personal protection upgrade in a timely manner. The protective equipment and its use shall be in compliance with the EHASP and all appropriate regulations and/or standards for employee working conditions.

METHOD OF MEASUREMENT

Personal Protection Level C Upgrade will be measured for payment by the hour per worker.

BASIS OF PAYMENT

Personal Protection Level C Upgrade will be paid only upon upgrade to Level C and will be at the contract unit price, per hour, per worker, required in Level C personal protection. No payment will be made to the Contractor to provide Level D PPE.

**ITEM 180.03 LICENSED SITE PROFESSIONAL SERVICES HOUR**

Within limited areas of the project site, soils, sediments and/or groundwater may be contaminated. A Licensed Site Professional (LSP) shall be required to provide the services necessary to comply with the requirements of the MCP. These services may include sampling, analysis and characterization of potentially contaminated media, preparation of Immediate Response Action (IRA) Plans, Utility-Related Abatement Measure (URAM) and Release Abatement Measure (RAM) Plans, Imminent Hazard Evaluations, status reports, transmittal forms, release notification forms, risk assessments, completion statements, and related documents required pursuant to the Massachusetts Contingency Plan (MCP). LSP hours related to the characterization and disposal of contaminated soil and/or sediment are incidental to the disposal items. An estimate of LSP services to be provided shall be submitted to the Engineer for approval before any LSP activity begins.

The name and qualifications of the LSP and all environmental technicians to be assigned to the project shall be submitted to the Engineer for approval at least four weeks prior to initial site activities. The LSP shall have a current, valid license issued by the Massachusetts Board of Registration of Hazardous Waste Site Cleanup Professionals. The LSP shall have significant experience in the oversight of MCP activities at active construction sites. Qualification packages for the LSP and each technician shall include a resume, all recent work assignments with responsibilities identified (previous 5 years), and applicable training and certifications. A list of all Notices of Noncompliance, Notice of Audit Findings and Enforcement Orders issued by the DEP shall be submitted for all work assignments listed for the LSP and environmental technicians.

The LSP shall evaluate soil and/or sediment with discoloration, odor, and presence of petroleum liquid or sheening on the groundwater surface, or any abnormal gas or materials in the ground which are known or suspected to be oil or hazardous materials. Excavated soil and sediment which is suspected of petroleum contamination shall be field screened using the jar headspace procedures according to established DEP Guidance. All field screening equipment must be pre-approved by the Engineer. The LSP shall ensure proper on site calibration of all field screening instrumentation.

The Engineer shall be contacted immediately when observations or any field screening results verify contamination requiring further analysis, and/or enhanced management of suspect soil and/or sediment. Any enhanced management of contaminated soil to ensure proper stockpiling and storage is incidental to the LSP Services item. The LSP shall adequately characterize subsurface conditions prior to backfill in areas where contaminated material has been excavated. The Engineer shall approve the locations of the testing sites prior to the sampling.

**ITEM 180.03** (Continued)

Contaminated soil, sediment and/or groundwater shall be handled in accordance with all applicable state and federal statutes, regulations and policies. The LSP shall adequately characterize contaminated media for comparison to the requirements of the MCP. The Contractor and the LSP shall be aware of the reporting requirements for releases of oil and/or other hazardous material (OHM) as set forth in federal and state laws and regulations, and shall both be held responsible for performing the work in accordance with all applicable Federal and State laws and regulations. The LSP shall maintain written records in a clear and concise format which tracks the excavation,

stockpiling, analysis and reuse/disposal of all suspect contaminated soils, sediments and groundwater. These records shall be up-to-date and available to the Engineer on a bi-weekly basis. The LSP shall review and summarize the laboratory data from any analyses performed on contaminated media. A report shall be delivered to the Engineer outlining the material sampling methods, laboratory analysis results and proposed course of action. The laboratory report together with Chain of Custody forms for all analytical results shall be submitted to the Engineer within 14 days after completion of such analyses.

The LSP and Contractor shall be held responsible for the submission of all MCP-related documents to the Engineer at least 14 days in advance of any timeframe specified in the MCP and for the timely submission of data and tracking information as noted within this Item. All documents prepared under this Item must be reviewed and signed by the approved LSP. The Contractor and LSP shall be responsible for all fines, penalties and enforcement requirements imposed by applicable regulatory agencies for failure to meet regulatory and contract timeframes. No compensation will be provided for such fines, penalties and enforcement actions.

The Contractor and the LSP shall be aware of the reporting requirements for releases of oil and/or other hazardous material (OHM) as set forth in federal and state laws and regulations, and shall both be held responsible for performing the work in accordance with all applicable Federal and State laws and regulations.

If the Contractor causes a release of OHM, the Contractor shall be responsible for assessing and remediating the release in accordance with all pertinent State and Federal regulations, including securing the services of a LSP, at his own expense.

The LSP shall coordinate all activities involving both MassDOT and the DEP through the Engineer. Any notification of release shall be approved by the Department before submittal to the DEP, except if an imminent hazard condition exists as defined in 309 CMR 4.03(4)(b).

LABORATORY TESTING IN SUPPORT OF LSP SERVICES

Laboratory testing provides for analytical testing in support of LSP services related to maintaining MCP compliance, such as delineating the extent and type of contamination present. Sampling and testing for disposal purposes are not included.

**ITEM 180.03** (Continued)

In order to maintain compliance with the MCP or other regulatory requirements, the LSP shall request approval from the Engineer to obtain samples from various locations and depths within the project area and to perform laboratory analyses on those samples. The samples shall be delivered to a DEP- certified laboratory using proper chain-of-custody documentation for analyses which, depending upon site conditions and suspected and/or identified contaminants of concern, may include, but are not limited to, metals, polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, polycyclic aromatic hydrocarbons (PAHs), extractable petroleum hydrocarbons (EPHs) and volatile petroleum hydrocarbons (VPHs) as may be necessary for off-site disposal of excess excavated soil that cannot be reused on site. Subsequent testing, depending upon initial results, may be required for Toxicity Characteristic Leaching Procedure (TCLP) analyses (EPA Method 1311) for metals.

METHOD OF MEASUREMENT

LSP Services for work under this item will be measured per person, per hour of service provided by LSP, Environmental Technicians and other approved personnel. Travel time shall not be included in the billable hours. LSP hours related to soil/sediment disposal (disposal characterization, landfill acceptance, disposal package preparation, etc.) shall be incidental to disposal items.

The quantity and type of laboratory tests must be approved by the Engineer beforehand. The contractor will be reimbursed upon satisfactory written evidence of payment. The contractor may be required to obtain cost estimates from three DEP certified laboratories for the Engineer to choose the service provider. Laboratory testing related to soil/sediment disposal (disposal characterization, landfill acceptance, disposal package preparation, etc.) shall be incidental to disposal items.

BASIS OF PAYMENT

LSP Services will be paid at the Contractor bid price for each hour, or fraction thereof, spent to perform the work as described above. The bid price shall be a blended rate that includes the cost of the LSP, environmental technicians and other personnel, the performance of all work tasks and field screening, including required equipment, materials and instrumentation, and production of all documentation described above. All requests for payment must be accompanied by the following information: the names of the personnel associated with the work charged under LSP Services, dates and hours worked, work conducted, including, where appropriate, locations as identified on the construction plans, and a copy of the field diary for the dates submitted.

Laboratory Testing will be reimbursed upon receipt of paid invoices for testing approved by the Engineer.

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|---|---|---|
| **ITEM 181.11** | **DISPOSAL OF UNREGULATED SOIL** | **TON** |
| **ITEM 181.12** | **DISPOSAL OF REGULATED SOIL - IN-STATE FACILITY** | **TON** |
| **ITEM 181.13** | **DISPOSAL OF REGULATED SOIL - OUT-OF-STATE FACILITY** | **TON** |
| **ITEM 181.14** | **DISPOSAL OF HAZARDOUS WASTE** | **TON** |

The work under these Items shall include the transportation and disposal of contaminated material excavated, or excavated and stockpiled. It shall also include the cost of any additional laboratory analyses required by a particular disposal facility beyond the standard disposal test set.

Excavation of existing subsurface materials may include the excavation of contaminated soils. The Contractor shall be responsible for the proper coordination of characterization, transport and disposal, recycling or reuse of contaminated soils. Disposal, recycling or reuse will be referred to as "disposal" for the purposes of this specification. However, regardless of the use of the term herein, there will be no compensation under these items for reuse within the project limits. The Contractor will be responsible for coordinating the activities necessary for characterization, transport and disposal of contaminated soils. Such coordination will include the Engineer and his/her designee overseeing management of contaminated materials. Contaminated soils must be disposed of in a manner appropriate for the soil classification as described below and in accordance with the applicable laws of local, state and federal authorities. The Contractor shall be responsible for identifying disposal facility (ies) licensed to accept the class of contaminated soils to be managed and assure that the facility can accept the anticipated volume of soil contemplated by the project. The Contractor shall be responsible for hiring a Licensed Site Professional (LSP) and all ancillary professional services including laboratories as needed for this work. The Contractor will be responsible for obtaining all permits, approvals, manifests, waste profiles, Bills of Lading, etc. subject to the approval of the Engineer prior to the removal of the contaminated soil from the site. The Contractor and LSP shall prepare and submit to the Engineer for approval all documents required under the Massachusetts Contingency Plan (MCP) and related laws and environmental regulations to conduct characterization, transport, and disposal of contaminated materials.

CLASSES OF CONTAMINATED SOILS

The Contractor and its LSP shall determine if soil excavated or soil to be excavated is unregulated soil or contaminated soil as defined in this section. Such materials shall be given a designation for purposes of reuse or disposal based on the criteria of the MCP. Soils and sediments which are not suitable for reuse will be given a designation for purposes of off-site disposal based on the characterization data and disposal facility license requirements. The Classes of Contaminated Soils are defined as follows:

UNREGULATED SOIL consists of soil, fill and dredged material with measured levels of oil and hazardous material (OHM) contamination at concentrations below the applicable Reportable Concentrations (RCs) presented in the MCP. Unregulated soil consists of material which may be reused (or otherwise disposed) as fill within the Commonwealth of Massachusetts subject to the non-degradation criteria of the MCP (310 CMR 40.0032(3), in a restricted manner, such that they

**ITEMS 181.11 through 181.14** (Continued)

are sent to a location with equal or higher concentrations of similar contaminants. Disposal areas include licensed disposal facilities, approved industrial settings in areas which will be capped or covered with pavement or loamed and seeded, and for purposes of this project should be reused as fill within the project site construction corridor whenever possible. The material cannot be placed in residential and/or environmentally sensitive (e.g. wetlands) areas. Under no circumstances shall contaminated soils be placed in an uncontaminated or less contaminated area (including the area above the groundwater table if this area shows no sign of contamination).

The Contractor shall submit to MassDOT the proposed disposal location for unregulated soils for approval. If such a disposal location is not a licensed disposal facility, the Contractor shall submit to the Engineer analytical data to characterize the disposal area sufficiently to verify that the unregulated material generated within the MassDOT construction project limits is equal to or less than the contaminant levels at the disposal site and meets the non-degradation requirements of the MCP. In addition, the Contractor shall provide written confirmation from the owner of the proposed disposal location that they have been provided with the analytical data for both the materials to be disposed as well as the disposal site characterization and that s/he agrees to accept this material. A Material Shipping Record or Bill of Lading, as appropriate, shall be used to track the off-site disposal of unregulated soil and a copy, signed by the disposal facility or property owner, shall be provided to the Engineer in order to document legal disposal of the unregulated material.

The cost of on-site disposal of unregulated soil within the project area will be considered incidental to the item of work to which it pertains.

REGULATED SOIL consists of materials containing measurable levels of OHM that are equal to or exceed the applicable Reportable Concentrations for the site as defined by the MCP, 310 CMR 40.0000. Regulated soil which meets the MCP reuse criteria of the applicable soil/groundwater category for this project area may be reused on site provided that it meets the appropriate geotechnical criteria established by the Engineer. Regulated Soil may be reused (as daily or intermediate cover or pre-cap contouring material) or disposed (as buried waste) at lined landfills within the Commonwealth of Massachusetts or at an unlined landfill that is approved by the Massachusetts Department of Environmental Protection (DEP) for accepting such material, in accordance with DEP Policy #COMM-97-001, or at a similar out-of-state facility. It should be noted that soils which exceed the levels and criteria for disposal at in-state landfills, as outlined in COMM-97-001, may be shipped to an in-state landfill, but require approval from the DEP Division of Solid Waste Management and receiving facility. An additional management alternative for this material is recycling into asphalt. Regulated Soils may also be recycled at a DEP approved recycling facility possessing a Class A recycling permit subject to acceptance by the facility and compliance with DEP Policy #BWSC-94-400. Regulated Soil removed from the site for disposal or treatment must be removed via an LSP approved Bill of Lading, Manifest or applicable material tracking form. This type of facility shall be approved/permitted by the State in which it operates to accept the class of contaminated soil in accordance with all applicable local, state and federal regulations.

**ITEMS 181.11 through 181.14** (Continued)

HAZARDOUS WASTE consists of materials which must be disposed of at a facility permitted and operated in full compliance with Federal Regulation 40 CFR 260-265, Massachusetts Regulation 310 CMR 30.000, Toxic Substances Control Act (TSCA) regulations, or the equivalent regulations of other states, and all other applicable local, state, and federal regulations. All excavated materials classified as hazardous waste shall be disposed of at an out-of-state permitted facility. This facility shall be a RCRA hazardous waste or TSCA facility, or RCRA hazardous waste incinerator. This type of facility shall be approved/permitted by the State in which it operates to accept hazardous waste in accordance with all applicable local, state and federal regulations and shall be permitted to accept all contamination which may be present in the soil excavate. The Contractor shall ensure that, when needed, the facility can accept TSCA waste materials i.e. polychlorinated biphenyls (PCBs). Hazardous waste must be removed from the site for disposal or treatment via an LSP approved Manifest.

MONITORING/SAMPLING/TESTING REQUIREMENTS

The Contractor shall be responsible for monitoring, sampling and testing during and following excavation of contaminated soils to determine the specific class of contaminated material. Monitoring, sampling and testing frequency and techniques should be performed in accordance with Item 180.03 – LSP Services. Additional sampling and analysis may be necessary to meet the requirements of the disposal facility license. The cost of such additional sampling and analysis shall be included in the bid cost for the applicable disposal items. The Contractor shall obtain sufficient information to demonstrate that the contaminated soil meets the disposal criteria set by the receiving facility that will accept the material.

No excavated material will be permanently placed on-site or removed for off-site disposal until the results of chemical analyses have been received and the materials have been properly classified. The Contractor shall submit to the Engineer results of field and laboratory chemical analyses tests within seven days after their completion, accompanied by the classification of the material determined by the Contractor, and the intended disposition of the material. The Contractor shall submit to the Engineer for review all plans and documents relevant to LSP services, including but not limited to, all documents that must be submitted to the DEP.

WASTE TRACKING

Copies of the fully executed Weight Slips/Bills of Lading/ Manifests/Material Shipping Records or other material tracking form received by the Contractor from each disposal facility and for each load disposed of at that facility, shall be submitted to Engineer and the Contractor's LSP within three days of receipt by the Contractor. The Contractor is responsible for preparing and submitting such documents for review and signature by the LSP or other appropriate person with signatory authority, three days in advance of transporting soil off-site. The Contractor shall furnish a form attached to each manifest or other material tracking form for all material removed off-site, certifying that the material was delivered to the site approved for the class of material. If the proposed disposition of the material is for reuse within the project construction corridor, the

**ITEMS 181.11 through 181.14** (Continued)

Contractor shall cooperate with MassDOT to obtain a suitable representative sample(s) of the material to establish its structural characteristics in order to meet the applicable structural requirements as fill for the project.

All material transported off-site shall be loaded by the Contractor into properly licensed and permitted vehicles and transported directly to the selected disposal or recycling facility and be accompanied by the applicable shipping paper. At a minimum, truck bodies must be structurally sound with sealed tail gates, and trucks shall be lined, and loads covered with a liner, which shall be placed to form a continuous waterproof tarpaulin to protect the load from wind and rain. The Contractor should be aware of the potential presence of sharps such as needles.

DECONTAMINATION OF EQUIPMENT

Tools and equipment which are to be taken from and reused off site shall be decontaminated in accordance with applicable local, state and federal regulations. This requirement shall include, but not be limited to, all tools, heavy machinery and excavating and hauling equipment used during excavation, stockpiling and handling of contaminated material. Decontamination of equipment is considered incidental to the applicable excavation item.

REGULATORY REQUIREMENTS

The Contractor shall be responsible for adhering to regulations, specifications and recognized standard practices related to contaminated material handling during excavation and disposal activities. MassDOT shall not be responsible at any time for the Contractor's violation of pertinent State or Federal regulations or endangerment of laborers and others. The Contractor shall comply with all rules, regulations, laws, permits and ordinances of all authorities having jurisdiction including, but not limited to, Massachusetts DEP, the U.S. Environmental Protection Agency (EPA), Federal Department of Transportation (DOT), Massachusetts Water Resources Authority (MWRA), the Commonwealth of Massachusetts and other applicable local, state and federal agencies governing the disposal of contaminated soils.

All labor, materials, equipment and services necessary to make the work comply with such regulations shall be provided by the Contractor without additional cost to MassDOT. Whenever there is a conflict or overlap within the regulations, the most stringent provisions shall apply. The Contractor shall reimburse MassDOT for all costs it incurs, including penalties and/or for fines, as a result of the Contractor's failure to adhere to the regulations, specifications, recognized standard practices, etc., that relate to contaminated material handling, transportation and disposal.

**ITEMS 181.11 through 181.14** (Continued)

SUBMITTALS

I. Summary of Sampling Results, Classification of Material and Proposed Disposal Option.

The following information, presented in tabular format, must be submitted to the Engineer for review and approval prior to any reuse on-site or disposal off-site. This requirement is on-going throughout the project duration. At least two weeks prior to the start of any excavation activity, the Contractor shall submit a tracking template to be used to present the information as stipulated below. Excavation will not begin until the format is acceptable to MassDOT.

Characterization Reports will be submitted for all soil, sediment, debris and groundwater characterized through the sampling and analysis program. Each report will include a site plan which identifies the sampling locations represented in the Report. The Construction Plan sheets may be used as a baseplan to record this information.

The Sampling Results will be presented in tabular format. Each sample will be identified by appropriate identification matching the sample identification shown on the Chain of Custody Record. The sample must also be identified by location (e.g. grid number or stockpile number). For each sample, the following information must be listed: the classification (unregulated, regulated, etc.), proposed disposal option for the stockpile or unit of material represented, and all analytical results.

Each Characterization Report will include the laboratory analytical report and Chain of Custody Record for the samples included in the Report.

II. Stockpiling, Transport, and Disposal.

At least two weeks prior to the start of any excavation activity, the Contractor shall submit, in writing, the following for review and shall not begin excavation activity until the entire submittal is acceptable to MassDOT.

Excavation and Stockpiling Protocol:
Provide a written description of the management protocols for performing excavation and stockpiling and/or direct loading for transport, referencing the locations and methods of excavating and stockpiling excavated material.

**ITEMS 181.11 through 181.14** (Continued)

The Contractor shall identify and propose locations for construction staging of both on or offsite temporary soil stockpiles and miscellaneous materials, soil/waste treatment technologies and treatment areas (on-site or offsite), disposal, recycling and treatment facilities, facilities for the beneficial re-use of excavated materials including but not limited to soil, debris, or other miscellaneous materials, temporary storage facilities, landfills, soil recycling and hazardous waste treatment, storage and disposal facilities for all excavated material.

Disposal and Recycling Facilities:

1. Provide the name, address, applicable licenses and approved waste profile for disposal and/or recycling location(s) where contaminated soil will be disposed. Present information substantiating the suitability of proposed sites to receive classifications of materials intended to be disposed there, including the ability of the facility to accept anticipated volumes of material.

2. Provide a summary of the history of compliance actions for each disposal/recycling facility proposed to be used by the Contractor. The compliance history shall include a comprehensive list of any state or federal citations, notices of non-compliance, consent decrees or violations relative to the management of waste (including remediation waste) at the facility. Material should not be sent to facilities which are actively considered by the DEP, USEPA or other responsible agency to be in violation of federal, state or local hazardous waste or hazardous material regulations. MassDOT reserves the right to reject any facility on the basis of poor compliance history.

Transportation:

The name, address, applicable license and insurance certificates of the licensed hauler(s) and equipment and handling methods to be used in excavation, segregation, transport, disposal or recycling.

The Contractor shall not be permitted to transport materials off-site until all storage, disposal, or recycling facility documentation has been received, reviewed, and approved by the MassDOT. The Contractor shall transport materials from the site to the storage, disposal, reuse or recycling facility in accordance with all United State Department of Transportation (DOT), USEPA, MassDEP, and applicable state and local regulations. The Hauler(s) shall be licensed in all states affected by transport.

The Contractor shall be responsible for ensuring that free liquid is properly transported. “Wet soils” shall not be loaded for transport. The Contractor shall dewater “wet soils”, and properly dispose of free liquid in accordance with local, state, and federal regulations. The Contractor shall dispose of any free liquids that may result during transportation at no additional cost to the MassDOT.

**ITEMS 181.11 through 181.14** (Continued)

All excavated material transported upon public roadways shall be covered to minimize fugitive dust, and where necessary truck tire and undercarriage decontamination shall be employed to minimize tracking of soils onto public roadways.

III. Material Tracking and Analytical Documentation for Reuse/Disposal.

The following documents are required for all excavation, reuse and disposal operations and shall be in the format described. At least two weeks prior to the start of any excavation or demolition activity, the Contractor shall submit the tracking templates required to present the information as stipulated below. Excavation or demolition will not begin until the format is acceptable to MassDOT.

All soils, sediments and demolition debris must be tracked from the point of excavation to stockpiling to onsite treatment/processing operations to off-site disposal or onsite reuse as applicable.

Demolition Debris:
Demolition debris must be tracked if the debris is stockpiled at a location other than the point of origin or if treatment or material processing is conducted. Identification of locations will be based on the station-offset of the location. The tracking table will identify date and point of generation, any field screening such as PID or dust monitoring, visual observations/comments, quantity, and stockpile ID/processing operation location. For each unit of material tracked, the table will also track reuse of the material on-site, providing reuse date, location of reuse as defined by start and end station, width of reuse location by offset, the fill elevation range, quantity, and finish grade for said location. For demolition debris which is not reused on site, the table will also track disposal of the material as defined by disposal date, quantity and disposal facility. The table must provide a reference to any analytical data generated for the material.

Soil/Sediment:
Soil excavation will be identified based on the station-offset of the excavation location limits. The tracking table will identify date and point of generation, any field screening such as PID or dust monitoring, visual observations, quantity, and stockpile number/location. For each unit of material tracked, the table will also track reuse of the material on-site and disposal of the material off-site using the same categories identified for demolition debris above.

METHOD OF MEASUREMENT

Disposal of contaminated soil shall be measured for payment by the Ton of actual and verified weight of contaminated materials removed and disposed of. The quantities will be determined only by weight slips issued by and signed by the disposal facility. The most cost-effective, legal disposal method shall be used. The work of the LSP for disposal under all of these items shall be incidental to the work with no additional compensation.

**ITEMS 181.11 through 181.14** (Continued)

BASIS OF PAYMENT

ITEM 181.11 Measurement for Disposal of Unregulated Soil shall be under the Contract Unit Price by the weight, in tons, of contaminated materials removed from the site and transported to and disposed of at an approved location or licensed facility, and includes any and all costs for approvals, permits, fees and taxes, additional testing/characterization required by the facility beyond the standard disposal test set, decontamination procedures, transportation and disposal.

ITEM 181.12 Measurement for Disposal of Regulated Soil – In-State Facility shall be under the Contract Unit Price by the weight in tons of contaminated materials removed from the site and transported to and disposed of at an approved in-state facility, and includes any and all costs for approvals, permits, fees and taxes, testing/characterization required by the facility beyond the standard disposal test set, decontamination procedures, transportation and disposal.

ITEM 181.13 Measurement for Disposal of Regulated Soil - Out-of-State Facility shall be under the Contract Unit Price by the weight in tons of contaminated materials removed from the site and transported to and disposed of at an approved out-of-state facility, and includes any and all costs for approvals, permits, fees and taxes, testing/characterization required by the facility beyond the standard disposal test set, decontamination procedures, transportation and disposal.

ITEM 181.14 Measurement for Disposal of Hazardous Waste shall be under the Contract Unit Price by the weight in tons of hazardous waste removed from the site and transported to and disposed of at the licensed hazardous waste facility, and includes any and all costs for approvals, permits, fees and taxes, testing/characterization required by the facility beyond the standard disposal test set, decontamination procedures, transportation and disposal.

**ITEM 697.1** **SILT SACK** **EACH**

Work under this item shall conform to the relevant provisions of Sections 227 and 670 of the Standard Specifications and the following:

The work under this item includes the furnishing, installation, maintenance and removal of a reusable fabric sack to be installed in drainage structures for the protection of wetlands and other resource areas and the prevention of silt and sediment from the construction site from entering the storm water collection system. Devices shall be ACF Environmental (800)-448-3636; Reed & Graham, Inc. Geosynthetics (888)-381-0800; The BMP Store (800)-644-9223; or approved equal.

CONSTRUCTION

Silt sacks shall be installed in retained existing catch basins and drop inlets within the project limits and as required by the Resident Engineer.

The silt sack shall be manufactured to fit the opening of the drainage structure under regular flow conditions, and shall be mounted under the grate. The insert shall be secured from the surface such that the grate can be removed without the insert discharging into the structure. The filter material shall be installed and maintained in accordance with the manufacturer's written literature and as directed by the Engineer.

Silt sacks shall remain in place until the placement of the pavement overlay or top course and the graded areas have become permanently stabilized by vegetative growth. All materials used for the filter fabric will become the property of the Contractor and shall be removed from the site.

The Contractor shall inspect the condition of silt sacks after each rainstorm and during major rain events. Silt sacks shall be cleaned periodically to remove and disposed of accumulated debris as required. Silt sacks, which become damaged during construction operations, shall be repaired or replaced immediately at no additional cost to the Department.

When emptying the silt sack, the contractor shall take all due care to prevent sediment from entering the structure. Any silt or other debris found in the drainage system at the end of construction shall be removed at the Contractors expense. The silt and sediment from the silt sack shall be legally disposed of offsite. Under no condition shall silt and sediment from the insert be deposited on site and used in construction.

All curb openings shall be blocked to prevent stormwater from bypassing the device.

All debris accumulated in silt sacks shall be handled and disposed of as specified in Section 227 of the Standard Specifications.

**ITEM 697.1** (Continued)

METHOD OF MEASUREMENT

Silt Sacks will be measured for payment for Each unit complete in place.

BASIS OF PAYMENT

Silt Sacks will be measured and paid at the Contract unit price per Each, complete in place, which price shall include all labor, materials, equipment and incidental costs required to complete the work. No separate payment will be made for removal and disposal of the sediment from the insert, but all costs in connection therewith shall be included in the Contract unit price bid.

**ITEM 697.2 FLOATING SILT FENCE FOOT**

GENERAL

The work under this item shall conform to the relevant provisions of Section 670 of the Standard Specifications and the following:

This work consists of furnishing, constructing, installing, maintaining, and ultimately removing a floating silt fence from the Reservoir Brook to minimize the drift of suspended sediment in the water body during construction of the Project. Construction of the floating silt fence and locations shall be as shown on the Plans, and as required by the manufacturer and the Engineer.

MATERIALS

Floating silt fence shall be made of a woven polypropylene with a minimum 200 lb. tensile strength. The Contractor shall submit to the Engineer, for review and approval, product specifications and technical data provided by the manufacturer, prior to installation. The fence shall be continuously weighted at the bottom to maintain a vertical submerged position. Anchors shall be placed at both ends of the curtain and at intermediate locations, as necessary, to hold the fence securely in place. The fence shall be installed to withstand the forces of the flow of the waterway.

CONSTRUCTION METHOD

General

When assembling and installing a floating silt fence, the Contractor shall follow all the directions of the floating silt fence manufacturer. All construction activities which generate any sediment or turbidity into the waterway shall be contained within the floating silt fence.

Floating silt fence shall be installed before construction begins and earth is disturbed.

Installation of Floating Silt Fence

The floating silt fence shall be floated into position, attached to the anchor lines, and then unfurled. The Contractor shall securely attach curtain panel ends together using rope lashings. The top lashing shall be securely tied to the anchor line. The Contractor shall place the anchors such that the floating silt fence remains in the Plan location and none of the flotation devices are pulled under the water surface. If required by the Engineer, the Contractor shall supply and place additional anchorage.

**ITEM 697.2** (Continued)

Maintenance of Floating Silt Fence

Throughout the project construction period, the Contractor shall maintain the floating silt fence so that no sediment caused by the project enters the waterway beyond the floating silt fence. All floating silt fence damaged prior to installation, during installation, or during the life of the Contract shall be repaired or replaced to the satisfaction of the Engineer. The Contractor shall remove floating debris at least weekly or as required by the Engineer.

The Contractor shall inspect the silt fence daily to ensure continuous effectiveness. Fence shall be maintained for effective performance at all times. If any fence becomes damaged or dislodged, construction activities shall be halted until all deficiencies are corrected by the Contractor with no additional compensation.

Removal of Floating Silt Fence

The floating silt fence shall remain in place until the project is complete and the turbidity has settled to no more than what existed prior to the start of construction and remaining sediment has sufficiently settled. Sediment may be removed and the original depth (or plan elevation) restored. Any spoils must be taken to upland area and be stabilized. When required by the Engineer, the floating silt fence shall be furled in place, then released from its anchors and towed out of the water. The floating silt fence and all materials incidental to the construction of the floating silt fence shall be removed in such a manner as to minimize turbidity to adjacent waters. The floating silt fence and related components shall become the property of the Contractor and shall be removed from the project.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Floating Silt Fence will be measured and paid at the Contract unit price per Foot of fence installed, completed in place, within the specified limits as directed by the Engineer, which price shall include all labor, materials, equipment, and incidental costs required to complete the work.

No separate payment will be made for any adjustments or repairs that may be required to provide a floating silt fence that is continuously effective for the duration of construction.

No separate payment will be made for the removal of the floating silt fence.

**ITEM 751.765** **COMPOST AND SEED OVER MODIFIED ROCKFILL** **CUBIC YARD**

## GENERAL

The work under this Item shall conform to the relevant provisions of Subsection 751, 767, and 765 of the Standard Specifications and the following.

Work shall consist of furnishing and pneumatically applying compost in conjunction with the specified native seed on designated areas of modified rock and achieving satisfactory establishment of seeded species as specified herein.

### QUALIFICATIONS

Compost application and seeding shall be done by a company having a minimum of five years of experience with native seed establishment. Prior to beginning work, the seeding Contractor shall furnish proof of qualifications to the Engineer for approval. Proof of qualifications shall include providing documentation (photos and contacts) to demonstrate knowledge and expertise with native seeding and establishment and proof of having completed successful native seeding projects.

### MATERIAL AND SUBMITTALS

Compost

Compost shall meet the relevant provisions for Type 2 Compost, found in Section M1.06 of the Supplemental Standard Specifications.

The Engineer shall approve the Contractor's equipment for application.

Seed Mix

Seed Mixes and Submittals shall be per the item(s) for the permanent seed mix. Mix shall be:

Item 765.442 – Roadside Riverbank Mix

### SEEDING SEASON

The season for seeding native mixes is April 1 - May 15 and October 1 - December 1 for dormant seeding. Written approval must be obtained for seeding outside the seeding season and, if approved, the permanent seed rate shall be increased by 50%

### CONSTRUCTION METHODS

Method of application and equipment to be used shall be reviewed and approved by the Engineer prior to placement of material.

**ITEM 751.765** (Continued)

Placement of Compost

Compost shall be placed as shown on the Plans and in the Detail and as required by the Engineer. Material shall be placed so that settled material is at or slightly below the surface plane of the stone. The Contractor shall ensure that there will be adequate quantity, including adjustment for settlement.

For purposes of estimation, required compost quantities should be 300 cubic yards per acre to achieve the target depth.

Seeding

For areas smaller than half an acre, unless otherwise approved by the Engineer, seeding shall be done by broadcast method. Seeding shall be done in conjunction with or immediately following Compost application. Alternative seeding methods must be submitted and approved by the Engineer 14 days in advance of compost and seed application.

Hydroseeding

Hydroseeding may be used for sites over half an acre in size or when the rock slope does not permit safe application via a broadcasting method. Hydroseed shall be per the manufacturer's directions and as follows.

Tank and hoses shall be cleaned from all previous hydroseeding and hydromulching projects. Seed shall be mixed into the slurry immediately before application and slurry applied within 30 minutes after seeds have been placed in the tank. Once seed has been placed in the tank, tank shall be agitated only enough to mix the seeds and keep slurry from separating.

When Seeding Occurs after Application of Compost or after December 1

When seeding is done more than 3 days after Compost application or when Compost is applied after December 1, seeding rate shall be increased by 50%.

Over-Seeding

Large extents of bare area (greater than 5-6 feet and depending on modified rock slope conditions) shall be over-seeded with the specified mix during the appropriate season for seeding. Rates, methods, and submittals shall be as specified under the relevant Seed Mix Item and Materials above.

Over-seeding, mulch, watering, and all work for over-seeding shall be incidental.

**ITEM 751.765** (Continued)

Determining Satisfactory Establishment

A reasonably well-established stand of the specified seeded species as determined by the Engineer and the MassDOT Landscape Architect or designated Specialist will be required for Final Acceptance. The expectation is that an acceptable number and variety of the desired permanent seeded species will be visible. For seeding with compost over modified rock this shall generally be:

- A minimum of 50% coverage by the specified permanent seeded species after one growing season (considered June-September 15). Of that percentage, generally, depending on the mix species:
  - At least 2 types of permanent seeded grass species shall be visible.
  - At least 2 species of wildflowers shall be visible.
- There will be no more than 25% coverage by weed species.
- There will be no invasive or aggressive species within the stand at the time of acceptance.
- There shall be no evidence of seed from non-native mixes (ex., clover) due to using an incorrect or modified mix or due to failure to clean the hydroseeding tank if a hydroseeder is used.

Invasive and aggressive weeds (such as mugwort, vetch, knapweed, and chicory) must be cut, pulled with roots removed, or treated with herbicide by a licensed and approved applicator prior to going to seed for Interim Acceptance. Weed removal shall be coordinated with MassDOT Landscape Architect. No herbicides shall be used without approval and coordination with MassDOT Landscape Design Section.

Acceptance of Seeding and Establishment Work

**Conditional Acceptance** shall be based on approval of seed mix submittals and proper application of seed as specified herein.

**Final Acceptance of Seed Establishment** shall be given upon satisfactory Establishment as described above. If the seeded area fails to meet the requirements of Establishment by the end of the growing season, contractor shall propose and implement remediations and site shall be inspected during the following growing season after July 1st. Otherwise, Contractor shall forego the payment for Final Acceptance. All remediation shall be at the contractor's expense.

**ITEM 751.765** (Continued)

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Compost and Seed for Modified Rock will be measured and paid for at the Contract unit price per Cubic Yard which price shall include all labor, materials, equipment, site preparation, and all incidental costs required to complete the work.

Native Seed Mix shall be compensated at the bid price per the specified seed mix item by pound.

Schedule of payment shall be as follows:

60% upon approval of Compost application and Conditional Acceptance of seeding as specified above

40% upon Final Acceptance of Seed Establishment

**ITEM 755.35 INLAND WETLAND REPLICATION AREA LUMP SUM**

The work under this item shall conform to the relevant provisions of Sections 120, 770, 771 of the Standard Specifications and the following:

Work under this item shall include furnishing material and the construction and maintenance of inland wetland replication areas as shown on the drawings and as required by the Engineer. Inland Wetland Replication Area shall hereafter be referred to as Replication Area. All work shall be in coordination with an approved Wetland Specialist as specified under that item.

Wetland Restoration work shall be as specified and compensated under that item. Construction of tidal wetlands shall be as specified under the appropriate item for tidal wetland mitigation.

The Replication Area shall be constructed prior to wetland impacts unless otherwise approved by the Engineer, specified herein, or specified in permit conditions and approvals. Construction schedule shall be appropriate to planting and seeding season (see below). Changes to this schedule will require written approval from the Engineer.

DESCRIPTION OF WORK

Construction of the Replication Area shall be completed as shown on the drawings at the following location(s):

Area A at Station: ***102+75-103+60 RT*** Area = ***697*** sf.

Replication Area shall be constructed to meet the requirements of all associated permits and certifications, including relevant performance standards of the Section 401 Water Quality Certification and Section 404, U.S. Army Corps of Engineers Permit.

The Contractor is responsible for protection and preservation of natural areas adjacent to the Replication Area both within and outside the project limits and for the duration of the Contract; including but not limited to damage to soils or vegetation due to erosion, sedimentation, compaction, trampling, vehicles, storage of materials, or other negligence shall be repaired to the satisfaction of the Engineer and at the Contractor's expense.

The Wetland Specialist overseeing the Wetland Replication construction work shall not be from the same company as that which is performing planting, seeding, or participating in any aspect of the Wetland Replication construction.

**ITEM 755.35** (Continued)

SUBMITTALS - DOCUMENTS

Request for Conditional Acceptance: As specified below, a letter requesting Conditional Acceptance of the work and the site conditions shall be submitted to the Engineer.

Request for Certificate of Compliance (Partial or Full): As specified below, shall be submitted to the Engineer for distribution to appropriate regulatory agencies.

Request for Final Acceptance: As specified below, a letter requesting Final Acceptance of the work and the site conditions shall be submitted to the Engineer.

Monitoring Reports: Reports shall be submitted to the Engineer as specified below. Reports shall be compensated under Item 755.75 and 755.76.

SUBMITTALS - MATERIAL

**Soil and Amendments**

No soil, compost, or other soil amendment imported to the work site shall contain seeds, roots, stems, or other viable parts of invasive plants or other noxious plants.

At least sixty (60) days prior to installation and prior to ordering, the Contractor shall submit for approval sources of soil, compost, and amendments. Submittal shall include the supplier and location of the source. Off-site sources shall be identified and available for inspection by the Wetland Specialist prior to transport of material to the site to verify that they are likely to be free of invasive plant species, including all viable plant parts.

Samples of tested and approved wetland soil and soil amendments for soil texture, organic carbon content or other routine soil analysis parameters (e.g., pH, Cation Exchange Capacity, Percent Base Saturation) and Soil Organic Matter Analysis will be required if requested by the Engineer. The grab samples shall be collected by the Contractor or Wetland Specialist from multiple representative locations in the wetland topsoil mix following the “Umass Soil and Plant Tissue Testing Laboratory Sampling and Collection Protocols” (or equivalent certification paperwork provided by the soil supplier). The lab analysis shall be provided to the Engineer along with written certification from the Contractor or Wetland Specialist that the wetland topsoil was collected per the referenced protocol and meets the desired specification. The analysis and written certification of same shall be provided to the Engineer prior to placing the wetland topsoil in the Replication Area.

**ITEM 755.35** (Continued)

**Seed Mix**

Certificate of Materials from the supplier shall be submitted 30 days prior to seeding and must be approved prior to ordering materials. Seed species listed on the certificate shall include ecotype region (i.e., *Asclepias incarnata*, PA Ecotype).

Seed tag from the bag of seed used shall be submitted to the Engineer at the time of seeding. Seed tag shall include ecotype region and species, guaranteed percentages of purity, weed content and germination of the seed, and the net weight. Seed tag shall match the Certificate of Materials, include the name of the supplier, and date material was sent.

Bill of lading or notarized Certificate of Compliance from the Supplier serving as proof of purchase shall be submitted if requested by the Engineer. Document shall include date of sale, quantity, lot number, and address of Supplier. This shall match the seed tag. Notary shall not work for either the contractor or seed supplier.

**Plant Certification**

Plant Certification shall be per the applicable requirements of Subsection 771, PLANTING TREES, SHRUBS AND GROUNDCOVER, of the Standard Specifications. The nursery source shall certify the provenance or origin of all plants.

**Other Material:** Submittals shall be per the respective item.

MATERIALS

**Sediment Control Barrier and Erosion Prevention Measures**
Sediment control barriers shall be per Item 767.121.

Erosion prevention measures for disturbed areas adjacent to the Replication Area shall include but not necessarily be limited to sediment control barrier as approved by the Engineer.

Sediment controls and erosion prevention devices and measures shall be compensated under the respective items.

**Wetland Soil**

Soil appropriate for the Replication Area may be either hydric soil excavated from the impacted wetland, a manufactured mix of compost and on-site borrow, or a combination thereof, as approved by the Engineer.

**ITEM 755.35** (Continued)

Hydric soil from the impacted wetland area may be spread on the surface of the constructed Replication Area as an inoculant or can be placed in a bulk fashion in a roughly 1:1 ratio of area and depth. Soil shall be handled such that the original soil structure is preserved and shall not be compacted, screened, or otherwise processed.

Hydric soil from the impacted wetland that is infested with invasive plant species identified on the Massachusetts Invasive Plant Advisory Group (MIPAG) shall not be used in the Replication Area unless approved by the Wetland Specialist and Engineer. To the extent possible, infested soil shall be disposed of within the project limits in an upland area outside of regulated areas and as approved by the Invasive Plant Management Strategy item (if in the contract) or by the Engineer.

A manufactured mix suitable for wetlands shall consist of on-site borrow from the proposed Replication Area (if approved by the Wetland Specialist and Engineer) thoroughly mixed with compost to achieve a target organic carbon content of 10-12% (up to 21% percent organic matter) by dry weight. The organic material used for mixing shall be well or partially decomposed. Clean leaf compost is the preferred soil amendment to achieve these standards though other materials may be used if approved by the Wetland Specialist and Engineer. Note that "clean" refers both to a negligible amount (<1%) of physical contaminants such as plastic and to the lack of chemical contaminants that might pose a hazard to plants or animals. Off-site borrow may be used for mixing if approved in advance by the Engineer.

No soil or soil amendment shall be brought on site without approval of the material source by the Wetland Specialist and the Engineer. Soils used in the replacement area shall be free of rocks greater than 4 inches in diameter.

Seed Mix

Seeding shall conform to the Standard Specifications Section M6, ROADSIDE DEVELOPMENT MATERIALS.

Seed Mix shall be Wetland – Riparian Mix and shall be per Item 765.553 and Wetland – Seasonally Flooded Mix and shall be per Item 765.554. See Plans for areas.

Fertilizers shall not be used.

**ITEM 755.35** (Continued)

**Item 765.553: Wetland – Riparian Mix**

| | Botanical Name | Common Name | % PLS By Weight |
|---|---|---|---|
| Grass | | | |
| | Sorghastrum nutans NY Eco | Indiangrass NY Ecotype | 14.00% |
| | Schizachyrium scoparium | Little Blue Stem | 14.00% |
| | Elymus riparius | Riverbank Wild Rye | 10.00% |
| | Elymus virginicus | Virginia Wild Rye | 10.00% |
| | Panicum clandestinum 'Tioga' | Deer Tongue 'Tioga' | 9.00% |
| | Andropogon gerardii NY Eco | Big Bluestem NY Eco | 8.00% |
| | Carex vulpinoidea | Fox Sedge | 7.00% |
| | Panicum virgatum | Switchgrass | 3.00% |
| | Juncus effusus | Soft Rush | 2.00% |
| | Agrostis perennans | Upland Bentgrass | 2.00% |
| | Scirpus atrovirens | Green Bulrush | 1.00% |
| | | | 80.00% |
| Herb/Forb | | | |
| | Chamaecrista fasciculata | Partridge Pea | 3.00% |
| | Verbena hastata | Blue Vervain | 3.00% |
| | Asclepias incarnata | Swamp Milkweed | 3.00% |
| | Heliopsis helianthoides | Ox-Eye Sunflower | 2.00% |
| | Eupatorium perfoliatum | Boneset | 2.00% |
| | Aster umbellatus | Flat Topped White Aster | 1.00% |
| | Aster prenanthoides | Zig Zag Aster | 1.00% |
| | Aster puniceus | Aster – Swamp | 1.00% |
| | Aster novae-angliae | New England Aster | 1.00% |
| | Eupatorium maculatum | Joe-pye Weed | 1.00% |
| | Monarda fistulosa | Wild Bergamot | 1.00% |
| | Vernonia noveboracensis | New York Ironweed | 1.00% |
| | | | 20.00% |
| | | | 100.00% |

**ITEM 755.35** (Continued)

**Item 765.554: Wetland – Seasonally Flooded Mix**

| | Botanical Name | Common Name | % PLS By Weight |
|---|---|---|---|
| Grass | Elymus riparius | Riverbank Wild Rye | 20.00% |
| | Andropogon gerardii NY Eco | Big Bluestem NY Eco | 12.00% |
| | Carex lupulina | Hop Sedge | 10.00% |
| | Panicum clandestinum 'Tioga' | Deer Tongue 'Tioga' | 10.00% |
| | Carex vulpinoidea | Fox Sedge | 10.00% |
| | Carex scoparia | Broom sedge | 8.00% |
| | Sorghastrum nutans NY Eco | Indiangrass NY Ecotype | 8.00% |
| | Panicum virgatum | Switch Gras | 8.00% |
| | Juncus effusus | Soft Rush | 2.00% |
| | Juncus tenuis | Path Rush | 1.00% |
| | | | 89.00% |
| Herb/Forb | Verbena hastata | Blue Vervain | 4.00% |
| | Desmodium canadense | Showy Tick Trefoil | 2.00% |
| | Eupatorium maculatum | Joe-pye Weed | 1.00% |
| | Asclepias incarnata | Swamp Milkweed | 1.00% |
| | Aster novae-angliae | New England Aster | 1.00% |
| | Eupatorium perfoliatum | Boneset | 0.70% |
| | Helenium autumnale | Common Sneezeweed | 0.50% |
| | Aster puniceus | Aster - Swamp | 0.50% |
| | Mimulus ringens | Monkey Flower | 0.20% |
| | Vernonia noveboracensis | New York Ironweed | 0.10% |
| | | | 11.00% |
| | | | 100.00% |

**Mix 765.553:** 20 lbs/acre PLS.
**Mix 765.554:** 20 lbs/acre PLS.

In addition, apply 30 pounds of cover crop (grain oats or grain rye) as appropriate to the season.

50% Increase Adjustment for Field Conditions

**ITEM 755.35** (Continued)

Seeding under the following conditions requires a 50% increase in the permanent mix at the time of construction:

- Seeding out of season
  OR
- Seeding after Compost Blanket has been applied (unless already increased for out of season).

Water

The Contractor shall provide water and all equipment required at no extra cost. Water shall be suitable for irrigation and free from ingredients harmful to plants and wildlife. Water from the adjacent water bodies or waterways shall not be utilized. It is the Contractor's responsibility to correct injury or damage due to the lack of water, too much water, or use of contaminated water.

Mulch/Compost Blanket for Seeding

Hydromulch shall be per the manufacturer's recommendations and shall be wood fiber or straw mulch only. Mulch shall be incidental to seeding.

Compost Blanket may be used in lieu of mulch for seeding. Compost Blanket shall meet the material and submittal requirements of that Item and shall be applied as specified below. Compost Blanket shall be compensated under that item.

CONSTRUCTION METHODS & SEQUENCE

**SITE PROTECTION MEASURES**

Minimizing Damage
The Contractor shall plan and execute operations in a manner minimizing the amount of excavated and exposed fill or other foreign materials that could be washed or otherwise carried into Replication Area and nearby resource areas.

Construction of and access to the Replication Area shall minimize damage to existing vegetation and soils as specified herein. Damage to soils or vegetation shall be repaired to the satisfaction of the Engineer and at the Contractor's expense. If required for soil remediation, tilling and the addition of compost shall be at the Contractor's expense.

Wetland topsoil shall be deposited and graded in the Replication Area in a manner that minimizes travel and subsequent compaction of the subgrade (including any specified pit and mound topography) to the extent practicable, including use of track mounted excavators as appropriate. Should soils be compacted, they shall be loosened by a method such as disking, spring-tooth harrowing and/or rototilling. The Contractor shall use boards, timber or composite mats, or other approved materials as necessary, to protect existing and/or new wetlands from compaction due to

**ITEM 755.35** (Continued)

heavy foot traffic or if equipment is required to travel over wetland soil. All labor and materials required for protection and preservation of site shall be incidental to this item.

Stockpiling of Soil

Stockpiling of soil, including hydric soil for replication, shall be at least 100 feet from the edge of the bordering and isolated vegetated wetlands and inland banks, unless approved otherwise by the Engineer. Stockpiled soils shall be securely stabilized and contained. Any areas of exposed soil or stockpiles within and adjacent to the Replication Area that will remain inactive for more than 7 calendar days shall be sown with a mix of rapid germinating annual grasses (e.g., annual rye) covered with a layer of straw mulch applied at a rate of 90 pounds per 1,000 square feet. As necessary, the mulch shall be anchored with a tacking coat (non-tar) applied by a hydro seeder or other method recommended by the Wetland Specialist in consultation with the Engineer. In the event that there is excess borrow, it shall be disposed of under Earth Excavation, Item 120.

Sediment Barriers

***Placement:*** Sediment barriers shall be installed along the downslope perimeter of the Replication Area beginning and ending in the surrounding upland so that no excavated material or disturbed soil can enter adjacent wetlands or waters. Where construction work is immediately upgradient of the wetland, barriers shall be located so as to protect the Replication Area until slopes are stabilized. Sediment barriers shall be in place and approved by the Engineer prior to excavation work. No work shall take place outside the barriers.

***Maintenance:*** The Contractor shall ensure that all sediment barriers function as intended and at all times per the specifications of those respective items.

Existing Trees to Remain

***Tree protection*** shall be per the relevant specifications and as shown on the plans or as required by the Engineer. To protect root systems of existing trees to remain, the limits of the Replication Area may be adjusted, but, the total area of replication required by the permits shall not be reduced. Access route may be adjusted as required.

***Trees to be retained as snags*** (upright dead or dying trees left for wildlife habitat) within or adjacent to the Replication Area shall be as shown on the plans or as directed by the Wetland Specialist or Landscape Architect during the initial site walk. Trees to remain as snags shall be clearly marked prior to clearing. Trees that pose a potential fall hazard (i.e., are near a roadway) should have limbs and trunk cut such that the tree does not pose a fall hazard.

**ITEM 755.35** (Continued)

***Coarse woody debris*** in the form of cut trees, stumps, logs, and brush shall be incorporated as shown on the plans or as directed by the Wetland Specialist or Landscape Architect. On site material shall be selected and marked by the Wetland Specialist, retained on the project site, and placed as specified below under Placement of Coarse Woody Debris.

All trees, stumps, or brush not specified to remain shall be removed and shall not be stockpiled in the wetland resource areas while awaiting disposal.

Work shall be coordinated with Clearing or Tree Removal Item and compensated under that Item.

**PRE-WETLAND CONSTRUCTION SITE WALK**

***Delineating the Replication Area and Access Route.*** The Contractor shall stake out the Replication Area boundaries and the intended access route and set grade stakes for approval by the Wetland Specialist and Engineer. Following staking and demarcation of areas, the Engineer and Wetland Specialist shall approve or modify as necessary the limits of work, the access route, final location and configuration of replication, grade stake elevations, proposed location of sediment barriers, and review proposed construction methods.

As part of the delineation and approval process, the Wetland Specialist shall mark trees to be converted to snags, select course woody debris to be retained for re-use, and select rocks or other elements to be used for habitat features.

***Invasive Plants:*** As part of the initial site walk, the wetland to be impacted and the proposed replication site shall be inspected for the presence of invasive plants. If invasive plants are found they shall be addressed as described herein under Invasive Plants.

**SOIL WORK**

Final grades in the Replication Area shall meet the target elevations as shown on the Plans or as adjusted by the Wetland Specialist to achieve the desired hydrology and micro-habitat. If adjustments are required, a Request for Information (RFI) shall be submitted to the Engineer for approval. Adjustments shall be documented and included in the As-Built plans (if required) and/or other applicable required documents.

**ITEM 755.35** (Continued)

Excavation & Grading

When required by permits, the Wetland Specialist shall notify MADEP and the ACOE (as applicable) at least 72 hours prior to excavation.

Soil in the proposed wetland areas that must be removed for grades to conform to the proposed elevations shall be stripped and disposed of, or, if suitable for reuse, be stockpiled in an approved location. Stockpiled soils shall be kept wet and not allowed to dry out. Procedures for maintaining appropriate moisture levels shall be documented by the Wetland Specialist and provided to the Engineer and the Contractor.

Replication area shall be excavated as shown on the drawings. Where replication area is adjacent to existing reference wetland, finish grade of replication shall generally match existing grades and micro-topography, notwithstanding any deviations that are necessary to achieve the desired hydrology and habitat in the Replication Area.

Prior to placement of backfill, scarify subgrade to a depth of 4 to 6 inches.

Placement of Wetland Soil

Following excavation, scarification, and grading of sub-grade, and after the sub-grade elevations are approved by the Wetland Specialist, suitable soil previously removed or an evenly mixed organic/mineral soil created on-site shall be spread to the design depth and thickness over the proposed wetland areas as shown on the plans and as directed by the Wetland Specialist.

Vehicles used to transport soil from offsite shall be washed or cleaned with air pressure to prevent exotic or invasive seeds or root fragments from contaminating the Replication Area.

Final Grading

The finished grade of the Replication Area shall be at an elevation that will provide an unrestricted hydrologic connection between the Replication Area and adjacent resource areas. The hydrologic connection should be in keeping with restoring the intended function of the replacement wetland relative to the impacted reference wetland. The Contractor shall verify that this elevation is not at a level that could negatively alter the hydrology of an adjacent wetland. Microtopography in the form of hummocks, pits and mounds shall be as shown on the plans or as adjusted by the Wetland Specialist. Final elevations and grading of wetland soil shall be approved by the Wetland Specialist and the Engineer.

To avoid compaction once soil has been placed, no heavy equipment shall travel across placed soil and no work shall occur in wet or moist soil. Soil that is compacted due to construction activities shall be replaced with soil as specified herein and at the Contractor's expense.

**ITEM 755.35** (Continued)

**RESTORING VEGETATION**

Placement of Coarse Woody Material

If specified within this Contract or if directed by the Wetland Specialist or Landscape Architect during the initial site walk, woody debris shall be placed in the Replication Area and/or adjacent upland buffer. Material shall be placed as shown on the plans or as directed following placement of wetland soil and prior to application of compost and/or seed. Woody material shall cover a minimum of 5-20 percent of the Replication Area, depending on whether it is a meadow or woodland wetland and how much wood is available from construction clearing. Where trees are cut for construction purposes, logs of a minimum length of 8 feet must comprise a minimum of 50% of the woody material left on site. Brush shall be included along with logs and stumps as directed. Woody material shall be placed in a deliberate and naturalistic manner.

Planting

Following placement of wetland soil and approval of final grade and conditions, Replication Area shall be planted. Planting shall conform to SECTION 771 PLANTING TREES, SHRUBS AND GROUNDCOVER of the Division I Standard Specifications and as amended below.

Planting Season shall be May 15-June 15 and September 1-November 1 unless otherwise specified in applicable permit conditions.

Prior to planting, the Wetland Specialist shall approve the condition of the plant material and the method of installation and shall oversee the planting work. Replication Area shall be planted in the dry. Plants shall be placed according to the planting details and within the range of target elevations and at the spacing shown on the Plans or, if spacing is not indicated on the Plans, at the direction of the Wetland Specialist. Unless otherwise noted on the Plans, final plant locations shall be determined on site and located with regard to expected hydrology, plant growth characteristics, habitat desired, and water protection.

Plant material shall be installed as soon as possible after delivery. Plants stored on-site prior to installation shall be stored in the shade and watered twice daily up until time of installation. Plants showing signs of stress or compromised health may be rejected by the Engineer or Wetland Specialist and shall be replaced at the Contractor's expense.

**ITEM 755.35** (Continued)

Plant material shall be furnished and installed as indicated including all labor, materials, plants, equipment, incidentals, re-setting of plants (frost heaves, etc), irrigation, re-planting and clean up. If previously approved species are not available at the time of planting, the Wetland Specialist may propose substitutions relative to species, size, and quantities for review and approval by the MassDOT Landscape Architect. Upon approval by MassDOT, substitutions shall be approved by the regulating authority, if and as necessary. Provisions shall be made for a growth warranty of at least two (2) calendar years from the date of Conditional Acceptance as described below or as required by permits.

Seeding

Following placement of wetland soil and planting (if included), the Replication Area shall be seeded using one of the following methods:

- Broadcast by hand or with a hand-held spreader followed by application of straw mulch. If necessary, seed shall be lightly raked to insure good seed-to-soil contact.
- Hydro-seeded with hydro mulch per the Standard Specifications and per the manufacturer's directions.
- Hand broadcast seed with Compost Blanket pneumatically applied at the same time to ensure light cover of soil topdressing over seed.

If spring conditions are drier than usual, supplemental watering may be required. If sowing during the summer months, supplemental watering will likely be required until germination.

If required, seeding limits for different seed mixes shall be determined by the Wetland Specialist.

PLANT ESTABLISHMENT AND INVASIVE MANAGEMENT

*Plants* shall be watered as necessary to maintain healthy establishment. Plants that fail by September 1 after spring planting or by May 15 after fall planting shall be replaced within the immediate or next planting period and at the Contractor's expense.

*Seeding* that fails to established according to the conditions of acceptance below shall be over-seeded as required by the Engineer. Washouts and channels shall be repaired and stabilized prior to overseeding. Excessive weed growth shall be pulled out by the roots or, with approval from the Engineer, cut prior to over-seeding. Soil repair and weed control are incidental to this item.

*Invasive Plants:* Corrective measures shall be taken to remove or treat invasive plant species in the Replication Areas. Invasive plants shall include those listed as invasive by Massachusetts Invasive Plant Advisory Group (MIPAG) and the US Army Corp of Engineer's New England District's Compensatory Mitigation Guidance.

**ITEM 755.35** (Continued)

If chemical treatment of invasive plants is necessary, the strategy for treatment shall be as determined under Item 102.3 Invasive Plant Management Strategy. That strategy shall be coordinated with the Wetland Specialist and all applicable permits and permitting agencies. Chemical application under 102.33 Invasive Plant Management On-site shall be compensated under that item and shall be for the duration of the contract only.

CONDITIONAL ACCEPTANCE OF WORK

Conditional Acceptance shall indicate approval of the wetland construction work and agreement that work has been done according to plan or modified as approved.

Upon completion of construction, the Contractor shall submit a Request for Conditional Acceptance that includes a brief narrative from the Wetland Specialist demonstrating that the wetland replication construction work was done according to plans (or how modified) and meets required permit conditions. The narrative shall include, photo-documentation of pre-construction conditions as well as soil work, planting, and seeding. Seed tags shall be submitted as part of the Request for Conditional Acceptance.

Upon receipt of a Request for Conditional Acceptance, the Engineer, the Wetland Specialist, and regulatory representative (if required) shall assess the Replication Area and surrounding areas. At a minimum, the following conditions shall be included in the narrative and reviewed as part of the on-site assessment of whether:

- The final finished target elevations have been met and maintained relative to the approved plans and reference wetland. Areas that are too high or too low should be identified along with suggested corrective measures.
- Hydrology meets performance standards.
- Specified seed mix has been seeded. If inspected 30 or more days after seeding, seeded species in the wetland and adjacent upland shall show signs of good germination and healthy growth.
- Planted woody and herbaceous species meet specifications and are establishing well.
- Soils are stabilized and there is no sediment in the wetland and no channeling of slopes.
- There are no invasive plants visible in the replication area.

Upon approval that the work meets the above conditions, MassDOT will issue a letter of Conditional Acceptance. If the Wetland Replication work is not approved, MassDOT will issue a rejection letter requiring corrective actions. The Wetland Specialist shall recommend corrective actions. Work not approved shall be addressed by the Contractor at no extra cost.

Wetland Specialist shall be compensated under Item 755.75.

Erosion of adjacent slopes or the flow of sediments into the wetland between Conditional and Final Acceptance shall be immediately addressed by the Contractor.

**ITEM 755.35** (Continued)

FINAL ACCEPTANCE OF WORK

Following one full growing season, the Contractor shall submit a Request for Final Acceptance. Submittal shall include a brief narrative of conditions. Upon receiving the Request, the Engineer, Contractor, Wetland Specialist and regulatory representative (if required) shall assess the Replication Area. Final Acceptance will initiate the start of the Wetland Monitoring Period.

The following conditions shall be inspected and approved for acceptance and payment.

- Hydrology is functioning as intended.
- The desired seeded species are establishing well and cover at least 95 percent of the Replication Area, excluding areas of open water areas or planned bare soil.
- No sediments have entered the wetland.
- Adjacent slopes are stabilized with desirable vegetation.
- All planted species (if included) are living and establishing well.
- There are no visible invasive plants.
- Silt fence and non-biodegradable sediment barrier materials have been removed.

If the mitigation work does not meet the above condition and is not approved, MassDOT will issue a rejection letter requiring corrective action. The Wetland Specialist shall recommend corrective actions. Work not approved will be addressed by the Contractor at no extra cost.

Wetland Specialist shall be compensated under Item 755.75.

MONITORING REPORTS FOR REGULATORY COMPLIANCE

Post wetland construction Monitoring Reports shall be completed and submitted by the Wetland Specialist as specified and compensated under Item 755.76 Wetland Monitoring Reports.

Generally, the following conditions shall be met upon each inspection:

- Hydrology is functioning as intended.
- The desired seeded species are establishing well and cover 95 percent of the area, excluding areas of open water areas or planned bare soil.
- No sediments have entered into wetland.
- Adjacent slopes are stabilized with desirable vegetation.
- All planted species (if included) are living and establishing well.
- There are no visible invasive plants.

If, at the end of the required monitoring period, the requirements have not been met and success of the wetland replication area has not been achieved as determined by the Monitoring Reports, the Contractor shall provide corrective measures. All costs associated with corrective measures and plant replacement shall be incidental to this item with no additional compensation.

**ITEM 755.35** (Continued)

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 755.35 will be paid for at the Contract unit price per Lump Sum, which price shall include all labor, materials, equipment, submittals, maintenance, all required soil, site preparation, grading, wetland seeding, planting, mulching, watering, as-built plans, Request for Certificate of Compliance, and all incidental costs necessary to complete the work as required.

Payment shall be as follows:

- 60% upon Conditional Acceptance.
- 20% after receipt and acceptance of Certificate of Compliance by the Engineer and once all permit construction requirements have been met and approved.
- 20% upon Final Acceptance.

Excavation will be paid under Item 120.
Sediment Control Barrier will be paid under Item 767.121
Wetland Specialist will be paid under Item 755.75
Wetland Monitoring Reports for follow-up monitoring will be paid under Item 755.76

**ITEM 755.45** **WETLAND RESTORATION** **SQUARE YARD**

DESCRIPTION

The work under this item shall conform to the relevant provisions of Subsections 120, 751, 765, 767, and 771 of the Standard Specifications and the following:

The work under this item shall include all labor and furnishing of materials to complete the work specified herein to protect and restore existing inland wetland areas that will be temporarily impacted as shown on the drawings and as required by the Engineer.

Inland Wetland Replication work shall be as specified and compensated under that item.

Restoration Area shall be constructed to meet the requirements of all associated permits and certifications, including relevant performance standards of the Section 401 Water Quality Certification and Section 404, U.S. Army Corps of Engineers General Permit.

All work shall be in coordination with an approved Wetland Specialist and/or Geomorphologist. Wetland Specialist qualifications and requirements shall be per Item 755.75, Wetland Specialist.

SUBMITTALS – DOCUMENTS

Survey: To establish or confirm pre-construction baseline elevation of temporarily impacted area(s), a survey shall be submitted to the Engineer prior to any fill or other land disturbance.

Request for Conditional Acceptance: As specified below, a letter requesting Conditional Acceptance of the work and the site conditions shall be submitted to the Engineer.

Request for Final Acceptance: As specified below, a letter requesting Final Acceptance of the work and the site conditions shall be submitted to the Engineer.

Request for Certificate of Compliance (Partial or Full): If applicable, request for a Certificate of Compliance shall be submitted to the Engineer for distribution to appropriate regulatory agencies as specified below.

Monitoring Reports: Reports shall be submitted to the Engineer as specified below. Reports shall be compensated under Item 755.76 Wetland Monitoring Reports.

**ITEM 755.45** (Continued)

ASSOCIATED ITEMS AND MATERIALS

**Compost** shall be in accordance with Subsection 751 and M1.06.0 Organic Soil Additives of the Standard Specifications. Compost shall not contain seeds, roots, stems, or other viable parts of invasive plants or other noxious plants. Off-site sources shall be identified and available for inspection prior to transport of material to the site to verify that they are likely to be free of invasive plant species, including all viable plant parts.

**Compost Blanket** shall be as specified under that item.

**Seed Mix**

Required submittals include:

- Certificate of Materials from the supplier shall be submitted and approved 30 days prior to ordering seed. Seed species listed on the certificate shall include ecotype region (i.e., *Asclepias incarnata*, PA Ecotype).

- Seed tag from the bag of seed used shall be submitted to the Engineer at the time of seeding. Seed tag shall include ecotype region and species, guaranteed percentages of purity, weed content and germination of the seed, and the net weight. Seed tag shall match the Certificate of Materials, include the name of the supplier, and date material was sent.

- Bill of lading or a notarized Certificate of Compliance from the Supplier serving as proof of purchase shall be submitted if requested by the Engineer. Document shall include date of sale, quantity, lot number, and address of Supplier. This shall match the seed tag. Notary shall not work for either the contractor or seed supplier.

Seed Mix shall be Wetland – Seasonally Flooded Mix and shall be per Item 765.554. See Plans for areas.

Fertilizers shall not be used.

**Straw mulch or hydromulch** shall be per Section M6 of the Standard Specifications.

**ITEM 755.45** (Continued)

**Item 765.554: Wetland – Seasonally Flooded Mix**

| | Botanical Name | Common Name | % PLS By Weight |
|---|---|---|---|
| Grass | Elymus riparius | Riverbank Wild Rye | 20.00% |
| | Andropogon gerardii NY Eco | Big Bluestem NY Eco | 12.00% |
| | Carex lupulina | Hop Sedge | 10.00% |
| | Panicum clandestinum 'Tioga' | Deer Tongue 'Tioga' | 10.00% |
| | Carex vulpinoidea | Fox Sedge | 10.00% |
| | Carex scoparia | Broom sedge | 8.00% |
| | Sorghastrum nutans NY Eco | Indiangrass NY Ecotype | 8.00% |
| | Panicum virgatum | Switch Gras | 8.00% |
| | Juncus effusus | Soft Rush | 2.00% |
| | Juncus tenuis | Path Rush | 1.00% |
| | | | 89.00% |
| Herb/Forb | Verbena hastata | Blue Vervain | 4.00% |
| | Desmodium canadense | Showy Tick Trefoil | 2.00% |
| | Eupatorium maculatum | Joe-pye Weed | 1.00% |
| | Asclepias incarnata | Swamp Milkweed | 1.00% |
| | Aster novae-angliae | New England Aster | 1.00% |
| | Eupatorium perfoliatum | Boneset | 0.70% |
| | Helenium autumnale | Common Sneezeweed | 0.50% |
| | Aster puniceus | Aster - Swamp | 0.50% |
| | Mimulus ringens | Monkey Flower | 0.20% |
| | Vernonia noveboracensis | New York Ironweed | 0.10% |
| | | | 11.00% |
| | | | 100.00% |

**Mix 765.554:** 20 lbs/acre PLS.

In addition, apply 30 pounds of cover crop (grain oats or grain rye) as appropriate to the season.

50% Increase Adjustment for Field Conditions

**Water**

The Contractor shall provide water and all equipment required at no extra cost. Water shall be suitable for irrigation and free from ingredients harmful to plants and wildlife. Water from the adjacent water bodies or waterways shall not be utilized. It is the Contractor's responsibility to correct injury or damage due to the lack of water, too much water, or use of contaminated water.

**ITEM 755.45** (Continued)

**Site Protection Prior to Impacts**

Prior to any land work, as part of the initial site-walk, the Wetland Specialist shall photo-document the site and provide a summary report of existing conditions as outlined under Item 755.75 Wetland Specialist.

Where and as required vegetation shall be cut flush and area surveyed to establish pre-construction elevations.

Following the cutting and surveying, temporary separation fabric or timber matting shall be placed as required to protect soil and vegetation from compaction, contamination, and/or other damages. Fabric and timber mats shall be placed as specified under the respective items and the Engineer shall approval placement.

**Restoration Upon Completion of Roadway Construction Work**

Sediment Barriers

If required for sediment control during Restoration work (i.e, tilling is required to restore soil), sediment barriers shall be installed along the downslope perimeter of the Restoration Area beginning and ending in the surrounding upland so that no disturbed soil can enter adjacent wetlands or waters. Sediment barriers shall be in place and approved by the Engineer prior to any soil disturbance. No work shall take place outside the barriers.

Removal of Fill and Grading

Fill and temporary separation fabric or mats shall be removed and disposed of as specified under the respective items.

Final elevations shall be approved by the Engineer prior to soil preparation and seeding. Grading shall be incidental to this item.

Following approval of grading to elevations required, soil shall be prepared and seeded as follows.

Soil Scarification

Compacted soil shall be scarified with equipment approved by the Engineer. Upon approval of soil scarification, the area shall ***seeded with Compost Blanket*** as specified below. Seeding shall immediately follow soil preparation.

**ITEM 755.45** (Continued)

Seeding with Compost Blanket
Application of compost blanket and seed shall be done as one application and shall not begin until the Engineer has approved the site and soil conditions. The Contractor shall notify the Engineer when raked areas are ready for inspection and application of compost blanket and seed.

Compost shall be pneumatically applied (blown on) to a depth of one half to one inch at the same time that seed is broadcast such that seed is covered by a light application of compost.

When planting occurs on projects with compost blankets and seed application, planting shall occur prior to application of compost and seed. Otherwise, compost and seed shall be re-applied to the satisfaction of the Engineer and at not cost to the contract.

Seed tags shall be submitted at time of seeding.

SEED ESTABLISHMENT

*Seeding* that fails to establish according to the conditions of acceptance below shall be over-seeded as required by the Engineer. Washouts and channels shall be repaired and stabilized prior to overseeding. Excessive weed growth shall be pulled out by the roots or, with approval from the Engineer, cut prior to over-seeding. Soil repair and weed control are incidental to this item.

CONDITIONAL ACCEPTANCE OF WORK
Conditional Acceptance shall indicate approval of the wetland restoration work and agreement that work has been done according to plan or modified as approved.

Upon completion of construction, the Contractor shall submit a Request for Conditional Acceptance that includes a brief narrative from the Wetland Specialist (if applicable to project) demonstrating that the wetland restoration work was done according to plans (or how modified) and meets required permit conditions (if applicable). The narrative shall include, photo-documentation of pre-construction conditions as well as soil work, planting, and seeding. Seed tags shall be submitted as part of the Request for Conditional Acceptance.

**ITEM 755.45** (Continued)

Upon receipt of a Request for Conditional Acceptance, the Engineer, the Wetland Specialist, and regulatory representative (if required) shall assess the Restoration Area and the surrounding areas. At a minimum, the following conditions shall be included in the narrative and reviewed as part of the on-site assessment of whether:

- The target elevations have been restored per the survey or adjusted per the Engineer. Areas that are too high or too low should be identified along with suggested corrective measures.
- Soil compaction has been mitigated.
- Soils are stabilized and there is no sediment in the wetland and no channeling of slopes.
- Hydrology meets performance standards and has been adequately restored.
- Specified seed mix has been seeded and seeded species in the wetland and adjacent upland show signs of good germination and healthy growth.
- Planted woody and herbaceous species (if included) meet specifications and are establishing well.
- There are no invasive plants visible in the restored wetland area.
- Silt fence and non-biodegradable sediment barrier materials have been removed.

Upon approval that the work meets the above conditions, MassDOT will issue a letter of Conditional Acceptance. If the Wetland Restoration work is not approved, MassDOT will issue a rejection letter requiring corrective actions. Work not approved shall be addressed by the Contractor at no extra cost.

Erosion of adjacent slopes or the flow of sediments into the wetland between Conditional and Final Acceptance shall be immediately addressed by the Contractor.

FINAL ACCEPTANCE OF WORK

Following one full growing season, the Contractor shall submit a Request for Final Acceptance. Submittal shall include a brief narrative of conditions. Upon receiving the Request, the Engineer, Wetland Specialist and regulatory representative (if required) shall assess the Restoration Area. Final Acceptance will initiate the start of the Monitoring Period (if required).

The following conditions shall be inspected and approved for acceptance and payment:

- Hydrology is functioning as intended.
- The desired seeded species are establishing well and cover 100 percent of the restoration area, excluding areas of open water, large boulders or planned bare soil.
- No sediments have entered the wetland.
- Adjacent slopes are stabilized with desirable vegetation.
- Planted woody and herbaceous species (if included) meet specifications and are establishing well.
- There are no visible invasive plants.

**ITEM 755.45** (Continued)

If the restoration work is not approved, MassDOT will issue a rejection letter requiring corrective action. All costs associated with corrective measures and plant replacement shall be incidental to this item with no additional compensation. Work not approved shall be addressed by the Contractor at no extra cost.

MONITORING REPORTS FOR REGULATORY COMPLIANCE

Post wetland construction Monitoring Reports shall be completed and submitted by the Wetland Specialist as specified and compensated under Item 755.76 Wetland Monitoring Reports.

Generally, the following conditions shall be met upon each inspection:

- Hydrology is functioning as intended, relative to the preexisting condition of the restored wetland.
- Seeded species are establishing well and cover 100 percent of the area, excluding areas of open water areas or planned bare soil.
- No sediments have entered into wetland.
- Adjacent slopes are stabilized with desirable vegetation.
- All planted species (if included) are living and establishing well.
- There are no visible invasive plants.

If, at the end of the required monitoring period, the requirements have not been met and success of the wetland replication area has not been achieved as determined by the Monitoring Reports, the Contractor shall provide corrective measures. All costs associated with corrective measures and plant replacement shall be incidental to this item with no additional compensation.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 755.45 will be paid for at the Contract unit price per Square Yard, which price shall include all labor, materials, compost and amendments, compost blanket, seed, mulch, equipment, submittals, maintenance, grading, and incidental costs necessary to complete the work as required.

Payment shall be as follows:

- 50% upon completion of soil preparation and seeding
- 25% upon Conditional Acceptance
- 25% upon Final Acceptance or approval of the Engineer

Excavation of existing sediment will be paid under Item 120.
Sediment Control Barrier will be paid under Item 767.121
Timber Mat will be paid under Item 767.91
Wetland Specialist will be paid under Item 755.75
Wetland Monitoring Reports for follow-up monitoring will be paid under Item 755.76

**ITEM 755.75 WETLAND SPECIALIST HOUR**

Work under this Item shall be for services of a Wetland Scientist, Wetland Ecologist, Restoration Ecologist, or other professional with similar qualifications hereafter referred to as the "Wetland Specialist."

"Wetland Mitigation" shall be used herein for applicable wetland work. For this project, applicable wetland work is for: ***Item 755.35 Inland Wetland Replication Area*** (creation of a new wetland) ***and/ Item 755.45 Wetland Restoration (restoration after temporary impacts).***

The Wetland Specialist shall demonstrate knowledge and expertise to coordinate and oversee all work associated with the Wetland Mitigation as defined herein, as shown on the Plans, as required by permits, and as specified under the relevant Wetland Mitigation items.

Regulatory monitoring reports following Final Acceptance of the Wetland Mitigation shall be per Item 755.76, Wetland Monitoring Reports.

For all onsite work, the Wetland Specialist shall sign in and sign out with the Engineer.

The Wetland Specialist shall not be from the same company as the company responsible for planting, seeding, and/or maintaining the wetland.

QUALIFICATIONS

The Wetland Specialist shall have a minimum of five (5) years of experience with construction and monitoring of wetland mitigation areas similar in size, type, and complexity to the Contract mitigation. When required by permits, at least ten (10) years of experience may be required. The Wetland Specialist shall be thoroughly versed in the Commonwealth of Massachusetts Wetlands Protection Act (MGL C.131, s.40), U.S. Army Corps of Engineers New England District Compensatory Mitigation Guidance, and all other relevant regulations of the Massachusetts Department of Environmental Protection and the U.S. Army Corps of Engineers New England District.

SUBMITTALS - QUALIFICATION

Within sixty (60) days following the Notice to Proceed, the Contractor shall provide proof of qualifications for the Wetland Specialist to the Engineer for approval. Submittals shall include, but not be limited to, the following:

- Resume of the individual on-site implementing the Wetland Specialist work. If the Wetland Specialist changes over the course of the project, the new individual shall submit resume and qualifications for approval 30 days prior to doing any work on-site.
- Resume of any personnel working on-site in place of the Wetland Specialist. Individual shall be approved prior to work on-site.
- Narrative describing the company, its expertise, technical qualifications and experience with wetland construction.

**ITEM 755.75** (Continued)

- At least three (3) references from prior work of a similar nature completed in the last five (5) years and by the individuals who will perform the work. Provide contact information for each reference including address, phone number and email.
- A summary of each reference project including nature of the work, project size, dates, and period of construction and monitoring, methodologies used, and summary of success (or not) in terms of meeting performance objectives. Summary shall include a minimum of one before and one after photo for each project.

SUBMITTALS – DOCUMENTATION AND REPORTS

Wetland Construction Oversight

Wetland Specialist shall provide documentation of pre-existing conditions and wetland construction as specified below and as part of fulfilling the Scope of Work described below. Documentation shall include photos that are clear and legible. Photos are incidental to this item.

- ***Site Walk Prior to Disturbance and Construction of Wetlands:*** Provide brief assessment with photos, including documentation of the existing wetlands to be impacted (both permanent and temporary), proposed wetland replication area, and reference/model wetland areas (typically an adjacent undisturbed wetland or the existing wetland to be impacted). Photos of existing wetlands that will be temporarily impacted shall include a view from at least 3 angles.
- ***Excavation and Grading:*** Documentation shall include minimum of two photos of the excavated wetland and two photos after final grading prior to planting and seeding. For restoration areas, photos shall show soil preparation (i.e, tilling and grading), if applicable.
- ***Approval of Subgrades****:* The Wetland Specialist shall inspect the sub-grade of the Replication Area to ensure that proper hydrology is likely to be established and shall provide the Engineer with written confirmation and photographs upon completion of subgrade excavation work. Written confirmation shall include recommended field adjustments, based on field observations, to achieve the desired hydrology and designed wetland system.
- ***Planting and Seeding:*** Provide assessment and photos of vegetation upon completion of planting and seeding work.

Wetland construction documentation and reports shall be submitted with Request for Conditional Acceptance and for the Order of Conditions, Water Quality Certifications, and other regulatory permits as required.

**ITEM 755.75** (Continued)

Requests for Acceptance of Work & Regulatory Compliance

The Wetland Specialist shall submit the following documents if and as specified herein and under Item the relevant Wetland Mitigation items:

- Request for Conditional Acceptance.
- Request for Certificate of Compliance (Partial or Full) when applicable.
- Request for Final Acceptance.

SCOPE OF WORK

In the event of discrepancies with the applicable permits, the Wetland Specialist shall submit a Request for Information (RFI) to the Engineer.

General

The Wetland Specialist shall be responsible for the following:

- Review and have a comprehensive knowledge of the environmental permits relevant to the specific mitigation work being done so as to ensure compliance throughout the duration of the contract.
- Identify and inform the Contractor and Engineer of unique site conditions which may require adjustments to the schedule, design, or construction methods. For example, wildlife nesting, illegal dumping, or rare species.
- Identify and inform the Contractor and Engineer of any sediment or erosion control problems observed within mitigation areas.
- Advise so as to avoid impacts to adjacent areas and regulated wetland resources.
- Participate in necessary meetings as required by permits and when requested by the Engineer.

Inspections & Construction Oversight

The Wetland Specialist shall be responsible for, but not limited to, the following:

- Pre-Construction Site Walk
    - Following surveying, flagging, and staking of all relevant boundaries and elevations by the Contractor, the Wetland Specialist shall walk the site with the Engineer and the Contractor to review existing and proposed conditions, recommend changes if necessary, and approve the following: location and boundaries of the Mitigation Area, target elevations and grades, location of tree protection associated with the Mitigation Area, and final layout and limits of clearing for access route.
    - Select and mark snags, logs, and woody material to be retained for placement in the Wetland Mitigation, as appropriate.
    - Note invasive plants in and adjacent to Wetland Mitigation.
    - Provide summary report if and as specified under Wetland Mitigation items.

**ITEM 755.75** (Continued)

- Excavation, Soil Placement, Grading for Replication Areas
  - Approve excavated depth and grading for appropriate wetland hydrology, subsoil preparation, and finished grade of placed wetland soil.
  - Adjust grades as required and approve microtopography. If grades need to be adjusted, submit an RFI to the Engineer.
  - If requested by the Engineer, the Wetland Specialist shall inspect stockpiled wetland soil for moisture content and signs of undesirable weeds.
- Soil Protection and Restoration Measures for Restoration Areas
  - Review and approve methods of soil protection and restoration if required.
  - Confirm decompaction will adequately restore appropriate wetland hydrology. If decompaction measures need to be adjusted, submit an RFI to the Engineer.
- Re-vegetation of Mitigation Area
  - Placement of woody material to be re-used.
  - Verify seed used complies with specifications and site conditions, determine limits for wetland seeding based on elevations, approve seeding and mulching methods, and collect seed tags to submit with Request for Conditional Acceptance.
  - Review planting methods (if applicable) prior to installation and oversee layout of wetland plants.

Conditional Acceptance

Upon completion of construction of the wetland, as part of the Request for Conditional Acceptance, the Wetland Specialist shall provide a brief narrative demonstrating that the wetland construction work was done according to plans (or how modified) and meets the conditions required for acceptance as specified under the Wetland Mitigation items. Submittal shall include a report and photo documentation of pre-construction conditions, construction work, seeding, planting, and other work as specified under the Wetland Mitigation items. Photos of completed Wetland Restoration areas shall include the same views as the pre-construction reference photos.

Upon receipt of a Request for Conditional Acceptance, the Engineer, the Wetland Specialist and regulatory representative (if required) shall assess the Wetland Mitigation and surrounding area to ensure that it meets the conditions specified under the Wetland Mitigation items.

Upon approval, MassDOT will issue a letter of Conditional Acceptance. If the Wetland Mitigation work is not approved, MassDOT will issue a rejection letter requiring corrective action. The Wetland Specialist shall recommend corrective actions.

Request for Certificate of Compliance

If required, a Request for Certificate of Compliance shall be prepared and submitted to the Engineer immediately following Conditional Acceptance. Request shall be as specified under the relevant Wetland Mitigation items.

**ITEM 755.75** (Continued)

Request for Final Acceptance

Following one full growing season, the Wetland Specialist shall provide a brief narrative of the status of the Wetland Mitigation to be submitted with the Request for Final Acceptance.

Upon receipt of the Request, the Engineer, the Wetland Specialist and regulatory representative (if required) shall assess the Wetland Mitigation and surrounding area to ensure that it meets the conditions specified under the relevant Wetland Mitigation items.

If the Wetland Mitigation is not approved, MassDOT will issue a rejection letter requiring corrective action. The Wetland Specialist shall recommend corrective actions.

METHOD OF MEASUREMENT

Item 755.75 Wetland Specialist shall be measured per hour for on-site service provided by the Wetland Specialist.

Work shall include all inspections, photos, submittals, and associated tasks for construction and restoration oversight, narratives for Conditional and Final Acceptance, Request for Certificate of Compliance (Partial or Full) if required, documentation required for permits, and all other work specified above. Payment shall not include travel time or time spent off-site on reports. Decimal Pay Limits will be 0.25 hours.

BASIS OF PAYMENT

Item 755.75 Wetland Specialist shall be paid at the Contractor bid price for each hour, or fraction thereof, spent on-site to perform the work as described above. Reports and photo documentation are required for payment.

Post wetland construction reports shall be per Item 755.76, Wetland Monitoring Reports.

**ITEM 755.76 WETLAND MONITORING REPORTS LUMP SUM**

Work under this item shall be for the submittal of Wetland Monitoring Reports following the completion of wetland construction and shall include all inspections, photos, and other work required to complete those reports as specified herein.

"Wetland Mitigation" shall be used herein for applicable wetland work, whether Wetland Replication (creation of a new wetland) and/or Wetland Restoration (restoration after temporary impacts).

The Contractor shall retain the services of a Wetland Scientist, Wetland Ecologist, Restoration Ecologist, or other professional with similar qualifications, hereafter referred to as the "Wetland Specialist," to complete the Wetland Monitoring reports. Wetland Specialist shall meet requirements specified under Item 755.75 Wetland Specialist.

All on-site Wetland Specialist services required to complete the construction and revegetation of the wetland replication, including preparation and submission of monitoring reports during construction, shall be per Item 755.75 Wetland Specialist.

SCOPE OF WORK

Post-Construction Wetland Monitoring Reports

Final Acceptance of the wetland construction work as specified under item 755.35 shall initiate the beginning of the Monitoring Period.

Inspections and reports shall be performed to ensure compliance with mitigation requirements defined under the relevant Wetland Mitigation items and with all applicable environmental permits. Monitoring reports shall cover the following:

- Identification of all plant species present
- Percent cover for each plant species and overall percent surface area cover by indigenous wetland plant species for replication area and upland
- Description of the viability, health, and vigor of installed plants as well as volunteer plant species within the replication areas
- Description of remedial measures taken to ensure criteria are met
- Depth to apparent water table and/or depth of surface inundation, both as measured from the soil surface and data loggers, as appropriate.
- A conclusion regarding the success of the wetland mitigation area relative to the performance standards at 310 CMR 10.55(4)(b) (unless varied), the design plans, and performance criteria established by MADEP in the variance conditions (when applicable), and the reference wetland.
- Recommendation for a corrective plan of action if needed.

**ITEM 755.76** (Continued)

Reports shall be submitted to the Engineer as a digital copy in Portable Document Format (PDF) unless otherwise requested. Hard copies shall be provided as requested by the Engineer. All reports shall be marked with the applicable permit numbers and identifying information as required in the permits. Reports shall include photo documentation of the wetland/s being monitored and shall include a minimum of 3 views from different orientations. Views shall be labeled.

Spring Reports, when required, shall be submitted to the Engineer by July 1 for dispersal to the appropriate permitting agencies.

End of Year Reports (which may serve as the Fall Report) shall be based on inspections that occur prior to October 15th. Reports shall be submitted to the Engineer no later than November 1 of each year.

Monitoring Reports shall be as follows for **2** years (to be confirmed after permits are filed):

- *MassDEP: 2 Reports - (1 spring and 1 end of year).*
- *ACOE: 2 Reports (1 spring and 1 end of year).*

BASIS OF PAYMENT

Item 755.76 Wetland Monitoring Reports and associated inspections shall be at the Contract unit price per Lump Sum and shall include all labor, materials, equipment, and all incidental costs required to complete the work. Lump Sum will be paid in equal installments of the Lump Sum divided by the number of reports submitted. Payment shall be upon submittal and acceptance of each report, based on the following schedule:

- Year 1 = ***2 Reports***
- Year 2 = ***2 Reports***

**ITEM 756.1 NPDES STORM WATER POLLUTION PREVENTION PLAN LUMP SUM**

This Item addresses the preparation and implementation of a Storm Water Pollution Prevention Plan required by the National Pollutant Discharge Elimination System (NPDES) and applicable Construction General Permit (CGP) issued by the U.S. Environmental Protection Agency (EPA).

Pursuant to the Federal Clean Water Act, construction activities which disturb one acre or more are required to apply to the EPA for coverage under the NPDES General Permit for Storm Water Discharges from Construction Activities. The Contractor shall be fully responsible for compliance with the most recently issued CGP and any subsequent revisions. Should a fine or damages be assessed against it, or MassDOT, as a result of a local, state, or federal enforcement action due to non-compliance with the CGP, the Contractor shall take full responsibility.

The NPDES CGP requires the submission of a Notice of Intent (NOI) to the EPA prior to the start of construction (defined as any activity which disturbs land, including clearing and grubbing). There is a fourteen (14) day review period commencing from the date on which EPA enters the Notice into their database. Based on the review of the NOI, EPA may require additional information, including but not limited to, the submission of the Storm Water Pollution Prevention Plan (SWPPP) for review. Work may not commence on the project until final authorization has been granted by EPA. Any additional time required by EPA for review of submittals will not constitute a basis for claim of delay.

In addition, if the project discharges to an Outstanding Resource Water, vernal pool, or is within a coastal ACEC as identified by the Massachusetts Department of Environmental Protection (DEP), a separate notification to DEP is required. DEP may also require submission of the Storm Water Pollution Prevention Plan for review and approval. Filing fees associated with the notification to DEP and, if required, the SWPPP filing to DEP shall be paid by the Contractor.

The CGP also requires the preparation and implementation of a SWPPP in accordance with the afore-mentioned statutes and regulations. The Plan will include the CGP conditions and detailed descriptions of controls of erosion and sedimentation to be implemented during construction. The contractor shall prepare the SWPPP and update it as necessary. The Contractor shall submit the Plan to the Engineer for approval at least four (4) weeks prior to any site activities. It is the responsibility of the Contractor to comply with the CGP conditions and the conditions of any state Wetlands Protection Act Order, Water Quality Certification, Corps of Engineers Section 404 Permit and other environmental permits applicable to the project and to include in the SWPPP the methods and means necessary to comply with applicable conditions of said permits.

It is the responsibility of the Contractor to complete the SWPPP in accordance with the EPA CGP, provide all information required, and obtain any and all certifications as required by the CGP. Any amendments to the SWPPP required by site conditions, schedule changes, revised work, regulations, construction methodologies, and the like are the responsibility of the Contractor. Amendments will require the approval of the Engineer prior to implementation.
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**ITEM 756.1** (Continued)

In addition to the CGP requirements for inspections, MassDOT requires inspection of all erosion controls and site conditions on a weekly basis. Inspections are also required at portions of sites that discharge to sediment or nutrient impaired or high quality waters per the CGP when each incidence of rainfall exceeding 0.25 inches in twenty-four hours or after snowmelt discharge from a storm event that produces 3.25 inches or more of snow within twenty-four hours occurs. The CGP requires that inspections be performed by a qualified individual as outlined in the CGP. MassDOT requires proof of completion of a 4 hour minimum sedimentation and erosion control training class current to the latest CGP. This individual can be, but not limited to, someone that is either a certified inspector, certified professional, or certified storm water inspector. The documentation shall be included as an appendix in the SWPPP. The inspector's qualifications shall be submitted to the Engineer for approval prior to beginning any work. This individual shall be on-site during construction to perform these inspections. In addition, if the Engineer determines at any time that the inspector's performance is inadequate, the Contractor shall provide an alternate inspector. Written weekly inspection forms, storm event inspection forms, and Monthly Summary Reports must be completed and provided to the Engineer. Monthly Summary Reports must include a summary of construction activities undertaken during the reporting period, general site conditions, erosion control maintenance and corrective actions taken, the anticipated schedule of construction activities for the next reporting period, any SWPPP amendments, and representative photographs.

The Contractor is responsible for preparation of the Plan, all SWPPP certifications, inspections, reports and any and all corrective actions necessary to comply with the provisions of the CGP. The Standard Specifications require adequate erosion control for the duration of the Contract. All control measures must be properly selected, installed, and maintained in accordance with manufacturer specifications and good engineering practices. If periodic inspections or other information indicates a control has been used inappropriately or is no longer adequate, it is the responsibility of the Contractor to replace or modify the control for site conditions at no additional cost to the Department. Contractor must maintain all control measures and other protective measures in effective operating conditions and shall consider replacement of erosion controls for each construction season.

The work under this item shall also include the preparation, submission and implementation of a Flood Contingency Plan. The plan shall address the potential need for the temporary relocation of construction and auxiliary equipment situated within the 1% annual chance of flooding zone to designated upland locations above the Base Flood Elevation during flood events. The Flood Contingency Plan shall address any additional MassDEP-required information requirements, as applicable. The Flood Contingency Plan shall be submitted to the Engineer for review and approval at the same time as the SWPPP.

**ITEM 756.1** (Continued)

This Item addresses acceptable completion of the SWPPP, any revisions/amendments required during construction, preparation of monthly reports and Flood Contingency Plan. In addition, any erosion controls beyond those specified in bid items which are selected by the Contractor to facilitate and/or address the Contractor's schedule, methods and prosecution of the work shall be considered incidental to this item.

The CGP provides specific requirements for temporary and final stabilization. This shall be incorporated into the project schedule. The permit defines specific deadline requirements for Initial Stabilization ("immediately", i.e., no later than the end of the next work day following the day when earth-disturbing activities have temporarily or permanently ceased) and for Complete Stabilization Activities (no later than 14 calendar days after the initiation of stabilization). Stabilization criteria for vegetative and non-vegetative measures are provided in the CGP.

The CGP requires the submission of a Notice of Termination (NOT) from all operators when final stabilization has been achieved, as well as removal and proper disposal of all construction materials, waste and waste handling devices, removal of all equipment and construction vehicles, removal of all temporary stormwater controls, etc. Approval of final stabilization by the Engineer and confirmation of submission of the NOT will be required prior to submission of the Resident Engineer's Final Estimate. The permittee shall use EPA's website to prepare and submit the NOT.

BASIS OF PAYMENT

Item 756.1 will be paid for at the Contract unit price Lump Sum, which price shall include all labor, materials, equipment, SWPPP & Flood Contingency Plan preparation, revisions/addenda during construction, monthly reports, filing fees, and all incidental costs required to complete the work.

Payment of 50% of the Lump Sum price of this item will be made upon acceptance of the NPDES Stormwater Pollution Prevention Plan & Flood Contingency Plan.

Payment of 40% of the Lump Sum price of this item will be will be paid in equal monthly installments distributed across the time remaining in the accepted baseline schedule until substantial completion.

The remaining 10% of the Lump Sum price of this Item will be paid following accepted submission of a Notice of Termination (NOT) when final stabilization has been achieved.

**ITEM 765.21 ANNUAL COVER CROP FOR NATIVE SEEDING POUND**

Work under this item shall conform to the relevant provisions of Subsection 765 of the Standard Specifications and the following.

DESCRIPTION

Work consists of furnishing and applying the appropriate annual grass to be seeded as a cover crop in conjunction with upland native seeding and at the rate specified herein.

A cover crop shall be used for following conditions:

- when specified under Application Rate for the permanent native upland seed mix
- for slopes 2:1 or steeper and an annual is not already specified as part of the permanent mix
- when seeding out of season and the native seed mix does not already specify an annual
- as required to prevent erosion until the permanent seed establishes.

A cover crop is not necessary for wetland seeding and is not typically necessary for soil stabilization when seeding in conjunction with a compost blanket application.

Annual rye (*Lolium multiflorum*) will not be accepted as an annual cover crop.

Using annual rye or exceeding the application rate such that a dense stand of annual grasses prevents germination of the native grasses will require mowing of annual grasses. In this instance, mowing of cover crop will be incidental to this item.

**Seed and Application Rate**

Add 30 pounds/acre of the following seed based on seeding season:

| | |
|---|---|
| *Avena sativa* (Grain Oats): | 1 January to 31 July |
| *Cecale cereale* (Grain Rye): | 1 August to 31 December |

METHOD OF MEASUREMENT

Annual Cover Crop will be measured for payment per pound of seed, complete in place.

BASIS OF PAYMENT

Annual Cover Crop will be paid at the contract unit price per pound upon approval of seed bag tags or other documentation of correct application rate and species, and upon acceptance of a satisfactory stand of annual grasses three weeks following seeding.

Application and care of cover crop will be paid for separately under Item 765.65 Native Seeding and Establishment.

**ITEM 765.442 ROADSIDE RIVERBANK SEED MIX POUND**

Work under this item shall consist of furnishing the mix(es) specified below in the required quantity.

SUBMITTALS

1) Pre-Verification of Seed Availability. Within 30 days after the Notice to Proceed, the Contractor shall submit to the Engineer the supplier's verification of availability of seed species in the required quantities and for the anticipated date of seeding. Verification shall be on the supplier's letterhead and notarized by the supplier's notary. Species not expected to be available should be noted and substitutions recommended.

2) Final Verification of Seed Availability. No earlier than 21 days prior to ordering, the Contractor shall submit to the Engineer the supplier's verification of availability of seed species and in the required quantities. Verification shall be on the supplier's letterhead and notarized by the supplier's notary. A copy of this submittal shall be forwarded to the MassDOT Landscape Design Section. Substitutions or changes in the mix at this time must be approved by MassDOT Landscape Design Section.

3) Seed Worksheet provided herein shall be submitted to the Engineer prior to ordering seed to determine the number of pounds of Pure Live Seed required.

4) Seed Tags. The contractor shall submit original seed tags from each bag of seed used on the project or ensure that each tag is photo documented by the Engineer while on the unopened bag.

Number of tags submitted must correspond to number of bags delivered.

Species listed on the seed tag shall match the Final Verification of Seed Availability (Submittal #2) unless approved otherwise. Tag must include: variety and species name; lot number; purity; percentage of inert matter; percentage of weeds, noxious seeds, and other crop seeds; germination, dormant or hard seed; total viability; origin of seed; germination test date, net weight, and name and address of seller. The origin of seed must be listed on the seed tag for all species in the mix to provide verification of original (generation 0) seed source. The smallest known geographic area (township, county, ecotype region, etc.) shall be listed. Ecotypes and cultivars shall be as close to Massachusetts as possible and appropriate to the site conditions.

**ITEM 765.442** (Continued)

A copy of this submittal shall be forwarded to the MassDOT Landscape Design Section.

5) Verification of Seed Delivery. Prior to payment, contractor shall submit the Seed Delivery Verification form contained within the contract or the Supplier's Verification on company letterhead or a bill of lading. Supplier verification must include all information requested on the Verification form within this contract. The bill of lading must include variety and species name, lot number, net weight shipped, date of sale, invoice, project or seeding location, and name and address of Supplier. All information must be filled in and complete for acceptance. Information must match the seed tags and quantity of seed used on the job. A copy of this submittal shall be forwarded to the MassDOT Landscape Design Section

6) Seed Sample. If requested or if seed is from a previously opened bag, the contractor may be asked to submit to the Engineer a sample of seed from the seed bag (1-2 cups) at the time of seeding.

SEEDING SEASON

The appropriate seeding seasons are:
Spring: April 1 - May 15
Fall: October 1 - December 1 for dormant seeding

PERMANENT SEED MIX(ES)

**Calculating Pure Live Seed (PLS)**

Quantities specified are PURE LIVE SEED. Greater quantities of ordered seed may be required to achieve actual specified seeding rates.

Pure Live Seed (PLS) is defined as a percentage calculated by multiplying the percent of pure seed by the percent of viable seed (total germination, hard seed, and dormant seed). For example:

If a seed label indicates 90% purity, 78% germination, 10% hard seed, and 2% dormancy, it is calculated to be 90% x [78 + 10 + 2]% = 81% PLS.

Therefore, each pound of PLS would need 1 pound / 0.81 = 1.2 pounds of seed with a 90% purity and 90% total germination

**Seed Mix(es)** shall be as specified below. Ecotypes and cultivars shall be as close to Massachusetts as possible and appropriate to the site conditions.

**ITEM 765.442** (Continued)

Roadside Riverbank Seed Mix

| Botanical Name | Common Name | % Mix By Weight (PLS) |
|---|---|---|
| **Grass** | | |
| Elymus virginicus | Virginia Wild Rye | 27.0% |
| Schizachyrium scoparium 'Albany Pine' | Little Bluestem 'Albany Pine' | 22.5% |
| Andropogon gerardii NY Eco | Big Bluestem NY Eco | 14.0% |
| Elymus riparius | Riverbank Wild Rye | 14.0% |
| Panicum virgatum | Switch Grass | 5.0% |
| Dichanthelium clandestinum 'Tioga' | Deertongue grass 'Tioga' | 5.0% |
| Carex vulpinoidea | Fox Sedge | 2.5% |
| Agrostis perennans | Upland Bentgrass | 1.5% |
| Poa palustris | Fowl Bluegrass | 0.3% |
| Juncus effusus | Soft Rush | 0.1% |
| Juncus tenuis | Path Rush | 0.1% |
| | | **92.0%** |
| **Herb/Forb** | | |
| Chamaecrista fasciculata | Partridge Pea | 3.0% |
| Penstemon digitalis | Beard-tongue | 1.0% |
| Vernonia noveboracensis | New York Ironweed | 0.6% |
| Helenium autumnale | Common Sneezeweed | 0.5% |
| Verbena hastata | Blue Vervain | 0.4% |
| Aster puniceus | Aster - Swamp | 0.4% |
| Aster cordifolius | Blue Wood Aster | 0.3% |
| Asclepias incarnata | Swamp Milkweed | 0.3% |
| Monarda fistulosa | Wild Bergamot | 0.2% |
| Aster novae-angliae | New England Aster | 0.2% |
| Solidago odora | Licorice Scented Goldenrod | 0.2% |
| Desmodium canadense | Showy Tick Trefoil | 0.2% |
| Eupatorium perfoliatum | Boneset | 0.2% |
| Eupatorium maculatum | Spotted Joe Pye Weed | 0.2% |
| Solidago juncea | Early Goldenrod | 0.1% |
| Euthamia graminifolia | Grass-leaved Goldenrod | 0.1% |
| Lobelia cardinalis | Cardinal Flower | 0.1% |
| | | **8.0%** |
| **Seeding Rate: 15.0 lbs PLS/Acre** | | **100.0%** |

**Application Rate:** 15 lbs/acre PLS. In addition, apply 30 pounds of cover crop (grain oats or grain rye) as appropriate to the season.

**ITEM 765.442** (Continued)

Any species substitutions shall be with a species having similar characteristics and function. Substitutions must be approved by MassDOT Landscape Design Section per the documentation submittal process.

**50% Increase Adjustment for Field Conditions**

Seeding under the following conditions requires a 50% increase in the permanent mix at the time of construction:

- Seeding out of season
  OR
- Seeding after Compost Blanket has been applied (unless already increased for out of season).

METHOD OF MEASUREMENT

Item 765.442 will be measured for payment by the pound of Pure Live Seed delivered and complete in place.

BASIS OF PAYMENT

Item 765.442 will be paid at the contract unit price per pound of Pure Live Seed delivered upon approval of all Seed Submittal Documentation. Overseeding required to correct poor germination or establishment shall be incidental to the item.

Cover crop not included as part of the permanent mix composition will be paid for under Item 765.21, Annual Cover Crop.

Application and care of native seed mix will be paid for separately under Item 765.635 Native Seeding and Establishment.

**ITEM 765.442** (Continued)

## *NATIVE SEED WORKSHEET*

Project Description: _____ Project No: _____

Contractor: _____ Contract No: _____

Seed Mix Number & Description: _____

**Contractor: Complete Prior To Ordering**

Pounds of Seed Required Per Contract:

_____lbs./acre for _____Acre(s) OR _____ SY

Additional 50% increase if required (out of season or seeding over compost blanket):

_____**lbs. Total Seed Required**

Calculated Quantity for **P**ure **L**ive **S**eed (PLS[1]):

_____ **Total Pounds PLS**

**Engineer: Verification at Time of Application**

Number pounds delivered to site[2]: _____ Date(s): _____

Actual Seed Bag Tag/s Received or photo documented by Engineer: _____

[1] *PLS=% pure seed x % viable seed (total germination, hard seed, and dormant seed).*
[2]*Quantity delivered should match pounds* ***Total Pounds PLS*** *and* ***Verification of Seed Delivery****. Pounds should be shown on each Seed Tag.*

**ITEM 765.442** (Continued)

## *SUPPLIER VERIFICATION OF SEED DELIVERY FOR MASSDOT PROJECTS*

Date_____

We hereby certify that (*Seed Supplier*):_____

Furnished to (*Contractor*): _____

For use on: (*Project Description*) _____

Project #: _____ Contract #: _____

Pounds of Pure Live Seed: _____

Of Mix (*Description*): _____

Lot Number _____

The material was delivered on (*Date*)_____.

The labels and contents meet all State and Federal regulations. The mixture consists of the following species, including cultivars (as applicable) and ecotype region, and at the following percentages (may be attached separately):

Name (print): _____ Title: _____

Supplier: _____

Signature and Seal: _____

**ITEM 765.635 NATIVE SEEDING AND ESTABLISHMENT SQUARE YARD**

Work shall conform to the relevant provisions of Subsections 765 and 767 of the Standard Specifications and the following:

The work under this item shall consist of seeding, mowing, and other care to establish a stand of grass in the areas shown on the plans or as required by the Engineer. For the purposes of these specifications, the term "grass" shall apply to all the forbs, grasses, sedges, and rushes included in the materials.

QUALIFICATIONS

Seeding shall be done by a company having a minimum of five years of experience with native seed establishment. Prior to beginning work, the seeding Contractor shall furnish proof of qualifications to the Engineer for approval. Proof of qualifications shall include providing documentation (photos and contacts) to demonstrate knowledge and expertise with native seeding and establishment and proof of having completed successful native seeding projects.

SEEDING SEASON

Seeding seasons for native mixes is April 1 - May 15 and October 1 - December 1 for dormant seeding. Written approval must be obtained for seeding outside the seeding season and, if approved, the permanent seed rate shall be increased by 50%.

Seeding season for cover crops shall be grain oats January 1 – July 31 and grain rye August 1 – December 1.

MATERIAL AND SUBMITTALS

**Seed Mixes and Submittals** shall be per the item(s) for permanent and annual (cover crop) seed mixes.

**Compost Blanket**, if used, shall meet the material and submittal requirements for that item.

**Hydromulch** shall be wood fiber or straw applied per the Standard Specifications and at the rates specified below and per the manufacturer.

A certified statement shall be furnished, prior to start of work, to the Engineer by the Contractor as to the number of pounds of hydromulch, tackifier, and seed, per 100 gallons of water and as applicable to products used. This statement should also specify the number of square yards of seeding that can be covered with the solution specified above.

**Fertilizer**

No fertilizers shall be applied.

**ITEM 765.635** (Continued)

**Water**

Water, including hose and all other watering equipment required for the work, shall be furnished by the Contractor to the site at no additional cost. Water shall be suitable for irrigation and free from ingredients harmful to plant life. All plants injured or work damaged due to the lack of water or the use of too much water shall be the Contractor's responsibility to correct.

SEEDING

Hand broadcast method shall be used for all areas smaller than half an acre and when specified on the plans for areas over half an acre.

Seeding shall occur within 72 hours of placement of loam and final grading or the Contractor shall propose a reasonable, alternative schedule that shall be approved by the Engineer.

**Surface Preparation**

No seeding or soil preparation shall be done if soils are muddy or dry and compacted. Bare soils shall be raked to remove large stiff clods, lumps, brush, roots, stumps, litter and other foreign matter. Ruts and depressions shall be filled with additional loam or compost and the soil shall be re-graded to a relatively smooth finish corresponding to the required grades.

When seeding over existing or compacted soil or soil that has sat bare for more than 30 days, surface will be prepared by tilling or raking to a minimum depth of 2 inches prior to seeding and prior to Compost Blanket application (when applied).

Surface preparation shall be compensated for under for loam placement or topsoil rehandled and spread as appropriate to the project.

Jute or coir mesh, when specified in the contract, shall be placed after seeding and per the Standard Specifications and the manufacturer’s instruction.

Surface preparation shall be approved by the Engineer prior to seeding.

**Seeding over Various Substrates**

Loam: Seeding shall occur within 72 hours of loam placement to prevent loss of topsoil. Seed shall be manually broadcast for areas less than half an acre (each area, not cumulative area) and when specified on the plans. Broadcasting shall be immediately followed by hydromulching as specified below. When not specified on the plans, larger areas may be hydroseeded as specified below.

Compost Blanket: Compost Blanket shall be applied as specified under that item. Seed should be hand broadcast at the same time as compost application to ensure a thin cover of compost over seed.

**ITEM 765.635** (Continued)

When seeding is done after application of Compost Blanket the rate shall be increased by 50%. If the Compost Blanket is applied after December 1, seed shall be broadcast or hydroseeding over the compost in the Spring and the rate increased by 50% specified under Seed Application.

Compost Mulch over Modified Rock: Compost Mulch and seed shall be applied as specified under that item. No hydromulch is required.

**Cover Crop**

Cover crop shall be used when seeding out of season, when specified with the permanent native seed mix under that item, and as required to prevent erosion until the permanent seed establishes.

A cover crop should not be used with a steep slope mix or other permanent mix which already contains either cereal rye or oats in the composition of the mix. A cover crop is not necessary for wetland seeding and is not typically necessary for soil stabilization when seeding in conjunction with a compost blanket application.

**Seed Application**

All seed shall be mulched as specified herein.

Seed application shall be by broadcast seeding or by hydroseeding as described below.

Broadcast Seeding

Seed shall be broadcast spread using a cyclone or whirlwind seeder or hand broadcast. Small or light-seeded species such as bluestem may be mixed with approved filler to achieve an even distribution. Seed shall not be broadcast when wind velocities are greater than 15 mph.

Broadcast seeding shall be undertaken in two separate passes at ninety degrees to each other. One-half the seeding rate shall be applied in each direction (horizontally and vertically). To ensure seed to soil contact with broadcasting of seed, seeding shall be followed by rolling or tracking with equipment approved by the Engineer.

Broadcast seed shall be mulched with weed-free straw mulch unless seeding is done as part of Compost Blanket in which case it shall be as specified above under seeding with Compost Blanket application. Hydromulching shall be as specified under Hydromulching.

Hydroseeding and Hydromulching

Hydroseed and mulching shall be per the manufacturer's directions and as follows.

Hydroseeding shall only be used for sites over half an acre in size or with permission of the Engineer.

**ITEM 765.635** (Continued)

Tank and hoses shall be cleaned from all previous hydroseeding and hydromulching projects. Seed shall be mixed into the slurry immediately before application and slurry applied within 30 minutes after seeds have been placed in the tank. Once seed has been placed in the tank, tank shall be agitated only enough to mix the seeds and keep slurry from separating.

A 2-step process shall be used for seeding in conjunction with hydromulch. Seed shall be applied with 500 lbs/acre of hydromulch in the first pass. A second pass with 1,000 lbs/ acre of hydromulch shall be applied in a second pass. Each pass shall be applied in a different direction.

Once the seed has been added to the tank mixture a one-hour time limit is set for spreading the mixture on the soil. Once the one hour has passed the excess mixture must be discarded.

For broadcast seeding, hydromulch shall be applied immediately following seeding at a rate of 1,000 lbs/acre. Tank shall be cleaned from any previous hydroseeding.

CARE DURING GERMINATION AND ESTABLISHMENT

Contractor shall care for seeded areas as necessary for successful germination. Care will include watering and weed control as necessary to achieve establishment of the specified seeded species after one growing season as specified below.

The contractor shall maintain the stand of grasses to ensure healthy growth of the seeded species. Work shall include mowing or weed-whacking for weed control, watering if necessary, and removal of invasive plants.

Watering shall be sufficient to achieve soil moisture to a depth of 2 inches or more and such moisture is uniform. Method of watering shall not erode or damage soil or grassed surfaces.

General Weed Control: Unless otherwise directed, mowing shall be as specified under Mowing for Weed Control for seed establishment. Weeds shall be mowed prior to weeds setting seed (by the end of July unless otherwise approved).

Control of Invasive and Aggressive Weeds: Invasive and aggressive weeds, including but not limited to mugwort, ragweed, knapweed, foxtail, crabgrass, and chicory must be cut or treated prior to going to seed. Herbicide treatment must be coordinated with MassDOT. Undesired species (such as chicory) introduced due to use of incorrect seed mix shall be removed at the Contractor's expense.

MOWING FOR WEED CONTROL

Mowing for weed control shall be completed after weeds have sprouted and show leaf and bud growth, but prior to setting seed, generally between July 7th and August 1st, unless directed otherwise by the MassDOT Landscape Architect and the Engineer.

**ITEM 765.635** (Continued)

Mowing height shall be as needed for weed control, generally to a height of 8 inches and not below 4 inches, unless directed otherwise. Mowing shall be with a brush hog mower or string trimmer other approved equipment. Conventional lawn mowers which cannot achieve the appropriate cut shall not be used.

Contractor shall give 48-hour notice prior to mowing work. Mowing shall only occur in dry sunny weather. Litter pickup should occur prior to mowing in all areas. If required, cut grass shall be raked and removed. Litter pickup and raking and removal of grass shall be incidental to the work.

Mowing equipment shall be approved by the Engineer prior to work.

OVER-SEEDING

Areas of bare ground greater than 2-3 feet in diameter shall be over-seeded with the specified mix during the appropriate season for seeding. Where required for overseeding mowing shall be as close to the soil as possible. Soil that is compacted shall be raked or otherwise roughened prior to over-seeding.

Over-seeding rates and methods shall those specified above under Materials and Methods. Following over-seeding, soil shall be lightly tamped to ensure seed to soil contact and areas shall be mulched with straw mulch and watered with a fine mist to moisten soil to a depth of at least 2 inches.

Over-seeding, mulch, watering, and all work for over-seeding shall be incidental.

DETERMINING SATISFACTORY GRASS ESTABLISHMENT

A well-established stand of the specified seeded species as determined by the Engineer and the MassDOT Landscape Architect will be required for Final Acceptance. The expectation is that an acceptable number and variety of the desired permanent seeded species (not the cover crop) will be visible. Generally:

- A minimum of 75% coverage by the specified permanent seeded species after one growing season. Of that percentage, generally, depending on the mix species:
    - At least 3 types of the permanent seeded grass species shall be visible.
    - At least 3 species of wildflowers shall be visible.
- There will be no significant gaps or bare soil (generally 2-3 feet in diameter or greater).
- There will be no more than 25% coverage by weed species.
- All soil shall be stabilized and there shall be no channeling or erosion.
- There will be no invasive or aggressive species within the stand at the time of acceptance.
- There shall be no evidence of seed from non-native mixes (i.e., clover) due to failure to clean the hydroseeding tank or using incorrect mix.

**ITEM 765.635** (Continued)

Invasive and aggressive weeds (such as mugwort, ragweed, knapweed, and chicory) must be cut or treated prior to going to seed for Interim Acceptance. Herbicide treatment must be coordinated with MassDOT.

A warm-season grass mix with perennials will not have uniform growth. A uniform stand of grass may indicate use of an incorrect mix.

ACCEPTANCE OF SEEDING AND ESTABLISHMENT WORK

Conditional Acceptance shall be based on proper application of seed as specified herein.

Interim Acceptance of Care. Seeding will be inspected by mid-July to assess germination and Establishment conditions as described above. When necessary for Interim Acceptance, areas shall be mowed prior to weed species producing seed and as specified above under Weed Control. ***Areas requiring weed control that are not mowed prior to weed seed dispersal will not be approved for Interim Acceptance.*** Seeding that shows good germination and is determined by the Engineer and Landscape Architect to not require weed control at time of inspection shall be accepted for Interim Acceptance payment.

Final Acceptance of Establishment shall be given upon satisfactory Establishment as described above.

If the seeded area fails to meet the requirements of Establishment by the end of the growing season, contractor shall propose and implement remediations and site shall be inspected during the following growing season after July 1st. All remediation shall be at the contractor's expense.

METHOD OF MEASUREMENT

Native Seeding and Establishment will be measured for payment by the square yard, complete in place.

BASIS OF PAYMENT

Native Seeding and Establishment will be paid at the Contract unit price by the square yard upon Conditional, Interim, and Final Acceptances as described above. This price shall include all submittals, seeding, rolling to ensure seed-to-soil contact, weed control other than mowing, water, over-seeding, labor, materials, equipment, and all incidental costs required to complete the work of establishing a satisfactory stand of grass.

Native seed and cover crop mixes shall be compensated under the respective items.

Site preparation, including raking, tilling, removal of debris and stones, and other work to the prepare site for seeding shall be compensated under loam placement or topsoil rehandled and spread as relevant to the project.

**ITEM 765.635** (Continued)

Mowing for weed control will be incidental to this item.

Schedule of payment shall be as follows:

30% upon Conditional Acceptance

20% upon Interim Acceptance of Care, except this amount will be reduced to zero and final payment will be reduced accordingly when areas requiring weed control are not mowed as specified in the Interim Acceptance criteria.

50% upon Final Acceptance of Establishment

**ITEM 767.121 SEDIMENT CONTROL BARRIER FOOT**

GENERAL

The work under this item shall conform to the relevant provisions of Subsections 670, 751 and 767 of the Standard Specifications and shall include the furnishing and placement of a sediment control barrier. Sediment control barrier shall be installed prior to disturbing upslope soil.

The purpose of the sediment control barrier is to slow runoff velocity and filter suspended sediments from storm water flow. Sediment barrier may be used to contain stockpile sediments, to break slope length, and to slow or prevent upgradient water or water off road surfaces from flowing into a work zone. Contractor shall be responsible for ensuring that barriers fulfill the intent of adequately controlling siltation and runoff.

Twelve-inch diameter (after installation) compost filter tubes with biodegradable natural fabric (i.e., cotton, jute, burlap) are intended to be the primary sedimentation control barrier.

For small areas of disturbance with minimal slope and slope length, the Engineer may approve the following sediment control methods:

- 9-inch compost filter tubes
- Straw bales which shall be trenched

No straw wattles may be used. Additional compost filter tubes (adding depth or height) shall be used at specific locations of concentrated flow such as at gully points, steep slopes, or identified failure points in the sediment capture line.

When required by permits, additional sediment barrier shall be stored on-site for emergency use and replacement for the duration of the contract.

Where shown on the plans or when required by permits, silt fence shall be used in addition to compost filter tubes and straw bales and shall be incidental to the item.

Sediment control barriers shall be installed in the approximate location as shown on the plans and as required so that no excavated or disturbed soil can enter mitigation areas or adjacent wetlands or waterways. Barriers shall be in place prior to excavation work. No work shall take place outside the barriers.

MATERIALS AND CONSTRUCTION

Prior to initial placement of barriers, the Contractor and the Engineer shall review locations specified on the plans and adjust placement to ensure that the placement will provide maximum effectiveness.

**ITEM 767.121** (Continued)

Barriers shall be staked, trenched, and/or wedged as specified herein and according to the Manufacturer's instructions. Barriers shall be securely in contact with existing soil such that there is no flow beneath the barrier.

Compost Filter Tube

Compost material inside the filter tube shall meet M1.06.0, except for the following: no peat, manure or bio-solids shall be used; no kiln-dried wood or construction debris shall be allowed; material shall pass through a 2-inch sieve; and the C:N ratio shall be disregarded.

Outer tube fabric shall be made of 100% biodegradable materials (i.e., cotton, hemp or jute) and shall have a knitted mesh with openings that allow for sufficient water flow and effective sediment capture.
Tubes shall be tamped, but not trenched, to ensure good contact with soil. When reinforcement is necessary, tubes shall be stacked as shown on the detail plans.

Straw Bales

Straw bales shall be used if shown on the plans or when specified by Orders of Condition or other permit requirements.

Bales should be placed in a single row, lengthwise on the contour, with ends of adjacent bales tightly abutting one another. All bales should be either wire-bound or string-tied. Straw bales should be installed so that bindings are oriented around the sides (rather than along the tops and bottoms) of the bales in order to prevent deterioration of the bindings.

The barrier should be entrenched and backfilled. A trench should be excavated the width of a bale and the length of the proposed barrier to a minimum depth of 4 inches. The trench must be deep enough to remove all grass and other material which might allow underflow. After the bales are staked and chinked (filled by wedging), the excavated soil should be backfilled against the barrier. Backfill soil should conform to the ground level on the downhill side and should be built up to 4 inches against the uphill side of the barrier.

Each bale should be securely anchored by at least 2 stakes or re-bars driven through the bale. The first stake in each bale should be driven toward the previously laid bale to force the bales together. Stakes or re-bars should be driven deep enough into the ground to securely anchor the bales. For safety reasons, stakes should not extend above the bales but should be driven in flush with the top of the bale.

The gaps between the bales should be chinked (filled by wedging) with straw to prevent water from escaping between the bales. Loose straw scattered over the area immediately uphill from a straw bale barrier tends to increase barrier efficiency. Wedging must be done carefully in order not to separate the bales.

**ITEM 767.121** (Continued)

When used in a swale, the barrier should be extended to such a length that the bottoms of the end bales are higher in elevation than the top of the lowest middle bale to assure that sediment-laden runoff will flow either through or over the barrier but not around it.

Sedimentation Fence

Materials and Installation shall be per Section 670.40 and 670.60 of the Standard Specifications and the following:

Sedimentation fence shall only be used if shown on the plans or when specified by Orders of Condition or other permit requirements.

When used with compost filter tubes, the tube shall be placed on a minimum of 8 inches of folded fabric on the upslope side of the fence. Fabric does not need to be trenched.

When used with straw bales, an 8-inch deep and 4-inch wide trench or V-trench shall be dug on the upslope side of the fence line. One foot of fabric shall be placed in the bottom of the trench followed by backfilling with compacted earth or gravel. Stakes shall be on the down slope side of the trench and shall be spaced such that the fence remains vertical and effective.

Width of fabric shall be sufficient to provide a 36-inch high barrier after fabric is folded or trenched. Sagging fabric will require additional staking or other anchoring.

Stakes

Stakes for anchoring compost filter tubes and straw bales shall be as shown on the plans and shall be a minimum
of 1x1 inch diameter x 4 feet hardwood stakes.

When used with silt fence, stakes for compost filter tubes shall be driven 12 inches into the ground. Stakes for straw bales shall be driven 16 inches into the ground.

Stakes of other material of equivalent strength may be used if approved by the Engineer.

MAINTENANCE

Maintenance of the sediment control barrier shall be per Section 670.60 of the Standard Specifications or per the Stormwater Pollution Prevention Plan (SWPPP), whichever is more restrictive.

**ITEM 767.121** (Continued)

The contractor shall inspect the sediment barrier in accordance with relevant permits. At a minimum, barriers shall be inspected at least once every 7 calendar days and after a rain event resulting in 0.25 inches or more of rainfall. Contractor shall be responsible for ensuring that an effective barrier is in place and working effectively for all phases of the Contract.

Barriers that decompose such that they no longer provide the function required shall be repaired or replaced as directed. If the resulting berm of compost within the fabric tube is sufficiently intact and continues to provide effective water and sediment control, barrier does not necessarily require replacement.

DISMANTLING & REMOVING

Barriers shall be dismantled and/or removed, as required, when construction work is complete and upslope areas have been permanently stabilized and after receiving permission to do so from the Engineer.

Regardless of site context, nonbiodegradable material and components of the sediment barriers, including photo-biodegradable fabric, plastic netting, nylon twine, and silt fence, shall be removed and disposed off-site by the Contractor.

For naturalized areas, biodegradable, natural fabric and material may be left in place to decompose on-site. In urban, residential, or other locations where aesthetics is a concern, the following shall apply:

- Compost filter tube fabric shall be cut and removed, and compost shall be raked to blend evenly (as would be done with a soil amendment or mulch). No more than a 2-inch depth shall be left on soil substrate.
- Straw bales shall be removed and disposed off-site by the Contractor. Areas of trenching shall be raked smooth and disturbed soils stabilized with a seed mix matching adjacent seeding or existing grasses (i.e., lawn or native grass mix).
- Silt fence, stakes, and other debris shall be removed and disposed off-site. Site shall be restored to a neat and clean condition.

METHOD OF MEASUREMENT

Sediment Control Barrier will be measured for payment by the Foot of Sediment Control Barrier within the specified limits directed by the Engineer.

**ITEM 767.121** (Continued)

BASIS OF PAYMENT

Sediment Control Barrier will be paid for at the contract unit price per Foot, which price shall include all labor, equipment, materials, maintenance, dismantling, removal, restoration of soil, and all incidental costs required to complete the work.

Silt fence, when used in conjunction with compost filter tubes or straw bales, will be incidental to this item.

Additional barrier, such as double or triple stacking of compost filter tubes, will be paid for per Foot of tube installed.

Barriers that have been driven over or otherwise damage by construction activities shall be repaired or replaced as directed by the Engineer at the Contractors expense.

**ITEM 767.122 COIR LOG BANK FOOT**

The work under this item shall conform to the relevant provisions of Subsections 101, 120, 170, 751, and 771 of the Standard Specifications and the following:

Coir Log Bank shall be used in locations as shown on the Drawings and/or locations required by the engineer, placed immediately between the wetland replication area and stream restoration area, to serve as a planted bank feature. Coir Log Bank shall not be used as a sediment control barrier outside of the intended purpose between the streambed restoration area and wetland replication areas.

## MATERIALS

Coir Log: Coir Log shall be biodegradable coir fiber cylindrical bundles. Inner core shall be 100 percent unsorted, well-cleaned, coir fiber uniformly distributed along the length of the log. The stuffed density of the coir fiber shall be a minimum of 9 pounds per cubic foot.

Outer netting shall be constructed from a minimum 3-ply high strength coir bristle twine. The netting shall have 2-inch by 2-inch rhombic openings with hand-knotted junctions. The average breaking strength of the coir twine shall be a minimum of 80 pounds. Production tolerance for all the above parameters shall not exceed plus or minus 10 percent.

Coir log diameter shall be sized as shown on the drawings. Typical lengths are supplied in 10 foot or 20-foot increments. Coir logs or coir netting may not be cut to decrease length and shall maintain the physical properties as supplied by the Manufacturer.

Wood Stakes: Stakes shall be oak or southern pine with dimensions as shown on the Drawings. Stakes shall be free from knots and other defects which would cause splitting.

Coconut Fiber Cord: Coconut fiber cord shall be two-ply braided cord with a breaking strength of 80 pounds, minimum 0.25-inch diameter.

Delivery, Storage and Handling: Protect materials from deterioration during delivery and while stored at site.

## CONSTRUCTION METHODS

General: Prior to placement of the coir log bank, the Contractor and the Engineer shall consult with the Wetland Specialist to review locations specified on the plans and adjust placement, if required, to ensure that the coir log positioning and configuration will provide maximum stability between the wetland replication area and stream restoration area.

**ITEM 767.122** (Continued)

Installation: Coir logs shall be staked and secured as shown on the Drawings, as specified herein, and/or as recommended by the Wetland Specialist or Fluvial Geomorphologist. The Contractor shall remove all underlying vegetation or debris to ensure that each coir log is securely in contact with soil, such that there is no flow beneath the log.

The coir log shall be placed parallel to the flow of the stream and shall be set below the final grade to a depth that allows for a two (2) to four (4) inch reveal of the log above grade, between the final streambed material and the wetland replication soils. The coir log shall be placed directly against the streambed material to provide retainment and structure until the wetland replication soils are backfilled against the opposite side of the log.

Wood stakes shall be driven parallel through both sides of the coir log at a typical spacing of 5 feet on center, unless site conditions warrant a closer spacing distance to ensure logs are firmly secured to the underlying soil. Stakes shall be driven through the coir log such that the stakes pierce the outer netting of the coir log. Stakes shall not extend more than 1 foot beyond the top of the log.

The coir log shall be drilled or pierced every two (2) to three (3) feet on center for placement of live cutting stakes in accordance with Item 799.775 Planting – Live Cuttings. Live cuttings shall not be used as a primary means of anchoring the coir log bank nor shall live cuttings be used as a substitute for the wood stakes.

When utilizing multiple logs for sediment control, each coir log shall be laced together end-to-end (creating a seam) with coir twine to create a continuous length. End-to-end lacing may be completed before or after placement, to facilitate handling.

Jute netting or similar erosion control blanketing applied over the wetland replication soils may extend over and toe-in beneath the coir log bank if such netting can be applied without detriment to the Coir Log Bank stability or to the live cuttings, at the approval of the Engineer.

Maintenance: Inspection of the Coir Log Bank shall be in accordance with relevant Wetland Replication and Streambed Restoration monitoring. If a breach or other failure of the barrier occurs, the log shall be immediately restored. Repair shall include replacement of entire defective segments. The Engineer must approve breech repair means and methods as well as outcome.

If the Coir Log Bank is damaged by equipment or undergoes a significant washout or other major failure, the Contractor shall replace the component in its entirety, at the discretion and approval of the Engineer and Wetland Specialist or Geomorphologist.

Disposition/Removal**:** The Coir Log Bank and wooden stakes are intended to be left in place to decompose on-site as a component of the wetland replication and streambed restoration design.

**ITEM 767.122** (Continued)

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 767.122 - Coir Log Bank will be measured for payment by the FOOT, complete in place and will be paid for at the Contract unit price per FOOT, which price shall include all labor, materials, equipment, and incidental costs required to complete the work.

Installation and care of live cuttings will be paid for separately under Item 799.775 Planting – Live Cuttings.

No separate payment will be made for coir log(s) follow-up maintenance and repairs but all costs in connection therewith shall be included in the Contract unit price bid.

**ITEM 767.91 TIMBER MATTING SQUARE YARD**

Work under this item shall conform to the plans and the relevant provisions of Section 767 and the following:

Timber Mats shall be used to support construction equipment when operating in wetlands. This item consists of furnishing, placing, maintaining, and removing Timber Matting as specified herein, as shown on the plans, and as required to protect existing soils during construction. Mats shall be within the area shown on the plans as necessary for construction access and staging. Existing soils shall be protected to the extent feasible.

At a minimum, material and methods shall follow Army Corp of Engineers Best Management Practices:
*https://www.nae.usace.army.mil/Portals/74/docs/regulatory/StateGeneralPermits/MA/ConstructionMatBMPs.pdf*

Relevant permit conditions and approvals shall also be followed.

MATERIALS & SUBMITTALS

Material and methods shall be submitted to the Engineer for approval. Submittal shall include a plan to show the proposed extent of matting, methods of preventing soil or other material from entering the wetland through gaps in the timber, procedure for inspections, method of removal and cleaning, and location of cleaning.

The timber construction mats shall be composed of heavy timbers joined together to form stable platforms installed over the surface of wetlands. Mats shall have all timber and rods intact.

Depending on site specific field conditions at the time of construction, multiple layers of Timber Mats and stringers may be necessary to support heavy equipment and to protect the underlying wetland.

As necessary, sediment control devices such as compost filter tubes shall be placed along edge of the Timber Mats to protect wetlands from sedimentation caused by construction vehicle traffic.

Mats shall be certified clean by the vendor prior to installation. The vendor shall submit proof of compliance. Clean is defined as being free of plant matter (stems, flowers, roots, etc.), soil, or other deleterious materials prior to being brought to the project site.

**ITEM 767.91** (Continued)

METHOD OF WORK

Prior to placement of mats, existing wetland limits and topography shall be assessed. Vegetation shall be cut flush. Care shall be taken to avoid removal of plant roots and to avoid soil disturbance.

Mats shall be spread evenly and smoothly to ensure direct contact with the soil at all points and placed parallel to the drainage flow direction. To the extent possible, mats shall be placed along the travel area so that individual boards are perpendicular to the direction of traffic. There shall be no gaps between the mats. Mats shall be placed on either side of wetland area to rest on firm ground.

For situations where the Contractor determines that stones or boulders shall be removed or relocated within wetland areas in order to install safe and level structure work pads or access roads, the boulders shall be moved in a manner which does not result in significant soil disturbance (i.e., pushing with a bull-dozer is not allowed). When there is a significant number of boulders that shall be removed, the Contractor shall consult with the Engineer prior to undertaking the work.

The stockpiling of stone, drill spoils, and other unconsolidated material on construction mats shall be avoided unless determined necessary due to access and work pad constraints. Under this scenario, composite mats and/or other approved methods and materials shall be placed on top of the timber mats to prevent spoils from migrating through the gaps between timbers or spilling over the sides of the matting. The stockpiled spoil shall be removed from the work zone and properly disposed of in uplands approved by the Engineer or hauled off site for proper disposal. Material that falls into or otherwise enters the wetlands shall be removed by hand following removal of the mats.

Sediment controls and stone or wood chip ramps may be installed to promote a smooth transition to and minimize sediment tracking onto the timber mats. Geotextile may be added beneath stone or wood chip transitions to facilitate removal, as necessitated by site or permit conditions.

Mats shall be placed per the manufacturer’s instruction. If requested by the Engineer, method of installation and final placement of mats shall be approved by the Wetland Specialist.

**ITEM 767.91** (Continued)

MAINTENANCE

Mats shall be monitored to assure that they are functioning correctly and shall be inspected for any defects or structural problems. Mats covered with soils or construction debris shall be cleaned and the materials removed and disposed of in an upland location. The material should not be scraped and shoveled into the resource area. Mats that become imbedded must be reset or layered to prevent mud from covering them or water passing over them. Worn timber or plywood used as a wearing surface shall be replaced as required and to the satisfaction of the Engineer.

REMOVAL OF MATS

Clean mats after use to remove any invasive plant species seed stock. Cleaning methods may include but are not limited to, shaking or dropping mats in a controlled manner with a piece of machinery to knock off attached soil and debris, spraying with water or air, sweeping, or exposing the mats to high temperatures. The location and method of cleaning shall be approved by the Engineer.

Upon completion of construction, mats shall be removed. Matting should be removed by "backing" out of the site, removing mats one at a time.

If rutting or soil compaction following construction mat removal is observed, the area shall be returned to pre-existing conditions consistent with the surrounding area, by light hand raking or by back-blading with machinery. Deeper ruts shall be graded using available, loose soil from the work area.

Care shall be taken to inspect wetland crossings as each mat is removed to ensure any undesirable materials are properly removed and disposed of off- site.

If determined necessary by the Engineer, to enhance the functions of an altered wetland, a wetland seed mix shall be sown throughout the disturbed areas. In most instances, natural re-vegetation is an appropriate means to re-establish the wetland plant community in lieu of seeding.

Proper snow removal on construction mats shall avoid the formation of ice. To avoid the formation of ice, snow shall be removed from construction mats before applying sand. Prior to their removal from wetlands, sand shall be collected from the construction mats and disposed of in an upland area. A round street sweeping brush mounted on the front of a truck may be an effective way to remove snow from construction mats. Propane heaters may also be suitable solutions for snow removal and/or de-icing of swamp mats. Once construction mats are removed, wetlands shall be inspected for build-up of sand that may have fallen through swamp mats, therefore care shall be taken to inspect wetland crossings carefully as each mat is removed to ensure sand is properly removed and disposed of off-site.

**ITEM 767.91** (Continued)

METHOD OF MEASUREMENT

Timber matting will be measured for payment by the square yard, complete in place, maintained and removed. Overlapped matting will not be measured for payment.

BASIS OF PAYMENT

Timber matting will be paid for at the Contract unit price per square yard, which price shall include all labor, materials, equipment, sediment barriers specific to matting, geotextile, stone, wood chips, cutting of existing vegetation, and incidental costs required to complete the work of installation, maintenance, removal, and restoration of soil and vegetation, if required.

**ITEM 799.775** **PLANTING – LIVE CUTTINGS** **EACH**

The work to be done under this Item shall conform to the relevant provisions of Standard Specifications Section 771, supplemented with the following:

MATERIAL

A variety of plant species shall be used, depending on availability. Mix shall be determined by the Landscape Architect and/or Wetland Specialist. Species shall be 1) native species; 2) most appropriate for conditions; and 3) appropriate for use as a live cutting. Species may include, but not be limited to:

*Salix discolor* (Pussy Willow),
*Salix nigra* (Black Willow),
*Cornus sericea* (Redosier Dogwood),
*Cornus amomum* (Silky Dogwood),

**Planting Season:** Stakes shall be planted only during dormancy, prior to any growth or blooms. The season of planting shall be November 1 to December 15; and February 15 to March 31. Stakes shall not be planted in frozen ground.

**Live cuttings:** referred to herein shall be dormant live stakes. The stakes shall be a minimum three to four feet (3'-4') in length, longer preferred, and a minimum of one half inch (½") in diameter. Provide live stakes harvested locally, within the same physiographic ecoregion and plant hardiness zone. Stakes shall have side branches removed and bark intact. Any leaves and branches on stakes shall be removed prior to planting. Basel ends shall be cut at a 30 to 45-degree angle for insertion into the soil, tops shall be cut square. At least two to five (2-5) bud scars are required near the top to facilitate branch development. Live stakes shall not be stored for more than two (2) weeks after they have been prepared for installation.

Stakes must be fresh when brought to site and shall be planted within two (2) days of arriving on site. If stored on site after arrival, the stakes shall be cool, moist, and shaded until planted, with the bottoms of the stakes soaked in water. Dried stakes shall be rejected.

CONSTRUCTION METHODS

Care shall be taken to ensure the correct end of the stake is planted in the coir log and ground. Pilot holes shall be drilled into the coir log every 2-3 feet apart on center prior to installation of the live stakes. one-fifth to two-fifths of the length of the live stake should be installed into the ground beneath the coir log with a minimum of eight-inch reveal of the stake above the surface of the coir log. Do not split the stakes during installation. Stakes that split should be removed and replaced. Stakes may be driven into the ground with a rubber mallet, and pilot holes may be made in harder soils with a metal bar or re-bar, prior to inserting the stakes. Stakes shall be planted at 90-degrees to surrounding grade. Live cutting stakes shall not serve as the primary anchoring method of the coir log to the ground.

**ITEM 799.775** (Continued)

The layout of species shall be in groupings of three (3), depending on species available or per the Landscape Architect or Wetland Specialist. Spacing shall be two to three (2-3) feet between stakes throughout the length of the coir log bank.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Measurement and payment shall be at the Contract unit price for each cutting planted.

**ITEM 983.521 STREAMBED RESTORATION CUBIC YARD**

DESCRIPTION

This work shall consist of replacing riverbed material in the proposed culvert replacement and channel restoration areas. The streambed restoration shall replicate the existing natural channel bed outside the work area in terms of material, roughness, shape, profile, and appearance. The ultimate product will, to the extent possible, replicate the function and appearance of the natural stream channel, as illustrated by photo-documentation herein.

The Contractor shall coordinate with his/her sub-contractors to ensure all required equipment is available on-site to complete the work in this manner. The streambed restoration is required to comply with environmental permits issued for the project. MassDOT Environmental Services will provide a Fluvial Geomorphologist (Geomorphologist) to provide a pre-construction meeting, on-site oversight during construction, and assistance during streambed restoration construction to ensure the restoration is constructed as shown on the Plans, as required by these Special Provisions, and in accordance with permit requirements.

At least 30 days prior to the commencement of construction, the Contractor shall coordinate with David Paulson (MassDOT Wildlife Unit Supervisor, (857) 262-3378 / david.j.paulson@state.ma.us) to set up an initial (virtual or in-person) meeting with MassDOT's Geomorphologist, Contractor, and Resident Engineer. At this meeting, the Geomorphologist will provide an overview of the restoration work and material requirements. The Contractor should be prepared to discuss the anticipated means, methods, and schedule.

Process Approval:

In lieu of a mockup, the Contractor shall schedule an onsite meeting to discuss the streambed restoration with the Geomorphologist and respective parties from MassDOT within two weeks of initiating work on the streambed. The Geomorphologist shall be onsite to review the initial streambed restoration. The Contractor shall provide the Geomorphologist adequate access to observe, direct, and inspect the channel restoration work throughout the duration of the removal, stockpile, and reinstallation of the existing streambed material. If material is being brought to the site for streambed restoration, the Contractor shall provide the Geomorphologist with photographs to see the material prior to the site visit.

MATERIAL

The streambed material excavated from the existing streambed shall be removed and stockpiled to facilitate reinstallation and replication of the natural streambed. Removal and stockpiling shall be per Item 148.01. The excavated streambed material shall also be reused to fill the voids in any proposed scour protection.

**ITEM 983.521** (Continued)

In the event that the excavated material is not suitable and there is not enough available suitable material, additional streambed restoration material shall be locally sourced that matches the composition of the existing native river bed. The following gradation sampled from a similar streambed surface shall be used as a guide.

Stream Bed Material Gradation

| Particle | Percent (%) Composition |
|---|---|
| Boulder | 5 |
| Cobble | 80 |
| Gravel | 10 |
| Sand | 5 |

The streambed material shall be approved by the Resident Engineer and Geomorphologist prior to use.

Related Items

Riprap Stone shall conform to the requirements of Item 983.1 and shall be paid for under that item.

CONSTRUCTION

The streambed material shall be installed in the channel, as depicted on the plans, to an average thickness of 1.0 feet, with variations in thickness as necessary to replicate existing channel conditions. If voids exist, the initial placement of streambed material shall fill the voids in the underlying material. Fill voids by shaking stone with the teeth of an excavator bucket, hand tamping with metal tamping rods, and by spraying water to settle fines between large stones. Plate compactors shall not be used. The purpose of filling the voids is to prevent subsurface flow where surface water disappears into large voids between the stone fill below the channel bed surface during low flow conditions. The final streambed shape and appearance shall be finalized in the field as directed by the Geomorphologist.

Reinstallation of the stockpiled streambed material shall be placed to restore streambed habitat and fish passage. The streambed materials shall be installed during normal low-water conditions behind cofferdams in accordance with the environmental permits.

Once all material has been placed in the stream channel and approved by the Geomorphologist and Resident Engineer, the Contractor shall remove the cofferdams in such a way as to slowly wet the stream to minimize the initial sediment pulse. Every attempt shall be made to minimize the downstream movement of sediment.

**ITEM 983.521** (Continued)

The final streambed shall maintain the general configuration of the existing streambed bedform and there shall be minimal subsurface flow upon final inspection by the Resident Engineer and Geomorphologist. The project must be passable by fish, other aquatic organisms, and wildlife following construction.

The streambed restoration to be measured for payment will be the complete and accepted work for restoration of the streambed within the limits shown on the Plans as approved by the Resident Engineer and Geomorphologist.

METHOD OF MEASUREMENT

Streambed Restoration shall be measured for payment by the cubic yard, complete in place.

BASIS OF PAYMENT

Streambed restoration will be paid for on a lump sum basis. Payment will be full compensation for transporting, and placing the material specified and for furnishing all labor, tools, equipment, testing, and incidentals necessary to complete the work. Additional streambed restoration material required beyond existing to be re-used, shall be compensated under this item.

The Geomorphologist will be provided by MassDOT at no cost to the Contractor.

Disposal of excess streambed material will be paid for under Item 148.
Removal and stockpiling existing streambed material will be paid for under item 148.01.
Riprap will be paid for under Item 983.1.

FIGURES



***Figure A: Natural channel upstream of the culvert under low flow (looking upstream).***



***Figure B: Natural channel downstream of the culvert under low flow (looking downstream).***



***Figure C: Deposited cobble and boulder after the flood some of which will be harvested and stockpiled for streambed restoration.***

**ITEM 991.1 CONTROL OF WATER – STRUCTURE NO. L-08-053 LUMP SUM**
**ITEM 991.12 CONTROL OF WATER – STREAM RELOCATION LUMP SUM**

GENERAL

The work under this item shall conform to the relevant provisions of Section 140.60 of the MassDOT Standard Specifications, the Plans, and the following:

Work under Item 991.1 shall include all work necessary to control water during demolition of the existing culvert and the construction of the proposed culvert. Stream water shall be diverted and controlled in such a way that all existing and proposed culvert and wingwall elements are removed and constructed completely in the dry.

Work under Item 991.12 shall include all work necessary to control water to construct the downstream relocation work as shown on the Plans. All downstream relocation shall be completed in the dry.

The Contractor shall design, furnish, install, maintain, and remove all temporary control of water systems required to perform the construction of Structure No. L-08-053 and downstream stream relocation activities. The Contractor shall determine all means and methods, sequencing, and temporary works necessary to divert, convey, or otherwise control water and stream flows to complete the work in a safe and dry condition.

The operations of Control of Water neither shall cause the accumulation of siltation nor any adverse effect to the water or the environment. As much work as possible shall be conducted from outside the stream banks.

The system shall be comprised of bulk sandbags or portable cofferdams or other approved impervious curtains. If required by the Contractor's design, Item 991.1 shall also include a stream bypass system designed to handle the 2-year flood discharge, and dewatering to facilitate construction activities. Work under this Item also includes filter fabrics, stone, sedimentation/retention tanks and all other means to collect, settle, and discharge water into the Reservoir Brook during construction.

Special care shall be given to minimize disturbance to the stream and adjacent banks. All in-stream work shall take place during the stream's low flow period (July 1 – September 30).

**ITEM 991.1 & 991.12** (Continued)

SUBMITTALS

Prior to the commencement of any work at the site, the Contractor shall submit to the Engineer for review and approval, a detailed plan for water control for the entire project (i.e. culvert construction and downstream relocation construction), including a timetable and details specific to each critical phase of construction (i.e. timing temporary/permanent utility moves, culvert/wingwall erection, phasing of culvert/downstream work, etc.). The submittal shall include working drawings and calculations, detailing the methods and materials proposed to account for all anticipated loads and construction conditions necessary to permit the work while maintaining a safe work area and protecting property from damage.

The water control plan (including all drawings and calculations) must be prepared and stamped by a Professional Engineer registered in the Commonwealth of Massachusetts.

The Water Control Plan shall include a Sedimentation and Erosion Control Plan and a Water Flow Diversion and Containment Plan. The plans shall be adequate in detail to define specifics regarding materials, sizes, connections and incidental items associated with the work. The furnishing of such plans shall not serve to relieve the Contractor's responsibility for the safety of the work or his/her responsibility for the successful completion of the project. The proposed plans submitted shall be designed and stamped by a Professional Engineer registered in the Commonwealth of Massachusetts.

The Contractor shall make his/her own evaluation of existing conditions, groundwater level, water flow, the effects of his/her proposed temporary works and construction methods, and shall provide in his/her design for all loads and construction conditions necessary to permit construction of the specified improvements while maintaining public safety, and protecting completed work and all third party property from damage due to his operations.

Sedimentation and Erosion Control Plan:

The Contractor shall submit to the Engineer, plans and details of the intended sedimentation/retention tank system that will be used along with dewatering techniques, and its location at the site. All discharge resulting from dewatering activities shall be directed to temporary sedimentation/retention tank at locations approved by the Engineer. At no time shall said discharge be directly released into the stream. The proposed plan shall include methods and equipment necessary to discharge water from the sedimentation treatment basins. Sedimentation/retention tank shall be sized appropriately to adequately dewater from the proposed work zone while allowing sufficient time for sediments to settle out of the water, and with a depth such that a minimum of 18 inches of freeboard is maintained throughout its use.

**ITEM 991.1 & 991.12** (Continued)

Water Flow Diversion and Containment Plan:

The Contractor shall submit plans and details along with a complete description showing any proposed systems for control of water and dewatering plan to the Engineer for his approval prior to the start of the work. The proposed plan shall include methods and equipment necessary to perform the work and shall include water discharge methods and equipment to bring water from the work zone to sedimentation/retention tank.

METHODS

The system shall be designed so that there are no adverse effects on the adjacent properties. The control of water system shall be sized in such a way that the system is overtopped with elevated stream water before any adjacent properties are inundated.

Where sandbags are used, the bags shall not decay nor rip or tear during the installation, its service life within the waterway, or during the removal process. The Contractor shall not disturb the stream bed in order to avoid migration of silts and sands further downstream. All in-stream work required to install, adjust and remove the control of water system must be performed by hand or by hoisting equipment positioned upland.

The Contractor is responsible for researching the seasonal groundwater levels and flow characteristics of the Reservoir Brook to determine appropriate details.

Measures to control the discharge of sediment or pollutants into the water resource areas shall include, but not be limited to the following:

1. Site construction areas outside the buffer zones and on relatively flat ground.
2. Management of construction operations involving hazardous materials, such as refueling and maintenance of equipment within the resource areas.
3. Formulation of contingency plans to control accidental spillage from potentially hazardous materials.
4. Installation and continuous maintenance of water control measures throughout the project.
5. Treatment of all discharge resulting from dewatering activities through a sedimentation/retention tank to control turbidity. At no time shall the discharge from dewatering activities be directly released into a resource area.
6. Perform as much work as possible outside the stream banks.
7. Scheduling of work within the resource areas to avoid periods of high flood (e.g., spring floods) and inclement weather.

**ITEM 991.1 & 991.12** (Continued)

These measures shall be maintained for the duration of the contract.

The locations of any sedimentation/retention tank will be determined by the Contractor based on the selected methods of construction. Placement of the tank shall be in an upland area that is within the existing right of way and temporary easements.

A sumping basin shall be constructed to collect any stream waters able to bypass the diversion system that may enter any work areas. The basin shall be equipped with a pump to convey waters to a sedimentation/retention tank. Water shall be discharged downstream once passing through the sumping basin and sedimentation/retention tank. No waters pumped from the work areas shall be discharged back to the stream until sediment is filtered using the sedimentation/retention tank.

All dewatering and related water control work shall be conducted in such a manner as to prevent siltation or contamination of the waterway. At a minimum, the sedimentation/retention tank shall be constructed of an earthen berm lined with geotextile fabric and surrounded by staked hay bales. The tank shall meet or exceed the following criteria:

1. The size and location of the tank shall be determined based on the size of the Contractor's pump and the anticipated groundwater levels.
2. The outlet/weir of the sedimentation/retention tank shall not cause erosion of the surrounding area. An approved method of controlling erosion, such as an erosion control blanket, stone, etc., shall be used at the outlet of the tank.
3. The Contractor shall not allow any sediment within the sedimentation/retention tank to accumulate to a depth of greater than 12 inches at any point in the tank, nor shall the water level be allowed to rise to a height of more than 24 inches.
4. The sedimentation/retention tank shall be designed with a minimum of 18 inches of freeboard, which must be maintained at all times.
5. The Contractor shall inspect the sedimentation/retention tank at least daily when in operation.
6. Damages shall be repaired immediately.
7. The sedimentation/retention outlet shall be cleaned daily.
8. The sediments within the sedimentation/retention tank shall be disposed of as approved by the Engineer.

Upon completion of water control, the materials and equipment used to maintain the cofferdam(s) (if needed) and sumping basin(s) and sedimentation/retention tank (including the temporary riprap for dewatering discharge) shall become the property of the Contractor and shall be removed by the Contractor from the site. The area affected shall be restored to its natural condition in a manner subject to the Engineer's approval.

The Contractor is advised that the effectiveness of the water control method used will vary based on the field conditions and the time at which the actual excavation work is being performed. The Engineer has the right to order the Contractor to stop all excavation operations when in his

**ITEM 991.1 & 991.12** (Continued)

judgment the Contractor's water control operations are failing to produce adequate results or are posing a threat to the environment.

BASIS OF PAYMENT

Control of water – Structure No. L-08-053 and Control of Water – Stream Relocation will be paid for at the Contract Lump Sum price, which will include all labor, materials, equipment, engineering, and incidental costs required to complete the work as indicated on the Contract Documents. Any riprap used for dewatering discharge will be considered incidental to the work and will be paid for under this Item.

In general, the payment method for Items 991.1 and 991.12 is partial progressive payment of the Lump Sum Contract Bid Price of each Item. The partial payment schedule will be as follows:

- The first payment of Items 991.1 and 991.12 (60% of the Lump Sum bid price) will be made upon complete installation of the water control system to the satisfaction and approval of the Engineer.
- The final payment of Items 991.1 and 991.12 (40% of the Lump Sum bid price) will be made upon the satisfactory removal of the water control system after bridge construction is complete.

All adjustments and repositioning of water control shall be considered as included under this item.

No separate payment will be made for engineering or any adjustments and repositioning of the control of water, but all costs in connection therewith shall be included in the Contract Lump Sum price.

# Attachment I – Sediment Sampling Plan

Memorandum

Jacobs

## Sediment Sampling Plan for WQC Dredge

| | |
|---|---|
| **Date:** | February 11, 2026 |
| **Project name:** | Leominster – Pleasant Street Culvert Replacement |
| **MassDOT Project no:** | 613865 |
| **Attention:** | Courtney Walker, MassDOT<br>Heidi Davis, MassDEP<br>Tyler Lewis, MassDEP |
| **Company:** | Jacobs |
| **Prepared by:** | Clay Hutchinson, Jacobs |
| **Attachments:** | Figure 1 – USGS Locus Map<br>Figure 2 – Sediment Sampling Plan |

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United States
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F +1.617.242.9824
Jacobs.com

# 1. Introduction

Jacobs is submitting this Sediment Sampling Plan on behalf of the Massachusetts Department of Transportation – Highway Division (MassDOT) to support a Dredge Water Quality Certification (BRP WW 08 Minor Project Certification) being filed for the bridge replacement of the Pleasant Street over Reservoir Brook crossing and downstream streambed restoration (Figure 1 – USGS Locus Map). The proposed work will result in excavation within Waters of the United States (WOTUS) within the Commonwealth to exceed 100 cubic yards of material. The Project will result in the removal of approximately 379 cubic yards of material from Reservoir Brook. Therefore, sediment sampling within the stream channel in accordance with 314 CMR 9.07 is required.

# 2. Existing Conditions

The Site is located approximately 0.5 miles west of Route 12 within the intersection of Colburn Street and Pleasant Street. The Project extent follows the existing streambed and extends approximate 75 feet to the northwest and 440 feet to the southeast of the Reservoir Brook crossing under Pleasant Street. The existing culvert under Pleasant Street replaced a previous collapsed 5'x3' culvert with a temporary 36" corrugated plastic pipe as an emergency replacement. The current land use of the Project area is identified on MassMapper as developed open space, deciduous forest, and residential, with previous land use (year 1971) identified as residential.

According to the MADEP Waste Site & Reportable Releases database, there is one listed Disposal Site within 200 ft of the Project limits. The Disposal Site is classified as a tier 1 release site and is, located at 192 Pleasant Street (Release Tracking Number (RTN) 2-0016857). There are no USEPA Brownfield properties, TSCA properties, Superfund sites, or MassDEP Oil and or Hazardous Material Sites with Activity and Use Limitations (AULs) within or adjacent to the Project limits.

Soil to be removed from the Project area shall not be assumed to be uncontaminated and will be evaluated prior to off-site management for potential contamination with hazardous materials. No

soil will be disposed of off-site without proper assessment by the contractor and approval from the Resident Engineer (RE) or the District Environmental Engineer (DEE).

Three sediment samples will be collected through hand auguring between STA 101 and STA 106, within the areas where dredging of sediment deposits is anticipated. **Table 1**, below, describes the approximate location of each sediment sample. Sediments deposited as a result of the 2023 flood event have been determined to be an average depth of two feet above the parent streambed materials, requiring a dredge depth between 1.5 and 2.5 feet within Reservoir Brook. Where the project will excavate existing parent soils outside of the stream channel, and absent of sedimentation, observation and testing will be conducted by a Project LSP prior to stockpiling and removal from or reuse on the Project Site during Construction Phase activities, in accordance with the applicable MassDOT Dredging and Stockpiling of Materials and Disposal of Soils provisions.

**Table 1 – Sediment Sample Locations (Within Proposed Dredge Areas)**

| Sample ID | STA | Location |
|---|---|---|
| 1 | 101+26.1 | Immediately upstream of the proposed culvert, approximately 24 feet northwest of Pleasant Street. |
| 2 | 104+75.4 | Within the stream channel, approximately 117 feet to the south of Pleasant Street. |
| 3 | 105+38.3 | Within the existing stream channel, at the divergence of the previous stream channel that was bypassed during the 2023 storm event, approximately 278 feet to the south of Pleasant Street. |

The samples collected will be picked up the day of sampling for analysis by a courier sent by ESS Laboratory (a Massachusetts Certified Laboratory). To the best of our knowledge, to date, no analysis has been performed within the stream at this location.

The three sediment samples collected will be tested for:

- Metals (Arsenic, Cadmium, Chromium, Copper, Lead, Nickel, Mercury, Zinc)
- Polychlorinated Biphenyls (PCBs) Pesticides
- Extractable Petroleum Hydrocarbons (EPH)
- Polycyclic Aromatic Hydrocarbons (PAHs)
- Semi-Volatile Organic Compounds (SVOCs)
- Total Organic Compounds (TOCs)
- Percent Water
- Grain Size

The analysis is anticipated to take up to two to three weeks for completion.

## 3. Sampling Equipment

A stainless steel telescoping hand augur with a corer end piece will be used to collect the sediment samples. Samples will be placed in clean buckets to be transferred to inert glass or plastic containers to be sent to an approved laboratory for analysis.

## 4. Site Contacts

The locations of the sediment sampling will occur within land owned by the City of Leominster and the Wass Meadow Realty Trust. The City and the Realty Trust will be notified prior to sampling. Persons responsible for the sediment sampling include:

- **Jacobs:**
  - Clay Hutchinson, Environmental Scientist
    Clay.Hutchinson@jacobs.com
    508-868-2115

  - Phillip Lanergan, Geotechnical Manager (Sediment Sampling Project Manager)
    Phillip.lanergan@jacobs.com
    617-963-3140

In the event of "suspect" contamination or previously unknown conditions, contact the Geotechnical Manager.

## 5. Health and Safety

Appropriate personal protective equipment (PPE) must be worn such as a high visibility vest and waders. Samples will be collected during lower flow river conditions. Precautions will be also taken to avoid cross-contamination of samples.

## 6. Sediment Sampling Oversight

Three sediment samples (see Figure 2 – Sediment Sampling Plan) will be taken at a depth of approximately three feet (via hand auger) or at refusal, if less than three feet, below the streambed by the environmental professional. To ensure sample documentation accuracy, the Geotechnical Manager will oversee the sediment coring and will photo-document the sediment conditions for each sample location, prepare field notes documenting the sediment coring activities, sediment descriptions, visual/olfactory observations, and any instances of "suspect" contamination, and observe and screen sediment with a PID at 1-ft intervals to a depth of three feet maximum.

## 7. Sampling Plan

The following sampling procedures are guidelines to be followed during the sediment sampling program to assist with determining where (location and depth) to collect sediment samples for analysis:

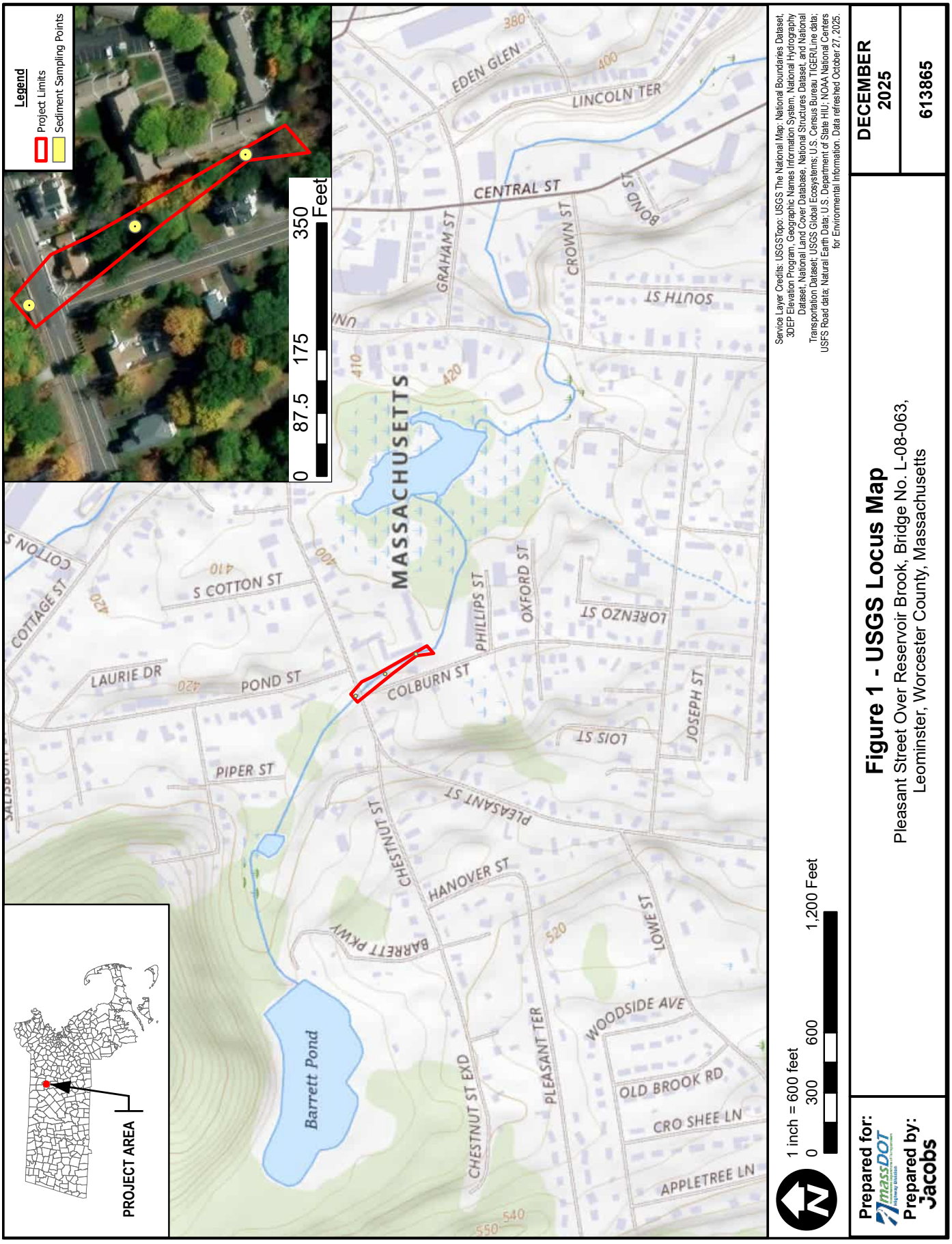
- Three (3) sediment cores will be collected.

- Sediment samples will be collected via a hand augur and will be advanced to a depth of three (3) feet below streambed or to refusal if less than three (3) feet, at locations shown on the Sediment Sampling Plan.

- To ensure representation of all three locations proposed for dredging, samples shall not be composited. This will ensure that each sample is substantively representative to each dredging location.

The attached Sediment Sampling Plan depicts the locations of the three proposed exploratory sediment coring locations. Jacobs scientists will collect samples, characterize soils, and record screenings.

The three sediment samples will be collected and submitted for analysis of EPHs, PCBs, SVOCs, Metals, Pesticides, TOC, percent water, and grain size using proper collection and chain-of-custody procedures. A MA certified laboratory will be utilized.


Legend
Project Limits
Sediment Sampling Points
0
87.5
175
350
Feet
PROJECT AREA
MASSACHUSETTS
Barrett Pond
EDEN GLEN
LINCOLN TER
CENTRAL ST
BOND ST
GRAHAM ST
CROWN ST
SOUTH ST
S COTTON ST
COTTAGE ST
LAURIE DR
POND ST
COLBURN ST
PHILLIPS ST
OXFORD ST
LORENZO ST
LOIS ST
JOSEPH ST
PIPER ST
PLEASANT ST
CHESTNUT ST
HANOVER ST
BARRETT PKWY
LOWE ST
WOODSIDE AVE
OLD BROOK RD
CRO SHEE LN
APPLETREE LN
CHESTNUT ST EXD
PLEASANT TER
1 inch = 600 feet
0
300
600
1,200 Feet
Service Layer Credits: USGSTopo: USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road data; Natural Earth Data; U.S. Department of State HIU; NOAA National Centers for Environmental Information. Data refreshed October 27, 2025.
Figure 1 - USGS Locus Map
Pleasant Street Over Reservoir Brook, Bridge No. L-08-063,
Leominster, Worcester County, Massachusetts
Prepared for:
massDOT
Highway Division
Prepared by:
Jacobs
DECEMBER
2025
613865

3 PROPOSED CONDITIONS.DWG Plotted on 12-Dec-2025 12:57 PM

SHEET 1 OF 1

FIGURE 2 - SEDIMENT SAMPLE PLAN

CULVERT REPLACEMENT PROJECT
PLEASANT STREET OVER RESERVOIR BROOK
BRIDGE L-08-053
LEOMINSTER, MASSACHUSETTS
DECEMBER 12, 2025

= Approximate locations of Streambed Sampling

SCALE: 1" = 40'

Hutchinson, Clay

From: Davis, Heidi (DEP) <heidi.davis@mass.gov>
Sent: Wednesday, February 11, 2026 4:53 PM
To: Walker, Courtney L. (DOT); Lewis, Tyler (DEP)
Cc: Ciaramicoli, Kim; Hutchinson, Clay; Iannelli, Jaime (DEP)
Subject: [EXTERNAL] RE: Leominster - Pleasant Street - Sediment Sampling Plan
Attachments: 613865_Pleasant Street Culvert_Sediment Sampling Plan_2026-02-11.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

**This Message Is From an External Sender**
This message came from outside your organization.

Thanks, Courtney. Per this email, MassDEP approves the updated sediment sampling plan.

Best,
Heidi

Heidi M. Davis
Senior Wetland Analyst
Highway Unit Supervisor
Wetlands Program, Boston Office
MassDEP
339-225-2332

From: Walker, Courtney L. (DOT) <Courtney.L.Walker@dot.state.ma.us>
Sent: Wednesday, February 11, 2026 2:16 PM
To: Lewis, Tyler (DEP) <Tyler.Lewis@mass.gov>; Davis, Heidi (DEP) <heidi.davis@mass.gov>
Cc: Ciaramicoli, Kim <kim.ciaramicoli@jacobs.com>; Clay.Hutchinson@jacobs.com; Iannelli, Jaime (DEP) <Jaime.Iannelli@mass.gov>
Subject: RE: Leominster - Pleasant Street - Sediment Sampling Plan

Hi Tyler,

The Sediment Sampling Plan has been updated with the dredge depths stated under Section 2 on Page 2. The overall average depth of sedimentation within the stream channel is two feet, with anticipated depth of dredging of 1.5 to 2.5 feet.

Let me know if you have any questions.

Thanks,
Courtney

Courtney Walker
Wetlands and Water Resources Coordinator
MassDOT – Highway Division
10 Park Plaza, Boston MA 02116
857-262-0757 | courtney.l.walker@dot.state.ma.us

From: Lewis, Tyler (DEP) <Tyler.Lewis@mass.gov>
Sent: Tuesday, February 10, 2026 9:13 AM
To: Walker, Courtney L. (DOT) <Courtney.L.Walker@dot.state.ma.us>; Davis, Heidi (DEP) <heidi.davis@mass.gov>
Cc: Ciaramicoli, Kim <kim.ciaramicoli@jacobs.com>; Clay.Hutchinson@jacobs.com; Iannelli, Jaime (DEP) <Jaime.Iannelli@mass.gov>
Subject: RE: Leominster - Pleasant Street - Sediment Sampling Plan

Courtney,

I can't seem to find where the dredge depth is stated in the plan you attached. Could you please direct me to the section it states this? If it does not, could it please be added?

Thank you,

Tyler

From: Walker, Courtney L. (DOT) <Courtney.L.Walker@dot.state.ma.us>
Sent: Monday, February 9, 2026 12:48 PM
To: Davis, Heidi (DEP) <heidi.davis@mass.gov>
Cc: Ciaramicoli, Kim <kim.ciaramicoli@jacobs.com>; Clay.Hutchinson@jacobs.com; Lewis, Tyler (DEP) <Tyler.Lewis@mass.gov>; Iannelli, Jaime (DEP) <Jaime.Iannelli@mass.gov>
Subject: RE: Leominster - Pleasant Street - Sediment Sampling Plan

Hi Heidi,

Please see the revised sediment sampling plan with the depth of dredging specified (3 feet).

Let me know if there are any other comments.

Thank you!

Courtney Walker
Wetlands and Water Resources Coordinator
MassDOT – Highway Division
10 Park Plaza, Boston MA 02116
857-262-0757 | courtney.l.walker@dot.state.ma.us

From: Davis, Heidi (DEP) <heidi.davis@mass.gov>
Sent: Friday, January 9, 2026 9:41 AM
To: Walker, Courtney L. (DOT) <Courtney.L.Walker@dot.state.ma.us>
Cc: Ciaramicoli, Kim <kim.ciaramicoli@jacobs.com>; Clay.Hutchinson@jacobs.com; Lewis, Tyler (DEP) <Tyler.Lewis@mass.gov>; Iannelli, Jaime (DEP) <Jaime.Iannelli@mass.gov>
Subject: RE: Leominster - Pleasant Street - Sediment Sampling Plan

Good morning, Courtney –

Thank you for forwarding the sediment sampling plan for the Pleasant Street culvert. What is the anticipated depth of dredging? If the proposed sample depth does not match or exceed the proposed dredge depth, please revise the plan accordingly.

Thank you –
Heidi

Heidi M. Davis
Senior Wetland Analyst
Highway Unit Supervisor
Wetlands Program, Boston Office
MassDEP
339-225-2332

---

From: Walker, Courtney L. (DOT) <Courtney.L.Walker@dot.state.ma.us>
Sent: Wednesday, December 31, 2025 9:58 AM
To: Davis, Heidi (DEP) <heidi.davis@mass.gov>; Lewis, Tyler (DEP) <Tyler.Lewis@mass.gov>
Cc: Ciaramicoli, Kim <kim.ciaramicoli@jacobs.com>; Clay.Hutchinson@jacobs.com
Subject: Leominster - Pleasant Street - Sediment Sampling Plan

Good morning, Heidi and Tyler,

I hope you both had a wonderful holiday. I have attached a sediment sampling plan for review and approval for the upcoming culvert replacement project in Leominster over Reservoir Brook on Pleasant Street. In finalizing the design, it has been determined that there will be 379 Cubic Yards of dredge and therefore requires the need for a sediment sampling plan.

Would it be possible to expedite the review of this plan? We are trying to move this project along more quickly and the team will be ready to go out and get the samples upon approval. If you can it's greatly appreciated!

Please let me know if you have any questions and/or comments.

Thank you,
Courtney

Courtney Walker
Wetlands and Water Resources Coordinator
MassDOT – Highway Division
10 Park Plaza, Boston MA 02116
857-262-0757 | courtney.l.walker@dot.state.ma.us

# Attachment J – Sediment Analysis

Transmittal

Jacobs

## Sediment Sampling Result Analysis

**Date:** April 27, 2026
**Attention:** Courtney Walker, MassDOT
**Company:** MassDOT
**Prepared by:** Marti Nover, Jacobs
**Project name:** Leominster - Culvert Replacement, #L-08-053, Pleasant St and Colburn St
**Project no:** 631865
**Copies to:** Kim Ciaramicoli, Jacobs
Robert Niccoli, TEC

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On behalf of the Massachusetts Department of Transportation (MassDOT), Jacobs is transmitting the enclosed Analytical Report containing analytical results from the sediment sampling event that took place at the Pleasant Street Culvert, Leominster, MA project location (631865) in support of the 401 Dredge Water Quality Certification application. Jacobs performed the sampling and submission of sediment samples at three representative locations to submit for analyses to ESS Laboratory (a Massachusetts Certified Laboratory) on 03/10/2026.

The three sediment samples collected have been tested for:

- Metals (Arsenic, Cadmium, Chromium, Copper, Lead, Nickel, Mercury, and Zinc),
- Polychlorinated Biphenyls (PCBs),
- Extractable Petroleum Hydrocarbons (EPH) Pesticides,
- Polycyclic Aromatic Hydrocarbons (PAHs),
- Semi-Volatile Organic Compounds (SVOCs),
- Total Organic Carbon (TOC)
- Percent Water, and
- Grain Size/Sieve Analysis

Results from all three grab samples reported low levels above laboratory detection limits of SVOCs, EPH, and metals including Mercury. Lead did not exceed 100 ppm in any of the sediment samples. Only one sample detected PCBs slightly above its detection limit. Dredged sediments should be handled in accordance with the 401 WQC conditions and all applicable state and federal regulations pertaining to proper disposal.

eurofins | Environment Testing

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

# ANALYTICAL REPORT

## PREPARED FOR

Attn: Marta Nover
Jacobs Engineering Group Inc
120 St James Ave
5th Floor
Boston, Massachusetts 02116

Generated 4/3/2026 7:07:55 AM

## JOB DESCRIPTION

Pleasant St Culvert

## JOB NUMBER

620-34584-1

Eurofins Rhode Island
646 Camp Ave
North Kingstown RI 02852

See page two for job notes and contact information.



my EOL

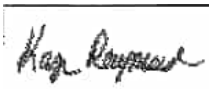
# Eurofins Rhode Island

## Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northeast, LLC Project Manager.

## Authorization



Generated
4/3/2026 7:07:55 AM

Authorized for release by
Karyn Raymond, Account Executive
Karyn.Raymond@et.eurofinsus.com
Designee for
Marc Levesque, Project Manager
Marc.Levesque@et.eurofinsus.com
(401)580-8719

# Table of Contents

Cover Page . . . . . 1
Table of Contents . . . . . 3
Definitions/Glossary . . . . . 4
Case Narrative . . . . . 5
Detection Summary . . . . . 6
Client Sample Results . . . . . 10
Surrogate Summary . . . . . 24
QC Sample Results . . . . . 26
QC Association Summary . . . . . 34
Lab Chronicle . . . . . 37
Certification Summary . . . . . 40
Method Summary . . . . . 42
Sample Summary . . . . . 43
Chain of Custody . . . . . 44
Receipt Checklists . . . . . 49

# Definitions/Glossary

Client: Jacobs Engineering Group Inc
Job ID: 620-34584-1
Project/Site: Pleasant St Culvert

## Qualifiers

### GC/MS Semi VOA

| Qualifier | Qualifier Description |
|---|---|
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |

### GC Semi VOA

| Qualifier | Qualifier Description |
|---|---|
| F1 | MS and/or MSD recovery exceeds control limits. |
| F2 | MS/MSD RPD exceeds control limits |
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |
| p | The %RPD between the primary and confirmation column/detector is >40%. The lower value has been reported. |

### Metals

| Qualifier | Qualifier Description |
|---|---|
| *+ | LCS and/or LCSD is outside acceptance limits, high biased. |
| B | Compound was found in the blank and sample. |
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |

## Glossary

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|---|---|
| ☼ | Listed under the "D" column to designate that the result is reported on a dry weight basis |
| %R | Percent Recovery |
| CFL | Contains Free Liquid |
| CFU | Colony Forming Unit |
| CNF | Contains No Free Liquid |
| DER | Duplicate Error Ratio (normalized absolute difference) |
| Dil Fac | Dilution Factor |
| DL | Detection Limit (DoD/DOE) |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC | Decision Level Concentration (Radiochemistry) |
| EDL | Estimated Detection Limit (Dioxin) |
| LOD | Limit of Detection (DoD/DOE) |
| LOQ | Limit of Quantitation (DoD/DOE) |
| MCL | EPA recommended "Maximum Contaminant Level" |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| MPN | Most Probable Number |
| MQL | Method Quantitation Limit |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| NEG | Negative / Absent |
| POS | Positive / Present |
| PQL | Practical Quantitation Limit |
| PRES | Presumptive |
| QC | Quality Control |
| RER | Relative Error Ratio (Radiochemistry) |
| RL | Reporting Limit or Requested Limit (Radiochemistry) |
| RPD | Relative Percent Difference, a measure of the relative difference between two points |
| TEF | Toxicity Equivalent Factor (Dioxin) |
| TEQ | Toxicity Equivalent Quotient (Dioxin) |
| TNTC | Too Numerous To Count |

# Case Narrative

Client: Jacobs Engineering Group Inc
Project: Pleasant St Culvert

Job ID: 620-34584-1

**Job ID: 620-34584-1** **Eurofins Rhode Island**

**Job Narrative**
**620-34584-1**

The analytical test results presented in this report meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page, unless otherwise noted. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable. Regulated compliance samples (e.g. SDWA, NPDES) must comply with associated agency requirements/permits.

- Matrix-specific batch QC (e.g., MS, MSD, SD) may not be reported when insufficient sample volume is available or when site-specific QC samples are not submitted. In such cases, a Laboratory Control Sample Duplicate (LCSD) may be analyzed to provide precision data for the batch.
- For samples analyzed using surrogate and/or isotope dilution analytes, any recoveries falling outside of established acceptance criteria are re-prepared and/or re-analyzed to confirm results, unless the deviation is due to sample dilution or otherwise explained in the case narrative.

**Receipt**
The samples were received on 3/10/2026 5:00 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice.

**GC/MS Semi VOA**
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

**Hydrocarbons**
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

**PCBs**
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

**Metals**
Method 6020B: The method blank for preparation batch 620-61705 and analytical batch 620-61831 contained Chromium and Zinc above the method detection limit. This target analyte concentration was less than the reporting limit (RL) in the method blank; therefore, re-extraction and/or re-analysis of samples was not performed.

Method 6020B: The method blank for preparation batch 620-61705 and analytical batch 620-61932 contained Lead above the method detection limit. This target analyte concentration was less than the reporting limit (RL) in the method blank; therefore, re-extraction and/or re-analysis of samples was not performed.

Method 6020B: The laboratory control sample (LCS) for preparation batch 620-61705 and analytical batch 620-61932 recovered outside control limits for the following analytes: Lead. These analytes were biased high in the LCS but passed in the LCSD so data is acceptable.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

**General Chemistry**
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

**Geotechnical**
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

# Detection Summary

Client: Jacobs Engineering Group Inc
Project/Site: Pleasant St Culvert

Job ID: 620-34584-1

## Client Sample ID: SS-101-261_0-2_20260310

## Lab Sample ID: 620-34584-1

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthylene | 0.21 | | 0.097 | 0.040 | mg/Kg | 5 | ☼ | 8270E LL PAH | Total/NA |
| Anthracene | 0.23 | | 0.097 | 0.040 | mg/Kg | 5 | ☼ | 8270E LL PAH | Total/NA |
| Benzo[a]anthracene | 0.71 | | 0.097 | 0.040 | mg/Kg | 5 | ☼ | 8270E LL PAH | Total/NA |
| Benzo[a]pyrene | 0.68 | | 0.097 | 0.040 | mg/Kg | 5 | ☼ | 8270E LL PAH | Total/NA |
| Benzo[b]fluoranthene | 0.66 | | 0.097 | 0.040 | mg/Kg | 5 | ☼ | 8270E LL PAH | Total/NA |
| Benzo[g,h,i]perylene | 0.51 | | 0.097 | 0.040 | mg/Kg | 5 | ☼ | 8270E LL PAH | Total/NA |
| Benzo[k]fluoranthene | 0.68 | | 0.097 | 0.040 | mg/Kg | 5 | ☼ | 8270E LL PAH | Total/NA |
| Chrysene | 0.93 | | 0.097 | 0.040 | mg/Kg | 5 | ☼ | 8270E LL PAH | Total/NA |
| Dibenz(a,h)anthracene | 0.15 | | 0.097 | 0.040 | mg/Kg | 5 | ☼ | 8270E LL PAH | Total/NA |
| Fluoranthene | 1.7 | | 0.097 | 0.040 | mg/Kg | 5 | ☼ | 8270E LL PAH | Total/NA |
| Fluorene | 0.073 | J | 0.097 | 0.040 | mg/Kg | 5 | ☼ | 8270E LL PAH | Total/NA |
| Indeno[1,2,3-cd]pyrene | 0.40 | | 0.097 | 0.040 | mg/Kg | 5 | ☼ | 8270E LL PAH | Total/NA |
| Phenanthrene | 1.0 | | 0.097 | 0.040 | mg/Kg | 5 | ☼ | 8270E LL PAH | Total/NA |
| Pyrene | 1.8 | | 0.097 | 0.040 | mg/Kg | 5 | ☼ | 8270E LL PAH | Total/NA |
| C19-C36 Aliphatics | 46 | | 6.0 | 6.0 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics | 95 | | 6.0 | 6.0 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics (Adjusted) | 74 | | 6.0 | 6.0 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| Total Organic Carbon | 8200 | | 300 | 100 | mg/Kg | 1 | | Lloyd Kahn | Total/NA |
| Moisture Content | 30.2 | | | | % | 1 | | D2216-90 | Total/NA |
| Sieve Size 3 inch - Percent Finer | 100.0 | | | | % Finer | 1 | | D422 | Total/NA |
| 50 mm (Sieve Size 2 inch) | 100.0 | | | | % Finer | 1 | | D422 | Total/NA |
| 37.5 mm (Sieve Size 1.5 inch) | 100.0 | | | | % Finer | 1 | | D422 | Total/NA |
| 25 mm (Sieve Size 1 inch) | 100.0 | | | | % Finer | 1 | | D422 | Total/NA |
| 19 mm (Sieve Size 0.75 inch) | 100.0 | | | | % Finer | 1 | | D422 | Total/NA |
| 9.5 mm (Sieve Size 0.375 inch) | 96.9 | | | | % Finer | 1 | | D422 | Total/NA |
| 4.75 mm (Sieve Size #4) | 88.5 | | | | % Finer | 1 | | D422 | Total/NA |
| 2 mm (Sieve Size #10) | 74.4 | | | | % Finer | 1 | | D422 | Total/NA |
| 0.85 mm (Sieve Size #20) | 54.3 | | | | % Finer | 1 | | D422 | Total/NA |
| 0.425 mm (Sieve Size #40) | 33.6 | | | | % Finer | 1 | | D422 | Total/NA |
| 0.25 mm (Sieve Size #60) | 23.4 | | | | % Finer | 1 | | D422 | Total/NA |
| 0.18 mm (Sieve Size #80) | 20.3 | | | | % Finer | 1 | | D422 | Total/NA |
| 0.15 mm (Sieve Size #100) | 19.1 | | | | % Finer | 1 | | D422 | Total/NA |
| 0.075 mm (Sieve Size #200) | 17.5 | | | | % Finer | 1 | | D422 | Total/NA |
| 36.1 um (Hydrometer Reading 1) | 1.0 | | | | % Finer | 1 | | D422 | Total/NA |
| 22.9 um (Hydrometer Reading 2) | 1.0 | | | | % Finer | 1 | | D422 | Total/NA |
| 13.4 um (Hydrometer Reading 3) | 1.0 | | | | % Finer | 1 | | D422 | Total/NA |
| 9.8 um (Hydrometer Reading 4) | 1.0 | | | | % Finer | 1 | | D422 | Total/NA |
| 6.7 um (Hydrometer Reading 5) | 1.0 | | | | % Finer | 1 | | D422 | Total/NA |
| 3.3 um (Hydrometer Reading 6) | 0.7 | | | | % Finer | 1 | | D422 | Total/NA |
| 1.4 um (Hydrometer Reading 7) | 0.7 | | | | % Finer | 1 | | D422 | Total/NA |
| Clay | 1.0 | | | | % | 1 | | D422 | Total/NA |
| Gravel | 11.5 | | | | % | 1 | | D422 | Total/NA |
| Coarse Sand | 14.1 | | | | % | 1 | | D422 | Total/NA |
| Fine Sand | 16.1 | | | | % | 1 | | D422 | Total/NA |
| Medium Sand | 40.8 | | | | % | 1 | | D422 | Total/NA |
| Sand | 71.0 | | | | % | 1 | | D422 | Total/NA |
| Silt | 16.5 | | | | % | 1 | | D422 | Total/NA |

This Detection Summary does not include radiochemical test results.

# Detection Summary

Client: Jacobs Engineering Group Inc
Project/Site: Pleasant St Culvert

Job ID: 620-34584-1

## Client Sample ID: SS-104-75.4_0-2_20260310

## Lab Sample ID: 620-34584-2

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthylene | 0.061 | | 0.024 | 0.0097 | mg/Kg | 1 | ☼ | 8270E LL PAH | Total/NA |
| Anthracene | 0.033 | | 0.024 | 0.0097 | mg/Kg | 1 | ☼ | 8270E LL PAH | Total/NA |
| Benzo[a]anthracene | 0.14 | | 0.024 | 0.0097 | mg/Kg | 1 | ☼ | 8270E LL PAH | Total/NA |
| Benzo[a]pyrene | 0.16 | | 0.024 | 0.0097 | mg/Kg | 1 | ☼ | 8270E LL PAH | Total/NA |
| Benzo[b]fluoranthene | 0.14 | | 0.024 | 0.0097 | mg/Kg | 1 | ☼ | 8270E LL PAH | Total/NA |
| Benzo[g,h,i]perylene | 0.10 | | 0.024 | 0.0097 | mg/Kg | 1 | ☼ | 8270E LL PAH | Total/NA |
| Benzo[k]fluoranthene | 0.17 | | 0.024 | 0.0097 | mg/Kg | 1 | ☼ | 8270E LL PAH | Total/NA |
| Chrysene | 0.21 | | 0.024 | 0.0097 | mg/Kg | 1 | ☼ | 8270E LL PAH | Total/NA |
| Dibenz(a,h)anthracene | 0.036 | | 0.024 | 0.0097 | mg/Kg | 1 | ☼ | 8270E LL PAH | Total/NA |
| Fluoranthene | 0.33 | | 0.024 | 0.0097 | mg/Kg | 1 | ☼ | 8270E LL PAH | Total/NA |
| Fluorene | 0.012 | J | 0.024 | 0.0097 | mg/Kg | 1 | ☼ | 8270E LL PAH | Total/NA |
| Indeno[1,2,3-cd]pyrene | 0.087 | | 0.024 | 0.0097 | mg/Kg | 1 | ☼ | 8270E LL PAH | Total/NA |
| Naphthalene | 0.014 | J | 0.024 | 0.0097 | mg/Kg | 1 | ☼ | 8270E LL PAH | Total/NA |
| Phenanthrene | 0.21 | | 0.024 | 0.0097 | mg/Kg | 1 | ☼ | 8270E LL PAH | Total/NA |
| Pyrene | 0.36 | | 0.024 | 0.0097 | mg/Kg | 1 | ☼ | 8270E LL PAH | Total/NA |
| Bis(2-ethylhexyl) phthalate | 0.013 | J | 0.024 | 0.0097 | mg/Kg | 1 | ☼ | 8270E LL PAH | Total/NA |
| PCB-180 | 0.00077 | J | 0.0014 | 0.00069 | ng/uL | 1 | ☼ | EPA 8082A | Total/NA |
| C19-C36 Aliphatics | 11 | | 7.4 | 7.4 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics | 29 | | 7.4 | 7.4 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics (Adjusted) | 27 | | 7.4 | 7.4 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| Total Organic Carbon | 13000 | | 300 | 100 | mg/Kg | 1 | | Lloyd Kahn | Total/NA |
| Moisture Content | 52.0 | | | | % | 1 | | D2216-90 | Total/NA |
| Sieve Size 3 inch - Percent Finer | 100.0 | | | | % Finer | 1 | | D422 | Total/NA |
| 50 mm (Sieve Size 2 inch) | 100.0 | | | | % Finer | 1 | | D422 | Total/NA |
| 37.5 mm (Sieve Size 1.5 inch) | 100.0 | | | | % Finer | 1 | | D422 | Total/NA |
| 25 mm (Sieve Size 1 inch) | 100.0 | | | | % Finer | 1 | | D422 | Total/NA |
| 19 mm (Sieve Size 0.75 inch) | 100.0 | | | | % Finer | 1 | | D422 | Total/NA |
| 9.5 mm (Sieve Size 0.375 inch) | 97.5 | | | | % Finer | 1 | | D422 | Total/NA |
| 4.75 mm (Sieve Size #4) | 90.9 | | | | % Finer | 1 | | D422 | Total/NA |
| 2 mm (Sieve Size #10) | 84.9 | | | | % Finer | 1 | | D422 | Total/NA |
| 0.85 mm (Sieve Size #20) | 78.1 | | | | % Finer | 1 | | D422 | Total/NA |
| 0.425 mm (Sieve Size #40) | 64.1 | | | | % Finer | 1 | | D422 | Total/NA |
| 0.25 mm (Sieve Size #60) | 49.4 | | | | % Finer | 1 | | D422 | Total/NA |
| 0.18 mm (Sieve Size #80) | 39.7 | | | | % Finer | 1 | | D422 | Total/NA |
| 0.15 mm (Sieve Size #100) | 34.0 | | | | % Finer | 1 | | D422 | Total/NA |
| 0.075 mm (Sieve Size #200) | 23.4 | | | | % Finer | 1 | | D422 | Total/NA |
| 36.1 um (Hydrometer Reading 1) | 9.7 | | | | % Finer | 1 | | D422 | Total/NA |
| 22.9 um (Hydrometer Reading 2) | 6.7 | | | | % Finer | 1 | | D422 | Total/NA |
| 13.4 um (Hydrometer Reading 3) | 4.7 | | | | % Finer | 1 | | D422 | Total/NA |
| 9.8 um (Hydrometer Reading 4) | 4.7 | | | | % Finer | 1 | | D422 | Total/NA |
| 6.7 um (Hydrometer Reading 5) | 4.7 | | | | % Finer | 1 | | D422 | Total/NA |
| 3.3 um (Hydrometer Reading 6) | 2.7 | | | | % Finer | 1 | | D422 | Total/NA |
| 1.4 um (Hydrometer Reading 7) | 1.7 | | | | % Finer | 1 | | D422 | Total/NA |
| Clay | 4.7 | | | | % | 1 | | D422 | Total/NA |
| Gravel | 9.1 | | | | % | 1 | | D422 | Total/NA |
| Coarse Sand | 6.0 | | | | % | 1 | | D422 | Total/NA |
| Fine Sand | 40.7 | | | | % | 1 | | D422 | Total/NA |
| Medium Sand | 20.8 | | | | % | 1 | | D422 | Total/NA |
| Sand | 67.5 | | | | % | 1 | | D422 | Total/NA |
| Silt | 18.7 | | | | % | 1 | | D422 | Total/NA |

This Detection Summary does not include radiochemical test results.

Eurofins Rhode Island

# Detection Summary

Client: Jacobs Engineering Group Inc
Project/Site: Pleasant St Culvert

Job ID: 620-34584-1

## Client Sample ID: SS-105-38.3_0-1.5_20260310 — Lab Sample ID: 620-34584-3

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthylene | 0.18 | | 0.089 | 0.037 | mg/Kg | 5 | ☼ | 8270E LL PAH | Total/NA |
| Anthracene | 0.18 | | 0.089 | 0.037 | mg/Kg | 5 | ☼ | 8270E LL PAH | Total/NA |
| Benzo[a]anthracene | 0.48 | | 0.089 | 0.037 | mg/Kg | 5 | ☼ | 8270E LL PAH | Total/NA |
| Benzo[a]pyrene | 0.42 | | 0.089 | 0.037 | mg/Kg | 5 | ☼ | 8270E LL PAH | Total/NA |
| Benzo[b]fluoranthene | 0.35 | | 0.089 | 0.037 | mg/Kg | 5 | ☼ | 8270E LL PAH | Total/NA |
| Benzo[g,h,i]perylene | 0.30 | | 0.089 | 0.037 | mg/Kg | 5 | ☼ | 8270E LL PAH | Total/NA |
| Benzo[k]fluoranthene | 0.39 | | 0.089 | 0.037 | mg/Kg | 5 | ☼ | 8270E LL PAH | Total/NA |
| Chrysene | 0.56 | | 0.089 | 0.037 | mg/Kg | 5 | ☼ | 8270E LL PAH | Total/NA |
| Dibenz(a,h)anthracene | 0.092 | | 0.089 | 0.037 | mg/Kg | 5 | ☼ | 8270E LL PAH | Total/NA |
| Fluoranthene | 1.0 | | 0.089 | 0.037 | mg/Kg | 5 | ☼ | 8270E LL PAH | Total/NA |
| Indeno[1,2,3-cd]pyrene | 0.22 | | 0.089 | 0.037 | mg/Kg | 5 | ☼ | 8270E LL PAH | Total/NA |
| Phenanthrene | 0.47 | | 0.089 | 0.037 | mg/Kg | 5 | ☼ | 8270E LL PAH | Total/NA |
| Pyrene | 1.1 | | 0.089 | 0.037 | mg/Kg | 5 | ☼ | 8270E LL PAH | Total/NA |
| C19-C36 Aliphatics | 11 | | 5.4 | 5.4 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics | 48 | | 5.4 | 5.4 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| C11-C22 Aromatics (Adjusted) | 40 | | 5.4 | 5.4 | mg/Kg | 1 | ☼ | MAEPH2.1 | Total/NA |
| Total Organic Carbon | 3100 | | 300 | 100 | mg/Kg | 1 | | Lloyd Kahn | Total/NA |
| Moisture Content | 19.2 | | | | % | 1 | | D2216-90 | Total/NA |
| Sieve Size 3 inch - Percent Finer | 100.0 | | | | % Finer | 1 | | D422 | Total/NA |
| 50 mm (Sieve Size 2 inch) | 100.0 | | | | % Finer | 1 | | D422 | Total/NA |
| 37.5 mm (Sieve Size 1.5 inch) | 100.0 | | | | % Finer | 1 | | D422 | Total/NA |
| 25 mm (Sieve Size 1 inch) | 100.0 | | | | % Finer | 1 | | D422 | Total/NA |
| 19 mm (Sieve Size 0.75 inch) | 100.0 | | | | % Finer | 1 | | D422 | Total/NA |
| 9.5 mm (Sieve Size 0.375 inch) | 90.2 | | | | % Finer | 1 | | D422 | Total/NA |
| 4.75 mm (Sieve Size #4) | 77.1 | | | | % Finer | 1 | | D422 | Total/NA |
| 2 mm (Sieve Size #10) | 58.6 | | | | % Finer | 1 | | D422 | Total/NA |
| 0.85 mm (Sieve Size #20) | 41.7 | | | | % Finer | 1 | | D422 | Total/NA |
| 0.425 mm (Sieve Size #40) | 23.6 | | | | % Finer | 1 | | D422 | Total/NA |
| 0.25 mm (Sieve Size #60) | 16.9 | | | | % Finer | 1 | | D422 | Total/NA |
| 0.18 mm (Sieve Size #80) | 15.1 | | | | % Finer | 1 | | D422 | Total/NA |
| 0.15 mm (Sieve Size #100) | 14.5 | | | | % Finer | 1 | | D422 | Total/NA |
| 0.075 mm (Sieve Size #200) | 13.8 | | | | % Finer | 1 | | D422 | Total/NA |
| 36.1 um (Hydrometer Reading 1) | 0.3 | | | | % Finer | 1 | | D422 | Total/NA |
| 22.9 um (Hydrometer Reading 2) | 0.3 | | | | % Finer | 1 | | D422 | Total/NA |
| 13.4 um (Hydrometer Reading 3) | 0.3 | | | | % Finer | 1 | | D422 | Total/NA |
| 9.8 um (Hydrometer Reading 4) | 0.3 | | | | % Finer | 1 | | D422 | Total/NA |
| 6.7 um (Hydrometer Reading 5) | 0.3 | | | | % Finer | 1 | | D422 | Total/NA |
| 3.3 um (Hydrometer Reading 6) | 0.3 | | | | % Finer | 1 | | D422 | Total/NA |
| 1.4 um (Hydrometer Reading 7) | 0.3 | | | | % Finer | 1 | | D422 | Total/NA |
| Clay | 0.3 | | | | % | 1 | | D422 | Total/NA |
| Gravel | 22.9 | | | | % | 1 | | D422 | Total/NA |
| Coarse Sand | 18.5 | | | | % | 1 | | D422 | Total/NA |
| Fine Sand | 9.8 | | | | % | 1 | | D422 | Total/NA |
| Medium Sand | 35.0 | | | | % | 1 | | D422 | Total/NA |
| Sand | 63.3 | | | | % | 1 | | D422 | Total/NA |
| Silt | 13.5 | | | | % | 1 | | D422 | Total/NA |

## Client Sample ID: SS-101-261_0-2_20260310 — Lab Sample ID: 620-34584-4

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 32 | | 0.21 | 0.0042 | mg/Kg | 5 | ☼ | 6020B | Total/NA |

This Detection Summary does not include radiochemical test results.

Eurofins Rhode Island

# Detection Summary

Client: Jacobs Engineering Group Inc
Project/Site: Pleasant St Culvert

Job ID: 620-34584-1

## Client Sample ID: SS-101-261_0-2_20260310 (Continued) — Lab Sample ID: 620-34584-4

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Cadmium | 0.088 | J | 0.21 | 0.0042 | mg/Kg | 5 | ☼ | 6020B | Total/NA |
| Chromium | 18 | B | 0.42 | 0.0085 | mg/Kg | 5 | ☼ | 6020B | Total/NA |
| Copper | 15 | | 0.42 | 0.0085 | mg/Kg | 5 | ☼ | 6020B | Total/NA |
| Lead | 59 | B *+ | 0.13 | 0.0025 | mg/Kg | 5 | ☼ | 6020B | Total/NA |
| Nickel | 10 | | 0.42 | 0.0085 | mg/Kg | 5 | ☼ | 6020B | Total/NA |
| Zinc | 150 | B | 1.7 | 0.034 | mg/Kg | 5 | ☼ | 6020B | Total/NA |
| Mercury | 0.0089 | J | 0.044 | 0.0061 | mg/Kg | 1 | ☼ | 7471B | Total/NA |

## Client Sample ID: SS-104-75.4_0-2_20260310 — Lab Sample ID: 620-34584-5

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 13 | | 0.26 | 0.0052 | mg/Kg | 5 | ☼ | 6020B | Total/NA |
| Cadmium | 0.086 | J | 0.26 | 0.0052 | mg/Kg | 5 | ☼ | 6020B | Total/NA |
| Chromium | 10 | B | 0.52 | 0.010 | mg/Kg | 5 | ☼ | 6020B | Total/NA |
| Copper | 10 | | 0.52 | 0.010 | mg/Kg | 5 | ☼ | 6020B | Total/NA |
| Lead | 53 | B *+ | 0.16 | 0.0031 | mg/Kg | 5 | ☼ | 6020B | Total/NA |
| Nickel | 6.2 | | 0.52 | 0.010 | mg/Kg | 5 | ☼ | 6020B | Total/NA |
| Zinc | 37 | B | 2.1 | 0.042 | mg/Kg | 5 | ☼ | 6020B | Total/NA |
| Mercury | 0.098 | | 0.052 | 0.0073 | mg/Kg | 1 | ☼ | 7471B | Total/NA |

## Client Sample ID: SS-105-38.3_0-1.5_20260310 — Lab Sample ID: 620-34584-6

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 14 | | 0.20 | 0.0041 | mg/Kg | 5 | ☼ | 6020B | Total/NA |
| Cadmium | 0.050 | J | 0.20 | 0.0041 | mg/Kg | 5 | ☼ | 6020B | Total/NA |
| Chromium | 8.0 | B | 0.41 | 0.0082 | mg/Kg | 5 | ☼ | 6020B | Total/NA |
| Copper | 9.0 | | 0.41 | 0.0082 | mg/Kg | 5 | ☼ | 6020B | Total/NA |
| Lead | 12 | B *+ | 0.12 | 0.0025 | mg/Kg | 5 | ☼ | 6020B | Total/NA |
| Nickel | 6.3 | | 0.41 | 0.0082 | mg/Kg | 5 | ☼ | 6020B | Total/NA |
| Zinc | 21 | B | 1.6 | 0.033 | mg/Kg | 5 | ☼ | 6020B | Total/NA |

This Detection Summary does not include radiochemical test results.

# Client Sample Results

Client: Jacobs Engineering Group Inc
Project/Site: Pleasant St Culvert

Job ID: 620-34584-1

**Client Sample ID: SS-101-261_0-2_20260310**
**Date Collected: 03/10/26 11:08**
**Date Received: 03/10/26 17:00**

**Lab Sample ID: 620-34584-1**
**Matrix: Solid**
**Percent Solids: 81.6**

## Method: SW846 8270E LL PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | <0.097 | | 0.097 | 0.040 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:34 | 5 |
| **Acenaphthylene** | **0.21** | | 0.097 | 0.040 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:34 | 5 |
| 1-Methylnaphthalene | <0.097 | | 0.097 | 0.040 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:34 | 5 |
| **Anthracene** | **0.23** | | 0.097 | 0.040 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:34 | 5 |
| **Benzo[a]anthracene** | **0.71** | | 0.097 | 0.040 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:34 | 5 |
| **Benzo[a]pyrene** | **0.68** | | 0.097 | 0.040 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:34 | 5 |
| **Benzo[b]fluoranthene** | **0.66** | | 0.097 | 0.040 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:34 | 5 |
| **Benzo[g,h,i]perylene** | **0.51** | | 0.097 | 0.040 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:34 | 5 |
| **Benzo[k]fluoranthene** | **0.68** | | 0.097 | 0.040 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:34 | 5 |
| **Chrysene** | **0.93** | | 0.097 | 0.040 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:34 | 5 |
| **Dibenz(a,h)anthracene** | **0.15** | | 0.097 | 0.040 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:34 | 5 |
| **Fluoranthene** | **1.7** | | 0.097 | 0.040 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:34 | 5 |
| **Fluorene** | **0.073** | **J** | 0.097 | 0.040 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:34 | 5 |
| **Indeno[1,2,3-cd]pyrene** | **0.40** | | 0.097 | 0.040 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:34 | 5 |
| 2-Methylnaphthalene | <0.097 | | 0.097 | 0.040 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:34 | 5 |
| Naphthalene | <0.097 | | 0.097 | 0.040 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:34 | 5 |
| **Phenanthrene** | **1.0** | | 0.097 | 0.040 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:34 | 5 |
| **Pyrene** | **1.8** | | 0.097 | 0.040 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:34 | 5 |
| Bis(2-ethylhexyl) phthalate | <0.097 | | 0.097 | 0.040 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:34 | 5 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Nitrobenzene-d5 (Surr)* | *53* | | *30 - 130* | *03/11/26 11:31* | *03/11/26 18:34* | *5* |
| *Terphenyl-d14 (Surr)* | *80* | | *30 - 130* | *03/11/26 11:31* | *03/11/26 18:34* | *5* |
| *2-Fluorobiphenyl (Surr)* | *71* | | *30 - 130* | *03/11/26 11:31* | *03/11/26 18:34* | *5* |

## Method: SW846 EPA 8082A - PCB Congeners (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| PCB-167 | <0.0012 | | 0.0012 | 0.0011 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 08:16 | 1 |
| PCB-153 | <0.0012 | | 0.0012 | 0.00076 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 08:16 | 1 |
| PCB-195 | <0.0012 | | 0.0012 | 0.00063 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 08:16 | 1 |
| PCB-123 | <0.0012 | | 0.0012 | 0.0011 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 08:16 | 1 |
| PCB-52 | <0.0012 | | 0.0012 | 0.00048 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 08:16 | 1 |
| PCB-187 | <0.0012 | | 0.0012 | 0.00065 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 08:16 | 1 |
| PCB-114 | <0.0012 | | 0.0012 | 0.00086 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 08:16 | 1 |
| PCB-66 | <0.0012 | | 0.0012 | 0.00088 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 08:16 | 1 |
| PCB-126 | <0.0012 | | 0.0012 | 0.00076 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 08:16 | 1 |
| PCB-157 | <0.0012 | | 0.0012 | 0.00073 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 08:16 | 1 |
| PCB-138 | <0.0012 | | 0.0012 | 0.00048 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 08:16 | 1 |
| PCB-170 | <0.0012 | | 0.0012 | 0.00060 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 08:16 | 1 |
| PCB-81 | <0.0012 | | 0.0012 | 0.0011 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 08:16 | 1 |
| PCB-44 | <0.0012 | | 0.0012 | 0.00047 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 08:16 | 1 |
| PCB-209 | <0.0012 | | 0.0012 | 0.00074 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 08:16 | 1 |
| PCB-77 | <0.0012 | | 0.0012 | 0.0010 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 08:16 | 1 |
| PCB-8 | <0.0012 | | 0.0012 | 0.00043 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 08:16 | 1 |
| PCB-118 | <0.0012 | | 0.0012 | 0.00081 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 08:16 | 1 |
| PCB-156 | <0.0012 | | 0.0012 | 0.00065 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 08:16 | 1 |
| PCB-206 | <0.0012 | | 0.0012 | 0.00054 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 08:16 | 1 |
| PCB-180 | <0.0012 | | 0.0012 | 0.00057 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 08:16 | 1 |
| PCB-169 | <0.0012 | | 0.0012 | 0.00083 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 08:16 | 1 |
| PCB-18 | <0.0012 | F1 F2 | 0.0012 | 0.00074 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 08:16 | 1 |

# Client Sample Results

Client: Jacobs Engineering Group Inc
Project/Site: Pleasant St Culvert

Job ID: 620-34584-1

**Client Sample ID: SS-101-261_0-2_20260310**
**Date Collected: 03/10/26 11:08**
**Date Received: 03/10/26 17:00**

**Lab Sample ID: 620-34584-1**
**Matrix: Solid**
**Percent Solids: 81.6**

## Method: SW846 EPA 8082A - PCB Congeners (GC) (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| PCB-105 | <0.0012 | | 0.0012 | 0.00078 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 08:16 | 1 |
| PCB-28 | <0.0012 | | 0.0012 | 0.00064 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 08:16 | 1 |
| PCB-189 | <0.0012 | | 0.0012 | 0.00057 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 08:16 | 1 |
| PCB-101 | <0.0012 | | 0.0012 | 0.00033 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 08:16 | 1 |
| PCB-128 | <0.0012 | | 0.0012 | 0.00045 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 08:16 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *PCB-205 (Surr)* | *54* | | *31 - 150* | *03/12/26 15:13* | *03/16/26 08:16* | *1* |
| *Tetrachloro-m-xylene (Surr)* | *54* | | *35 - 150* | *03/12/26 15:13* | *03/16/26 08:16* | *1* |

## Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | <6.0 | | 6.0 | 2.8 | mg/Kg | ☼ | 03/11/26 08:17 | 03/14/26 02:54 | 1 |
| **C19-C36 Aliphatics** | **46** | | 6.0 | 6.0 | mg/Kg | ☼ | 03/11/26 08:17 | 03/14/26 02:54 | 1 |
| **C11-C22 Aromatics** | **95** | | 6.0 | 6.0 | mg/Kg | ☼ | 03/11/26 08:17 | 03/14/26 02:54 | 1 |
| **C11-C22 Aromatics (Adjusted)** | **74** | | 6.0 | 6.0 | mg/Kg | ☼ | 03/11/26 08:17 | 03/14/26 02:54 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *58* | | *40 - 140* | *03/11/26 08:17* | *03/14/26 02:54* | *1* |
| *o-Terphenyl (Surr)* | *67* | | *40 - 140* | *03/11/26 08:17* | *03/14/26 02:54* | *1* |
| *2-Fluorobiphenyl (Surr)* | *92* | | *40 - 140* | *03/11/26 08:17* | *03/14/26 02:54* | *1* |

## General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Total Organic Carbon (EPA Lloyd Kahn)** | **8200** | | 300 | 100 | mg/Kg | | | 03/17/26 11:53 | 1 |

## Method: ASTM D2216-90 - Water (Moisture) Content

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Moisture Content** | **30.2** | | | | % | | | 03/16/26 11:24 | 1 |

## Method: ASTM D422 - Grain Size

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Sieve Size 3 inch - Percent Finer** | **100.0** | | | | % Finer | | | 03/16/26 11:15 | 1 |
| **50 mm (Sieve Size 2 inch)** | **100.0** | | | | % Finer | | | 03/16/26 11:15 | 1 |
| **37.5 mm (Sieve Size 1.5 inch)** | **100.0** | | | | % Finer | | | 03/16/26 11:15 | 1 |
| **25 mm (Sieve Size 1 inch)** | **100.0** | | | | % Finer | | | 03/16/26 11:15 | 1 |
| **19 mm (Sieve Size 0.75 inch)** | **100.0** | | | | % Finer | | | 03/16/26 11:15 | 1 |
| **9.5 mm (Sieve Size 0.375 inch)** | **96.9** | | | | % Finer | | | 03/16/26 11:15 | 1 |
| **4.75 mm (Sieve Size #4)** | **88.5** | | | | % Finer | | | 03/16/26 11:15 | 1 |
| **2 mm (Sieve Size #10)** | **74.4** | | | | % Finer | | | 03/16/26 11:15 | 1 |
| **0.85 mm (Sieve Size #20)** | **54.3** | | | | % Finer | | | 03/16/26 11:15 | 1 |
| **0.425 mm (Sieve Size #40)** | **33.6** | | | | % Finer | | | 03/16/26 11:15 | 1 |
| **0.25 mm (Sieve Size #60)** | **23.4** | | | | % Finer | | | 03/16/26 11:15 | 1 |
| **0.18 mm (Sieve Size #80)** | **20.3** | | | | % Finer | | | 03/16/26 11:15 | 1 |
| **0.15 mm (Sieve Size #100)** | **19.1** | | | | % Finer | | | 03/16/26 11:15 | 1 |
| **0.075 mm (Sieve Size #200)** | **17.5** | | | | % Finer | | | 03/16/26 11:15 | 1 |
| **36.1 um (Hydrometer Reading 1)** | **1.0** | | | | % Finer | | | 03/16/26 11:15 | 1 |
| **22.9 um (Hydrometer Reading 2)** | **1.0** | | | | % Finer | | | 03/16/26 11:15 | 1 |
| **13.4 um (Hydrometer Reading 3)** | **1.0** | | | | % Finer | | | 03/16/26 11:15 | 1 |
| **9.8 um (Hydrometer Reading 4)** | **1.0** | | | | % Finer | | | 03/16/26 11:15 | 1 |

# Client Sample Results

Client: Jacobs Engineering Group Inc
Project/Site: Pleasant St Culvert

Job ID: 620-34584-1

## Client Sample ID: SS-101-261_0-2_20260310

**Lab Sample ID: 620-34584-1**
**Date Collected: 03/10/26 11:08**
**Matrix: Solid**
**Date Received: 03/10/26 17:00**
**Percent Solids: 81.6**

### Method: ASTM D422 - Grain Size (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 6.7 um (Hydrometer Reading 5) | 1.0 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 3.3 um (Hydrometer Reading 6) | 0.7 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 1.4 um (Hydrometer Reading 7) | 0.7 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| Clay | 1.0 | | | | % | | | 03/16/26 11:15 | 1 |
| Gravel | 11.5 | | | | % | | | 03/16/26 11:15 | 1 |
| Coarse Sand | 14.1 | | | | % | | | 03/16/26 11:15 | 1 |
| Fine Sand | 16.1 | | | | % | | | 03/16/26 11:15 | 1 |
| Medium Sand | 40.8 | | | | % | | | 03/16/26 11:15 | 1 |
| Sand | 71.0 | | | | % | | | 03/16/26 11:15 | 1 |
| Silt | 16.5 | | | | % | | | 03/16/26 11:15 | 1 |

## Client Sample ID: SS-104-75.4_0-2_20260310

**Lab Sample ID: 620-34584-2**
**Date Collected: 03/10/26 10:13**
**Matrix: Solid**
**Date Received: 03/10/26 17:00**
**Percent Solids: 66.4**

### Method: SW846 8270E LL PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | <0.024 | | 0.024 | 0.0097 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:09 | 1 |
| Acenaphthylene | 0.061 | | 0.024 | 0.0097 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:09 | 1 |
| 1-Methylnaphthalene | <0.024 | | 0.024 | 0.0097 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:09 | 1 |
| Anthracene | 0.033 | | 0.024 | 0.0097 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:09 | 1 |
| Benzo[a]anthracene | 0.14 | | 0.024 | 0.0097 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:09 | 1 |
| Benzo[a]pyrene | 0.16 | | 0.024 | 0.0097 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:09 | 1 |
| Benzo[b]fluoranthene | 0.14 | | 0.024 | 0.0097 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:09 | 1 |
| Benzo[g,h,i]perylene | 0.10 | | 0.024 | 0.0097 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:09 | 1 |
| Benzo[k]fluoranthene | 0.17 | | 0.024 | 0.0097 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:09 | 1 |
| Chrysene | 0.21 | | 0.024 | 0.0097 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:09 | 1 |
| Dibenz(a,h)anthracene | 0.036 | | 0.024 | 0.0097 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:09 | 1 |
| Fluoranthene | 0.33 | | 0.024 | 0.0097 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:09 | 1 |
| Fluorene | 0.012 | J | 0.024 | 0.0097 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:09 | 1 |
| Indeno[1,2,3-cd]pyrene | 0.087 | | 0.024 | 0.0097 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:09 | 1 |
| 2-Methylnaphthalene | <0.024 | | 0.024 | 0.0097 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:09 | 1 |
| Naphthalene | 0.014 | J | 0.024 | 0.0097 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:09 | 1 |
| Phenanthrene | 0.21 | | 0.024 | 0.0097 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:09 | 1 |
| Pyrene | 0.36 | | 0.024 | 0.0097 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:09 | 1 |
| Bis(2-ethylhexyl) phthalate | 0.013 | J | 0.024 | 0.0097 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:09 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Nitrobenzene-d5 (Surr)* | *47* | | *30 - 130* | *03/11/26 11:31* | *03/11/26 18:09* | *1* |
| *Terphenyl-d14 (Surr)* | *56* | | *30 - 130* | *03/11/26 11:31* | *03/11/26 18:09* | *1* |
| *2-Fluorobiphenyl (Surr)* | *53* | | *30 - 130* | *03/11/26 11:31* | *03/11/26 18:09* | *1* |

### Method: SW846 EPA 8082A - PCB Congeners (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| PCB-167 | <0.0014 | | 0.0014 | 0.0013 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 09:37 | 1 |
| PCB-153 | <0.0014 | | 0.0014 | 0.00092 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 09:37 | 1 |
| PCB-195 | <0.0014 | | 0.0014 | 0.00075 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 09:37 | 1 |
| PCB-123 | <0.0014 | | 0.0014 | 0.0013 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 09:37 | 1 |
| PCB-52 | <0.0014 | | 0.0014 | 0.00058 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 09:37 | 1 |
| PCB-187 | <0.0014 | | 0.0014 | 0.00078 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 09:37 | 1 |

# Client Sample Results

Client: Jacobs Engineering Group Inc
Project/Site: Pleasant St Culvert

Job ID: 620-34584-1

## Client Sample ID: SS-104-75.4_0-2_20260310

**Date Collected: 03/10/26 10:13**
**Date Received: 03/10/26 17:00**

## Lab Sample ID: 620-34584-2

**Matrix: Solid**
**Percent Solids: 66.4**

### Method: SW846 EPA 8082A - PCB Congeners (GC) (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| PCB-114 | <0.0014 | | 0.0014 | 0.0010 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 09:37 | 1 |
| PCB-66 | <0.0014 | | 0.0014 | 0.0011 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 09:37 | 1 |
| PCB-126 | <0.0014 | | 0.0014 | 0.00091 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 09:37 | 1 |
| PCB-157 | <0.0014 | | 0.0014 | 0.00088 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 09:37 | 1 |
| PCB-138 | <0.0014 | | 0.0014 | 0.00058 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 09:37 | 1 |
| PCB-170 | <0.0014 | | 0.0014 | 0.00072 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 09:37 | 1 |
| PCB-81 | <0.0014 | | 0.0014 | 0.0013 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 09:37 | 1 |
| PCB-44 | <0.0014 | | 0.0014 | 0.00057 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 09:37 | 1 |
| PCB-209 | <0.0014 | | 0.0014 | 0.00089 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 09:37 | 1 |
| PCB-77 | <0.0014 | | 0.0014 | 0.0013 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 09:37 | 1 |
| PCB-8 | <0.0014 | | 0.0014 | 0.00052 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 09:37 | 1 |
| PCB-118 | <0.0014 | | 0.0014 | 0.00098 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 09:37 | 1 |
| PCB-156 | <0.0014 | | 0.0014 | 0.00078 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 09:37 | 1 |
| PCB-206 | <0.0014 | | 0.0014 | 0.00066 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 09:37 | 1 |
| **PCB-180** | **0.00077** | **J** | 0.0014 | 0.00069 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 09:37 | 1 |
| PCB-169 | <0.0014 | | 0.0014 | 0.0010 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 09:37 | 1 |
| PCB-18 | <0.0014 | | 0.0014 | 0.00089 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 09:37 | 1 |
| PCB-105 | <0.0014 | | 0.0014 | 0.00094 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 09:37 | 1 |
| PCB-28 | <0.0014 | | 0.0014 | 0.00077 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 09:37 | 1 |
| PCB-189 | <0.0014 | | 0.0014 | 0.00069 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 09:37 | 1 |
| PCB-101 | <0.0014 | | 0.0014 | 0.00040 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 09:37 | 1 |
| PCB-128 | <0.0014 | | 0.0014 | 0.00054 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 09:37 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *PCB-205 (Surr)* | *70* | | *31 - 150* | *03/12/26 15:13* | *03/16/26 09:37* | *1* |
| *Tetrachloro-m-xylene (Surr)* | *52* | | *35 - 150* | *03/12/26 15:13* | *03/16/26 09:37* | *1* |

### Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | <7.4 | | 7.4 | 3.5 | mg/Kg | ☼ | 03/11/26 08:17 | 03/14/26 03:21 | 1 |
| **C19-C36 Aliphatics** | **11** | | 7.4 | 7.4 | mg/Kg | ☼ | 03/11/26 08:17 | 03/14/26 03:21 | 1 |
| **C11-C22 Aromatics** | **29** | | 7.4 | 7.4 | mg/Kg | ☼ | 03/11/26 08:17 | 03/14/26 03:21 | 1 |
| **C11-C22 Aromatics (Adjusted)** | **27** | | 7.4 | 7.4 | mg/Kg | ☼ | 03/11/26 08:17 | 03/14/26 03:21 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *70* | | *40 - 140* | *03/11/26 08:17* | *03/14/26 03:21* | *1* |
| *o-Terphenyl (Surr)* | *74* | | *40 - 140* | *03/11/26 08:17* | *03/14/26 03:21* | *1* |
| *2-Fluorobiphenyl (Surr)* | *95* | | *40 - 140* | *03/11/26 08:17* | *03/14/26 03:21* | *1* |

### General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Total Organic Carbon (EPA Lloyd Kahn)** | **13000** | | 300 | 100 | mg/Kg | | | 03/17/26 12:03 | 1 |

### Method: ASTM D2216-90 - Water (Moisture) Content

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Moisture Content** | **52.0** | | | | % | | | 03/16/26 11:24 | 1 |

### Method: ASTM D422 - Grain Size

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Sieve Size 3 inch - Percent Finer** | **100.0** | | | | % Finer | | | 03/16/26 11:15 | 1 |

# Client Sample Results

Client: Jacobs Engineering Group Inc
Job ID: 620-34584-1
Project/Site: Pleasant St Culvert

## Client Sample ID: SS-104-75.4_0-2_20260310
**Lab Sample ID: 620-34584-2**
**Date Collected: 03/10/26 10:13**
**Matrix: Solid**
**Date Received: 03/10/26 17:00**
**Percent Solids: 66.4**

### Method: ASTM D422 - Grain Size (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 50 mm (Sieve Size 2 inch) | 100.0 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 37.5 mm (Sieve Size 1.5 inch) | 100.0 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 25 mm (Sieve Size 1 inch) | 100.0 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 19 mm (Sieve Size 0.75 inch) | 100.0 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 9.5 mm (Sieve Size 0.375 inch) | 97.5 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 4.75 mm (Sieve Size #4) | 90.9 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 2 mm (Sieve Size #10) | 84.9 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 0.85 mm (Sieve Size #20) | 78.1 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 0.425 mm (Sieve Size #40) | 64.1 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 0.25 mm (Sieve Size #60) | 49.4 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 0.18 mm (Sieve Size #80) | 39.7 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 0.15 mm (Sieve Size #100) | 34.0 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 0.075 mm (Sieve Size #200) | 23.4 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 36.1 um (Hydrometer Reading 1) | 9.7 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 22.9 um (Hydrometer Reading 2) | 6.7 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 13.4 um (Hydrometer Reading 3) | 4.7 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 9.8 um (Hydrometer Reading 4) | 4.7 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 6.7 um (Hydrometer Reading 5) | 4.7 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 3.3 um (Hydrometer Reading 6) | 2.7 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 1.4 um (Hydrometer Reading 7) | 1.7 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| Clay | 4.7 | | | | % | | | 03/16/26 11:15 | 1 |
| Gravel | 9.1 | | | | % | | | 03/16/26 11:15 | 1 |
| Coarse Sand | 6.0 | | | | % | | | 03/16/26 11:15 | 1 |
| Fine Sand | 40.7 | | | | % | | | 03/16/26 11:15 | 1 |
| Medium Sand | 20.8 | | | | % | | | 03/16/26 11:15 | 1 |
| Sand | 67.5 | | | | % | | | 03/16/26 11:15 | 1 |
| Silt | 18.7 | | | | % | | | 03/16/26 11:15 | 1 |

## Client Sample ID: SS-105-38.3_0-1.5_20260310
**Lab Sample ID: 620-34584-3**
**Date Collected: 03/10/26 09:34**
**Matrix: Solid**
**Date Received: 03/10/26 17:00**
**Percent Solids: 89.9**

### Method: SW846 8270E LL PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | <0.089 | | 0.089 | 0.037 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:58 | 5 |
| Acenaphthylene | 0.18 | | 0.089 | 0.037 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:58 | 5 |
| 1-Methylnaphthalene | <0.089 | | 0.089 | 0.037 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:58 | 5 |
| Anthracene | 0.18 | | 0.089 | 0.037 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:58 | 5 |
| Benzo[a]anthracene | 0.48 | | 0.089 | 0.037 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:58 | 5 |
| Benzo[a]pyrene | 0.42 | | 0.089 | 0.037 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:58 | 5 |
| Benzo[b]fluoranthene | 0.35 | | 0.089 | 0.037 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:58 | 5 |
| Benzo[g,h,i]perylene | 0.30 | | 0.089 | 0.037 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:58 | 5 |
| Benzo[k]fluoranthene | 0.39 | | 0.089 | 0.037 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:58 | 5 |
| Chrysene | 0.56 | | 0.089 | 0.037 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:58 | 5 |
| Dibenz(a,h)anthracene | 0.092 | | 0.089 | 0.037 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:58 | 5 |
| Fluoranthene | 1.0 | | 0.089 | 0.037 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:58 | 5 |
| Fluorene | <0.089 | | 0.089 | 0.037 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:58 | 5 |
| Indeno[1,2,3-cd]pyrene | 0.22 | | 0.089 | 0.037 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:58 | 5 |
| 2-Methylnaphthalene | <0.089 | | 0.089 | 0.037 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:58 | 5 |
| Naphthalene | <0.089 | | 0.089 | 0.037 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:58 | 5 |

# Client Sample Results

Client: Jacobs Engineering Group Inc
Project/Site: Pleasant St Culvert

Job ID: 620-34584-1

**Client Sample ID: SS-105-38.3_0-1.5_20260310**
**Date Collected: 03/10/26 09:34**
**Date Received: 03/10/26 17:00**

**Lab Sample ID: 620-34584-3**
**Matrix: Solid**
**Percent Solids: 89.9**

## Method: SW846 8270E LL PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Phenanthrene** | **0.47** | | 0.089 | 0.037 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:58 | 5 |
| **Pyrene** | **1.1** | | 0.089 | 0.037 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:58 | 5 |
| Bis(2-ethylhexyl) phthalate | <0.089 | | 0.089 | 0.037 | mg/Kg | ☼ | 03/11/26 11:31 | 03/11/26 18:58 | 5 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Nitrobenzene-d5 (Surr)* | *56* | | *30 - 130* | *03/11/26 11:31* | *03/11/26 18:58* | *5* |
| *Terphenyl-d14 (Surr)* | *73* | | *30 - 130* | *03/11/26 11:31* | *03/11/26 18:58* | *5* |
| *2-Fluorobiphenyl (Surr)* | *70* | | *30 - 130* | *03/11/26 11:31* | *03/11/26 18:58* | *5* |

## Method: SW846 EPA 8082A - PCB Congeners (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| PCB-167 | <0.0011 | | 0.0011 | 0.00098 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 10:05 | 1 |
| PCB-153 | <0.0011 | | 0.0011 | 0.00070 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 10:05 | 1 |
| PCB-195 | <0.0011 | | 0.0011 | 0.00057 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 10:05 | 1 |
| PCB-123 | <0.0011 | | 0.0011 | 0.00097 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 10:05 | 1 |
| PCB-52 | <0.0011 | | 0.0011 | 0.00044 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 10:05 | 1 |
| PCB-187 | <0.0011 | | 0.0011 | 0.00059 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 10:05 | 1 |
| PCB-114 | <0.0011 | | 0.0011 | 0.00079 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 10:05 | 1 |
| PCB-66 | <0.0011 | | 0.0011 | 0.00081 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 10:05 | 1 |
| PCB-126 | <0.0011 | | 0.0011 | 0.00069 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 10:05 | 1 |
| PCB-157 | <0.0011 | | 0.0011 | 0.00067 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 10:05 | 1 |
| PCB-138 | <0.0011 | | 0.0011 | 0.00044 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 10:05 | 1 |
| PCB-170 | <0.0011 | | 0.0011 | 0.00055 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 10:05 | 1 |
| PCB-81 | <0.0011 | | 0.0011 | 0.00097 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 10:05 | 1 |
| PCB-44 | <0.0011 | | 0.0011 | 0.00043 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 10:05 | 1 |
| PCB-209 | <0.0011 | | 0.0011 | 0.00068 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 10:05 | 1 |
| PCB-77 | <0.0011 | | 0.0011 | 0.00095 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 10:05 | 1 |
| PCB-8 | <0.0011 | | 0.0011 | 0.00040 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 10:05 | 1 |
| PCB-118 | <0.0011 | | 0.0011 | 0.00074 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 10:05 | 1 |
| PCB-156 | <0.0011 | | 0.0011 | 0.00059 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 10:05 | 1 |
| PCB-206 | <0.0011 | | 0.0011 | 0.00050 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 10:05 | 1 |
| PCB-180 | <0.0011 | | 0.0011 | 0.00052 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 10:05 | 1 |
| PCB-169 | <0.0011 | | 0.0011 | 0.00076 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 10:05 | 1 |
| PCB-18 | <0.0011 | | 0.0011 | 0.00068 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 10:05 | 1 |
| PCB-105 | <0.0011 | | 0.0011 | 0.00071 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 10:05 | 1 |
| PCB-28 | <0.0011 | | 0.0011 | 0.00058 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 10:05 | 1 |
| PCB-189 | <0.0011 | | 0.0011 | 0.00052 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 10:05 | 1 |
| PCB-101 | <0.0011 | | 0.0011 | 0.00030 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 10:05 | 1 |
| PCB-128 | <0.0011 | | 0.0011 | 0.00041 | ng/uL | ☼ | 03/12/26 15:13 | 03/16/26 10:05 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *PCB-205 (Surr)* | *52* | | *31 - 150* | *03/12/26 15:13* | *03/16/26 10:05* | *1* |
| *Tetrachloro-m-xylene (Surr)* | *54* | | *35 - 150* | *03/12/26 15:13* | *03/16/26 10:05* | *1* |

## Method: MA DEP MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | <5.4 | | 5.4 | 2.5 | mg/Kg | ☼ | 03/11/26 08:17 | 03/14/26 03:47 | 1 |
| **C19-C36 Aliphatics** | **11** | | 5.4 | 5.4 | mg/Kg | ☼ | 03/11/26 08:17 | 03/14/26 03:47 | 1 |
| **C11-C22 Aromatics** | **48** | | 5.4 | 5.4 | mg/Kg | ☼ | 03/11/26 08:17 | 03/14/26 03:47 | 1 |
| **C11-C22 Aromatics (Adjusted)** | **40** | | 5.4 | 5.4 | mg/Kg | ☼ | 03/11/26 08:17 | 03/14/26 03:47 | 1 |

# Client Sample Results

Client: Jacobs Engineering Group Inc
Project/Site: Pleasant St Culvert

Job ID: 620-34584-1

## Client Sample ID: SS-105-38.3_0-1.5_20260310

**Lab Sample ID: 620-34584-3**
**Date Collected: 03/10/26 09:34**
**Matrix: Solid**
**Date Received: 03/10/26 17:00**
**Percent Solids: 89.9**

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| 1-Chlorooctadecane (Surr) | 71 | | 40 - 140 | 03/11/26 08:17 | 03/14/26 03:47 | 1 |
| o-Terphenyl (Surr) | 71 | | 40 - 140 | 03/11/26 08:17 | 03/14/26 03:47 | 1 |
| 2-Fluorobiphenyl (Surr) | 92 | | 40 - 140 | 03/11/26 08:17 | 03/14/26 03:47 | 1 |

### General Chemistry

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon (EPA Lloyd Kahn) | 3100 | | 300 | 100 | mg/Kg | | | 03/17/26 12:13 | 1 |

### Method: ASTM D2216-90 - Water (Moisture) Content

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Moisture Content | 19.2 | | | | % | | | 03/16/26 11:24 | 1 |

### Method: ASTM D422 - Grain Size

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Sieve Size 3 inch - Percent Finer | 100.0 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 50 mm (Sieve Size 2 inch) | 100.0 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 37.5 mm (Sieve Size 1.5 inch) | 100.0 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 25 mm (Sieve Size 1 inch) | 100.0 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 19 mm (Sieve Size 0.75 inch) | 100.0 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 9.5 mm (Sieve Size 0.375 inch) | 90.2 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 4.75 mm (Sieve Size #4) | 77.1 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 2 mm (Sieve Size #10) | 58.6 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 0.85 mm (Sieve Size #20) | 41.7 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 0.425 mm (Sieve Size #40) | 23.6 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 0.25 mm (Sieve Size #60) | 16.9 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 0.18 mm (Sieve Size #80) | 15.1 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 0.15 mm (Sieve Size #100) | 14.5 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 0.075 mm (Sieve Size #200) | 13.8 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 36.1 um (Hydrometer Reading 1) | 0.3 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 22.9 um (Hydrometer Reading 2) | 0.3 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 13.4 um (Hydrometer Reading 3) | 0.3 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 9.8 um (Hydrometer Reading 4) | 0.3 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 6.7 um (Hydrometer Reading 5) | 0.3 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 3.3 um (Hydrometer Reading 6) | 0.3 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| 1.4 um (Hydrometer Reading 7) | 0.3 | | | | % Finer | | | 03/16/26 11:15 | 1 |
| Clay | 0.3 | | | | % | | | 03/16/26 11:15 | 1 |
| Gravel | 22.9 | | | | % | | | 03/16/26 11:15 | 1 |
| Coarse Sand | 18.5 | | | | % | | | 03/16/26 11:15 | 1 |
| Fine Sand | 9.8 | | | | % | | | 03/16/26 11:15 | 1 |
| Medium Sand | 35.0 | | | | % | | | 03/16/26 11:15 | 1 |
| Sand | 63.3 | | | | % | | | 03/16/26 11:15 | 1 |
| Silt | 13.5 | | | | % | | | 03/16/26 11:15 | 1 |

## Client Sample ID: SS-101-261_0-2_20260310

**Lab Sample ID: 620-34584-4**
**Date Collected: 03/10/26 11:08**
**Matrix: Solid**
**Date Received: 03/10/26 17:00**
**Percent Solids: 93.0**

### Method: SW846 6020B - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 32 | | 0.21 | 0.0042 | mg/Kg | ☼ | 03/17/26 14:54 | 03/18/26 14:55 | 5 |

# Client Sample Results

Client: Jacobs Engineering Group Inc
Project/Site: Pleasant St Culvert

Job ID: 620-34584-1

## Client Sample ID: SS-101-261_0-2_20260310

**Lab Sample ID: 620-34584-4**
**Date Collected: 03/10/26 11:08**
**Matrix: Solid**
**Date Received: 03/10/26 17:00**
**Percent Solids: 93.0**

### Method: SW846 6020B - Metals (ICP/MS) (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Cadmium | 0.088 | J | 0.21 | 0.0042 | mg/Kg | ☼ | 03/17/26 14:54 | 03/18/26 14:55 | 5 |
| Chromium | 18 | B | 0.42 | 0.0085 | mg/Kg | ☼ | 03/17/26 14:54 | 03/18/26 14:55 | 5 |
| Copper | 15 | | 0.42 | 0.0085 | mg/Kg | ☼ | 03/17/26 14:54 | 03/18/26 14:55 | 5 |
| Lead | 59 | B *+ | 0.13 | 0.0025 | mg/Kg | ☼ | 03/17/26 14:54 | 03/19/26 15:07 | 5 |
| Nickel | 10 | | 0.42 | 0.0085 | mg/Kg | ☼ | 03/17/26 14:54 | 03/18/26 14:55 | 5 |
| Zinc | 150 | B | 1.7 | 0.034 | mg/Kg | ☼ | 03/17/26 14:54 | 03/18/26 14:55 | 5 |

### Method: SW846 7471B - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.0089 | J | 0.044 | 0.0061 | mg/Kg | ☼ | 03/17/26 10:39 | 03/17/26 14:16 | 1 |

## Client Sample ID: SS-104-75.4_0-2_20260310

**Lab Sample ID: 620-34584-5**
**Date Collected: 03/10/26 10:13**
**Matrix: Solid**
**Date Received: 03/10/26 17:00**
**Percent Solids: 76.3**

### Method: SW846 6020B - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 13 | | 0.26 | 0.0052 | mg/Kg | ☼ | 03/17/26 14:54 | 03/18/26 14:58 | 5 |
| Cadmium | 0.086 | J | 0.26 | 0.0052 | mg/Kg | ☼ | 03/17/26 14:54 | 03/18/26 14:58 | 5 |
| Chromium | 10 | B | 0.52 | 0.010 | mg/Kg | ☼ | 03/17/26 14:54 | 03/18/26 14:58 | 5 |
| Copper | 10 | | 0.52 | 0.010 | mg/Kg | ☼ | 03/17/26 14:54 | 03/18/26 14:58 | 5 |
| Lead | 53 | B *+ | 0.16 | 0.0031 | mg/Kg | ☼ | 03/17/26 14:54 | 03/19/26 15:10 | 5 |
| Nickel | 6.2 | | 0.52 | 0.010 | mg/Kg | ☼ | 03/17/26 14:54 | 03/18/26 14:58 | 5 |
| Zinc | 37 | B | 2.1 | 0.042 | mg/Kg | ☼ | 03/17/26 14:54 | 03/18/26 14:58 | 5 |

### Method: SW846 7471B - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.098 | | 0.052 | 0.0073 | mg/Kg | ☼ | 03/17/26 10:40 | 03/17/26 14:21 | 1 |

## Client Sample ID: SS-105-38.3_0-1.5_20260310

**Lab Sample ID: 620-34584-6**
**Date Collected: 03/10/26 09:34**
**Matrix: Solid**
**Date Received: 03/10/26 17:00**
**Percent Solids: 96.9**

### Method: SW846 6020B - Metals (ICP/MS)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 14 | | 0.20 | 0.0041 | mg/Kg | ☼ | 03/17/26 14:54 | 03/18/26 15:00 | 5 |
| Cadmium | 0.050 | J | 0.20 | 0.0041 | mg/Kg | ☼ | 03/17/26 14:54 | 03/18/26 15:00 | 5 |
| Chromium | 8.0 | B | 0.41 | 0.0082 | mg/Kg | ☼ | 03/17/26 14:54 | 03/18/26 15:00 | 5 |
| Copper | 9.0 | | 0.41 | 0.0082 | mg/Kg | ☼ | 03/17/26 14:54 | 03/18/26 15:00 | 5 |
| Lead | 12 | B *+ | 0.12 | 0.0025 | mg/Kg | ☼ | 03/17/26 14:54 | 03/19/26 15:13 | 5 |
| Nickel | 6.3 | | 0.41 | 0.0082 | mg/Kg | ☼ | 03/17/26 14:54 | 03/18/26 15:00 | 5 |
| Zinc | 21 | B | 1.6 | 0.033 | mg/Kg | ☼ | 03/17/26 14:54 | 03/18/26 15:00 | 5 |

### Method: SW846 7471B - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | <0.057 | | 0.057 | 0.0079 | mg/Kg | ☼ | 03/17/26 10:40 | 03/17/26 14:26 | 1 |

# Particle Size of Soils by ASTM D422

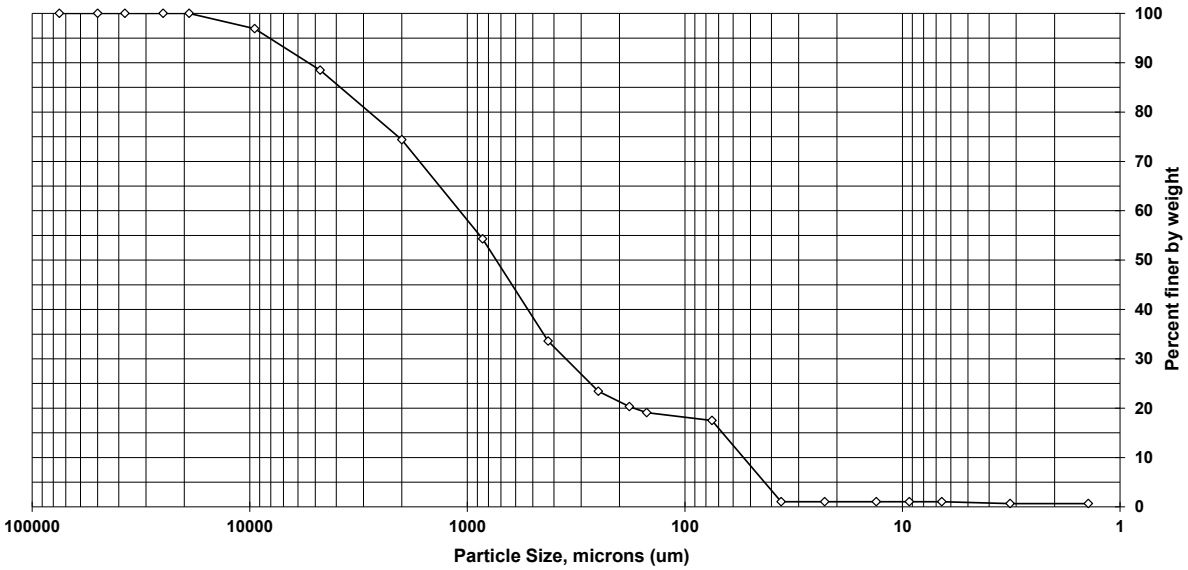
**Sample ID:** SS-101-261_0-2_20260
**Lab ID:** 620-34584-B-1

**Percent Solids:** 81.6%
**Specific Gravity:** 2.650

**Date Received:** 3/10/2026
**Start Date:** 3/16/2026
**End Date:** 3/23/2026

**Shape (> #10):**

**Non-soil material:** rocks
**Hardness (> #10):**




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 96.9 | 3.1 |
| #4 | 4750 | 88.5 | 8.4 |
| #10 | 2000 | 74.4 | 14.1 |
| #20 | 850 | 54.3 | 20.1 |
| #40 | 425 | 33.6 | 20.7 |
| #60 | 250 | 23.4 | 10.2 |
| #80 | 180 | 20.3 | 3.1 |
| #100 | 150 | 19.1 | 1.2 |
| #200 | 75 | 17.5 | 1.6 |
| Hyd1 | 36.1 | 1.0 | 16.5 |
| Hyd2 | 22.8 | 1.0 | 0.0 |
| Hyd3 | 13.2 | 1.0 | 0.0 |
| Hyd4 | 9.3 | 1.0 | 0.0 |
| Hyd5 | 6.6 | 1.0 | 0.0 |
| Hyd6 | 3.2 | 0.7 | 0.4 |
| Hyd7 | 1.4 | 0.7 | 0.0 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 11.5 |
| Sand | 71.0 |
| Coarse Sand | 14.1 |
| Medium Sand | 40.8 |
| Fine Sand | 16.1 |
| Silt | 16.5 |
| Clay | 1.0 |
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# Particle Size of Soils by ASTM D422

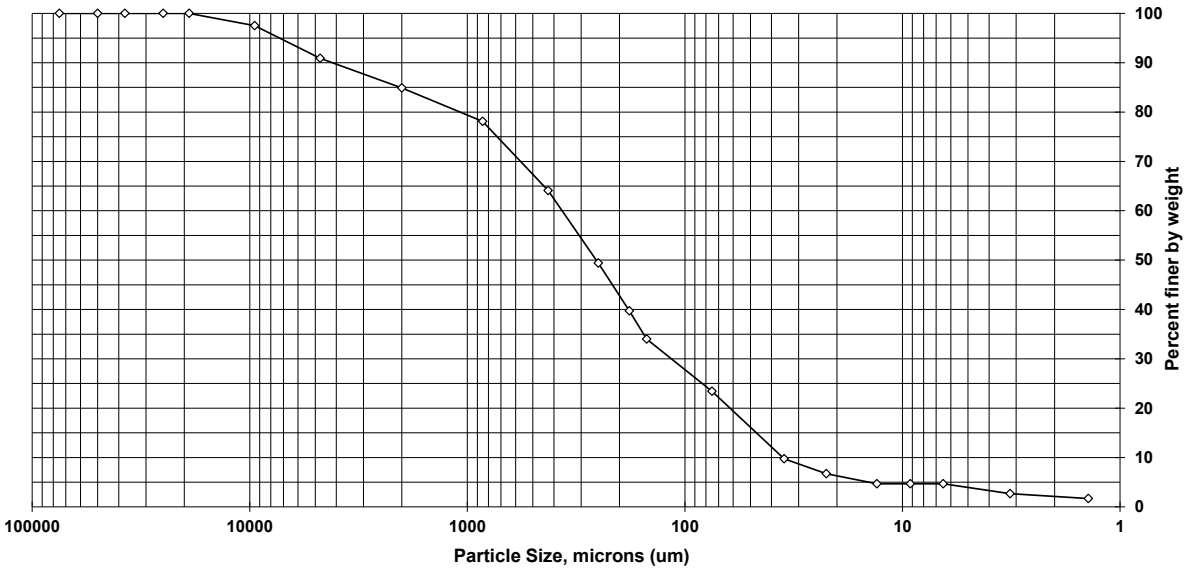
**Sample ID:** SS-104-75.4_0-2_2026
**Lab ID:** 620-34584-B-2

**Percent Solids:** 66.4%
**Specific Gravity:** 2.650

**Date Received:** 3/10/2026
**Start Date:** 3/16/2026
**End Date:** 3/23/2026

**Shape (> #10):**

**Non-soil material:**
**Hardness (> #10):**




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 97.5 | 2.5 |
| #4 | 4750 | 90.9 | 6.6 |
| #10 | 2000 | 84.9 | 6.0 |
| #20 | 850 | 78.1 | 6.8 |
| #40 | 425 | 64.1 | 14.0 |
| #60 | 250 | 49.4 | 14.7 |
| #80 | 180 | 39.7 | 9.7 |
| #100 | 150 | 34.0 | 5.7 |
| #200 | 75 | 23.4 | 10.6 |
| Hyd1 | 35 | 9.7 | 13.7 |
| Hyd2 | 22.4 | 6.7 | 3.0 |
| Hyd3 | 13.1 | 4.7 | 2.0 |
| Hyd4 | 9.2 | 4.7 | 0.0 |
| Hyd5 | 6.5 | 4.7 | 0.0 |
| Hyd6 | 3.2 | 2.7 | 2.0 |
| Hyd7 | 1.4 | 1.7 | 1.0 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 9.1 |
| Sand | 67.5 |
| Coarse Sand | 6.0 |
| Medium Sand | 20.8 |
| Fine Sand | 40.7 |
| Silt | 18.7 |
| Clay | 4.7 |
| | |
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# Particle Size of Soils by ASTM D422

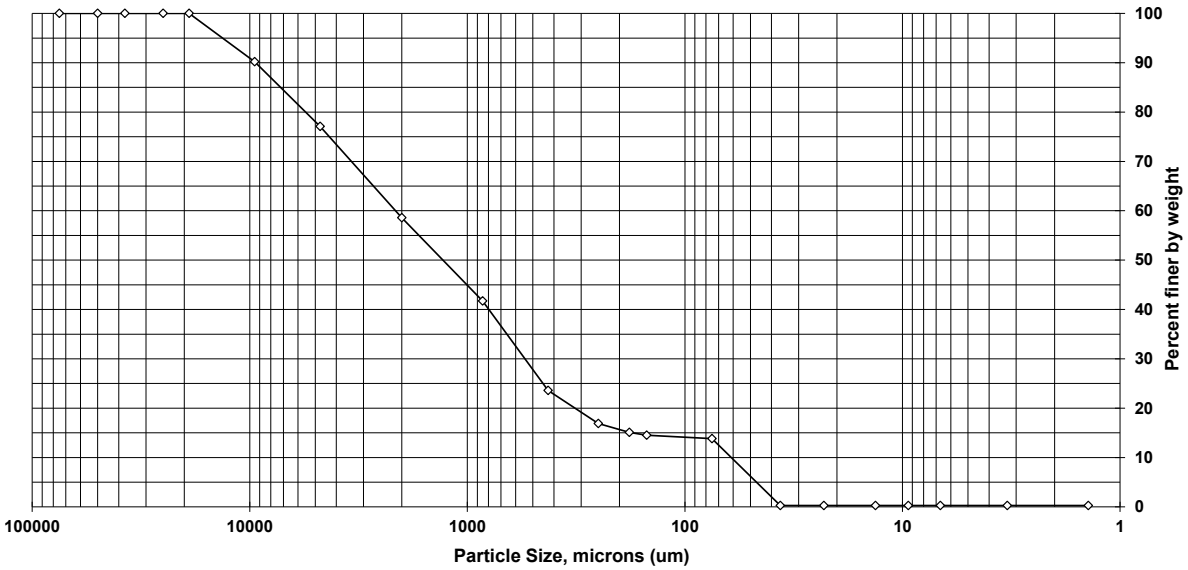
**Sample ID:** SS-105-38.3_0-1.5_20
**Lab ID:** 620-34584-B-3

**Percent Solids:** 89.9%
**Specific Gravity:** 2.650

**Date Received:** 3/10/2026
**Start Date:** 3/16/2026
**End Date:** 3/23/2026

**Shape (> #10):**

**Non-soil material:**
**Hardness (> #10):**




| Sieve size | Particle size, um | Percent finer | Incremental percent |
|---|---|---|---|
| 3 inch | 75000 | 100.0 | 0.0 |
| 2 inch | 50000 | 100.0 | 0.0 |
| 1.5 inch | 37500 | 100.0 | 0.0 |
| 1 inch | 25000 | 100.0 | 0.0 |
| 3/4 inch | 19000 | 100.0 | 0.0 |
| 3/8 inch | 9500 | 90.2 | 9.8 |
| #4 | 4750 | 77.1 | 13.1 |
| #10 | 2000 | 58.6 | 18.5 |
| #20 | 850 | 41.7 | 16.9 |
| #40 | 425 | 23.6 | 18.1 |
| #60 | 250 | 16.9 | 6.7 |
| #80 | 180 | 15.1 | 1.8 |
| #100 | 150 | 14.5 | 0.6 |
| #200 | 75 | 13.8 | 0.7 |
| Hyd1 | 36.4 | 0.3 | 13.5 |
| Hyd2 | 23 | 0.3 | 0.0 |
| Hyd3 | 13.3 | 0.3 | 0.0 |
| Hyd4 | 9.4 | 0.3 | 0.0 |
| Hyd5 | 6.7 | 0.3 | 0.0 |
| Hyd6 | 3.3 | 0.3 | 0.0 |
| Hyd7 | 1.4 | 0.3 | 0.0 |
| | | | |

| Soil Classification | Percent of sample |
|---|---|
| Gravel | 22.9 |
| Sand | 63.3 |
| Coarse Sand | 18.5 |
| Medium Sand | 35.0 |
| Fine Sand | 9.8 |
| Silt | 13.5 |
| Clay | 0.3 |
| | |
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**Sediment Grain Size - D422**

| | |
|---|---|
| Client | |
| Client Sample ID | SS-101-261_0-2_20260 |
| Lab Sample ID | 620-34584-B-1 |

| | |
|---|---|
| Date Received | 3/10/2026 |
| Start Date | 03/16/2026 11:15 |
| End Date | 03/23/2026 16:54 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 0.80 | g |
| Wet Sample + Tin | 5.00 | g |
| Dry Sample + Tin | 4.23 | g |
| % Moisture | 18.40 | % |

| | |
|---|---|
| Non-soil material: | rocks |
| Shape (> #10): | |
| Hardness (> #10): | |

| | |
|---|---|
| Date/Time in oven | 03/17/2026 15:58 |
| Date/Time out of oven | 03/23/2026 16:50 |

| Sample Weights | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | 0.00 | 250.78 | 250.78 |
| Sample Weight (Oven Dried) | | | 205 |

| Sample Split (oven dried) | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 52.6 |
| Sample <#10 | | | 152 |
| % Passing #10 | | | 60.6 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 747874 |
| Calib. Date (mm/dd/yyyy) | 02/23/2026 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0055 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0045 |
| Hydrometer Cal Slope | -0.000166667 |
| Hydrometer Cal Intercept | 1.008333333 |
| Default Soil Gravity | 2.6500 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | 556.47 | 562.80 | 6.33 | g | 96.9 | Gravel | |
| #4 | 4750 | 502.76 | 520.03 | 17.27 | g | 88.5 | Gravel | |
| #10 | 2000 | 450.82 | 479.80 | 28.98 | g | 74.4 | Sand | Coarse |
| #20 | 850 | 339.02 | 380.18 | 41.16 | g | 54.3 | Sand | Medium |
| #40 | 425 | 346.87 | 389.32 | 42.45 | g | 33.6 | Sand | Medium |
| #60 | 250 | 328.84 | 349.85 | 21.01 | g | 23.4 | Sand | Fine |
| #80 | 180 | 324.84 | 331.25 | 6.41 | g | 20.3 | Sand | Fine |
| #100 | 150 | 349.99 | 352.37 | 2.38 | g | 19.1 | Sand | Fine |
| #200 | 75 | 307.90 | 311.27 | 3.37 | g | 17.5 | Sand | Fine |
| | | | | 0.00 | g | 17.5 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 205 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0060 | 22.0 | 36.1 | 1.04 | Silt | |
| 5 | 5 | 1.0060 | 22.0 | 22.8 | 1.04 | Silt | |
| 15 | 15 | 1.0060 | 22.0 | 13.2 | 1.04 | Silt | |
| 30 | 30 | 1.0060 | 22.0 | 9.3 | 1.04 | Silt | |
| 60 | 60 | 1.0060 | 22.0 | 6.6 | 1.04 | Silt | |
| 250 | 250 | 1.0055 | 22.0 | 3.2 | 0.653 | Clay | |
| 1440 | 1440 | 1.0055 | 22.0 | 1.4 | 0.653 | Clay | |

**Sediment Grain Size - D422**

| | |
|---|---|
| Client | |
| Client Sample ID | SS-104-75.4_0-2_2026 |
| Lab Sample ID | 620-34584-B-2 |

| | |
|---|---|
| Date Received | 3/10/2026 |
| Start Date | 03/16/2026 11:15 |
| End Date | 03/23/2026 17:00 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 0.80 | g |
| Wet Sample + Tin | 5.00 | g |
| Dry Sample + Tin | 3.59 | g |
| % Moisture | 33.60 | % |

| | |
|---|---|
| Non-soil material: | |
| Shape (> #10): | |
| Hardness (> #10): | |
| Date/Time in oven | 03/17/2026 15:58 |
| Date/Time out of oven | 03/23/2026 16:55 |

| Sample Weights | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | 0.00 | 120.30 | 120.3 |
| Sample Weight (Oven Dried) | | | 79.9 |

| Sample Split (oven dried) | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 12.1 |
| Sample <#10 | | | 67.8 |
| % Passing #10 | | | 56.4 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 747874 |
| Calib. Date (mm/dd/yyyy) | 02/23/2026 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0055 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0045 |
| Hydrometer Cal Slope | -0.000166667 |
| Hydrometer Cal Intercept | 1.008333333 |
| Default Soil Gravity | 2.6500 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | 556.47 | 558.47 | 2.00 | g | 97.5 | Gravel | |
| #4 | 4750 | 502.76 | 508.04 | 5.28 | g | 90.9 | Gravel | |
| #10 | 2000 | 450.82 | 455.65 | 4.83 | g | 84.9 | Sand | Coarse |
| #20 | 850 | 339.02 | 344.43 | 5.41 | g | 78.1 | Sand | Medium |
| #40 | 425 | 346.87 | 358.02 | 11.15 | g | 64.1 | Sand | Medium |
| #60 | 250 | 328.84 | 340.60 | 11.76 | g | 49.4 | Sand | Fine |
| #80 | 180 | 324.84 | 332.61 | 7.77 | g | 39.7 | Sand | Fine |
| #100 | 150 | 349.99 | 354.54 | 4.55 | g | 34.0 | Sand | Fine |
| #200 | 75 | 307.90 | 316.38 | 8.48 | g | 23.4 | Sand | Fine |
| | | | | 0.00 | g | 23.4 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 79.9 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0095 | 22.0 | 35 | 9.72 | Silt | |
| 5 | 5 | 1.0080 | 22.0 | 22.4 | 6.7 | Silt | |
| 15 | 15 | 1.0070 | 22.0 | 13.1 | 4.69 | Silt | |
| 30 | 30 | 1.0070 | 22.0 | 9.2 | 4.69 | Silt | |
| 60 | 60 | 1.0070 | 22.0 | 6.5 | 4.69 | Silt | |
| 250 | 250 | 1.0060 | 22.0 | 3.2 | 2.68 | Clay | |
| 1440 | 1440 | 1.0055 | 22.0 | 1.4 | 1.68 | Clay | |

**Sediment Grain Size - D422**

| | |
|---|---|
| Client | |
| Client Sample ID | SS-105-38.3_0-1.5_20 |
| Lab Sample ID | 620-34584-B-3 |

| | |
|---|---|
| Date Received | 3/10/2026 |
| Start Date | 03/16/2026 11:15 |
| End Date | 03/23/2026 17:05 |

**Dry Weight Determination**

| | | |
|---|---|---|
| Tin Weight | 0.80 | g |
| Wet Sample + Tin | 5.00 | g |
| Dry Sample + Tin | 4.58 | g |
| % Moisture | 10.10 | % |

| | |
|---|---|
| Non-soil material: | |
| Shape (> #10): | |
| Hardness (> #10): | |
| Date/Time in oven | 03/17/2026 15:58 |
| Date/Time out of oven | 03/23/2026 17:01 |

| Sample Weights | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample Weight (Wet) | 0.00 | 222.16 | 222.16 |
| Sample Weight (Oven Dried) | | | 200 |

| Sample Split (oven dried) | Tare (g) | Pan+Samp (g) | Samp (g) |
|---|---|---|---|
| Sample >=#10 | | | 82.9 |
| Sample <#10 | | | 117 |
| % Passing #10 | | | 52.7 |

**Hydrometer Data**

| | |
|---|---|
| Serial Number | 747874 |
| Calib. Date (mm/dd/yyyy) | 02/23/2026 |
| Low Temp (C) | 17.0 |
| Reading at Low Temp | 1.0055 |
| High Temp (C) | 23.0 |
| Reading at High Temp | 1.0045 |
| Hydrometer Cal Slope | -0.000166667 |
| Hydrometer Cal Intercept | 1.008333333 |
| Default Soil Gravity | 2.6500 |

**Gravel/Sand Fraction (Sieves)**

| Sample Fraction | Size (um) | Pan Tare (g) | Pan+Sample (g) | Sample | | % Finer | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 3 inch | 75000 | | | 0.00 | g | 100.0 | Gravel | |
| 2 inch | 50000 | | | 0.00 | g | 100.0 | Gravel | |
| 1.5 inch | 37500 | | | 0.00 | g | 100.0 | Gravel | |
| 1 inch | 25000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/4 inch | 19000 | | | 0.00 | g | 100.0 | Gravel | |
| 3/8 inch | 9500 | 556.47 | 576.06 | 19.59 | g | 90.2 | Gravel | |
| #4 | 4750 | 502.76 | 529.00 | 26.24 | g | 77.1 | Gravel | |
| #10 | 2000 | 450.82 | 487.88 | 37.06 | g | 58.6 | Sand | Coarse |
| #20 | 850 | 339.02 | 372.81 | 33.79 | g | 41.7 | Sand | Medium |
| #40 | 425 | 346.87 | 383.00 | 36.13 | g | 23.6 | Sand | Medium |
| #60 | 250 | 328.84 | 342.19 | 13.35 | g | 16.9 | Sand | Fine |
| #80 | 180 | 324.84 | 328.43 | 3.59 | g | 15.1 | Sand | Fine |
| #100 | 150 | 349.99 | 351.14 | 1.15 | g | 14.5 | Sand | Fine |
| #200 | 75 | 307.90 | 309.34 | 1.44 | g | 13.8 | Sand | Fine |
| | | | | 0.00 | g | 13.8 | | |

**Adjusted Hydrometer Sample Mass**

| | |
|---|---|
| Hydrometer Sample Mass (g) | 200 |

**Silt/Clay Fraction (Hydrometer Test)**

| Hydrometer Test Time (min) | Actual | Spec. Gravity | Temp C | Particle Size (Micron) | % Finer | | Classification | Sub Class |
|---|---|---|---|---|---|---|---|---|
| 2 | 2 | 1.0050 | 22.0 | 36.4 | 0.268 | | Silt | |
| 5 | 5 | 1.0050 | 22.0 | 23 | 0.268 | | Silt | |
| 15 | 15 | 1.0050 | 22.0 | 13.3 | 0.268 | | Silt | |
| 30 | 30 | 1.0050 | 22.0 | 9.4 | 0.268 | | Silt | |
| 60 | 60 | 1.0050 | 22.0 | 6.7 | 0.268 | | Silt | |
| 250 | 250 | 1.0050 | 22.0 | 3.3 | 0.268 | | Clay | |
| 1440 | 1440 | 1.0050 | 22.0 | 1.4 | 0.268 | | Clay | |

# Surrogate Summary

Client: Jacobs Engineering Group Inc
Project/Site: Pleasant St Culvert

Job ID: 620-34584-1

## Method: 8270E LL PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH

**Matrix: Solid** **Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | | |
|---|---|---|---|---|
| | | NBZ | TPHL | FBP |
| Lab Sample ID | Client Sample ID | (30-130) | (30-130) | (30-130) |
| 620-34584-1 | SS-101-261_0-2_20260310 | 53 | 80 | 71 |
| 620-34584-2 | SS-104-75.4_0-2_20260310 | 47 | 56 | 53 |
| 620-34584-3 | SS-105-38.3_0-1.5_20260310 | 56 | 73 | 70 |
| LCS 620-61263/8-A | Lab Control Sample | 57 | 72 | 62 |
| LCSD 620-61263/9-A | Lab Control Sample Dup | 60 | 71 | 64 |
| MB 620-61263/1-A | Method Blank | 57 | 78 | 62 |

**Surrogate Legend**

NBZ = Nitrobenzene-d5 (Surr)
TPHL = Terphenyl-d14 (Surr)
FBP = 2-Fluorobiphenyl (Surr)

## Method: EPA 8082A - PCB Congeners (GC)

**Matrix: Solid** **Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | |
|---|---|---|---|
| | | PCB2051 | TCX1 |
| Lab Sample ID | Client Sample ID | (31-150) | (35-150) |
| 620-34584-1 | SS-101-261_0-2_20260310 | 54 | 54 |

**Surrogate Legend**

PCB205 = PCB-205 (Surr)
TCX = Tetrachloro-m-xylene (Surr)

## Method: EPA 8082A - PCB Congeners (GC)

**Matrix: Solid** **Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | |
|---|---|---|---|
| | | PCB2052 | TCX1 |
| Lab Sample ID | Client Sample ID | (31-150) | (35-150) |
| 620-34584-1 MS | SS-101-261_0-2_20260310 | 54 | 55 |
| 620-34584-1 MSD | SS-101-261_0-2_20260310 | 54 | 55 |
| 620-34584-2 | SS-104-75.4_0-2_20260310 | 70 | 52 |
| 620-34584-3 | SS-105-38.3_0-1.5_20260310 | 52 | 54 |
| LCS 180-511175/2-A | Lab Control Sample | 62 | 50 |
| MB 180-511175/1-A | Method Blank | 72 | 49 |

**Surrogate Legend**

PCB205 = PCB-205 (Surr)
TCX = Tetrachloro-m-xylene (Surr)

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

**Matrix: Solid** **Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | | |
|---|---|---|---|---|
| | | 1COD1 | OTPH1 | FBP1 |
| Lab Sample ID | Client Sample ID | (40-140) | (40-140) | (40-140) |
| 620-34584-1 | SS-101-261_0-2_20260310 | 58 | 67 | 92 |
| 620-34584-2 | SS-104-75.4_0-2_20260310 | 70 | 74 | 95 |
| 620-34584-3 | SS-105-38.3_0-1.5_20260310 | 71 | 71 | 92 |
| LCS 620-61213/2-B | Lab Control Sample | 59 | 60 | 93 |
| LCSD 620-61213/3-B | Lab Control Sample Dup | 60 | 60 | 91 |

# Surrogate Summary

Client: Jacobs Engineering Group Inc
Job ID: 620-34584-1
Project/Site: Pleasant St Culvert

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

**Matrix: Solid** **Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Lab Sample ID | Client Sample ID | 1COD1 (40-140) | OTPH1 (40-140) | FBP1 (40-140) | | | | | | |
| MB 620-61213/1-B | Method Blank | 68 | 69 | 91 | | | | | | |

**Surrogate Legend**

1COD = 1-Chlorooctadecane (Surr)
OTPH = o-Terphenyl (Surr)
FBP = 2-Fluorobiphenyl (Surr)

# QC Sample Results

Client: Jacobs Engineering Group Inc
Project/Site: Pleasant St Culvert

Job ID: 620-34584-1

## Method: 8270E LL PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH

**Lab Sample ID: MB 620-61263/1-A**
**Matrix: Solid**
**Analysis Batch: 61244**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 61263**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | <0.016 | | 0.016 | 0.0066 | mg/Kg | | 03/11/26 11:31 | 03/11/26 15:39 | 1 |
| Acenaphthylene | <0.016 | | 0.016 | 0.0066 | mg/Kg | | 03/11/26 11:31 | 03/11/26 15:39 | 1 |
| 1-Methylnaphthalene | <0.016 | | 0.016 | 0.0066 | mg/Kg | | 03/11/26 11:31 | 03/11/26 15:39 | 1 |
| Anthracene | <0.016 | | 0.016 | 0.0066 | mg/Kg | | 03/11/26 11:31 | 03/11/26 15:39 | 1 |
| Benzo[a]anthracene | <0.016 | | 0.016 | 0.0066 | mg/Kg | | 03/11/26 11:31 | 03/11/26 15:39 | 1 |
| Benzo[a]pyrene | <0.016 | | 0.016 | 0.0066 | mg/Kg | | 03/11/26 11:31 | 03/11/26 15:39 | 1 |
| Benzo[b]fluoranthene | <0.016 | | 0.016 | 0.0066 | mg/Kg | | 03/11/26 11:31 | 03/11/26 15:39 | 1 |
| Benzo[g,h,i]perylene | <0.016 | | 0.016 | 0.0066 | mg/Kg | | 03/11/26 11:31 | 03/11/26 15:39 | 1 |
| Benzo[k]fluoranthene | <0.016 | | 0.016 | 0.0066 | mg/Kg | | 03/11/26 11:31 | 03/11/26 15:39 | 1 |
| Chrysene | <0.016 | | 0.016 | 0.0066 | mg/Kg | | 03/11/26 11:31 | 03/11/26 15:39 | 1 |
| Dibenz(a,h)anthracene | <0.016 | | 0.016 | 0.0066 | mg/Kg | | 03/11/26 11:31 | 03/11/26 15:39 | 1 |
| Fluoranthene | <0.016 | | 0.016 | 0.0066 | mg/Kg | | 03/11/26 11:31 | 03/11/26 15:39 | 1 |
| Fluorene | <0.016 | | 0.016 | 0.0066 | mg/Kg | | 03/11/26 11:31 | 03/11/26 15:39 | 1 |
| Indeno[1,2,3-cd]pyrene | <0.016 | | 0.016 | 0.0066 | mg/Kg | | 03/11/26 11:31 | 03/11/26 15:39 | 1 |
| 2-Methylnaphthalene | <0.016 | | 0.016 | 0.0066 | mg/Kg | | 03/11/26 11:31 | 03/11/26 15:39 | 1 |
| Naphthalene | <0.016 | | 0.016 | 0.0066 | mg/Kg | | 03/11/26 11:31 | 03/11/26 15:39 | 1 |
| Phenanthrene | <0.016 | | 0.016 | 0.0066 | mg/Kg | | 03/11/26 11:31 | 03/11/26 15:39 | 1 |
| Pyrene | <0.016 | | 0.016 | 0.0066 | mg/Kg | | 03/11/26 11:31 | 03/11/26 15:39 | 1 |
| Bis(2-ethylhexyl) phthalate | <0.016 | | 0.016 | 0.0066 | mg/Kg | | 03/11/26 11:31 | 03/11/26 15:39 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Nitrobenzene-d5 (Surr)* | *57* | | *30 - 130* | *03/11/26 11:31* | *03/11/26 15:39* | *1* |
| *Terphenyl-d14 (Surr)* | *78* | | *30 - 130* | *03/11/26 11:31* | *03/11/26 15:39* | *1* |
| *2-Fluorobiphenyl (Surr)* | *62* | | *30 - 130* | *03/11/26 11:31* | *03/11/26 15:39* | *1* |

**Lab Sample ID: LCS 620-61263/8-A**
**Matrix: Solid**
**Analysis Batch: 61244**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 61263**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Acenaphthene | 0.167 | 0.100 | | mg/Kg | | 60 | 26 - 100 |
| Acenaphthylene | 0.167 | 0.101 | | mg/Kg | | 60 | 26 - 100 |
| 1-Methylnaphthalene | 0.167 | 0.0925 | | mg/Kg | | 55 | 22 - 100 |
| Anthracene | 0.167 | 0.113 | | mg/Kg | | 68 | 33 - 100 |
| Benzo[a]anthracene | 0.167 | 0.118 | | mg/Kg | | 71 | 36 - 100 |
| Benzo[a]pyrene | 0.167 | 0.117 | | mg/Kg | | 70 | 36 - 100 |
| Benzo[b]fluoranthene | 0.167 | 0.115 | | mg/Kg | | 69 | 33 - 110 |
| Benzo[g,h,i]perylene | 0.167 | 0.111 | | mg/Kg | | 67 | 38 - 110 |
| Benzo[k]fluoranthene | 0.167 | 0.122 | | mg/Kg | | 73 | 35 - 110 |
| Chrysene | 0.167 | 0.121 | | mg/Kg | | 73 | 37 - 110 |
| Dibenz(a,h)anthracene | 0.167 | 0.109 | | mg/Kg | | 65 | 34 - 110 |
| Fluoranthene | 0.167 | 0.122 | | mg/Kg | | 73 | 35 - 110 |
| Fluorene | 0.167 | 0.105 | | mg/Kg | | 63 | 29 - 100 |
| Indeno[1,2,3-cd]pyrene | 0.167 | 0.113 | | mg/Kg | | 68 | 36 - 110 |
| 2-Methylnaphthalene | 0.167 | 0.0952 | | mg/Kg | | 57 | 24 - 100 |
| Naphthalene | 0.167 | 0.0981 | | mg/Kg | | 59 | 25 - 100 |
| Phenanthrene | 0.167 | 0.109 | | mg/Kg | | 65 | 33 - 100 |
| Pyrene | 0.167 | 0.124 | | mg/Kg | | 74 | 38 - 110 |

# QC Sample Results

Client: Jacobs Engineering Group Inc
Project/Site: Pleasant St Culvert

Job ID: 620-34584-1

## Method: 8270E LL PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH (Continued)

**Lab Sample ID: LCS 620-61263/8-A**
**Matrix: Solid**
**Analysis Batch: 61244**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 61263**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Bis(2-ethylhexyl) phthalate | | | 0.167 | 0.127 | | mg/Kg | | 76 | 24 - 120 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *Nitrobenzene-d5 (Surr)* | *57* | | *30 - 130* |
| *Terphenyl-d14 (Surr)* | *72* | | *30 - 130* |
| *2-Fluorobiphenyl (Surr)* | *62* | | *30 - 130* |

**Lab Sample ID: LCSD 620-61263/9-A**
**Matrix: Solid**
**Analysis Batch: 61244**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 61263**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | | | 0.167 | 0.106 | | mg/Kg | | 64 | 26 - 100 | 6 | 30 |
| Acenaphthylene | | | 0.167 | 0.106 | | mg/Kg | | 63 | 26 - 100 | 5 | 30 |
| 1-Methylnaphthalene | | | 0.167 | 0.103 | | mg/Kg | | 62 | 22 - 100 | 11 | 30 |
| Anthracene | | | 0.167 | 0.112 | | mg/Kg | | 67 | 33 - 100 | 1 | 30 |
| Benzo[a]anthracene | | | 0.167 | 0.116 | | mg/Kg | | 70 | 36 - 100 | 2 | 30 |
| Benzo[a]pyrene | | | 0.167 | 0.114 | | mg/Kg | | 68 | 36 - 100 | 3 | 30 |
| Benzo[b]fluoranthene | | | 0.167 | 0.0965 | | mg/Kg | | 58 | 33 - 110 | 17 | 30 |
| Benzo[g,h,i]perylene | | | 0.167 | 0.108 | | mg/Kg | | 65 | 38 - 110 | 3 | 30 |
| Benzo[k]fluoranthene | | | 0.167 | 0.132 | | mg/Kg | | 79 | 35 - 110 | 7 | 30 |
| Chrysene | | | 0.167 | 0.119 | | mg/Kg | | 71 | 37 - 110 | 2 | 30 |
| Dibenz(a,h)anthracene | | | 0.167 | 0.109 | | mg/Kg | | 65 | 34 - 110 | 0 | 30 |
| Fluoranthene | | | 0.167 | 0.119 | | mg/Kg | | 71 | 35 - 110 | 3 | 30 |
| Fluorene | | | 0.167 | 0.106 | | mg/Kg | | 63 | 29 - 100 | 1 | 30 |
| Indeno[1,2,3-cd]pyrene | | | 0.167 | 0.109 | | mg/Kg | | 65 | 36 - 110 | 4 | 30 |
| 2-Methylnaphthalene | | | 0.167 | 0.105 | | mg/Kg | | 63 | 24 - 100 | 10 | 30 |
| Naphthalene | | | 0.167 | 0.109 | | mg/Kg | | 65 | 25 - 100 | 10 | 30 |
| Phenanthrene | | | 0.167 | 0.108 | | mg/Kg | | 65 | 33 - 100 | 1 | 30 |
| Pyrene | | | 0.167 | 0.121 | | mg/Kg | | 73 | 38 - 110 | 2 | 30 |
| Bis(2-ethylhexyl) phthalate | | | 0.167 | 0.124 | | mg/Kg | | 75 | 24 - 120 | 2 | 30 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *Nitrobenzene-d5 (Surr)* | *60* | | *30 - 130* |
| *Terphenyl-d14 (Surr)* | *71* | | *30 - 130* |
| *2-Fluorobiphenyl (Surr)* | *64* | | *30 - 130* |

## Method: EPA 8082A - PCB Congeners (GC)

**Lab Sample ID: MB 180-511175/1-A**
**Matrix: Solid**
**Analysis Batch: 511235**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 511175**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| PCB-167 | <0.0010 | | 0.0010 | 0.00089 | ng/uL | | 03/12/26 15:13 | 03/16/26 07:22 | 1 |
| PCB-153 | <0.0010 | | 0.0010 | 0.00063 | ng/uL | | 03/12/26 15:13 | 03/16/26 07:22 | 1 |
| PCB-195 | <0.0010 | | 0.0010 | 0.00052 | ng/uL | | 03/12/26 15:13 | 03/16/26 07:22 | 1 |
| PCB-123 | <0.0010 | | 0.0010 | 0.00088 | ng/uL | | 03/12/26 15:13 | 03/16/26 07:22 | 1 |

# QC Sample Results

Client: Jacobs Engineering Group Inc
Project/Site: Pleasant St Culvert

Job ID: 620-34584-1

## Method: EPA 8082A - PCB Congeners (GC) (Continued)

**Lab Sample ID: MB 180-511175/1-A**
**Matrix: Solid**
**Analysis Batch: 511235**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 511175**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| PCB-52 | <0.0010 | | 0.0010 | 0.00040 | ng/uL | | 03/12/26 15:13 | 03/16/26 07:22 | 1 |
| PCB-187 | <0.0010 | | 0.0010 | 0.00054 | ng/uL | | 03/12/26 15:13 | 03/16/26 07:22 | 1 |
| PCB-114 | <0.0010 | | 0.0010 | 0.00072 | ng/uL | | 03/12/26 15:13 | 03/16/26 07:22 | 1 |
| PCB-66 | <0.0010 | | 0.0010 | 0.00073 | ng/uL | | 03/12/26 15:13 | 03/16/26 07:22 | 1 |
| PCB-126 | <0.0010 | | 0.0010 | 0.00063 | ng/uL | | 03/12/26 15:13 | 03/16/26 07:22 | 1 |
| PCB-157 | <0.0010 | | 0.0010 | 0.00061 | ng/uL | | 03/12/26 15:13 | 03/16/26 07:22 | 1 |
| PCB-138 | <0.0010 | | 0.0010 | 0.00040 | ng/uL | | 03/12/26 15:13 | 03/16/26 07:22 | 1 |
| PCB-170 | <0.0010 | | 0.0010 | 0.00050 | ng/uL | | 03/12/26 15:13 | 03/16/26 07:22 | 1 |
| PCB-81 | <0.0010 | | 0.0010 | 0.00088 | ng/uL | | 03/12/26 15:13 | 03/16/26 07:22 | 1 |
| PCB-44 | <0.0010 | | 0.0010 | 0.00039 | ng/uL | | 03/12/26 15:13 | 03/16/26 07:22 | 1 |
| PCB-209 | <0.0010 | | 0.0010 | 0.00062 | ng/uL | | 03/12/26 15:13 | 03/16/26 07:22 | 1 |
| PCB-77 | <0.0010 | | 0.0010 | 0.00087 | ng/uL | | 03/12/26 15:13 | 03/16/26 07:22 | 1 |
| PCB-8 | <0.0010 | | 0.0010 | 0.00036 | ng/uL | | 03/12/26 15:13 | 03/16/26 07:22 | 1 |
| PCB-118 | <0.0010 | | 0.0010 | 0.00067 | ng/uL | | 03/12/26 15:13 | 03/16/26 07:22 | 1 |
| PCB-156 | <0.0010 | | 0.0010 | 0.00054 | ng/uL | | 03/12/26 15:13 | 03/16/26 07:22 | 1 |
| PCB-206 | <0.0010 | | 0.0010 | 0.00045 | ng/uL | | 03/12/26 15:13 | 03/16/26 07:22 | 1 |
| PCB-180 | <0.0010 | | 0.0010 | 0.00047 | ng/uL | | 03/12/26 15:13 | 03/16/26 07:22 | 1 |
| PCB-169 | <0.0010 | | 0.0010 | 0.00069 | ng/uL | | 03/12/26 15:13 | 03/16/26 07:22 | 1 |
| PCB-18 | <0.0010 | | 0.0010 | 0.00062 | ng/uL | | 03/12/26 15:13 | 03/16/26 07:22 | 1 |
| PCB-105 | <0.0010 | | 0.0010 | 0.00065 | ng/uL | | 03/12/26 15:13 | 03/16/26 07:22 | 1 |
| PCB-28 | <0.0010 | | 0.0010 | 0.00053 | ng/uL | | 03/12/26 15:13 | 03/16/26 07:22 | 1 |
| PCB-189 | <0.0010 | | 0.0010 | 0.00047 | ng/uL | | 03/12/26 15:13 | 03/16/26 07:22 | 1 |
| PCB-101 | <0.0010 | | 0.0010 | 0.00027 | ng/uL | | 03/12/26 15:13 | 03/16/26 07:22 | 1 |
| PCB-128 | <0.0010 | | 0.0010 | 0.00037 | ng/uL | | 03/12/26 15:13 | 03/16/26 07:22 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *PCB-205 (Surr)* | *72* | | *31 - 150* | *03/12/26 15:13* | *03/16/26 07:22* | *1* |
| *Tetrachloro-m-xylene (Surr)* | *49* | | *35 - 150* | *03/12/26 15:13* | *03/16/26 07:22* | *1* |

**Lab Sample ID: LCS 180-511175/2-A**
**Matrix: Solid**
**Analysis Batch: 511235**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 511175**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| PCB-153 | 0.0100 | 0.00566 | | ng/uL | | 57 | 47 - 130 |
| PCB-195 | 0.0100 | 0.00543 | | ng/uL | | 54 | 48 - 134 |
| PCB-52 | 0.0100 | 0.00577 | | ng/uL | | 58 | 47 - 127 |
| PCB-187 | 0.0100 | 0.00572 | | ng/uL | | 57 | 48 - 129 |
| PCB-66 | 0.0100 | 0.00579 | | ng/uL | | 58 | 50 - 139 |
| PCB-126 | 0.0100 | 0.00615 | | ng/uL | | 62 | 44 - 150 |
| PCB-138 | 0.0100 | 0.00554 | | ng/uL | | 55 | 45 - 124 |
| PCB-170 | 0.0100 | 0.00539 | | ng/uL | | 54 | 44 - 136 |
| PCB-44 | 0.0100 | 0.00593 | | ng/uL | | 59 | 46 - 136 |
| PCB-209 | 0.0100 | 0.00551 | | ng/uL | | 55 | 41 - 141 |
| PCB-77 | 0.0100 | 0.00655 | | ng/uL | | 65 | 39 - 170 |
| PCB-8 | 0.0100 | 0.00588 | | ng/uL | | 59 | 47 - 130 |
| PCB-118 | 0.0100 | 0.00574 | | ng/uL | | 57 | 50 - 133 |
| PCB-156 | 0.0100 | 0.00558 | | ng/uL | | 56 | 49 - 133 |

# QC Sample Results

Client: Jacobs Engineering Group Inc
Project/Site: Pleasant St Culvert

Job ID: 620-34584-1

## Method: EPA 8082A - PCB Congeners (GC) (Continued)

**Lab Sample ID: LCS 180-511175/2-A**
**Matrix: Solid**
**Analysis Batch: 511235**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 511175**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PCB-206 | | | 0.0100 | 0.00531 | | ng/uL | | 53 | 47 - 135 | | |
| PCB-180 | | | 0.0100 | 0.00536 | | ng/uL | | 54 | 44 - 123 | | |
| PCB-169 | | | 0.0100 | 0.00528 | | ng/uL | | 53 | 42 - 148 | | |
| PCB-18 | | | 0.0100 | 0.00564 | | ng/uL | | 56 | 38 - 149 | | |
| PCB-105 | | | 0.0100 | 0.00564 | | ng/uL | | 56 | 51 - 133 | | |
| PCB-28 | | | 0.0100 | 0.00573 | | ng/uL | | 57 | 46 - 142 | | |
| PCB-101 | | | 0.0100 | 0.00557 | | ng/uL | | 56 | 46 - 123 | | |
| PCB-128 | | | 0.0100 | 0.00561 | | ng/uL | | 56 | 48 - 119 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *PCB-205 (Surr)* | *62* | | *31 - 150* |
| *Tetrachloro-m-xylene (Surr)* | *50* | | *35 - 150* |

**Lab Sample ID: 620-34584-1 MS**
**Matrix: Solid**
**Analysis Batch: 511235**

**Client Sample ID: SS-101-261_0-2_20260310**
**Prep Type: Total/NA**
**Prep Batch: 511175**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PCB-153 | <0.0012 | | 0.0121 | 0.00734 | | ng/uL | ☼ | 60 | 47 - 130 | | |
| PCB-195 | <0.0012 | | 0.0121 | 0.00749 | | ng/uL | ☼ | 62 | 48 - 134 | | |
| PCB-52 | <0.0012 | | 0.0121 | 0.00762 | | ng/uL | ☼ | 63 | 47 - 127 | | |
| PCB-187 | <0.0012 | | 0.0121 | 0.00703 | | ng/uL | ☼ | 58 | 48 - 129 | | |
| PCB-66 | <0.0012 | | 0.0121 | 0.00792 | | ng/uL | ☼ | 65 | 50 - 139 | | |
| PCB-126 | <0.0012 | | 0.0121 | 0.00810 | | ng/uL | ☼ | 67 | 44 - 150 | | |
| PCB-138 | <0.0012 | | 0.0121 | 0.00685 | | ng/uL | ☼ | 56 | 45 - 124 | | |
| PCB-170 | <0.0012 | | 0.0121 | 0.00734 | | ng/uL | ☼ | 60 | 44 - 136 | | |
| PCB-44 | <0.0012 | | 0.0121 | 0.00754 | | ng/uL | ☼ | 62 | 46 - 136 | | |
| PCB-209 | <0.0012 | | 0.0121 | 0.00727 | | ng/uL | ☼ | 60 | 41 - 141 | | |
| PCB-77 | <0.0012 | | 0.0121 | 0.00953 | | ng/uL | ☼ | 78 | 39 - 170 | | |
| PCB-8 | <0.0012 | | 0.0121 | 0.00798 | | ng/uL | ☼ | 66 | 47 - 130 | | |
| PCB-118 | <0.0012 | | 0.0121 | 0.00767 | | ng/uL | ☼ | 63 | 50 - 133 | | |
| PCB-156 | <0.0012 | | 0.0121 | 0.00752 | | ng/uL | ☼ | 62 | 49 - 133 | | |
| PCB-206 | <0.0012 | | 0.0121 | 0.00715 | | ng/uL | ☼ | 59 | 47 - 135 | | |
| PCB-180 | <0.0012 | | 0.0121 | 0.00721 | | ng/uL | ☼ | 59 | 44 - 123 | | |
| PCB-169 | <0.0012 | | 0.0121 | 0.00734 | | ng/uL | ☼ | 60 | 42 - 148 | | |
| PCB-18 | <0.0012 | F1 F2 | 0.0121 | 0.00714 | p | ng/uL | ☼ | 59 | 38 - 149 | | |
| PCB-105 | <0.0012 | | 0.0121 | 0.00723 | | ng/uL | ☼ | 60 | 51 - 133 | | |
| PCB-28 | <0.0012 | | 0.0121 | 0.00819 | | ng/uL | ☼ | 67 | 46 - 142 | | |
| PCB-101 | <0.0012 | | 0.0121 | 0.00733 | | ng/uL | ☼ | 60 | 46 - 123 | | |
| PCB-128 | <0.0012 | | 0.0121 | 0.00695 | | ng/uL | ☼ | 57 | 48 - 119 | | |

| *Surrogate* | *MS %Recovery* | *MS Qualifier* | *Limits* |
|---|---|---|---|
| *PCB-205 (Surr)* | *54* | | *31 - 150* |
| *Tetrachloro-m-xylene (Surr)* | *55* | | *35 - 150* |

# QC Sample Results

Client: Jacobs Engineering Group Inc
Project/Site: Pleasant St Culvert

Job ID: 620-34584-1

## Method: EPA 8082A - PCB Congeners (GC) (Continued)

**Lab Sample ID: 620-34584-1 MSD**
**Matrix: Solid**
**Analysis Batch: 511235**

**Client Sample ID: SS-101-261_0-2_20260310**
**Prep Type: Total/NA**
**Prep Batch: 511175**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PCB-153 | <0.0012 | | 0.0120 | 0.00741 | | ng/uL | ☼ | 62 | 47 - 130 | 1 | 32 |
| PCB-195 | <0.0012 | | 0.0120 | 0.00738 | | ng/uL | ☼ | 61 | 48 - 134 | 1 | 34 |
| PCB-52 | <0.0012 | | 0.0120 | 0.00754 | | ng/uL | ☼ | 63 | 47 - 127 | 1 | 32 |
| PCB-187 | <0.0012 | | 0.0120 | 0.00706 | | ng/uL | ☼ | 59 | 48 - 129 | 0 | 33 |
| PCB-66 | <0.0012 | | 0.0120 | 0.00794 | | ng/uL | ☼ | 66 | 50 - 139 | 0 | 31 |
| PCB-126 | <0.0012 | | 0.0120 | 0.00806 | | ng/uL | ☼ | 67 | 44 - 150 | 1 | 15 |
| PCB-138 | <0.0012 | | 0.0120 | 0.00690 | | ng/uL | ☼ | 57 | 45 - 124 | 1 | 32 |
| PCB-170 | <0.0012 | | 0.0120 | 0.00759 | | ng/uL | ☼ | 63 | 44 - 136 | 3 | 35 |
| PCB-44 | <0.0012 | | 0.0120 | 0.00761 | | ng/uL | ☼ | 63 | 46 - 136 | 1 | 33 |
| PCB-209 | <0.0012 | | 0.0120 | 0.00747 | | ng/uL | ☼ | 62 | 41 - 141 | 3 | 15 |
| PCB-77 | <0.0012 | | 0.0120 | 0.00933 | | ng/uL | ☼ | 78 | 39 - 170 | 2 | 36 |
| PCB-8 | <0.0012 | | 0.0120 | 0.00805 | | ng/uL | ☼ | 67 | 47 - 130 | 1 | 32 |
| PCB-118 | <0.0012 | | 0.0120 | 0.00777 | | ng/uL | ☼ | 65 | 50 - 133 | 1 | 32 |
| PCB-156 | <0.0012 | | 0.0120 | 0.00741 | | ng/uL | ☼ | 62 | 49 - 133 | 1 | 15 |
| PCB-206 | <0.0012 | | 0.0120 | 0.00728 | | ng/uL | ☼ | 61 | 47 - 135 | 2 | 35 |
| PCB-180 | <0.0012 | | 0.0120 | 0.00692 | | ng/uL | ☼ | 58 | 44 - 123 | 4 | 33 |
| PCB-169 | <0.0012 | | 0.0120 | 0.00759 | | ng/uL | ☼ | 63 | 42 - 148 | 3 | 40 |
| PCB-18 | <0.0012 | F1 F2 | 0.0120 | 0.00719 | p | ng/uL | ☼ | 60 | 38 - 149 | 1 | 33 |
| PCB-105 | <0.0012 | | 0.0120 | 0.00722 | | ng/uL | ☼ | 60 | 51 - 133 | 0 | 32 |
| PCB-28 | <0.0012 | | 0.0120 | 0.00817 | | ng/uL | ☼ | 68 | 46 - 142 | 0 | 35 |
| PCB-101 | <0.0012 | | 0.0120 | 0.00723 | | ng/uL | ☼ | 60 | 46 - 123 | 1 | 30 |
| PCB-128 | <0.0012 | | 0.0120 | 0.00676 | | ng/uL | ☼ | 56 | 48 - 119 | 3 | 33 |

| *Surrogate* | *MSD %Recovery* | *MSD Qualifier* | *Limits* |
|---|---|---|---|
| *PCB-205 (Surr)* | *54* | | *31 - 150* |
| *Tetrachloro-m-xylene (Surr)* | *55* | | *35 - 150* |

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC)

**Lab Sample ID: MB 620-61213/1-B**
**Matrix: Solid**
**Analysis Batch: 61462**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 61213**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | <5.0 | | 5.0 | 2.3 | mg/Kg | | 03/11/26 08:17 | 03/14/26 00:13 | 1 |
| C19-C36 Aliphatics | <5.0 | | 5.0 | 5.0 | mg/Kg | | 03/11/26 08:17 | 03/14/26 00:13 | 1 |
| C11-C22 Aromatics | <5.0 | | 5.0 | 5.0 | mg/Kg | | 03/11/26 08:17 | 03/14/26 00:13 | 1 |
| C11-C22 Aromatics (Adjusted) | <5.0 | | 5.0 | 5.0 | mg/Kg | | 03/11/26 08:17 | 03/14/26 00:13 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *68* | | *40 - 140* | *03/11/26 08:17* | *03/14/26 00:13* | *1* |
| *o-Terphenyl (Surr)* | *69* | | *40 - 140* | *03/11/26 08:17* | *03/14/26 00:13* | *1* |
| *2-Fluorobiphenyl (Surr)* | *91* | | *40 - 140* | *03/11/26 08:17* | *03/14/26 00:13* | *1* |

# QC Sample Results

Client: Jacobs Engineering Group Inc
Project/Site: Pleasant St Culvert

Job ID: 620-34584-1

## Method: MAEPH2.1 - Massachusetts - Extractable Petroleum Hydrocarbons (GC) (Continued)

**Lab Sample ID: LCS 620-61213/2-B**
**Matrix: Solid**
**Analysis Batch: 61462**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 61213**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | 6.00 | 3.51 | J | mg/Kg | | 59 | 40 - 140 |
| C19-C36 Aliphatics | 8.00 | 6.18 | | mg/Kg | | 77 | 40 - 140 |
| C11-C22 Aromatics | 17.0 | 10.8 | | mg/Kg | | 63 | 40 - 140 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *59* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *60* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *93* | | *40 - 140* |

**Lab Sample ID: LCSD 620-61213/3-B**
**Matrix: Solid**
**Analysis Batch: 61462**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 61213**

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| C9-C18 Aliphatics | 6.00 | 3.45 | J | mg/Kg | | 57 | 40 - 140 | 2 | 25 |
| C19-C36 Aliphatics | 8.00 | 6.50 | | mg/Kg | | 81 | 40 - 140 | 5 | 25 |
| C11-C22 Aromatics | 17.0 | 10.6 | | mg/Kg | | 63 | 40 - 140 | 1 | 25 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane (Surr)* | *60* | | *40 - 140* |
| *o-Terphenyl (Surr)* | *60* | | *40 - 140* |
| *2-Fluorobiphenyl (Surr)* | *91* | | *40 - 140* |

## Method: 6020B - Metals (ICP/MS)

**Lab Sample ID: MB 620-61705/1-A**
**Matrix: Solid**
**Analysis Batch: 61831**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 61705**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | <0.48 | | 0.48 | 0.0097 | mg/Kg | | 03/17/26 14:54 | 03/18/26 13:36 | 5 |
| Cadmium | <0.48 | | 0.48 | 0.0097 | mg/Kg | | 03/17/26 14:54 | 03/18/26 13:36 | 5 |
| Chromium | 0.0377 | J | 0.97 | 0.019 | mg/Kg | | 03/17/26 14:54 | 03/18/26 13:36 | 5 |
| Copper | <0.97 | | 0.97 | 0.019 | mg/Kg | | 03/17/26 14:54 | 03/18/26 13:36 | 5 |
| Lead | 0.0330 | J | 0.29 | 0.0058 | mg/Kg | | 03/17/26 14:54 | 03/18/26 13:36 | 5 |
| Nickel | <0.97 | | 0.97 | 0.019 | mg/Kg | | 03/17/26 14:54 | 03/18/26 13:36 | 5 |
| Zinc | 0.690 | J | 3.9 | 0.077 | mg/Kg | | 03/17/26 14:54 | 03/18/26 13:36 | 5 |

**Lab Sample ID: MB 620-61705/1-A**
**Matrix: Solid**
**Analysis Batch: 61932**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 61705**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.0487 | J | 0.29 | 0.0058 | mg/Kg | | 03/17/26 14:54 | 03/19/26 14:59 | 5 |

# QC Sample Results

Client: Jacobs Engineering Group Inc
Project/Site: Pleasant St Culvert

Job ID: 620-34584-1

## Method: 6020B - Metals (ICP/MS) (Continued)

**Lab Sample ID: LCSSRM 620-61705/28-A**
**Matrix: Solid**
**Analysis Batch: 61932**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 61705**

| Analyte | Spike Added | LCSSRM Result | LCSSRM Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Lead | 4490 | 4180 | | mg/Kg | | 93.1 | 80.0 - 120.0 |

**Lab Sample ID: LCSSRM 620-61705/2-A**
**Matrix: Solid**
**Analysis Batch: 61831**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 61705**

| Analyte | Spike Added | LCSSRM Result | LCSSRM Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Arsenic | 264 | 315 | *+ | mg/Kg | | 119.2 | 68.2 - 99.6 |
| Cadmium | 209 | 253 | *+ | mg/Kg | | 121.3 | 70.8 - 101.9 |
| Chromium | 101 | 123 | *+ | mg/Kg | | 121.7 | 73.4 - 106.9 |
| Copper | 196 | 245 | *+ | mg/Kg | | 125.0 | 75.5 - 106.1 |
| Lead | 130 | 170 | *+ | mg/Kg | | 130.5 | 74.7 - 108.5 |
| Nickel | 91.4 | 113 | *+ | mg/Kg | | 123.9 | 73.3 - 105.4 |
| Zinc | 500 | 613 | *+ | mg/Kg | | 122.7 | 71.6 - 107.8 |

**Lab Sample ID: LCSSRM 620-61705/2-A**
**Matrix: Solid**
**Analysis Batch: 61932**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 61705**

| Analyte | Spike Added | LCSSRM Result | LCSSRM Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Lead | 130 | 165 | *+ | mg/Kg | | 126.7 | 74.7 - 108.5 |

**Lab Sample ID: LCSSRM 620-61705/3-A**
**Matrix: Solid**
**Analysis Batch: 61932**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 61705**

| Analyte | Spike Added | LCSSRM Result | LCSSRM Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Lead | 130 | 126 | | mg/Kg | | 97.0 | 74.7 - 108.5 |

## Method: 7471B - Mercury (CVAA)

**Lab Sample ID: MB 620-61676/5-A**
**Matrix: Solid**
**Analysis Batch: 61716**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 61676**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | <0.040 | | 0.040 | 0.0056 | mg/Kg | | 03/17/26 10:39 | 03/17/26 13:38 | 1 |

# QC Sample Results

Client: Jacobs Engineering Group Inc
Project/Site: Pleasant St Culvert

Job ID: 620-34584-1

## Method: 7471B - Mercury (CVAA) (Continued)

**Lab Sample ID: LCSSRM 620-61676/6-A**
**Matrix: Solid**
**Analysis Batch: 61716**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 61676**

| Analyte | Spike Added | LCSSRM Result | LCSSRM Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Mercury | 24.9 | 26.1 | | mg/Kg | | 104.6 | 58.6 - 112.0 |

## Method: Lloyd Kahn - Organic Carbon, Total (TOC)

**Lab Sample ID: MB 410-784381/5**
**Matrix: Solid**
**Analysis Batch: 784381**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon | <300 | | 300 | 100 | mg/Kg | | | 03/17/26 11:12 | 1 |

**Lab Sample ID: LCS 410-784381/4**
**Matrix: Solid**
**Analysis Batch: 784381**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| Total Organic Carbon | 3290 | 3230 | | mg/Kg | | 98 | 36 - 163 |

# QC Association Summary

Client: Jacobs Engineering Group Inc
Project/Site: Pleasant St Culvert

Job ID: 620-34584-1

## GC/MS Semi VOA

### Analysis Batch: 61244

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-34584-1 | SS-101-261_0-2_20260310 | Total/NA | Solid | 8270E LL PAH | 61263 |
| 620-34584-2 | SS-104-75.4_0-2_20260310 | Total/NA | Solid | 8270E LL PAH | 61263 |
| 620-34584-3 | SS-105-38.3_0-1.5_20260310 | Total/NA | Solid | 8270E LL PAH | 61263 |
| MB 620-61263/1-A | Method Blank | Total/NA | Solid | 8270E LL PAH | 61263 |
| LCS 620-61263/8-A | Lab Control Sample | Total/NA | Solid | 8270E LL PAH | 61263 |
| LCSD 620-61263/9-A | Lab Control Sample Dup | Total/NA | Solid | 8270E LL PAH | 61263 |

### Prep Batch: 61263

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-34584-1 | SS-101-261_0-2_20260310 | Total/NA | Solid | 3546 | |
| 620-34584-2 | SS-104-75.4_0-2_20260310 | Total/NA | Solid | 3546 | |
| 620-34584-3 | SS-105-38.3_0-1.5_20260310 | Total/NA | Solid | 3546 | |
| MB 620-61263/1-A | Method Blank | Total/NA | Solid | 3546 | |
| LCS 620-61263/8-A | Lab Control Sample | Total/NA | Solid | 3546 | |
| LCSD 620-61263/9-A | Lab Control Sample Dup | Total/NA | Solid | 3546 | |

## GC Semi VOA

### Prep Batch: 61213

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-34584-1 | SS-101-261_0-2_20260310 | Total/NA | Solid | 3546 | |
| 620-34584-2 | SS-104-75.4_0-2_20260310 | Total/NA | Solid | 3546 | |
| 620-34584-3 | SS-105-38.3_0-1.5_20260310 | Total/NA | Solid | 3546 | |
| MB 620-61213/1-B | Method Blank | Total/NA | Solid | 3546 | |
| LCS 620-61213/2-B | Lab Control Sample | Total/NA | Solid | 3546 | |
| LCSD 620-61213/3-B | Lab Control Sample Dup | Total/NA | Solid | 3546 | |

### Fraction Batch: 61279

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-34584-1 | SS-101-261_0-2_20260310 | Total/NA | Solid | MA EPH Frac | 61213 |
| 620-34584-2 | SS-104-75.4_0-2_20260310 | Total/NA | Solid | MA EPH Frac | 61213 |
| 620-34584-3 | SS-105-38.3_0-1.5_20260310 | Total/NA | Solid | MA EPH Frac | 61213 |
| MB 620-61213/1-B | Method Blank | Total/NA | Solid | MA EPH Frac | 61213 |
| LCS 620-61213/2-B | Lab Control Sample | Total/NA | Solid | MA EPH Frac | 61213 |
| LCSD 620-61213/3-B | Lab Control Sample Dup | Total/NA | Solid | MA EPH Frac | 61213 |

### Analysis Batch: 61462

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-34584-1 | SS-101-261_0-2_20260310 | Total/NA | Solid | MAEPH2.1 | 61279 |
| 620-34584-2 | SS-104-75.4_0-2_20260310 | Total/NA | Solid | MAEPH2.1 | 61279 |
| 620-34584-3 | SS-105-38.3_0-1.5_20260310 | Total/NA | Solid | MAEPH2.1 | 61279 |
| MB 620-61213/1-B | Method Blank | Total/NA | Solid | MAEPH2.1 | 61279 |
| LCS 620-61213/2-B | Lab Control Sample | Total/NA | Solid | MAEPH2.1 | 61279 |
| LCSD 620-61213/3-B | Lab Control Sample Dup | Total/NA | Solid | MAEPH2.1 | 61279 |

### Prep Batch: 511175

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-34584-1 | SS-101-261_0-2_20260310 | Total/NA | Solid | 3541 | |
| 620-34584-2 | SS-104-75.4_0-2_20260310 | Total/NA | Solid | 3541 | |
| 620-34584-3 | SS-105-38.3_0-1.5_20260310 | Total/NA | Solid | 3541 | |
| MB 180-511175/1-A | Method Blank | Total/NA | Solid | 3541 | |

# QC Association Summary

Client: Jacobs Engineering Group Inc
Project/Site: Pleasant St Culvert

Job ID: 620-34584-1

## GC Semi VOA (Continued)

### Prep Batch: 511175 (Continued)

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| LCS 180-511175/2-A | Lab Control Sample | Total/NA | Solid | 3541 | |
| 620-34584-1 MS | SS-101-261_0-2_20260310 | Total/NA | Solid | 3541 | |
| 620-34584-1 MSD | SS-101-261_0-2_20260310 | Total/NA | Solid | 3541 | |

### Analysis Batch: 511235

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-34584-1 | SS-101-261_0-2_20260310 | Total/NA | Solid | EPA 8082A | 511175 |
| 620-34584-2 | SS-104-75.4_0-2_20260310 | Total/NA | Solid | EPA 8082A | 511175 |
| 620-34584-3 | SS-105-38.3_0-1.5_20260310 | Total/NA | Solid | EPA 8082A | 511175 |
| MB 180-511175/1-A | Method Blank | Total/NA | Solid | EPA 8082A | 511175 |
| LCS 180-511175/2-A | Lab Control Sample | Total/NA | Solid | EPA 8082A | 511175 |
| 620-34584-1 MS | SS-101-261_0-2_20260310 | Total/NA | Solid | EPA 8082A | 511175 |
| 620-34584-1 MSD | SS-101-261_0-2_20260310 | Total/NA | Solid | EPA 8082A | 511175 |

## Metals

### Prep Batch: 61676

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-34584-4 | SS-101-261_0-2_20260310 | Total/NA | Solid | 7471B | |
| 620-34584-5 | SS-104-75.4_0-2_20260310 | Total/NA | Solid | 7471B | |
| 620-34584-6 | SS-105-38.3_0-1.5_20260310 | Total/NA | Solid | 7471B | |
| MB 620-61676/5-A | Method Blank | Total/NA | Solid | 7471B | |
| LCSSRM 620-61676/6-A | Lab Control Sample | Total/NA | Solid | 7471B | |

### Prep Batch: 61705

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-34584-4 | SS-101-261_0-2_20260310 | Total/NA | Solid | 3050B | |
| 620-34584-5 | SS-104-75.4_0-2_20260310 | Total/NA | Solid | 3050B | |
| 620-34584-6 | SS-105-38.3_0-1.5_20260310 | Total/NA | Solid | 3050B | |
| MB 620-61705/1-A | Method Blank | Total/NA | Solid | 3050B | |
| LCSSRM 620-61705/28-A | Lab Control Sample | Total/NA | Solid | 3050B | |
| LCSSRM 620-61705/2-A | Lab Control Sample | Total/NA | Solid | 3050B | |
| LCSSRM 620-61705/3-A | Lab Control Sample | Total/NA | Solid | 3050B | |

### Analysis Batch: 61716

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-34584-4 | SS-101-261_0-2_20260310 | Total/NA | Solid | 7471B | 61676 |
| 620-34584-5 | SS-104-75.4_0-2_20260310 | Total/NA | Solid | 7471B | 61676 |
| 620-34584-6 | SS-105-38.3_0-1.5_20260310 | Total/NA | Solid | 7471B | 61676 |
| MB 620-61676/5-A | Method Blank | Total/NA | Solid | 7471B | 61676 |
| LCSSRM 620-61676/6-A | Lab Control Sample | Total/NA | Solid | 7471B | 61676 |

### Analysis Batch: 61831

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-34584-4 | SS-101-261_0-2_20260310 | Total/NA | Solid | 6020B | 61705 |
| 620-34584-5 | SS-104-75.4_0-2_20260310 | Total/NA | Solid | 6020B | 61705 |
| 620-34584-6 | SS-105-38.3_0-1.5_20260310 | Total/NA | Solid | 6020B | 61705 |
| MB 620-61705/1-A | Method Blank | Total/NA | Solid | 6020B | 61705 |
| LCSSRM 620-61705/2-A | Lab Control Sample | Total/NA | Solid | 6020B | 61705 |

# QC Association Summary

Client: Jacobs Engineering Group Inc
Project/Site: Pleasant St Culvert

Job ID: 620-34584-1

## Metals

### Analysis Batch: 61932

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-34584-4 | SS-101-261_0-2_20260310 | Total/NA | Solid | 6020B | 61705 |
| 620-34584-5 | SS-104-75.4_0-2_20260310 | Total/NA | Solid | 6020B | 61705 |
| 620-34584-6 | SS-105-38.3_0-1.5_20260310 | Total/NA | Solid | 6020B | 61705 |
| MB 620-61705/1-A | Method Blank | Total/NA | Solid | 6020B | 61705 |
| LCSSRM 620-61705/28-A | Lab Control Sample | Total/NA | Solid | 6020B | 61705 |
| LCSSRM 620-61705/2-A | Lab Control Sample | Total/NA | Solid | 6020B | 61705 |
| LCSSRM 620-61705/3-A | Lab Control Sample | Total/NA | Solid | 6020B | 61705 |

## General Chemistry

### Analysis Batch: 61300

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-34584-1 | SS-101-261_0-2_20260310 | Total/NA | Solid | Moisture | |
| 620-34584-2 | SS-104-75.4_0-2_20260310 | Total/NA | Solid | Moisture | |
| 620-34584-3 | SS-105-38.3_0-1.5_20260310 | Total/NA | Solid | Moisture | |

### Analysis Batch: 61675

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-34584-4 | SS-101-261_0-2_20260310 | Total/NA | Solid | Moisture | |
| 620-34584-5 | SS-104-75.4_0-2_20260310 | Total/NA | Solid | Moisture | |
| 620-34584-6 | SS-105-38.3_0-1.5_20260310 | Total/NA | Solid | Moisture | |

### Analysis Batch: 784381

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-34584-1 | SS-101-261_0-2_20260310 | Total/NA | Solid | Lloyd Kahn | |
| 620-34584-2 | SS-104-75.4_0-2_20260310 | Total/NA | Solid | Lloyd Kahn | |
| 620-34584-3 | SS-105-38.3_0-1.5_20260310 | Total/NA | Solid | Lloyd Kahn | |
| MB 410-784381/5 | Method Blank | Total/NA | Solid | Lloyd Kahn | |
| LCS 410-784381/4 | Lab Control Sample | Total/NA | Solid | Lloyd Kahn | |

## Geotechnical

### Analysis Batch: 783971

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-34584-1 | SS-101-261_0-2_20260310 | Total/NA | Solid | D2216-90 | |
| 620-34584-2 | SS-104-75.4_0-2_20260310 | Total/NA | Solid | D2216-90 | |
| 620-34584-3 | SS-105-38.3_0-1.5_20260310 | Total/NA | Solid | D2216-90 | |

### Analysis Batch: 787583

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 620-34584-1 | SS-101-261_0-2_20260310 | Total/NA | Solid | D422 | |
| 620-34584-2 | SS-104-75.4_0-2_20260310 | Total/NA | Solid | D422 | |
| 620-34584-3 | SS-105-38.3_0-1.5_20260310 | Total/NA | Solid | D422 | |

# Lab Chronicle

Client: Jacobs Engineering Group Inc
Project/Site: Pleasant St Culvert

Job ID: 620-34584-1

## Client Sample ID: SS-101-261_0-2_20260310
**Lab Sample ID: 620-34584-1**
**Date Collected: 03/10/26 11:08**
**Matrix: Solid**
**Date Received: 03/10/26 17:00**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Lloyd Kahn | | 1 | 784381 | A7TA | ELLE | 03/17/26 11:53 |
| Total/NA | Analysis | Moisture | | 1 | 61300 | EAM | EET RI | 03/11/26 15:54 |
| Total/NA | Analysis | D2216-90 | | 1 | 783971 | M98K | ELLE | 03/16/26 11:24 |
| Total/NA | Analysis | D422 | | 1 | 787583 | JJ6Z | ELLE | 03/16/26 11:15 |

## Client Sample ID: SS-101-261_0-2_20260310
**Lab Sample ID: 620-34584-1**
**Date Collected: 03/10/26 11:08**
**Matrix: Solid**
**Date Received: 03/10/26 17:00**
**Percent Solids: 81.6**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3546 | | | 61263 | MFH | EET RI | 03/11/26 11:31 |
| Total/NA | Analysis | 8270E LL PAH | | 5 | 61244 | JS | EET RI | 03/11/26 18:34 |
| Total/NA | Prep | 3541 | | | 511175 | DVC | EET PIT | 03/12/26 15:13 |
| Total/NA | Analysis | EPA 8082A | | 1 | 511235 | JMO | EET PIT | 03/16/26 08:16 |
| Total/NA | Prep | 3546 | | | 61213 | MFH | EET RI | 03/11/26 08:17 |
| Total/NA | Fraction | MA EPH Frac | | | 61279 | MFH | EET RI | 03/11/26 12:58 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 61462 | JS | EET RI | 03/14/26 02:54 |

## Client Sample ID: SS-104-75.4_0-2_20260310
**Lab Sample ID: 620-34584-2**
**Date Collected: 03/10/26 10:13**
**Matrix: Solid**
**Date Received: 03/10/26 17:00**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Lloyd Kahn | | 1 | 784381 | A7TA | ELLE | 03/17/26 12:03 |
| Total/NA | Analysis | Moisture | | 1 | 61300 | EAM | EET RI | 03/11/26 15:54 |
| Total/NA | Analysis | D2216-90 | | 1 | 783971 | M98K | ELLE | 03/16/26 11:24 |
| Total/NA | Analysis | D422 | | 1 | 787583 | JJ6Z | ELLE | 03/16/26 11:15 |

## Client Sample ID: SS-104-75.4_0-2_20260310
**Lab Sample ID: 620-34584-2**
**Date Collected: 03/10/26 10:13**
**Matrix: Solid**
**Date Received: 03/10/26 17:00**
**Percent Solids: 66.4**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3546 | | | 61263 | MFH | EET RI | 03/11/26 11:31 |
| Total/NA | Analysis | 8270E LL PAH | | 1 | 61244 | JS | EET RI | 03/11/26 18:09 |
| Total/NA | Prep | 3541 | | | 511175 | DVC | EET PIT | 03/12/26 15:13 |
| Total/NA | Analysis | EPA 8082A | | 1 | 511235 | JMO | EET PIT | 03/16/26 09:37 |
| Total/NA | Prep | 3546 | | | 61213 | MFH | EET RI | 03/11/26 08:17 |
| Total/NA | Fraction | MA EPH Frac | | | 61279 | MFH | EET RI | 03/11/26 12:58 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 61462 | JS | EET RI | 03/14/26 03:21 |

# Lab Chronicle

Client: Jacobs Engineering Group Inc
Project/Site: Pleasant St Culvert

Job ID: 620-34584-1

## Client Sample ID: SS-105-38.3_0-1.5_20260310
**Lab Sample ID: 620-34584-3**
**Date Collected: 03/10/26 09:34**
**Matrix: Solid**
**Date Received: 03/10/26 17:00**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Lloyd Kahn | | 1 | 784381 | A7TA | ELLE | 03/17/26 12:13 |
| Total/NA | Analysis | Moisture | | 1 | 61300 | EAM | EET RI | 03/11/26 15:54 |
| Total/NA | Analysis | D2216-90 | | 1 | 783971 | M98K | ELLE | 03/16/26 11:24 |
| Total/NA | Analysis | D422 | | 1 | 787583 | JJ6Z | ELLE | 03/16/26 11:15 |

## Client Sample ID: SS-105-38.3_0-1.5_20260310
**Lab Sample ID: 620-34584-3**
**Date Collected: 03/10/26 09:34**
**Matrix: Solid**
**Date Received: 03/10/26 17:00**
**Percent Solids: 89.9**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3546 | | | 61263 | MFH | EET RI | 03/11/26 11:31 |
| Total/NA | Analysis | 8270E LL PAH | | 5 | 61244 | JS | EET RI | 03/11/26 18:58 |
| Total/NA | Prep | 3541 | | | 511175 | DVC | EET PIT | 03/12/26 15:13 |
| Total/NA | Analysis | EPA 8082A | | 1 | 511235 | JMO | EET PIT | 03/16/26 10:05 |
| Total/NA | Prep | 3546 | | | 61213 | MFH | EET RI | 03/11/26 08:17 |
| Total/NA | Fraction | MA EPH Frac | | | 61279 | MFH | EET RI | 03/11/26 12:58 |
| Total/NA | Analysis | MAEPH2.1 | | 1 | 61462 | JS | EET RI | 03/14/26 03:47 |

## Client Sample ID: SS-101-261_0-2_20260310
**Lab Sample ID: 620-34584-4**
**Date Collected: 03/10/26 11:08**
**Matrix: Solid**
**Date Received: 03/10/26 17:00**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 61675 | EAM | EET RI | 03/17/26 10:24 |

## Client Sample ID: SS-101-261_0-2_20260310
**Lab Sample ID: 620-34584-4**
**Date Collected: 03/10/26 11:08**
**Matrix: Solid**
**Date Received: 03/10/26 17:00**
**Percent Solids: 93.0**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3050B | | | 61705 | JAS | EET RI | 03/17/26 14:54 |
| Total/NA | Analysis | 6020B | | 5 | 61932 | CES | EET RI | 03/19/26 15:07 |
| Total/NA | Prep | 3050B | | | 61705 | JAS | EET RI | 03/17/26 14:54 |
| Total/NA | Analysis | 6020B | | 5 | 61831 | CES | EET RI | 03/18/26 14:55 |
| Total/NA | Prep | 7471B | | | 61676 | DJW | EET RI | 03/17/26 10:39 |
| Total/NA | Analysis | 7471B | | 1 | 61716 | DJW | EET RI | 03/17/26 14:16 |

## Client Sample ID: SS-104-75.4_0-2_20260310
**Lab Sample ID: 620-34584-5**
**Date Collected: 03/10/26 10:13**
**Matrix: Solid**
**Date Received: 03/10/26 17:00**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 61675 | EAM | EET RI | 03/17/26 10:24 |

# Lab Chronicle

Client: Jacobs Engineering Group Inc
Project/Site: Pleasant St Culvert

Job ID: 620-34584-1

## Client Sample ID: SS-104-75.4_0-2_20260310

**Lab Sample ID: 620-34584-5**
**Date Collected: 03/10/26 10:13**
**Matrix: Solid**
**Date Received: 03/10/26 17:00**
**Percent Solids: 76.3**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3050B | | | 61705 | JAS | EET RI | 03/17/26 14:54 |
| Total/NA | Analysis | 6020B | | 5 | 61932 | CES | EET RI | 03/19/26 15:10 |
| Total/NA | Prep | 3050B | | | 61705 | JAS | EET RI | 03/17/26 14:54 |
| Total/NA | Analysis | 6020B | | 5 | 61831 | CES | EET RI | 03/18/26 14:58 |
| Total/NA | Prep | 7471B | | | 61676 | DJW | EET RI | 03/17/26 10:40 |
| Total/NA | Analysis | 7471B | | 1 | 61716 | DJW | EET RI | 03/17/26 14:21 |

## Client Sample ID: SS-105-38.3_0-1.5_20260310

**Lab Sample ID: 620-34584-6**
**Date Collected: 03/10/26 09:34**
**Matrix: Solid**
**Date Received: 03/10/26 17:00**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 61675 | EAM | EET RI | 03/17/26 10:24 |

## Client Sample ID: SS-105-38.3_0-1.5_20260310

**Lab Sample ID: 620-34584-6**
**Date Collected: 03/10/26 09:34**
**Matrix: Solid**
**Date Received: 03/10/26 17:00**
**Percent Solids: 96.9**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab | Prepared or Analyzed |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3050B | | | 61705 | JAS | EET RI | 03/17/26 14:54 |
| Total/NA | Analysis | 6020B | | 5 | 61932 | CES | EET RI | 03/19/26 15:13 |
| Total/NA | Prep | 3050B | | | 61705 | JAS | EET RI | 03/17/26 14:54 |
| Total/NA | Analysis | 6020B | | 5 | 61831 | CES | EET RI | 03/18/26 15:00 |
| Total/NA | Prep | 7471B | | | 61676 | DJW | EET RI | 03/17/26 10:40 |
| Total/NA | Analysis | 7471B | | 1 | 61716 | DJW | EET RI | 03/17/26 14:26 |

**Laboratory References:**

EET PIT = Eurofins Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

EET RI = Eurofins Rhode Island, 646 Camp Ave, North Kingstown, RI 02852, TEL (413)789-9018

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

# Accreditation/Certification Summary

Client: Jacobs Engineering Group Inc
Job ID: 620-34584-1
Project/Site: Pleasant St Culvert

## Laboratory: Eurofins Rhode Island

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|
| A2LA | Dept. of Defense ELAP | 7165.01 | 01-31-27 |
| A2LA | ISO/IEC 17025 | 7165.01 | 01-31-27 |
| Connecticut | State | PH-0824 | 06-30-26 |
| Maine | State | RI00100 | 05-09-27 |
| Massachusetts | State | M-RI907 | 06-30-26 |
| New Hampshire | NELAP | 2245 | 09-17-26 |
| New Jersey | NELAP | RI008 | 09-29-24 * |
| New York | NELAP | 11393 | 03-31-26 |
| Rhode Island | State | LAI00368 | 11-30-26 |

## Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|
| A2LA | Dept. of Defense ELAP | 0001.01 | 11-30-26 |
| A2LA | Dept. of Energy | 0001.01 | 11-30-26 |
| A2LA | ISO/IEC 17025 | 0001.01 | 11-30-26 |
| Alabama | State | 43200 | 01-31-27 |
| Alaska | State | PA00009 | 06-30-26 |
| Alaska (UST) | State | 17-027 | 12-30-26 |
| Arizona | State | AZ0780 | 03-12-27 |
| Arkansas DEQ | State | 88-00660 | 08-09-26 |
| Colorado | State | PA00009 | 06-30-26 |
| Connecticut | State | PH-0746 | 06-30-27 |
| DE Haz. Subst. Cleanup Act (HSCA) | State | 019-006 (PA cert) | 01-31-27 |
| Delaware (DW) | State | N/A | 01-31-27 |
| Florida | NELAP | E87997 | 06-30-26 |
| Georgia (DW) | State | C048 | 01-31-27 |
| Illinois | NELAP | 200027 | 01-31-27 |
| Kansas | NELAP | E-10151 | 10-31-26 |
| Kentucky (DW) | State | KY90088 | 12-31-26 |
| Kentucky (UST) | State | 0001.01 | 11-30-26 |
| Kentucky (WW) | State | KY90088 | 12-31-26 |
| Louisiana (All) | NELAP | 02055 | 06-30-26 |
| Maine | State | 2019012 | 03-12-27 |
| Maryland | State | 100 | 06-30-26 |
| Massachusetts | State | M-PA009 | 06-30-26 |
| Michigan | State | 9930 | 01-31-27 |
| Minnesota | NELAP | 042-999-487 | 12-31-26 |
| Mississippi | State | 023 | 01-31-27 |
| Missouri | State | 450 | 01-31-28 |
| Montana (DW) | State | 0098 | 01-01-27 |
| Nebraska | State | NE-OS-32-17 | 01-31-27 |
| New Hampshire | NELAP | 2730 | 01-10-27 |
| New Jersey | NELAP | PA011 | 06-30-26 |
| New York | NELAP | 10670 | 03-31-26 |
| North Carolina (DW) | State | 42705 | 07-31-26 |
| North Carolina (WW/SW) | State | 521 | 01-01-27 |
| North Dakota | State | R-205 | 01-31-24 * |
| Ohio | State | 87787 | 01-31-27 |

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

# Accreditation/Certification Summary

Client: Jacobs Engineering Group Inc
Job ID: 620-34584-1
Project/Site: Pleasant St Culvert

## Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|
| Oklahoma | NELAP | 9804 | 12-13-26 |
| Oregon | NELAP | PA200001 | 09-11-26 |
| Pennsylvania | NELAP | 36-00037 | 01-31-27 |
| Quebec Ministry of Environment and Fight against Climate Change | PALA | 507 | 09-16-29 |
| Rhode Island | State | LAO00338 | 12-31-26 |
| South Carolina | State | 89002 | 01-31-27 |
| Tennessee | State | 02838 | 01-31-27 |
| Texas | NELAP | T104704194-23-46 | 08-31-26 |
| USDA | US Federal Programs | 525-22-298-19481 | 04-10-26 |
| Vermont | State | VT - 36037 | 10-28-26 |
| Virginia | NELAP | 460182 | 03-19-26 |
| Washington | State | C457 | 04-11-26 |
| West Virginia (DW) | State | 9906 C | 01-31-27 |
| West Virginia DEP | State | 055 | 07-31-26 |
| Wyoming | State | 8TMS-L | 01-31-27 |
| Wyoming (UST) | A2LA | 0001.01 | 11-30-26 |

## Laboratory: Eurofins Pittsburgh

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|
| Arkansas DEQ | State | 88-00690 | 06-27-26 |
| California | State | 3122 | 04-30-26 |
| Connecticut | State | PH-0820 | 09-30-26 |
| Florida | NELAP | E871008 | 06-30-26 |
| Georgia | State | PA 02-00416 | 04-30-26 |
| Illinois | NELAP | 200005 | 07-31-26 |
| Kansas | NELAP | E-10350 | 01-31-27 |
| Kentucky (UST) | State | 162013 | 04-30-26 |
| Kentucky (WW) | State | KY98043 | 12-31-26 |
| Louisiana | NELAP | 04041 | 06-30-22 * |
| Louisiana (All) | NELAP | 04041 | 06-30-25 * |
| Minnesota | NELAP | 042-999-482 | 12-31-25 * |
| New Hampshire | NELAP | 2030 | 04-04-26 |
| New Jersey | NELAP | PA005 | 06-30-26 |
| New York | NELAP | 11182 | 03-31-26 |
| North Carolina (WW/SW) | State | 434 | 12-31-26 |
| North Dakota | State | R-227 | 04-30-24 * |
| Oregon | NELAP | PA-2151 | 02-06-27 |
| Pennsylvania | NELAP | 02-00416 | 03-16-26 |
| Rhode Island | State | LAO00375 | 12-30-26 |
| South Carolina | State | 89014 | 04-30-26 |
| Texas | NELAP | T104704528 | 03-31-26 |
| US Fish & Wildlife | US Federal Programs | A21930 | 04-30-26 |
| USDA | US Federal Programs | 525-23-230-11560 | 08-18-26 |
| Utah | NELAP | PA00146 | 05-31-26 |
| Virginia | NELAP | 460189 | 09-30-26 |
| West Virginia DEP | State | 142 | 01-31-27 |
| Wisconsin | State | 998027800 | 08-31-26 |

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

# Method Summary

Client: Jacobs Engineering Group Inc
Job ID: 620-34584-1
Project/Site: Pleasant St Culvert

| Method | Method Description | Protocol | Laboratory |
|---|---|---|---|
| 8270E LL PAH | Semivolatile Organic Compounds (GC/MS) Low level PAH | SW846 | EET RI |
| EPA 8082A | PCB Congeners (GC) | SW846 | EET PIT |
| MAEPH2.1 | Massachusetts - Extractable Petroleum Hydrocarbons (GC) | MA DEP | EET RI |
| 6020B | Metals (ICP/MS) | SW846 | EET RI |
| 7471B | Mercury (CVAA) | SW846 | EET RI |
| Lloyd Kahn | Organic Carbon, Total (TOC) | EPA | ELLE |
| Moisture | Percent Moisture | EPA | EET RI |
| D2216-90 | Water (Moisture) Content | ASTM | ELLE |
| D422 | Grain Size | ASTM | ELLE |
| 3050B | Preparation, Metals | SW846 | EET RI |
| 3541 | Automated Soxhlet Extraction | SW846 | EET PIT |
| 3546 | Microwave Extraction | SW846 | EET RI |
| 7471B | Preparation, Mercury | SW846 | EET RI |
| MA EPH Frac | Massachusetts - Extractable Petroleum Hydrocarbon Fractionation | MA DEP | EET RI |

**Protocol References:**

ASTM = ASTM International
EPA = US Environmental Protection Agency
MA DEP = Massachusetts Department Of Environmental Protection
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

EET PIT = Eurofins Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058
EET RI = Eurofins Rhode Island, 646 Camp Ave, North Kingstown, RI 02852, TEL (413)789-9018
ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

# Sample Summary

Client: Jacobs Engineering Group Inc
Project/Site: Pleasant St Culvert

Job ID: 620-34584-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received | Sample Origin |
|---|---|---|---|---|---|
| 620-34584-1 | SS-101-261_0-2_20260310 | Solid | 03/10/26 11:08 | 03/10/26 17:00 | Massachusetts |
| 620-34584-2 | SS-104-75.4_0-2_20260310 | Solid | 03/10/26 10:13 | 03/10/26 17:00 | Massachusetts |
| 620-34584-3 | SS-105-38.3_0-1.5_20260310 | Solid | 03/10/26 09:34 | 03/10/26 17:00 | Massachusetts |
| 620-34584-4 | SS-101-261_0-2_20260310 | Solid | 03/10/26 11:08 | 03/10/26 17:00 | Massachusetts |
| 620-34584-5 | SS-104-75.4_0-2_20260310 | Solid | 03/10/26 10:13 | 03/10/26 17:00 | Massachusetts |
| 620-34584-6 | SS-105-38.3_0-1.5_20260310 | Solid | 03/10/26 09:34 | 03/10/26 17:00 | Massachusetts |

34584

**ESS Laboratory**

**Analytical Balance** **BAL Laboratory**

185 Frances Avenue, Cranston, RI 02910
Phone: 401-461-7181
www.esslaboratory.com

Work Order # Page 1 of 1

Turn Time (Days): ☑ Standard ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ SameDay

Regulatory State: Massachusetts Criteria:

PROJECT TYPE: ☐ CT RCP ☐ MA MCP ☐ RGP ☐ Permit ☒ 401 WQ ☐ Drinking Water

PAYMENT: Amount $ ____ Check # ____ V MC D AmEx Cash

ELECTRONIC DELIVERABLES (Final Reports are PDF): ☐ EQuIS ☐ State Upload ☐ Enviro Data ☐ CLP-Like Package ☐ Other (Specify) →

**CLIENT INFORMATION**

Client: Jacobs
Address: 120 St James Ave, 5th Floor
Boston, MA 02116
Phone:
Persons Authorized to Receive Data: Marta Nover, Philip Lanergan

**PROJECT INFORMATION**

Project Name: Pleasant St Culvert
Project Location: Leominster, MA
Project Number: 613865
Project Manager: Marta Nover
Bill to:
PO#:
Quote#:

Client acknowledges that sampling is compliant with all EPA / State regulatory programs.

**REQUESTED ANALYSES**

| Laboratory ID | Collection Date | Collection Time | Sample Type | Sample Matrix | Sample ID | Arsenic | Cadmium | Chromium | Copper | Lead | Mercury | Nickel | Zinc | PAHs | PCB Congeners | EPH | SVOCs | TOC | Percent Water | Grain Size/Sieve | Toxicity Characteristic Leaching Procedure (4, 10, 40, 60, 100) | Total Number of Bottles |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -1 | 3/10/26 | 1108 | Sediment | | SS-101-261_0-2_20260310 | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | 3 |
| -2 | 3/10/26 | 1013 | Sediment | | SS-104-75.4_0-2_20260310 | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | 3 |
| -3 | 3/10/26 | 0934 | Sediment | | SS-105-38.3_0-1.5_20260310 | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | 3 |

620-34584 COC

Container Type: AC-Air Cassette AG-Amber Glass B-BOD Bottle C-Cubitainer J-Jar O-Other P-Poly S-Sterile V-Vial — AG, J
Container Volume: 1-100 mL 2-2.5 gal 3-250 mL 4-300 mL 5-500 mL 6-1L 7-VOA 8-2 oz 9-4 oz 10-8 oz 11-Other* — 10, 1
Preservation Code: 1-Non Preserved 2-HCl 3-H2SO4 4-HNO3 5-NaOH 6-Methanol 7-Na2S2O3 8-ZnAce, NaOH 9-NH4Cl 10-DI H2O 11-Other — 1, 2
Number of Bottles per Sample: 1, 1

**Shipping Conditions (circle one)**

Ice Iced Ambient

Cooler Temperature (°C): ____

Client approval required for temperature >6°C

☐ Approved by Client (initials/date →)

Sampled by: D Kearney

Comments: * Please specify "Other" preservative and containers types in this space

401 WQC Sediment Sampling

Chain needs to be filled out neatly and completely for on time delivery.

All samples submitted are subject to ESS Laboratory's payment terms and conditions.

Dissolved Filtration: ☐ Laboratory Filter ☐ Field Filter

| Relinquished by (Signature) | Date | Time | Received By (Signature) | Relinquished by (Signature) | Date | Time | Received by (Signature) |
|---|---|---|---|---|---|---|---|
| | 3/10/26 | | | | 3/10/26 | 1430 | |
| Relinquished by (Signature) | Date | Time | Received By (Signature) | Relinquished by (Signature) | Date | Time | Received by (Signature) |
| | | | | | | | |

1.4/1.2 #6
1 Cl

A00830 - 386

Page 44 of 51

4/3/2026

Proposal No. 616375-136648

## Eurofins Rhode Island Laboratory Sample and Cooler Receipt Checklist

Client: Jacobs
Shipped/Delivered Via Courier

EET Project ID: 345584
Date Received: 3/10/26
TAT Requested STD

1 Air bill manifest present? NA
Air No.:

2. Were custody seals present? NA

3. Is a Cooler Present? Y
Temp: 1.2 Iced with: Ice
Temp: Iced with:
Temp: Iced with:
Temp: Iced with:
Temp: Iced with:

4. Was COC signed and dated by client? Y

5 Does COC match bottles? Y

6 Is COC complete and correct? Y

7 Were samples received intact? Y

8. Were labs informed about short holds & rushes? Yes / No / NA

9. Were any analyses received outside of hold time? Yes / No

11. Any Subcontracting needed? Yes / No
TALS Sample IDs:
Analysis:
TAT: STD

12. Were VOAs received? Yes / No
a. Air bubbles in aqueous VOAs? Yes / No
b. Does methanol cover soil completely? Yes / No / NA

13. Are the samples properly preserved? Yes / No
a. If metals, unpreserved delivered to the lab: Date: Time: By/Acid Lot#:
b. Low Level VOA vials frozen: Date: Time: By:

Sample Receiving Notes:

14 Was there a need to contact Project Manager? Yes / No
a. Was there a need to contact the client? Yes / No
Who was contacted? Date: Time: By:

Resolution:

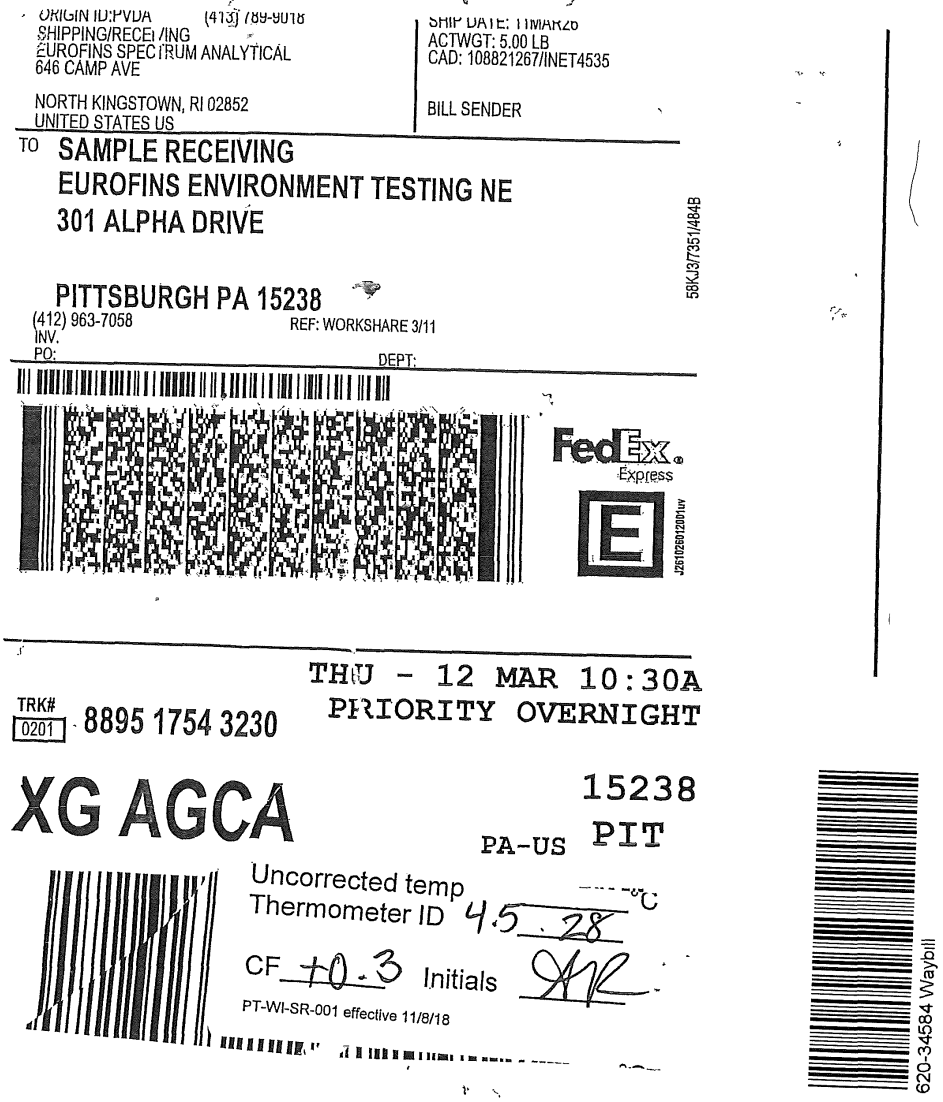
| Sample Number | Container ID | Proper Container | Air Bubbles Present | Sufficient Volume | Container Type | Preservative | Record pH (Cyanide and 608 Pesticides) |
|---|---|---|---|---|---|---|---|
| | | | N/A | | | | |

**2nd Review**
**Were all containers scanned into storage/lab?** Initials AS
Are barcode labels on correct containers? Yes / No
Are all Flashpoint stickers attached/container ID # circled? Yes / No / NA
Are all Hex Chrome stickers attached? Yes / No / NA
Are all QC stickers attached? Yes / No / NA
Are VOA stickers attached if bubbles noted? Yes / No / NA
Are Composite stickers added if needed? Yes / No / NA

Completed By: Date & Time: 3/10/26 1945
Reviewed By: Date & Time: 3/10/26 1950

RIFQA013.0
3/5/2026

Eurofins Rhode Island



ORIGIN ID:PVDA (413) 789-9018
SHIPPING/RECEIVING
EUROFINS SPECTRUM ANALYTICAL
646 CAMP AVE

NORTH KINGSTOWN, RI 02852
UNITED STATES US

SHIP DATE: 11MAR26
ACTWGT: 5.00 LB
CAD: 108821267/INET4535

BILL SENDER

TO SAMPLE RECEIVING
EUROFINS ENVIRONMENT TESTING NE
301 ALPHA DRIVE

PITTSBURGH PA 15238
(412) 963-7058
INV.
PO:
REF: WORKSHARE 3/11
DEPT:

58KJ3/7351/4B4B

FedEx Express

THU - 12 MAR 10:30A
PRIORITY OVERNIGHT

TRK# 0201 8895 1754 3230

XG AGCA

15238
PA-US PIT

Uncorrected temp ____°C
Thermometer ID 4.5.28
CF +0.3 Initials AR

PT-WI-SR-001 effective 11/8/18

620-34584 Waybill

**Eurofins Rhode Island**
646 Camp Ave
North Kingstown, RI 02852
Phone 413-789-9018 Fax 413-506-3830

G8BB

# Chain of Custody Record

eurofins | Environment Testing

| Client Information (Sub Contract Lab) | Sampler: N/A | Lab PM: Levesque, Marc E | Carrier Tracking No(s): N/A | COC No: 620-28471 1 |
|---|---|---|---|---|
| Client Contact: Shipping/Receiving | Phone: N/A | E-Mail: Marc Levesque@et eurofinsus com | State of Origin: Massachusetts | Page: Page 1 of 1 |
| Company: Eurofins Environment Testing Northeast L | | Accreditations Required (See note): N/A | | Job #: 620-34584-1 |
| Address: 301 Alpha Drive, RIDC Park, | Due Date Requested: 3/16/2026 | | | |
| City: Pittsburgh | TAT Requested (days): N/A | | | |
| State, Zip: PA, 15238 | | | | |
| Phone: 412-963-7058(Tel) 412-963-2468(Fax) | PO #: N/A | | | |
| Email: N/A | WO #: N/A | | | |
| Project Name: Pleasant St Culvert | Project #: 62006002 | | | |
| Site: N/A | SSOW#: N/A | | | |

**Analysis Requested**

**Preservation Codes:** -

**Other:** N/A

| Sample Identification - Client ID (Lab ID) | Sample Date | Sample Time | Sample Type (C=comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | 8082A_Con/3541401 WQ list | Total Number of containers | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|
| | | | Preservation Code | | | | | | |
| SS-101-261_0-2_20260310 (620-34584-1) | 3/10/26 | 11 08 Eastern | G | Solid | | | X | 1 | |
| SS-104-75 4_0-2_20260310 (620-34584-2) | 3/10/26 | 10 13 Eastern | G | Solid | | | X | 1 | |
| SS-105-38 3_0-1 5_20260310 (620-34584-3) | 3/10/26 | 09 34 Eastern | G | Solid | | | X | 1 | |

620-34584 Chain of Custody

Note Since laboratory accreditations are subject to change, Eurofins Environment Testing Northeast, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories This sample shipment is forwarded under chain-of-custody If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing Northeast, LLC laboratory or other instructions will be provided Any changes to accreditation status should be brought to Eurofins Environment Testing Northeast, LLC attention immediately If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing Northeast, LLC

| ***Possible Hazard Identification*** | ***Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)*** |
|---|---|
| *Unconfirmed* | ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months* |
| Deliverable Requested I, II, III, IV, Other (specify) | Special Instructions/QC Requirements |

| Empty Kit Relinquished by | Date | Time | Method of Shipment: |
|---|---|---|---|

| | Relinquished by | Date/Time | Company | Received by | Date/Time | Company |
|---|---|---|---|---|---|---|
| 1 | | 3/11/26 1630 | | | 3/12/26 0930 | |
| 2 | Relinquished by | Date/Time | Company | Received by | Date/Time | Company |
| 3 | Relinquished by | Date/Time | Company | Received by | Date/Time | Company |

| Custody Seals Intact | Custody Seal No | Cooler Temperature(s) °C and Other Remarks |
|---|---|---|
| Δ Yes Δ No | | |

Ver: 10/10/2024



Proposal No. 616375-136648

**Eurofins Rhode Island**
646 Camp Ave
North Kingstown, RI 02852
Phone: 413-789-9018 Fax: 413-506-3830

# Chain of Custody Record

eurofins | Environment Testing

| Client Information (Sub Contract Lab) | Sampler: N/A | Lab PM: Levesque, Marc E | Carrier Tracking No(s): N/A | COC No: 620-28472.1 |
|---|---|---|---|---|
| Client Contact: Shipping/Receiving | Phone: N/A | E-Mail: Marc.Levesque@et.eurofinsus.com | State of Origin: Massachusetts | Page: Page 1 of 1 |
| Company: Eurofins Lancaster Laboratories Environm | | Accreditations Required (See note): N/A | | Job #: 620-34584-1 |
| Address: 2425 New Holland Pike, , | Due Date Requested: 3/16/2026 | | | Preservation Codes: - |
| City: Lancaster | TAT Requested (days): N/A | | | |
| State, Zip: PA, 17601 | | | | |
| Phone: 717-656-2300(Tel) | PO #: N/A | | | |
| Email: N/A | WO #: N/A | | | |
| Project Name: Pleasant St Culvert | Project #: 62006002 | | | |
| Site: N/A | SSOW#: N/A | | | Other: N/A |

| Sample Identification - Client ID (Lab ID) | Sample Date | Sample Time | Sample Type (C=comp, G=grab) | Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air) | Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | D422/Routine Grainsize | Lloyd_Kahn_ModTOC | D2216_90 | Total Number of containers | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Preservation Code: | | | | | | | | |
| SS-101-261_0-2_20260310 (620-34584-1) | 3/10/26 | 11:08 Eastern | G | Solid | | | X | X | X | 1 | |
| SS-104-75.4_0-2_20260310 (620-34584-2) | 3/10/26 | 10:13 Eastern | G | Solid | | | X | X | X | 1 | |
| SS-105-38.3_0-1.5_20260310 (620-34584-3) | 3/10/26 | 09:34 Eastern | G | Solid | | | X | X | X | 1 | |

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing Northeast, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing Northeast, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing Northeast, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing Northeast, LLC.

| Possible Hazard Identification: Unconfirmed | Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month): ☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months |
|---|---|
| Deliverable Requested: I, II, III, IV, Other (specify) | Special Instructions/QC Requirements: |

| Empty Kit Relinquished by: | Date: | Time: | Method of Shipment: |
|---|---|---|---|

| Relinquished by: | Date/Time: | Company | Received by: | Date/Time: | Company |
|---|---|---|---|---|---|
| | | | | 3/11/26 2130 | |
| Relinquished by: | Date/Time: 3/12/26 0130 | Company | Received by: | Date/Time: | Company |
| Relinquished by: | Date/Time: | Company | Received by: | Date/Time: 3-12-26 0130 | Company ECLE |

| Custody Seals Intact: ∆ Yes ∆ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks: R:4.7 C:4.9 |
|---|---|---|

Ver: 10/10/2024

## Login Sample Receipt Checklist

Client: Jacobs Engineering Group Inc

Job Number: 620-34584-1

**Login Number: 34584**
**List Number: 1**
**Creator: Scott, Krishnan F**

**List Source: Eurofins Rhode Island**

| Question | Answer | Comment |
|---|---|---|
| Radioactivity wasn't checked or is </= background as measured by a survey meter. | | |
| The cooler's custody seal, if present, is intact. | | |
| Sample custody seals, if present, are intact. | | |
| The cooler or samples do not appear to have been compromised or tampered with. | | |
| Samples were received on ice. | | |
| Cooler Temperature is acceptable. | | |
| Cooler Temperature is recorded. | | |
| COC is present. | | |
| COC is filled out in ink and legible. | | |
| COC is filled out with all pertinent information. | | |
| Is the Field Sampler's name present on COC? | | |
| There are no discrepancies between the containers received and the COC. | | |
| Samples are received within Holding Time (excluding tests with immediate HTs) | | |
| Sample containers have legible labels. | | |
| Containers are not broken or leaking. | | |
| Sample collection date/times are provided. | | |
| Appropriate sample containers are used. | | |
| Sample bottles are completely filled. | | |
| Sample Preservation Verified. | | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | | |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4"). | | |
| Multiphasic samples are not present. | | |
| Samples do not require splitting or compositing. | | |
| Residual Chlorine Checked. | | |

## Login Sample Receipt Checklist

Client: Jacobs Engineering Group Inc

Job Number: 620-34584-1

**Login Number: 34584**
**List Number: 2**
**Creator: Williams, Aeric**

**List Source: Eurofins Lancaster Laboratories Environment Testing, LLC**
**List Creation: 03/12/26 10:39 AM**

| Question | Answer | Comment |
|---|---|---|
| The cooler's custody seal is intact. | N/A | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature acceptable,where thermal pres is required(</=6C, not frozen). | True | |
| Cooler Temperature is recorded. | True | |
| WV:Container Temp acceptable,where thermal pres is required (</=6C, not frozen). | N/A | |
| WV:  Container Temperature is recorded. | N/A | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| There are no discrepancies between the containers received and the COC. | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| There is sufficient vol. for all requested analyses. | True | |
| Is the Field Sampler's name present on COC? | False | Received project as a subcontract. |
| Sample custody seals are intact. | N/A | |
| VOA sample vials do not have headspace >6mm in diameter (none, if from WV)? | N/A | |

## Login Sample Receipt Checklist

Client: Jacobs Engineering Group Inc

Job Number: 620-34584-1

**Login Number: 34584**
**List Number: 3**
**Creator: Rucker, Keenyn J**

**List Source: Eurofins Pittsburgh**
**List Creation: 03/12/26 11:29 AM**

| Question | Answer | Comment |
|---|---|---|
| Radioactivity wasn't checked or is </= background as measured by a survey meter. | N/A | |
| The cooler's custody seal, if present, is intact. | True | |
| Sample custody seals, if present, are intact. | True | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the containers received and the COC. | True | |
| Samples are received within Holding Time (excluding tests with immediate HTs) | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | False | Containers completely submerged in water. Sample volume appears compromised. |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4"). | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |
| Residual Chlorine Checked. | N/A | |

# Attachment K – Site Plans

# CULVERT REPLACEMENT PROJECT

## PLEASANT STREET OVER RESERVOIR BROOK

## BRIDGE NO. L-08-053

IN THE CITY OF

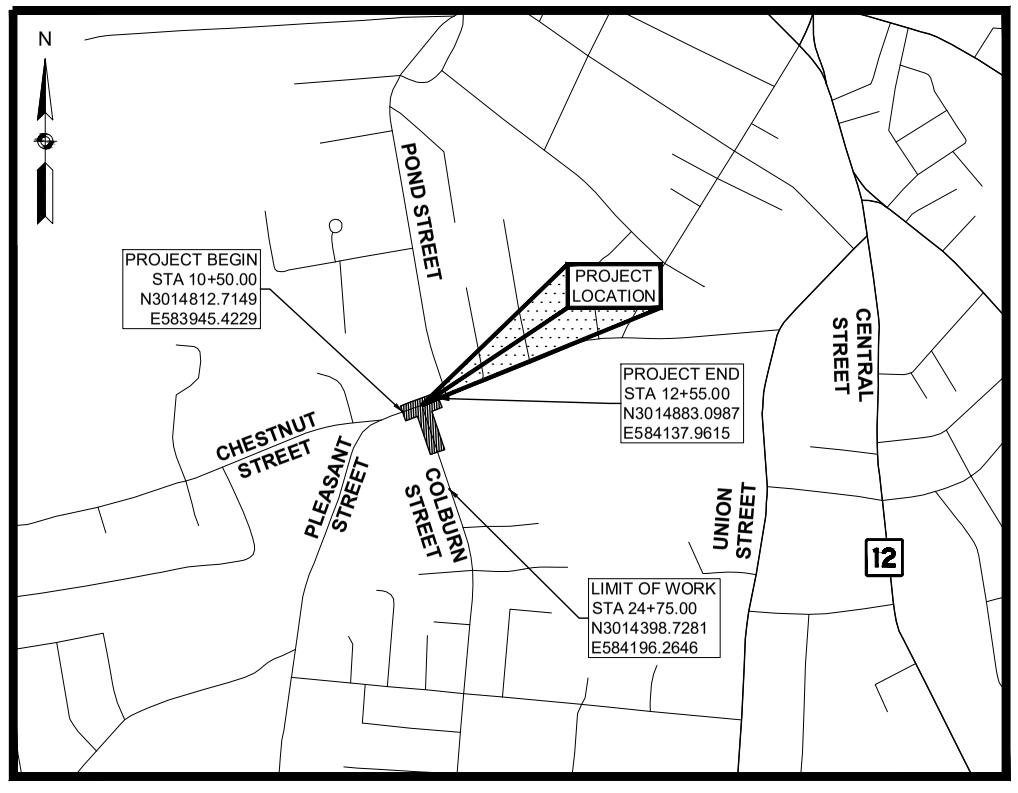
## LEOMINSTER

## WORCESTER COUNTY

## PERMIT PLANS

**INDEX**


| SHEET NO. | DESCRIPTION |
|---|---|
| 1 | TITLE SHEET & INDEX |
| 2 | EXISTING CONDITIONS |
| 3 | PROPOSED CONDITIONS |
| 4 | IMPACT PLAN |
| 5 | PLEASANT STREET PROFILE |
| 6 | RESERVOIR BROOK PROFILE |
| 7 | GRADING PLAN |
| 8 | LANDSCAPE PLAN |
| 9 | EROSION & SEDIMENT CONTROL PLAN |
| 10 | WETLAND REPLICATION & PLANTING PLAN |
| 11 | CONTROL OF WATER PLAN |
| 12 | CULVERT PROFILE |
| 13 | CULVERT ELEVATIONS |
| 14 - 15 | CONSTRUCTION DETAILS |
| 16 - 20 | STREAM CROSS SECTIONS |


| IMPACTS TO WATERS OF THE UNITED STATES | | |
|---|---|---|
| LAND UNDER WATER (WATERS OF THE US) | PERMANENT | 4263 SF |
| | DREDGING | 379 CY |
| BANK/ORDINARY HIGH WATER (OHW) | PERMANENT | 630 LF |
| BORDERING VEGETATED WETLANDS | PERMANENT | 662 SF |
| | TEMPORARY | 1666 SF |
| WETLAND REPLICATION | | 672 SF |

0 1000 2000 3000 4000

SCALE: 1" = 1000'


TEC The Engineering Corp
282 Merrimack St
2nd Floor
Lawrence, MA 01843
978-794-1792

100 Front Street
10th Floor
Worcester, MA 01608
508-868-5104

2 Monument Square
Suite 301
Portland, ME 04101
207-370-5838

www.tecinc.com

MassDOT Massachusetts Department of Transportation Highway Division


SHEET 1 OF 20

TITLE SHEET & INDEX

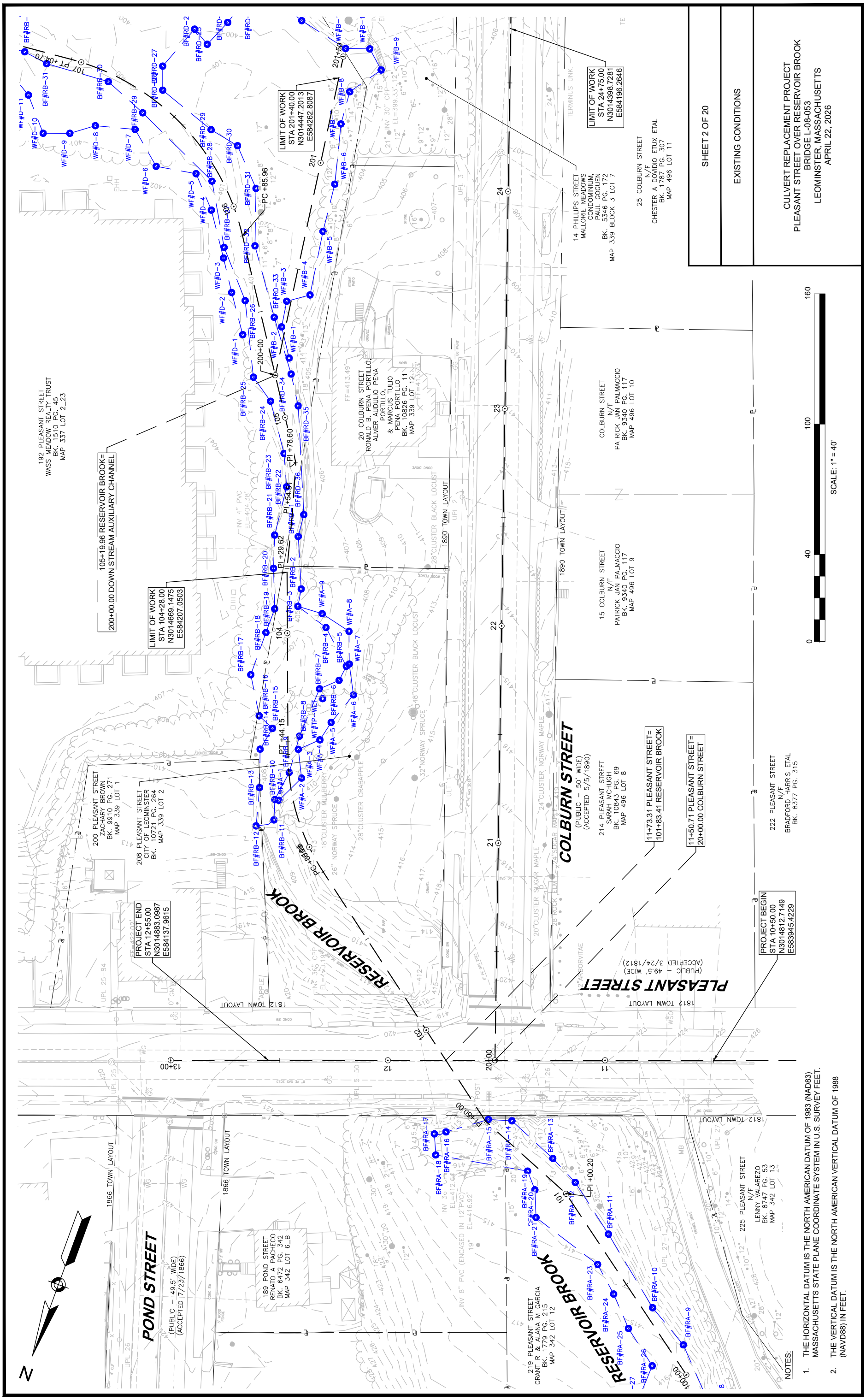
CULVERT REPLACEMENT PROJECT
PLEASANT STREET OVER RESERVOIR BROOK
BRIDGE L-08-053
LEOMINSTER, MASSACHUSETTS
APRIL 22, 2026


1 INDEX.DWG Plotted on 22-Apr-2026 2:24 PM

Proposal No. 616375-136648

A00830 - 395

2 EXISTING CONDITIONS.DWG Plotted on 22-Apr-2026 2:24 PM



3 PROPOSED CONDITIONS.DWG Plotted on 22-Apr-2026 2:25 PM

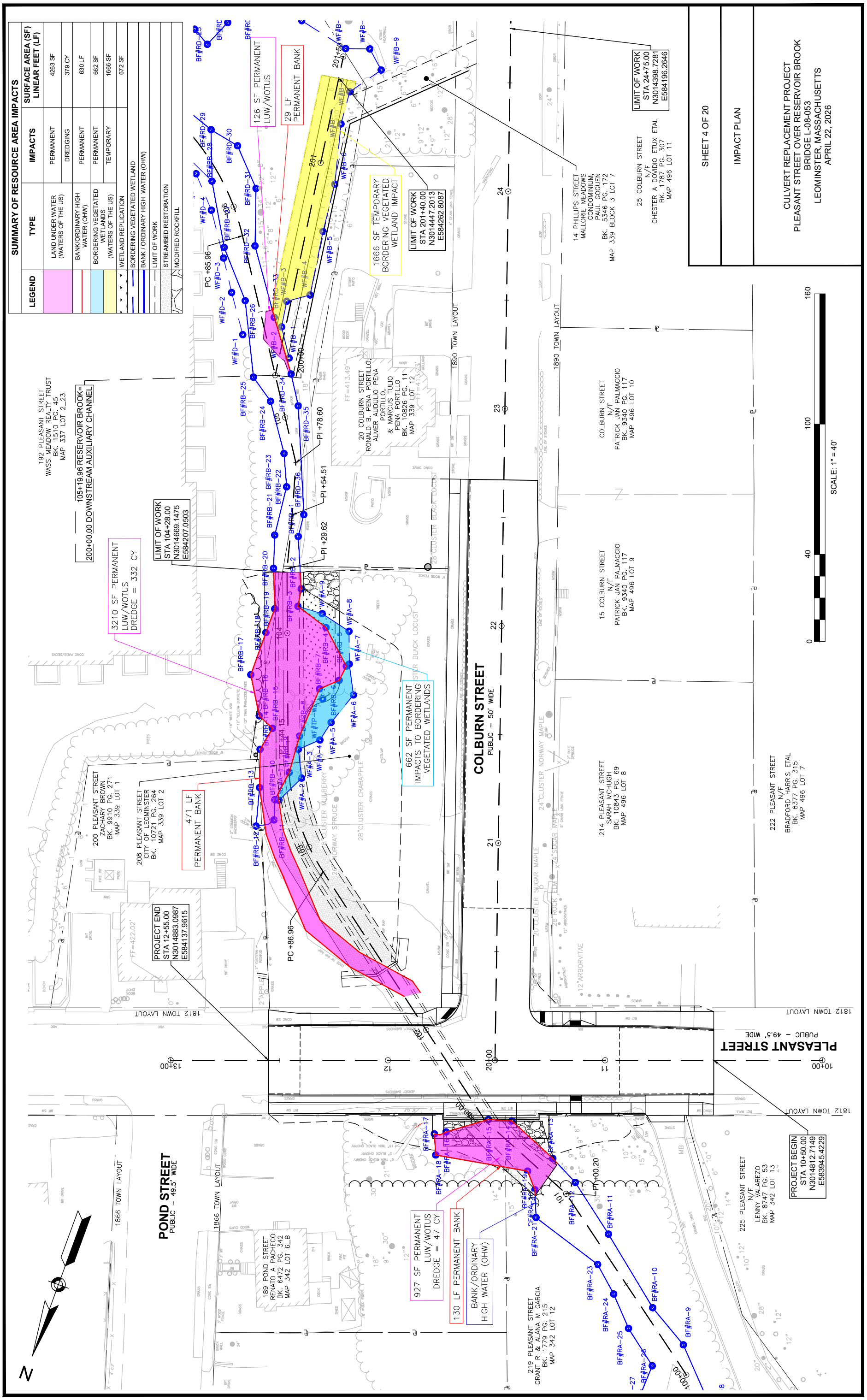
SHEET 3 OF 20

PROPOSED CONDITIONS

CULVERT REPLACEMENT PROJECT
PLEASANT STREET OVER RESERVOIR BROOK
BRIDGE L-08-053
LEOMINSTER, MASSACHUSETTS
APRIL 22, 2026

LEGEND
= STREAMBED RESTORATION
= WETLAND REPLICATION AREA
= MODIFIED ROCKFILL

SCALE: 1" = 40'


7 BANK & LUW IMPACT PLAN.DWG
Plotted on 22-Apr-2026 2:25 PM
SUMMARY OF RESOURCE AREA IMPACTS
LEGEND
TYPE
IMPACTS
SURFACE AREA (SF) LINEAR FEET (LF)
LAND UNDER WATER (WATERS OF THE US)
PERMANENT
4263 SF
DREDGING
379 CY
BANK/ORDINARY HIGH WATER (OHW)
PERMANENT
630 LF
BORDERING VEGETATED WETLANDS (WATERS OF THE US)
PERMANENT
662 SF
TEMPORARY
1666 SF
WETLAND REPLICATION
672 SF
BORDERING VEGETATED WETLAND
BANK / ORDINARY HIGH WATER (OHW)
LIMIT OF WORK
STREAMBED RESTORATION
MODIFIED ROCKFILL
SHEET 4 OF 20
IMPACT PLAN
CULVERT REPLACEMENT PROJECT
PLEASANT STREET OVER RESERVOIR BROOK
BRIDGE L-08-053
LEOMINSTER, MASSACHUSETTS
APRIL 22, 2026
126 SF PERMANENT LUW/WOTUS
29 LF PERMANENT BANK
1666 SF TEMPORARY BORDERING VEGETATED WETLAND IMPACT
LIMIT OF WORK STA 201+40.00 N3014447.2013 E584262.8087
LIMIT OF WORK STA 24+75.00 N3014398.7281 E584196.2646
105+19.96 RESERVOIR BROOK=
200+00.00 DOWNSTREAM AUXILIARY CHANNEL
LIMIT OF WORK STA 104+28.00 N3014669.1475 E584207.0503
3210 SF PERMANENT LUW/WOTUS DREDGE = 332 CY
662 SF PERMANENT IMPACTS TO BORDERING VEGETATED WETLANDS
471 LF PERMANENT BANK
927 SF PERMANENT LUW/WOTUS DREDGE = 47 CY
130 LF PERMANENT BANK
BANK/ORDINARY HIGH WATER (OHW)
PROJECT END STA 12+55.00 N3014883.0987 E584137.9615
PROJECT BEGIN STA 10+50.00 N3014812.7149 E583945.4229
COLBURN STREET PUBLIC – 50' WIDE
POND STREET PUBLIC – 49.5' WIDE
PLEASANT STREET PUBLIC – 49.5' WIDE
1890 TOWN LAYOUT
1866 TOWN LAYOUT
1812 TOWN LAYOUT
SCALE: 1" = 40'
0
40
100
160
N

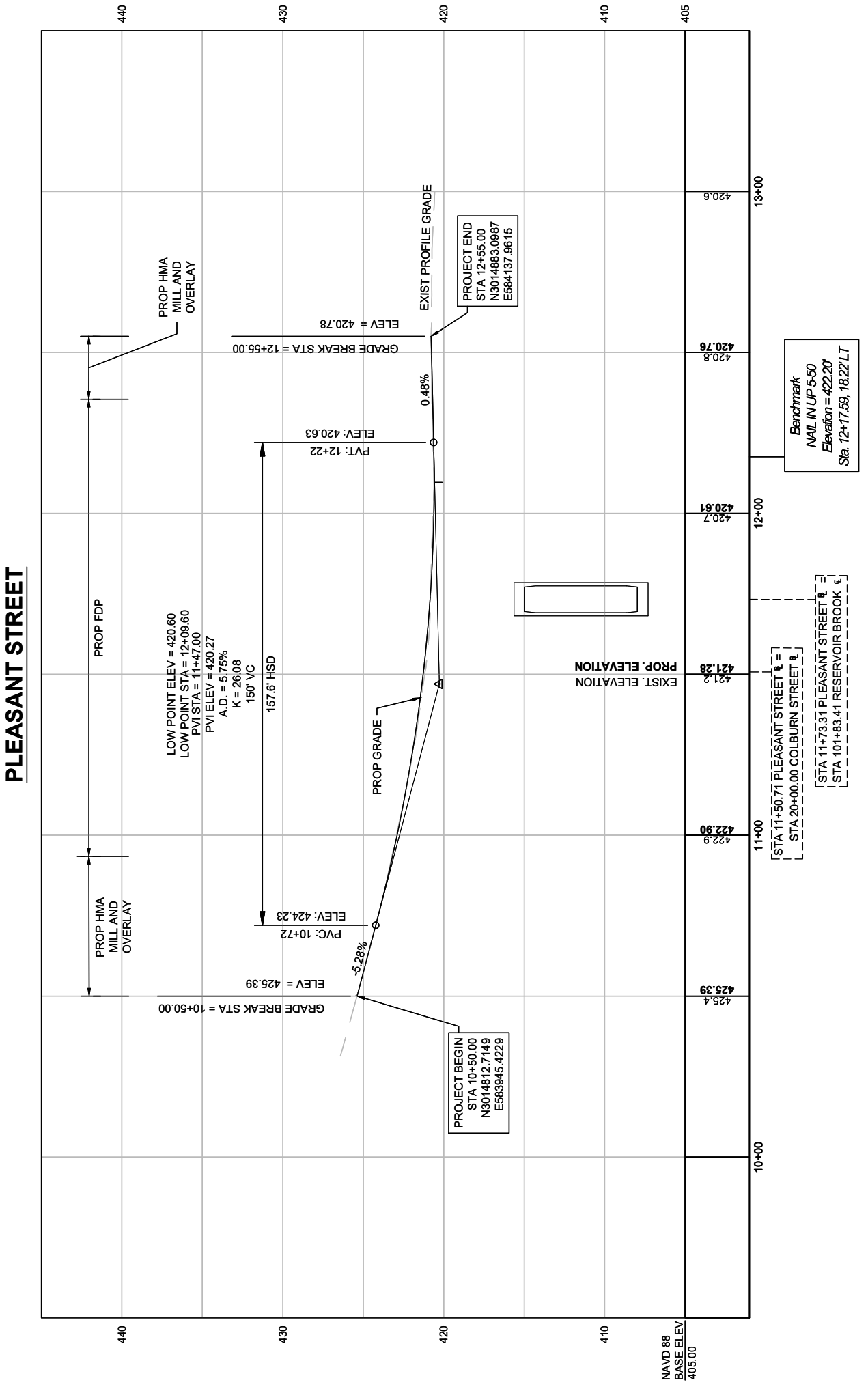
5-6 PROFILES.DWG Plotted on 22-Apr-2026 2:25 PM

SHEET 5 OF 20

PLEASANT STREET PROFILE

CULVERT REPLACEMENT PROJECT
PLEASANT STREET OVER RESERVOIR BROOK
BRIDGE L-08-053
LEOMINSTER, MASSACHUSETTS
APRIL 22, 2026

HOR. SCALE IN FEET 80 40 0 40 80
VER. SCALE IN FEET 16 8 0 8



5-6 PROFILES.DWG Plotted on 22-Apr-2026 2:25 PM

CULVERT REPLACEMENT PROJECT
PLEASANT STREET OVER RESERVOIR BROOK
BRIDGE L-08-053
LEOMINSTER, MASSACHUSETTS
APRIL 22, 2026

RESERVOIR BROOK PROFILE

SHEET 6 OF 20

HOR. SCALE IN FEET 0 40 80
VER. SCALE IN FEET 0 8 16

RESERVOIR BROOK

EXIST PROFILE GRADE

LIMIT OF WORK
STA 104+28.00
N3014669.1475
E584207.0503

GRADE BREAK STA = 104+28.00
ELEV = 402.37

-3.63%

-2.90%

PROP GRADE

GRADE BREAK STA = 102+34.00
ELEV = 409.40

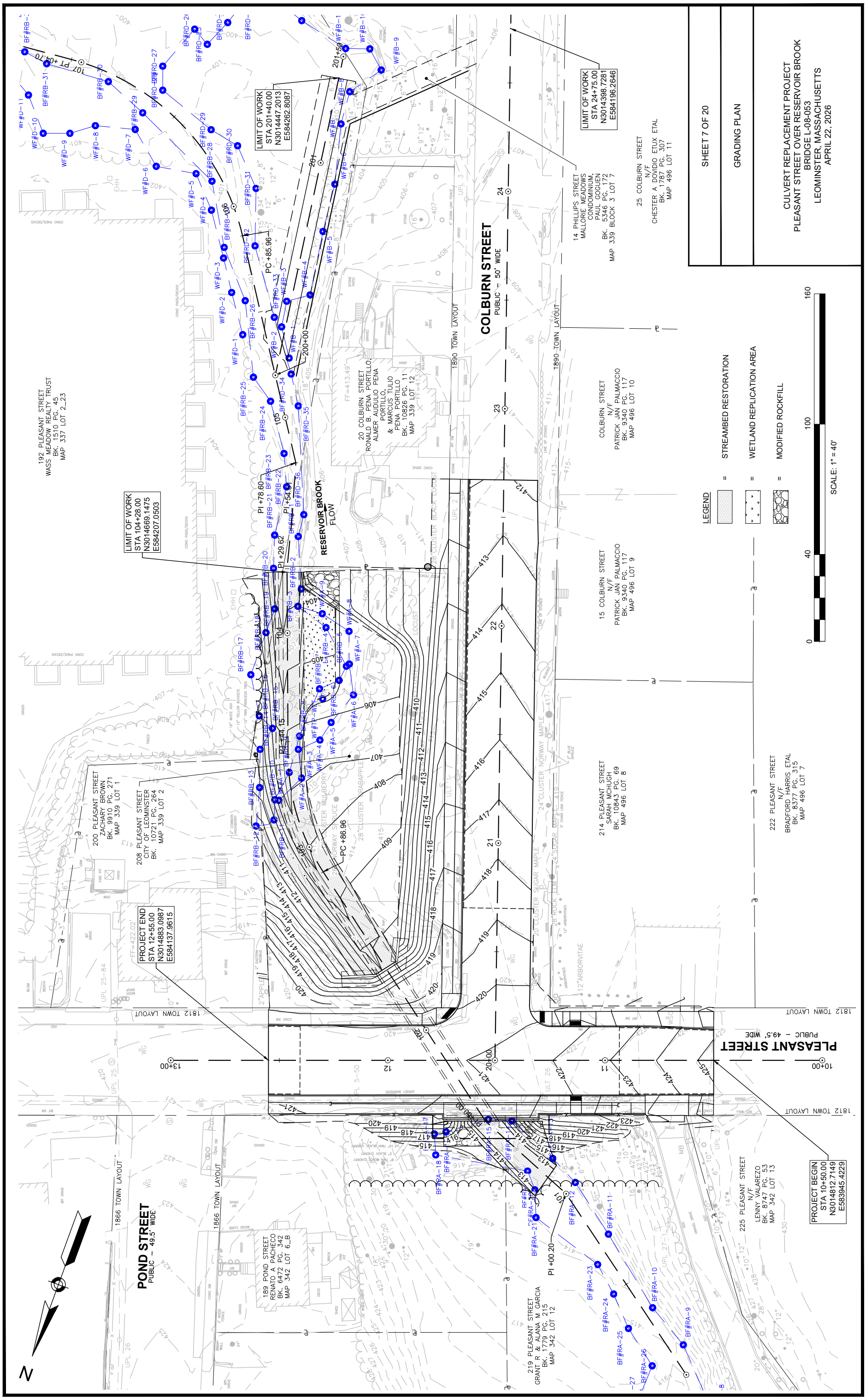
GRADE BREAK STA = 101+11.00
ELEV = 412.96

STA 105+19.96 RESERVOIR BROOK ℄ =
STA 200+00.00 DOWNSTREAM AUXILARY CHANNEL ℄

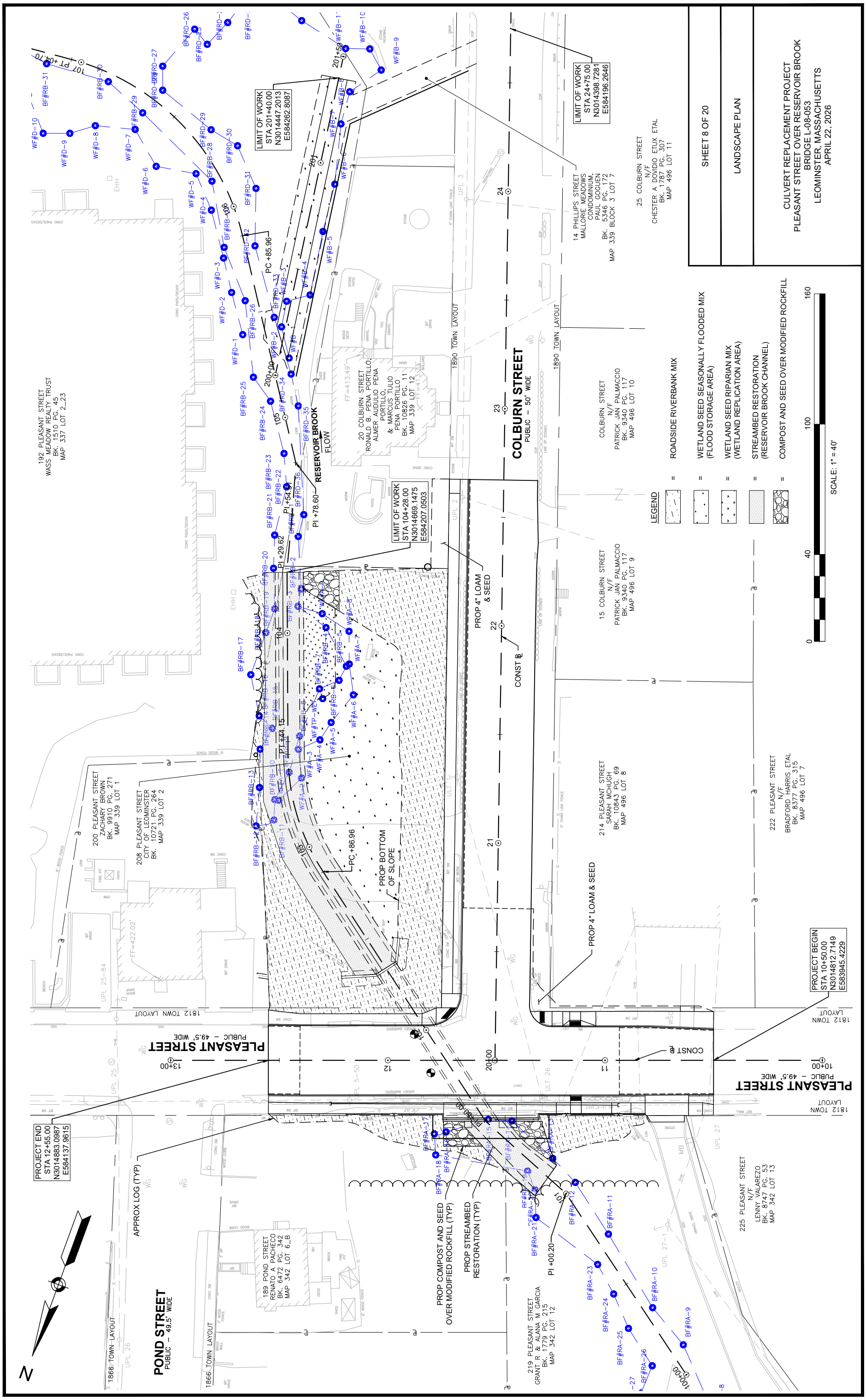
| | EXIST. ELEVATION | PROP. ELEVATION |
|---|---|---|
| 107+00 | 399.8 | |
| | 400.2 | |
| 106+00 | 401.1 | |
| | 401.2 | |
| 105+00 | 401.5 | |
| | 401.9 | |
| 104+00 | 405.8 | 403.38 |
| | 407.6 | 405.19 |
| 103+00 | 412.7 | 407.01 |
| | 410.4 | 408.82 |
| 102+00 | 419.9 | 410.38 |
| | 414.8 | 411.83 |
| 101+00 | 413.3 | |

430 420 410 400 390

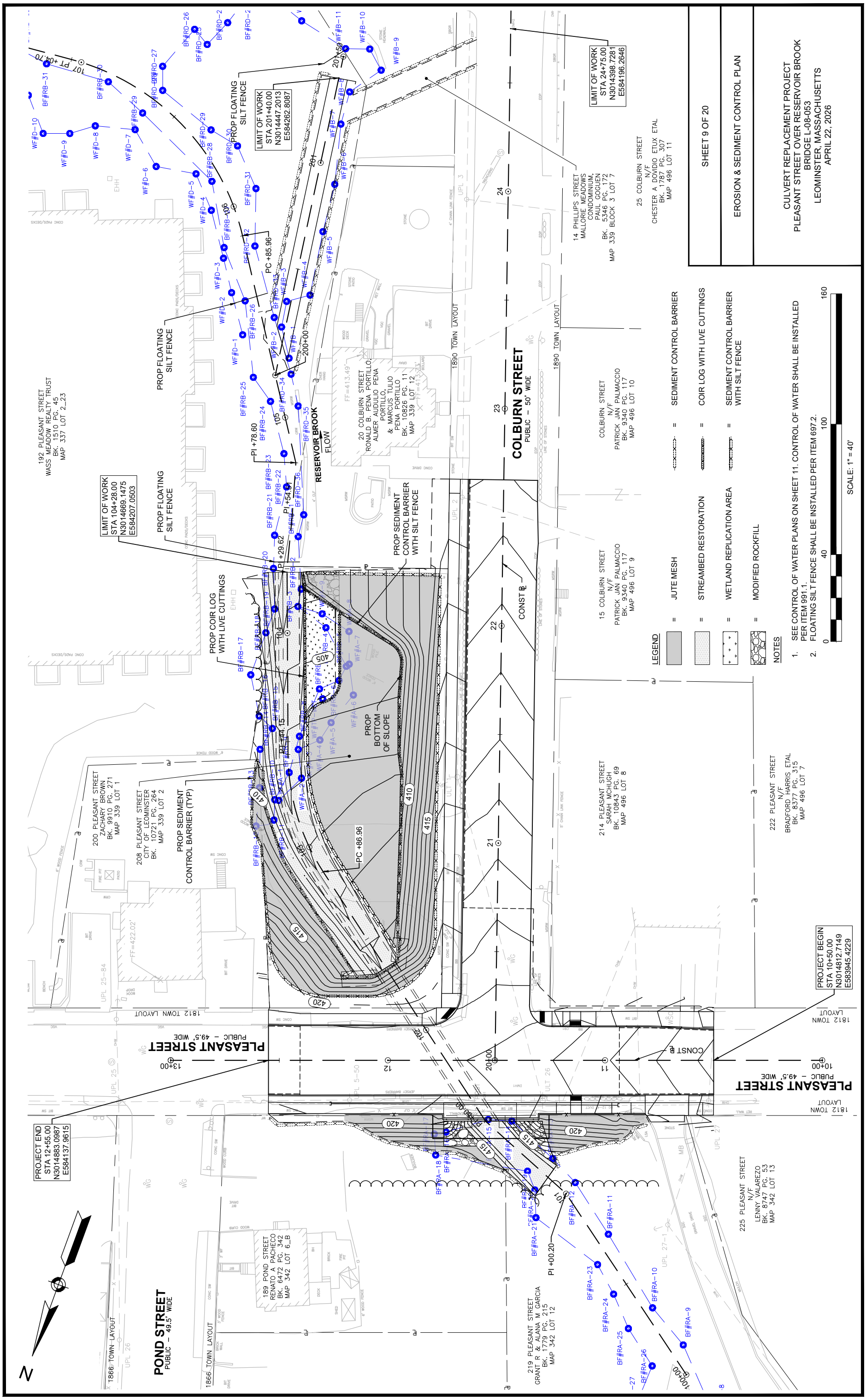
NAVD 88
BASE ELEV
390.00

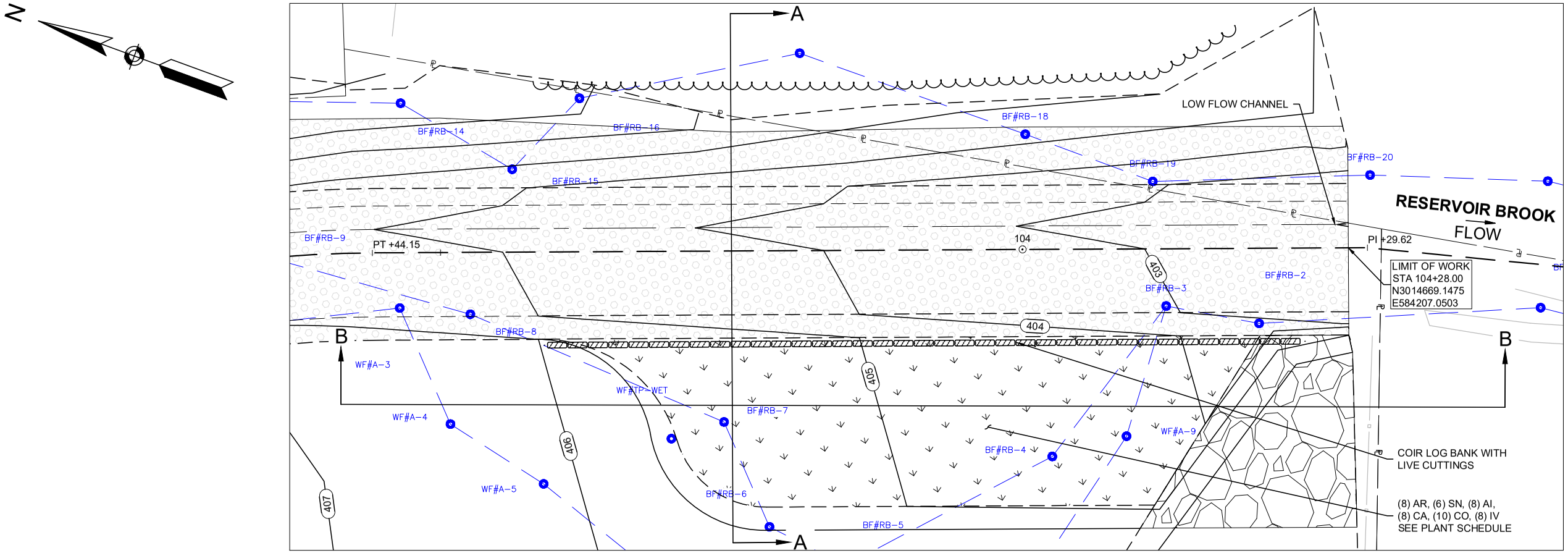

8 GRADING PLAN.DWG Plotted on 22-Apr-2026 2:26 PM
SHEET 7 OF 20
GRADING PLAN
CULVERT REPLACEMENT PROJECT
PLEASANT STREET OVER RESERVOIR BROOK
BRIDGE L-08-053
LEOMINSTER, MASSACHUSETTS
APRIL 22, 2026
LEGEND
= STREAMBED RESTORATION
= WETLAND REPLICATION AREA
= MODIFIED ROCKFILL
SCALE: 1" = 40'
0 40 100 160
COLBURN STREET
PUBLIC – 50' WIDE
1890 TOWN LAYOUT
POND STREET
PUBLIC – 49.5' WIDE
1866 TOWN LAYOUT
PLEASANT STREET
PUBLIC – 49.5' WIDE
1812 TOWN LAYOUT
RESERVOIR BROOK
FLOW
LIMIT OF WORK
STA 201+40.00
N3014447.2013
E584262.8087
LIMIT OF WORK
STA 24+75.00
N3014398.7281
E584196.2646
LIMIT OF WORK
STA 104+28.00
N3014669.1475
E584207.0503
PROJECT END
STA 12+55.00
N3014883.0987
E584137.9615
PROJECT BEGIN
STA 10+50.00
N3014812.7149
E583945.4229
PC +85.96
PC +86.96
PI +00.20
PI +29.62
PI +54.60
PI +78.60
PT +0+10.10
201+50
200+00
20+00
13+00
10+00
192 PLEASANT STREET
WASS MEADOW REALTY TRUST
BK. 1510 PG. 45
MAP 337 LOT 2_23
200 PLEASANT STREET
ZACHARY BROWN
BK. 9910 PG. 271
MAP 339 LOT 1
208 PLEASANT STREET
CITY OF LEOMINSTER
BK. 10721 PG. 264
MAP 339 LOT 2
20 COLBURN STREET
RONALD B. PENA PORTILLO,
ALMER AUDULIO PENA
PORTILLO,
& MARCUS TULIO
PENA PORTILLO
BK. 10826 PG. 11
MAP 339 LOT 12
14 PHILLIPS STREET
MALLORIE MEADOWS
CONDOMINIUM,
PAUL GOGUEN
BK. 5346 PG. 172
MAP 339 BLOCK 3 LOT 7
25 COLBURN STREET
N/F
CHESTER A DOVIDIO ETUX ETAL
BK. 1787 PG. 307
MAP 496 LOT 11
COLBURN STREET
N/F
PATRICK JAN PALMACCIO
BK. 9340 PG. 117
MAP 496 LOT 10
15 COLBURN STREET
N/F
PATRICK JAN PALMACCIO
BK. 9340 PG. 117
MAP 496 LOT 9
214 PLEASANT STREET
SARAH MCHUGH
BK. 10843 PG. 69
MAP 496 LOT 8
222 PLEASANT STREET
N/F
BRADFORD HARRIS ETAL
BK. 8377 PG. 315
MAP 496 LOT 7
225 PLEASANT STREET
N/F
LENNY VALAREZO
BK. 8747 PG. 53
MAP 342 LOT 13
189 POND STREET
RENATO A PACHECO
BK. 6472 PG. 342
MAP 342 LOT 6_B
219 PLEASANT STREET
GRANT R & ALANA M GARCIA
BK. 1779 PG. 215
MAP 342 LOT 12
N

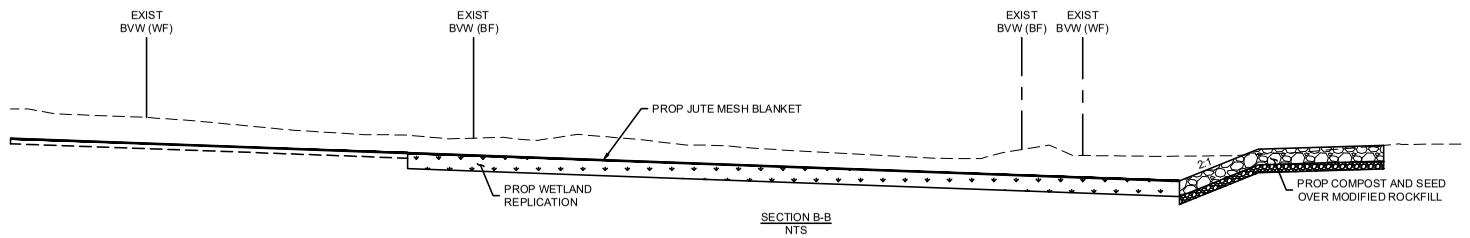
10 LANDSCAPE PLAN.DWG Plotted on 22-Apr-2026 2:26 PM

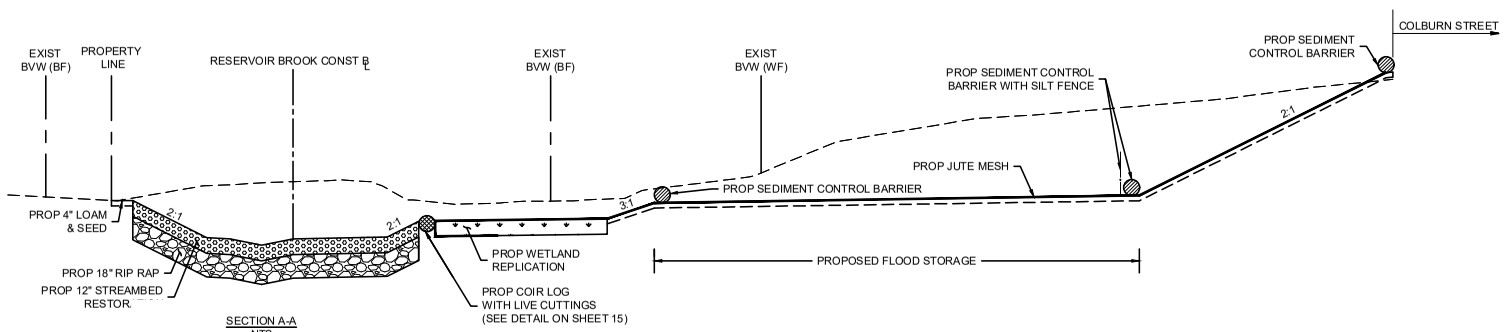


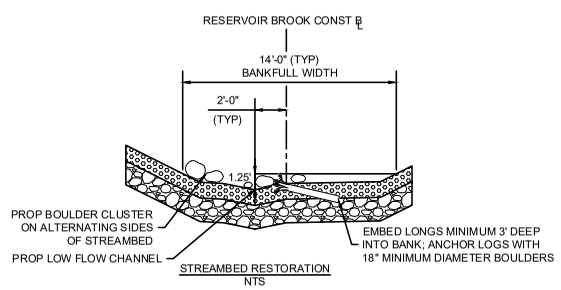
9 EROSION & SEDIMENT CONTROL PLAN.DWG Plotted on 22-Apr-2026 2:27 PM






NOTES:

1. WETLAND PLANTS ARE TO BE LAID OUT BY THE WETLAND SPECIALIST.
2. LIVE CUTTING WILLOW STAKES WILL BE PLACED IN THE COIR LOG BANK AT 3-5 FOOT SPACING ACROSS THE REPLICATION AREA BANK.
3. WETLAND REPLICATION AREA SHALL BE CONSTRUCTED IN ACCORDANCE WITH ITEM 755.35 OF THE SPECIAL PROVISIONS. EXCAVATE EXISTING SOIL TO TARGET ELEVATIONS. IF EXISTING SUBSOIL IS DETERMINED TO BE UNSUITABLE FOR PLANTING, EXCAVATE TO DEPTH NECESSARY FOR PLANTING AND BACKFILL WITH APPROPRIATE MANUFACTURED SOIL. BACKFILL SHALL BE INSTALLED AS PER MASSDOT STANDARD SPECIFICATIONS.
4. SET LOW FLOW CHANNEL WIDTH TO APPROXIMATELY $\frac{1}{3}$ THE BANKFULL WIDTH.
5. ALIGNMENT OF THE LOW FLOW CHANNEL TO BE CONFIRMED IN THE FIELD DURING CONSTRUCTION BY THE GEOMORPHOLOGIST.
6. PROPOSED CHANNEL TO BE CONSTRUCTED USING NATIVE CHANNEL BED MATERIAL IN ACCORDANCE WITH THE STREAMBED RESTORATION SPECIFICATION AND IN COORDINATION WITH THE GEOMORPHOLOGIST. MAINTAIN ROUGH AND IRREGULAR CROSS SECTION.
7. CHANNEL BED SHOULD BE ROUGH AND "MESSY". WOOD TO BE EMBEDDED IN SEDIMENT PER GEOMORPHOLOGIST'S DIRECTION IN FIELD TO CREATE HABITAT FEATURES. PLACE NATIVE BOULDERS IN CHANNEL.
8. ADD A 6" MINIMUM LAYER OF RIVER GRAVEL ACROSS CHANNEL BOTTOM IF MUCK SOILS ARE UNCOVERED WITHIN THE EXCAVATED CHANNEL. RIVER GRAVEL TO BE INCIDENTAL TO ITEM 983.521.

| Plant Schedule | | | | |
|---|---|---|---|---|
| Symbol | Quantity | Botanical Name | Common Name | Size |
| | | | | |
| **Trees** | | | | |
| AR | 8 | ACER RUBRUM | RED MAPLE | 3'-4' HT |
| SN | 6 | SALIX NIGRA | BLACK WILLOW | 3'-4' HT |
| **Shrubs** | | | | |
| AI | 8 | ALNUS INCANA | SPECKLED ALDER | 2'-3' HT |
| CA | 8 | CORNUS AMOMUM | SILKY DOGWOOD | 2'-3' HT |
| CO | 10 | CEPHALANTHUS OCCIDENTALIS | BUTTONBUSH | 18"-24" HT |
| IV | 8 | ILEX VERTICILLATA | COMMON WINTERBERRY | 18"-24" HT |

0 10 25 50

SCALE: 1" = 10'

SHEET 10 OF 20

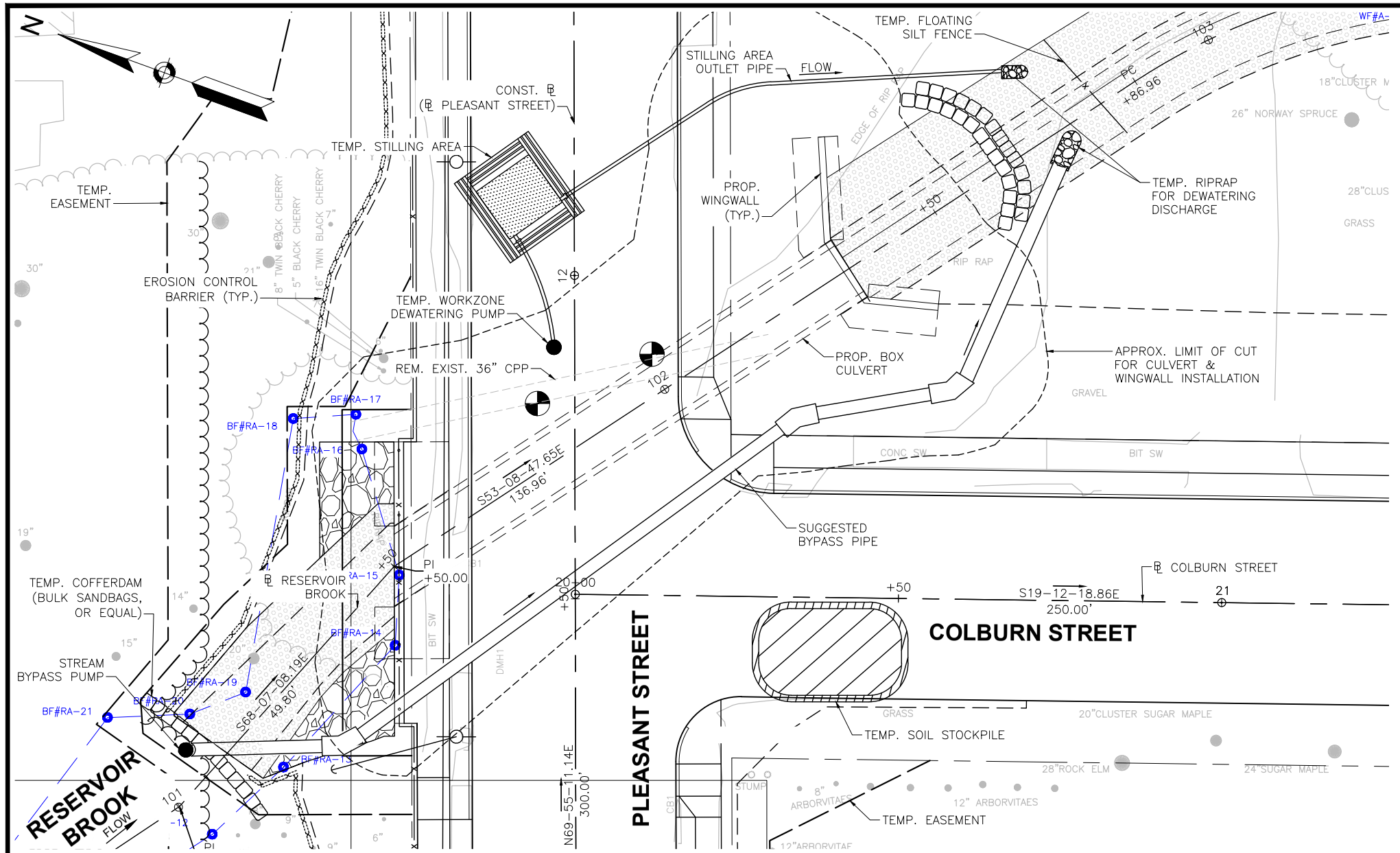
WETLAND REPLICATION & PLANTING PLAN

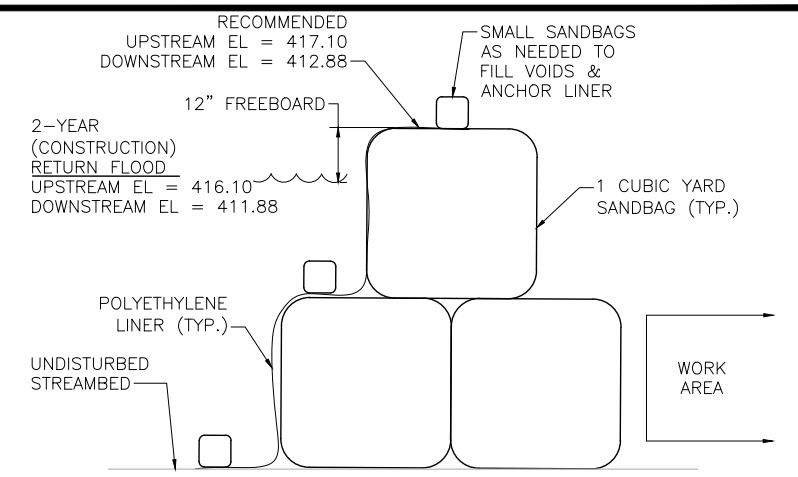
CULVERT REPLACEMENT PROJECT
PLEASANT STREET OVER RESERVOIR BROOK
BRIDGE L-08-053
LEOMINSTER, MASSACHUSETTS
APRIL 22, 2026

A00830 - 404

Proposal No. 616375-136648

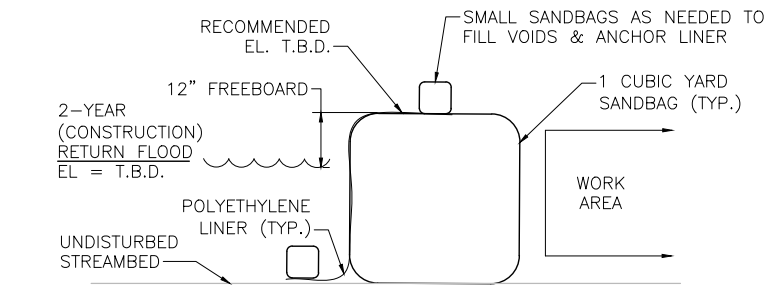
11 WETLAND REPLICATION & PLANTING PLAN.DWG Plotted on 22-Apr-2026 2:35 PM



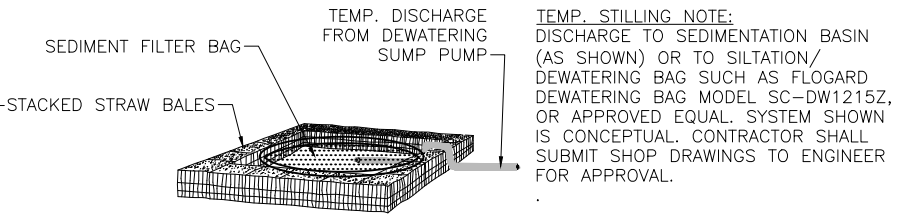

## DOWNSTREAM SANDBAG COFFERDAM

NOT TO SCALE




## SANDBAG COFFERDAM

NOT TO SCALE

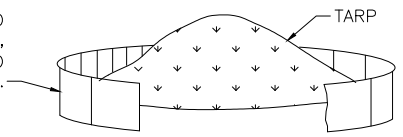



TEMP. STILLING NOTE:
DISCHARGE TO SEDIMENTATION BASIN (AS SHOWN) OR TO SILTATION/ DEWATERING BAG SUCH AS FLOGARD DEWATERING BAG MODEL SC-DW1215Z, OR APPROVED EQUAL. SYSTEM SHOWN IS CONCEPTUAL. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO ENGINEER FOR APPROVAL.

## TEMPORARY STILLING AREA

NOT TO SCALE

STOCKPILES SHALL BE SURROUNDED BY DOUBLE-STAKED STRAW BALES, OR SILT FENCE ENTRENCHED 6" INTO THE GROUND WITH STRAW BALES.




NOTE:
IF STOCKPILE IS PLACED ON PAVEMENT, THEN IT SHALL BE SURROUNDED BY COMPOST FILTER TUBES.

## TEMPORARY SOIL STOCKPILE

NOT TO SCALE

## CONTROL OF WATER NOTES:

1. THE CONTROL OF WATER (C.O.W.) SYSTEM SHOWN IN THESE PLANS IS AN ALTERNATIVE FOR THE CULVERT CONSTRUCTION ONLY. THE CONTRACTOR SHALL DETERMINE THE MOST APPROPRIATE METHODS FOR CONTROLLING WATER AND FOR THE STREAM RELOCATION WORK DOWNSTREAM OF THE CULVERT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF ALL NECESSARY C.O.W. SYSTEMS AND SHALL SUBMIT A C.O.W. PLAN TO THE ENGINEER FOR APPROVAL.
2. ALL DEWATERING SHALL BE DIVERTED TO A TEMPORARY STILLING BASIN PRIOR TO BEING PUMPED BACK INTO THE BROOK. NO CONTAMINATED WATER IS PERMITTED TO ENTER THE BROOK.
3. C.O.W. SYSTEM SHALL BE DESIGNED TO WITHSTAND A 2-YEAR FLOOD ELEVATION. THE TOP ELEVATION OF THE TEMPORARY WATER CONTROL MEASURE SHALL BE THE 2-YEAR FLOOD ELEVATION +1 FOOT OF FREEBOARD.
4. C.O.W. SYSTEM SHALL BE INSPECTED DAILY FOR WATER LEAKS OR EROSION AND REPAIR PROCEDURES SHALL BE IMPLEMENTED ACCORDINGLY.
5. PLEASANT STREET SHALL BE CLOSED TO VEHICULAR AND PEDESTRIAN TRAFFIC AT THE BRIDGE CROSSING PRIOR TO BEGINNING EXCAVATION. DETOUR SIGNAGE WILL BE INSTALLED IN ACCORDANCE WITH THE MUTCD AND THE TEMPORARY TRAFFIC CONTROL PLANS INCLUDED IN THESE CONSTRUCTION DRAWINGS.
6. TEMPORARY AND PERMANENT UTILITIES NOT SHOWN FOR CLARITY. REFER TO UTILITY PLANS FOR ADDITIONAL INFORMATION REGARDING TEMPORARY AND PERMANENT UTILITY WORK.

## SUGGESTED SEQUENCE OF CONSTRUCTION:

1. CLOSE THE ROADWAY TO VEHICULAR AND PEDESTRIAN TRAFFIC AT THE BRIDGE CROSSING. COORDINATE TEMPORARY UTILITY WORK (GAS AND OHW) WITH RESPECTIVE OWNERS PRIOR TO BREAKING EARTH.
2. INSTALL EROSION CONTROLS: TEMPORARY EROSION CONTROL AROUND PROJECT LIMITS TO PROTECT RESERVOIR BROOK FROM WORK ZONE SEDIMENT; FLOATING SILT FENCE IN THE RESERVOIR BROOK DOWNSTREAM OF THE PROJECT LIMITS TO TRAP ANY FLOATING DEBRIS/SILT THAT MAY ENTER THE BROOK.
3. INSTALL C.O.W. COFFERDAMS, BYPASS PIPE, DEWATERING PUMPS, AND TEMPORARY STILLING BASIN.
4. PLACE TEMPORARY RIPRAP AT OUTLET FOR BYPASS DISCHARGE.
5. DEWATER THE WORK AREA PRIOR TO (AND THROUGHOUT) EXCAVATION TO FACILITATE INSTALLING THE CULVERT AND WINGWALLS IN THE DRY CONDITION. ALL DEWATERING FLOW SHALL PASS THROUGH THE STILLING BASIN TO REMOVE SEDIMENT PRIOR TO DEPOSITING BACK INTO THE STREAM.
6. INSTALL THE DOWNSTREAM CULVERT SECTIONS FIRST TO FACILITATE TEMPORARY UTILITY RELOCATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR TIMING THE WORK SUCH THAT THE INSTALLATION OF NECESSARY PRECAST CULVERT SECTIONS IS COMPLETE PRIOR TO TEMPORARY UTILITY RELOCATIONS (WATER AND SEWER).
7. INSTALL THE REMAINING PRECAST BOX CULVERT SECTIONS AND WINGWALLS (EXCEPT BUTTERFLY WALL ON NORTH SIDE). RESTORE THE STREAMBED IN ACCORDANCE WITH THESE PLANS.
8. MAKE FINAL UTILITY CONNECTIONS AND REMOVE TEMPORARY BYPASS PIPING. BACKFILL THE CULVERT AND WINGWALLS THAT HAVE BEEN INSTALLED.
9. REDIRECT STREAM FLOW THROUGH THE CULVERT.
10. CONSTRUCT THE BUTTERFLY WALL. NOTE THAT THE STREAMFLOW SHALL BE FULLY RESTORED PRIOR TO CONSTRUCTION OF THE BUTTERFLY WALL DUE TO THE BYPASS PIPE ALIGNMENT BENEATH THE WALL.
11. INSTALL MODIFIED ROCKFILL EMBANKMENT AND LOAM AND SEED WITH EROSION CONTROL BLANKET IN FRONT OF THE WINGWALLS.
12. SION CONTROL BLANKET IN FRONT OF THE WINGWALLS.

0 20 50 100

SCALE: 1" = 20'

SHEET 11 OF 20

CONTROL OF WATER PLAN

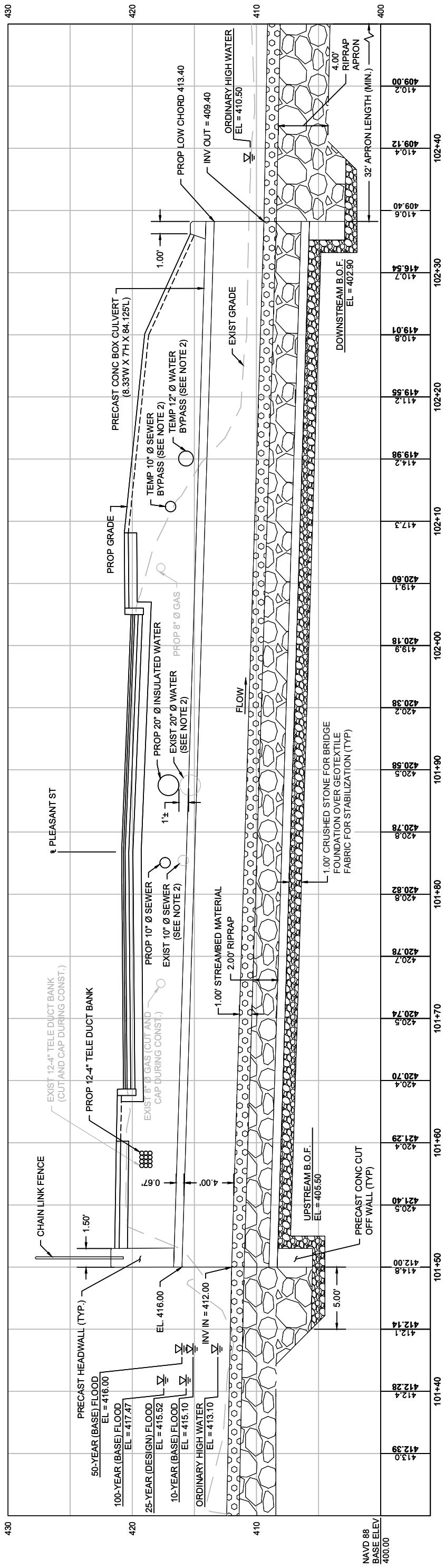
CULVERT REPLACEMENT PROJECT
PLEASANT STREET OVER RESERVOIR BROOK
BRIDGE L-08-053
LEOMINSTER, MASSACHUSETTS
APRIL 22, 2026

A00830 - 405

Proposal No. 616375-136648

12 CONTROL OF WATER PLAN.DWG Plotted on 22-Apr-2026 2:29 PM

5-6 PROFILES.DWG Plotted on 22-Apr-2026 4:03 PM




SHEET 12 OF 20

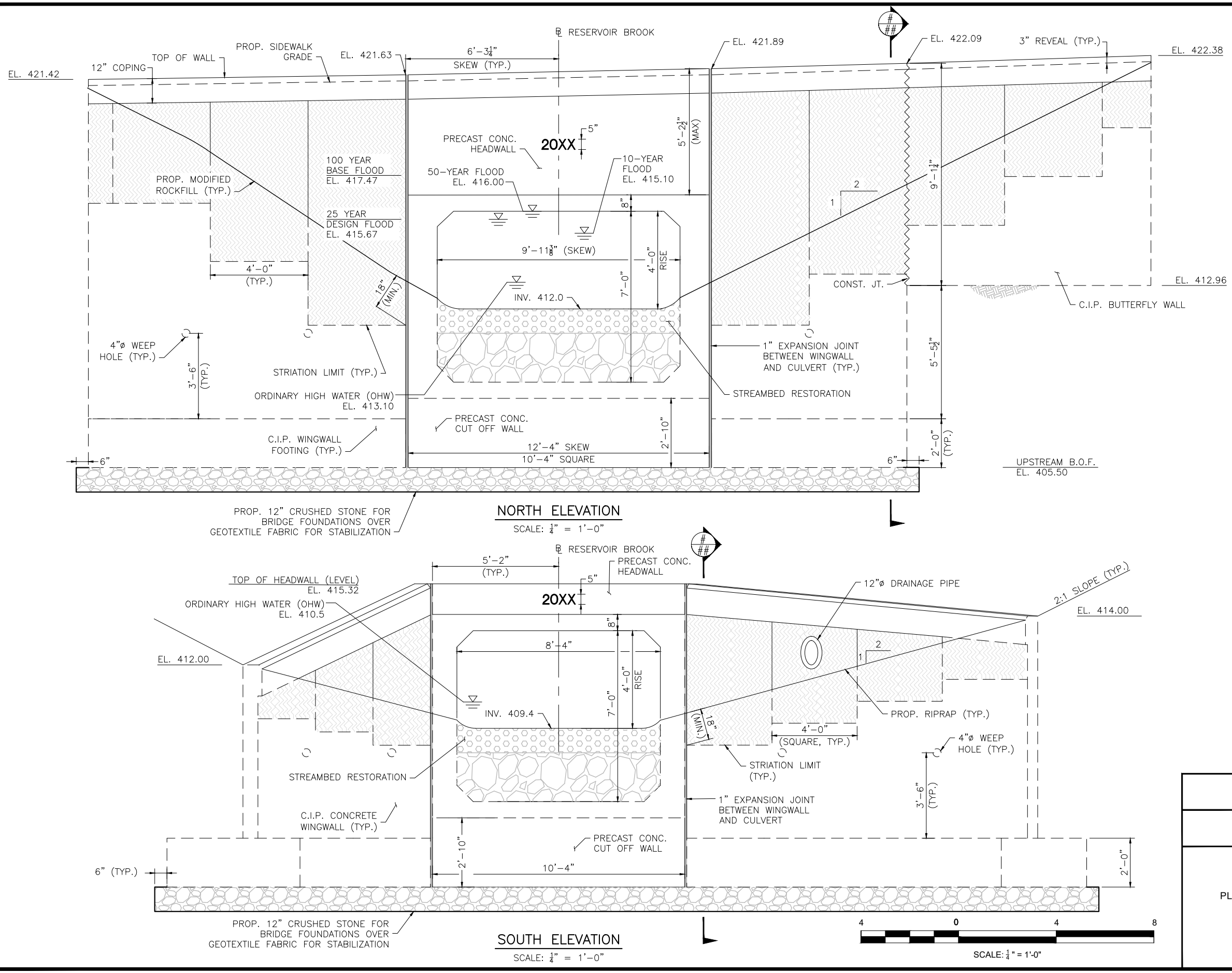
CULVERT PROFILE

CULVERT REPLACEMENT PROJECT
PLEASANT STREET OVER RESERVOIR BROOK
BRIDGE L-08-053
LEOMINSTER, MASSACHUSETTS
APRIL 22, 2026

HOR. SCALE IN FEET
16 8 0 8 16

VER. SCALE IN FEET
8 0 8

NOTES:
1. THIS PROFILE IS TAKEN ALONG THE RESERVOIR BROOK BASELINE.
2. EXISTING WATER AND SEWER LINES SHALL REMAIN IN THEIR CURRENT POSITION UNTIL THE DOWNSTREAM PORTION OF THE PROPOSED CULVERT CAN BE INSTALLED TO SUPPORT THE TEMPORARY BYPASSES. ONLY ONCE THE TEMPORARY BYPASSES ARE IN PLACE AND ACTIVE MAY THE CONTRACTOR REMOVE THE EXISTING WATER AND SEWER LINES. THE CONTRACTOR'S CULVERT DESIGN AND ERECTION PROCEDURE SHALL CONSIDER THE INSTALLATION OF THE TEMPORARY BYPASS PIPES WHEN SIZING CULVERT UNITS.




NORTH ELEVATION

SCALE: ¼" = 1'-0"




SOUTH ELEVATION

SCALE: ¼" = 1'-0"

4 0 4 8

SCALE: ¼" = 1'-0"

SHEET 13 OF 20

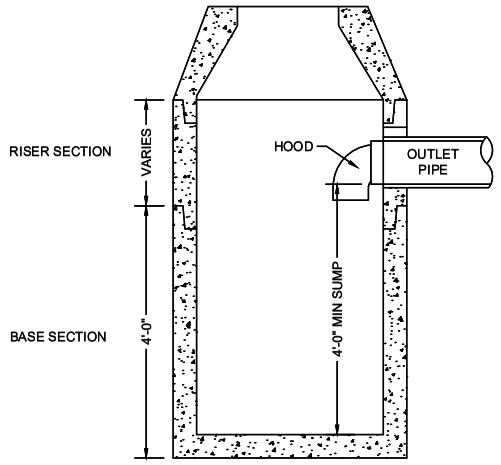
CULVERT ELEVATIONS

CULVERT REPLACEMENT PROJECT
PLEASANT STREET OVER RESERVOIR BROOK
BRIDGE L-08-053
LEOMINSTER, MASSACHUSETTS
APRIL 22, 2026

A00830 - 407

4 ELEVATION.DWG Plotted on 22-Apr-2026 2:29 PM

Proposal No. 616375-136648

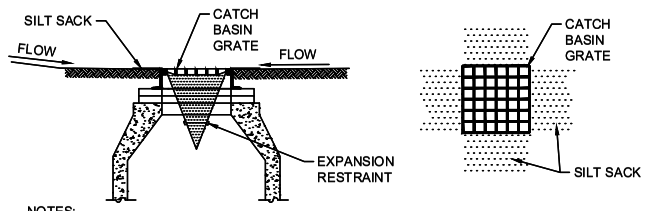



NOTE:

ALL CATCH BASINS SHALL CONFORM TO MASSDOT CONSTRUCTION STANDARD 201.0.2 EXCEPT FOR 4' SUMP DEPTH AS SHOWN

## DEEP SUMP CATCH BASIN WITH HOOD

N.T.S.

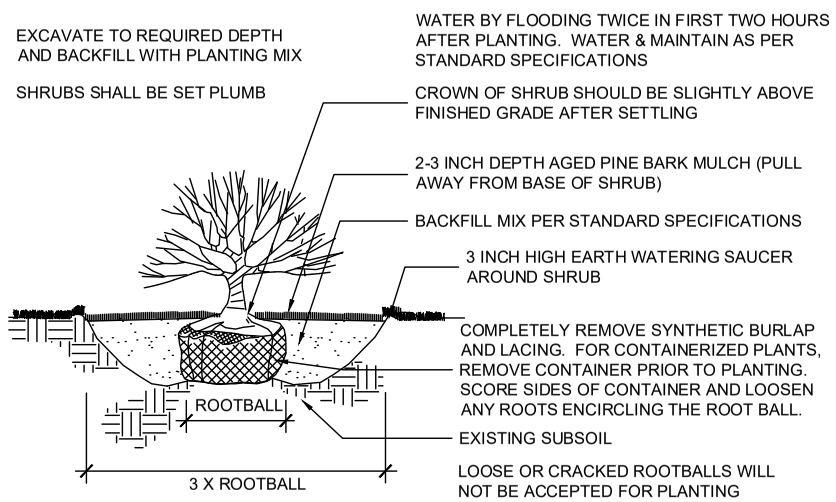



NOTES:

1. INSTALL SILT SACK IN EXISTING CATCH BASINS BEFORE COMMENCING WORK, AND IN NEW CATCH BASINS IMMEDIATELY AFTER INSTALLATION OF STRUCTURE. MAINTAIN UNTIL BINDER COURSE PAVING IS COMPLETE OR A PERMANENT STAND OF GRASS HAS BEEN ESTABLISHED.
2. GRATE TO BE PLACED OVER SILT SACK.
3. SILT SACK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS AND CLEANING OR REPLACEMENT SHALL BE PERFORMED PROMPTLY AS NEEDED.

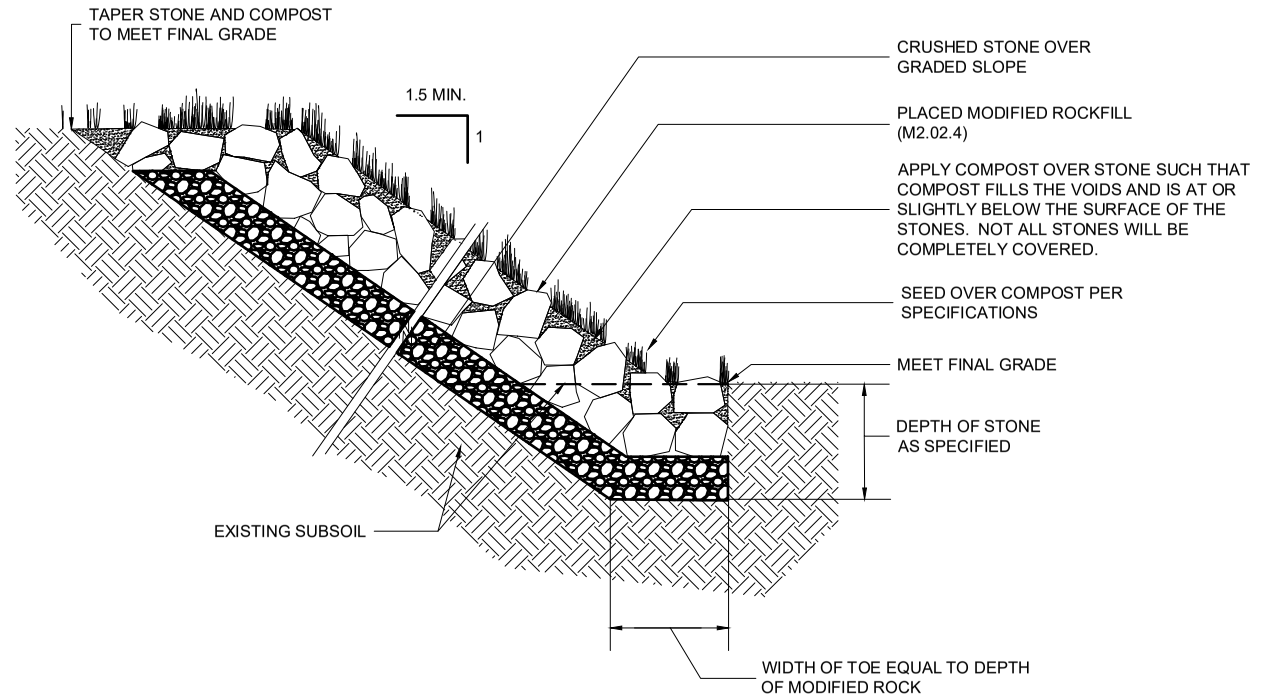
## INLET PROTECTION SILT SACK IN CATCH BASIN

N.T.S.




## SHRUB PLANTING

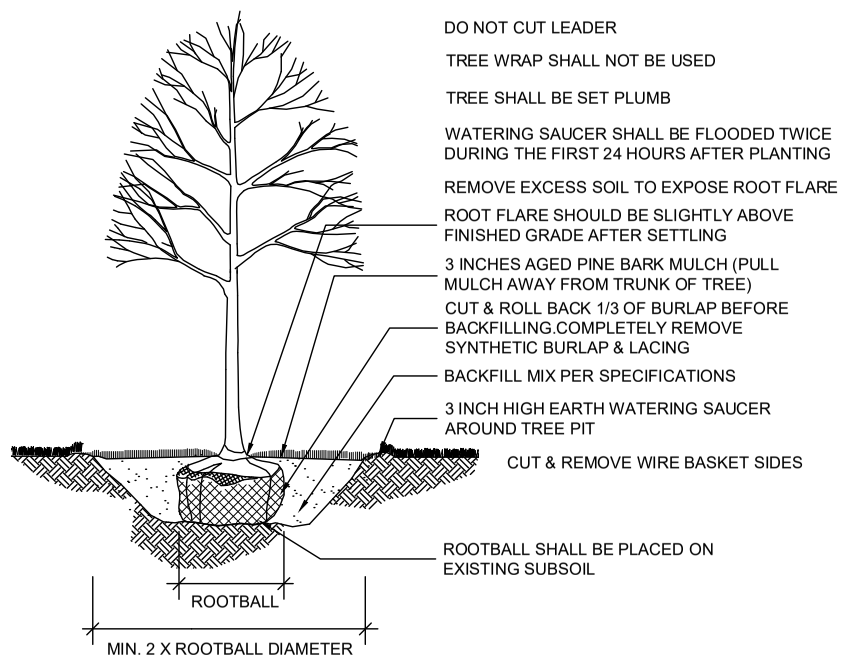
NOT TO SCALE




## COMPOST AND SEED OVER MODIFIED ROCKFILL

NOT TO SCALE

20160320_MassDOT




## DECIDUOUS TREE PLANTING

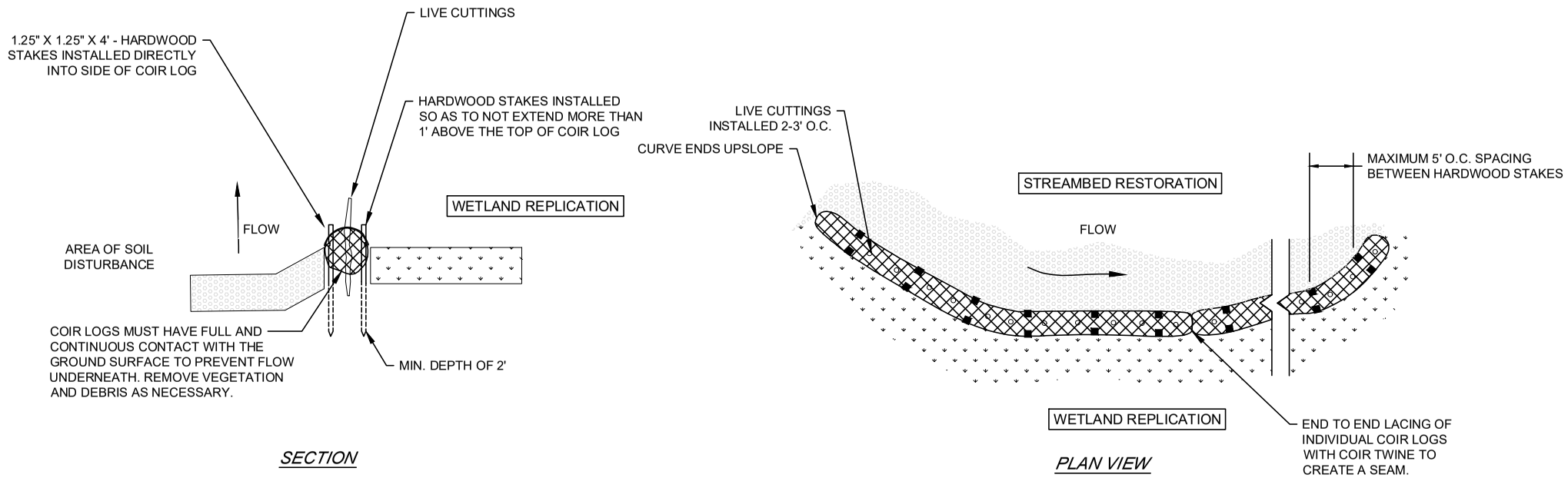
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SHEET 14 OF 20

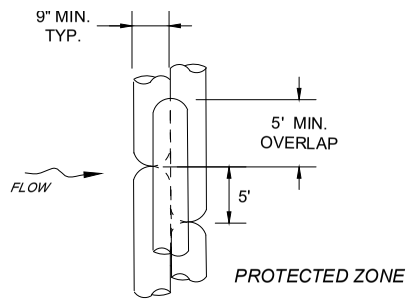
CONSTRUCTION DETAILS - 1 OF 2

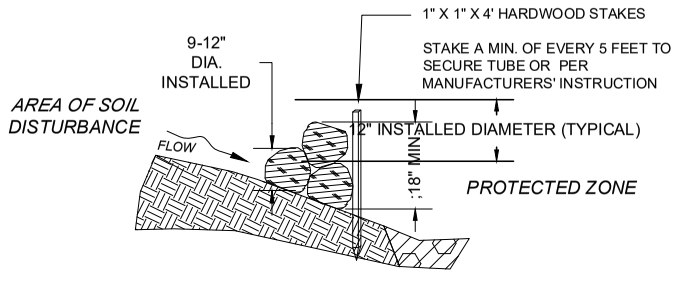
CULVERT REPLACEMENT PROJECT
PLEASANT STREET OVER RESERVOIR BROOK
BRIDGE L-08-053
LEOMINSTER, MASSACHUSETTS
APRIL 22, 2026

13 DETAILS.DWG Plotted on 22-Apr-2026 2:29 PM
Proposal No. 616375-136648
A00830 - 408

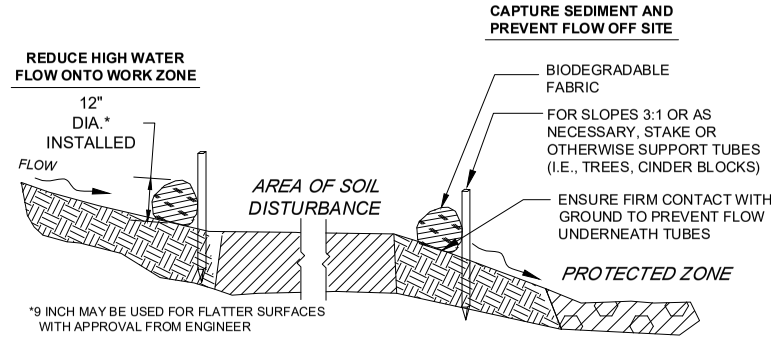



COIR LOG BANK
N.T.S.

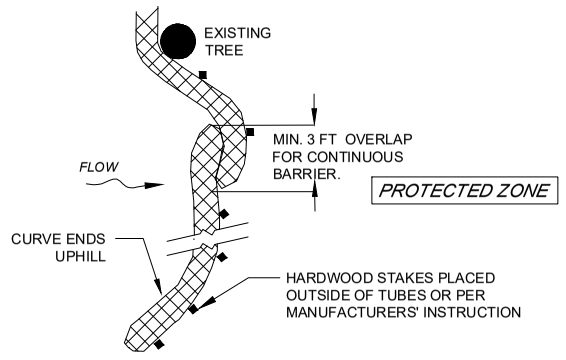


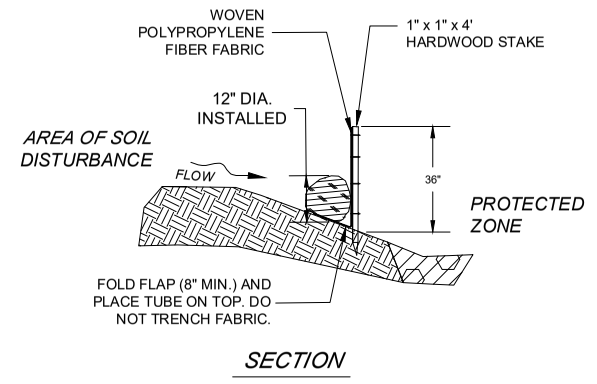

COMPOST FILTER TUBE BERM (SLOPES 2:1 OR STEEPER)
N.T.S.




SEDIMENT BARRIER - COMPOST FILTER TUBES
N.T.S.




COMPOST FILTER TUBE
N.T.S.




COMPOST FILTER TUBE & SILT FENCE
N.T.S.

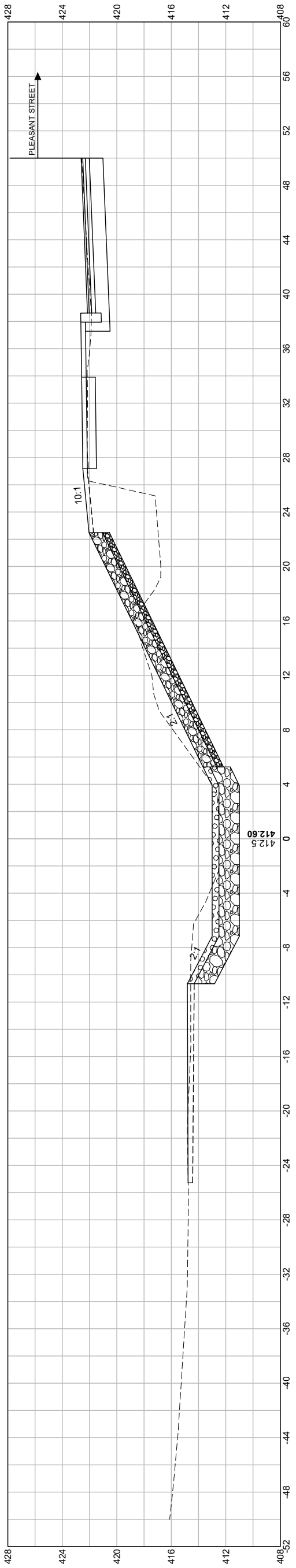
SHEET 15 OF 20

CONSTRUCTION DETAILS - 2 OF 2

CULVERT REPLACEMENT PROJECT
PLEASANT STREET OVER RESERVOIR BROOK
BRIDGE L-08-053
LEOMINSTER, MASSACHUSETTS
APRIL 22, 2026

13 DETAILS.DWG Plotted on 22-Apr-2026 4:02 PM
Proposal No. 616375-136648
A00830 - 409

14 CROSS SECTIONS.DWG Plotted on 22-Apr-2026 2:30 PM




SHEET 16 OF 20

STREAM CROSS SECTIONS - 1 OF 5

CULVERT REPLACEMENT PROJECT
PLEASANT STREET OVER RESERVOIR BROOK
BRIDGE L-08-053
LEOMINSTER, MASSACHUSETTS
APRIL 22, 2026

HOR. SCALE IN FEET 0 8 16
VER. SCALE IN FEET 0 8 16
SCALE: 1" = 8'

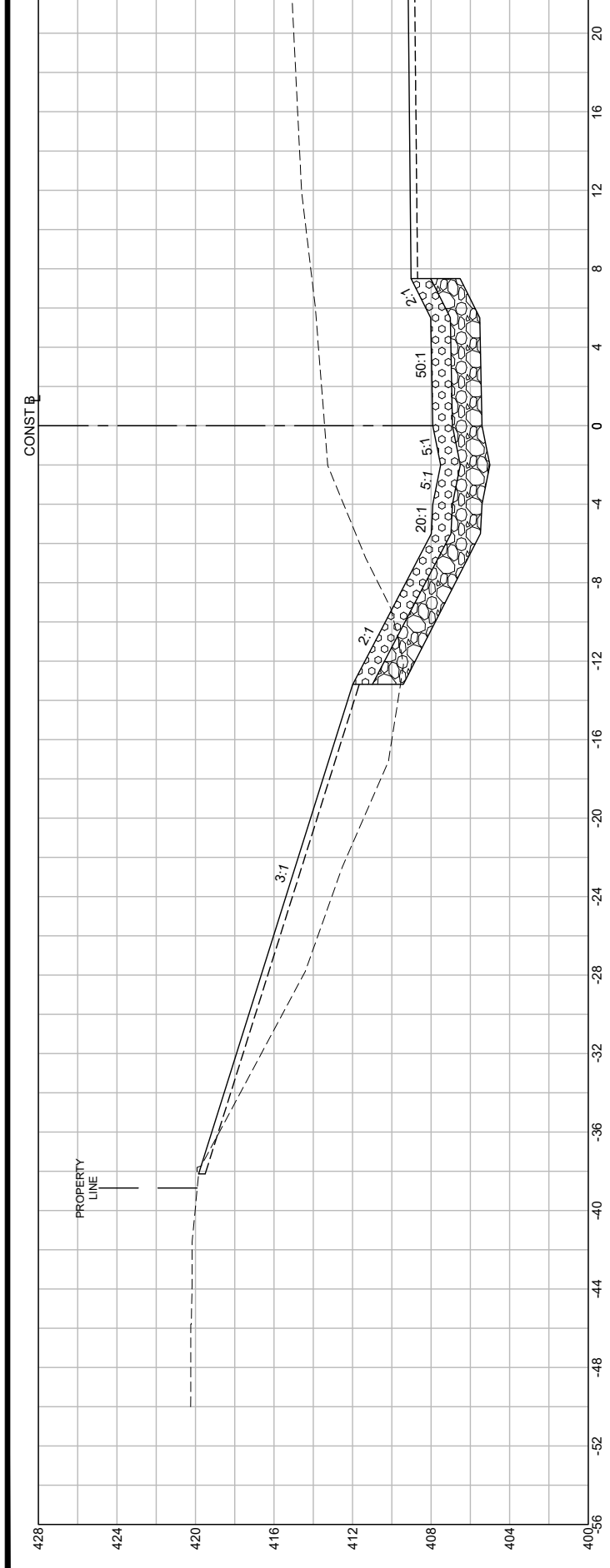
14 CROSS SECTIONS.DWG Plotted on 22-Apr-2026 2:30 PM

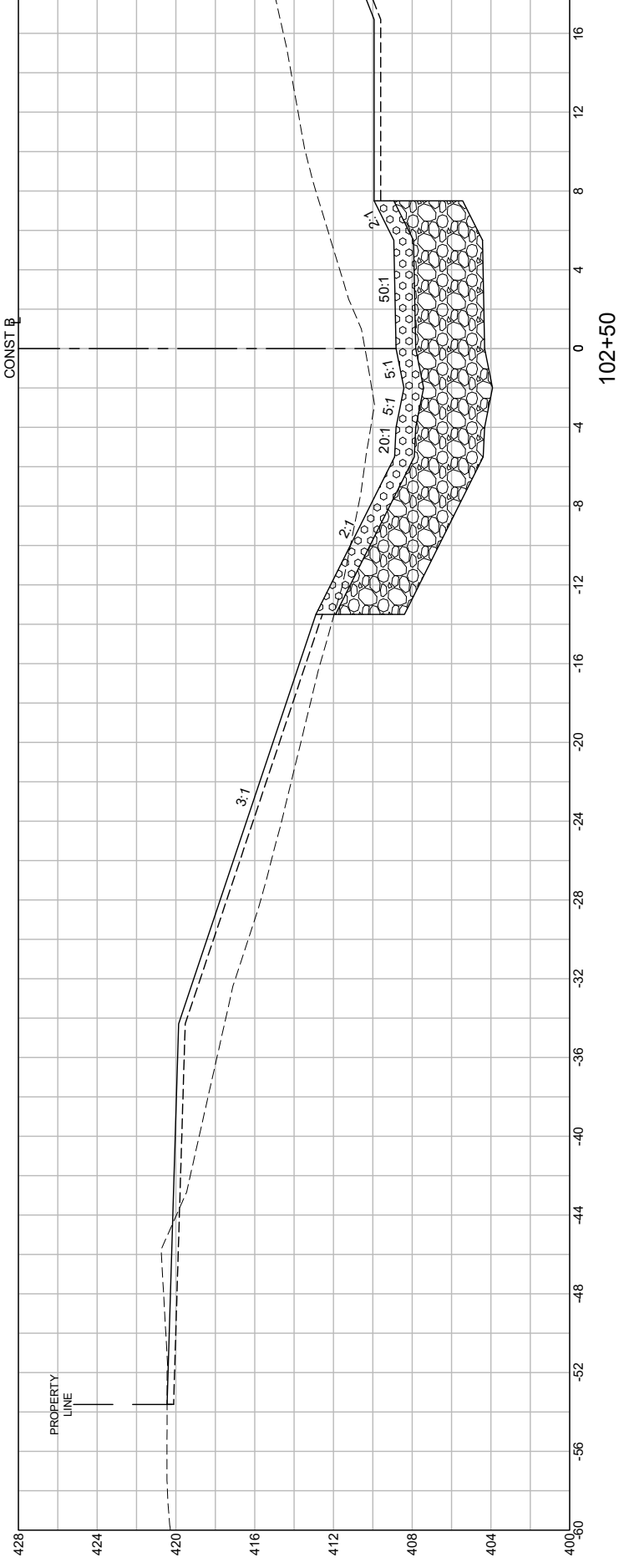
CULVERT REPLACEMENT PROJECT
PLEASANT STREET OVER RESERVOIR BROOK
BRIDGE L-08-053
LEOMINSTER, MASSACHUSETTS
APRIL 22, 2026

STREAM CROSS SECTIONS - 2 OF 5

SHEET 17 OF 20

HOR. SCALE IN FEET 8 0 8 16
VER. SCALE IN FEET 8 0 8 16
SCALE: 1" = 8'



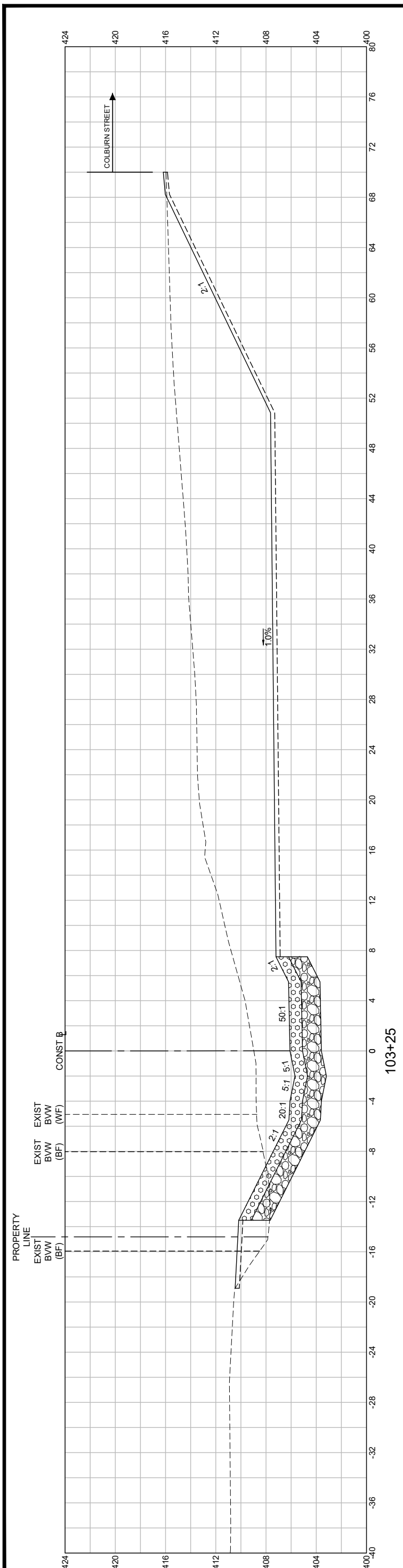
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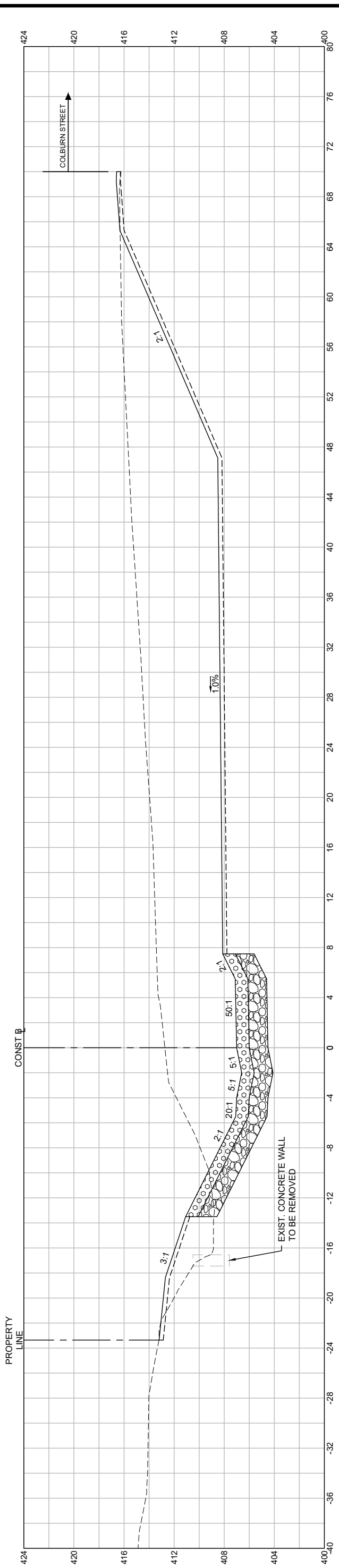
CULVERT REPLACEMENT PROJECT
PLEASANT STREET OVER RESERVOIR BROOK
BRIDGE L-08-053
LEOMINSTER, MASSACHUSETTS
APRIL 22, 2026

STREAM CROSS SECTIONS - 3 OF 5

SHEET 18 OF 20

HOR. SCALE IN FEET 8 0 8 16
VER. SCALE IN FEET 8 0 8 16
SCALE: 1" = 8'



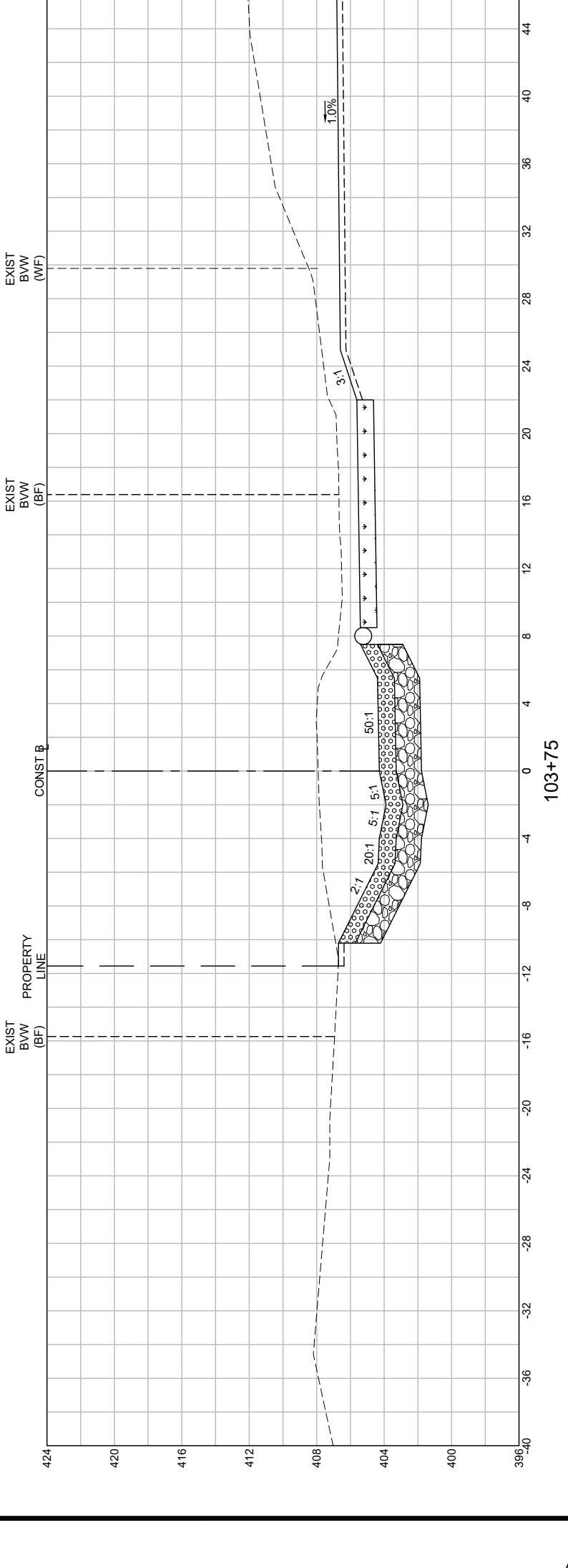
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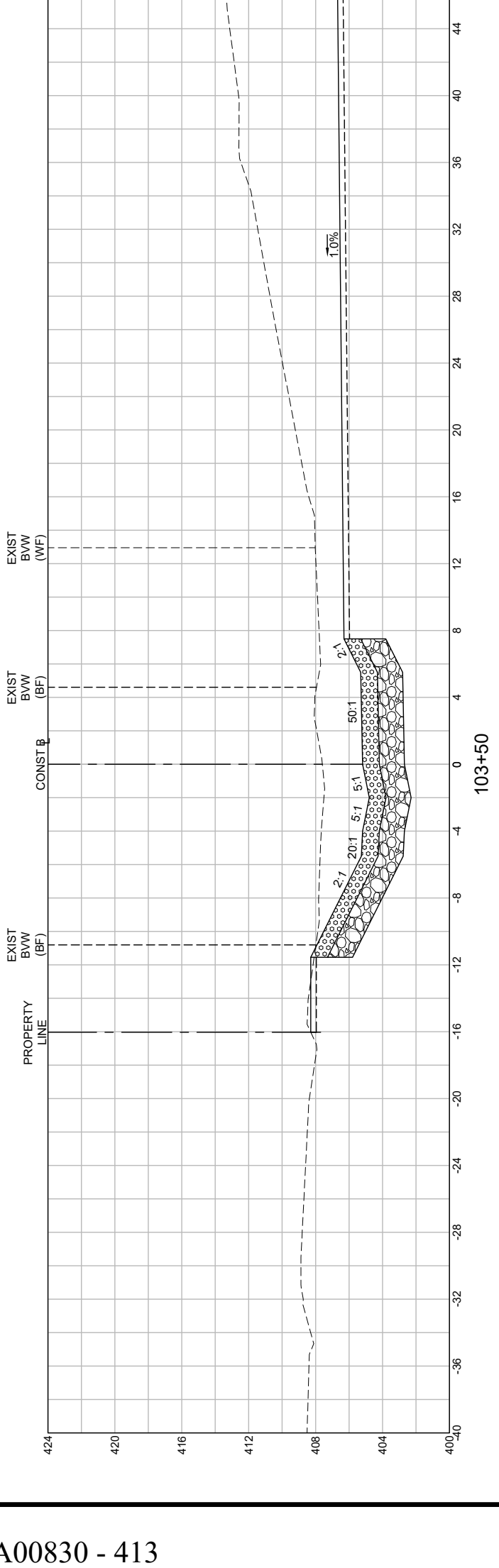
CULVERT REPLACEMENT PROJECT
PLEASANT STREET OVER RESERVOIR BROOK
BRIDGE L-08-053
LEOMINSTER, MASSACHUSETTS
APRIL 22, 2026

STREAM CROSS SECTIONS - 4 OF 5

SHEET 19 OF 20

HOR. SCALE IN FEET 8 0 8 16
VER. SCALE IN FEET 8 0 8 16
SCALE: 1" = 8'



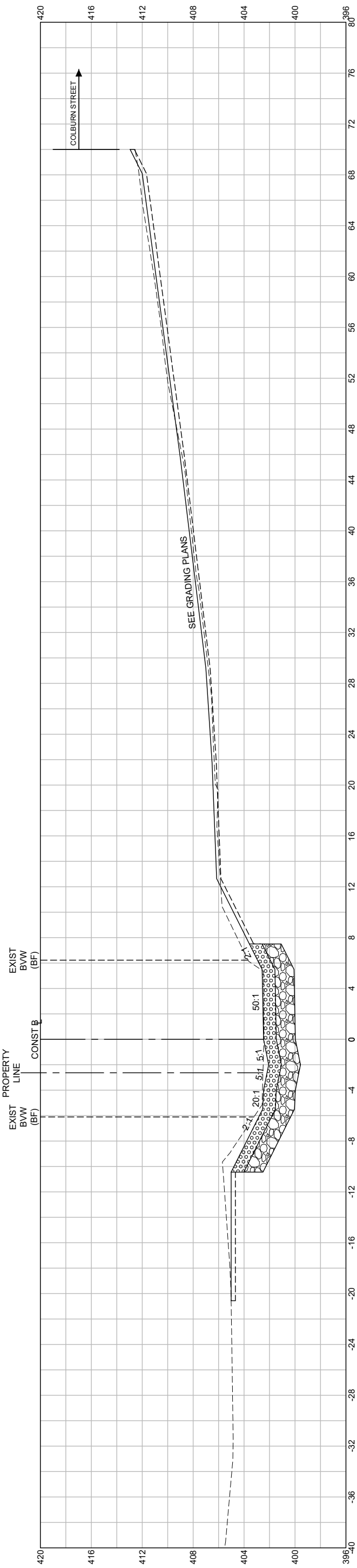
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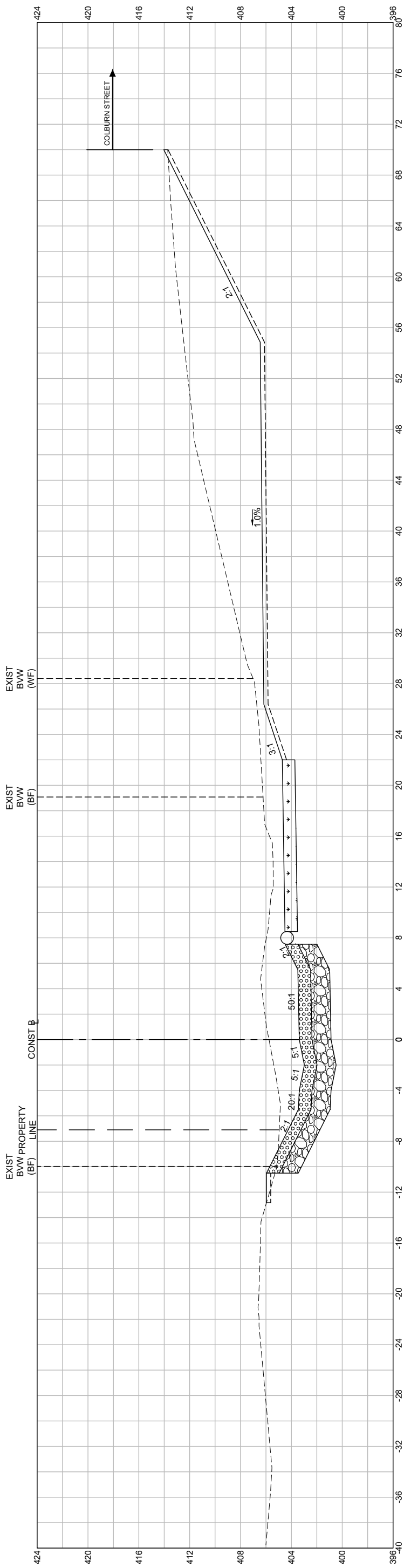
CULVERT REPLACEMENT PROJECT
PLEASANT STREET OVER RESERVOIR BROOK
BRIDGE L-08-053
LEOMINSTER, MASSACHUSETTS
APRIL 22, 2026

STREAM CROSS SECTIONS - 5 OF 5

SHEET 20 OF 20

HOR. SCALE IN FEET 8 0 8 16
VER. SCALE IN FEET 8 0 8 16
SCALE: 1" = 8'



DOCUMENT A00831

# US ARMY CORPS OF ENGINEERS (ACOE)

# VERIFICATION –
# PROJECT FILE NUMBER NAE-2025-00175
# &
# GENERAL PERMIT NUMBER
# NAE-2022-02649

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**DEPARTMENT OF THE ARMY**
**U.S. ARMY CORPS OF ENGINEERS**
**NEW ENGLAND DISTRICT OFFICE**
**696 VIRGINIA ROAD**
**CONCORD, MASSACHUSETTS 01742-2751**

August 26, 2026

Regulatory Division
File No. NAE-2025-00175

Courtney Walker
MassDOT - Highway Division
10 Park Plaza
Room 7360
Boston, Massachusetts 02116
Courtney.L.Walker@dot.state.ma.us

Dear Courtney Walker:

The U.S. Army Corps of Engineers (Corps) has reviewed your request to permanently discharge fill material within 4,263 square feet below the Ordinary High Water (OHW) mark of Reservoir Brook, and within 662 square feet of wetlands, associated with the replacement of the culvert conveying Pleasant Street over Reservoir Brook in Leominster, Massachusetts, at latitude 42.520610° and longitude -71.767470°. The existing, temporary, 36" corrugated plastic pipe will be removed and replaced with a new, 8'-4" W x 7' H, 4-sided concrete box culvert embedded with 2’ of rip-rap overtopped with 1’ of natural material. A new headwall will be installed on the downstream end of the culvert. The rip-rap lined stream channel downstream from the culvert will be realigned and restored to meet the new culvert outlet, and additional flood storage will be created. The project also includes temporary impacts within 1,666 square feet of wetlands associated with temporary construction access to remove accumulated material deposited following the failure of the original culvert. The proposed regulated activities associated with this project are detailed on the attached drawings titled “CULVERT REPLACEMENT PLEASANT STREET OVER RESERVOIR BROOK BRIDGE NO. L-08-053 IN THE CITY OF LEOMINSTER WORCESTER COUNTY PERMIT PLANS,” on 21 sheets and dated April 22, 2026 (sheet 9 dated April 10, 2026, and sheet 21 dated May 14, 2026). This letter follows a provisional notification letter from this office dated July 2, 2026.

Based on the information provided, the Corps has verified that the proposed actions are authorized under Nationwide Permit (NWP) NWP 14, Linear Transportation Projects and NWP 27, Aquatic Ecosystem Restoration, Enhancement, and Establishment Activities, pursuant to authorities under Section 404 of the Clean Water Act (33 U.S.C. § 1344). You can find a copy of these permits at: https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/. You must ensure the proposed work is performed in accordance with the enclosed applicable terms and conditions.

**Special Conditions**

In addition, this verification is subject to the following special conditions:

1. The permittee shall complete and return the enclosed Work-Start Notification Form to this office at least two weeks prior to the anticipated construction start date.

2. The permittee shall complete and return the enclosed Completion Certification Form to this office at least one month following the completion of the authorized work.

3. Stream realignment/restoration work and removal of accumulated sediment from downstream wetland/stream areas shall be overseen by a qualified fluvial geomorphologist or wetland scientist.

4. Photographs of the realigned and restored stream and the downstream wetland/stream areas restored by removing accumulated sediment shall be provided to the Corps Project Manager within 30 days of the completion of this work.

A change in location or project plans may require re-evaluation of your project. Proposed changes should be coordinated with this office prior to construction. Failure to comply with all terms and conditions of these permits (NWP) invalidate this authorization and could result in a violation of Section 301 of the Clean Water Act or Section 10 of the Rivers and Harbors Act. You must also obtain all local, state, Tribal, and other Federal permits that apply to this project.

**Water Quality Certification (WQC) and Coastal Zone Management Act (CZM)**

The Commonwealth of Massachusetts issued a conditioned individual WQC decision (enclosed). You must comply with the conditions specified in the WQC decision for this NWP authorization to be valid.

**Permit Expiration**

The Corps verification of this NWP authorization is valid until March 15, 2031, unless the NWP is modified, reissued, or revoked prior to that date. If the authorized work for the NWP authorization has not been completed by that date and you have commenced or are under contract to commence this activity before March 15, 2031, you will have until March 15, 2032, to complete the activity under the enclosed terms and conditions of this NWP.

**Contact Information**

If you have any questions, please contact Daniel Vasconcelos at 978-318-8653, or by email at daniel.b.vasconcelos@usace.army.mil. To better serve you, please complete the Customer Service Survey located at: https://regulatory.ops.usace.army.mil/customer-service-survey/.

Sincerely,

Grace Moses
Chief, Technical Support Branch
Regulatory Division

Enclosures:
Project Plans
Work Start Notification Form
Compliance Certification Form
Water Quality Certification
NWP 14, Linear Transportation Projects and General/Regional Conditions
NWP 27, Aquatic Ecosystem Restoration, Enhancement, and Establishment Activities

cc:
Kim Ciaramicoli, Jacobs Engineering, kim.ciaramicoli@jacobs.com
Heidi Davis, MassDEP, heidi.davis@mass.gov
U.S. EPA, Region 1; R1_CWA404_REG@epa.gov

# Work-Start Notification Form

**File Number: NAE-2025-00175** **State: Massachusetts** **County: Worcester**

**Permittee: MassDOT - Highway Division, Courtney Walker**
**Date Verification Issued: 8/26/2026**
**Project Manager: Daniel Vasconcelos**

At least two weeks prior to commencing the activity authorized by this permit, sign this certification and return it to the following address:

**US ARMY CORPS OF ENGINEERS**
**New England District**
**Attn: Daniel Vasconcelos**
**696 Virginia Road**
**Concord, MA 01742**
**or**
**daniel.b.vasconcelos@usace.army.mil**
**978-318-8653**

Please note that your permitted activity is subject to a compliance inspection by a U. S. Army Corps of Engineers (USACE) representative. Failure to comply with any terms or conditions of this authorization may result in the USACE suspending, modifying or revoking the authorization and/or issuing a Class I administrative penalty, or initiating other appropriate legal action.

**The people (e.g. contractor) listed below will do the work, and they understand the permit's conditions and limitations.**

**Contractor Name/Contractor Firm: _____**
**Business Address: _____**
**_____**
**Contractor Phone and Email: _____**

**Proposed Construction Dates: Start: _____ Finish: _____**

**_____** **_____**
**Signature of Permittee** **Date**

U.S. Army Corps of Engineers (USACE)

## CERTIFICATION OF COMPLIANCE WITH DEPARTMENT OF THE ARMY PERMIT

For use of this form, see Section 404 of the Clean Water Act, Section 10 of the Rivers and Harbors Act of 1899, and Section 103 of the Marine Protection, Research, and Sanctuaries Act; the proponent agency is CECW-COR.

*Form Approved -*
*OMB No. 0710-0003*
*Expires 2027-10-31*

**The Agency Disclosure Notice (ADN)**

The Public reporting burden for this collection of information, 0710-0003, is estimated to average 10 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

**PURPOSE**: This form is used by recipients of U.S. Army Corps of Engineer Regulatory permits to certify compliance with the permit terms and conditions.

Your permitted activity is subject to a compliance inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with this permit, you are subject to permit suspension, modification, or revocation.

Upon completion of the activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to the U.S. Army Corps of Engineers, New England District, Regulatory Office.

The certification can be submitted by email at daniel.b.vasconcelos@usace.army.mil or by mail at the below address:

U.S. Army Corps of Engineers
New England District Office
Street Address: 696 Virginia Road
City: Concord State: Massachusetts Zip Code: 01742-2751

**COMPLETED BY THE CORPS**

Corps Action Number: NAE-2025-00175

Permit Type: General Permit

General Permit Number and Name (*if applicable*): NWP 14 (Linear Transportation) and 27 (Aquatic Ecosystem Restoration)

Name of Permittee: Courtney Walker

Project Name: MassDOT-Highway Division Leominster, MA

Project Location (*physical address*): Pleasant Street
Leominster, Massachusetts

**PERMITTEE'S CERTIFICATION**

Date Work Started: _____

Date Work Completed: _____

Enclose photographs showing the completed project (*if available*).

I _____ hereby certify that the work authorized by the above referenced permit has been completed in accordance with all of the permit terms and conditions, and that any required compensatory mitigation has been completed in accordance with the permit conditions.

| Name | Date | Signature |
|---|---|---|
| | | |

**ENG FORM 6285, DEC 2024** PREVIOUS EDITIONS ARE OBSOLETE.

Memorandum

Jacobs

# Leominster, Pleasant St Culvert Replacement - Additional Information for Wetland B

**Date:** May 18, 2026
**Project name:** Leominster - Culvert Replacement, #L-08-053, Pleasant St and Colburn St
**Project no:** 616375
**Attention:** Dan Vasconcelos, USACE
**Prepared by:** Clay Hutchinson, Jacobs
**Copies to:** Courtney Walker, MassDOT

120 St. James Avenue
5th Floor
Boston, MA 02116
United States
T +1.617.242.9222
F +1.617.242.9824
www.jacobs.com

Below, please find Jacobs' responses to the questions received on the PCN Application (NAE-2025-00175) for the Leominster Pleasant Street Culvert Replacement. Responses are provided below in *italics*.

**Requested Information – Wetland B Activities**

1. What is causing the 126 square-foot permanent WOTUS impact in this location?

   *The permanent impacts proposed adjacent to Wetland B are a result of the removal of sediment deposits within the streambed channel. The intent of the removal of the deposits is to restore the channel alignment at this location where sediments were deposited during the severe flood event in 2023.*

   *The 126 square foot area of permanent impact to Land Under Water / Reservoir Brook is separate from the 1,666 square foot area of temporary impact to Wetland B, and will result in minor realignment of the stream channel and bank.*

2. Where will material excavated from this area be disposed of?

   *The soil/sediment excavation means, methods, and disposal locations of excavated soil/sediments form this location will be determined by the Contractor in accordance with MassDOT **Special Provision Items 181.11-181.14**. The Contractor shall submit Sampling Results, Classification of Material and Proposed Disposal Options to the MassDOT Resident Engineer for approval at least two weeks prior to the start of any excavation activity. While reuse of native streambed material and soils onsite may be conducted if chemically suited and approved by the Engineer, no reuse of the deposited sediments is approved. Excavated sediment deposits are proposed for removal and proper disposal at an approved receiving facility in accordance with the Special Provisions and the Massachusetts Contingency Plan after sampling results have been obtained and approval from the selected receiving facility has been received.*

3. Do you have a cross-section plan showing the proposed work in this area?

   *Please find the attached **Stream Cross Sections – 6 of 6** Plan Sheet (Sheet 21 of 21).*

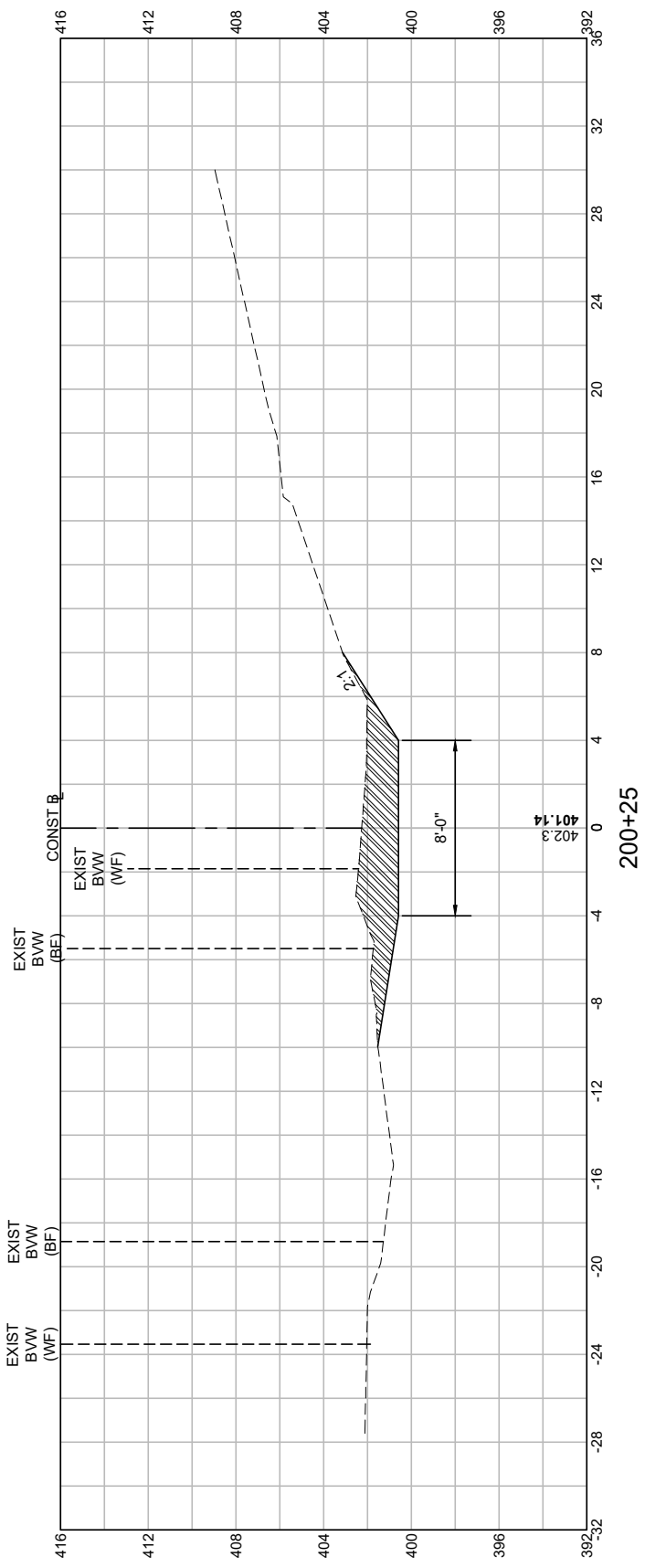
14 CROSS SECTIONS.DWG Plotted on 14-May-2026 1:42 PM

SHEET 21 OF 21

STREAM CROSS SECTIONS - 6 OF 6

CULVERT REPLACEMENT PROJECT
PLEASANT STREET OVER RESERVOIR BROOK
BRIDGE L-08-053
LEOMINSTER, MASSACHUSETTS
MAY 14, 2026

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DOCUMENT A00831

# U.S. ARMY CORPS OF ENGINEERS
# GENERAL PERMIT NUMBER NAE-2022-02649

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General Permit No.: NAE-2022-02649 Final Effective Date: June 2, 2023
Applicant: General Public, Commonwealth of Massachusetts Expiration Date: June 1, 2028

**Department of the Army**
**General Permits for the Commonwealth of Massachusetts**

The New England District of the U.S. Army Corps of Engineers (USACE) hereby issues twenty-five (25) regional general permits (GPs) for activities subject to USACE jurisdiction in waters of the U.S., including wetlands, navigable waters within the Commonwealth of Massachusetts and adjacent ocean waters to the seaward limit of the outer continental shelf. The Massachusetts GPs (hereafter referred to as the MA GP or GP) are issued in accordance with USACE regulations at 33 CFR 320 – 332 [see 33 CFR 325.5(c)(1)]. These GPs establish criteria and contain permit conditions to ensure that the authorized activities have no more than minimal individual and cumulative adverse impacts to the environment.


| This document contains the following sections: | | Pages |
|---|---|---|
| SECTION I | Statutory Authorities & Regulated Activities | 2 |
| SECTION II | Review Categories & Application Procedures | 3-7 |
| SECTION III | Massachusetts General Permits | 8-34 |
| SECTION IV | General Conditions | 35-51 |
| SECTION V | Mitigation Standards | 52-54 |
| SECTION VI | Federal & State Agency Contact Information & Websites | 55-56 |
| SECTION VII | Definitions & Acronyms | 57-66 |
| APPENDIX A | Guidance for Section 106 NHPA Compliance in Massachusetts | 67-71 |
| APPENDIX B | Pre-Construction Notification | 72-77 |
| APPENDIX C | Self-Verification Notification | 78-81 |
| APPENDIX D | Pre-Construction Notification Application Checklist | 82-88 |


In issuing these GPs, the Federal Government does not assume any liability for the following: (a) damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes; (b) damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the U.S. in the public interest; (c) damages to persons, property or to other permitted or unpermitted activities or structures caused by the activity authorized by any of the GPs; (d) design or construction deficiencies associated with the permitted work; or (e) damage claims associated with any future modification, suspension or revocation of these permits.

Tammy R. Turley 02 June 2023

Tammy R. Turley Date
Chief, Regulatory Division

## SECTION I. STATUTORY AUTHORITES & REGULATED ACTIVITIES

### 1. Work Requiring USACE Authorization

a. Section 10: Work and structures that are located in, over, under or that affect navigable waters of the United States (U.S.) (see 33 CFR 329). The USACE regulates these activities under section 10 of the Rivers and Harbors Act of 1899 (see 33 CFR 322).

b. Section 404: The discharge of dredged or fill material into waters of the U.S (see 33 CFR 328). The USACE regulates these activities under Section 404 of the Clean Water Act (CWA). The term "discharge of dredged or fill material" also includes certain discharges resulting from excavation. Applicants should contact USACE to determine if a particular excavation discharge occurring within waters of the U.S., is a regulated activity. See 33 CFR 323.4 of the CWA for exempted activities.

For additional information on the limits of USACE jurisdiction, please see: https://www.nae.usace.army.mil/Portals/74/docs/regulatory/JurisdictionalLimits/Jurisdictional_Limits_Brochure.pdf

### 2. Authority to Issue General Permits

a. In accordance with 33 CFR 322.2(f), 325.2(e)(2), and 325.5(c), USACE may issue regional general permits authorizing activities under Section 10 of the RHA.

b. In accordance with Section 404(e) of the CWA, 33 USC 1344(e), and 33 CFR 323.2(h), 325.2(e)(2), and 325.5(c), after notice and opportunity for public hearing, USACE may issue regional general permits for any category of activities involving discharges of dredged or fill material if the activities in such category are similar in nature, will cause only minimal adverse environmental effects when performed separately, and will only have minimal cumulative adverse effect on the environment.

### 3. Related Laws

33 CFR 320.3 includes a list of related laws including, but not limited to, Section 408 of the Rivers and Harbors Act of 1899, Section 401 of the Clean Water Act, Section 402 of the Clean Water Act, Section 307(c) of the Coastal Zone Management Act of 1972, Section 106 of the National Historic Preservation Act of 1966, Section 7 of the Endangered Species Act, the Fish and Wildlife Coordination Act of 1956, the Magnuson-Stevens Fishery Conservation and Management Act, the Fish and Wildlife Coordination Act, Section 302 of the Marine Protection, Research and Sanctuaries Act of 1972, Section 7(a) of the Wild and Scenic Rivers Act, the Golden Eagle Protection Act, and the Migratory Bird Treaty Act.

## SECTION II. REVIEW CATEGORIES & APPLICATION PROCEDURES

To qualify under these GPs, the design, construction, and maintenance associated with each proposed activity must meet the terms and eligibility criteria listed in Section III, all applicable general conditions (GCs) in Section IV, and any specific mitigation requirements in Section V. Applicants should first review the GPs to see if a project is eligible for authorization under one or more of the GPs within this document. Any activity not specifically listed may still be eligible for authorization under these GPs; applicants are advised to contact USACE for specific eligibility determination.

Please note that these GPs allow for Self-Verification (SV) contingent upon meeting all criteria and with full adherence to all GCs. Projects that do not qualify for SV, may meet criteria for Pre-Constriction Notification (PCN). Tables are provided under each activity, which outline criteria for SV and PCN. Activities that do not meet criteria for SV or PCN may require review as an Individual Permit (IP). Activities may require a PCN or IP as noted in Sections III and/or IV of this GP. Notwithstanding compliance with the terms of these GPs, USACE retains discretionary authority to require either PCN review or IP review on a case-by-case basis for any project based on concerns for the environment or for any of the other public interest factors found in 33 CFR 320.4(a). These GPs also do not replace or change those activities identified as exempt from USACE regulation (33 CFR 323.4).

### 1. Pre-Application Assistance

Prospective applicants may request a pre-application meeting to address any questions they may have. USACE may also request a pre-application meeting or additional information to facilitate review of the request. Pre-application meetings and/or site visits help streamline the authorization process by alerting the prospective applicant to potentially time-consuming factors that may arise during the evaluation of their project (e.g., avoidance, minimization and compensatory mitigation requirements, historic properties, endangered species, essential fish habitat, impacts to federal projects, and/or dredging of contaminated sediments).

To schedule a pre-application meeting, present questions, or if you need further assistance, please contact USACE at:

Email: cenae-r-ma@usace.army.mil (strongly preferred) Phone: (978) 318-8338

Mail: U.S. Army Corps of Engineers
New England District
Regulatory Division, Massachusetts Section
696 Virginia Road
Concord, MA 01742

### 2. Submitting a Request

Please follow the procedures outlined in Sections II.2-5 when requesting an SV or applying for PCN authorization for activities covered by these GPs. The GPs are provided in Section III below. For SV-eligible projects, the Self-Verification Notification (SVN) must be submitted within 30 days of commencing work. Otherwise, a Pre-Construction Notification (PCN) must be submitted for work that is not SV-eligible. Please include appropriate drawings and attachments and submit your request using the mailbox identified in Section II.4 or II.5 below. USACE will promptly confirm receipt of your request and notify you in the event additional information is required. Guidance on

how to submit electronic correspondence is located on the NAE Regulatory website here: https://www.nae.usace.army.mil/Missions/Regulatory/Submitting-Electronic-Correspondence.

## 3. Local, State & Federal Approvals

Applicants are responsible for applying for and obtaining any required local, state, and federal permits or approvals. These must be obtained prior to the commencement of work in waters. Such authorizations may include a Water Quality Certification, a Coastal Zone Management Act consistency determination, and other approvals as noted below. 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.

***I. Water Quality Certification under Section 401 of the Federal Clean Water Act (33 USC 1341).***
Applicants are responsible for determining the appropriate 401 Water quality Certification (WQC) requirements and submitting this information to the USACE at the time of their PCN application or when completing their SVN. Applicants that are unsure of whether their activity has been certified should contact MassDEP, or EPA Region 1 when the activity is located on tribal lands, for a determination. The 401 WQC requirement must be satisfied by acquiring one of the following WQCs from MassDEP (see GC 8):

**General 401 WQC:** The MassDEP issued a WQC on April 21, 2023 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 this 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

Applicants should 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/*. If eligible, you must comply with all applicable WQC conditions. 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.

**Individual 401 WQC:** In the event the proposed activity is not covered by the general WQC, applicants 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 applicant shall submit their Individual 401 WQC application concurrently to MassDEP and the USACE to comply with 40 CFR 121.

Activities Proposed on Tribal Lands: When an activity is proposed on Tribal lands, the applicant shall refer to the general 401 WQCs granted by the Environmental Protection Agency (EPA), Region 1 on May 15, 2023. These 401 WQCs are located on the USACE Regulatory website: https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/.

***II. Coastal Zone Management Act Federal Consistency Concurrence pursuant to Section 307 of the CZMA of 1972, as amended.*** Federal consistency concurrence is required for all activities located within the coastal zone, unless determined otherwise by the Massachusetts Office of Coastal Zone Management (MA CZM) (see GC 9). As applicable, this requirement must be satisfied by acquiring one of the following from the MA CZM:

**General CZM Federal Consistency Concurrence (General Concurrence):** MA CZM has granted General Concurrence for all SV and PCN activities for GPs 1-25 and this can be found at: https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/. The applicant must obtain all applicable permits and approvals prior to the commencement of work in USACE jurisdiction (i.e., construction begins on site). For SVs, General Concurrence is automatically granted and no further action is required from the applicant. For PCNs, the USACE will coordinate with MA CZM to acquire General Concurrence as part of the PCN application review. During review of the PCN application, USACE may request additional information from the applicant to support CZM's evaluation of the activity.

**Individual CZM Federal Consistency Concurrence (Individual Concurrence):** In certain cases, MA CZM may elevate any GP activity 1-25 to require Individual Concurrence. The applicant must contact MA CZM and follow the procedures to obtain Individual Concurrence as determined appropriate by MA CZM.

The MA CZM program includes five regional offices that serve 78 coastal municipalities. The following map provides more information about these offices: https://www.mass.gov/service-details/czm-regions-coastal-communities-and-coastal-zone-boundary

**III. Other Approvals:** Approvals typically required in Massachusetts include, but are not limited to, a Chapter 91 Permit/License, Massachusetts Environmental Protection Act (MEPA) review, Wetlands Protection Act Order of Conditions, and/or Aquaculture Certification. *Applicants should also be aware that USACE may not be able to render a permit decision in the event the proposed activity is denied by another local, state and/or federal agency.*

### 4. Procedures for Self-Verification (SV) Eligible Projects

If the activity is eligible for an SV, the Self-Verification Notification (SVN) must be completed prior to the start of project construction and submitted to USACE within 30 days of commencing work. The purpose of the SVN is to provide applicants with a tool to assist them when determining if the activity as proposed is SV-eligible. The following GPs do not require submission of the SVN: GP 1 (SV #1), GP 3 (SV #2-3), GP 4 (SV #2), GP 11, GP 12 (note #2), GP 14 (see note), GP 15 (see note), and GP 24 (SV #3). **For the activities not listed above, the SVN must be completed prior to the start of work and be kept on site at all times during project construction.** The applicant shall not begin work for SV-eligible activities until they have completely verified the bulleted items below.

Digital submittals by email are **strongly encouraged** to facilitate the most efficient processing of the SVN submittal. Please communicate with USACE staff if you are unable to provide a digital copy. Addresses are cenae-r-ma-sv@usace.army.mil (email) or Regulatory Division, U.S. Army Corps of Engineers, New England District, 696 Virginia Road, Concord, MA 01742-2751 (mail).

*Eligible SV Activities:*

- Are subject to USACE jurisdiction (see GC 2); and
- Qualify for one or more of the GPs within this document (Section III); and
- Meet the GCs within this document (Section IV); and

- When required, are supported by a complete SVN (Appendix C); and
- Receive all other required local, State, and/or Federal approvals.

## 5. Procedures for Pre-Construction Notification (PCN) Eligible Projects

For activities that require a PCN, an application to and written authorization from USACE is required. *No work requiring a PCN may proceed until the applicant receives written authorization from USACE verifying that the activity is authorized.* The verification letter may include special conditions that the applicant must comply with. When possible, it is *highly* recommended that PCN application materials are submitted at least 90 days before the target start date to allow for USACE evaluation and any necessary agency consultations. PCN applications shall demonstrate in writing how the proposed activity complies with all GCs, as applicable to their activity.

Digital submittals by email are **strongly encouraged** to facilitate the most efficient processing of the PCN application. Please communicate with USACE staff if you are unable to provide a digital copy. Addresses are cenae-r-ma@usace.army.mil or Regulatory Division, U.S. Army Corps of Engineers, New England District, 696 Virginia Road, Concord, MA 01742-2751 (mail).

*Eligible PCN Activities:*

- Are subject to USACE jurisdiction (see GC 2); and
- Qualify for one or more of the GPs within this document (Section III); and
- Meet the GCs within this document (Section IV); and
- Comply with the Mitigation Standards within this document (Section V); and
- Are supported by a complete PCN document (Appendix B); and
- When required, are supported by the submittal of project information to the appropriate parties identified in Appendix A; and
- Receive all other required local, State, and/or Federal approvals.

## 6. Interagency Review Procedures

The USACE reserves the opportunity to coordinate PCN activities with Federal and State agencies to ensure that the proposed activity results in no more than a minimal impact to the aquatic environment. In some cases, USACE may require project modifications involving avoidance, minimization, and/or compensatory mitigation for unavoidable impacts to ensure the net effects of a project are minimal. The USACE determines, after review and coordination with the agencies and/or the applicant, if PCN applications:

a. Meet the terms and conditions of the GP as proposed;
b. Require additional information;
c. Require avoidance, minimization, compensatory mitigation, construction sequencing, project modification, or other special conditions to avoid or minimize adverse impacts to the aquatic environment;
d. Require individual permit review regardless of whether the terms and GCs of these GPs are met, based on concerns for the aquatic environment or any other factor of the public interest (see Section 9 below).

For activities requiring a PCN, the applicant must wait for written authorization from USACE before commencing activities in waters of the U.S. Beginning work for PCN required activities without a USACE written authorization is a violation of these GPs, and the terms and conditions of this document. The applicant may be subjected to an enforcement action by USACE and/or the Environmental Protection Agency (EPA).

### 7. Construction of Solid Fill Structures and Fills Along the Coastline or Baseline from Which the Territorial Sea is Measured.

Projects involving the construction of solid fill structures or discharge of fill that may extend beyond the coastline or the baseline from which the territorial sea is measured (i.e., mean low water) will require a PCN. The USACE will submit a description of the proposed work and a copy of the plans to the Solicitor, Department of the Interior, Washington, DC 20240, and request comments concerning the effects of the proposed work on the outer continental rights of the United States. These comments will be included in the administrative record of the application. After completion of permit review, the record will be forwarded to the Chief of Engineers. The decision on the application will be made by the Secretary of the Army after coordination with the Attorney General.

### 8. Emergency Activities

Per 33 CFR 325.2(e)(4), an emergency is limited to a situation that would result in an unacceptable hazard to life, a significant loss of property, or an immediate, unforeseen, and significant economic hardship if corrective action requiring a permit is not undertaken within a time period less than the normal time needed to process an application under standard procedures. Emergency work shall be limited to that which is necessary to stabilize and secure the situation. Additional work needed for final repairs shall not be completed until approval is obtained through the appropriate, non-emergency process. Emergency work is subject to the same terms and conditions of these GPs as non-emergency work, and similarly, must qualify for authorization under these GPs; otherwise, an IP is required. *See GP 25 Emergency Situations for additional information.*

### 9. Individual Permit

Projects that do not meet the terms and conditions of this GP may require review as an IP (33 CFR 325.5 (b)). Proposed work in this category will require a separate Federal application for an individual permit from USACE (33 CFR 325.1). In addition, USACE retains discretionary authority on a case-by-case basis to elevate GP-eligible activities to an IP based on concerns for the environment or any other factor of the public interest (33 CFR 320.4 (a)). Applicants are required to submit the appropriate application materials directly to USACE as early as possible to expedite the permit review process. General information and application forms can be obtained at our website or by contacting our office at cenae-r-ma@usace.army.mil or (978) 318-8338. Individual 401 WQC and/or CZMA Federal consistency concurrence from the appropriate MA agencies are required before USACE can issue an individual permit. Applying for an IP does not relieve the applicant from their obligation to obtain all required Federal, State and/or local approvals.

### 10. Compliance

Applicants shall ensure compliance with all applicable GPs in Section III, GCs in Section IV, and any special conditions included in USACE verification letters. Noncompliance with these GPs, GCs, and special conditions may subject the applicant to criminal, civil, or administrative penalties, and/or an ordered restoration, and/or the permit may be modified, suspended or revoked by USACE. The USACE will consider any activity requiring USACE authorization to be noncompliant if that activity does not comply with all GP terms and conditions at all times, including while the project is under construction and when work is completed.

## SECTION III. MASSACHUSETTS GENERAL PERMITS

Applicants are encouraged to review Sections I & II prior to submitting an application to confirm that the activity as proposed complies with all terms and conditions of the 2023 MA GPs. Applicants are also encouraged to review the definitions in Section VII, Definitions & Acronyms, of this document. Several terms are frequently used throughout the GPs, and it is important for the reader to understand these terms. If seeking verification for an activity previously verified under the 2018 MA GPs, please contact the USACE to discuss permitting needs in advance of submitting an application.

General Permits

1. Aids to Navigation and Temporary Recreational Structures
2. Maintenance
3. Moorings
4. Structures in Navigable Waters of the U.S.
5. Boat Ramps and Marine Railways
6. Utility Lines, Oil or Natural Gas Pipelines, Outfall Or Intake Structures, and Appurtenant Features
7. Dredging, Disposal of Dredged Material, Beach Nourishment, Rock Removal and Rock Relocation
8. U.S. Coast Guard Approved Bridges
9. Bank and Shoreline Stabilization
10. Aquatic Habitat Restoration, Enhancement, and Establishment Activities
11. Fish and Wildlife Harvesting and Attraction Devices and Activities
12. Response Operations, Oil and Hazardous Substances
13. Cleanup of Hazardous and Toxic Waste
14. Scientific Measurement Devices
15. Survey Activities
16. Land and Water-Based Renewable Energy Generation Facilities and Hydropower Projects
17. Residential, Commercial and Institutional Developments, and Recreational Facilities
18. Aquaculture
19. Mining Activities
20. Living Shorelines
21. Agricultural Activities
22. Reshaping Existing Drainage Ditches, Construction of New Ditches, and Mosquito Management
23. Linear Transportation Projects and Wetland/Stream Crossings
24. Temporary Construction, Access, and Dewatering
25. Emergency Situations

**GP 1. AIDS TO NAVIGATION AND TEMPORARY RECREATIONAL STRUCTURES (Authority: §10)**

(a) The placement of aids to navigation and regulatory markers that are approved by and installed in accordance with the requirements of the U.S. Coast Guard (USCG). See 33 CFR, Part 66; and (b) Temporary buoys, markers, and similar structures placed for recreational use during specific events such as water skiing competitions and boat races or seasonal use. See GC 16.

| Self-Verification Eligible | Pre-Construction Notification Required |
|---|---|
| 1. Aids to navigation and regulatory markers approved by and installed in accordance with the requirements of the USCG.<br><br>2. Temporary buoys, markers and similar structures that are: (a) placed for recreational use during specific events and removed within 30 days after event; or (b) placed during winter events on ice and removed before spring thaw. These structures must be authorized by the local harbormaster, not located within an FNP or its buffer zone, and not located in saltmarsh or tidal vegetated shallows. | 1. Impacts in saltmarsh or tidal vegetated shallows.<br><br>2. Activities that are not SV eligible. |

Note: An SVN submittal to USACE is not required for work authorized under SV #1 above.

**GP 2. MAINTENANCE (Authorities: §10 and §404)**

Repair, rehabilitation, or replacement of any previously authorized[1], currently serviceable structure, or fill, or of any currently serviceable structure or fill authorized by 33 CFR 330.3 (activities occurring before certain dates), provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification. Minor deviations in the structure's configuration or filled area, including those due to changes in materials, construction technique requirements of other regulatory agencies, or current construction codes or safety standards that are necessary to make the repair, rehabilitation, or replacement are authorized. This GP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to conduct the activities above. Maintenance dredging and beach nourishment are not eligible under GP 2 (see GP 7). Stream crossing modifications (including sliplining), replacements or extensions are not eligible under GP 2 (see GPs 6, 17, 23). *See GP 25 Emergency Situations for expedited review of emergency activities.*

**Not authorized under GP 2 (IP required):** (a) Permanent impacts in >1 acre in non-tidal waters and/or wetlands; or (b) Permanent impacts >1/2 acre in tidal waters; >1000 SF in saltmarsh, mud flats, riffle and pool complexes, or non-tidal vegetated shallows; or >100 SF in tidal vegetated shallows; or (c) Temporary impacts >1 acre in tidal waters; >5000 SF in saltmarsh, mud flats, riffle and pool complexes, or non-tidal vegetated shallows; or >1000 SF in vegetated shallows; (d) New stream channelization or stream relocation projects (e.g., those in response to storm or flood events).

**Self-Verification Eligible**

Maintenance activities that meet all of the following terms:

1. In non-tidal waters, the combined permanent and temporary impacts extending beyond the original footprint are ≤5,000 SF[2] and not located in vegetated shallows or riffle and pool complexes.

2. In tidal waters, the combined permanent and temporary impacts extending beyond the original footprint are ≤5,000 SF, ≤1,000 SF in mudflats and/or natural rocky habitat, and not located in saltmarsh and tidal vegetated shallows.

3. Minor deviations in the repair, rehabilitation, or replacement of previously authorized, currently serviceable structures or fills.

4. Bulkhead replacement in tidal and non-tidal waters via installation of new bulkhead within 18 inches of the existing bulkhead and associated backfill.

5. Drawdown of an impoundment for dam/levee repair provided it does not exceed 18 months and one growing season (April through September).

**Pre-Construction Notification Required**

1. Discharges associated with removal of accumulated sediments and debris in the vicinity of existing structures, including intake and outfall structures and associated canals.

2. The removal of sediment outside the immediate vicinity of existing structures (e.g., bridges, culverted road crossings, water intake structures, etc.) that is ≥200 linear feet. This activity is limited to the minimum necessary to restore the waterway in the vicinity of the structure to the approximate dimensions existing when the structure was built.

3. Dam and flood control or levee repair, rehabilitation, or replacement involves:
   a. A change in the flood elevation or permanent water surface elevation of the impoundment; or
   b. Drawdown of impoundment for construction exceeding one growing season (see SV eligible #5);
   c. Any modification that changes the character, scope, or size of the original fill design; or
   d. Does not meet SV eligible 1-7.

4. Installation of steel piles, including steel sheet piles, that cannot be done in the dry and where NOAA-ESA listed species are mapped as present.

[1] Some maintenance activities may not be subject to regulation under Section 404 of the CWA in accordance with 33 CFR 323.4(a)(2). Per 33 CFR 330.3, Vested dates are: a) Work performed and structures installed before December 18, 1968 (Section 10); and b) Fill placed before July 25, 1975 (Section 404).
[2] This excludes dam projects that may require a temporary drawdown with impacts >5,000 SF in non-tidal waters. Instead, the drawdown shall comply with SV #5 to be eligible under Self-Verification.

| | |
|---|---|
| 6. Any stream channel modification is limited to the minimum necessary for the repair, rehabilitation, or replacement of the structure or fill; such modifications, including the removal of material from the stream channel, must be immediately adjacent to the project or within the boundaries of the structure or fill.<br><br>7. Work to previously approved tide gates not affecting upstream tidal resource areas. | 5. Activities located in the Connecticut River or Merrimack River, unless they are completed in the dry or when the tide is waterward of the work area.<br><br>6. Activities on USACE properties & USACE-controlled easements.<br><br>7. Activities that do not require an IP. Activities that do not require a PCN or an IP may be SV eligible. |
| Notes:<br>1. This authorizes the repair, rehabilitation, or replacement of any previously authorized structure or fill that does not qualify for the CWA §404(f) exemption for maintenance. See 33 CFR 323.4(a)(2). Prior USACE permits may have included authorization to maintain the activity, in which case authorization under this GP is not necessary.<br>2. See GC 22 for information on temporary construction mats. | |

**GP 3. MOORINGS (Authority: §10)**

New moorings and mooring fields; the relocation of previously authorized moorings; expansions, boundary reconfigurations or modifications of previously authorized mooring fields; and maintenance and replacement of moorings.

**Not authorized under GP 3 (IP required):** (a) Moorings or mooring fields converted to or associated with a new boating facility[1]; or (b) Moorings in a USACE Federal Navigation Anchorage or USACE Federal Navigation Channel, except municipal-operated mooring fields.

| Self-Verification Eligible | Pre-Construction Notification Required |
|---|---|
| 1. New or relocated moorings that meet all the following terms:<br>a. Authorized by a local harbormaster/ municipality under MGL Chapter 91 §10A; and<br>b. No interference with navigation; and<br>c. Single boat, single-point and non-commercial; and<br>d. Not associated with a boating facility, and<br>e. Neither placed within nor impact tidal vegetated shallows (e.g., eelgrass); and<br>f. Not located within a USACE Federal navigation project (FNP) or the FNP buffer zone.<br><br>2. Existing, authorized moorings are converted from traditional moorings to low impact mooring technology (see note below) and/or helical anchors.<br><br>3. Maintenance and replacement of moorings authorized by the USACE. | 1. New mooring fields; or expansions, boundary reconfigurations or modifications of existing, authorized mooring fields.<br><br>2. Moorings located such that they, and/or vessels docked or moored at them, are within the buffer zone of the horizontal limits of a Federal Anchorage. The buffer zone is equal to 3 times the authorized depth of that channel (see GC 15).<br><br>3. New individual moorings located in saltmarsh, mudflats, natural rocky habitat, and tidal vegetated shallows. Locating moorings these areas should be avoided to the maximum extent practicable. If these areas cannot be avoided, plans should show conservation mooring or low-impact mooring systems that prevent mooring chains from resting or dragging on the bottom substrate at all tides, where practicable. USACE may require a survey in areas previously mapped as containing eelgrass or within 100 ft. of existing eelgrass beds to document presence or absence of eelgrass and to determine the appropriate type and amount of compensatory mitigation for impacts to eelgrass.<br><br>4. Replacement moorings located in tidal vegetated shallows.<br><br>5. Moorings that are not SV eligible and do not require an IP. |

Notes:

1. Low impact mooring systems, including conservation moorings, are encouraged to minimize impacts of chain scouring from conventional moorings during the tidal cycle.
2. An SVN submittal to USACE is not required for work authorized under SV #2-3 above.

[1] Boating facilities are marinas, yacht clubs, boat clubs, boat yards, dockominiums, town facilities, land/homeowner's associations, etc. that provide for a fee, rent or sell mooring or docking space. Not classified as boating facilities are municipal moorings or municipal mooring fields that charge an equitable user fee based only on the actual costs incurred.

**GP 4. STRUCTURES IN NAVIGABLE WATERS OF THE U.S. (Authority: §10 & §404)**

New, expansions, reconfigurations or modifications of structures for navigational access in waters of the U.S. including but not limited to temporary/seasonal or permanent pile and pole-supported piers, floats, stairs, shore outhauls, and boat and float lifts.

**Not authorized under GP 4 (IP required):** (a) Structures associated with a new boating facility; (b) Structures in a USACE Federal anchorage or channel; or (c) Artificial reefs.

**Self-Verification Eligible**

1. Private, non-commercial piers, floats and lifts that meet all the following terms:

a. Piers and floats in: (i) Tidal waters total ≤600 SF combined; and (ii) Non-tidal navigable waters of the U.S. total ≤600 SF combined; and

b. Piers are ≤4 feet wide and ≥6 feet above the marsh substrate (the height is measured from the marsh substrate to the bottom of the lowest longitudinal support); and

c. Floats and lifts in tidal waters and non-tidal navigable waters of the U.S. are ≥24 inches above the substrate during all tidal cycles. Float stops are preferred when site conditions warrant them (i.e., low tide exposes substrate), and skids can only be used in areas where piles are not feasible and on sandy or hard bottom substrates; and

d. Piers, floats and lifts: (i) Are ≥25 feet from previously mapped or existing vegetated shallows, or riparian property line extensions; (ii) Extend ≤25% of the waterway width in non-tidal navigable waters of the U.S. or MHW in tidal navigable waters of the U.S.

e. Installation of ≤12-inch diameter timber piles. Installation of ≥12-inch diameter piles of any material type when installed in the dry.

2. Fenders and similar structures.

**Pre-Construction Notification Required**

1. Shore outhauls.
2. Expansions, modifications, or new reconfiguration zones at any authorized boating facility.
3. New, expansions, reconfigurations, reconfiguration zones, or modifications of structures that provide public, community or government recreational uses such as boating, fishing, swimming, access, etc.
4. Installation of steel piles, including steel sheet piles, that cannot be done in the dry and where NOAA-ESA listed species are mapped as present.
5. Located within the buffer zone of the horizontal limits of an FNP (GC 15).
6. Miscellaneous structures.
7. Impacts in tidal vegetated shallows.
8. Structures that are not SV eligible and do not require an IP.

Notes:

1. See GC 19 regarding pile driving and pile removal in navigable waters and
2. See GC 20 regarding time of year restrictions in tidal waters.
3. Boating facilities are facilities that provide for a fee, rent, or sell mooring space, such as marinas, yacht clubs, boat clubs, boat yards, town facilities, dockominiums, etc. Pile supported structures with no discharges of dredged or fill material are not regulated by USACE in non-navigable waters.
4. A SVN submittal to USACE is not required for SV #2 above.

**GP 5. BOAT RAMPS AND MARINE RAILWAYS (Authorities: §10 and §404)**

Activities required for the construction of boat ramps and marine railways, including excavation and fill.

**Not authorized under GP 5 (IP required):** (a) Permanent impacts that are >1 acre in non-tidal waters of the U.S., >½ acre in tidal waters; >1000 SF in saltmarsh, mud flats, riffle and pool complexes, or non-tidal vegetated shallows; or >100 SF in tidal vegetated shallows; (b) Temporary impacts in tidal waters that are >1 acre; >5000 SF in saltmarsh, mud flats, or riffle and pool complexes; or >1000 SF in vegetated shallows[1]; or (c) dredging in navigable waters of the U.S. (see GP 7).

| Self-Verification Eligible | Pre-Construction Notification Required |
|---|---|
| 1. In non-tidal waters, the combined permanent and temporary impacts are (a) ≤5,000 SF, and (b) not located in riffle and pool complexes and non-tidal vegetated shallows. | 1. Boat ramps are located within 25 feet of property line extensions unless the properties are owned by the same owner. The USACE may require a letter of no objection from the abutter(s). |
| 2. In tidal waters, the combined permanent and temporary impacts are (a) ≤5,000 SF, (b) ≤1,000 SF in mudflats and/or natural rocky habitat, and (c), not located in saltmarsh and tidal vegetated shallows. | 2. Activities that are not eligible for SV and do not require an IP. |

**GP 6. UTILITY LINES, OIL OR NATURAL GAS PIPELINES, OUTFALL OR INTAKE STRUCTURES, AND APPURTENANT FEATURES (Authorities: §10 & §404)**

Activities required for: (a) The construction, maintenance, repair or removal of utility lines, oil or natural gas pipelines[1], outfall or intake structures[2], and appurtenant features including the associated excavation, backfill, or bedding for these structures. (b) The construction, maintenance, or expansion of substations and other appurtenant facilities associated with a utility line, oil or natural gas pipeline, and outfall or intake structure in non-tidal waters of the U.S.; and (c) The construction and maintenance of foundations for overhead utility line towers, poles, and anchors in tidal and non-tidal waters of the U.S., provided the foundations are the minimum size necessary and separate footings for each tower leg (rather than a larger single pad) are used where feasible. This GP authorizes the construction of access roads to facilitate construction of the above activities provided the activity, in combination with all other activities included in one single and complete project, does not exceed the thresholds identified below (IP required). Access roads used solely for construction of the utility line must be removed upon completion of the work. This GP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to conduct the activities above.[3]

**Not authorized under GP 6 (IP required):** (a) Permanent impacts for any single and complete project that are >1 acre in non-tidal waters of the U.S.; >½ acre in tidal waters; >1000 SF in saltmarsh, mud flats, riffle and pool complexes, or non-tidal vegetated shallows; or >100 SF in tidal vegetated shallows; (b) Temporary impacts in tidal waters that are >1 acre; >5000 SF in saltmarsh, mud flats, or riffle and pool complexes; or >1000 SF in vegetated shallows; (c) Stormwater treatment or detention systems, or subsurface sewage disposal systems in waters of the U.S.; or (d) New tide gates that do not meet SV criteria below.

| Self-Verification Eligible | Pre-Construction Notification Required |
|---|---|
| 1. In non-tidal waters, the combined permanent and temporary impacts are (a) ≤5,000 SF, and (b) not located in riffle and pool complexes and non-tidal vegetated shallows.<br><br>2. In tidal waters, the combined permanent and temporary impacts are (a) ≤5,000 SF, (b) ≤1,000 SF in mudflats and/or natural rocky habitat, and (c), not located in saltmarsh and tidal vegetated shallows.<br><br>3. Intake structures that are dry hydrants used exclusively for firefighting activities with no stream impoundments.<br><br>4. New tide gates on outfall structures for pipes conveying stormwater and/or industrial NPDES-permitted discharges from waters that are not waters of the U.S. | 1. New outfall and/or intake structures.<br><br>2. Unconfined work or silt producing activities in streams with diadromous fish.<br><br>3. Submarine cables, conduits, or pipelines that occur in, over or under navigable waters of the U.S.<br><br>4. Stream channelization, relocation, impoundment, or loss of streambed occurs.<br><br>5. The activity is placed within and runs parallel to or along a streambed within waters of the U.S.<br><br>6. There is a permanent change in preconstruction contours in waters of the U.S.<br><br>7. Installation of utility lines or gas/oil pipelines using trench excavation where material is temporarily sidecast into waters of the U.S. for >3 months. Applicants must demonstrate how the material would not be dispersed by currents or other forces.<br><br>8. Activities that are not SV eligible and do not require an IP. |

[1] See the definitions of a “utility line” and “oil or natural gas pipeline” in Section VII.
[2] Outfall structures must be in compliance with regulations issued under the National Pollutant Discharge Elimination System Program (Section 402 of the Clean Water Act).
[3] Temporary impacts shall comply with all GCs, including GC 32 Utility Line Installation and Removal.

**GP 7. DREDGING (Authority: §10), DISPOSAL OF DREDGED MATERIAL (Authorities: §10, §404), BEACH NOURISHMENT (Authorities: §10 & §404), ROCK REMOVAL (Authority: §10) AND ROCK RELOCATION (Authorities: §10 & §404)**

New, improvement and maintenance dredging (see notes below) including: (a) Disposal of dredged material at a confined aquatic disposal cell, beach nourishment location, near shore site, or ocean disposal site selected under Section 404 of the Clean Water Act pursuant to the 404(b)(1) Guidelines, provided the dredged material meets the requirements for such disposal; (b) Beach nourishment not associated with dredging; and (c) Rock removal and relocation for navigation.

**Not authorized under GP 7 (IP required):** (a) Dredging where ocean disposal is required for the disposal of dredged material (Section 103); New dredging >½ acre; ≥10,000 CY; >1000 SF permanent impacts to intertidal areas, saltmarsh, mud flats, riffle and pool complexes, or non-tidal vegetated shallows; or >100 SF permanent impacts to tidal vegetated shallows; (b) Maintenance or improvement dredging and/or disposal with >1 acre of impacts to intertidal areas, saltmarsh, mudflats, riffle and pool complexes, or non-tidal vegetated shallows; (c) New dredging where the primary purpose is sand mining for beach nourishment; (d) Beach scraping; (e) Boulder removal and relocation for navigation >½ acre; or (f) Blasting.

**Self-Verification Eligible**

1. Maintenance dredging of previously dredged areas, with upland disposal, that meet all of the following terms:
   a. Dredged area ≤1/2 acre; and
   b. Activities comply with GC 20, TOY Restrictions. The time-of-year restriction(s) stated in Appendix B of the MA Division of Marine Fisheries (DMF) Technical Report TR-47[1] can apply instead if the general TOY restriction if a TOY is provided for a specific waterbody and is less restrictive. This is to protect endangered species, EFH, and other species; and
   c. The dredge footprint is located >25' from salt marsh or >100' from vegetated shallows; and
   d. Combined permanent and temporary impacts that are (i) ≤1,000 SF in mudflats or natural rocky habitat, or (ii) ≤5,000 SF within intertidal habitat and areas containing shellfish (an area contains shellfish unless: it is verified that minimal shellfish are present per the local shellfish constable or a shellfish survey; or it is not mapped as a MassGIS shellfish suitability area).
   e. No return water from upland disposal areas.

2. Boulder relocation with ≤1,000 SF of impacts, relocated to a similar depth and substrate.

**Pre-Construction Notification Required**

1. Maintenance dredging where the primary purpose is sand mining for beach nourishment.

2. New dredging and associated disposal ≤1/2 acre or <10,000 cubic yards.

3. Improvement dredging.

4. Beach nourishment in waters of the U.S. not associated with dredging.

5. Activities that are located in saltmarsh and tidal vegetated shallows.

6. Dredging in a Federal Navigation Project or within the buffer zone (see GC 15).

7. Activities that are not eligible for SV and do not require an IP.

Notes:

1. See Section VII for definitions of improvement and maintenance dredging.
2. For PCN activities, the USACE may waive or adjust the time of year requirement on a case-by-case basis after consultation with resource agencies.
3. Disposal site of any dredged material must be identified prior to obtaining USACE authorization.
4. Contact the USACE if a ten-year authorization to maintain an area is desired.

[1] The MA DMF Technical Report TR-47: https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/

**GP 8. U.S. COAST GUARD APPROVED BRIDGES (Authorities: §404)**

Discharges of dredged or fill material incidental to the construction and modification of bridges across navigable waters of the U.S., including cofferdams, abutments, foundation seals, piers, and temporary construction and access fills provided that the USCG authorizes the construction of the bridge structure under Section 9 of the Rivers and Harbors Act of 1899 or other applicable laws. A USCG Authorization Act Exemption or a Surface Transportation and Uniform Relocation Assistance Act (STURRA) (144h) exemption do not constitute USCG authorization.

**Not authorized under GP 8 (IP Required):** Causeways and approach fills (see GP 23).

| **Self-Verification Eligible** | **Pre-Construction Notification Required** |
|---|---|
| 1. Discharges of dredged or fill material that are incidental to the construction of bridges across navigable waters and meet all of the following:<br>a. Combined permanent and temporary impacts that are ≤5,000 SF.<br>b. Combined permanent and temporary impacts that are ≤1,000 SF in mudflats and natural rocky habitat.<br>c. Not located in saltmarsh and tidal vegetated shallows. | 1. Activities on USACE properties & USACE controlled easements.2. Installation of steel piles, including steel sheet piles, that cannot be done in the dry and where NOAA-ESA listed species are mapped as present.<br>3. Activities that are not eligible for SV and do not require an IP. |

Notes:

1. GP 8 is not applicable to bridges over inland waters or wetlands that are not tidally influenced or regulated as navigable under Section 10.
2. See eligibility criteria for GPs 2 & 23 for projects that are not subject to USCG regulations.

**GP 9. BANK AND SHORELINE STABILIZATION (Authorities: §10 & §404)**

Bank stabilization activities necessary for erosion protection along the banks of lakes, ponds, streams, estuarine and ocean waters, and any other open waters. Includes bulkheads, seawalls, riprap, revetments, living seawalls, or slope protection & similar structures, specifically for the purpose of shoreline protection. This GP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to conduct the activities above.

Activities must meet the following criteria: (a) No material is placed in excess of the minimum needed for erosion protection; (b) No material is of a type, or is placed in any location, or in any manner, that will impair surface water flow into or out of any waters of the U.S.; (c) No material is 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); (d) Native plants appropriate for current site conditions, including salinity, must be used for bioengineering or vegetative bank stabilization; (e) The activity is not a stream channelization activity; and (f) The activity must be properly maintained, which may require repairing it after severe storms or erosion events. This GP authorizes those maintenance and repair activities if they require authorization. This GP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to construct the bank stabilization activity. See GP 20 for living shoreline stabilization structures or fills.

**Not authorized under GP 9 (IP required):** (a) New bank stabilization >500 feet in total length (>1,000 linear feet in total length when necessary to protect transportation infrastructure) or permanent loss of saltmarsh >1,000 SF, unless the District Engineer waives this criterion by making a written determination concluding that the discharge of dredged or fill material will result in no more than minimal adverse environmental effects (an exception is for bulkheads – the district engineer cannot issue a waiver for a new bulkhead that is >1,000 feet in length along the bank); (b) Stream channelization or relocation activities; or (c) Breakwaters, groins or jetties.

**Self-Verification Eligible**

1. Activities in tidal and non-tidal waters that are:
   a. <200 feet in length.
   b. <400 feet in length when necessary to protect transportation infrastructure.
   c. ≤1 cubic yard of fill per linear foot average along the bank waterward of the plane of OHW or HTL.
   d. Not located in non-tidal wetlands, saltmarsh, vegetated shallows.

**Pre-Construction Notification Required**

1. Activities in tidal and non-tidal waters that are:
   a. ≥200 feet to ≤500 feet in total length. Activities >500 feet in total length must have a written waiver from USACE.
   b. ≥400 feet to ≤1,000 feet in total length when necessary to protect transportation infrastructure. Activities >1,000 feet in total length must have a written waiver from USACE.
   c. >1 cubic yard of fill per linear foot average along the bank waterward of the plane of OHW or HTL.
   d. Located in non-tidal wetlands, saltmarsh, vegetated shallows.
2. Activities with permanent loss of tidal or non-tidal waters that is (a) ≥5,000 SF or (b) ≥1,000 SF in mudflats and natural rocky habitat.
3. Activities that are (a) located in the Connecticut River or Merrimack River and/or (b) require installation of steel piles/steel sheet piles that cannot be done in the dry where NOAA ESA-listed species are mapped as present.
4. Activities on USACE properties & USACE-controlled easements.
5. Activities that require grouted riprap and/or poured/unformed concrete.
6. Activities that are not eligible for SV and do not require an IP.

Note: The applicant shall comply with GC 24. This includes utilization of bioengineering techniques in lieu of hard armoring to the maximum extent practicable as site conditions allow.

**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** | **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.<br><br>2. Eelgrass (vegetated shallows) planting and transplanting ≤100 SF in tidal waters. | 1. In tidal and non-tidal waters excluding tidal vegetated shallows, the combined permanent and temporary impacts are >5,000 SF.<br><br>2. Eelgrass (vegetated shallows) planting and transplanting >100 SF in tidal waters.<br><br>3. Permanent water impoundments, dam removal, fish ladders, or tide gates.<br><br>4. Stream relocation, impoundment, or loss of streambed occurs.<br><br>5. Runneling projects with the purpose of restoring saltmarsh by removing excess water that ponds on the saltmarsh surface.<br><br>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).<br><br>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.<br><br>8. Activities on USACE properties & USACE-controlled easements.<br><br>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.

**GP 11. FISH AND WILDLIFE HARVESTING AND ATTRACTION DEVICES AND ACTIVITIES (Authorities: §10 and §404)**

Fish and wildlife harvesting and attraction devices and activities in waters of the U.S. such as pound nets, crab traps, crab and shellfish dredging, eel pots, lobster traps, duck blinds, clam and oyster digging, fish aggregating devices, and small fish attraction devices such as open-water fish concentrators (sea kites, etc.).

**Not authorized under GP 11 (IP required):** Artificial reefs; or new, or expansions of, impoundments and semi-impoundments of waters of the U.S. for the culture or holding of motile species such as lobster with an impounded area >½ acre.

| **Self-Verification Eligible** | **Pre-Construction Notification Required** |
|---|---|
| 1. In non-tidal waters, the combined permanent and temporary impacts are (a) ≤1/2 acre, and (b) not located in riffle and pool complexes and non-tidal vegetated shallows.<br><br>2. Fish and wildlife harvesting and attraction devices and activities that do not require a PCN or IP. | 1. Pound nets, impoundments or semi-impoundments of waters of the U.S. for the culture or holding of motile species such as lobster with an impounded area ≤½ acre, fish aggregating devices, or small fish attraction devices.<br><br>2. Devices and activities that are located in tidal vegetated shallows, mud flats, or saltmarsh.<br><br>3. Devices and activities that do not require an IP. |

Note: An SVN submittal to USACE is not required for work authorized under GP 11.

**GP 12. RESPONSE OPERATIONS, OIL AND HAZARDOUS SUBSTANCES (Authorities: §10 & §404)**

(a) Activities conducted in response to a discharge or release of oil and hazardous substances that are subject to the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR 300) including containment, cleanup, and mitigation efforts, provided that the activities are done under either: (i) The Spill Prevention, Control and Countermeasure Plan required by 40 CFR 112.3; (ii) The direction or oversight of the Federal on-scene coordinator designated by 40 CFR 300; or (iii) Any approved existing State, regional or local contingency plan provided that the Regional Response Team concurs with the proposed response efforts or does not object to the response effort; (b) Activities required for the cleanup of oil releases in waters of the U.S. from electrical equipment that are governed by EPA's polychlorinated biphenyl (PCB) spill response regulations at 40 CFR 761; (c) Booms placed in navigable waters of the U.S. for oil and hazardous substance containment, absorption and prevention; and (d) The use of structures and fills for spill response training exercises. Wetlands, vegetated shallows, mudflats, and riffle and pool complexes should be restored in place at the same elevation.

| **Self-Verification Eligible** | **Pre-Construction Notification Required** |
|---|---|
| 1. Activities are conducted in accordance with (a) or (b) above that are not planned or scheduled, but an emergency response (see Note 1).<br><br>2. Booms placed in navigable waters of the U.S. for oil and hazardous substance containment, absorption and prevention.<br><br>3. Temporary impacts for spill response training exercises ≤5000 SF in non-tidal waters and ≤1000 SF in tidal waters with no impacts to wetlands, saltmarsh, mudflats, or vegetated shallows.<br><br>4. Temporary structures in tidal waters with no impacts to wetlands, saltmarsh, mudflats, vegetated shallows, or riffle and pool complexes and in place ≤30 days. | 1. Activities (a) or (b) above are planned or scheduled, not an emergency response; or<br><br>2. Activities that are not eligible for SV and do not require an IP. |

Notes:

1. For emergency response activities in the Connecticut River from the Turners Falls Dam to the MA/CT border, Merrimack River from the Essex Dam to the mouth, and remaining tidal waters that are not rivers, the permittee must contact the USACE at (978) 318-8338 before or as soon as possible after the work authorized under GP 12(a) - (c) commences for the USACE to address effects under the Endangered Species Act.
2. An SVN submittal to USACE is not required for booms used for spill prevention, or properly contained and cleaned de minimus oil or hazardous substance discharges into navigable waters of the U.S.

**GP 13. CLEANUP OF HAZARDOUS AND TOXIC WASTE (Authorities: §10 and §404)**

Specific activities required to affect the containment, stabilization, or removal of hazardous or toxic waste materials, including court ordered remedial action plans or related settlements, which are performed, ordered or sponsored by a government agency with established legal or regulatory authority.

**Not authorized under GP 13:** (a) Establishment of new disposal sites; or (b) Expansion of existing sites used for the disposal of hazardous or toxic waste.

| Self-Verification Eligible | Pre-Construction Notification Required |
|---|---|
| 1. In non-tidal waters, the combined permanent and temporary impacts are (a) ≤5,000 SF, and (b) not located in vegetated shallows and riffle and pool complexes. | 1. In non-tidal waters, the combined permanent and temporary impacts are (a) >5,000 SF, and (b) located in vegetated shallows and riffle and pool complexes.<br>2. Permanent and temporary impacts in tidal waters or navigable waters of the U.S.<br>3. Stream channelization, relocation, impoundment, or loss of streambed occurs.<br>4. Activities that are not eligible for SV and do not require an IP. |

Notes:

1. Wetlands, vegetated shallows, mudflats, and riffle and pool complexes should be restored in place at the same elevation to the maximum extent practicable.
2. Activities undertaken entirely on a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) site by authority of CERCLA, are not required to obtain permits under Section 404 of the CWA or Section 10 of the Rivers and Harbors Act.

**GP 14. SCIENTIFIC MEASUREMENT DEVICES (Authorities: §10 and §404)**

Scientific measurement devices for measuring and recording scientific data, such as staff gauges, tide and current gauges, meteorological stations, water recording and biological observation devices, water quality testing and improvement devices, and similar structures. Also eligible are small weirs and flumes constructed primarily to record water elevation, flow and/or velocity. Upon completion of the use of the device to measure and record scientific data, the measuring device and any other structures or fills associated with that device (e.g., foundations, anchors, buoys, lines, etc.) must be removed to the maximum extent practicable and the site restored to preconstruction elevations.

**Not authorized under GP 14 (IP required):** (a) Permanent impacts that are >5,000 SF in tidal and non-tidal waters of the U.S.; >1000 SF in tidal saltmarsh, mud flats, riffle and pool complexes; or >100 SF in tidal vegetated shallows; or (b) Temporary impacts in tidal waters that are >1 acre, unless the District Engineer waives this criterion by making a written determination concluding that the discharge of dredged or fill material will result in no more than minimal adverse environmental effects; >5000 SF in saltmarsh, mud flats, or riffle and pool complexes; or >1000 SF in vegetated shallows.

**Self-Verification Eligible**

1. In non-tidal waters, the combined permanent and temporary impacts are (a) ≤5,000 SF, (b) not located in riffle and pool complexes and non-tidal vegetated shallows.

2. In tidal waters, the combined permanent and temporary impacts are (a) ≤5,000 SF, (b) ≤1,000 SF in mudflats and/or natural rocky habitat, (c) not located in saltmarsh and tidal vegetated shallows.

3. Temporary, non-biological sampling devices in waters that do not restrict or concentrate movement of aquatic organisms and will not adversely affect the course, condition, or capacity of a waterway for navigation.

4. Scientific measurement devices, and small weirs and flumes constructed primarily to record water quantity and velocity provided the discharge of fill is limited to 25 cubic yards. These cannot obstruct or restrict the waterway course, condition, capacity, and location.

5. Temporary measuring devices and associated structures (e.g., anchors, buoys, etc.) in tidal and non-tidal waters that do not require a PCN or IP.

**Pre-Construction Notification Required**

1. Biological sampling devices, weirs or flumes, or the activity restricts or concentrates movement of aquatic organisms.

2. Permanent towers located in navigable waters that record and measure scientific data.

3. Devices that are not eligible for SV and do not require an IP.

Note: An SVN submittal to USACE is not required for temporary measuring devices with a footprint of <10 SF, with a profile of <3 feet high measured from the substrate and located in water deeper than -10 feet MLW.

**GP 15. SURVEY ACTIVITIES (Authorities: §10 and §404)**

Survey activities such as soil borings, core sampling, seismic exploratory operations, plugging of seismic shot holes and other exploratory-type bore holes, exploratory trenching, soil surveys, sampling, sample plots or transects for wetland delineations, and historic resources surveys.

**Not authorized under GP 15 (IP required):** (a) Permanent impacts that are >1 acre in tidal and non-tidal waters; >1000 SF in tidal saltmarsh, mud flats, or riffle and pool complexes; or >100 SF in tidal vegetated shallows; or (b) Temporary impacts in tidal waters that are >1 acre, unless the District Engineer waives this criterion by making a written determination concluding that the discharge of dredged or fill material will result in no more than minimal adverse environmental effects; >5000 SF in saltmarsh, mud flats, or riffle and pool complexes; or >1000 SF in vegetated shallows.

| **Self-Verification Eligible** | **Pre-Construction Notification Required** |
|---|---|
| 1. In non-tidal waters, the combined permanent and temporary impacts are (a) ≤5,000 SF, (b) not located in riffle and pool complexes and non-tidal vegetated shallows.<br><br>2. In tidal waters, the combined permanent and temporary impacts are (a) ≤5,000 SF, (b) ≤1,000 SF in mudflats and/or natural rocky habitat, (c) not located in saltmarsh and tidal vegetated shallows. | 1. Exploratory trenching (see Note 2) occurs in waterways (e.g., streams, tidal waters).<br><br>2. Activities associated with the recovery of historic resources, and the drilling and discharge of excavated material from test wells for oil and gas exploration.<br><br>3. Seismic exploratory operations occur in tidal waters, the Connecticut River from the Turners Falls Dam to the MA/CT border, or the Merrimack River from the Essex Dam to the mouth. This is to protect endangered species.<br><br>4. Activities that are not eligible for SV and do not require an IP. |

Notes:

1. An SVN submittal is not required for wetland delineations, and core sampling conducted for preliminary evaluation of dredge project analysis.
2. For the purposes of GP 15, the term “exploratory trenching” means mechanical land or underwater clearing of the upper soil profile to expose bedrock or substrate for the purpose of mapping or sampling the exposed material.
3. The discharge of drilling mud and cuttings may require a permit under §402 of the CWA.

**GP 16. LAND AND WATER-BASED RENEWABLE ENERGY GENERATION FACILITIES (Authorities: §10 and §404), AND HYDROPOWER PROJECTS (Authority: §10 and §404)**

Structures and work in tidal waters and discharges of dredged or fill material into tidal and non-tidal waters for the construction, expansion, modification or removal of: (a) Land-based renewable energy production facilities (e.g., solar, wind, biomass, geothermal) and their attendant features; (b) Water-based wind or hydrokinetic renewable energy generation projects and their attendant features; and (c) Discharges of dredged or fill material associated with hydropower projects. Attendant features may include, but are not limited to, land-based collection and distribution facilities, control facilities, and parking lots. For each single and complete project in (b) above, no more than 10 generation units (e.g., wind turbines or hydrokinetic devices) are authorized in navigable waters of the U.S. Upon completion of the pilot project (see note 2), the generation units, transmission lines, and other structures or fills associated with the pilot project must be removed to the maximum extent practicable.

**Not authorized under GP 16 (IP required):** (a) Permanent impacts that are >1 acre in non-tidal waters, >½ acre in tidal waters; >1000 SF in saltmarsh, mud flats, riffle and pool complexes, or non-tidal vegetated shallows; or >100 SF in vegetated shallows; or (b) Temporary impacts in tidal waters that are >1 acre; >5000 SF in saltmarsh, mud flats, or riffle and pool complexes; or >1000 SF in vegetated shallows.

| **Self-Verification Eligible** | **Pre-Construction Notification Required** |
|---|---|
| In non-tidal waters, the combined permanent and temporary impacts for land-based activities are (a) ≤5,000 SF, (b) not located in riffle and pool complexes and non-tidal vegetated shallows. | 1. In non-tidal waters, the combined permanent and temporary impacts for land-based activities are (a) >5000 SF, or (b) located in vegetated shallows or riffle and pool complexes.<br>2. Permanent and temporary impacts in tidal waters.<br>3. Water-based wind or hydrokinetic renewable energy generation projects, and hydropower projects.<br>4. For all activities eligible for authorization under GP 16:<br>a. The activity occurs in tidal waters or in, over or under navigable waters.<br>b. Stream channelization, relocation, impoundment, or loss of streambed occurs.<br>5. Activities that are not eligible for SV and do not require an IP. |

Notes:

1. Utility lines constructed to transfer the energy from the land-based renewable generation or collection facility to a distribution system, regional grid, or other facility may be authorized by GP 6.
2. For the purposes of this GP, the term “pilot project” means an experimental project where the renewable energy generation units will be monitored to collect information on their performance and environmental effects at the project site.

**GP 17. RESIDENTIAL, COMMERCIAL AND INSTITUTIONAL DEVELOPMENTS AND RECREATIONAL FACILITIES (AUTHORITIES: §404)**

Discharges of dredged or fill material into non-tidal waters for the construction or expansion of: (a) Residences and residential subdivisions; (b) Residential, commercial and institutional building foundations and building pads; and (c) Recreational facilities such as playgrounds, playing fields, bikeways, trails, etc. This GP also authorizes attendant features that include, but are not limited to, roads, parking lots, garages, yards, and utility lines, and stormwater management facilities. This GP authorizes attendant features if they are necessary for the use of the project purpose.

**Not authorized under GP 17 (IP required):** (a) Permanent impacts that result in loss of non-tidal waters >1/2 acre; >1000 SF in riffle and pool complexes or vegetated shallows; or (b) Subsurface sewerage disposal systems in non-tidal waters.

| **Self-Verification Eligible** | **Pre-Construction Notification Required** |
|---|---|
| 1. In non-tidal waters, the combined permanent and temporary impacts are (a) <5,000 SF, and (b) not located in riffle and pool complexes and non-tidal vegetated shallows.<br><br>2. Stream channelization or relocation resulting in loss of streambed that is <200 LF. | 1. In non-tidal waters, the combined permanent and temporary impacts are (a) ≥5,000 SF, or (b) located in riffle and pool complexes or non-tidal vegetated shallows.<br><br>2. Stream and wetland crossings that require a PCN per GCs 20 TOY Restrictions and GC 31 Stream Work and Crossings & Wetland Crossings.<br><br>3. Stream channelization or relocation resulting in loss of streambed that is ≥200 LF. Stream impoundment activities of any kind.<br><br>4. Activities on USACE properties & USACE-controlled easements.<br><br>5. Activities that are not SV eligible and do not require an IP. |

Notes:

1. Stream and wetland crossings (permanent and temporary), including those built with construction mats; and modifications (including sliplining), replacements or extensions to existing crossings.
2. See GC 22 for information on temporary construction mats.
3. Subdivisions: For residential subdivisions, the aggregate total loss of waters of United States authorized by this GP cannot exceed 1/2-acre. This includes any loss of waters of the United States associated with development of individual subdivision lots.

**GP 18. AQUACULTURE (Authorities: §10 and §404)**

(a) The installation of buoys, floats, racks, trays, nets, lines, tubes, containers, and other structures into navigable waters of the U.S.; (b) Discharges of dredged or fill material into tidal and non-tidal waters necessary for shellfish seeding, rearing, cultivating, transplanting, and harvesting activities; and (c) Shellfish seeding or brushing the flats projects. Any fill material imported to the project from offsite (this is limited to mineral growth medium used in culture trays) shall be clean and of comparable grain size to the native substrate. Activities authorized under this GP must have (a) their MA DMF Aquaculture Certificate letter for licensed shellfish aquaculture sites, (b) documentation that the applicant has coordinated with the U.S. Coast Guard regarding USCG Private Aids to Navigation standards, (c) their MEPA Certificate (if required), and (d) documentation that the applicant has contacted their local authorities (ex. harbormaster, select board, shellfish constable) for authorization of their facility.

**Not authorized under GP 18 (IP required):** (a) New, or expansions of, impoundments and semi-impoundments of tidal and non-tidal waters for the culture or holding of motile species such as lobster with an impounded area >½ acre; (b) Cultivation of a nonindigenous species (see Note 1) unless that species has been previously cultivated in the waterbody; (c) Cultivation of an aquatic nuisance species (see Note 1); (d) Attendant features such as docks, piers, boat ramps (see GP 4); (e) stockpiles, staging areas, or the deposition of shell material back into tidal and non-tidal waters as waste.

**Self-Verification Eligible**

1. In tidal waters, a new lease site area is (a) ≤2-acre, (b) not located in salt marsh, natural rocky habitat, or tidal vegetated shallows.

2. In tidal waters, *expansions* of existing lease sites not to exceed 2 acres for the entire site (e.g. 1 acre lease site increasing to a 2 acre lease site may qualify as SV). A PCN is required for expansions in salt marsh, natural rocky habitat, and tidal vegetated shallows.

3. Cages, racks that are elevated ≥2 feet above the ocean floor with legs within a lease site with ≤4 buoys marking the corners.

4. Floating cage strings with a single connecting line, ≤2 anchors and ≤2 end marker buoys per string within a lease site with ≤4 buoys marking the corners.

5. No activities located within 25 feet of tidal vegetated shallows.

6. Culture only indigenous species.

7. Not located in FNP or within a distance of three times the authorized depth of an FNP (see GC 15).

8. Not located in or impinge upon the value of any National Lands or Federal Properties.

9. Floating upweller docks that total ≤600 SF in area.

**Pre-Construction Notification Required**

1. Discharges of fill material associated with aquaculture >5,000 SF.

2. Research, educational, commercial-viability or experimental aquaculture gear activities >1,000 SF.

3. Kelp or finfish aquaculture.

4. Land-based hatchery intakes >3 inches in diameter.

5. Activities in water depths >10 feet mean low lower water (MLLW).

6. Activities with in-water lines, ropes or chains that are not SV eligible (see #3-4).

7. Activities occur in the Connecticut River from the Turners Falls Dam to the MA/CT border or the Merrimack River from the Essex Dam to the mouth. This is to protect endangered species.

8. New, or expansions of, impoundments and semi-impoundments for the culture or holding of motile species such as lobster with an impounded area ≤1/2 acre.

9. Activities that do not require an IP. Activities that do not require a PCN or an IP may be SV eligible.

Note: The Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 defines: (a) nonindigenous species as “any species or other viable biological material that enters an ecosystem beyond its historic range, including any such organism transferred from one country into another”; and (b) aquatic nuisance species as “a nonindigenous species that threatens the diversity or abundance of native species or the ecological stability of infested waters, or commercial, agricultural, aquacultural, or recreational activities dependent on such waters.”

**GP 19. MINING ACTIVITIES (Authorities: §10 and §404)**

Discharges of dredged or fill material into non-tidal waters for mining activities, except for coal mining and metallic mineral mining activities.

**Not authorized under GP 19 (IP required):** (a) Permanent impacts >1 acre in non-tidal waters; or (b) Activities in tidal waters.

| Self-Verification Eligible | Pre-Construction Notification Required |
|---|---|
| In non-tidal waters, the combined permanent and temporary impacts are (a) ≤5,000 SF, and (b) not located in riffle and pool complexes, non-tidal vegetated shallows, and streams. | 1. In non-tidal waters, the combined permanent and temporary impacts are (a) >5,000 SF, or (b) located in riffle and pool complexes, non-tidal vegetated shallows, and streams.<br>2. The activity occurs in non-tidal navigable waters of the U.S.<br>3. Stream channelization, relocation, impoundment, loss of streambed, or discharge of tailings into streams occurs.<br>4. Work on USACE properties & USACE-controlled easements.<br>5. Activities that are not eligible for SV and do not require an IP. |

**GP 20. LIVING SHORELINES[1] (Authorities: §10 and §404)**

Construction and maintenance of living shorelines to stabilize banks and shores in tidal waters. In non-tidal waters that are not subject to the ebb and flow of the tide, nature-based bank stabilization techniques such as bioengineering and vegetative stabilization may be authorized by GP 9. This GP authorizes those maintenance and repair activities in-kind that are necessary to address changing environmental conditions.

The following terms must be met for both SVs and PCNs as applicable: (a) Coir logs, coir mats, stone, native oyster shell, native wood debris, and other structural materials must be adequately anchored, of sufficient weight, or installed in a manner that prevents relocation in most wave action or water flow conditions, except for extremely severe storms; (b) For living shorelines consisting of tidal fringe wetlands, native plants appropriate for current site conditions, including salinity and elevation, must be used if the site is planted by the permittee; (c) Discharges of dredged or fill material into waters of the U.S., and oyster or mussel reef structures in navigable waters, must be the minimum necessary for the establishment and maintenance of the living shoreline; (d) If sills or other structural materials per PCN #4 must be constructed to protect fringe wetlands for the living shoreline, those structures must be the minimum size necessary to protect those fringe wetlands; (e) The activity must be designed, constructed, and maintained so that it has no more than minimal adverse effects on water and sediment movement between the waterbody and the shore and the movement of aquatic organisms between the waterbody and the shore; and (f) The living shoreline must be properly maintained and monitored, which may require periodic repair of sills, bioengineered components, or replacing sand fills after severe storms or erosion events. Vegetation may be replanted to maintain the living shoreline.

**Not authorized under GP 20 (IP required):** (a) The activity is ≥1000 feet in length along the bank (≥2000 LF both banks) unless waived by the District Engineer; or (b) The activity is >30 feet channel ward of mean low water in tidal waters; or (c) Upland reclamation activities; or (d) Stream channelization or relocation activities; or (e) Breakwaters, groins, jetties, or artificial reefs; or (f) Permanent impacts >1,000 SF in existing saltmarsh; >100 SF in existing tidal vegetated shallows.

| **Self-Verification Eligible** | **Pre-Construction Notification Required** |
|---|---|
| 1. Tidal and non-tidal living shorelines ≤100 LF for each bank (≤200 LF for both banks).<br><br>2. Combined permanent and temporary impacts ≤5,000 SF in tidal waters, excluding existing salt marsh, tidal vegetated shallows, natural rocky habitat, and mudflats. | 1. Tidal and non-tidal living shorelines >100 LF to <1000 LF (>200 LF to <2000 LF for both banks).<br><br>2. Permanent and temporary impacts in existing salt marsh, tidal vegetated shallows, or mudflats.<br><br>3. Work on USACE properties & USACE-controlled easements.<br><br>4. Use of stone sills, native oyster shell, native wood debris, or other structural materials. |

Notes:

1. PCNs require monitoring for a minimum of 5 years in accordance with an approved restoration plan, unless otherwise determined by the USACE. The first year of monitoring will be the first year that the site has been through a full growing period after completion of construction and planting.
2. Applicants are encouraged to obtain a MEPA certificate prior to submitting a USACE permit application.

[1] A living shoreline has a footprint that is made up mostly of native material. It incorporates vegetation or other living, natural "soft" elements alone or in combination with some type of harder shoreline structure (e.g., oyster or mussel reefs or rock sills) for added protection and stability. Living shorelines should maintain the natural continuity of the land-water interface and retain or enhance shoreline ecological processes. Living shorelines must have a substantial biological component, either tidal or lacustrine fringe wetlands or oyster or mussel reef structures.

**GP 21. AGRICULTURAL ACTIVITIES (Authority: §404)**

Discharges of dredged or fill material in non-tidal waters for agricultural activities, including the construction of building pads for farm buildings. Authorized activities include: (a) installation, placement, or construction of drainage tiles, ditches, or levees; mechanized land clearing; land leveling; the relocation of existing serviceable drainage ditches; and similar activities; (b) construction of farm ponds, excluding perennial streams, provided the farm pond is used solely for agricultural purposes; and (c) discharges of dredged or fill material to relocate existing serviceable drainage ditches constructed in non-tidal streams.

**Not authorized under GP 21 (IP required):** (a) Permanent impacts that are >1 acre in non-tidal waters; or >1000 SF in riffle and pool complexes, or non-tidal vegetated shallows; (b) Work in tidal waters; or (c) Construction of farm ponds in perennial streams.

| **Self-Verification Eligible** | **Pre-Construction Notification Required** |
|---|---|
| In non-tidal waters, the combined permanent and temporary impacts are (a) ≤5,000 SF, and (b) not located in riffle and pool complexes and non-tidal vegetated shallows. | 1. In non-tidal waters, the combined permanent and temporary impacts are (a) >5,000 SF, or (b) located in riffle and pool complexes and non-tidal vegetated shallows.<br>2. Activities occur in non-tidal navigable waters of the U.S.<br>3. Stream channelization, relocation, impoundment, loss of streambed, or farm ponds in non-perennial streams occurs.<br>4. Activities that are not eligible for SV and do not require an IP. |

Note: Some discharges for agricultural activities may qualify for an exemption under Section 404(f) of the CWA (see 33 CFR 323.4). This GP authorizes the construction of farm ponds that do not qualify for the CWA §404(f)(1)(C) exemption because of the recapture provision at §404(f)(2).

**GP 22. RESHAPING EXISTING DRAINAGE DITCHES, CONSTRUCTION OF NEW DITCHES, AND MOSQUITO MANAGEMENT (Authorities: §10 and §404)**

Discharges to modify the cross-sectional configuration of currently serviceable drainage ditches constructed in tidal and non-tidal waters, for the purpose of improving water quality by regrading the drainage ditch with gentler slopes, which can reduce erosion, increase growth of vegetation, and increase uptake of nutrients and other substances by vegetation. Also authorized are mosquito reduction activities.

**Not authorized under GP 22 (IP required):** Stream channelization, relocation, impoundments, or loss of streambed.

| **Self-Verification Eligible** | **Pre-Construction Notification Required** |
|---|---|
| ≤500 linear feet of drainage ditch will be reshaped provided excavated material is deposited in an upland area. | 1. >500 linear feet of drainage ditch will be reshaped, excavated material is deposited in a water of the U.S., or the reshaping of the ditch increases the drainage capacity beyond the original as-built capacity or expands the area drained by the ditch as originally constructed (i.e., the capacity of the ditch is not the same as originally constructed or drains additional wetlands or other waters of the U.S.).<br>2. Permanent and temporary impacts in tidal vegetated shallows.<br>3. New ditches or relocation of drainage ditches constructed in waters of the U.S. (i.e., the location of the centerline of the reshaped drainage ditch is not approximately the same as the location of the centerline of the original drainage ditch).<br>4. Activities that are not eligible for SV and do not require an IP. |

Note: Some ditch activities are exempt under Section 404(f) of the CWA (see 33 CFR 323.4).

**GP 23. LINEAR TRANSPORTATION PROJECTS AND WETLAND/STREAM CROSSINGS (Authorities: §10 & §404)**

Activities[1] required for the construction, expansion, modification, or improvement of linear transportation projects (e.g., driveways, roads, highways, railways, trails, airport runways, and taxiways) and attendant features. This GP also authorizes temporary structures, fills, and work, including the use of temporary mats (see Note 1), necessary to construct the linear transportation project.

**Not authorized under GP 23 (IP required):** (a) Permanent impacts for any single and complete project that are >1 acre in non-tidal waters; >½ acre in tidal waters; >1000 SF in saltmarsh, mud flats, riffle and pool complexes, or non-tidal vegetated shallows; or >100 SF in tidal vegetated shallows; (b) Temporary impacts in tidal waters that are >1 acre; >5000 SF in saltmarsh, mud flats, or riffle and pool complexes; or >1000 SF in vegetated shallows; (c) Non-linear features commonly associated with transportation projects, such as vehicle maintenance or storage buildings, parking lots, train stations, or aircraft hangars (see GP 17); or (d) New tide gates.

**Self-Verification Eligible**

1. In non-tidal waters, the combined permanent and temporary impacts are a) ≤5,000 SF; b) not located in riffle and pool complexes and non-tidal vegetated shallows; and c) meet the Massachusetts River and Stream Crossing Standards

2. Existing crossings (e.g., culverts, elliptical or arch pipes, etc.) are not modified by (a) decreasing the diameter of the crossing or (b) changing the friction coefficient, such as through slip lining (retrofitting an existing culvert by inserting a smaller diameter pipe), culvert relining or invert lining.

3. Stream channelization or relocation resulting in loss of streambed that is <200 LF.

**Pre-Construction Notification Required**

1. In non-tidal waters, the combined permanent and temporary impacts are a) >5,000 SF; b) located in vegetated shallows or riffle and pool complexes; or c) do not meet the Massachusetts River and Stream Crossing Standards (see note 4).

2. The activity occurs in tidal waters, salt marsh, or in, over or under navigable waters of the U.S.

3. Stream and wetland crossings that require a PCN per GC 20 TOY Restrictions and GC 31 Stream Work and Crossings & Wetland Crossings.

4. Stream channelization or relocation resulting in loss of streambed that is ≥200 LF. Stream impoundment activities of any kind.

5. Work on USACE properties & USACE-controlled easements.

6. Activities that are not eligible for SV and do not require an IP.

Notes:

1. See GC 22 for information on temporary construction mats.
2. Discharges of dredged or fill material incidental to the construction of bridges across navigable waters of the U.S. may be authorized under GP 8.
3. Loss of streambed does not require a PCN when bridge piers or similar supports are used.
4. In their PCN application submission to the USACE, applicants must explain why they are unable to meet the Massachusetts River and Stream Crossing Standards.
5. For tidal crossings, modeling is encouraged as a method to verify the proposed crossing would not be undersized and resilient to the effects of sea level rise.

[1] Stream crossings must conform with the MA Stream Crossing Guidelines when practicable and comply with all applicable GCs of this document (Section IV).

**GP 24. TEMPORARY CONSTRUCTION, ACCESS, AND DEWATERING (Authorities: §10 and §404)**

Temporary structures, work, and discharges, including cofferdams, necessary for construction activities or access fills or dewatering of construction sites that are not authorized under another GP activity.

**Not authorized under GP 24 (IP required):** (a) Permanent structures or impacts; (b) Temporary impacts in tidal waters that are >1 acre; >5000 SF in saltmarsh, mud flats, or riffle and pool complexes; or >1000 SF in vegetated shallows; (c) Use of cofferdams to dewater wetlands or other aquatic areas to change their use; (d) Temporary stream crossings (see GPs 6, 17, 23); (e) Structures or fill left in place after construction is completed.

| **Self-Verification Eligible** | **Pre-Construction Notification Required** |
|---|---|
| 1. In non-tidal waters, temporary impacts are a) ≤5,000 SF; b) not located in riffle and pool complexes and non-tidal vegetated shallows.<br><br>2. In tidal waters, temporary impacts are a) ≤5,000 SF, b) ≤1,000 SF in mudflats and/or natural rocky habitat, and c) not located in saltmarsh and tidal vegetated shallows.<br><br>3. Structures in navigable waters of the U.S. provided impacts do not require a PCN and they are left in place ≤30 days. | 1. In non-tidal waters, temporary impacts are a) >5,000 SF; b) located in riffle and pool complexes or non-tidal vegetated shallows.<br><br>2. In tidal waters, temporary impacts are a) >5,000 SF; b) >1,000 SF in mudflats and/or natural rocky habitat, or (c) located in saltmarsh and tidal vegetated shallows.<br><br>3. 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 temporary impacts unless they are performed <5 feet waterward from OHW or HTL and in the dry. This is to protect endangered species; or<br><br>4. Activities not eligible for SV and do not require an IP. |

Notes:

1. Turbidity or sediment resuspension is generally not considered to occur when properly using management techniques to work in dry conditions. See GC 25.
2. Total impact areas under SV Eligible 1-2 exclude use of temporary construction mats. See GC 22 for information on temporary construction mats.
3. An SVN submittal to USACE is not required for SV #3 above.

**GP 25. EMERGENCY SITUATIONS (Authorities: §10 and §404)**

Structures or work in or affecting navigable waters of the U.S. and the discharge of dredged or fill material into waters of the U.S., including wetlands, necessary for repair or protection measures associated with an emergency situation[1], MassDEP Emergency Declaration/Certification, or FEMA Declared Disaster. The activity shall be the minimum necessary to alleviate the immediate emergency unless that additional work would result in no more than minimal effects to aquatic environment and is necessary to reduce the potential for future failure or loss of the structure or site. Typical activities authorized under this GP include, but are not limited to, restoration of damaged areas; bank stabilization; temporary fills for staging, access, and dewatering; and, repair, replacement, or rehabilitation of existing structures and/or fills (i.e., roads, bridges, utility pipelines and flood control structures, including attendant features, and other existing structures located in waters of the U.S.).

For the restoration of areas damaged by storms floods, or other discrete events: (a) The restored area must not extend waterward of the ordinary high-water mark or high tide line that existed prior to the damage. (b) The slope of the restored area below the ordinary high-water mark or high tide line must not exceed the slope that existed prior to the damage. (c) The bottom elevation of the restored area must not exceed the bottom elevation that existed prior to the damage (i.e., the restored area must not result in a reduction in the depth of the waterbody that existed prior to the damage). (d) Except in cases of FEMA reimbursement, the activity must be initiated, under contract to commence, or funds shall be allocated for the activity within 30 days of authorization under GP 25.

**Not authorized under GP 25 (IP required):** (a) Permanent impacts for a single and complete project >1/2 acre in tidal waters, unless the district engineer waives this criterion by making a written determination concluding that the activity will result in no more than minimal adverse environmental effects; >1,000 SF in saltmarsh, mud flats, riffle and pool complexes, or non-tidal vegetated shallows; or >100 SF in tidal vegetated shallows; (b) Temporary impacts in tidal waters that are >5,000 SF in saltmarsh, mud flats, or riffle and pool complexes; or >1,000 SF in vegetated shallows; (c) New structures or fills that did not previously exist before the storm event or other discrete event (see other GPs).

| **Self-Verification Eligible** | **Pre-Construction Notification Required** |
|---|---|
| 1. Activities that qualify under a Severe Weather Emergency Declaration pursuant to 310 CMR 10.06(8) and/or receive an Emergency Certification pursuant to 310 CMR 10.06 and/or meet the requirements of 314 CMR 9.12(2) or (3); and<br><br>2. Activities eligible under a FEMA Declared Disaster that also comply with #1 above. | 1. Activities that are eligible under a FEMA Declared Disaster and do not qualify under SV #1.<br><br>2. Minor deviations in the structure or fill area, including those to existing structures or fills are authorized due to changes in materials, construction techniques, requirements of other regulatory agencies, or current construction codes or safety standards that are necessary to alleviate the emergency.<br><br>3. Activities that are not eligible for SV and do not require an IP. |

Notes:

1. Review the GCs (Section IV) to confirm if a PCN is not required elsewhere in this document.
2. If the activity is not a MassDEP Emergency Declaration/Certification, does not meet the requirements of 314 CMR 9.12(2) or (3), or is not a FEMA Declared Disaster, applicants must explain in writing why their activity qualifies as an emergency (see footnote) to be eligible under GP 25.
3. SV eligible activities qualify under the general 401 WQC MassDEP issued for the 2023 MA GPs (GC 9).

[1] An emergency, as determined by this office and 33 CFR 325.2(e)(4), is one which would result in an unacceptable hazard to life, a significant loss of property, or an immediate, unforeseen, and significant economic hardship if corrective action requiring a Department of the Army permit is not undertaken within a time period less than the normal time to process the request under standard processing procedures.

**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 appliable 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 effects[1] (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 method[1] 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-47[2] 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 ≥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 controls[1] (hereinafter referred to as "controls") must installed prior to earth disturbance and maintained in effective operating condition during construction. Biodegradable wildlife friendly erosion controls should be used whenever practicable to minimize effects to water quality.
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 silicaceous 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.

## SECTION V: MITIGATION STANDARDS

### 1. Mitigation Types

For all activities, applicants must (a) demonstrate how the project has been designed to avoid or minimize impacts to aquatic resources; and (b) describe measures taken to avoid or minimize impacts to aquatic resources through construction techniques and/or site access. Please see https://www.nae.usace.army.mil/Missions/Regulatory/Mitigation/ for assistance with preparing mitigation in accordance with the 2008 Compensatory Mitigation for Losses of Aquatic Resources; Final Rule (33 CFR 332.3), hereafter referred to as "2008 Mitigation Rule."

*Avoidance* - Avoidance of impacts (direct and indirect) to aquatic resources means that project activities would not result in the placement of fill material or installation of a structure that could impact the resource area. Avoidance can include, but is not limited to, designing the project to avoid impacts to all or a portion of the aquatic resource areas.

*Minimization* - Minimization of impacts (direct and indirect) to aquatic resources means that measures are taken to ensure the amount and duration of impacts are limited to the maximum extent practicable. There are many minimization measures that could be implemented, prior to, during, or after the proposed activity, to ensure impacts are minimized. Examples include, but are not limited to:

- Permanent preservation of avoided aquatic features and buffer zone, in perpetuity. In these cases, the preserved area would be under a conservation easement and managed by conservation oriented third-party manager.
- Utilization of best management practices (BMPs) to ensure impacts are limited, and do not result in adverse impacts to the integrity and long-term functions of preserved/avoided features.

*Compensatory Mitigation* - Compensatory mitigation is generally required for PCN activities in which the impacts to the aquatic resources have been avoided and minimized to the maximum extent practicable but would still result in unavoidable adverse effects to the environment that are considered more than minimal or are contrary to the public interest. *Whatever the case may be, compensatory mitigation is no substitute for avoidance and minimization.*

### 2. Thresholds for Compensatory Mitigation

The basic objective of compensatory mitigation in the USACE Regulatory Program is to offset environmental losses resulting from unavoidable impacts to waters of the U.S. authorized by Department of the Army permits. **The following compensatory mitigation thresholds apply to all PCN activities that result in loss[1] of the resource area types listed below. Activities[2] in waters of the U.S. associated with the restoration, enhancement, and establishment of tidal and non-tidal aquatic resources are not considered loss and are not subject to the thresholds below.** Thresholds for different resource areas may not be combined to exceed 5,000 SF of total loss of all waters. The USACE will continue to evaluate projects on a case-by-case basis, and may in some cases require compensatory mitigation below these thresholds (e.g. minor impacts that add to a cumulative loss).

[1] See definition of loss in Section VII.
[2] These activities must result in net increases in aquatic resource functions and services to be exempted from the thresholds above.

| Compensatory Mitigation Thresholds in Massachusetts | | |
|---|---|---|
| **Resource Area** | **Non-Tidal Threshold** | **Tidal Threshold** |
| Stream | 200 LF | 200 LF |
| Bank Stabilization | 500 LF | 500 LF |
| Open Water | Project Dependent | Project Dependent |
| Wetland | 5,000 SF | 500 SF |
| Vernal Pool | All | N/A |
| SAV | Project dependent | 25 SF |
| Mudflat | N/A | 1,000 SF |
| Intertidal | N/A | 1,000 SF |

These thresholds can be utilized to determine at what point compensatory mitigation is required but are not used to determine how much mitigation may be needed to offset impacts to resources. Per the 2008 Mitigation Rule (33 CFR 332.3(f)(1)) "the amount of required compensatory mitigation must be, to the extent practicable, sufficient to replace lost aquatic resource functions. In cases where appropriate functional or condition assessment methods or other suitable metrics are available, these methods should be used where practicable to determine how much compensatory mitigation is required. If a functional or condition assessment or other suitable metric is not used, a minimum one-to-one acreage or linear foot compensation ratios must be used."

### 3. Compensatory Mitigation Hierarchy

Compensatory mitigation should follow the hierarchy as outlined in 33 CFR 332.3(b)(2-6) or current regulation. This hierarchy in order of preference includes: (1) Mitigation Bank credits, (2) In-Lieu Fee program credits, (3) permittee-responsible mitigation under a watershed approach, (4) permittee-responsible mitigation through on-site and in-kind mitigation, and (5) permittee-responsible mitigation through off-site and/or out-of-kind mitigation. If the proposed mitigation deviates from this mitigation hierarchy, the applicant **must** justify in writing why the proposed mitigation is environmentally preferable to the preferred method of compensatory mitigation (See 2008 Mitigation Rule). **In order for your application to be considered complete, you must provide a statement that discusses how your project will compensate for the loss or impact to aquatic resources.** If you are proposing permittee responsible mitigation, the 12 components of a mitigation plan (33 CFR 332.4(c)(2-14) must be addressed for your application to be considered complete. Prospective applicants are encouraged to contact USACE with questions at any time. Addressing the 12 components of a mitigation plan is commensurate with the amount of compensatory mitigation required, and USACE can assist prospective applicants with the level of information needed to satisfy each component.

For activities resulting in the loss of marine or estuarine resources, permittee-responsible mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee.

### 4. In-Lieu Fee (ILF)

The purchase of credits from the Massachusetts In-Lieu Fee Program (MA ILFP) is the ***preferred*** method of compensatory mitigation in Massachusetts since, as of the issuance date of this GP, there are no mitigation banks available in Massachusetts. The applicant shall develop a mitigation plan that addresses the baseline conditions at the impact site and the number of credits to be provided (see 33 CFR 332.4(c)(1)(ii)).

The MA ILFP is administered by the Massachusetts Department of Fish & Game (DFG) in accordance with the 2008 Mitigation Rule at 33 CFR 332. The Mitigation Rule governs in-lieu fee compensatory mitigation associated with USACE permits under §404 of the Clean Water Act and/or §9 or §10 of the Rivers and Harbors Act of 1899.

MA ILFP Website: https://www.mass.gov/in-lieu-fee-program

Acceptance of an ILF payment into the ILFP established by the 2014 MA ILFP Instrument (link below) is an acknowledgement by DFG that it assumes all legal responsibility for satisfying the mitigation requirements of the USACE (i.e., the implementation, performance, and long-term management and monitoring of the compensatory mitigation project(s) approved under this Instrument and subsequent Compensatory Mitigation Plans). This transfer of legal responsibility is established by: 1) the approval of this In-Lieu Fee Instrument; 2) receipt by the district engineer of a Notice of Credit Sale and Transfer of Legal Responsibility to DFG that is signed by the DFG and the permittee and dated; and 3) the transfer of fees from the permittee to DFG.

MA ILFP Fact Sheet: https://www.mass.gov/files/documents/2017/01/sj/ilfp-fact-sheet-ma-ilfp-fees.pdf

MA ILFP Instrument: https://www.mass.gov/files/documents/2016/08/nd/ilfp-final-instrument-dfg.pdf

**5. Permittee-Responsible**

The USACE may determine that the proposed permittee-responsible compensatory mitigation is appropriate on a case-by-case basis. As described in the Compensatory Mitigation Hierarchy section above, applicants must justify in writing why the proposed mitigation is environmentally preferable to the purchase of ILF credits. Applicants are encouraged to contact the USACE prior to submission of a permit application to seek further guidance regarding USACE mitigation requirements.

Applicants will demonstrate their proposed compensatory mitigation in writing by addressing the 12 components of a mitigation plan (33 CFR 332.4(c)(2-14). *Please note that all elements must be addressed, or the permit application will be deemed incomplete.* In certain circumstances, the district engineer may determine that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)). Guidance on how to address these components can be found on the New England District Mitigation webpage: https://www.nae.usace.army.mil/Missions/Regulatory/Mitigation/

Performance standards will be used to measure the successfulness of the mitigation project. A successful mitigation project is one that is self-sustaining. For a mitigation project that will restore, enhance, or create wetlands, proper performance standards must address hydrology, hydric soils, and hydrophytic vegetation. The mitigation proposal must include an explanation of quantitative methods used to measure the success of performance standards (i.e., percent cover may be measured using vegetation plots, hydrology may be measured using data loggers, soil cores may be taken and evaluated for hydric soil indicators).

Monitoring methods should include quantitative sampling methods following established, scientific protocols. Sampling documentation, as part of monitoring reports, should include maps and coordinates (also shapefiles, if available) showing locations of sampling points, transects, quadrats, etc. In addition, permanent photo stations should be established coincident with sampling locations.

## SECTION VI: FEDERAL & STATE AGENCY CONTACT INFORMATION & ORGANIZATIONAL WEBSITES

### Federal Agencies

U.S. Army Corps of Engineers
Regulatory Division
696 Virginia Road
Concord, Massachusetts 01742-2751
(978) 318-8338 (phone); (978) 318-8303 (fax)
www.nae.usace.army.mil/missions/regulatory

U.S. Army Corps of Engineers
Navigation Division – Section 408
696 Virginia Road
Concord, Massachusetts 01742-2751
*See link below for contact information:*
https://www.nae.usace.army.mil/Missions/Section-408/

National Marine Fisheries Service
55 Great Republic Drive
Gloucester, Massachusetts 01930
(978) 281-9300 (phone)
(*Federal endangered species & EFH)*

U.S. Fish & Wildlife Service
70 Commercial Street, Suite 300
Concord, New Hampshire 03301
(603) 223-2541 (phone)
*(Federal endangered species)*

National Park Service
15 State Street
Boston, Massachusetts 02109
(617) 223-5191 (phone)
(*Wild and Scenic Rivers*)

Bureau of Ocean and Energy Management
1849 C Street, NW
Washington D.C. 20240
202-208-6474 (phone)
(*Offshore Wind Facilities)*

Chief, Risk Analysis Branch
FEMA Region 1
99 High Street, 6th Floor
U.S. Department of Homeland Security
Boston, Massachusetts 02110
(617) 956-7576 (phone)

Commander (dpb)
First Coast Guard District
Battery Building
One South Street
New York, New York 10004-1466
(212) 514-4331 (phone); (212) 514-4337 (fax)
(*Bridge permits*)

U.S. Environmental Protection Agency
5 Post Office Square
Suite 100 (OEP06–3)
Boston, Massachusetts 02109-3912
(617) 918-1692 (phone)

**State Agencies in Massachusetts**

| Massachusetts Department of Environmental Protection (MassDEP) | |
|---|---|
| DEP Division of Wetlands & Waterways | 100 Cambridge Street, Suite 900<br>Boston, Massachusetts 02114<br>(617) 292-5695 |
| Northeast Region | 150 Presidential Way, Suite 300<br>Woburn, Massachusetts 01801<br>(978) 694-3200 |
| Southeast Region | 20 Riverside Drive, Route 105<br>Lakeville, Massachusetts 02347<br>(508) 946-2800 |
| Central Region | 8 New Bond Street<br>Worcester, Massachusetts 01606<br>(508) 792-7650 |
| Western Region | 436 Dwight Street<br>Springfield, Massachusetts 01103<br>(413) 784-1100 |

| Massachusetts Office of Coastal Zone Management (CZM)<br>Emails may be sent to: czm@mass.gov | |
|---|---|
| MA Office of Coastal Zone Management | 100 Cambridge Street, Suite 900<br>Boston, Massachusetts 02114<br>(617) 626-1200 |
| North Shore Region | 2 State Fish Pier<br>Gloucester, Massachusetts 01930<br>(978) 281-3972 |
| South Shore Region | 175 Edward Foster Road<br>Scituate, Massachusetts 02066 |
| Cape Cod and Islands Region | 3195 Main Street, P.O. Box 220<br>Barnstable, MA 02630 |
| South Coastal Region | 81-B County Road, Suite E<br>Mattapoisett, MA 02739 |

| Massachusetts Historical Commission (MHC) | |
|---|---|
| Office Location: | 220 Morrisey Boulevard<br>Boston, Massachusetts 02125<br>(617) 727-8470 |

| Massachusetts Board of Underwater Archaeological Resources (BUAR)<br>Emails may be sent to: david.s.robinson@mass.gov | |
|---|---|
| Office Location: | 100 Cambridge Street, Suite 900<br>Boston, Massachusetts 02114<br>(617) 626-1014 |

## SECTION VII: Definitions & Acronyms

**Artificial or Living Reef:** A structure which is constructed or placed in waters for the purpose of enhancing fishery resources and commercial and recreational fishing opportunities.
**Attendant Features:** Occurring with or as a result of; accompanying.
**Biodegradable:** A material that decomposes into elements found in nature within a reasonably short period of time and will not leave a residue of plastic or a petroleum derivative in the environment after degradation. In contrast, degradable plastics break down into plastic fragments that remain in the environment after degradation. Examples of biodegradable materials include jute, sisal, cotton, straw, burlap, coconut husk fiber (coir) or excelsior. In contrast, degradable plastics break down into plastic fragments that remain in the environment after degradation. Photodegradable, UV degradable or Oxo-(bio)degradable plastics are not considered biodegradable under this GP.
**Boating facilities:** These provide, rent or sell mooring space, such as marinas, yacht clubs, boat yards, dockominiums, municipal facilities, land/home owners, etc. Not classified as boating facilities are piers shared between two abutting properties or municipal mooring fields that charge an equitable user fee based on the actual costs incurred.
**Compensatory mitigation:** The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved. Must comply with the applicable provisions of 33 CFR 332. See also the New England District Compensatory Mitigation Guidance at http://www.nae.usace.army.mil/Missions/Regulatory/Mitigation.aspx.
**Construction mats:** Constructions, swamp and timber mats (herein referred to as “construction mats”) are generic terms used to describe structures that distribute equipment weight to prevent wetland damage while facilitating passage and providing work platforms for workers and equipment. They are comprised of sheets or mats made from a variety of materials in various sizes. A timber mat consists of large timbers bolted or cabled together. Corduroy roads, which are not considered to be construction mats, are cut trees and/or saplings with the crowns and branches removed, and the trunks lined up next to one another. Corduroy roads are typically installed as permanent structures. Like construction mats, they are considered as fill whether they are installed temporarily or permanently.
**Cumulative Impacts:** The impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.1). Although the impact of a particular discharge may constitute a minor change in itself, the cumulative effect of numerous such piecemeal changes can result in a major impairment of the water resources and interfere with the productivity and water quality of existing aquatic ecosystems. See 40 CFR 230.11(g).
**Currently serviceable:** Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.
**Dredging:**
*Improvement Dredging*: For the purposes of these GPs, this is dredging deeper than previously authorized by the USACE and dredged under that authorization.
*Maintenance Dredging*: For the purposes of these GPs, this is dredging from an area previously authorized by the USACE and dredged under that authorization. The USACE may require proof of authorization and dredging. Maintenance dredging typically refers to the routine removal of accumulated sediment to maintain the design depths of serviceable navigation channels, harbors, marinas, boat launches and port facilities. Maintenance dredging is conducted for navigational purposes and does not include any expansion of the previously dredged area. The USACE may

review a maintenance dredging activity as new dredging if sufficient time has elapsed to allow for the colonization of SAS, shellfish, etc.

*New Dredging*: For the purposes of these GPs, this is a) first time the USACE authorizes dredging of a particular location or b) dredging has not occurred for an extended period of time, and this has allowed for aquatic resources (i.e., eelgrass, shellfish, etc.) to redevelop in the area.

**Dredged material & discharge of dredged material:** These are defined at 33 CFR 323.2(c) and (d). The term dredged material means material that is excavated or dredged from waters of the U.S.

**Enhancement:** The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s) but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

**Ephemeral stream:** A stream with flowing water only during, and for a short duration, after precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.

**Erosion Controls:** 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.

**Establishment (creation):** The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area (33 CFR 332.2).

**Expansions:** Work that increases the footprint of fill, structures, depth of basin or drainage features, or floats, or slip capacity.

**Essential Fish Habitat (EFH):** The Federal Magnuson-Stevens Fishery Management and Conservation Act broadly defines EFH to include those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. See www.greateratlantic.fisheries.noaa.gov/habitat for more information.

**Fill material & discharge of fill material:** Material placed in waters of the U.S. where the material has the effect of either replacing any portion of a water of the U.S. with dry land or changing the bottom elevation of any portion of a water of the U.S. Fill material does not include any pollutant discharged into the water primarily to dispose of waste. These are defined at 33 CFR 323.2 (e) & (f).

**Federal navigation projects (FNPs):** These areas are maintained by the USACE; authorized, constructed and maintained on the premise that they will be accessible and available to all on equal terms; and comprised of USACE Federal anchorages, Federal channels and Federal turning basins. The buffer zone is equal to three times the authorized depth of a FNP. The following are FNPs in MA and more information, including the limits, is provided at www.nae.usace.army.mil/missions/navigation >> Navigation Projects:

- Andrews River, Harwich, MA
- Aunt Lydia's Cove
- Beverly Harbor
- Boston Harbor
- Buttermilk Bay Channel
- Canapitsit Channel
- Cape Cod Canal
- Chatham Harbor
- Cohasset Harbor
- Cross Rip Shoals, Nantucket Sound
- Cuttyhunk Harbor
- Dorchester Bay and Neponset River
- Duxbury Harbor
- Edgartown Harbor
- Essex River
- Fall River Harbor
- Falmouth Harbor
- Gloucester Harbor and Annisquam River
- Green Harbor
- Hingham Harbor
- Hyannis Harbor
- Ipswich River
- Island End River (Chelsea, MA)
- Kingston Harbor
- Lagoon Pond
- Little Harbor Woods Hole

Lynn Harbor
Malden River
Menemsha Creek
Merrimack River
Mystic River
Nantucket Harbor of Refuge
New Bedford and Fairhaven Harbor
Newburyport Harbor
Oak Bluffs Harbor
Pigeon Cove Harbor
Plymouth Harbor
Pollock Rip Shoals, Nantucket Sound
Provincetown Harbor
Red Brook Harbor
Rockport Harbor
Salem Harbor
Sandy Bay Harbor of Refuge
Saugus River
Scituate Harbor
Sesuit Harbor
Taunton River
Vineyard Haven Harbor
Wareham Harbor
Wellfleet Harbor
Westport River and Harbor
Weymouth Back River
Weymouth Fore and Town Rivers
Winthrop Harbor
Woods Hole Channel

**Flume:** An open artificial water channel, in the form of a gravity chute, which leads water from a diversion dam or weir alongside a natural flow. A flume can be used to measure the rate of flow.
**FNP buffer zone:** The buffer zone of a USACE Federal Navigation Project (FNP) is equal to three times the authorized depth of the FNP.
**Frac out:** During horizontal directional drilling (HDD) operations, drilling fluid travels up the borehole into a pit. When the borehole becomes obstructed or the pressure becomes too great inside the borehole, the ground fractures and fluid escapes to the surface and may affect surface waters.
**Ground disturbance:** Any activity that compacts, relocates, overturns, removes, mixes, or otherwise disturbs the ground, including under water. Ground disturbance can be caused by the use of hand tools (shovels, pick axe, posthole digger, etc.), heavy equipment (excavators, backhoes, bulldozers, dredgers, trenching and earthmoving equipment, etc.), and heavy trucks (large four wheel drive trucks, dump trucks and tractor trailers, etc.). Trenching, bulldozing, dredging, excavating, scraping, and plowing are typical examples of ground disturbance activities.
**Height:width ratio:** The height of structures shall at all points be equal to or exceed the width of the deck. For the purpose of this definition, height shall be measured from the marsh substrate to the bottom of the longitudinal support beam.
**High Tide Line (HTL):** The line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides 58 that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds. (33 CFR 328). Refer to the highest predicted tide for the current year at the nearest NOAA tide gage. https://tidesandcurrents.noaa.gov/map/index.html
**Historic Property:** Any prehistoric or historic site (including archaeological sites), district, building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60).
**Impacts:**
*Direct Impacts:* Effects that are caused by the activity and occur at the same time and place (40 CFR 1508.7).
*Indirect impacts:* Effects that are caused by the activity and are later in time or farther removed in distance, but are still reasonably foreseeable.
*Secondary impacts:* Effects on an aquatic ecosystem that are associated with a discharge of dredged or fill materials, but do not result from the actual placement of the dredged or fill material.

Information about secondary effects on aquatic ecosystems shall be considered prior to the time final section 404 action is taken by permitting authorities. Some examples of secondary effects on an aquatic ecosystem are: aquatic areas drained, flooded, fragmented; fluctuating water levels in an impoundment and downstream associated with the operation of a dam; septic tank leaching and surface runoff from residential or commercial developments on fill; and leachate and runoff from a sanitary landfill located in waters of the U.S. See 40 CFR 230.11(h).

**Incidental Fallback:** Incidental fallback is the redeposit of small volumes of dredged material that is incidental to excavation activity in waters of the U.S. when such material falls back to substantially the same place as the initial removal (33 CFR 323.2(d)(2)(iii)).

**In the dry:** Work that is done under dry conditions, e.g., work behind cofferdams or when the stream or tide is waterward of the work.

**Independent utility:** A test to determine what constitutes a single and complete non-linear project in the USACE Regulatory Program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. 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.

**Individual permit:** A Department of the Army authorization that is issued following a case-by-case evaluation of a specific structure or work in accordance with the procedures of 33 CFR 322, or a specific project involving the proposed discharge(s) in accordance with the procedures of 33 CFR 323, and in accordance with the procedures of 33 CFR 325 and a determination that the proposed discharge is in the public interest pursuant to 33 CFR 320.

**Intermittent stream:** An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.

**Intertidal:** The area in between mean low water and the high tide line.

**Living reef:** See the definition of “artificial or living reef.”

**Living shoreline:** A term used to describe a low-impact approach with a substantial biological component to shoreline protection and restoration along coastal shores, riparian zones, lacustrine fringe wetlands, or oyster or mussel reef structures. This approach integrates natural features to restore, enhance, maintain, or create habitat, functions, and processes while also functioning to mitigate flooding or shoreline erosion. Living shorelines may stabilize banks and shores with small fetch and gentle slopes that are subject to low-to mid-energy waves. A living shoreline has a footprint that is made up mostly of native material. It incorporates vegetation or other living, natural “soft” elements alone or in combination with some type of harder shoreline structure (e.g., oyster or mussel reefs or rock sills) for added protection and stability. Living shorelines should maintain the natural continuity of the land-water interface and retain or enhance shoreline ecological processes.

**Loss of waters of the United States:** Waters of the U.S. that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. The loss of stream bed includes the acres of stream bed that are permanently adversely affected by filling or excavation because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the U.S. is a threshold measurement of the impact to jurisdictional waters or wetlands for determining whether a project may qualify for a GP; it is not a net threshold that is calculated after considering compensatory mitigation that maybe used to offset losses of aquatic functions and services. Waters of the U.S. temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the U.S. Impacts resulting from activities that do not require Department of the Army authorization, such as activities eligible for exemptions under section 404(f) of the Clean Water Act, are not considered when calculating the loss of waters of the U.S.

**Maintenance:** The repair, rehabilitation, or in-kind replacement of any previously authorized, currently serviceable structure or fill, or of any currently serviceable structure or fill authorized by 33 CFR 330.3 – "Activities occurring before certain dates," provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification. Maintenance includes minor deviations in the structure's configuration or filled area, including those due to changes in materials, construction techniques, or current construction codes or safety standards that are necessary to make repair, rehabilitation, or replacement are authorized. Currently serviceable means useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.
**Maintenance Exemption**: In accordance with 33 CFR 323.4(a)(2), any discharge of dredged or fill material that may result from any of the following activities is not prohibited by or otherwise subject to regulation under Section 404 of the CWA: "Maintenance, including emergency reconstruction of recently damaged parts, of currently serviceable structures such as dikes, dams, levees, groins, riprap, breakwaters, causeways, bridge abutments or approaches, and transportation structures. Maintenance does not include any modification that changes the character, scope, or size of the original fill design."
**Mean high water:** Line on the shore reached by the plane of the average high water. Where precise determination of the actual location of the line becomes necessary, it must be established by survey with reference to the available tidal datum, preferably averaged over a period of 18.6 years. Less precise methods, such as observation of the "apparent shoreline" which is determined by reference to physical markings, lines of vegetation, or changes in type of vegetation, may be used only where an estimate is needed of the line reached by the mean high water.
**Mechanized land clearing:** Land clearing activities using mechanized equipment such as backhoes or bulldozers with sheer blades, rakes or discs constitute point source discharges and are subject to section 404 jurisdiction when they take place in wetlands or waters of the U.S (Regulatory Guidance Letter 90-05).
**Metallic mineral:** Any ore or material to be excavated from the natural deposits on or in the earth for its metallic mineral content to be used for commercial or industrial purposes. "Metallic mineral" does not include thorium or uranium.
**Minor deviations:** Deviations in the structure's configuration or filled area, including those due to changes in materials, construction techniques, or current construction codes or safety standards, which are necessary to make repair, rehabilitation, or replacement are permitted, provided the adverse environmental effects resulting from such repair, rehabilitation, or replacement are minimal.
**Natural Rocky Habitats:** Intertidal and subtidal substrates of pebble-gravel, cobble, boulder, or rock ledge and outcrops. Manufactured stone (e.g., cur or engineered riprap) is not considered a natural rocky habitat. Natural rocky habitats are either found as pavement (consolidated pebble-gravel, cobble, or boulder areas) or as a mixture with fines (i.e., clay and sand) and other substrates. Rocky habitats as EFH are defined as follows: (1) All pebble-gravel, cobble, or boulder pavements; (2) Pebble-gravel mixed with fines: mixed substrate of pebble-gravel and fines where pebble-gravel is an evident component of the substrate (either through visual observation or within sediment samples). Sediment samples with a content of 10% or more of pebble-gravel in the top layer (6-12 inches) should be delineated; (3) Scattered cobble, scattered boulder, scattered cobble/boulder: mixed substate of cobble and/or boulder and other substrates. The aerial extent of cobbles and/or boulders should be delineated; and (4) All rock ledge outcrops: area should be delineated along the edge of the ledge/outcrop (as defined by NMFS Habitat and Ecosystems Services Branch, Gloucester, MA).
**Navigable waters or Navigable waters of the U.S.:** These waters are subject to section 10 of the Rivers and Harbors Act of 1899 and are defined as those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce (33 CFR Part 329). Work or structures in navigable

waters require permits pursuant to §9 and §10 of the Rivers and Harbors Act of 1899. Also see the definition of “waters of the U.S.” below.
Note: Currently the following non-tidal waters have been determined to be navigable waters of the U.S. subject to permit jurisdiction in Massachusetts: Merrimack River, Connecticut River, and Charles River to the Watertown Dam.
**Nearshore disposal:** This is defined in the USACE Coastal Engineering Manual as “(1) In beach terminology an indefinite zone extending seaward from the shoreline well beyond the breaker zone. (2) The zone which extends from the swash zone to the position marking the start of the offshore zone, typically at water depths of the order of 20m.” A nearshore berm is an artificial berm built in shallow water using dredged material. Often, the berm is intended to renourish the adjacent and downdrift shore over time under the influence of waves and currents.
**Non-regulated activity:** Only structures or fills that were previously authorized and are in compliance with the terms and condition of the original authorization can be maintained as a non-regulated activity under 33 CFR 323.4(a)(2). Minor deviations from the previously authorized footprint do not qualify as a non-regulated activity and require new authorization from the USACE. The state’s maintenance provisions may differ from the USACE and a project may require reporting and written authorization from the state.
**Non-tidal wetlands:** A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. Non-tidal wetlands contiguous to tidal waters are located landward of the HTL (*i.e.,* spring HTL). Also see the definition of “Waters of the U.S.” below.
**Oil or natural gas pipeline:** Any pipe or pipeline for the transportation of any form of oil or natural gas, including products derived from oil or natural gas, such as gasoline, jet fuel, diesel fuel. heating oil, petrochemical feedstocks, waxes, lubricating oils, and asphalt.
**Ordinary High Water Mark (OHWM):** A line on the shore established by the fluctuations of water and indicated by physical characteristics, or by other appropriate means that consider the characteristics of the surrounding areas. See 33 CFR 328.3(e).
**Overall project:** The overall project, for purposes of these GPs, includes all regulated activities that are reasonably related and necessary to accomplish the project purpose. Also see the definition of “single and complete linear project.”
**Perennial stream**: A perennial stream has flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.
**Practicable:** Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.
**Permanent impacts:** Permanent impacts means waters of the U.S. that are permanently affected by filling, flooding, excavation, or drainage because of the regulated activity. Permanent impacts include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody.
**Preconstruction notification (PCN):** A request submitted by the applicant to the USACE for confirmation that a particular activity is authorized by these GPs. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Preconstruction notification may be required by the terms and conditions of these GPs. A PCN may be voluntarily submitted in cases where PCN is not required and the applicant wants confirmation that the activity is authorized under these GPs.
**Preservation:** The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions (33 CFR 332.2).
**Real estate subdivision:** Includes circumstances where a landowner or developer divides a tract of land into smaller parcels for the purpose of selling, conveying, transferring, leasing, or

developing said parcels. This would include the entire area of a residential, commercial or other real estate subdivision, including all parcels and parts thereof

**Reconfiguration zone:** A USACE authorized area in which permittees may rearrange pile-supported structures and floats without additional authorizations. A reconfiguration zone does not grant exclusive privileges to an area or an increase in structure or float area.

**Re-establishment:** The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/ historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in again in aquatic resource area and functions (33 CFR 332.2).

**Reference Site:** Reference sites - Compensatory restoration, rehabilitation, and creation mitigation projects should seek to duplicate the features of reference aquatic resources or enhance connectivity with adjacent natural upland and aquatic resource landscape elements. Performance standards related to reference sites are encouraged. Mitigation project sites must be selected based on their ability to be, and continue to be, resistant to disturbance from the surrounding landscape, by locating them adjacent to refuges, buffers, green spaces, and other preserved natural elements of the landscape. In general, aquatic resource mitigation projects must be designed to be self-sustaining, natural systems within the landscape and climate in which they are located, with little or no ongoing maintenance and/or hydrologic manipulation.

**Rehabilitation:** The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area (33 CFR 332.2).

**Restoration:** The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation (33 CFR 332.2).

**Riffle and pool complex:** Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a course substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

**Sedimentation:** Sedimentation is defined as the process of deposition of a solid material from a state of suspension. Deposited sediments may accumulate and have temporal impacts to aquatic resource areas. See secondary effects definition above. For the purposes of this document, “greater than minimal sedimentation” is generally not considered to occur when using proper erosion controls (GC 25) or when sedimentation is considered “de minimis” 33 CFR 323.2(d)(5).

**Single and complete linear project:** A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term “single and complete project” is defined as that portion of the total linear project proposed or accomplished by one owner/ developer or partnership or other association of owners/developers that includes all crossings of a single water of the U.S. (i.e., a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for the purposes of these GPs. 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.

**Single and complete non-linear project:** For non-linear 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 single and complete

non-linear project must have independent utility (see the definition of “independent utility”). Single and complete non-linear projects may not be “piecemealed” to avoid the limits in a GP authorization.
**Special aquatic sites (SAS):** These include inland and saltmarsh wetlands, mud flats, vegetated shallows, sanctuaries and refuges, coral reefs, and riffle and pool complexes. These are defined at 40 CFR 230.3 and listed in 40 CFR 230 Subpart E.
**Streambed:** The stream substrate between the OHW marks on each side. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the streambed, but outside of the OHW marks, are not considered part of the streambed.
**Stream channelization:** The manipulation of a stream’s course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized stream remains a water of the U.S.
**Structure:** An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.
**Temporal loss:** The time lag between the loss of aquatic resource functions caused by the permitted impacts and the replacement of aquatic resource functions at the compensatory mitigation site(s) (33 CFR 332.2).
**Temporary impacts:** Temporary impacts include, but are not limited to, jurisdictional waters that are temporarily filled, flooded, excavated, or drained because of the regulated activity. Impacts are considered temporary when they are removed immediately upon completion of the activity. Note: An impact is considered temporary when the aquatic resource is restored to pre-project conditions, but effects to archaeological and/or cultural resources may be permanent in duration.
**Tidal wetlands:** A wetland that is subject to the ebb and flow of the tide. See the definition of “Waters of the U.S.” below.
**Tide gates:** Structures such as duckbills, flap gates, manual and self-regulating tide gates, etc. that regulate or prevent upstream tidal flows.
**Turbidity:** A measure of the level of particles such as sediment, plankton, or organic by-products, in a body of water. As the turbidity of water increases, it becomes denser and less clear due to a higher concentration of these light-blocking particles. Suspended solids are more likely to carry toxic chemicals, and can also negatively affect aquatic organisms, water temperature, and dissolved oxygen levels.
**Utility line:** Any pipe or pipeline for the transportation of any gaseous, liquid, liquescent, or slurry substance, for any purpose that is not oil, natural gas, or petrochemicals. A utility line also includes any cable, line, or wire for the transmission for any purpose of electrical energy, telephone, and telegraph messages, and radio and television communication. The term ‘utility line’ does not include activities that drain a water of the U.S., such as drainage tile or French drains, but it does apply to pipes conveying drainage from another area.
**Vegetated shallows:** Permanently inundated areas that under normal circumstances support communities of rooted aquatic vegetation, such as eelgrass *(Zostera marina)* and widgeon grass (*Rupia maritima*) in marine systems (does not include salt marsh) as well as a number of freshwater species in rivers and lakes. These are a type of SAS defined at 40 CFR 230.43. Vegetated shallows are commonly referred to as submerged aquatic vegetation or SAV. Vegetated shallow survey guidance is located at www.nae.usace.army.mil/missions/regulatory /jurisdiction-and-wetlands. Maps of vegetated shallows in Massachusetts are located at www.nae.usace.army.mil/missions/regulatory/state-general-permits/massachusetts-general-permit.
**Vernal pools:** For the purposes of these GPs, vernal pools are depressional wetland basins that typically dry up in most years and may contain inlets or outlets, typically of intermittent flow. Vernal pools range in both size and depth depending upon landscape position and parent material(s). In

most years, vernal pools support one or more of the following obligate indicator species: wood frog, spotted salamander, blue-spotted salamander, marbled salamander, Jefferson's salamander and fairy shrimp. However, they should preclude sustainable populations of predatory fish.

**Water diversions:** Water diversions are activities such as bypass pumping (e.g., "dam and pump") or water withdrawals. Temporary flume pipes, culverts or cofferdams where normal flows are maintained within the stream boundary's confines aren't water diversions. "Normal flows" are defined as no change in flow from pre-project conditions.

**Waters of the United States (U.S.)** These waterbodies are the waters where permits are required for the discharge of dredged or fill material pursuant to §404 of the CWA. These waters include but are not limited to navigable waters of the U.S. and tidal wetlands and include many non-tidal wetlands and other waterbodies. See definitions for navigable waters of the U.S., tidal wetlands, waterbody, and non-tidal wetlands. (33 CFR 328)

**Waterbody:** Examples of "waterbodies" include oceans, coastal waters, rivers, streams, ditches, lakes, ponds, and wetlands. If a wetland is adjacent to a waterbody determined to be a water of the U.S., that waterbody and any adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)).

**Weir:** A barrier across a river designed to alter the flow characteristics. In most cases, weirs take the form of a barrier, smaller than most conventional dams, across a river that causes water to pool behind the structure and allows water to flow over the top. Weirs are commonly used to alter the flow regime of a river, prevent flooding, measure discharge and help render a river navigable.

**Wetland:** Wetlands are areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. The Corps of Engineers Wetlands Delineation Manual in conjunction with the associated regional supplement should be used to determine if a wetland is present and delineate wetland boundaries.

**Acronyms**

| | |
|---|---|
| BMPs | Best Management Practices |
| BUAR | Massachusetts Board of Underwater Archaeological Resources |
| CWA | Clean Water Act |
| CZM | Coastal Zone Management |
| EPA | U.S. Environmental Protection Agency |
| ESA | Endangered Species Act |
| EFH | Essential Fish Habitat |
| FNP | Federal Navigation Project |
| GC | General Condition |
| GP | General Permit |
| HTL | High Tide Line |
| IP | Individual Permit |
| LID | Low impact development |
| MassDEP | Massachusetts Department of Environmental Protection |
| MA DMF | Massachusetts Division of Marine Fisheries |
| MHC | Massachusetts Historical Commission |
| MHW | Mean High Water |
| MLLW | Mean Lower Low Water |
| MLW | Mean Low Water |
| NHPA | National Historic Preservation Act |
| NMFS | National Marine Fisheries Service |
| OHW | Ordinary High Water Mark |
| PCN | Preconstruction Notification |
| SAS | Special Aquatic Sites |
| SF | Square Feet |
| SV | Self-Verification |
| SHPO | State Historic Preservation Officer |
| THPO | Tribal Historic Preservation Officer |
| USFWS | U.S. Fish and Wildlife Service |
| USCG | U.S. Coast Guard |
| USFS | U.S. Forest Service |
| USGS | U.S. Geological Service |
| WQC | Water Quality Certification |

## Appendix A: Guidance for NHPA Section 106 Compliance in Massachusetts

### 1. Purpose & Applicability

Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA) (54 U.S.C § 306108), requires Federal agencies to take into account the effects of their undertakings on Historic Properties and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings. Therefore, in order for an activity to be eligible for authorization under the 2023 Massachusetts General Permit, the USACE must consider the effect the activity may have on historic properties. Historic properties may include, but are not limited to, historic districts, archaeological districts, sites, buildings, structures, objects, sacred sites, traditional cultural places, and traditional cultural landscapes that are included in, or eligible for inclusion in, the National Register of Historic Places (NRHP).

This guidance applies to projects that require authorization under Section 404 of the Clean Water Act (33 U.S.C. § 1344) and/or Section 10 of the Rivers and Harbors Act (33 U.S.C. §403) and will assist applicants when evaluating and documenting the presence of historic properties within or near their project site(s). The prospective applicant will evaluate their proposed project using the criteria below to determine if their project has the potential to affect historic properties and if so, whether or not historic properties are present or are likely to be present. All activities authorized under these GPs shall follow the terms outlined in General Condition 14: Historic Properties and General Condition 6: Tribal Rights & Burial Sites. Prospective applicants shall complete their due diligence according to the procedures below for their application to be deemed complete.

### 2. No Potential to Affect Historic Properties

Certain activities do not have the potential to cause effects on historic properties, assuming such historic properties were present, based on the nature of the activity and site-specific conditions. Therefore, these activities **do not** require historic property identification efforts or notification of the SHPO, THPOs, and/or BUAR under Section 106. The USACE has determined the following activities within the stated parameters have no potential to affect historic properties:

| General Permit | Activity Parameters |
|---|---|
| 1 | Temporary buoys, markers and similar structures that are placed during winter events on ice and removed before spring thaw. |
| 2 | Repair or rehabilitation of structures that are less than 45 years in age. Any temporary structures or fills or work necessary to complete repairs or rehabilitation must not result in any ground disturbance. |
| 3 | Maintenance and replacement of moorings that are less than 45 years in age. |
| 6 | Maintenance, repair, replacement, or removal of utility lines, oil or natural gas pipelines, outfall or intake structures, and/or appurtenant features that are less than 45 years in age when all access, staging, and ground disturbance is strictly limited to previously disturbed areas (including any previous ground disturbance). Replacement must be in kind or smaller in size.<br>Installation of tide gates on outfall structures that are less than 45 years in age. |
| 7 | Maintenance dredging of previously dredged areas where dredging does not extend beyond the original bottom elevations. |

| | |
|---|---|
| | Disposal of dredged material at an existing established and USACE-approved confined aquatic disposal cell.<br>Beach nourishment in ongoing existing nourishment areas. |
| 11 | Fish and wildlife harvesting and attraction devices and activities. |
| 13 | Cleanup of hazardous and toxic waste materials, including contaminated sediments, that are less than 45 years in age. |
| 16 | Removal of land-based and water-based renewable energy generation facilities and hydropower projects that are less than 45 years in age. |
| 18 | Installation of buoys, floats, racks, trays, nets, lines, tubes, containers, and other structures for previously authorized by the USACE and ongoing aquaculture activities.<br>Discharges of dredged or fill material into tidal or non-tidal waters necessary for shellfish seeding, rearing, cultivating, transplanting, and harvesting activities for previously authorized and ongoing aquaculture activities. |
| 20 | Maintenance activities for existing living shorelines excluding maintenance activities that require new ground disturbance such as excavation or re-sloping of the bank/shoreline. |
| 22 | Reshaping or maintenance of existing drainage ditches less than 45 years in age excluding ditch enlargement. |
| 23 | Placement of temporary and removable linear transportation and wetland/stream crossings that have no ground disturbance prior to placement, during placement, and during removal (i.e., placed on the surface and subsequently removed within one year of placement). |
| 24 | Placement of temporary and removable crossings and cofferdams that have no ground disturbance prior to placement, during placement, and during removal (i.e., placed on the surface and subsequently removed within one year of placement). |
| 25 | Emergency repair of existing structures and/or fills less than 45 years in age. |

### 3. Historic Property Identification

If the activity does not fit under the criteria above, the following historic property identification efforts must be completed to demonstrate compliance with Section 106 of the NHPA. This includes documenting previously identified and unidentified historic properties in the project area.

a. Previously Identified Historic Properties: The prospective applicant shall document if previously identified historic properties are present on or adjacent to the project site by notifying the Massachusetts Historical Commission (MHC) and the Massachusetts Board of Underwater Archaeological Resources (BUAR), as appropriate, of the proposed project. The MHC and BUAR will check their records for the presence of any previously identified historic properties. The following outlines how prospective applicants should notify the MHC and BUAR.

i. The prospective applicant will notify the SHPO and BUAR to identify any previously recorded cultural resources. Applicants shall mail a completed Project Notification Form[18], project narrative, location (coordinates), plans, soil maps, and information on known cultural resources to the MHC. The MHC does not accept submissions via email. Applicants shall email or mail this information to the BUAR when the activity is located in lakes, ponds, rivers, and/or navigable waters in MA. Emailed file attachments should be <10MB. Any files >10MB shall be delivered via a file exchange system or the hard copy documents shall be mailed. Preferred contact information is listed below.

ii. **When sending this information, applicants must also document proof of receipt OR proof the information was delivered.** Proof of receipt constitutes a certified mail receipt, read email receipt, or other mail/email/online tracking services that document the information has reached the intended recipient(s). Proof the information was delivered constitutes a certificate of mailing, email delivery receipt, or other mail/email/online services that document the information was sent at a particular time. When using proof of delivery such (e.g., certificate of mailing), applicants should add 5 days to the 30-day notification period so the mail has time to reach its intended recipient. When using proof of receipt, the applicant may begin the 30-day notification period from the date received by the intended recipient.

iii. When mailing or emailing the application materials, applicants should include the following statement: “Please send responses to this notification directly to the USACE via email: cenae-r-ma@usace.army.mil or address regular mail responses to: Regulatory Division, U.S. Army Corps of Engineers, New England District, 696 Virginia Road, Concord, Massachusetts 01742-2751.” Email responses to the USACE are strongly preferred. The SHPO and BUAR will contact the USACE and cc the applicant(s) within 30 days of receiving the notification if their records indicate that historic properties are located in the project vicinity, and if additional review and/or surveys are recommended to ensure NHPA compliance. If the SHPO and/or BUAR do not respond within 30 days of receiving the notification, is it presumed that no known historic properties are present.

b. Previously Unidentified Historic Properties: The prospective applicant shall evaluate the project site and determine the sensitivity for the presence of historic properties if the project site has not been previously surveyed for cultural resources within the last 10 years. If the sensitivity is determined to be moderate to high, an intensive archaeological and/or architectural survey is required to investigate the potential presence of historic properties. The individual conducting this survey must meet the Secretary of the Interior’s Standards for Professional Qualifications (48 FR 44738-44739) in the discipline relevant to a particular resource type. For example, archeologists should not document and evaluate buildings or structures and architectural historians should not document and evaluate archaeological sites. The identification and qualifications for those participating in any survey and evaluation of resources should be included with the survey results. The criteria listed below are indicators of low sensitivity for the presence of historic properties for consideration when determining if an archaeological or architectural survey is needed.

Low sensitivity indicators:

- Previous archaeological and/or architectural survey within the last 10 years with negative results.
- In a location created in modern times (i.e., built on fill placed within the last 45 years or within an area excavated within the last 45 years).
- USACE has reviewed the project description and determined that a survey is not warranted based on the proposed activity and its location.

State survey guidance and standards are provided in the September 1995 Historic Properties Survey Manual Guidelines for the Identification of Historical and Archaeological Resources in Massachusetts available. State survey guidance and standards for underwater surveys are provided

[18] https://www.sec.state.ma.us/mhc/mhcform/formidx.htm

in the Board of Underwater Archaeological Resources' 2022 Policy Guidance on Archaeological Investigations and Related Survey Standards for the Discovery of Underwater Archaeological Resources. This guidance is available on the NAE Regulatory website: https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/.

Please note, a negative result from MHC and/or BUAR does not necessarily mean no historic properties are present. Often proposed project sites have not been previously subject to a survey, so historic properties which may be present have not been previously recorded.

## 4. Tribal Coordination

Prospective applicants shall mail the Project Notification Form, project narrative, location (coordinates), plans with locus map, soil maps, and information on cultural resources to the Wampanoag Tribe of Gay Head (Aquinnah), Mashpee Wampanoag Tribe, Narragansett Indian Tribe, and/or Stockbridge-Munsee Community Band of Mohican Indians with interests in the project location. Preferred tribal contact information, including their respective areas of interest, can be found below. Applicants shall follow the same procedures as identified in Section 3(a)i-iii above when notifying Tribes of the proposed activity. Applicants shall provide the USACE with any responses received from the tribe(s) with their PCN application. If a tribe does not respond within 30 days of receiving the notification, the applicant shall provide USACE with all documentation of tribal outreach with their SV or PCN submission (e.g., emails, letters, phone call log, etc.). If the tribe indicates the presence of a previously unrecorded cultural resource, including a traditional cultural property (TCP) or traditional cultural landscape (TCL), a PCN is required.

## 5. Effect Determination

The project may have the potential to affect historic properties and/or tribal resources if 1) notification recipients respond within 30 calendar days of notification with concerns, 2) historic properties eligible for listing, or potentially eligible for listing in the NRHP, are present or 3) tribal resources are known to be present. The USACE may need to further review the project to confirm potential effects to historic properties and/or tribal resources. A PCN is required for any activity that may affect a historic property.

The USACE may determine the project will have 'no effect' on historic properties (i.e., no historic properties affected) when procedures outlined in Section 3 above are followed and no cultural resources are identified. Similarly, if historic properties are identified and will be completely avoided, the USACE may determine 'no effect.'

## 6. Contact Information:

### *Massachusetts Historical Commission*

The Massachusetts Archives Building
220 Morrissey Boulevard
Boston, Massachusetts 02125

No email. Applicants or their representatives must send project information via certified mail and submit the certified mail receipt to the USACE or send via regular mail and submit proof of delivery.

Area of concern: All of Massachusetts.

***Massachusetts Board of Underwater Archaeological Resources (BUAR)***

100 Cambridge Street, Suite 900
Boston, Massachusetts 02114
Email: david.s.robinson@mass.gov

Applicants or their representatives must send project information via email (***strongly preferred***) or regular mail and provide proof of receipt or proof of delivery.

Area of concern: All waterbodies in Massachusetts.

***Wampanoag Tribe of Gay Head (Aquinnah)***

Bettina Washington
Tribal Historic Preservation Officer (THPO)
20 Black Brook Road
Aquinnah, Massachusetts 02535
Email: thpo@wampanoagtribe-nsn.gov

Applicants or their representative must send project information via email (***preferred***) or regular mail and provide proof of receipt or proof of delivery.

Area of concern: All of Massachusetts.

***Mashpee Wampanoag Tribe***

ATTN: David Weeden
Tribal Historic Preservation Officer (THPO)
483 Great Neck Road South
Mashpee, Massachusetts 02649
Email: 106review@mwtribe-nsn.gov
Cc: David.weeden@mwtribe-nsn.gov

Applicants or their representative must send project information via email (***preferred***) or regular mail and provide proof of receipt or proof of delivery.

Area of concern: All of Massachusetts.

***Narragansett Indian Tribe***

ATTN: John Brown
Tribal Historic Preservation Officer (THPO)
Narragansett Indian Longhouse
4425 South County Trail
Charlestown, Rhode Island 02813
Email: tashtesook@aol.com

Applicants or their representative must send project information via email (***preferred***) or regular mail and provide proof of receipt or proof of delivery.

Area of concern: Massachusetts east of the Connecticut River.

***Stockbridge-Munsee Community Band of Mohican Indians***

ATTN: Jeff Bendremer
Tribal Historic Preservation Manager
Stockbridge-Munsee Community
Tribal Historic Preservation Extension office
86 Spring Street
Williamstown, Massachusetts 01267
Email: thpo@mohican-nsn.gov

Applicants or their representative must send project information via email (***preferred***) or regular mail and provide proof of receipt or proof of delivery.

Area of concern: West of the Connecticut River and Northfield, Montague, Miller's Falls, Turner's Falls, Sunderland, Amherst, Hadley, South Hadley, Chicopee, Springfield and Longmeadow.

# APPENDIX B PRE-CONSTRUCTION NOTIFICATION

U.S. Army Corps of Engineers (USACE), New England District (NAE)

# PRE-CONSTRUCTION NOTIFICATION (PCN)

**DATA REQUIRED BY THE PRIVACY ACT OF 1974**

**Authority** Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332.

**Principal Purpose** The information provided will be used in evaluating activities under Pre-Construction Notification procedures within New England.

**Routine Uses** This information may be shared with other federal, state, and local government agencies during the application review process. Submission

**Disclosure** of requested information is voluntary. However, if information is not provided the PCN application cannot be fully evaluated nor can USACE render a permit decision.

**Instructions** The applicant must complete ALL required sections of this document before their submission to USACE. The PCN submission to USACE shall include one set of drawings which show the location and character of the proposed activity, statements that address each required field below, and documentation that supports each field (e.g., emails, letters, description/narrative, phone calls, surveys, reports, etc.). Electronic submissions to the following address are strongly preferred: cenae-r-ma@usace.army.mil. The email subject line shall contain the following: General Permit #, PCN, City/Town, and date submitted. An application that is not completed in full will be returned.

**(ITEMS 1 THRU 4 TO BE FILLED BY USACE)**

| 1. APPLICATION NO. | 2. FIELD OFFICE CODE | 3. DATE RECEIVED | 4. DATE APPLICATION COMPLETE |
|---|---|---|---|
| | | | |

**(ITEMS BELOW TO BE FILLED BY APPLICANT)**

| 5. APPLICANT'S NAME | 8. AUTHORIZED AGENT'S NAME AND TITLE (*agent is not required*) |
|---|---|
| First - Middle - Last - | First - Middle - Last - |
| Company - | Company - |
| E-mail Address - | E-mail Address - |
| 6. APPLICANT'S ADDRESS: | 9. AGENT'S ADDRESS: |
| Address- | Address- |
| City - State - Zip - Country - | City - State - Zip - Country - |
| 7. APPLICANT'S PHONE NOs. with AREA CODE | 10. AGENT'S PHONE NOs. with AREA CODE |
| a. Residence b. Business c. Fax d. Mobile | a. Residence b. Business c. Fax d. Mobile |

**STATEMENT OF AUTHORIZATION**

11. I hereby authorize, _____ to act on my behalf as my agent in the processing of this general permit PCN application and to furnish, upon request, supplemental information in support of this general permit PCN application.

_____ _____

SIGNATURE OF APPLICANT DATE

**NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY**

12. PROJECT NAME or TITLE (*see instructions*)

| 13. NAME OF WATERBODY, IF KNOWN (*if applicable*) | 14. PROPOSED ACTIVITY STREET ADDRESS (*if applicable*) |
|---|---|
| 15. LOCATION OF PROPOSED ACTIVITY (*see instructions*) | City: State: Zip: |
| Latitude: °N Longitude: °W | |

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (*see instructions*)

State Tax Parcel ID: Municipality:

Section: Township: Range:

17. DIRECTIONS TO THE SITE.

18. IDENTIFY THE SPECIFIC GENERAL PERMIT(S) YOU PROPOSE TO USE:

19. DESCRIPTION OF PROPOSED GENERAL PERMIT ACTIVITY (*see instructions*)

20. DESCRIPTION OF PROPOSED MITIGATION MEASURES (*see instructions*)

21. PURPOSE OF GENERAL PERMIT ACTIVITY (*Describe the reason or purpose of the project, see instructions*)

22. Quantity of Wetlands, Streams, or Other Types of Waters Directly Affected by Proposed General Permit Activity (*see instructions*)

| Area (square feet) | Length (linear feet) | Volume (cubic yards) | Duration | Purpose |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

**Each PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site.**

23. List any other GP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project on any related activity (*see instructions*)

24. If the proposed activity will result in the loss of aquatic resources that exceed those identified in the New England District Compensatory Mitigation Thresholds, explain how the compensatory mitigation requirement will be satisfied. (*see instructions*)

25. Is Any Portion of the General Permit Activity Already Complete? ☐ Yes ☐ No If Yes, describe the completed work:

26. List the name(s) of any species listed as endangered or threatened under the Endangered Species Act that might be affected by the proposed GP activity or utilize the designated critical habitat that might be affected by the proposed GP activity. (*see instructions*)

27. List any historic properties that have the potential to be affected by the proposed GP activity or include a vicinity map indicating the location of the historic property or properties. Attach relevant project information, along with any responses received from project notifications to this submittal. (*see instructions*)

28. For a proposed GP activity that will 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, identify the Wild and Scenic River or the "study river":

29. If the proposed GP activity also requires permission from the USACE pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, have you submitted a written request for section 408 permission from the USACE district having jurisdiction over that project? ☐ Yes ☐ No

If "yes", please provide the date your request was submitted to the USACE District:

30. Does the activity require a 401 Water Quality Certification (WQC)? If so, specify the type of 401 WQC that is required (general or individual). In cases where an individual 401 WQC is required, provide the date the 401 WQC certification request was submitted to the certifying authority and their contact information.

31. If the terms of the GP(s) you want to use require additional information to be included in the PCN (i.e. sampling and analysis plan), please include that information in this space or provide it on an additional sheet of paper marked Block 30. (*see instructions*)

32. I certify that the information in this pre-construction notification is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

| SIGNATURE OF APPLICANT | DATE | SIGNATURE OF AGENT | DATE |
|---|---|---|---|

The Pre-Construction Notification must be signed by the person who desires to undertake the proposed activity (applicant) and, if the statement in block 11 has been filled out and signed, the authorized agent.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

**Instructions for Preparing a**

**Department of the Army**

**General Permit (GP) Pre-Construction Notification (PCN)**

**Blocks 1 through 4.** To be completed by the U.S. Army Corps of Engineers.

**Block 5. Applicant' Name.** Enter the name and the e-mail address of the responsible party or parties. If the responsible party is an agency, company, corporation, or other organization, indicate the name of the organization and responsible officer and title. If more than one party is associated with the PCN, please attach a sheet of paper with the necessary information marked Block 5.

**Block 6. Address of Applicant.** Please provide the full address of the party or parties responsible for the PCN. If more space is needed, attach an extra sheet of paper marked Block 6.

**Block 7. Applicant Telephone Number(s).** Please provide the telephone number where you can usually be reached during normal business hours.

**Blocks 8 through 11.** To be completed, if you choose to have an agent.

**Block 8. Authorized Agent's Name and Title.** Indicate name of individual or agency, designated by you, to represent you in this process. An agent can be an attorney, builder, contractor, engineer, consultant, or any other person or organization. Note: An agent is not required.

**Blocks 9 and 10. Agent's Address and Telephone Number.** Please provide the complete mailing address of the agent, along with the telephone number where they can be reached during normal business hours.

**Block 11. Statement of Authorization.** To be completed by the applicant, if an agent is to be employed.

**Block 12. Proposed General Permit Activity Name or Title.** Please provide a name identifying the proposed GP activity, e.g., Windward Marina, Rolling Hills Subdivision, or Smith Commercial Center.

**Block 13. Name of Waterbody.** Please provide the name (if it has a name) of any stream, lake, marsh, or other waterway to be directly impacted by the GP activity. If it is a minor (no name) stream, identify the waterbody the minor stream enters.

**Block 14. Proposed Activity Street Address.** If the proposed GP activity is located at a site having a street address (not a box number), enter it in Block 14.

**Block 15. Location of Proposed Activity.** Enter the latitude and longitude of where the proposed GP activity is located. Indicate whether the project location provided is the center of the project or whether the project location is provided as the latitude and longitude for each of the "corners" of the project area requiring evaluation. If there are multiple sites, please list the latitude and longitude of each site (center or corners) on a separate sheet of paper and mark as Block 15.

**Block 16. Other Location Descriptions.** If available, provide the Tax Parcel Identification number of the site, Section, Township, and Range of the site (if known), and / or local Municipality where the site is located.

**Block 17. Directions to the Site.** Provide directions to the site from a known location or landmark. Include highway and street numbers as well as names. Also provide distances from known locations and any other information that would assist in locating the site. You may also provide a description of the location of the proposed GP activity, such as lot numbers, tract numbers, or you may choose to locate the proposed GP activity site from a known point (such as the right descending bank of Smith Creek, one mile downstream from the Highway 14 bridge). If a large river or stream, include the river mile of the proposed GP activity site if known. If there are multiple locations, please indicate directions to each location on a separate sheet of paper and mark as Block 17.

**Block 18. Identify the Specific General Permit(s) You Propose to Use.** List the number(s) of the General Permit(s) you want to use to authorize the proposed activity (e.g., GP 4).

**Block 19. Description of the Proposed General Permit Activity.** Describe the proposed GP activity, including the direct and indirect adverse environmental effects of the proposed activity. The description of the proposed activity should be sufficiently detailed for USACE to determine that the adverse environmental effects of the activity will be no more than minimal. Identify the materials to be used in construction, as well as the methods by which the work is to be done.

Provide drawings to show that the proposed GP activity complies with the terms of the applicable GP(s). Drawings should contain sufficient detail to provide an illustrative description of the proposed GP activity, but do not need to be detailed engineering plans. The written descriptions and illustrations are an important part of the application. Please describe, in detail, what you wish to do. If more space is needed, attach an extra sheet of paper marked Block 19.

**Block 20: Description of Proposed Mitigation Measures.** Describe any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed GP activity. The description of any proposed mitigation measures should be sufficiently detailed for USACE to determine how the measures would avoid and minimize adverse environmental effects. If adverse effects exceed the New England District compensatory mitigation thresholds, you must document how compensatory mitigation would be satisfied in Block 24.

**Block 21. Purpose of General Permit Activity.** Describe the purpose and need for the proposed GP activity. What will it be used for and why? Also include a brief description of any related activities associated with the proposed project. Provide the approximate dates you plan to begin and complete all work.

**Block 22. Quantity of Wetlands, Streams, or Other Types of Waters Directly Affected by the Proposed General Permit Activity.** For discharges of dredged or fill material into Waters of the U.S., provide the amount of wetlands, streams, or other types of waters filled, flooded, excavated, or drained by the proposed GP activity. For structures or work in Navigable Waters of the U.S. subject to Section 10 of the Rivers and Harbors Act of 1899, provide the amount of navigable waters filled, dredged, occupied by one or more structures (e.g., aids to navigation, mooring buoys) by the proposed GP activity. The area of impact includes the structures or fills with direct or indirect effects to waters of the U.S. The length of impact includes the length of a stream, including is banks, that are directly affected by the structures or fills. The duration of impact should be identified as temporary (xx days) or permanent. The impact purpose should briefly describe what structure or fill is responsible for the impact.

**Block 23. Identify Any Other General Permit(s), Regional General Permit(s), or Individual Permit(s) Used to Authorize Any Part of Proposed Activity or Any Related Activity.** List any other GP(s) or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. For linear projects, list other separate and distant crossings of waters and wetlands authorized by these GPs that do not require PCNs. If more space is needed, attach an extra sheet of paper marked Block 23.

**Block 24. Compensatory Mitigation Statement for Losses Greater Than the New England District Compensatory Mitigation Thresholds.** New England District requires compensatory mitigation at a minimum one for one replacement ratio or greater for all aquatic resource losses that require a PCN and exceed the New England District Compensatory Mitigation Thresholds, unless USACE determines in writing that either some other form of mitigation is more environmentally appropriate or the adverse environmental effects of the proposed GP activity are no more than minimal without compensatory mitigation, and provides an activity specific waiver of this requirement. Describe the proposed compensatory mitigation for wetland losses greater than the New England District Compensatory Mitigation Thresholds or provide an explanation of why USACE should not require wetland compensatory mitigation for the proposed GP activity. If more space is needed, attach an extra sheet of paper marked Block 24.

**Block 25. Is Any Portion of the General Permit Activity Already Complete?** Describe any work that has already been completed for the GP activity.

**Block 26. List the Name(s) of Any Species Listed As Endangered or Threatened under the Endangered Species Act that Might be Affected by the General Permit Activity.** If you are not a federal agency, and if any listed species or designated critical habitat might be affected or is in the vicinity of the proposed GP activity, or if the proposed GP activity is located in designated critical habitat, list the name(s) of those endangered or threatened species that might be affected by the proposed GP activity or utilize the designated critical habitat that might be affected by the proposed GP activity. If you are a Federal agency, and the proposed GP activity requires a PCN, you must provide documentation demonstrating compliance with Section 7 of the Endangered Species Act.

**Block 27. List Any Historic Properties that Have the Potential to be Affected by the General Permit Activity.** If you are not a federal agency, and if any historic properties have the potential to be affected by the proposed GP activity, list the name(s) of those historic properties that have the potential to be affected by the proposed GP activity. Provide all relevant documentation about these historic properties in the PCN submittal. If you are a Federal agency, and the proposed GP activity requires a PCN, you must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.

**Block 28. List the Wild and Scenic River or Congressionally Designated Study River if the General Permit Activity Would Occur in such a River.** If the proposed GP activity will occur in a river in the National Wild and Scenic River System or in a river officially designated by Congress as a “study river” under the Wild and Scenic Rivers Act, provide the name of the river. For a list of Wild and Scenic Rivers and study rivers, please visit http://www.rivers.gov/

**Block 29. General Permit Activities that also Require Permission from the USACE Under 33 U.S.C. 408.** If the proposed GP activity also requires permission from the USACE under 33 U.S.C. 408 because it will temporarily or permanently alter, occupy, or use a USACE federal authorized civil works project, indicate whether you have submitted a written request for section 408 permission from the USACE district having jurisdiction over that project.

**Block 30. 401 Water Quality Certification.** As described above, specify if the activity requires a 401 WQC from the certifying authority.

**Block 31. Other Information Required For General Permit Pre Construction Notifications.** The terms of some of the General Permits include additional information requirements for preconstruction notifications:

* Maintenance – information regarding the original design capacities and configurations of the outfalls, intakes, small impoundments, and canals.
* Temporary Construction, Access, and Dewatering – a restoration plan showing how all temporary fills and structures will be removed and the area restored to pre-project conditions.
* Repair of Uplands Damaged by Discrete Events – documentation, such as a recent topographic survey or photographs, to justify the extent of the proposed restoration.
* Commercial Shellfish Aquaculture Activities – (1) a map showing the boundaries of the project area, with latitude and longitude coordinates for each corner of the project area; (2) the name(s) of the species that will be cultivated during the period this GP is in effect; (3) whether canopy predator nets will be used; (4) whether suspended cultivation techniques will be used; and (5) general water depths in the project area (a detailed survey is not required).Dredging – (1) a proposed sampling and analysis plan shall be provided to USACE for approval prior to its execution. Pre-application meetings are encouraged.
* Beach Nourishment – sediment grain size should be determined for the length of the beach where nourishment is proposed. The frequency and locations of sediment sampling shall be sufficient to identify the sediment composition of the beach profile. This data shall be consolidated to generate a sediment gradation curve for each sampled transect. Each sampled transect should also be identified on the project plans (drawings).

If more space is needed, attach an extra sheet of paper marked Box 31.

**Block 32. Signature of Applicant or Agent.** The PCN must be signed by the person proposing to undertake the GP activity, and if applicable, the authorized party (agent) that prepared the PCN. The signature of the person proposing to undertake the GP activity shall be an affirmation that the party submitting the PCN possesses the requisite property rights to undertake the GP activity (including compliance with special conditions, mitigation, etc.).

**DELINEATION OF WETLANDS, OTHER SPECIAL AQUATIC SITES, AND OTHER WATERS**

Each PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current wetland delineation manual and regional supplement published by the USACE. The permittee may ask the USACE to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the USACE does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. The 60-day PCN review period will not start until a delineation has been completed.

**DRAWINGS AND ILLUSTRATIONS**

**General Information.**

Three types of illustrations are needed to properly depict the work to be undertaken. These illustrations or drawings are identified as a Vicinity Map, a Plan View or a Typical Cross Section Map. Identify each illustration with a figure or attachment number. For linear projects (e.g. roads, subsurface utility lines, etc.) gradient drawings should also be included. Please submit one copy of all drawings on 8½ x 11 inch plain white paper (electronic submissions preferred). Use the fewest number of sheets necessary for your drawings or illustrations. Each illustration should identify the project, the applicant, and the type of illustration (vicinity map, plan view, or cross section). While illustrations need not be professional (many small, private project illustrations are prepared by hand), they should be clear, accurate, and contain all necessary information.

**ADDITIONAL INFORMATION AND REQUIREMENTS**

For proposed GP activities that involve discharges into waters of the United States, water quality certification from the State, Tribe, or EPA must be obtained or waived. Some States, Tribes, or EPA have issued water quality certification for one or more GPs. Please check the New England District website to see if water quality certification has already been issued for the GP(s) you wish to use. For proposed GP activities in coastal states, state Coastal Zone Management Act consistency concurrence must be obtained, or a presumption of concurrence must occur. Some States have issued Coastal Zone Management Act consistency concurrences for one or more GPs. Please check the New England District website to see if Coastal Zone Management Act consistency concurrence has already been issued for the GP(s) you wish to use.

# APPENDIX C SELF-VERIFICATION NOTIFICATION

U.S. Army Corps of Engineers (USACE)

# SELF-VERIFICATION NOTIFICATION (SVN)

**DATA REQUIRED BY THE PRIVACY ACT OF 1974**

**Authority** Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332.

**Principal Purpose** This information will be used in evaluating activities under Self-Verification procedures within Massachusetts.

**Routine Uses** Routine uses will include: (1) Documenting compliance with the terms and conditions of the General Permit (GP) for activities that may require authorization pursuant to one or more of USACE's Regulatory authorities. (2) Records may be referred to other Federal, State, and local agencies for evaluation and enforcement purposes.

**Disclosure** Failure to fully comply and abide by the GP terms and conditions prior to commencing work and after completion project may result in formal enforcement action, up to and including monetary penalties and/or legal action, pursuant to 33 CFR Part 326.

**Instructions** The permittee must complete ALL required sections of this document before commencing USACE-regulated activities. A copy of this completed SVN must be kept on site during construction and be made available for review by USACE and other Federal, State, & Local regulatory authorities at any time. Within 30 days of initiating project construction, the permittee shall submit the completed SVN to USACE. The SVN shall be submitted to USACE as **ONE signed document** that includes project plans and documentation that supports each field (e.g., emails, letters, description, phone calls, surveys). Electronic submissions to the following address are strongly preferred: cenae-r-ma-sv@usace.army.mil. The email subject line shall contain the following: GP #, SVN, City/Town, and date submitted.

**(ITEMS 1 THRU 3 TO BE FILLED BY USACE)**

| 1. APPLICATION NO. | 2. FIELD OFFICE CODE | 3. DATE RECEIVED |
|---|---|---|
| | | |

**APPLICANT AND AGENT INFORMATION**

| 4. APPLICANT'S NAME | 7. AGENT'S ADDRESS: |
|---|---|
| First - Middle - Last - | First - Middle - Last - |
| Company - | Company - |
| E-mail Address - | E-mail Address - |
| 5. APPLICANT'S ADDRESS: | 8. AGENT'S ADDRESS: |
| Address- | Address- |
| City - State - Zip - Country - | City - State - Zip - Country - |
| 6. APPLICANT'S PHONE NOs. w/AREA CODE | 9. AGENTS PHONE NOs. w/AREA CODE |
| a. Residence b. Business c. Fax | a. Residence b. Business c. Fax |

**NAME, LOCATION, AND DESCRIPTION OF PROJECT SITE**

10. PROJECT NAME OR TITLE

| 11. FILE NUMBER(S) OF PREVIOUS USACE ACTIONS ON THE SITE (if applicable) | 12. NAME OF WATERBODY |
|---|---|
| | |
| 13. PROJECT COORDINATES (in decimal degrees) | 14. PROJECT STREET ADDRESS (if applicable) |
| Latitude: ◦N Longitude: ◦W | Address |
| | City - State - Zip - |

**ACTIVITY TYPE, PROJECT IMPACTS, AVOIDANCE & MINIMIZATION**

15. GENERAL PERMIT ACTIVITIES (CHECK ALL THAT APPLY)

| | | | | |
|---|---|---|---|---|
| 1 ☐ | 6 ☐ | 11 ☐ | 16 ☐ | 21 ☐ |
| 2 ☐ | 7 ☐ | 12 ☐ | 17 ☐ | 22 ☐ |
| 3 ☐ | 8 ☐ | 13 ☐ | 18 ☐ | 23 ☐ |
| 4 ☐ | 9 ☐ | 14 ☐ | 19 ☐ | 24 ☐ |
| 5 ☐ | 10 ☐ | 15 ☐ | 20 ☐ | 25 ☐ |

16. SUMMARY OF PROJECT IMPACTS (*see instructions*)

| Area (square feet) | Length (linear feet) | Volume (cubic yards) | Duration |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

17. PROJECT PLANS (BY CHECKING THE BOXES BELOW, YOU CERTIFY THESE ITEMS ARE COMPLETE) (*see instructions*)

- ☐ a. Plans shall at least contain the following: Vicinity Map, Plan View, and Typical Cross Section View of the proposed activity.
- ☐ b. All direct, indirect and secondary impacts from USACE regulated activities are shown on the project plans.
- ☐ c. The size of the impact area for each activity (acre, square feet, linear feet) are shown on the project plans.
- ☐ d. For discharges of fill material (§404), the volume of fill material is identified on the project plans.
- ☐ e. The duration of each impact, permanent or temporary (X days), is identified on the project plans.
- ☐ f. Do activities with permanent impacts result in the loss of waters? If so, this is identified on the project plans.
- ☐ g. All aquatic resources in the vicinity of the USACE regulated activities are delineated on the project plans.

18. AVOIDANCE & MINIMIZATION (BY CHECKING THE BOXES BELOW, YOU CERTIFY THESE CRITERIA ARE MET) (*see instructions*)

- ☐ a. The project has been designed to avoid and minimize impacts to aquatic resources.
- ☐ b. The footprint of activities in waters of the U.S. has been reduced to only what is necessary to achieve the overall project purpose.
- ☐ c. All practicable measures have been taken to avoid and minimize impacts to aquatic resources through construction techniques and site access (e.g., Best Management Practices, Time of Year Restrictions).
- ☐ d. All temporary impacts from USACE regulated activities will be restored upon completion of construction and the project area will be returned to pre-construction contours and conditions.

**COMPLIANCE WITH FEDERAL REGULATIONS & SUPPLEMENTAL INFORMATION**

19. DUE DILIGENCE (*see instructions*)

Complete the entries below to document compliance with the following Federal requirements. Construction may NOT begin if a PCN is/may be required, and you must contact USACE to determine permitting requirements. Documentation that demonstrates how the activity complies with each field below shall be submitted to the USACE as noted in the instructions block. See each General Condition (GC) in the GP for how to comply with each requirement.

| | | | |
|---|---|---|---|
| a. State Historic Preservation Officer | Select Option | | |
| b. Massachusetts BUAR | Select Option | | |
| c. Tribal Historic Preservation Officers | Select Option | | |
| d. Endangered Species Act - NOAA | Select Option | | |
| e. Endangered Species Act - USFWS | Select Option | | |
| f. Northern Long Eared Bat (ESA) | Select Option | | |
| g. Essential Fish Habitat | Select Option | | |
| h. Wild & Scenic Rivers | Select Option | | |
| i. 401 Water Quality Certification 401 | Select Option | | |
| | 401 WQC/OOC File Number: | OOC issued: | 401 issued: |
| j. Section 408 Permission | Select Option | | |
| k. Coastal Zone | Select Option | | |
| l. Construction Mats | Select Option | | |
| m.Time of Year Restrictions | Select Option | | |
| n. Vernal Pools | Select Option | | |
| o. Sediment & Erosion Controls | Select Option | | |
| p. Stream/Wetland Crossings | Select Option | | |

20. AQUACULTURE ACTIVITIES - GP 18 (*see instructions*)

- ☐ a. If required, an Aquaculture Certification from the Massachusetts Division of Marine Fisheries was obtained prior to commencing work.
- ☐ b. Coordination with the U.S. Coast Guard pursuant to Private Aids to Navigation has occurred prior to commencing work.
- ☐ c. If required, a MEPA Certificate was obtained from the Massachusetts Environmental Protection Agency prior to commencing work. Select Option
- ☐ d. The prospective permittee contacted local authorities (e.g. harbormaster, select board, shellfish constable) for authorization of their facility prior to commencing work.

21. ADDITIONAL INFORMATION/ATTACHMENTS (*see instructions*)

- ☐ a. The project plans are enclosed in this SVN submittal (see block 17).
- ☐ b. The activity Select Option funded through the Bipartisan Infrastructure Bill (also known as the Infrastructure Investment and Jobs Act).
- ☐ c. All required state, local and federal approvals were acquired prior to starting construction in USACE jurisdiction.
- ☐ d. After construction of the activity is completed, a complete Certificate of Compliance will be submitted to USACE.

22. IS THERE ANOTHER LEAD FEDERAL AGENCY:

☐ YES ☐ NO

23. STATEMENT OF AUTHORIZATION *(see instructions)*

I certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

| SIGNATURE OF APPLICANT | DATE | SIGNATURE OF AGENT | DATE |
|---|---|---|---|

24. SIGNATURES *(see instructions)*

I hereby certify that the information in this Self-Verification Notification is complete and accurate. As the applicant or their duly authorized agent, I certify the activity was completed in accordance with the terms and conditions of the GP. This includes all applicable terms, general conditions, and activity-specific GP criteria. I agree to allow the duly authorized representatives of the Corps of Engineers Regulatory Program and other regulatory or advisory agencies to enter upon the premises of the project site at reasonable times to evaluate inspect and photograph site conditions. This consent to enter the property is superior to, takes precedence over, and waives any communication to the contrary. For example, if the property is posted as “no trespassing” this consent specifically supersedes and waives that prohibition and grants permission to enter the property despite such posting.

| SIGNATURE OF APPLICANT | DATE | SIGNATURE OF AGENT | DATE |
|---|---|---|---|

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

**Instructions for Preparing a**
**Department of the Army**
**General Permit (GP) Self-Verification**

**Blocks 1 through 3.** To be completed by the Corps of Engineers.

**Block 4. Applicant' Name.** Enter the name and the e-mail address of the responsible party or parties. If the responsible party is an agency, company, corporation, or other organization, indicate the name of the organization and responsible officer and title. If more than one party is associated with the self-verification, please attach a sheet of paper with the necessary information marked Block 4.

**Block 5. Address of Applicant.** Please provide the full address of the party or parties responsible for the self-verification. If more space is needed, attach an extra sheet of paper marked Block 5.

**Block 6. Applicant Telephone Number(s).** Please provide the telephone number where you can usually be reached during normal business hours.

**Blocks 7 through 9.** To be completed, if you choose to have an agent.

**Block 7. Authorized Agent's Name and Title.** Indicate name of individual or agency, designated by you, to represent you in this process. An agent can be an attorney, builder, contractor, engineer, consultant, or any other person or organization. Note: An agent is not required.

**Blocks 8 and 9. Agent's Address and Telephone Number.** Please provide the complete mailing address of the agent, along with the telephone number where they can be reached during normal business hours.

**Block 10. Proposed General Permit Activity Name or Title.** Please provide a name identifying the proposed GP activity, e.g., Windward Marina, Rolling Hills Subdivision, or Smith Commercial Center.

**Block 11. File Number(s) of Previous USACE Actions on the Site** Please provide any known USACE file number. If the activity does not have a known USACE file number, you may state N/A.

**Block 12. Name of Waterbody.** Please provide the name (if it has a name) of any stream, lake, marsh, or other waterway to be directly impacted by the GP activity. If it is a minor (no name) stream, identify the waterbody the minor stream enters.

**Block 13. Proposed Activity Coordinates.** Please enter the latitude and longitude of where the proposed GP activity is located. Indicate whether the project location provided is the center of the project or whether the project location is provided as the latitude and longitude for each of the "corners" of the project area. If there are multiple sites, please list the latitude and longitude of each site (center or corners) on a separate sheet of paper and mark as Block 13.

**Block 14. Proposed Activity Street Address.** If the proposed activity is located at a site having a street address (not a box number), enter it in Block 14.

**Block 15. General Permit Activity Type.** Please select all GP activity types that apply to the proposed activity. A list of GP activity types can be found in Section III of the GP.

**Block 16. Summary of Project Impacts.** Please provide ALL proposed impacts, both temporary and permanent in duration, that are located in Waters of the United States. The area of impact shall be provided in square feet (SF). When applicable, impacts that result in conversion of stream bank or shoreline must also be identified in linear feet (LF). Dredging or the discharge of dredged or fill material shall also include the volume, cubic yards (CY), of material removed from or placed into Waters of the U.S. If more entries are required, please attach a table matching the desired format in Block 16.

**Block 17. Project Plans.** Please verify that items a-g are included in the project plans. Three types of illustrations are necessary to properly depict the proposed work. These illustrations or drawings are identified as a Vicinity Map, a Plan View (Aerial view) and a Cross Section Map. For linear projects (e.g. roads, subsurface utility lines, etc.) gradient drawings (longitudinal profile) should also be included. Plans must accurately depict the existing conditions and all aspects of the proposed activity located in waters of the U.S. Please submit one copy of all drawings formatted to print on 8½ x 11 inch or 11 x 17 inch plain white paper. Use the fewest number of sheets necessary for your drawings or illustrations. Each illustration should identify the project, the applicant, and the type of illustration (vicinity map, plan view, or cross section). While illustrations need not be certified engineering sheets; they should be clear, accurate, contain all necessary information, and depict all proposed work. Each submission must also include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current wetland delineation manual and regional supplement published by USACE.

**Block 18. Avoidance & Minimization.** Please verify that items a-d have been implemented for the proposed activity.

**Block 19. Due Diligence.** Please complete all the fields and submit documentation to USACE to demonstrate compliance with the above requirements. This Documentation may include emails, letters, meeting notes, phone call log, project narrative, project plans, a species list from the NOAA Section 7 Mapper, a completed copy of the IPAC determination keys, etc. Documentation should be limited to what is necessary to demonstrate how the proposed activity meets each requirement. Refer to the MA GP, Appendix A, for specific guidance on the identification of previously identified historic properties and previously unidentified historic properties. Endangered Species: *The applicant must be designated as the non-federal representative for the purposes of Section 7 consultation to select the Rangewide D-Key options. Otherwise, the applicant shall select the following option when IPAC indicates the NLEB is present: "The activity IS located within the NLEB Species Range (PCN Required)."

**Block 20. Aquaculture Activities.** Please verify that items a-d have been obtained or completed prior to commencing work in waters of the U.S.

**Block 21. Additional Information/Attachments.** Please verify that items a-d have been completed prior to commencing work in waters of the U.S.

**Block 22. Lead Federal Agency.** Please identify if there is another lead federal agency involved with the proposed activity. Enter the lead federal agency name (e.g., the Federal Emergency Management Agency, FEMA) and the agency's designated person of contact for the activity.

**Block 23. Statement of Authorization.** The applicant shall sign this section for all activities. If an agent is to be employed, the agent shall sign this section.

**Block 24. Signatures.** The SVN must be signed by the person proposing to undertake the GP activity, and if applicable, the authorized party (agent) that prepared the SVN. The signature of the person proposing to undertake the GP activity shall be an affirmation that the party submitting the SVN possesses the requisite property rights to undertake the GP activity.

US Army Corps of Engineers®
New England District

## APPENDIX D: PCN APPLICATION CHECKLIST

The following information shall be submitted for all PCNs for USACE to properly evaluate your application. Some applications may require more information and this checklist is offered as a tool to assist applicants with submitting a complete application.

### *SECTION 1: GENERAL APPLICATION INFORMATION*

1. ☐ Complete the Pre-Construction Notification document (Appendix B).
2. ☐ Specify which local/state/federal authorizations are required for the project and if any have been obtained or applied for at the time of USACE application submittal.
3. ☐ Identify all funding sources the project will receive or has received to date. Provide any relevant information in the application submission.
4. ☐ Is this part of a larger project that is being implemented in phases? If so, describe the project schedule and how each phase will be implemented.
5. ☐ Describe the existing conditions on the site and the general land use in the vicinity of the project at the time application submittal.
6. ☐ Provide any historic information available that you may have of project area, e.g., existing USACE permit numbers, the names under which the permits were obtained if the permit numbers are unknown, construction dates and proof of prior existence (aerials, photos, town hall records, affidavits, state or local permits, etc.) to verify that the project predates regulation and is "vested".[19]
7. ☐ The anticipated start and end dates for construction.

### *SECTION 2: WETLAND DELINEATION*

8. ☐ Data used to support aquatic resource boundary determinations (delineation forms, delineation map(s) that show the locations of each aquatic resource in the project area, aerial and ground photographs, LIDAR imagery, national wetland inventory maps, soil maps, national hydrography dataset maps, floodplain maps, historical imagery, etc.).
9. ☐ Photographs of the wetland(s) and/or waterway(s) where impacts are proposed. Photos at low tide are preferred for work in tidal waters.
10. ☐ Indicate the relationship of the project area to waters of the U.S., i.e., adjacent wetlands, tidal influence or hydraulic connectivity through culverts, or other conveyances, etc.
11. ☐ At minimum the delineation map/figure should include the following:
    a. Contour lines showing topography.
    b. North arrow.
    c. Bar and text scale.
    d. Legend.
    e. Drawn project boundary.
    f. High tide line, mean high water, mean low water, ordinary high water mark, and/or wetland boundaries.
    g. Captions with a unique name for each aquatic resource and the area or length of the aquatic resource within the project area.

[19] Vested is exempt (someone or something) from a new law or regulation.

h. Appropriate landmarks and features (e.g., culverts, special aquatic sites, etc.).
i. Points showing the paired upland and wetland delineation locations for tidal and non-tidal wetlands only.

## *SECTION 3: AVOIDANCE & MINIMIZATION*

12. ☐ Describe specific measures taken to avoid impacts to aquatic resources or describe why aquatic resources could not be avoided while achieving the project purpose and need.
13. ☐ For impacts to aquatic resources that could not be avoided, describe specific considerations/ measures taken to minimize the area of proposed impacts to aquatic resources in designing the project.
14. ☐ Describe specific measures taken to avoid and minimize the proposed direct, indirect, and secondary impacts to aquatic resources and their functions through construction techniques and timing.
15. ☐ If applicable, provide a restoration plan that describes how all temporary fills and structures will be removed and the area restored to pre-impact conditions (see GC 22).
16. ☐ If applicable, provide an Invasive Species Control Plan (see GC 29). For sample control plans, see www.nae.usace.army.mil/missions/regulatory/invasive-species.
17. ☐ If applicable, describe how the proposed wetland/waterbody crossing is compliant with GC 31, Stream Work and Crossings, and Wetland Crossings.

## *SECTION 4A: PROJECT IMPACTS*

18. ☐ Describe the overall project and the activities located in Waters of the U.S. (WOTUS) that you are seeking authorization for.
19. ☐ Identify the following for project impacts in WOTUS:
    a. ☐ Direct, indirect, secondary impacts[20] within WOTUS.
    b. ☐ The size of each impact (square feet or acres, or linear feet).
    c. ☐ For discharges of fill material (§404), specify the volume of fill material to be discharged (cubic yards).
    d. ☐ The impact duration from each activity, permanent or temporary (X days).

## *SECTION 4B: PROJECT PLANS*

20. ☐ Submit project plans that depict all impacts in WOTUS. On the project plans, applicants shall provide:

    *General Information*

    a. ☐ Plan view and typical cross-section view sheets that show the existing and proposed conditions. These illustrations should each be identified with a figure number, date of the map, the project title, the name of the applicant and the type of illustration (vicinity map, plan view, or cross section).
    b. ☐ Drawings, sketches, or plans that are legible, reproducible (color is encouraged, but features must be distinguishable in black and white), drawn to scale, and no larger than 11”x17” and 10 MB when submitted in digital format. Numeric and graphic/bar scales must agree, and plan details must be measurable using a standard engineer’s scale on printed plans. Reduced plans are not acceptable.
    c. ☐ The north arrow and remove miscellaneous non-wetland or water project related features such as conduits, utility poles, guardrails, etc.

[20] See definitions section for the definitions of direct, indirect, secondary impacts.

d. ☐ Clearly draw the overall limits of work, staging areas, disposal sites, access routes, and any permittee responsible mitigation sites. These areas may include both aquatic resources and upland areas.
e. ☐ Names or numbers of all roads in the site's vicinity and ownership and numbers of abutting parcels.
f. ☐ Datum in plan and elevation views. The horizontal datum shall be in the NAD 83 Massachusetts State Plane Coordinate System (INSERT) in U.S. survey feet. The vertical data in coastal projects shall be referenced to either MLLW or the North American Vertical Datum of 1988 (NAVD 88). Both the distance and depth units shall be U.S. survey feet and specified on the project plans.

*Aquatic Resources & Project Impacts*

g. ☐ Delineation of all aquatic resource types on site including salt marsh; other special aquatic sites (vegetated shallows, mudflats, riffles and pools, coral reefs, and sanctuaries and refuges); other waters, such as lakes, ponds, vernal pools, natural rocky habitat (tidal only), and perennial, intermittent, and ephemeral streams.
h. ☐ Identify the substrate type (cobble/gravel, organic detritus, sand/shell, silt, mud) and the approximate percentage of each substrate type on site. Grain sizes shall be based on Wentworth grain size classification scale for granules, pebbles, cobbles, and boulders. Sediment samples with a content of 10% or more of pebble-gravel-cobble and/or boulder in the top layer (6-12 inches) should be delineated and material with epifauna/macroalgae should be differentiated from bare pebble-gravel-cobble and boulder.
i. ☐ The direction of ebb and flood in tidal waters and direction of flow in non-tidal waters.
j. ☐ In tidal waters, the project boundary distance from special aquatic sites identified in 20g above if within 25 feet from that resource.
k. ☐ USACE jurisdictional boundaries including ordinary high-water mark (OHWM), high tide line (HTL), mean high water (MHW). Other boundaries include mean low water (MLW), mean lower low water (MLLW), as applicable.
   - Non-tidal: OHWM and/or wetland boundaries.
   - Tidal (structures/work only): MHW, MLW.
   - Tidal (Fill and Structures/work): HTL, MHW, MLW.
   - Tidal (Dredging/Beach Nourishment): HTL, MHW, MLW, MLLW.
l. ☐ Identification of each aquatic resource with a unique name (ex. Wetland 1, Wetland 2, Tributary 1, Beaver Brook, Atlantic Ocean) and the size of each aquatic resource within the project area (square feet or acres).
m. ☐ Impacts to each aquatic resource with captions denoting the size of each impact (square feet, acres, or linear feet) and the duration of the impact (ex. Permanent, Temporary (X days).

## *SECTION 4C: PROJECT PLANS - SPECIFIC PROJECT INFORMATION*

21. ☐ For projects involving Navigation, Structures, Dredging, and/or Beach Nourishment, the applicant shall also address the following:

*Navigation*

a. ☐ Identify the locations of adjacent Federal navigation project (FNP) and/or state/local navigation projects on the project plans.
b. ☐ Specify the distance between the FNP and proposed project boundary, the authorized depths of the FNP, and state plane coordinates of seaward end(s) of project structures near an FNP.

*Structures*

a. ☐ Identification of the piling type (steel, timber, concrete) and diameter to be removed and/or installed.
b. ☐ Specify the minimal height of the structures' frame over saltmarsh. To meet the SV threshold, piers must be ≤4 feet in width and this minimal height must achieve a 1.5:1 ratio (i.e., a 4-foot-wide pier is 6 feet above a saltmarsh).
c. ☐ For floats, the methods of securing them (piles, bottom anchors) and for keeping them off substrate (skids, stops) at low water. To meet the SV threshold, a minimum depth of 18-inches of water should be maintained below a floating dock/structure at lower tide levels.

*Dredging*

a. ☐ The area (SF, acre) and volume (CY) of material to be dredged waterward of MHW for each dredge location.
b. ☐ Dredge boundaries.
c. ☐ Bathymetry for existing, proposed, and historical (include dates and USACE permits) dredge depths.
d. ☐ The likely final angle of repose of the side cuts based on the physical characterization of the material to be dredged and based upon the high/ medium/low, wave or current energy of the location.
e. ☐ Label area whether the dredging is new, maintenance, improvement, or a combination.
f. ☐ Location of the disposal site (include location sheet). NOTE: For projects proposing open water, nearshore disposal, or beach nourishment, contact USACE as early as possible for sampling and testing protocols. Sediment testing, including physical (e.g., grain-size analysis), chemical and biological testing may be required. Sampling/testing of sediments without such contact should not occur and if done, will be at the applicant's risk.
g. ☐ The methods and areas used to retain or prevent dredged material from running back into the wetland or waterway. Provide the capacity of the storage area and points of runback, including the overflow route, into the aquatic system.
h. ☐ For open-water disposal, explain why inland or beneficial reuse sites are not practicable.
i. ☐ Show the finished top elevation of the disposal site.

*Beach Nourishment*

a. ☐ For beach nourishment, identify the disposal footprint, existing and proposed nourishment profiles (multiple profiles are appropriate if the site is more than 150 feet long or non-contiguous), total fill area (SF) and volume (CY), fill area and volume waterward of the HTL, and delineation of dunes, banks, existing beach vegetation, and contours.
b. ☐ For beach nourishment identify the substrate type (fine sand, sand, cobble, boulder) and/or grain-size of existing material.

## *SECTION 5: STRUCTURES*

22. ☐ For projects with the removal of existing pilings identify the number, type (steel, timber, concrete) and diameter of pilings to be removed and the methodology for removal (cut off at mud line, pulling, vibratory, etc.).
23. ☐ For projects with the installation of new pilings identify the number, type (steel, timber, concrete) and diameter of pilings to be installed and the methodology for installation (vibratory hammer, impact hammer etc.).
24. ☐ Identify any existing structures and moorings in waters adjacent to the proposed activity, their dimensions, and the distance to the limits and coordinates of any proposed mooring field or reconfiguration zone. For reconfiguration zone and mooring fields, provide the coordinates for all

corners based on the Massachusetts State Plane Coordinate System. Specify the maximum number of slips and/or moorings within proposed reconfiguration zones or anchorage areas.

25. ☐ The dimensions of the structure or work and extent of encroachment waterward of MHW and from affixed point on the shoreline or upland.
26. ☐ Shoreline of adjacent properties and property boundary offset for structures. In narrow waterbodies, the distance to opposite shoreline, waterway width, and structures across from proposed work.
27. ☐ For new commercial boating facilities, anchorage areas or reconfiguration zones, provide a description of the type of vessels that would use the facility, and any plans for sewage pump-out facilities, fueling facilities and contingency plans for oil spills.
28. ☐ See Sections 4A-C above.

## *SECTION 6: AQUACULTURE*

29. ☐ Identify the coordinates for lease area corners and gear configuration area on the project plans.
30. ☐ Identify the proposed aquaculture gear type (buoys, floats, racks, trays, nets, lines, tubes, cages, containers, and other structures). Provide the impacts for each aquaculture gear type (see Section 4A 19a-d).
31. ☐ For a GP 18 to be valid, applicants must have (a) their MA DMF Aquaculture Certification letter for licensed shellfish aquaculture sites, (b) documentation that the applicant has coordinated with the U.S. Coast Guard regarding USCG Private Aids to Navigation standards, (c) their MEPA Certificate (if required), and (d) documentation that the applicant has contacted their local authorities (ex. harbormaster, select board, shellfish constable) for authorization of their facility.
32. Provide information on site the operation, maintenance, and access. Will the site be accessed via boat, kayak, etc.? Will cages be removed in the winter? How often will gear be checked on? Is there an operations plan for the proposed aquaculture area?
33. ☐ See Sections 4A-C above.

## *SECTION 7: DREDGING*

34. ☐ Sampling plan requests for new, improvement or maintenance dredging must submit completed **Dredged Material Evaluation checklist found at Dredged Material Evaluation Checklist, Sampling and Analysis Plan Requirements from Applicant (army.mil)** and identify the method of handling/transporting the dredged material.
35. ☐ Identify grain-size of material to be dredged (e.g., silty sand) and provide any existing sediment grain size and bulk sediment chemistry data from the proposed project or nearby projects. Include information on any recent spills of oil and/or other hazardous materials and/or nearby outfalls. Document the information source, e.g., EPA database, the harbormaster or fire chief. If there are none, state “none”.
36. ☐ See Section 4A, 4B and 4C, Dredging 21(a-i) above.

## *SECTION 8: WETLAND/WATERBODY CROSSINGS*

37. ☐ For the stream crossing, identify the crossing methodology on the project plan (e.g., dam and pump, dry, wet, etc.). Submit a waterway crossing sequencing plan with the application.
38. ☐ If the project includes a permanent crossing of a tidal waterway, your project design should be modified to match the velocity, depth, cross-sectional area, and substrate of the existing waterbody adjacent to the crossing and provide documentation (hydraulic analysis including low lying property analysis) that the size of the crossing will not restrict tidal flow over the full natural tide range and will not adversely affect abutting infrastructure.

39. ☐ If the work includes a permanent crossing of a non-tidal stream, your project design should be modified to match the culvert gradient of the existing stream channel profile, provide clearance for ≥1.2 times bank full width and conveyance should be embedded ≥1-2 feet for box culverts and pipe arches or ≥1-2 feet and at least 25 percent for rounded pipes/culverts in accordance with the Massachusetts Stream Crossing Standards. Provide the basis for any variation to this requirement.
40. ☐ If the work includes a permanent crossing of a non-tidal stream, the structure should be designed to include a natural bottom substrate within the conveyance that matches the characteristics of the substrate in the natural stream channel and the character of the banks (mobility, slope, stability, confinement, grain and rock size). The conveyance should be designed with a minimum openness ratio ≥0.82-feet (0.25-meters). For how to calculate openness ratio and stream simulation ecological approach for road and stream crossings, see https://www.nae.usace.army.mil/Missions/Regulatory/Stream-and-River-Continuity/.

## *SECTION 9: COMPENSATORY MITIGATION*

41. ☐ Does the project require Compensatory Mitigation[21] for impacts to Waters of the U.S.? (See Section V in the 2023 Massachusetts General Permit)
42. ☐ If the project requires mitigation, does the selected compensatory mitigation option (i.e., In-Lieu Fee, permittee-responsible mitigation) deviate from the order of the options presented in §332.3(b)(2)-(6)? If so, please explain why. https://www.ecfr.gov/current/title-33/chapter-II/part-332/section-332.3
43. ☐ For any compensatory mitigation that involves preservation, the applicant must use a site protection instrument to preserve the parcel in perpetuity. (Conservation Easement, Deed Restriction, etc.) https://www.mass.gov/service-details/conservation-restriction-review-program.

## *SECTION 10: HISTORIC PROPERTIES & NOTIFICATIONS TO SHPO, THPOs, BUAR*

44. ☐ Notify the SHPO, Massachusetts Historical Commission, of the Project via Certified Mail and include proof of delivery or receipt in the application package (See Appendix A).
45. ☐ As applicable, notify the THPOs, Narragansett Indian Tribe, Wampanoag Tribe of Gay Head (Aquinnah), and Mashpee Wampanoag Tribe, of the Project via email OR mail and include proof of delivery or receipt in the application package (See Appendix A).
46. ☐ As applicable, notify the BUAR via email (*strongly preferred*) OR mail and include proof of delivery or receipt in the application package (See Appendix A).
47. ☐ Include responses to this notification in the permit application.
48. ☐ As applicable, information on historic properties (Tribal and Archaeological) within the project area should be provided in the permit application.

## *SECTION 11: ENDANGERED SPECIES & ESSENTIAL FISH HABITAT*

49. ☐ Provide a USFWS Information for Planning and Consultation (IPaC) Official Species List from https://ecos.fws.gov/ipac and the email of the individual who generated the list (see GC 10 of the 2023 Massachusetts General Permit for more information).
50. ☐ Provide a species list from the NMFS Section 7 Endangered Species Act mapper at https://noaa.maps.arcgis.com/apps/webappviewer/index.html.
51. ☐ Provide a species list from the NMFS Essential Fish Habitat Mapper at https://www.habitat.noaa.gov/apps/efhmapper/?page=page_3.

[21] Your mitigation proposal must be consistent with the December 29, 2020 Compensatory Mitigation Standard Operating Procedures at https://www.nae.usace.army.mil/Portals/74/docs/regulatory/Mitigation/Compensatory-Mitigation-SOP-2020.pdf and 2008 Mitigation Rule.

52. ☐ If the project will generate turbidity, describe the extent of turbidity and if erosion controls will be used to contain turbidity. If turbidity controls are not operationally feasible, explain the basis for your conclusion and identify any other measures that you will implement to minimize resuspension of sediment.
53. ☐ Identify the substrate type and any aquatic resources that will be affected by the proposed action. (SAV, salt marsh, sand, silt/clay, rocky/hard bottom)
54. ☐ For projects which will include the installation of pilings/sheet-piles, identify the substrate at the project site (sand, cobble, silt/mud/clay), the installation method (vibratory hammer, impact hammer, combination) and indicate whether the following “soft start” procedures at beginning of the workday and after a 30-minute period of rest will be deployed:
    a. ☐ Vibratory Pile Installation: pile driving will 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 will be repeated two additional times, followed immediately by pile-driving at full rate and energy.
    b. ☐ Impact Pile Installation: pile driving will 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.
55. ☐ If the project involves dredging, describe any dredge history, number of dredge events to be covered by the permit, erosion/sediment controls, dredge type, intake structures (mesh screen size), dredged material disposal site.
56. ☐ For project activities associated with structures, identify the number, type (drill barge, work boat, tugboat, etc.), and size of any temporary vessels that will be used. Specify measures that will be implemented to ensure vessels are not berthed in shallow water or will “ground out” at low tide.
57. ☐ For aquaculture projects identify whether any component of the gear is seasonal (will be removed annually) or will be in place year-round. If gear will be present year-round and will be variably managed (e.g., floating in summer, bottom in winter) identify month/date for such configurations.
58. ☐ For aquaculture projects identify whether the project will involve use of an existing vessel or new vessel. Identify the length for all work vessels and identify the distance round trip from vessel berthing location and aquaculture area.
59. ☐ For project activities associated with docking structures (either commercial, industrial, or recreational) identify the number, type (motorized/non-motorized, jet-ski, sailboat, kayak, canoe, other that will be berthed there and the sizes of each.
60. ☐ Information required for Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act:
    a. Results of an eelgrass survey completed per the INSERT.
    b. Essential Fish Habitat Assessment to determine project-related impacts to essential fish habitat, using guidance developed by the National Marine Fisheries Service.
61. ☐ A document containing the following information (requirements of 50 CFR §600.920(e)(3)):
    a. Description of proposed action.
    b. Analysis of potential adverse effects on essential fish habitat.
    c. Conclusions regarding the effects of the action on essential fish habitat.
    d. If applicable, proposed mitigation.
    e. Analysis of alternatives to the proposed action.
    f. Other:

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DOCUMENT A00840

# MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

# ADMINISTRATIVE COMPLETENESS AND TECHNICAL DEFICIENCY REVIEW

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Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
**Department of Environmental Protection**
**Address**: 100 Cambridge Street, Suite 900, Boston MA 02114 | **Phone**: 617-292-5500

| **Maura T. Healey** | **Kim Driscoll** | **Rebecca Tepper** | **Bonnie Heiple** |
|---|---|---|---|
| Governor | Lieutenant Governor | Secretary | Commissioner |

June 1, 2026

Massachusetts Department of Transportation, Highway Division
10 Park Plaza, Suite 4160
Boston, MA 02116
Attn: Courtney Walker

RE: 401 Water Quality Certification
Administrative Completeness and Technical Deficiency Review
401 WQC Transmittal No: 26-WW26-0016-APP
WW11 Major Fill and Excavation and WW08 Minor Dredging

AT: Pleasant Street Culvert Replacement over Reservoir Brook
(No. L-08-053)
Leominster, MA

Dear Ms. Walker:

The Massachusetts Department of Environmental Protection (MassDEP) Wetlands Program Highway Unit has completed its Administrative Completeness Review of the application for the above-referenced Water Quality Certification (WQC) application. The application is hereby deemed administratively complete.

MassDEP has also completed its Technical Review of the above-referenced application and requests the following additional information:

1. To meet the MA Stream Crossing Standards to the Maximum Extent Practicable, a 3-sided box culvert is strongly preferred. Please evaluate substituting a 3-sided box culvert for the proposed 4-sided box culvert.

2. The proposed size of the Inland Wetland Replication Area identified in Item 755.35 of the Special Provisions (Attachment H) is 697 square feet (sf). However, elsewhere in the application, the proposed Inland Wetland Replication Area is 672 sf. This discrepancy should be clarified.

3. Note #2 on the Wetland Replication and Planting Plan (Sheet 10 of 20) states "*Live cutting willow stakes will be placed in the coir log bank…*". Please confirm that live cuttings may also include dogwood species (*Cornus amomum* and *Cornus sericea*), as indicated in Item 799.775 in Attachment H, as doing so would increase plant species diversity in the project area.

4. As shown in the Erosion and Sediment Control Plan (Sheet 8 of 20), several floating silt fences (i.e. turbidity curtains) are proposed within Reservoir Brook to prevent suspended sediment from flowing downstream during construction. Please confirm that the stream depth will allow the floating silt fences to function as intended without touching the streambed. If water depths will be less than 2 feet during construction, alternative sedimentation controls should be evaluated.

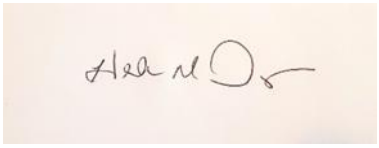
5. Please provide a construction detail of the flared end sections and rip rap energy dissipation bowls proposed at each new and replacement outfall as described in the Stormwater Management Report.

6. Figure 5, "Proposed Drainage Patterns", of the Stormwater Management Report refers to existing subcatchment area, EX-A1. This figure should be revised to show a delineation of post-development subcatchment areas including the amount of impervious surface that will discharge stormwater to each proposed deep sump catch basin.

Upon receipt of all requested supplemental information, MassDEP has 30 calendar days in which to issue or deny a certification.

Should you have any questions relative to this letter, please contact me at heidi.davis@mass.gov or Jaime Walker at jaime.walker@mass.gov.

Sincerely,



Heidi M. Davis
Highway Unit Supervisor

Ecc: DEP CERO – Judith Schmitz
USACE – Dan Vasconcelos
USACE – Kevin Newton
Leominster Conservation Commission – Jesse Averka
MassDOT – Ryan Wilcox
Clay Hutchinson – Jacobs

Kim Ciaramicoli – Jacobs

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June 10, 2026

Heidi Davis, Senior Environmental Analyst & Highway Unit Supervisor
Massachusetts Department of Environmental Protection
Wetlands and Waterways Program
100 Cambridge Street, Suite 900
Boston, MA 02114

**Subject: Leominster Pleasant St Culvert Replacement, #L-08-053**
**Response to 401 Water Quality Certification Administrative Completeness and Technical Deficiency Review Comments**
**Leominster, Massachusetts**

**WQC Transmittal No: 26-WW26-0016-APP**

Dear Ms. Davis:

The purpose of this letter is to respond to Department of Environmental Protection (DEP) comments on the Leominster Pleasant St Culvert Replacement (#L-08-053) Project located in Leominster, Massachusetts, provided in the 401 Water Quality Certification Administrative Completeness and Technical Deficiency Review (26-WW26-0016-APP) dated June 1, 2026. DEP comments are included herein in standard typeface, responses to comments are specified in italic typeface. Responses have been provided by Jacobs and TEC.

**Comments:**

1. To meet the MA Stream Crossing Standards to the Maximum Extent Practicable, a 3-sided box culvert is strongly preferred. Please evaluate substituting a 3-sided box culvert for the proposed 4-sided box culvert.

   *<u>Response:</u> TEC considered the use of a three-sided culvert throughout design and ultimately determined this alternative is not practicable for multiple reasons. Primarily, the entirety of construction must be completed during a Summer 2027 road closure coinciding with school vacation (projected to be June 25, 2027 – August 25, 2027 on the CTD, prepared by MassDOT). This construction timeline has been critical to the project since inception, with the goal of eliminating impact to busses and school traffic. Based on the current CTD, there is only 1-day of float in the schedule for the culvert installation (i.e. excavation/removal of existing structures, installation of temporary sewer bypass, installation of culvert and wingwalls, backfill, etc.) – meaning it is the critical path for construction. If a three-sided culvert were to be used, we would expect construction to*

*extend about 1-2 additional weeks due to the substantial amount of added earthwork and added time required to set/grout more precast pieces. This additional construction time cannot be accommodated in this extremely tight schedule.*

*In addition to the tight schedule, utilizing the four-sided structure yields significantly less excavation/impacts within the limits of the stream compared to the 3-sided structure. The attached Figure 1 illustrates the approximate limits of additional excavation that would be required to install the three-sided structure compared to the four-sided structure. TEC estimates that there would be an additional 134-cy of excavation that would be required to make this change.*

*Further, if a 3-sided structure was used, TEC estimates that there would only be approximately 3'-4" of clear space between the footings. We estimate that relatively larger footings (approximately 6-ft wide) would be required given the geotechnical properties of the native subgrade, as documented in the Geotechnical Report. We have prepared a graphic to illustrate this condition – please refer to Figure 2.*

*Given holistic review of project constraints, considerations and potential for ecological restoration, the four-sided structure meets the standards to the maximum extent practicable. In addition, streambed will be constructed throughout the four-sided culvert, creating a substantial improvement to fish and other aquatic organism passage compared to the existing conditions associated with the 36" corrugated plastic pipe (post flood) or 3'x5' stone culvert (pre-flood).*

2. The proposed size of the Inland Wetland Replication Area identified in Item 755.35 of the Special Provisions (Attachment H) is 697 square feet (sf). However, elsewhere in the application, the proposed Inland Wetland Replication Area is 672 sf. This discrepancy should be clarified.

   *<u>Response:</u> Jacobs confirms the proposed wetland replication area is intended to be 672 sf. The Special Provision for the Inland Wetland Replication Area (Item 755.35) has been revised to reflect the corrected Wetland Replication Area as 672 sf. Please see the revised Special Provision Item 755.35 attached.*

3. Note #2 on the Wetland Replication and Planting Plan (Sheet 10 of 20) states "Live cutting willow stakes will be placed in the coir log bank…". Please confirm that live cuttings may also include dogwood species (*Cornus amomum* and *Cornus sericea*), as indicated in Item 799.775 in Attachment H, as doing so would increase plant species

diversity in the project area.

*Response: Jacobs is confirming that live cuttings may also include dogwood species as specified in the Special Provision (Item 799.775) for Planting – Live Cuttings. Plan Sheet 10 has been revised to omit the word "willow" from Note 2. Please find the revised Sheet 10 - Wetland Replication & Planting Plan attached.*

4. As shown in the Erosion and Sediment Control Plan (Sheet 8 of 20), several floating silt fences (i.e. turbidity curtains) are proposed within Reservoir Brook to prevent suspended sediment from flowing downstream during construction. Please confirm that the stream depth will allow the floating silt fences to function as intended without touching the streambed. If water depths will be less than 2 feet during construction, alternative sedimentation controls should be evaluated.

   *Response: The floating silt fence has been removed from the plans. Extensive sediment and erosion control measures are provided throughout the entire project site to prevent construction material from entering the brook and to stabilize existing slopes. The silt fences were used as an extra layer of protection, but as indicated are unlikely to perform as expected due to the shallowness of the brook.*

   *Please find the revised Sheet 9 - Erosion & Sediment Control Plan attached.*

5. Please provide a construction detail of the flared end sections and rip rap energy dissipation bowls proposed at each new and replacement outfall as described in the Stormwater Management Report.

   *Response: The flared end section detail and stone for pipe ends details are attached. The outfall in the northeast quadrant will utilize the standard MassDOT detail for stone for pipe ends for energy dissipation. The other two outfalls in the northwest and southeast quadrants outfall into proposed slopes that are comprised of streambed material over rip rap as shown in the streambed restoration detail that was included in the plans.*

6. Figure 5, "Proposed Drainage Patterns", of the Stormwater Management Report refers to existing subcatchment area, EX-A1. This figure should be revised to show a delineation of post-development subcatchment areas including the amount of impervious surface that

will discharge stormwater to each proposed deep sump catch basin.

*<u>Response:</u> The figure has been revised to show the subcatchment areas and correctly reference PR-A1. The revised figure is attached.*

We appreciate your time and attention to this matter. Should you have any additional questions or comments regarding this application, please do not hesitate to contact us.

Thank you,

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Judith Schmitz, DEP CERO
Dan Vasconcelos, USACE
Kevin Newton, USACE
Jesse Averka, Leominster Conservation Commission

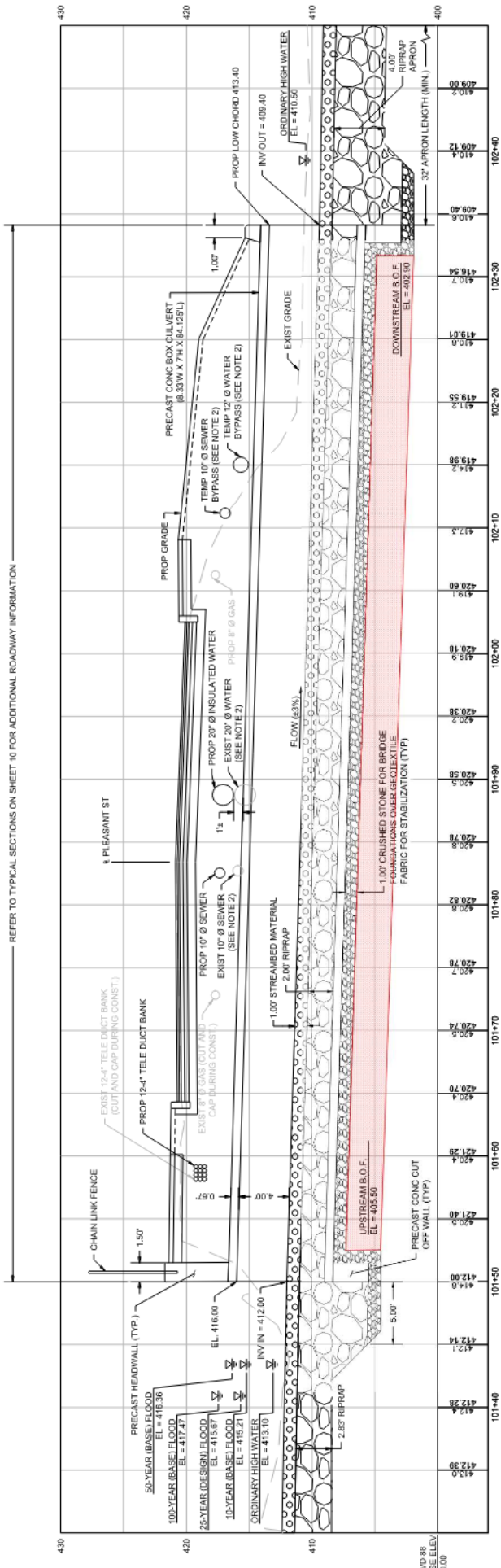
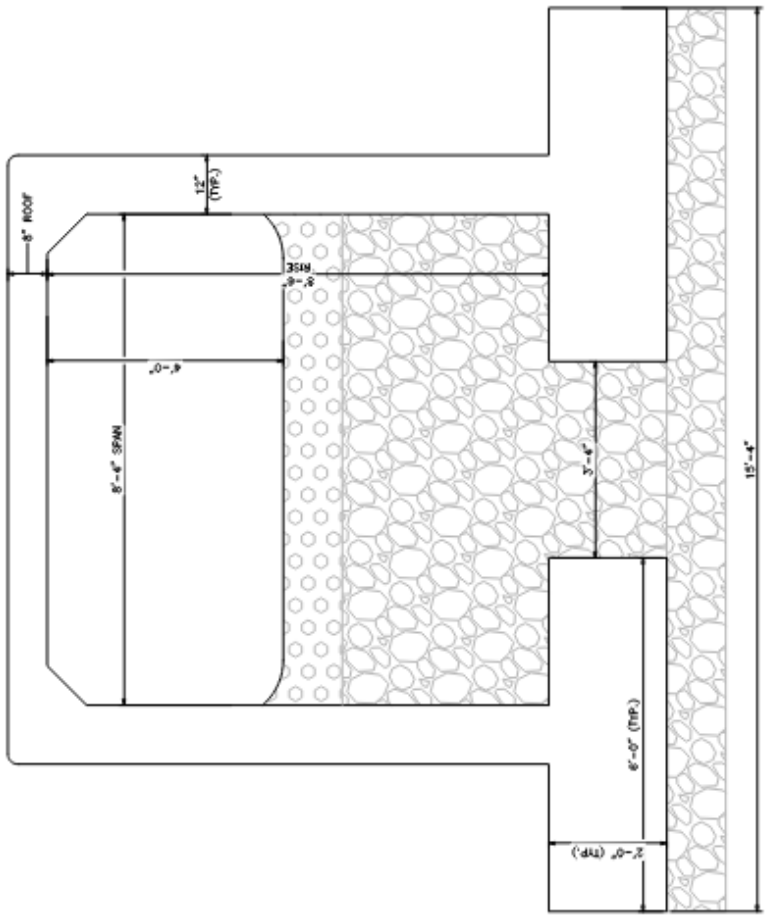
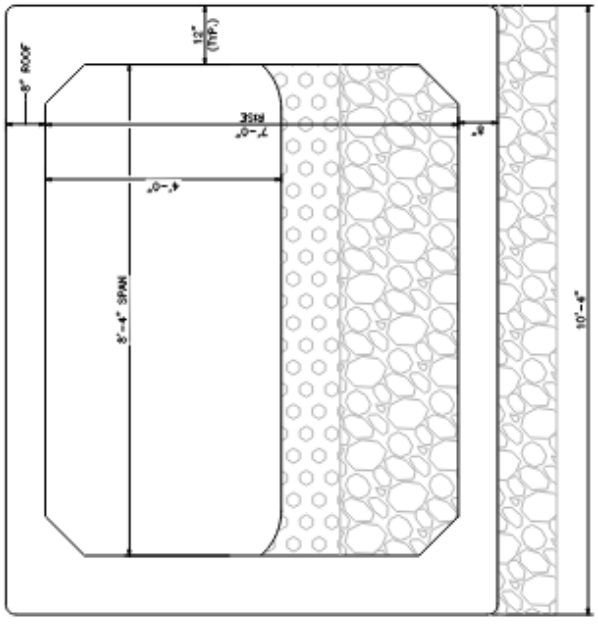

REFER TO TYPICAL SECTIONS ON SHEET 10 FOR ADDITIONAL ROADWAY INFORMATION
PLEASANT ST
CHAIN LINK FENCE
1.50'
EXIST 12-4" TELE DUCT BANK (CUT AND CAP DURING CONST.)
PROP 12-4" TELE DUCT BANK
EXIST 6" Ø GAS (CUT AND CAP DURING CONST.)
0.67'
4.00'
PROP 10" Ø SEWER
EXIST 10" Ø SEWER (SEE NOTE 2)
1:1
PROP 20" Ø INSULATED WATER
EXIST 20" Ø WATER (SEE NOTE 2)
PROP 8" Ø GAS
1.00' STREAMBED MATERIAL
2.00' RIPRAP
FLOW (@3%)
PROP GRADE
TEMP 10" Ø SEWER BYPASS (SEE NOTE 2)
TEMP 12" Ø WATER BYPASS (SEE NOTE 2)
PRECAST CONC BOX CULVERT (8.33'W X 7'H X 84.125'L)
1.00'
PROP LOW CHORD 413.40
INV/OUT = 409.40
ORDINARY HIGH WATER EL = 410.50
EXIST GRADE
4.00' RIPRAP APRON
32' APRON LENGTH (MIN.)
DOWNSTREAM B.O.F. EL = 402.90
1.00' CRUSHED STONE FOR BRIDGE FOUNDATIONS OVER GEOTEXTILE FABRIC FOR STABILIZATION (TYP)
UPSTREAM B.O.F. EL = 405.50
PRECAST CONC CUT OFF WALL (TYP)
5.00'
EL. 416.00
INV IN = 412.00
2.83' RIPRAP
PRECAST HEADWALL (TYP.)
50-YEAR (BASE) FLOOD EL = 416.36
100-YEAR (BASE) FLOOD EL = 417.47
25-YEAR (DESIGN) FLOOD EL = 415.87
10-YEAR (BASE) FLOOD EL = 415.21
ORDINARY HIGH WATER EL = 413.10
NAVD 88 BASE ELEV. 400.00
134 CY ADDITIONAL EXCAVATION

FIGURE 1




THREE SIDED CULVERT DETAIL
SCALE: 1" = 1'-0"

FIGURE 2




BOX CULVERT DETAIL
SCALE: 1" = 1'-0"

**ITEM 755.35 INLAND WETLAND REPLICATION AREA LUMP SUM**

The work under this item shall conform to the relevant provisions of Sections 120, 770, 771 of the Standard Specifications and the following:

Work under this item shall include furnishing material and the construction and maintenance of inland wetland replication areas as shown on the drawings and as required by the Engineer. Inland Wetland Replication Area shall hereafter be referred to as Replication Area. All work shall be in coordination with an approved Wetland Specialist as specified under that item.

Wetland Restoration work shall be as specified and compensated under that item. Construction of tidal wetlands shall be as specified under the appropriate item for tidal wetland mitigation.

The Replication Area shall be constructed prior to wetland impacts unless otherwise approved by the Engineer, specified herein, or specified in permit conditions and approvals. Construction schedule shall be appropriate to planting and seeding season (see below). Changes to this schedule will require written approval from the Engineer.

DESCRIPTION OF WORK

Construction of the Replication Area shall be completed as shown on the drawings at the following location(s):

Area A at Station: ***102+75-103+60 RT*** Area = **672** sf.

Replication Area shall be constructed to meet the requirements of all associated permits and certifications, including relevant performance standards of the Section 401 Water Quality Certification and Section 404, U.S. Army Corps of Engineers Permit.

The Contractor is responsible for protection and preservation of natural areas adjacent to the Replication Area both within and outside the project limits and for the duration of the Contract; including but not limited to damage to soils or vegetation due to erosion, sedimentation, compaction, trampling, vehicles, storage of materials, or other negligence shall be repaired to the satisfaction of the Engineer and at the Contractor's expense.

The Wetland Specialist overseeing the Wetland Replication construction work shall not be from the same company as that which is performing planting, seeding, or participating in any aspect of the Wetland Replication construction.

**ITEM 755.35** (Continued)

SUBMITTALS - DOCUMENTS

Request for Conditional Acceptance: As specified below, a letter requesting Conditional Acceptance of the work and the site conditions shall be submitted to the Engineer.

Request for Certificate of Compliance (Partial or Full): As specified below, shall be submitted to the Engineer for distribution to appropriate regulatory agencies.

Request for Final Acceptance: As specified below, a letter requesting Final Acceptance of the work and the site conditions shall be submitted to the Engineer.

Monitoring Reports: Reports shall be submitted to the Engineer as specified below. Reports shall be compensated under Item 755.75 and 755.76.

SUBMITTALS - MATERIAL

**Soil and Amendments**

No soil, compost, or other soil amendment imported to the work site shall contain seeds, roots, stems, or other viable parts of invasive plants or other noxious plants.

At least sixty (60) days prior to installation and prior to ordering, the Contractor shall submit for approval sources of soil, compost, and amendments. Submittal shall include the supplier and location of the source. Off-site sources shall be identified and available for inspection by the Wetland Specialist prior to transport of material to the site to verify that they are likely to be free of invasive plant species, including all viable plant parts.

Samples of tested and approved wetland soil and soil amendments for soil texture, organic carbon content or other routine soil analysis parameters (e.g., pH, Cation Exchange Capacity, Percent Base Saturation) and Soil Organic Matter Analysis will be required if requested by the Engineer. The grab samples shall be collected by the Contractor or Wetland Specialist from multiple representative locations in the wetland topsoil mix following the “Umass Soil and Plant Tissue Testing Laboratory Sampling and Collection Protocols” (or equivalent certification paperwork provided by the soil supplier). The lab analysis shall be provided to the Engineer along with written certification from the Contractor or Wetland Specialist that the wetland topsoil was collected per the referenced protocol and meets the desired specification. The analysis and written certification of same shall be provided to the Engineer prior to placing the wetland topsoil in the Replication Area.

**ITEM 755.35** (Continued)

**Seed Mix**

Certificate of Materials from the supplier shall be submitted 30 days prior to seeding and must be approved prior to ordering materials. Seed species listed on the certificate shall include ecotype region (i.e., *Asclepias incarnata*, PA Ecotype).

Seed tag from the bag of seed used shall be submitted to the Engineer at the time of seeding. Seed tag shall include ecotype region and species, guaranteed percentages of purity, weed content and germination of the seed, and the net weight. Seed tag shall match the Certificate of Materials, include the name of the supplier, and date material was sent.

Bill of lading or notarized Certificate of Compliance from the Supplier serving as proof of purchase shall be submitted if requested by the Engineer. Document shall include date of sale, quantity, lot number, and address of Supplier. This shall match the seed tag. Notary shall not work for either the contractor or seed supplier.

**Plant Certification**

Plant Certification shall be per the applicable requirements of Subsection 771, PLANTING TREES, SHRUBS AND GROUNDCOVER, of the Standard Specifications. The nursery source shall certify the provenance or origin of all plants.

**Other Material:** Submittals shall be per the respective item.

MATERIALS

**Sediment Control Barrier and Erosion Prevention Measures**
Sediment control barriers shall be per Item 767.121.

Erosion prevention measures for disturbed areas adjacent to the Replication Area shall include but not necessarily be limited to sediment control barrier as approved by the Engineer.

Sediment controls and erosion prevention devices and measures shall be compensated under the respective items.

**Wetland Soil**

Soil appropriate for the Replication Area may be either hydric soil excavated from the impacted wetland, a manufactured mix of compost and on-site borrow, or a combination thereof, as approved by the Engineer.

**ITEM 755.35** (Continued)

Hydric soil from the impacted wetland area may be spread on the surface of the constructed Replication Area as an inoculant or can be placed in a bulk fashion in a roughly 1:1 ratio of area and depth. Soil shall be handled such that the original soil structure is preserved and shall not be compacted, screened, or otherwise processed.

Hydric soil from the impacted wetland that is infested with invasive plant species identified on the Massachusetts Invasive Plant Advisory Group (MIPAG) shall not be used in the Replication Area unless approved by the Wetland Specialist and Engineer. To the extent possible, infested soil shall be disposed of within the project limits in an upland area outside of regulated areas and as approved by the Invasive Plant Management Strategy item (if in the contract) or by the Engineer.

A manufactured mix suitable for wetlands shall consist of on-site borrow from the proposed Replication Area (if approved by the Wetland Specialist and Engineer) thoroughly mixed with compost to achieve a target organic carbon content of 10-12% (up to 21% percent organic matter) by dry weight. The organic material used for mixing shall be well or partially decomposed. Clean leaf compost is the preferred soil amendment to achieve these standards though other materials may be used if approved by the Wetland Specialist and Engineer. Note that "clean" refers both to a negligible amount (<1%) of physical contaminants such as plastic and to the lack of chemical contaminants that might pose a hazard to plants or animals. Off-site borrow may be used for mixing if approved in advance by the Engineer.

No soil or soil amendment shall be brought on site without approval of the material source by the Wetland Specialist and the Engineer. Soils used in the replacement area shall be free of rocks greater than 4 inches in diameter.

Seed Mix

Seeding shall conform to the Standard Specifications Section M6, ROADSIDE DEVELOPMENT MATERIALS.

Seed Mix shall be Wetland – Riparian Mix and shall be per Item 765.553 and Wetland – Seasonally Flooded Mix and shall be per Item 765.554. See Plans for areas.

Fertilizers shall not be used.

**ITEM 755.35** (Continued)

**Item 765.553: Wetland – Riparian Mix**

| | Botanical Name | Common Name | % PLS By Weight |
|---|---|---|---|
| Grass | | | |
| | Sorghastrum nutans NY Eco | Indiangrass NY Ecotype | 14.00% |
| | Schizachyrium scoparium | Little Blue Stem | 14.00% |
| | Elymus riparius | Riverbank Wild Rye | 10.00% |
| | Elymus virginicus | Virginia Wild Rye | 10.00% |
| | Panicum clandestinum 'Tioga' | Deer Tongue 'Tioga' | 9.00% |
| | Andropogon gerardii NY Eco | Big Bluestem NY Eco | 8.00% |
| | Carex vulpinoidea | Fox Sedge | 7.00% |
| | Panicum virgatum | Switchgrass | 3.00% |
| | Juncus effusus | Soft Rush | 2.00% |
| | Agrostis perennans | Upland Bentgrass | 2.00% |
| | Scirpus atrovirens | Green Bulrush | 1.00% |
| | | | 80.00% |
| Herb/Forb | | | |
| | Chamaecrista fasciculata | Partridge Pea | 3.00% |
| | Verbena hastata | Blue Vervain | 3.00% |
| | Asclepias incarnata | Swamp Milkweed | 3.00% |
| | Heliopsis helianthoides | Ox-Eye Sunflower | 2.00% |
| | Eupatorium perfoliatum | Boneset | 2.00% |
| | Aster umbellatus | Flat Topped White Aster | 1.00% |
| | Aster prenanthoides | Zig Zag Aster | 1.00% |
| | Aster puniceus | Aster – Swamp | 1.00% |
| | Aster novae-angliae | New England Aster | 1.00% |
| | Eupatorium maculatum | Joe-pye Weed | 1.00% |
| | Monarda fistulosa | Wild Bergamot | 1.00% |
| | Vernonia noveboracensis | New York Ironweed | 1.00% |
| | | | 20.00% |
| | | | 100.00% |

**ITEM 755.35** (Continued)

**Item 765.554: Wetland – Seasonally Flooded Mix**

| | Botanical Name | Common Name | % PLS By Weight |
|---|---|---|---|
| Grass | Elymus riparius | Riverbank Wild Rye | 20.00% |
| | Andropogon gerardii NY Eco | Big Bluestem NY Eco | 12.00% |
| | Carex lupulina | Hop Sedge | 10.00% |
| | Panicum clandestinum 'Tioga' | Deer Tongue 'Tioga' | 10.00% |
| | Carex vulpinoidea | Fox Sedge | 10.00% |
| | Carex scoparia | Broom sedge | 8.00% |
| | Sorghastrum nutans NY Eco | Indiangrass NY Ecotype | 8.00% |
| | Panicum virgatum | Switch Gras | 8.00% |
| | Juncus effusus | Soft Rush | 2.00% |
| | Juncus tenuis | Path Rush | 1.00% |
| | | | 89.00% |
| Herb/Forb | Verbena hastata | Blue Vervain | 4.00% |
| | Desmodium canadense | Showy Tick Trefoil | 2.00% |
| | Eupatorium maculatum | Joe-pye Weed | 1.00% |
| | Asclepias incarnata | Swamp Milkweed | 1.00% |
| | Aster novae-angliae | New England Aster | 1.00% |
| | Eupatorium perfoliatum | Boneset | 0.70% |
| | Helenium autumnale | Common Sneezeweed | 0.50% |
| | Aster puniceus | Aster - Swamp | 0.50% |
| | Mimulus ringens | Monkey Flower | 0.20% |
| | Vernonia noveboracensis | New York Ironweed | 0.10% |
| | | | 11.00% |
| | | | 100.00% |

**Mix 765.553:** 20 lbs/acre PLS.
**Mix 765.554:** 20 lbs/acre PLS.

In addition, apply 30 pounds of cover crop (grain oats or grain rye) as appropriate to the season.

50% Increase Adjustment for Field Conditions

**ITEM 755.35** (Continued)

Seeding under the following conditions requires a 50% increase in the permanent mix at the time of construction:

- Seeding out of season
  OR
- Seeding after Compost Blanket has been applied (unless already increased for out of season).

Water

The Contractor shall provide water and all equipment required at no extra cost. Water shall be suitable for irrigation and free from ingredients harmful to plants and wildlife. Water from the adjacent water bodies or waterways shall not be utilized. It is the Contractor's responsibility to correct injury or damage due to the lack of water, too much water, or use of contaminated water.

Mulch/Compost Blanket for Seeding

Hydromulch shall be per the manufacturer's recommendations and shall be wood fiber or straw mulch only. Mulch shall be incidental to seeding.

Compost Blanket may be used in lieu of mulch for seeding. Compost Blanket shall meet the material and submittal requirements of that Item and shall be applied as specified below. Compost Blanket shall be compensated under that item.

CONSTRUCTION METHODS & SEQUENCE

**SITE PROTECTION MEASURES**

Minimizing Damage

The Contractor shall plan and execute operations in a manner minimizing the amount of excavated and exposed fill or other foreign materials that could be washed or otherwise carried into Replication Area and nearby resource areas.

Construction of and access to the Replication Area shall minimize damage to existing vegetation and soils as specified herein. Damage to soils or vegetation shall be repaired to the satisfaction of the Engineer and at the Contractor's expense. If required for soil remediation, tilling and the addition of compost shall be at the Contractor's expense.

Wetland topsoil shall be deposited and graded in the Replication Area in a manner that minimizes travel and subsequent compaction of the subgrade (including any specified pit and mound topography) to the extent practicable, including use of track mounted excavators as appropriate. Should soils be compacted, they shall be loosened by a method such as disking, spring-tooth harrowing and/or rototilling. The Contractor shall use boards, timber or composite mats, or other approved materials as necessary, to protect existing and/or new wetlands from compaction due to

**ITEM 755.35** (Continued)

heavy foot traffic or if equipment is required to travel over wetland soil. All labor and materials required for protection and preservation of site shall be incidental to this item.

Stockpiling of Soil

Stockpiling of soil, including hydric soil for replication, shall be at least 100 feet from the edge of the bordering and isolated vegetated wetlands and inland banks, unless approved otherwise by the Engineer. Stockpiled soils shall be securely stabilized and contained. Any areas of exposed soil or stockpiles within and adjacent to the Replication Area that will remain inactive for more than 7 calendar days shall be sown with a mix of rapid germinating annual grasses (e.g., annual rye) covered with a layer of straw mulch applied at a rate of 90 pounds per 1,000 square feet. As necessary, the mulch shall be anchored with a tacking coat (non-tar) applied by a hydro seeder or other method recommended by the Wetland Specialist in consultation with the Engineer. In the event that there is excess borrow, it shall be disposed of under Earth Excavation, Item 120.

Sediment Barriers

***Placement:*** Sediment barriers shall be installed along the downslope perimeter of the Replication Area beginning and ending in the surrounding upland so that no excavated material or disturbed soil can enter adjacent wetlands or waters. Where construction work is immediately upgradient of the wetland, barriers shall be located so as to protect the Replication Area until slopes are stabilized. Sediment barriers shall be in place and approved by the Engineer prior to excavation work. No work shall take place outside the barriers.

***Maintenance:*** The Contractor shall ensure that all sediment barriers function as intended and at all times per the specifications of those respective items.

Existing Trees to Remain

***Tree protection*** shall be per the relevant specifications and as shown on the plans or as required by the Engineer. To protect root systems of existing trees to remain, the limits of the Replication Area may be adjusted, but, the total area of replication required by the permits shall not be reduced. Access route may be adjusted as required.

***Trees to be retained as snags*** (upright dead or dying trees left for wildlife habitat) within or adjacent to the Replication Area shall be as shown on the plans or as directed by the Wetland Specialist or Landscape Architect during the initial site walk. Trees to remain as snags shall be clearly marked prior to clearing. Trees that pose a potential fall hazard (i.e., are near a roadway) should have limbs and trunk cut such that the tree does not pose a fall hazard.

**ITEM 755.35** (Continued)

***Coarse woody debris*** in the form of cut trees, stumps, logs, and brush shall be incorporated as shown on the plans or as directed by the Wetland Specialist or Landscape Architect. On site material shall be selected and marked by the Wetland Specialist, retained on the project site, and placed as specified below under Placement of Coarse Woody Debris.

All trees, stumps, or brush not specified to remain shall be removed and shall not be stockpiled in the wetland resource areas while awaiting disposal.

Work shall be coordinated with Clearing or Tree Removal Item and compensated under that Item.

**PRE-WETLAND CONSTRUCTION SITE WALK**

***Delineating the Replication Area and Access Route.*** The Contractor shall stake out the Replication Area boundaries and the intended access route and set grade stakes for approval by the Wetland Specialist and Engineer. Following staking and demarcation of areas, the Engineer and Wetland Specialist shall approve or modify as necessary the limits of work, the access route, final location and configuration of replication, grade stake elevations, proposed location of sediment barriers, and review proposed construction methods.

As part of the delineation and approval process, the Wetland Specialist shall mark trees to be converted to snags, select course woody debris to be retained for re-use, and select rocks or other elements to be used for habitat features.

***Invasive Plants:*** As part of the initial site walk, the wetland to be impacted and the proposed replication site shall be inspected for the presence of invasive plants. If invasive plants are found they shall be addressed as described herein under Invasive Plants.

**SOIL WORK**

Final grades in the Replication Area shall meet the target elevations as shown on the Plans or as adjusted by the Wetland Specialist to achieve the desired hydrology and micro-habitat. If adjustments are required, a Request for Information (RFI) shall be submitted to the Engineer for approval. Adjustments shall be documented and included in the As-Built plans (if required) and/or other applicable required documents.

**ITEM 755.35** (Continued)

Excavation & Grading

When required by permits, the Wetland Specialist shall notify MADEP and the ACOE (as applicable) at least 72 hours prior to excavation.

Soil in the proposed wetland areas that must be removed for grades to conform to the proposed elevations shall be stripped and disposed of, or, if suitable for reuse, be stockpiled in an approved location. Stockpiled soils shall be kept wet and not allowed to dry out. Procedures for maintaining appropriate moisture levels shall be documented by the Wetland Specialist and provided to the Engineer and the Contractor.

Replication area shall be excavated as shown on the drawings. Where replication area is adjacent to existing reference wetland, finish grade of replication shall generally match existing grades and micro-topography, notwithstanding any deviations that are necessary to achieve the desired hydrology and habitat in the Replication Area.

Prior to placement of backfill, scarify subgrade to a depth of 4 to 6 inches.

Placement of Wetland Soil

Following excavation, scarification, and grading of sub-grade, and after the sub-grade elevations are approved by the Wetland Specialist, suitable soil previously removed or an evenly mixed organic/mineral soil created on-site shall be spread to the design depth and thickness over the proposed wetland areas as shown on the plans and as directed by the Wetland Specialist.

Vehicles used to transport soil from offsite shall be washed or cleaned with air pressure to prevent exotic or invasive seeds or root fragments from contaminating the Replication Area.

Final Grading

The finished grade of the Replication Area shall be at an elevation that will provide an unrestricted hydrologic connection between the Replication Area and adjacent resource areas. The hydrologic connection should be in keeping with restoring the intended function of the replacement wetland relative to the impacted reference wetland. The Contractor shall verify that this elevation is not at a level that could negatively alter the hydrology of an adjacent wetland. Microtopography in the form of hummocks, pits and mounds shall be as shown on the plans or as adjusted by the Wetland Specialist. Final elevations and grading of wetland soil shall be approved by the Wetland Specialist and the Engineer.

To avoid compaction once soil has been placed, no heavy equipment shall travel across placed soil and no work shall occur in wet or moist soil. Soil that is compacted due to construction activities shall be replaced with soil as specified herein and at the Contractor’s expense.

**ITEM 755.35** (Continued)

**RESTORING VEGETATION**

Placement of Coarse Woody Material

If specified within this Contract or if directed by the Wetland Specialist or Landscape Architect during the initial site walk, woody debris shall be placed in the Replication Area and/or adjacent upland buffer. Material shall be placed as shown on the plans or as directed following placement of wetland soil and prior to application of compost and/or seed. Woody material shall cover a minimum of 5-20 percent of the Replication Area, depending on whether it is a meadow or woodland wetland and how much wood is available from construction clearing. Where trees are cut for construction purposes, logs of a minimum length of 8 feet must comprise a minimum of 50% of the woody material left on site. Brush shall be included along with logs and stumps as directed. Woody material shall be placed in a deliberate and naturalistic manner.

Planting

Following placement of wetland soil and approval of final grade and conditions, Replication Area shall be planted. Planting shall conform to SECTION 771 PLANTING TREES, SHRUBS AND GROUNDCOVER of the Division I Standard Specifications and as amended below.

Planting Season shall be May 15-June 15 and September 1-November 1 unless otherwise specified in applicable permit conditions.

Prior to planting, the Wetland Specialist shall approve the condition of the plant material and the method of installation and shall oversee the planting work. Replication Area shall be planted in the dry. Plants shall be placed according to the planting details and within the range of target elevations and at the spacing shown on the Plans or, if spacing is not indicated on the Plans, at the direction of the Wetland Specialist. Unless otherwise noted on the Plans, final plant locations shall be determined on site and located with regard to expected hydrology, plant growth characteristics, habitat desired, and water protection.

Plant material shall be installed as soon as possible after delivery. Plants stored on-site prior to installation shall be stored in the shade and watered twice daily up until time of installation. Plants showing signs of stress or compromised health may be rejected by the Engineer or Wetland Specialist and shall be replaced at the Contractor’s expense.

**ITEM 755.35** (Continued)

Plant material shall be furnished and installed as indicated including all labor, materials, plants, equipment, incidentals, re-setting of plants (frost heaves, etc), irrigation, re-planting and clean up. If previously approved species are not available at the time of planting, the Wetland Specialist may propose substitutions relative to species, size, and quantities for review and approval by the MassDOT Landscape Architect. Upon approval by MassDOT, substitutions shall be approved by the regulating authority, if and as necessary. Provisions shall be made for a growth warranty of at least two (2) calendar years from the date of Conditional Acceptance as described below or as required by permits.

Seeding

Following placement of wetland soil and planting (if included), the Replication Area shall be seeded using one of the following methods:

- Broadcast by hand or with a hand-held spreader followed by application of straw mulch. If necessary, seed shall be lightly raked to insure good seed-to-soil contact.
- Hydro-seeded with hydro mulch per the Standard Specifications and per the manufacturer's directions.
- Hand broadcast seed with Compost Blanket pneumatically applied at the same time to ensure light cover of soil topdressing over seed.

If spring conditions are drier than usual, supplemental watering may be required. If sowing during the summer months, supplemental watering will likely be required until germination.

If required, seeding limits for different seed mixes shall be determined by the Wetland Specialist.

PLANT ESTABLISHMENT AND INVASIVE MANAGEMENT

*Plants* shall be watered as necessary to maintain healthy establishment. Plants that fail by September 1 after spring planting or by May 15 after fall planting shall be replaced within the immediate or next planting period and at the Contractor's expense.

*Seeding* that fails to established according to the conditions of acceptance below shall be over-seeded as required by the Engineer. Washouts and channels shall be repaired and stabilized prior to overseeding. Excessive weed growth shall be pulled out by the roots or, with approval from the Engineer, cut prior to over-seeding. Soil repair and weed control are incidental to this item.

*Invasive Plants:* Corrective measures shall be taken to remove or treat invasive plant species in the Replication Areas. Invasive plants shall include those listed as invasive by Massachusetts Invasive Plant Advisory Group (MIPAG) and the US Army Corp of Engineer's New England District's Compensatory Mitigation Guidance

**ITEM 755.35** (Continued)

If chemical treatment of invasive plants is necessary, the strategy for treatment shall be as determined under Item 102.3 Invasive Plant Management Strategy. That strategy shall be coordinated with the Wetland Specialist and all applicable permits and permitting agencies. Chemical application under 102.33 Invasive Plant Management On-site shall be compensated under that item and shall be for the duration of the contract only.

CONDITIONAL ACCEPTANCE OF WORK

Conditional Acceptance shall indicate approval of the wetland construction work and agreement that work has been done according to plan or modified as approved.

Upon completion of construction, the Contractor shall submit a Request for Conditional Acceptance that includes a brief narrative from the Wetland Specialist demonstrating that the wetland replication construction work was done according to plans (or how modified) and meets required permit conditions. The narrative shall include, photo-documentation of pre-construction conditions as well as soil work, planting, and seeding. Seed tags shall be submitted as part of the Request for Conditional Acceptance.

Upon receipt of a Request for Conditional Acceptance, the Engineer, the Wetland Specialist, and regulatory representative (if required) shall assess the Replication Area and surrounding areas. At a minimum, the following conditions shall be included in the narrative and reviewed as part of the on-site assessment of whether:

- The final finished target elevations have been met and maintained relative to the approved plans and reference wetland. Areas that are too high or too low should be identified along with suggested corrective measures.
- Hydrology meets performance standards.
- Specified seed mix has been seeded. If inspected 30 or more days after seeding, seeded species in the wetland and adjacent upland shall show signs of good germination and healthy growth.
- Planted woody and herbaceous species meet specifications and are establishing well.
- Soils are stabilized and there is no sediment in the wetland and no channeling of slopes.
- There are no invasive plants visible in the replication area.

Upon approval that the work meets the above conditions, MassDOT will issue a letter of Conditional Acceptance. If the Wetland Replication work is not approved, MassDOT will issue a rejection letter requiring corrective actions. The Wetland Specialist shall recommend corrective actions. Work not approved shall be addressed by the Contractor at no extra cost.

Wetland Specialist shall be compensated under Item 755.75.

Erosion of adjacent slopes or the flow of sediments into the wetland between Conditional and Final Acceptance shall be immediately addressed by the Contractor.

**ITEM 755.35** (Continued)

FINAL ACCEPTANCE OF WORK

Following one full growing season, the Contractor shall submit a Request for Final Acceptance. Submittal shall include a brief narrative of conditions. Upon receiving the Request, the Engineer, Contractor, Wetland Specialist and regulatory representative (if required) shall assess the Replication Area. Final Acceptance will initiate the start of the Wetland Monitoring Period.

The following conditions shall be inspected and approved for acceptance and payment.

- Hydrology is functioning as intended.
- The desired seeded species are establishing well and cover at least 95 percent of the Replication Area, excluding areas of open water areas or planned bare soil.
- No sediments have entered the wetland.
- Adjacent slopes are stabilized with desirable vegetation.
- All planted species (if included) are living and establishing well.
- There are no visible invasive plants.
- Silt fence and non-biodegradable sediment barrier materials have been removed.

If the mitigation work does not meet the above condition and is not approved, MassDOT will issue a rejection letter requiring corrective action. The Wetland Specialist shall recommend corrective actions. Work not approved will be addressed by the Contractor at no extra cost.

Wetland Specialist shall be compensated under Item 755.75.

MONITORING REPORTS FOR REGULATORY COMPLIANCE

Post wetland construction Monitoring Reports shall be completed and submitted by the Wetland Specialist as specified and compensated under Item 755.76 Wetland Monitoring Reports.

Generally, the following conditions shall be met upon each inspection:

- Hydrology is functioning as intended.
- The desired seeded species are establishing well and cover 95 percent of the area, excluding areas of open water areas or planned bare soil.
- No sediments have entered into wetland.
- Adjacent slopes are stabilized with desirable vegetation.
- All planted species (if included) are living and establishing well.
- There are no visible invasive plants.

If, at the end of the required monitoring period, the requirements have not been met and success of the wetland replication area has not been achieved as determined by the Monitoring Reports, the Contractor shall provide corrective measures. All costs associated with corrective measures and plant replacement shall be incidental to this item with no additional compensation.

**ITEM 755.35** (Continued)

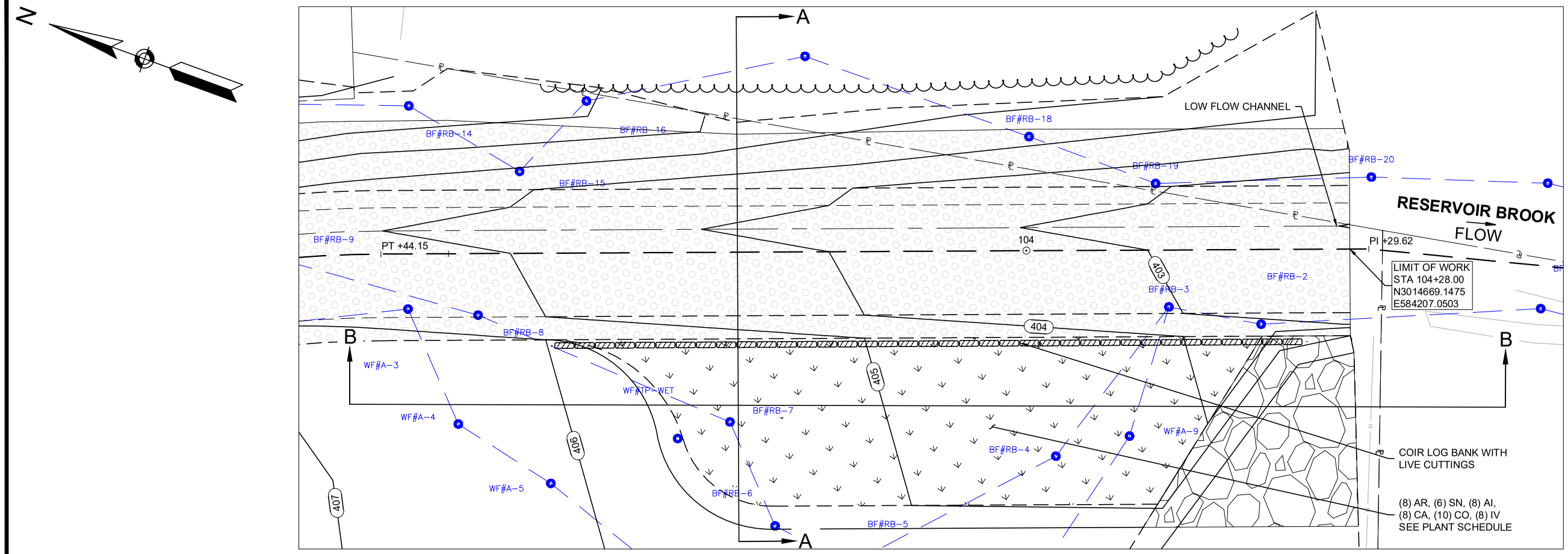
METHOD OF MEASUREMENT AND BASIS OF PAYMENT

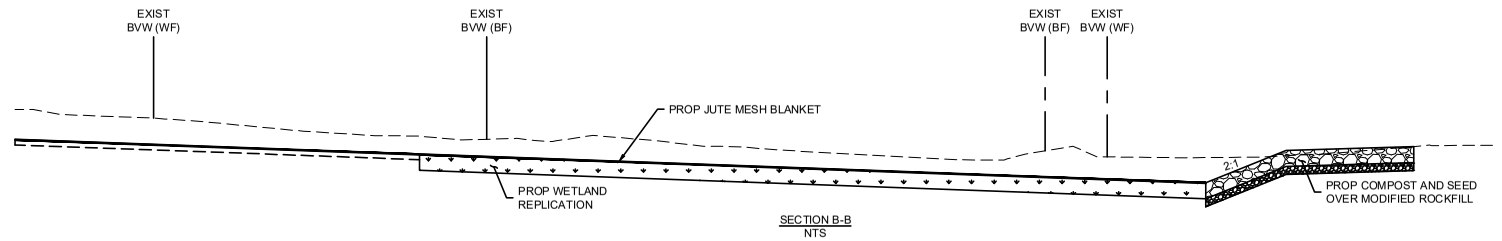
Item 755.35 will be paid for at the Contract unit price per Lump Sum, which price shall include all labor, materials, equipment, submittals, maintenance, all required soil, site preparation, grading, wetland seeding, planting, mulching, watering, as-built plans, Request for Certificate of Compliance, and all incidental costs necessary to complete the work as required. Seed mix for the adjacent flood storage area shall be considered incidental to this item.

Payment shall be as follows:

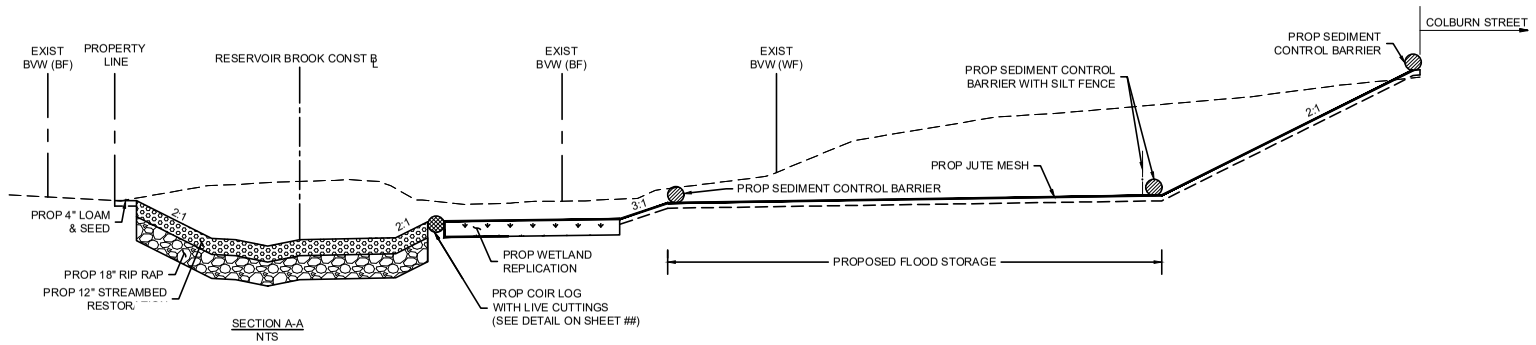
- 60% upon Conditional Acceptance.
- 20% after receipt and acceptance of Certificate of Compliance by the Engineer and once all permit construction requirements have been met and approved.
- 20% upon Final Acceptance.

Excavation will be paid under Item 120.
Sediment Control Barrier will be paid under Item 767.121
Wetland Specialist will be paid under Item 755.75
Wetland Monitoring Reports for follow-up monitoring will be paid under Item 755.76

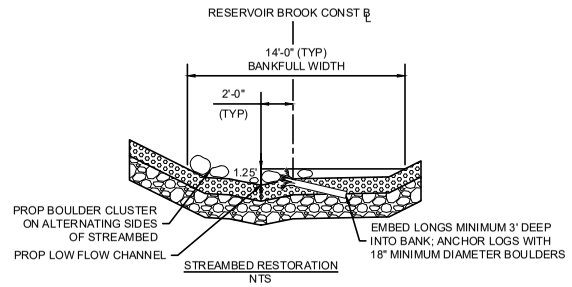



SECTION B-B
NTS




SECTION A-A
NTS




STREAMBED RESTORATION
NTS

NOTES:

1. WETLAND PLANTS ARE TO BE LAID OUT BY THE WETLAND SPECIALIST.
2. LIVE CUTTING STAKES WILL BE PLACED IN THE COIR LOG BANK AT 3-5 FOOT SPACING ACROSS THE REPLICATION AREA BANK.
3. WETLAND REPLICATION AREA SHALL BE CONSTRUCTED IN ACCORDANCE WITH ITEM 755.35 OF THE SPECIAL PROVISIONS. EXCAVATE EXISTING SOIL TO TARGET ELEVATIONS. IF EXISTING SUBSOIL IS DETERMINED TO BE UNSUITABLE FOR PLANTING, EXCAVATE TO DEPTH NECESSARY FOR PLANTING AND BACKFILL WITH APPROPRIATE MANUFACTURED SOIL. BACKFILL SHALL BE INSTALLED AS PER MASSDOT STANDARD SPECIFICATIONS.
4. SET LOW FLOW CHANNEL WIDTH TO APPROXIMATELY $\frac{1}{3}$ THE BANKFULL WIDTH.
5. ALIGNMENT OF THE LOW FLOW CHANNEL TO BE CONFIRMED IN THE FIELD DURING CONSTRUCTION BY THE GEOMORPHOLOGIST.
6. PROPOSED CHANNEL TO BE CONSTRUCTED USING NATIVE CHANNEL BED MATERIAL IN ACCORDANCE WITH THE STREAMBED RESTORATION SPECIFICATION AND IN COORDINATION WITH THE GEOMORPHOLOGIST. MAINTAIN ROUGH AND IRREGULAR CROSS SECTION.
7. CHANNEL BED SHOULD BE ROUGH AND "MESSY". WOOD TO BE EMBEDDED IN SEDIMENT PER GEOMORPHOLOGIST'S DIRECTION IN FIELD TO CREATE HABITAT FEATURES. PLACE NATIVE BOULDERS IN CHANNEL.
8. ADD A 6" MINIMUM LAYER OF RIVER GRAVEL ACROSS CHANNEL BOTTOM IF MUCK SOILS ARE UNCOVERED WITHIN THE EXCAVATED CHANNEL. RIVER GRAVEL TO BE INCIDENTAL TO ITEM 983.521.

| Plant Schedule | | | | |
|---|---|---|---|---|
| **Symbol** | **Quantity** | **Botanical Name** | **Common Name** | **Size** |
| | | | | |
| **Trees** | | | | |
| AR | 8 | ACER RUBRUM | RED MAPLE | 3'-4' HT |
| SN | 6 | SALIX NIGRA | BLACK WILLOW | 3'-4' HT |
| **Shrubs** | | | | |
| AI | 8 | ALNUS INCANA | SPECKLED ALDER | 2'-3' HT |
| CA | 8 | CORNUS AMOMUM | SILKY DOGWOOD | 2'-3' HT |
| CO | 10 | CEPHALANTHUS OCCIDENTALIS | BUTTONBUSH | 18"-24" HT |
| IV | 8 | ILEX VERTICILLATA | COMMON WINTERBERRY | 18"-24" HT |

0 10 25 50

SCALE: 1" = 10'

SHEET 10 OF 20

WETLAND REPLICATION & PLANTING PLAN

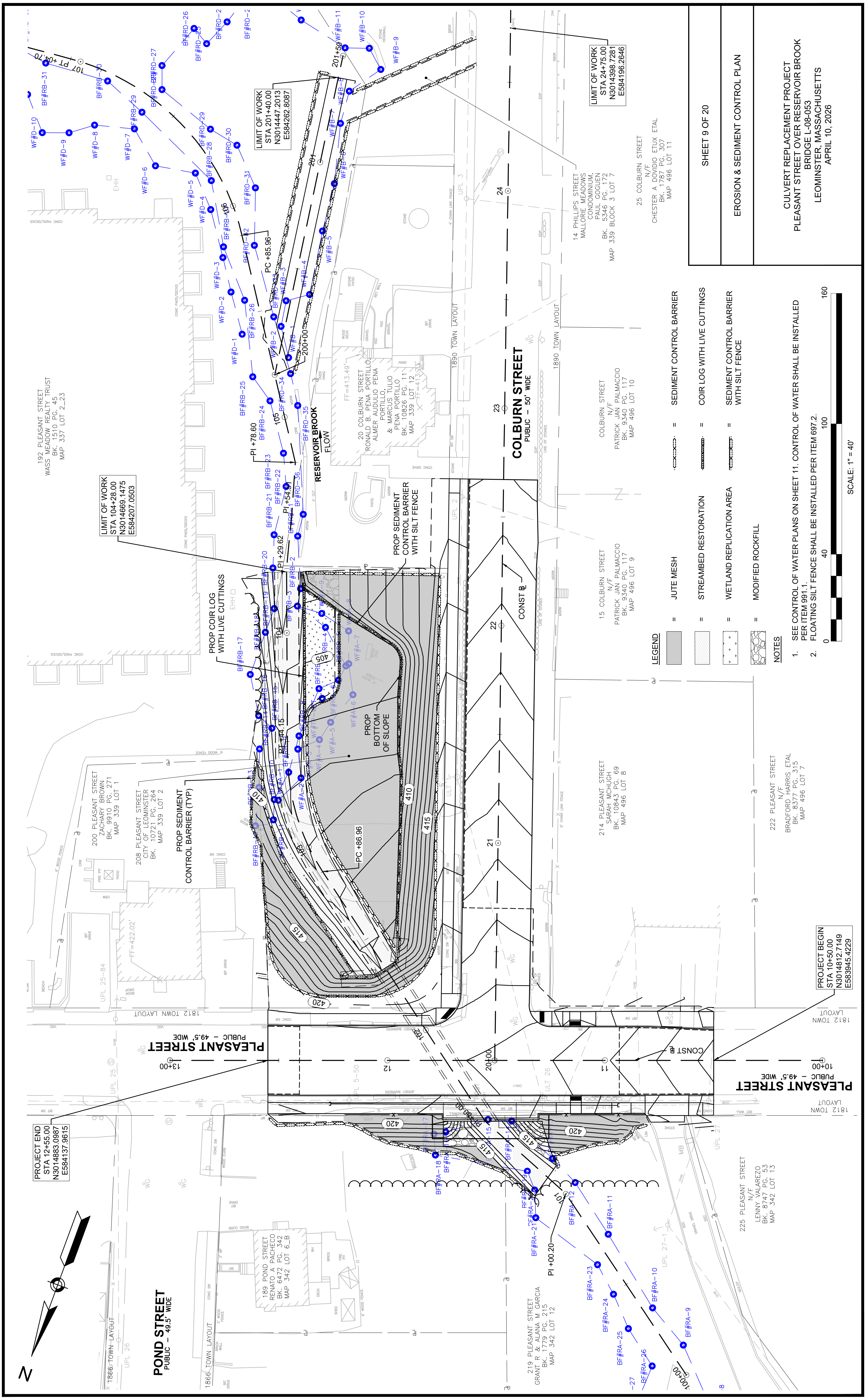
CULVERT REPLACEMENT PROJECT
PLEASANT STREET OVER RESERVOIR BROOK
BRIDGE L-08-053
LEOMINSTER, MASSACHUSETTS
APRIL 22, 2026

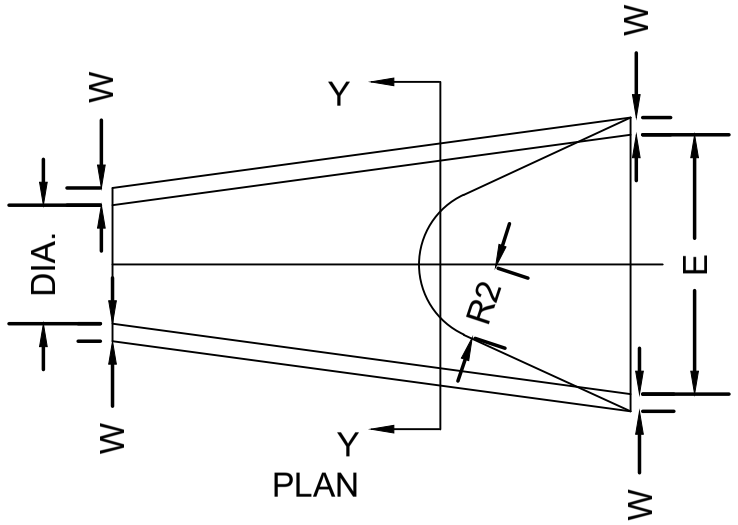
A00840 - 27

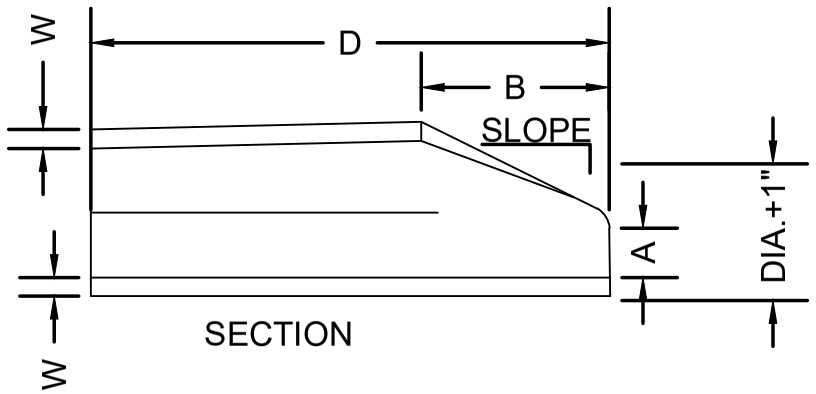
11 WETLAND REPLICATION & PLANTING PLAN.DWG Plotted on 3-Jun-2026 4:23 PM

Proposal No. 616375-136648

9 EROSION & SEDIMENT CONTROL PLAN.DWG Plotted on 3-Jun-2026 11:34 AM





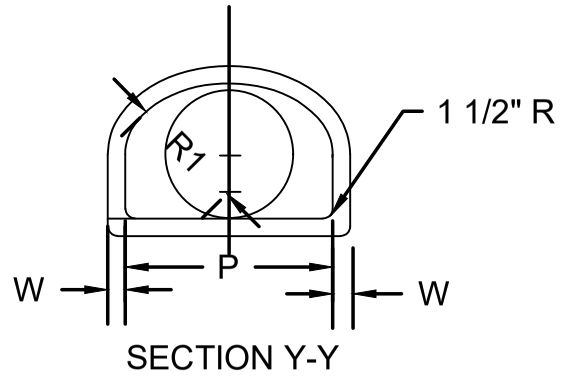




TABLE [ALL DIMENSIONS ARE INCHES OR FEET]

| MOVE | W | A | B | D | E | P | DIA. +1" | R1 | R2 | SLOPE |
|---|---|---|---|---|---|---|---|---|---|---|
| 12" | 2" | 4" | 2'-0" | 6'-0" | 2'-0" | 19 15/16 " | 13" | 10 1/8 " | 9" | 1V:3H |
| 15" | 2 1/4 " | 6" | 2'-3" | 6'-0" | 2'-6" | 24 5/16" | 16" | 12 1/2" | 11" | 1V:3H |
| 18" | 2 1/2 " | 9" | 2'-3" | 6'-0" | 3'-0" | 29" | 19" | 15 1/2" | 12" | 1V:3H |
| 21" | 2 3/4 " | 9" | 2'-11" | 6'-0" | 3'-6" | 31 5/8" | 22" | 16 1/8" | 13" | 1V:3H |
| 24" | 3" | 9 1/2" | 3'-7 1/2" | 6'-0" | 4'-0" | 33 3/16" | 25" | 16 13/16" | 14" | 1V:3H |
| 27" | 3 1/4" | 10 1/2" | 4'-0" | 6'-0" | 4'-6" | 36" | 28" | 18 9/16" | 14 1/2" | 1V:3H |
| 30" | 3 1/2" | 12" | 4'-6" | 6'-0" | 5'-0" | 37" | 31" | 18 1/2 " | 15" | 1V:3H |
| 36" | 4" | 15" | 5'-3" | 8'-0" | 6'-0" | 47 13/16" | 37" | 24 5/16" | 20" | 1V:3H |
| 42" | 4 1/2" | 21" | 5'-3" | 8'-0" | 6'-6" | 53 7/8" | 43" | 27 1/2" | 22" | 1V:3H |
| 48" | 5" | 24" | 6'-0" | 8'-0" | 7'-0" | 56 1/2" | 49" | 28 1/2" | 22" | 1V:3H |

NOTES:

1. SEE STANDARD SPECIFICATIONS FOR THE TYPE OF PIPE TO BE USED( BELL& SPIGOT OR TONGUE AND GROVE)
2. SEE STANDARD SPECIFICATIONS FOR THE TYPE OF PIPE AND PLACING OF STEEL REINFORCEMENT.
3. THE JOINTS ARE TO BE COMPATIBLE WITH THE MAIN RUN OFF PIPE.

massDOT Massachusetts Department of Transportation Highway Division

CONSTRUCTION STANDARDS

SECTION 200

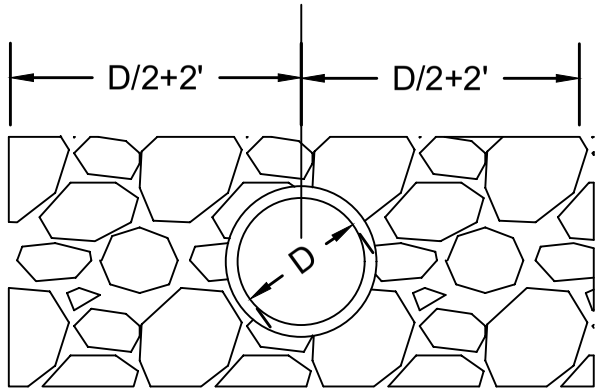
# REINFORCED CONCRETE PIPE FLARED ENDS

ISSUE DATE JAN 2025

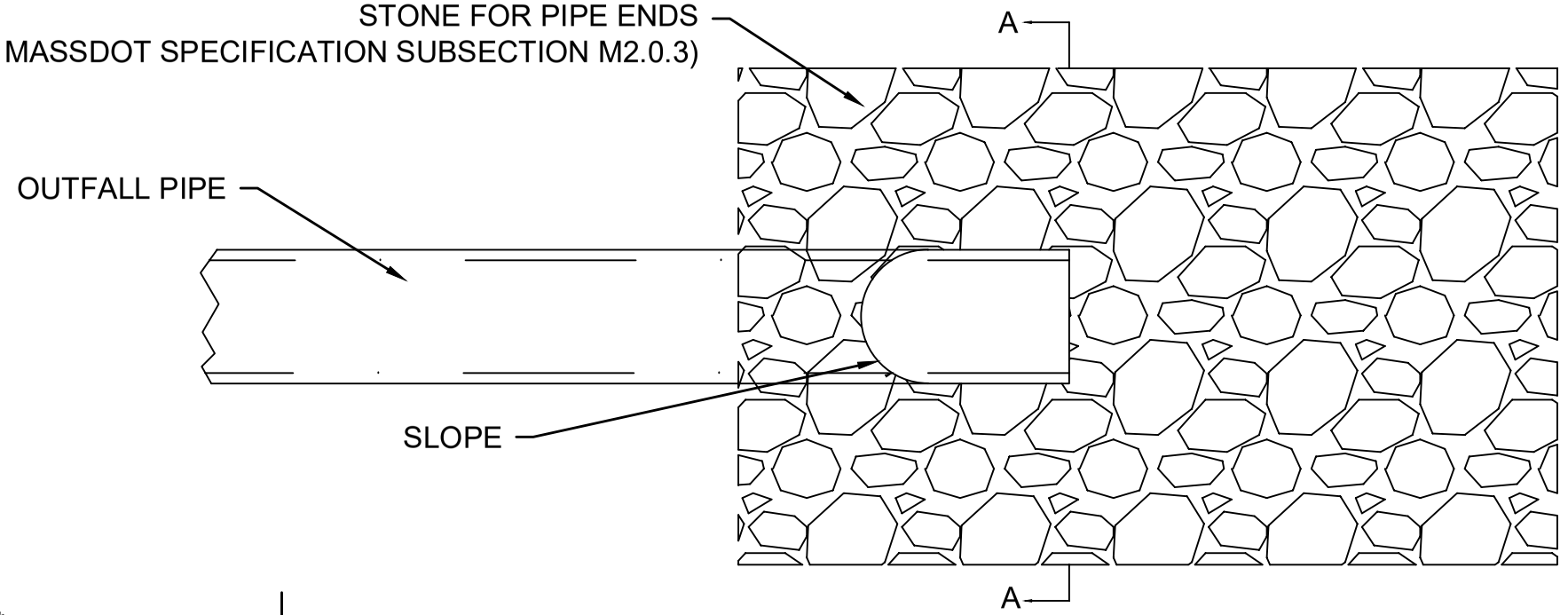
DRAWING NUMBER 242.0.1



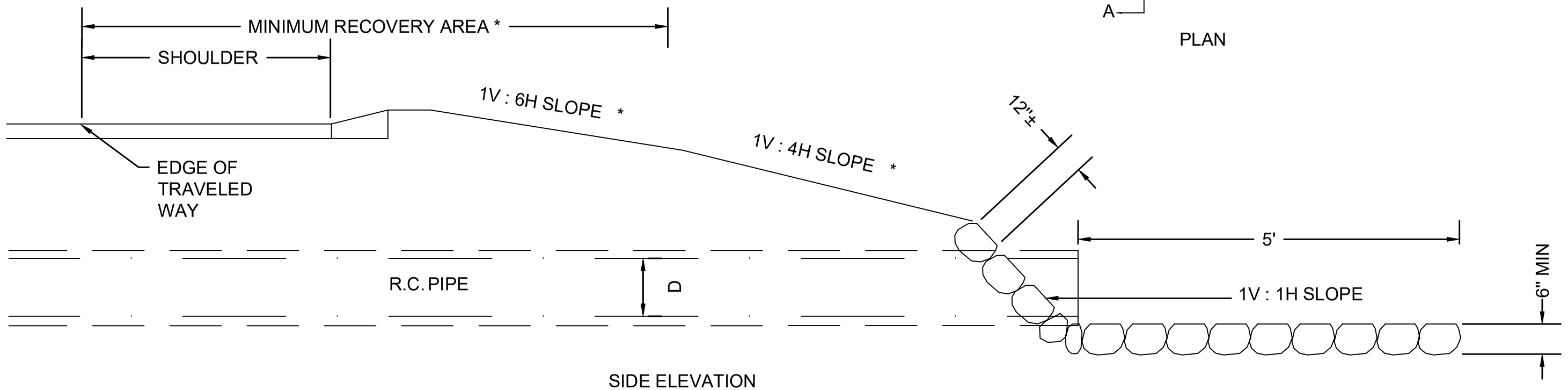
Proposal No. 616375-136648




SECTION A-A




PLAN




SIDE ELEVATION

* SEE TYPICAL SECTIONS

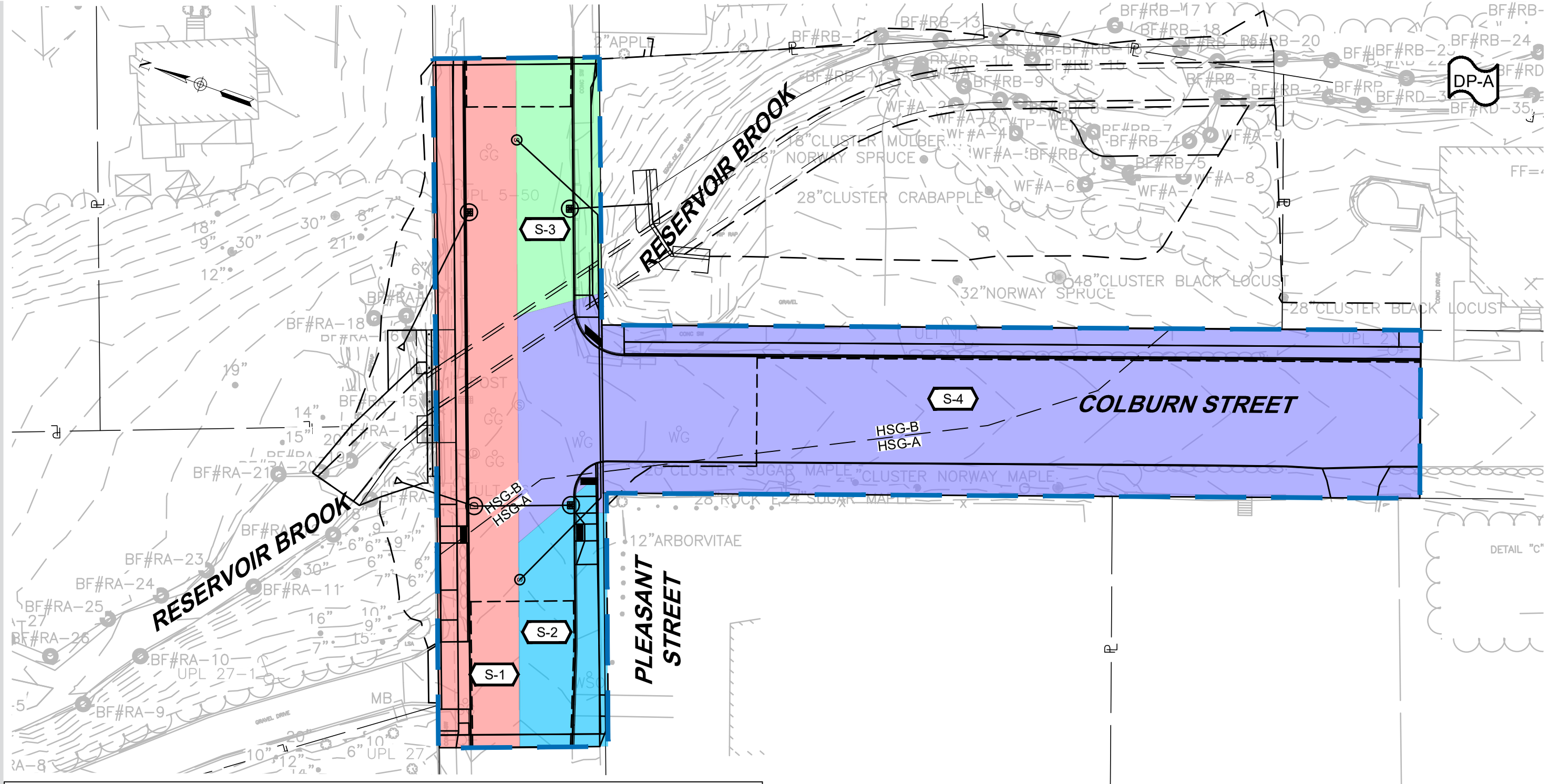
NOTES:

1. STONE TREATMENT OF PIPE ENDS SHALL NOT BE USED IN THE VEHICLE RECOVERY AREA.
2. MINIMUM MASS PER STONE=50LBS:MAXIMUM MASS PER STONE =125LBS.
3. FOR DESCRIPTION, MATERIALS AND CONSTRUCTION METHODS, SEE STANDARD SPECIFICATIONS M2.02.3 AND SUBSECTION 258 RESPECTIVELY.

| massDOT Massachusetts Department of Transportation Highway Division | CONSTRUCTION STANDARDS<br>SECTION 200 | **STONE PIPE ENDS FOR PIPE 24" AND LESS IN DIAMETER** | ISSUE DATE<br>**JAN 2026** | DRAWING NUMBER<br>**258.0.1** |
|---|---|---|---|---|

A00840 - 31

Proposal No. 616375-136648




| PROPOSED LOT COVERAGE TABLE | | | | | |
|---|---|---|---|---|---|
| | S-1 | S-2 | S-3 | S-4 | TOTAL (PR-A1) |
| IMPERVIOUS | 4,184 | 1,572 | 1,604 | 10,718 | 18,078 |
| PERVIOUS | 675 | 114 | 173 | 2,980 | 3,942 |
| TOTAL | 4,859 | 1,687 | 1,777 | 13,698 | 22,020 |

TEC
The Engineering Corp
TEC, Inc.
282 Merrimack Street, 2nd Floor
Lawrence, MA 01843

Scale: 1" = 30'
June 3, 2026

LEGEND
S-# SUBCATCHMENT AREA
P-# BASIN
DP-# DESIGN POINT
DRAINAGE AREA BOUNDARY

Post-Development

Pleasant Street
Leominster, Massachusetts

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June 16, 2026

Heidi Davis, Senior Environmental Analyst & Highway Unit Supervisor
Massachusetts Department of Environmental Protection
Wetlands and Waterways Program
100 Cambridge Street, Suite 900
Boston, MA 02114

**Subject: Leominster Pleasant St Culvert Replacement, #L-08-053**
**Response to 401 Water Quality Certification Administrative Completeness and Technical Deficiency Review Comments – Additional Comment**
**Leominster, Massachusetts**

**WQC Transmittal No: 26-WW26-0016-APP**

Dear Ms. Davis:

The purpose of this letter is to respond to the additional comment issued by the Department of Environmental Protection (DEP) on the Leominster Pleasant St Culvert Replacement (#L-08-053) Project located in Leominster, Massachusetts, provided via email on June 15, 2026, as follow up to the 401 Water Quality Certification Administrative Completeness and Technical Deficiency Review (26-WW26-0016-APP) dated June 1, 2026. This response letter is supplemental to the Comment Response letter issued by Jacobs and TEC dated June 10, 2026. DEP comments are included herein in standard typeface, responses to comments are specified in italic typeface. Responses have been provided by Jacobs and TEC.

**Comments:**

1. Based on the revised Post-Development Map provided in response to MassDEP Comment #6, it appears approximately 10,718 sf of impervious surface (i.e. Subcatchment Area, S-4) will sheet flow untreated off Colburn Street toward Reservoir Brook. Please evaluate installing a pair of deep sump catch basins along Colburn Street to intercept and treat a portion of runoff from this area prior to discharging through an outlet towards the mitigation area and Reservoir Brook. A marked-up image is provided below for a visual reference.

   *<u>Response:</u> Due to the presence of existing underground utilities along Colburn Street, additional CBs within this stretch is not feasible. The post development condition proposes no modification to the pre-existing drainage patterns along Colburn Street. In both the post-development and pre-existing conditions, drainage travels along Colburn*

16 June 2026

Leominster Pleasant St Culvert Replacement, #L-08-053
Response to 401 Water Quality Certification Administrative Completeness and Technical Deficiency Review Comments – Additional Comment
Leominster, Massachusetts

*Street to a set of structures to the south that outfall into Reservoir Brook. Colburn Street is bermed or curbed in both pre- and post- conditions and no water sheet flows off the roadway.*

*Additionally, the wetland replication area and flood storage areas have been designed to accept overflow waters from Reservoir Brook during high flow conditions while receiving sheet flow drainage limited to the overland flow from the vegetated areas inside of the roadway extent. Including a new point-source discharge point for roadway drainage would add potential for sediment scour and long-term erosion to the wetland replication area.*

We appreciate your time and attention to this matter. Should you have any additional questions or comments regarding this application, please do not hesitate to contact us.

Thank you,

Clay Hutchinson
Environmental Scientist

(508) 868 - 2115
Clay.Hutchinson@jacobs.com

Kim Ciaramicoli, PWS, CPESC
Group Leader – Northeast Environmental

(774) 529 – 7432
Kim.Ciaramicoli@jacobs.com

Bob Niccoli, PE, SE
Practice Leader – Structures
TEC, Inc

Copies to: Courtney Walker, MassDOT
Greg Frazier, MassDOT
Judith Schmitz, DEP CERO
Dan Vasconcelos, USACE
Kevin Newton, USACE
Jesse Averka, Leominster Conservation Commission

## Hutchinson, Clay

| | |
|---|---|
| From: | Walker, Jaime (DEP) <Jaime.Walker@mass.gov> |
| Sent: | Monday, June 15, 2026 10:53 AM |
| To: | Walker, Courtney L. (DOT); Hutchinson, Clay |
| Cc: | Davis, Heidi (DEP); Schmitz, Judith (DEP); Vasconcelos, Daniel B CIV USARMY CENAE (USA); Newton, Kevin M CIV USARMY CENAE (USA); javerka; Wilcox, Ryan P. (DOT) |
| Subject: | [EXTERNAL] Re: 401 Water Quality Certification Administrative Completeness and Technical Deficiency Review/Pleasant Street Culvert Replacement over Reservoir Brook, Leominster |

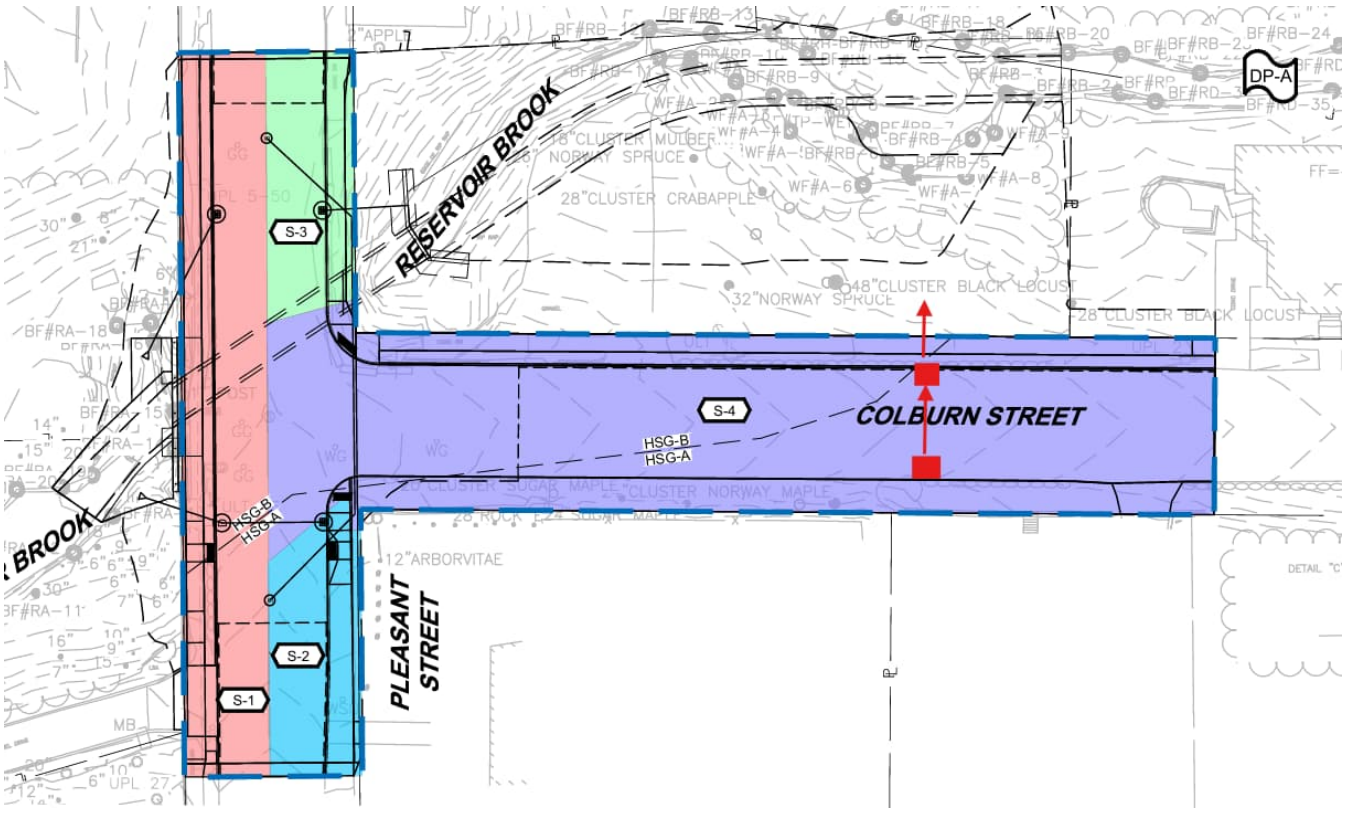
**This Message Is From an External Sender**

This message came from outside your organization.

Good morning, Courtney and Clay-

Thank you for providing the recent responses to MassDEP's comments in the Technical Deficiency letter dated June 1, 2026. In preparation of the issuance of the Water Quality Certification (WQC) and upon review of the responses and application materials, we have one more comment/question:

1. Based on the revised Post-Development Map provided in response to MassDEP Comment #6, it appears approximately 10,718 sf of impervious surface (i.e. Subcatchment Area, S-4) will sheet flow untreated off Colburn Street toward Reservoir Brook. Please evaluate installing a pair of deep sump catch basins along Colburn Street to intercept and treat a portion of runoff from this area prior to discharging through an outlet towards the mitigation area and Reservoir Brook. A marked-up image is provided below for a visual reference.



Please reach out to me at jaime.iannelli@mass.gov or Heidi Davis at heidi.davis@mass.gov if you have any questions concerning this comment.

Many thanks,

**Jaime Walker | Environmental Analyst**
Highway Unit, Wetlands and Waterways Program
Massachusetts Department of Environmental Protection
100 Cambridge Street, Suite 900, Boston, MA 02114
**Mobile**: 857-443-5440

---

From: Hutchinson, Clay <Clay.Hutchinson@jacobs.com>
Sent: Wednesday, June 10, 2026 4:18 PM
To: Davis, Heidi (DEP) <heidi.davis@mass.gov>
Cc: Schmitz, Judith (DEP) <judith.schmitz@mass.gov>; Vasconcelos, Daniel B CIV USARMY CENAE (USA) <daniel.b.vasconcelos@usace.army.mil>; Walker, Courtney L. (DOT) <Courtney.L.Walker@dot.state.ma.us>; Newton, Kevin M CIV USARMY CENAE (USA) <kevin.m.newton@usace.army.mil>; javerka <javerka@leominster-ma.gov>; Wilcox, Ryan P. (DOT) <Ryan.Wilcox@dot.state.ma.us>; Walker, Jaime (DEP) <Jaime.Walker@mass.gov>
Subject: RE: 401 Water Quality Certification Administrative Completeness and Technical Deficiency Review/Pleasant Street Culvert Replacement over Reservoir Brook, Leominster

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Hello Heidi,

Please find the attached response to Administrative Completeness and Technical Deficiency letter for the Pleasant Street Culvert Replacement over Reservoir Brook project (Transmittal No: 26-WW26-0016-APP) in Leominster. Please let us know if there is any additional information we can provide.

Thank you,

Clay

**Clay Hutchinson** (he/him) | Jacobs | Environmental Scientist
Clay.Hutchinson@Jacobs.com | (508) 868 – 2115

2 Executive Park Drive, Bedford, NH 03110 | USA

---

From: Davis, Heidi (DEP) <heidi.davis@mass.gov>
Sent: Monday, June 1, 2026 6:08 PM
To: Walker, Courtney L. (DOT) <Courtney.L.Walker@dot.state.ma.us>
Cc: Schmitz, Judith (DEP) <judith.schmitz@mass.gov>; Vasconcelos, Daniel B CIV USARMY CENAE (USA) <daniel.b.vasconcelos@usace.army.mil>; Newton, Kevin M CIV USARMY CENAE (USA) <kevin.m.newton@usace.army.mil>; javerka <javerka@leominster-ma.gov>; Wilcox, Ryan P. (DOT) <Ryan.Wilcox@dot.state.ma.us>; Hutchinson, Clay <Clay.Hutchinson@jacobs.com>; Walker, Jaime (DEP) <Jaime.Walker@mass.gov>
Subject: [EXTERNAL] 401 Water Quality Certification Administrative Completeness and Technical Deficiency Review/Pleasant Street Culvert Replacement over Reservoir Brook, Leominster

Good afternoon, Courtney –

Attached is the Administrative Completeness and Technical Deficiency letter for the Pleasant Street Culvert Replacement over Reservoir Brook project (Bridge No. L-08-053) in Leominster.

Please contact me at heidi.davis@mass.gov or Jaime Walker at jaime.walker@mass.gov if you have any questions concerning this document.

Best regards,

Heidi

Heidi M. Davis

Senior Wetland Analyst

Highway Unit Supervisor

Wetlands Program, Boston Office

MassDEP

339-225-2332




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# MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

# WATER QUALITY CERTIFICATE – FILING NUMBER: 26-WW26-0016-APP

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Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
**Department of Environmental Protection**
**Address**: 100 Cambridge Street, Suite 900, Boston MA 02114 | **Phone**: 617-292-5500

| **Maura T. Healey** | **Kim Driscoll** | **Rebecca Tepper** | **Bonnie Heiple** |
|---|---|---|---|
| Governor | Lieutenant Governor | Secretary | Commissioner |

July 16, 2026

Massachusetts Department of Transportation, Highway Division
10 Park Plaza, Suite 7360
Boston, MA 02116
Attn: Courtney Walker

RE: 401 WATER QUALITY CERTIFICATION
BRP WW 26, Minor Fill/Minor Dredge Project
Culvert (L-08-053) Replacement Project
Pleasant Street over Reservoir Brook
Leominster, Massachusetts

401 WQC Filing Number: 26-WW26-0016-APP
USACE Application Number: NAE-2025-00175
MassDOT Project Number: 613865

Dear Ms. Walker:

The Massachusetts Department of Environmental Protection (MassDEP) has reviewed your application for a Water Quality Certification (WQC), as referenced above. The WQC application was deemed complete on June 17, 2026. In accordance with the provisions of MGL Ch. 21, §§26-53 and Section 401 of the Federal Clean Water Act as amended (33 U.S.C. §1251 et seq.), it has been determined there is reasonable assurance the proposed project will be conducted in a manner which will not violate applicable water quality standards (314 CMR 4.00) and other applicable requirements of state law.

The proposed project includes the replacement of an existing culvert that carries Reservoir Brook underneath Pleasant Street in Leominster (the Project). Scour countermeasures, stream restoration, wetland replication, flood storage creation, stormwater drainage improvements, and full-depth reconstruction of the approaches will also be completed.

A severe flooding event in September 2023 caused the collapse of a 3-foot by 5-foot box culvert that conveyed Reservoir Brook underneath Pleasant Street and the adjacent property at 208 Pleasant Street. As a result, the residence of 208 Pleasant Street was compromised, and an extensive amount of sediment was deposited downstream between the properties of 20 Colburn Street and the condominiums at 192 Pleasant Street. In response, the City of

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Leominster redirected the brook toward a temporary 36-inch diameter corrugated plastic pipe east of the pre-existing culvert to quickly restore stream flow and vehicle travel. The City also acquired the 208 Pleasant Street property, demolished the house, and installed a temporary, riprap-lined drainage channel to daylight the portion of the stream that previously flowed under the property. Above the culvert, the restored roadway accommodates two undefined travel lanes with shoulders and no formal sidewalks.

Reservoir Brook flows northwest to southeast from Colburns Reservoir to its confluence with Fall Brook. At the crossing, the bankfull width of the brook is 12.4 feet. Bordering Vegetated Wetlands (BVWs) are present downstream of the culvert, where sediment deposits caused the pre-flood stream channel to shift east toward 192 Pleasant Street.

Stormwater from the Project area flows to closed drainage systems that ultimately discharge to Reservoir Brook. One catch basin located on the south side of Pleasant Street was washed out during the flood event.

A new four-sided precast concrete box culvert will be installed on a crushed stone foundation in the same alignment as the pre-existing culvert at Pleasant Street. The new 8.3-foot by 4-foot culvert will tie into the existing upstream headwall and extend 84 feet under Pleasant Street to a new concrete headwall on the downstream side.

The proposed project also includes the following restoration components:

1. Downstream of the culvert, the temporary drainage channel will be removed, realigned, and restored with natural streambed material from the outlet to the existing stream channel.

2. A flood storage area along the west bank of Reservoir Brook is proposed immediately downstream of the crossing. Existing grades within the upland area adjacent to the stream will be lowered to create a flat floodplain shelf and then seeded.

3. A 672-square-foot wetland replication area is proposed to replicate the 662-square-foot Vegetated Wetland area that will be permanently impacted as a result of activities associated with restoring hydrologic connections and creating flood storage.

4. In the downstream reach, sediments deposited after the storm event will be excavated and shaped from the former stream channel to restore an overland hydrologic

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connection to adjacent wetlands to accommodate overflow during high-flow conditions from Reservoir Brook.

Full depth pavement reconstruction is proposed approximately 60 feet east and 70 feet west of the culvert along Pleasant Street and approximately 50 feet south down Colburn Street from its intersection with Pleasant Street. The new roadway will accommodate two 11-foot-wide travel lanes with 3-foot-wide shoulders and 5-foot-wide sidewalks on both sides of Pleasant Street and the eastern side of Colburn Street.

A total of 4,263 square feet (sf) of permanent impacts to Land Under Water (LUW) is required to install the culvert and restore the stream channel. Once the culvert is installed, a 12-inch layer of locally sourced natural streambed material with similar composition to the existing streambed will overlay a 2-foot layer of riprap inside the culvert and a 4-foot layer of riprap at the inlet and outlet for scour protection. Natural streambed material will also be placed in the LUW restoration area once riprap is removed. The final channel shape and appearance will be overseen and approved by a Fluvial Geomorphologist (FGM) as conditioned herein.

A riparian wetland seed mix and native tree and shrub plantings will be applied/installed throughout and embedded coir logs with live-cutting stakes will stabilize the stream bank. Proposed native plantings include red maple (*Acer rubrum*), black willow (*Salix nigra*), speckled alder (*Alnus incana*), silky dogwood (*Cornus amomum*), buttonbush (*Cephalanthus occidentalis*), and winterberry (*Ilex verticillata*).

An additional 1,666 sf of temporary impacts to BVW will occur for the placement of timber mats for construction access. Upon removal, BVW will be restored to pre-existing conditions. All BVW restoration and replication work will be overseen and monitored by a Wetland Specialist as conditioned herein.

The Project meets the MA Stream Crossing Standards (SCS) to the maximum extent practicable per 314 CMR 9.06(2)(b)(4) and 9.07(1)(a)(4). Installation of a three-sided box culvert was deemed infeasible because it would increase construction duration and Resource Area impacts. Increasing the crossing span to meet 1.2 times bankfull width per SCS 3 is restricted by the approach intersections with Colburn Street and Pond Street. Additionally, the proposed openness ratio 0.39 will fall below the recommended openness under SCS 6. Regarding SCS 4, 5 and 7, natural substrate will be used within the culvert and throughout the stream restoration area and the water depth and velocity of the proposed channel will be comparable to pre-existing conditions.

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In total, 379 cubic yards (cy) of dredging within LUW is required for culvert installation and stream channel restoration. Sediment samples were collected on March 10, 2026, and the analytical results were compared to the Reportable Concentration (RCS-1) criteria of the Massachusetts Contingency Plan (MCP). The results identified the presence of arsenic in concentrations above RCS-1 criteria upstream of the culvert. Accordingly, proper handling, containment, dewatering and transportation of the dredged sediment will be conducted throughout the duration of the Project per 314 CMR 9.07.

Existing invasive species in the Project area will be documented prior to construction and managed in accordance with an Invasive Plant Management Strategy (IPMS) per Special Conditions 14 and 15.

The Project meets the MA Stormwater Management Standards to the maximum extent practicable per 314 CMR 9.06(6). The addition of a sidewalk on the eastern side of Colburn Street will increase impervious surfaces by 419 sf. The existing closed drainage system will be upgraded with the replacement of three existing catch basins with new deep sump catch basins. The new deep sump catch basins will remove 25% total suspended solids (TSS) from stormwater before discharging to Reservoir Brook through new pipe connections and reconstructed drainage outlets with stone pipe ends. Additional infiltration and conveyance Stormwater Control Measures (SCMs) are infeasible in the Project area due to surrounding development and Resource Areas. As such, Stormwater Management Standards 2, 3, and 4 will be met to the maximum extent practicable.

An alternatives analysis was completed in accordance with 314 CMR 9.00. The culvert requires full replacement to establish a permanent crossing that can withstand future flooding events from significantly impacting the area. As such, the no-build alternative was eliminated as it would not achieve project goals. Alternatives to replace the culvert in-kind or with a larger structure were also eliminated due to flooding concerns associated with retaining or significantly increasing the hydraulic opening of the pre-existing culvert.

Based on a review of information provided by the applicant, MassDEP finds that this project complies with the standards described under 314 CMR 9.06 and 9.07. Public notice was provided in the Sentinel and Enterprise on May 12, 2026, and in the MEPA Environmental Monitor on May 22, 2026. No comment letters were received during the public comment period.

Therefore, based on information currently in the record, MassDEP grants a WQC for this project subject to the following conditions to maintain water quality, to minimize impact on waters and

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wetlands, and to ensure compliance with appropriate state law. The Department further certifies in accordance with 314 CMR 9.00 that there is reasonable assurance the project or activity will be conducted in a manner which will not violate applicable water quality standards (314 CMR 4.00) and other applicable requirements of state law. Finally, the Department has determined that upon satisfying the conditions and mitigation requirements of this approval, the project provides a level of water quality necessary to protect existing uses and accordingly finds that the project to be implemented satisfies the Surface Water Quality Standards at 314 CMR 4.00.

Pursuant to 314 CMR 9.09(1)(d); 314 CMR 9.06(6)(a); 310 CMR 9.06(2); 314 CMR 9.07; 314 CMR 9.07(1); 314 CMR 9.09(7)(5)(c); 314 CMR 9.11; and 314 CMR 9.09(1)(e), the following Special Conditions are necessary to ensure that construction practices and stormwater controls are implemented in such a manner as to prevent degradation to wetlands and waters; ensure that practicable steps have been taken which will avoid and minimize impacts to wetlands and waters; minimize turbidity and sediment caused by construction activities; ensure that water quality is not degraded, and that biology of the waters are not negatively impacted by potential discharges; and/or maintain a record of the dredged material for reference and to ensure accountability in its transportation.

**Those Special Conditions that require direct submittals to MassDEP for either review, or review and approval, are denoted by the following notation (Submittal) at the end of the condition and are summarized in Attachment A. In addition, those conditions with the (Submittal) designation shall be included in the Special Provisions and, as applicable, reviewed at the Pre-Construction Meeting.**

1. All work shall be performed in accordance with the following documents and plans:

    a. Application for Water Quality Certification, with cover letter and attachments. 401 WQC Filing Number: 26-WW26-0016-APP (Minor Fill and Minor Dredge). Leominster-Culvert Replacement (L-08-053), Pleasant Street and Colburn Street, Leominster, Massachusetts. Prepared by Jacobs and TEC on behalf of MassDOT. Dated April 22, 2026.

    b. Plans entitled: “Culvert Replacement Project, Pleasant Street over Reservoir Brook (L-08-053) in the City of Leominster, Worcester County, Permit Plans”. Sheets 1 through 20. Prepared by TEC on behalf of MassDOT. Dated April 22, 2026, last revised on June 3, 2026.

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c. MassDEP Administrative Completeness and Technical Deficiency Review. 401 WQC Filing Number: 26-WW26-0016-APP (Minor Fill and Minor Dredge). Pleasant Street Culvert Replacement over Reservoir Brook (L-08-053), Leominster, Massachusetts. Dated June 1, 2026.

d. MassDOT Responses to MassDEP Administrative Completeness and Technical Deficiency Review, with cover letter and attachments. 401 WQC Filing Number: 26-WW26-0016-APP (Minor Fill and Minor Dredge). Leominster Pleasant Street Culvert Replacement (L-08-053), Leominster, Massachusetts. Prepared by Jacobs and TEC on behalf of MassDOT. Dated June 10, 2026.

e. MassDEP Supplemental Technical Deficiency Review, sent via email. 401 WQC Filing Number: 26-WW26-0016-APP (Minor Fill and Minor Dredge). Pleasant Street Culvert Replacement over Reservoir Brook (L-08-053), Leominster, Massachusetts. Dated June 15, 2026.

f. MassDOT Responses to MassDEP Supplemental Technical Deficiency Review, sent via email. 401 WQC Filing Number: 26-WW26-0016-APP (Minor Fill and Minor Dredge). Pleasant Street Culvert Replacement over Reservoir Brook (L-08-053), Leominster, Massachusetts. Prepared by Jacobs and TEC on behalf of MassDOT. Dated June 16, 2026.

g. Email from Thornton Ritz of the Division of Fisheries and Wildlife to MassDOT. Dated June 1, 2026.

**Pre-Construction**

2. A qualified **Wetland Scientist** (WS) with a minimum of five years of relevant professional experience with wetland replication and restoration projects shall be employed to oversee all BVW replication and restoration activities as proposed in the WQC application and approved herein, including but not limited to grading, placement of soil, seeding, vegetation plantings, and placement of wildlife habitat features. The name, contact information, and qualifications of the WS shall be provided to MassDEP for review and approval a minimum of 21 days prior to the Pre-Construction Meeting required in Condition 6. **(Submittal)**

3. A qualified **Fluvial Geomorphologist** (FGM) with a minimum of five years of relevant professional experience in stream replication and restoration projects shall be employed to oversee all LUW replication and restoration activities as proposed in the WQC

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application and approved herein. The name, contact information, and qualifications of the FGM shall be provided to MassDEP for review and approval a minimum of 21 days prior to the Pre-Construction Meeting required in Condition 6. The FGM shall either attend the Pre-Construction Meeting required in Condition 6 or a separate virtual or onsite meeting with MassDEP, MassDOT, and the construction contractor (Contractor) prior to any LUW replacement or restoration work. **(Submittal)**

4. One individual with at least three years of experience with construction period erosion and sedimentation controls shall be employed to be responsible for Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan (CP/PP) inspections (CP/PP Inspector). The name, contact information, and qualifications of the CP/PP Inspector shall be provided to MassDEP for review and approval a minimum of 21 days prior to the Pre-Construction Meeting required in Condition 6. **(Submittal)**

5. Prior to the Pre-Construction Meeting required in Condition 6, the applicant shall provide MassDEP with the name and contact information of the Resident Engineer (RE) responsible for ensuring that all work complies with the terms and conditions of this WQC. **(Submittal)**

6. A minimum of 21 days prior to the start of ground disturbance or vegetation clearing, MassDOT shall contact MassDEP to schedule an onsite Pre-Construction Meeting to review the approved plans and terms and conditions of this WQC. The RE, the Contractor, the WS, the CP/PP Inspector, a representative from the MassDOT Environmental Section and/or the District Environmental Engineer shall attend the Pre-Construction Meeting. **No work shall commence prior to the Pre-Construction Meeting.**

7. Prior to the Pre-Construction Meeting, the boundaries of BVWs and LUW shall be re-flagged where they are within 50 feet of the limits of work. All boundary markers, once in place, shall remain in place throughout construction until all disturbed surfaces have been permanently stabilized. Boundary markers shall be fully evaluated annually and refreshed where needed. Implementation of and compliance with this requirement shall be documented by the WS. All construction personnel shall be made aware of these markers.

8. MassDEP shall be copied on applicable submittals to the U.S. Army Corps of Engineers (USACE). These include but are not limited to: Pre-Construction Notification; Work-Start Notification Form; Mitigation Work-Start Notification Form; and Compliance

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Certification Form. The Work-Start Notification Form shall be submitted at least 14 days before the anticipated start of work. **(Submittal)**

9. A CP/PP shall be developed and implemented as required by 314 CMR 9.06(6)(a)8. A minimum of 21 days prior to the start of work, MassDOT shall submit the CP/PP to MassDEP for review and approval. If the U.S. Environmental Protection Agency (EPA) Construction General Permit (CGP) applies, the Stormwater Pollution Prevention Plan (SWPPP) may serve as the CP/PP, providing it includes the measures required to be in the CP/PP per these Special Conditions, in addition to the measures specifically required by the CGP. Any subsequent changes to the approved CP/PP (defined herein as including the construction period SWPPP if applicable) must be approved by MassDEP. **(Submittal)**

10. Training regarding erosion and sedimentation controls is required. The CP/PP Inspector and any other relevant personnel responsible for erosion and sedimentation controls shall complete the EPA CGP Inspector Training, or other training that meets the CGP requirements, as well as complete a comprehensive review of the approved CP/PP. Proof of completion of the training shall be submitted to MassDEP prior to the start of work. **(Submittal)**

11. The CP/PP shall identify, but shall not be limited to, staging and laydown areas in relation to BVWs and LUW, proposed dewatering methods and locations, proposed stockpile locations and their proximity to catch basins or other drainage conveyances that discharge to BVWs and LUW, and the location of construction-period erosion and sedimentation controls. The CP/PP shall include all the relevant provisions included in the Construction Period Conditions herein.

12. A minimum of 21 days prior to the start of work, MassDOT shall submit a Control of Water Plan for review and approval. The Plan shall include a description of proposed methods to isolate and dewater work areas within streams while maintaining stream flow, including but not limited to the method of isolation (e.g., steel sheeting or sandbag cofferdam), dewatering methods and locations and specifications for stream bypass systems as applicable. The Control of Water Plan shall include a plan depicting approved BVW and LUW boundaries, and the location of all relevant methods and materials which shall be located within the BVW and LUW impact areas approved herein. The plan shall meet the requirements of the CP/PP and be specific to the Project. Dewatering and stream bypasses shall be conducted under the supervision of

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**Phone:** 617-292-5500

the RE or other project staff with knowledge of these practices and comply with the applicable conditions identified herein. **(Submittal)**

13. Prior to the start of work, approved erosion and sedimentation control measures shall be installed per the approved CP/PP and as applicable, the manufacturer specifications. Erosion and sedimentation control measures may consist of, but are not limited to, silt fence, staked straw bales, silt/turbidity curtains, compost filter tubes, etc.

14. The Contractor shall develop an Invasive Plant Management Strategy (IPMS) to be submitted to MassDEP for review and approval at least 21 days prior to the Pre-Construction Meeting. The IPMS shall be implemented as approved. **(Submittal)**

15. If needed, use of herbicides to control invasive species shall be implemented in accordance with the approved IPMS and with the following requirements:

    a. Herbicides shall only be applied by a Licensed Applicator;

    b. Only herbicides registered with the Massachusetts Pesticide Board Subcommittee shall be applied to the targeted area/species;

    c. The manufacturer's label directions must be followed, in addition to any conditions imposed by other state or local authorities;

    d. Herbicide application shall use no more than the minimum application rate to accomplish removal of the target species; and

    e. Applicants may need to obtain a BRP WM04 Herbicide Permit from the MassDEP Wetlands Program, Dredge Unit before applying herbicides in wetlands and shall consult with the Dredge Unit regarding the applicability of a WM04 permit, and shall obtain such permit if required by MassDEP. A WM04 permit is required for chemical application to open water bodies and wetlands.

16. A minimum of 21 days prior to the start of demolition work, a Demolition Plan shall be submitted for review and approval describing how the existing culvert will be demolished and what measures will be taken to ensure that demolition material, including but not limited to any pollutants, construction debris, toxic or hazardous substances, and airborne dust, is properly contained and does not enter Reservoir Brook. **(Submittal)**

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**Construction Period**

17. No more than **662 sf** of permanent and **1,666 sf** of temporary impacts to BVW shall occur. No more than **4,263 sf** of permanent impacts to LUW shall occur. No more than **379 cy** of dredging in LUW shall occur. All work shall avoid unapproved impacts to BVW and LUW.

18. Under the direction of the CP/PP Inspector, inspection and maintenance of erosion and sediment controls in active work areas may be performed by both the Contractor and RE or other MassDOT project staff. Maintenance is the responsibility of the Contractor; however, the permittee shall be ultimately responsible for erosion and sedimentation control failure. The RE and/or contractor shall immediately notify MassDEP and the Leominster Conservation Commission if any unauthorized discharges to BVWs or LUW occur.

19. CP/PP inspections shall occur at least once every seven calendar days and within 24 hours of a storm event that produces 0.5 inches or more of rain within a 24-hour period, or at a more stringent frequency if the CP/PP requires.

20. Copies of CP/PP Inspection and Maintenance Log Forms shall be submitted to MassDEP within 14 days upon request.

21. Disturbed areas shall be stabilized immediately after activities have permanently ceased or will be temporarily inactive for 14 or more calendar days. The installation of stabilization measures shall be implemented as soon as practicable, but no later than 14 calendar days after disturbed areas have been inactive.

22. Work within LUW shall be conducted in low or no-flow conditions to the extent practicable. Notice shall be provided to MassDEP and the Leominster Conservation Commission within 24 hours prior to the commencement of dewatering. Dewatering methods and location(s) shall be approved by the RE or other project staff with knowledge of these practices prior to use to ensure consistency with the approved Control of Water Plan, and shall be documented in the CP/PP. There shall be no discharge of untreated dewatered stormwater or groundwater to BVWs or LUW. Any discharges shall be visibly free of sediment.

23. Additional erosion and sedimentation control materials shall be stored on-site at all times for emergency and routine replacement. Materials shall be kept covered, dry, and accessible at all times. The CP/PP Inspector shall be responsible for anticipating the

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need for and installation of additional erosion and sedimentation controls and shall have the authority to require additional erosion control measures to protect wetland resource areas beyond what is shown on the plans if field conditions or professional judgment dictate that additional protection is necessary.

24. Any storm drains with potential to receive discharge from stockpiled materials or construction operations shall be managed to inhibit the inflow of sediment while not increasing the likelihood of roadway flooding during periods of precipitation. The CP/PP shall specify measures to implement this. Filter fabric stretched under storm drain inlet grates are not acceptable for this purpose.

25. Stockpiles shall be located no less than 50 feet from BVWs, LUW, catch basins, or other drainage conveyances that discharge to BVWs or LUW.

26. The contractor shall have designated washout areas for concrete equipment that will be comprised of impermeable material and sized to contain project concrete wastes and wash water. Concrete wash out areas shall be located no less than 50 feet from BVWs, LUW, and catch basins or other drainage conveyances that discharge directly or indirectly to BVWs or LUW.

27. Refueling, washing, and cleaning of vehicles and other construction equipment shall not take place within 50 feet of BVWs or LUW and any wash water shall be contained such that it does not drain toward BVWs or LUW. MassDEP shall explicitly approve in writing any deviation to this condition for oversized stationary vehicles.

28. The contractor shall have spill containment kits on site. In the event of a release of fuels and/or oils, the local fire department, MassDEP Emergency Response and MassDEP Wetlands Program Highway Unit shall be immediately contacted, and in addition, the MassDEP Bureau of Waste Site Cleanup shall be notified per the requirements of the Massachusetts Contingency Plan, 310 CMR 40.0000.

29. Construction vehicles and equipment shall not enter BVWs or LUW unless authorization is provided by way of this permit or amendment. The Contractor shall use equipment with boom reach capabilities and other measures to avoid inadvertent impacts to jurisdictional resource areas as a result of excavation, riprap placement, and/or culvert demolition materials.

**Dredging**

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30. MassDEP shall be notified seven days prior to the start of dredging so that staff may inspect the work for compliance throughout the project. **(Submittal)**

31. No later than 21 days prior to commencement of dredging activity, a Dredged Material Dewatering Plan shall be submitted to MassDEP for review and approval. At a minimum, the 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. **(Submittal)**

32. Dredged sediment shall be screened and segregated into two stockpiles. Coarse-grained sediment that does not pass through the No. 200 U.S. Standard Series Testing Sieve shall be reused on-site as natural streambed material to the extent practicable per 314 CMR 9.07(2)(a). Sediment that passes through the No. 200 sieve shall be resampled to determine if its suitable for reuse or if off-site disposal is required. Results of the chemical analysis shall be compared to the MCP RCS-1 criteria. If the sediment exceeds RCS-1 criteria and is not suitable for on-site reuse, the analytical results should be compared to the reuse levels in Policy COMM-97-001 - Reuse and Disposal of Contaminated Soil at Massachusetts Landfills for reuse as landfill daily cover. The approved LSP required by Condition 33 will review the data to determine if the sediment exceeds the COMM-97-001 criteria and requires disposal at an out-of-state facility within ten calendar days. Sampling data including sampling methods and laboratory QA/QC data and the LSP determination shall be provided to MassDEP within 10 business days once available from the analytical laboratory for review and approval.

33. All handling of contaminated sediment exceeding MCP RCS-1 criteria and authorized by this WQC shall be conducted under the direction of a Licensed Site Professional (LSP). Prior to the Pre-Construction Meeting required in Condition 6, the applicant shall provide MassDEP with the name and contact information of the LSP. **(Submittal)**

34. An Environmental Health & Safety Plan shall be required for the protection of workers from any exposure to known/suspected contaminants present in environmental media (including sediment which has been characterized as exceeding MCP RCS-1 criteria). A copy shall be provided to MassDEP at least two weeks prior to the commencement of the dredging operation. **(Submittal)**

35. Best Management Practices (BMPs) shall be employed by the contractor to protect resource areas located adjacent to the proposed staging/temporary dredged material stockpiling and dewatering areas. Sediment stockpiles shall be constructed in

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accordance with the MassDEP approved project plans, stabilized, bottom-lined if not placed on paved surfaces and securely covered with wind tear resistance tarpaulin, polyethylene sheeting or similar impermeable material at all times, and properly labeled. Stockpile covers shall be securely weighed down. Stockpiles shall also be secured to restrict access by the public and shall be set back at least 10 feet from temporary construction access roads or other areas and activities which could disturb the stockpiles and associated erosion controls; if the 10-foot setback cannot be met, then a MassDEP-approved barrier shall be provided. Inspection of the sediment containment and dewatering location and associated erosion controls shall be conducted daily and within 24 hours of a storm that produces 0.5 inches or more of rain. Any observed deficiency shall be corrected or repaired in a timely manner.

36. In the event of a precipitation or storm event, the site shall be secured beforehand in such a way as to protect resource areas and waters on site and downstream of the site, including covering of stockpiles of dredged material. Sediment stockpile areas shall be inspected in line with the frequency of the CP/PP required in Condition 19. Any observed deficiency shall be corrected or repaired in a timely manner to prevent discharge from the stockpiled material. If stormwater runoff and erosion is observed from stockpiled dredged material, additional erosion and/or damage prevention controls measures shall be implemented.

37. Dredging, stockpiling of dredged material, and offsite transport of dredged material shall be sequenced and conducted in a manner to limit stockpiling time. Sediment characterized as having concentrations exceeding the RCS-1 criteria shall not be stockpiled at the site longer than 90 days from the date of generation. Extensions may be requested to accommodate unforeseen delays subject to MassDEP approval.

38. Measures shall be in place to prevent turbid waters, due to dredging, demolition, or debris removal activities, from extending past the limits of work into Reservoir Brook. These measures can be items such as sandbag cofferdams and/or silt fencing.

39. If visual turbidity escapes the controls in place, as described in Condition 37, work shall stop immediately and MassDEP shall be notified within 24 hours. Work shall not resume until the issue is corrected and to the satisfaction of MassDEP.

40. All turbidity controls shall be inspected daily by the RE or a designated trained MassDOT Project Staff. If any damage is observed the controls in place will be replaced or repaired immediately.

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41. If dredged sediment is disposed of off-site, MassDEP shall be notified in writing of the name and location of the upland licensed facilities accepting the dredged material for disposal or reuse for review and approval. 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. The dredged material shall not be transported to the facility without concurrence of MassDEP. **(Submittal)**

42. If dredged sediment is disposed of off-site, transportation and disposal of the dredged material shall be overseen by the LSP of record. A Bill-of-Lading (BOL) or a Material Shipping Record (MSR) shall be used to track the dredged material to the licensed disposal facility and/or proposed intermediate (stockpiling /dewatering) facility. A fully executed copy of the BOL or MSR shall be provided to MassDEP within 30 days of final shipment to the reused location or facility. **(Submittal)**

43. If dredged sediment is disposed of off-site, 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.

**Wetland Mitigation**

44. A minimum of 672 sf of BVW replication and 1,666 sf of BVW restoration shall be completed in coordination with an approved WS. The WS shall oversee all BVW replication and restoration, including final grading, seeding, and planting. The WS shall confirm that constructed BVW replication and restoration areas have adequate soils and hydrology to promote wetland plant species prior to seeding and installation of plantings and shall recommend measures to amend soils and promote wetland hydrology as needed.

45. Planting and seeding shall not take place between November 15th and April 15th, except as allowed by MassDEP in writing. The WS shall inspect trees and shrubs to ensure they are healthy prior to planting. Trees and shrubs deemed unhealthy in the professional judgment of the WS shall be replaced. Plantings and seed mixes shall consist of native and non-invasive species. Species may be substituted at the recommendation of the WS, and review and approval by MassDEP.

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**Department of Environmental Protection**

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**Phone:** 617-292-5500

46. At least 75% of the surface area of the BVW replication and restoration areas shall be vegetated with indigenous wetland plant species within two growing seasons, or the period required by the Section 404 permit, whichever is longer. Additionally, evidence of hydrology, including hydric soil formation shall be submitted at the same time. Annual monitoring reports shall be submitted by the WS no later than January 15th each year. Monitoring reports shall include an assessment based on the approved success criteria, representative photos, and recommended corrective actions as needed. **(Submittal)**

47. MassDEP reserves the right to determine the success or failure of the BVW replication and restoration areas, and reserves the right to require additional plantings, regrading, invasive species removal or other measures deemed necessary to promote success.

**Stream Mitigation**

48. The FGM shall oversee all LUW restoration. Placement of streambed materials shall take place in no- or low-flow conditions. The Control of Water Plan required in Condition 12 shall include measures to create no-flow conditions for this work such as a pump bypass system or other dewatering method, if needed. Placement of streambed materials during greater than low-flow conditions shall require a placement plan, with a narrative describing turbidity control measures, submitted to MassDEP for review and approval.

49. A minimum of 14 days prior to installation of the streambed materials, the FGM shall meet with the contractor to determine the suitability of stockpiled streambed material for reuse and whether there is sufficient stockpiled material to complete streambed restoration.

50. Water shall be slowly introduced back into the restored and dewatered LUW work areas as to not cause erosion and sedimentation. This work shall be overseen by the FGM. The FGM shall provide final approval of the streambed restoration upon re-wetting of banks and removal of water controls (photographs will suffice unless otherwise determined by the FGM).

51. The FGM, along with the contractor, shall confirm that the target elevations of the flood storage area have been met and transition properly into the BVW replication area.

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52. Upon completion of the LUW restoration, the FGM shall provide photographs and a summary of the completed work to MassDEP and the Leominster Conservation Commission. **(Submittal)**

53. MassDEP reserves the right to determine the success or failure of the LUW restoration areas and reserves the right to require additional measures deemed necessary to promote success.

**Post-Construction**

54. All temporary erosion and sedimentation controls shall be removed at the conclusion of work once the surrounding area has achieved final stabilization.

55. Compost or mulch used as an erosion or sedimentation control may be spread evenly in upland areas at a depth of no more than two inches and shall not be spread in BVWs or LUW.

56. The USACE Compliance Certification Form shall be submitted within 30 days following the completion of the authorized work. **(Submittal)**

**General Conditions**

57. Any proposed plan changes or amendment requests, as well as any required submittals shall be sent by email for review and approval to heidi.davis@mass.gov and jaime.walker@mass.gov. **(Submittal)**

58. This WQC remains in effect for the same duration as the Section 404 permit that requires it.

59. No Special Condition set forth herein shall be construed or operate to prohibit MassDEP from taking enforcement against MassDOT or its contractors for any failure to comply with the terms and requirements of this WQC.

60. No activity authorized by this WQC may begin prior to expiration of the 21-day appeal period, or until a final decision is issued by MassDEP in the event of an appeal.

Failure to comply with this Certification is grounds for enforcement, including civil and criminal penalties, under MGL Ch. 21 §42, MGL Ch. 21A §16, or other possible actions/penalties as authorized by the General Laws of the Commonwealth.

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**Phone:** 617-292-5500

This Certification does not relieve the applicant of the obligation to comply with other appropriate state or federal statutes or regulations.

**NOTICE OF APPEAL RIGHTS**

a.) Appeal Rights and Time Limits

Certain persons shall have a right to request an adjudicatory hearing concerning certifications 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 (10) 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 (10) 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 twenty-one (21) days from the date of issuance of this Certificate, and addressed to:

Case Administrator
Department of Environmental Protection
100 Cambridge Street, 9th Floor
Boston, MA 02114

A copy of the request shall at the same time be sent by certified mail or hand delivery to the Department of Environmental Protection at:

Department of Environmental Protection
Wetlands Program, Highway Unit
100 Cambridge Street, 8th floor
Boston, MA 02114

b.) Contents of Hearing Request

**The Commonwealth of Massachusetts**
**Department of Environmental Protection**

**Address:** 100 Cambridge Street, Suite 900, Boston, MA 02114
**Phone:** 617-292-5500

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):

1. the 401 Certification Transmittal Number;
2. the complete name of the applicant and address of the project;
3. 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;
4. 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;
5. a clear and concise statement that an adjudicatory hearing is being requested;
6. a clear and concise statement of (1) the facts which are grounds for the proceedings, (2) the objections to this Certificate, including specifically the manner in which it is alleged to be inconsistent with the MassDEP's Water Quality Regulations, 314 CMR 9.00, and (3) the relief sought through the adjudicatory hearing, including specifically the changes desired in the final written Certification; and
7. 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.

c.) Filing Fee and Address

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

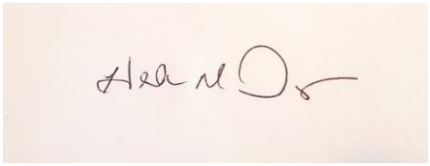
**The Commonwealth of Massachusetts**
**Department of Environmental Protection**

**Address:** 100 Cambridge Street, Suite 900, Boston, MA 02114
**Phone:** 617-292-5500

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 permit, please contact myself or Jaime Walker at heidi.davis@mass.gov and jaime.walker@mass.gov.

Very truly yours,



Heidi M. Davis
Highway Unit Supervisor

Ecc: DEP CERO – Judith Schmitz
USACE – Dan Vasconcelos
USACE via email – cenae-r-ma@usace.army.mil
Leominster Conservation Commission – Jesse Averka
MassDOT – Ryan Wilcox
Jacobs – Clay Hutchinson
Jacobs – Kim Ciaramicoli

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## Attachment A

## Submittal Checklist

## Culvert (L-08-053) Replacement Project
## Pleasant Street over Reservoir Brook
## Leominster, Massachusetts

**Each required submittal must be completed by the designated due date. Note that some conditions require that information be submitted a specific number of days prior to the start of work or the Pre-Construction Meeting. In the event of a conflict, the Special Conditions above shall preside.**

**Pre-Construction Meeting Date:** _____

| Condition | Required Submittal | Due Date | Date Submitted | Date Approved |
|---|---|---|---|---|
| **Pre-Construction and Construction-Period** | | | | |
| 2 | Name, contact information, and qualifications of the WS, including specific experience and years to meet requirement | 21 days prior to Pre-Construction Meeting | | |
| 3 | Name, contact information, and qualifications of the FGM, including specific experience and years to meet requirement | 21 days prior to Pre-Construction Meeting | | |
| 4 | Name, contact information, and qualifications of the CP/PP Inspector, including specific experience and years to meet requirement | 21 days prior to Pre-Construction Meeting | | |
| 5 | Name and contact information of the RE | Prior to Pre-Construction Meeting | | |
| 6 | Schedule Pre-Construction Meeting | 21 days prior to work start | | |
| 8 | USACE Work-Start Notification Form | 14 days prior to work start | | |
| 9 | CP/PP | 21 days prior to work start | | |

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**Phone:** 617-292-5500

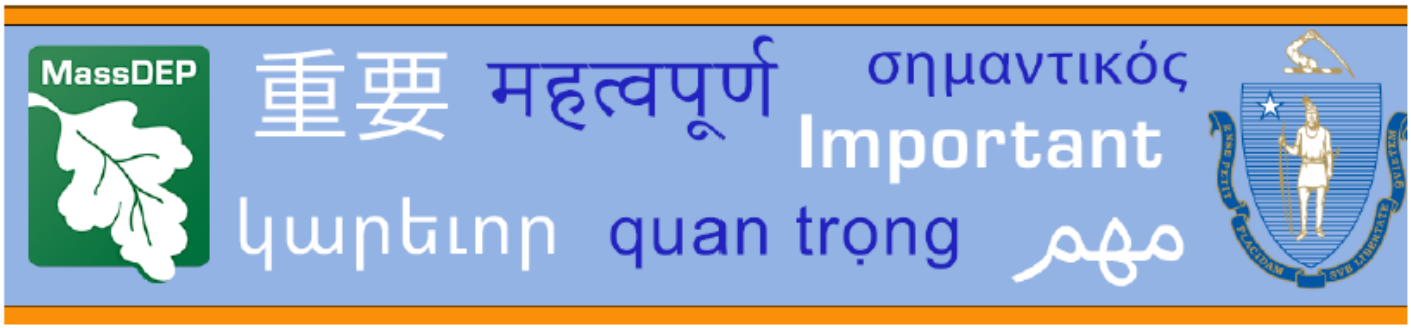
| Condition | Required Submittal | Due Date | Date Submitted | Date Approved |
|---|---|---|---|---|
| 10 | Verification of CP/PP Training | Prior to work start | | |
| 12 | Control of Water Plan | 21 days prior to work start | | |
| 14 | Invasive Plant Management Strategy | 21 days prior to Pre-Construction Meeting | | |
| 16 | Demolition Plan | 21 days prior to demolition work | | |
| **Dredging** | | | | |
| 30 | MassDEP Dredging Work-Start Notification | 7 days prior to the start of dredging | | |
| 31 | Dredged Material Dewatering Plan | 21 days prior to the start of dredging | | |
| 32 | Sediment Chemical Analysis Results | 10 business days after analytical results are available from laboratory | | |
| 33 | Name and contact information of the LSP | Prior to Pre-Construction Meeting | | |
| 34 | Environmental Health & Safety Plan | Two weeks prior to the start of dredging | | |
| 41 | Name and location of the upland licensed facilities | Prior to transportation of dredged material | | |
| 42 | BOL or MSR | Within 30 days of final shipment to the reused location or facility | | |
| **Wetland and Stream Mitigation** | | | | |
| 46 | WS Annual Wetland Monitoring Report | No later than January 15th each year | | |
| 52 | FGM Stream Monitoring Report | Upon completion of work | | |
| **Project Close-Out** | | | | |

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| Condition | Required Submittal | Due Date | Date Submitted | Date Approved |
|---|---|---|---|---|
| 56 | USACE Compliance Certification Form | Within 30 days following the completion of work | | |

**The Commonwealth of Massachusetts**
**Department of Environmental Protection**




## 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 Anviwònmantal 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
ហើយគប្បីតួរត្រូវបានបកប្រែភ្លាមៗ។
ប្រសិនបើអ្នកត្រូវការអោយឯកសារនេះបកប្រែ
សូមទាក់ទងនាយកផ្នែកយុត្តិធម៌បរិស្ថានរបស់
MassDEPតាមរយៈលេខទូរស័ព្ទដែលបានរាយដូចខាងក្រោម។

### Kriolu Kabuverdianu Cape Verdean

Es dokumentu sta important i tenki ser tradusidu immediatamenti. Se nho ta presisa ke es dokumentu sta tradisidu, por favor kontata O Diretor di Justisia di Environman di DEP ku es numero di telifoni menxionadu di baixo.

**Contact Deneen Simpson 857-406-0738**
**Massachusetts Department of Environmental Protection**

**The Commonwealth of Massachusetts**
**Department of Environmental Protection**

## 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।

DOCUMENT A00844

# US FISH AND WILDLIFE SERVICE

# NLAA CONCURRENCE VERIFICATION LETTER

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# United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 3301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To: 06/10/2026 20:13:39 UTC
Project code: 2026-0101578
Project Name: 616375 - LEOMINSTER- CULVERT REPLACEMENT, CULVERT REPAIR AND RETAINING WALL REPLACEMENT

Federal Nexus: yes
Federal Action Agency (if applicable): Army Corps of Engineers

**Subject:** Federal agency coordination under the Endangered Species Act, Section 7 for '616375 - LEOMINSTER- CULVERT REPLACEMENT, CULVERT REPAIR AND RETAINING WALL REPLACEMENT'

Dear Emily Puglisi:

This letter records your determination using the Information for Planning and Consultation (IPaC) system provided to the U.S. Fish and Wildlife Service (Service) on June 10, 2026, for '616375 - LEOMINSTER- CULVERT REPLACEMENT, CULVERT REPAIR AND RETAINING WALL REPLACEMENT' (here forward, Project). This project has been assigned Project Code 2026-0101578 and all future correspondence should clearly reference this number. **Please carefully review this letter. Your Endangered Species Act (Act) requirements may not be complete.**

**Ensuring Accurate Determinations When Using IPaC**

The Service developed the IPaC system and associated species' determination keys in accordance with the Endangered Species Act of 1973 (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and based on a standing analysis. All information submitted by the Project proponent into IPaC must accurately represent the full scope and details of the Project.

Failure to accurately represent or implement the Project as detailed in IPaC or the Northern Long-eared Bat and Tricolored Bat Range-wide Determination Key (DKey), invalidates this letter. ***Answers to certain questions in the DKey commit the project proponent to implementation of conservation measures that must be followed for the ESA determination to remain valid. Note that conservation measures for northern long-eared bat and tricolored bat may differ. If both bat species are present in the action area and the key suggests more conservative measures for one of the species for your Project, the Project may need to apply***

***the most conservative measures in order to avoid adverse effects. If unsure which conservation measures should be applied, please contact the appropriate Ecological Services Field Office.***

**Determination for the Northern Long-Eared Bat and Tricolored Bat**

Based on your IPaC submission and a standing analysis completed by the Service, you determined the proposed Project will have the following effect determinations:

| Species | Listing Status | Determination |
|---|---|---|
| Tricolored bat (*Perimyotis subflavus*) | Proposed Endangered | NLAA |

Federal agencies must consult with U.S. Fish and Wildlife Service under section 7(a)(2) of the Endangered Species Act (ESA) when an action *may affect* a listed species. Tricolored bat is proposed for listing as endangered under the ESA, but not yet listed. For actions that may affect a proposed species, agencies cannot consult, but they can *confer* under the authority of section 7(a)(4) of the ESA. Such conferences can follow the procedures for a consultation and be adopted as such if and when the proposed species is listed. Should the tricolored bat be listed, agencies must review projects that are not yet complete, or projects with ongoing effects within the tricolored bat range that previously received a NE or NLAA determination from the key to confirm that the determination is still accurate.

Unless the Service advises you within 15 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that consultation on the Action is complete for northern long-eared bat and/or tricolored bat and no further action is necessary unless either of the following occurs:

- new information reveals effects of the action that may affect the northern long-eared bat or tricolored bat in a manner or to an extent not previously considered; or,
- the identified action is subsequently modified in a manner that causes an effect to the northern long-eared bat or tricolored bat that was not considered when completing the determination key.

**15-Day Review Period**

As indicated above, the Service will notify you within 15 calendar days if we determine that this proposed Action does not meet the criteria for a “may affect, not likely to adversely affect” (NLAA) determination for the northern long-eared bat and/or tricolored bat. If we do not notify you within that timeframe, you may proceed with the Action under the terms of the NLAA concurrence provided here. This verification period allows the identified Ecological Services Field Office to apply local knowledge to evaluation of the Action, as we may identify a small subset of actions having impacts that we did not anticipate when developing the key. In such cases, the identified Ecological Services Field Office may request additional information to verify the effects determination reached through the Northern Long-eared Bat and Tricolored Bat DKey.

**Other Species and Critical Habitat that May be Present in the Action Area**

The IPaC-assisted determination key for the northern long-eared bat and tricolored bat does not apply to the following ESA-protected species and/or critical habitat that also may occur in your Action area:

- Monarch butterfly *Danaus plexippus* Proposed Threatened

You may coordinate with our Office to determine whether the Action may affect the species and/or critical habitat listed above. Note that reinitiation of consultation would be necessary if a new species is listed or critical habitat designated that may be affected by the identified action before it is complete.

If you have any questions regarding this letter or need further assistance, please contact the New England Ecological Services Field Office and reference Project Code 2026-0101578 associated with this Project.

**Action Description**
You provided to IPaC the following name and description for the subject Action.

**1. Name**

616375 - LEOMINSTER- CULVERT REPLACEMENT, CULVERT REPAIR AND RETAINING WALL REPLACEMENT

**2. Description**

The following description was provided for the project '616375 - LEOMINSTER- CULVERT REPLACEMENT, CULVERT REPAIR AND RETAINING WALL REPLACEMENT':

> 616375 - LEOMINSTER- CULVERT REPLACEMENT, CULVERT REPAIR AND RETAINING WALL REPLACEMENT AND RELATED WORK AT THREE LOCATIONS
> The project locations are Pleasant Street, Union Street and Lancaster Street. At Pleasant Street, the project consists of replacing the temporary plastic pipe with box culvert. Additionally, this project will include the restoration of the channel downstream of the culvert, reconstructing the roadway and sidewalks, and related work. At Lancaster Street, the proposed work includes reconstruction of the retaining wall and sidewalk reconstruction. At Union Street, the proposed work involves stabilization of the slopes at each quadrant of the existing culvert.
>
> Monarch Butterfly: Proposed Threatened Species. Due to MassDOT's enrollment in the Monarch Butterfly Nationwide CCAA, the action is Not Likely to Jeopardize the continued existence of the monarch butterfly.

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.51070865,-71.73808927638774,14z



# DETERMINATION KEY RESULT

Based on the answers provided, the proposed Action is consistent with a determination of “may affect, but not likely to adversely affect” for a least one species covered by this determination key.

## QUALIFICATION INTERVIEW

1. Does the proposed project include, or is it reasonably certain to cause, intentional take of listed bats or any other listed species?

   **Note:** Intentional take is defined as take that is the intended result of a project. Intentional take could refer to research, direct species management, surveys, and/or studies that include intentional handling/encountering, harassment, collection, or capturing of any individual of a federally listed threatened, endangered or proposed species?

   *No*

2. Is the action area wholly within Zone 2 of the year-round active area for northern long-eared bat and/or tricolored bat?

   **Automatically answered**
   *No*

3. Does the action area intersect Zone 1 of the year-round active area for northern long-eared bat and/or tricolored bat?

   **Automatically answered**
   *No*

4. Does any component of the action involve leasing, construction or operation of wind turbines? Answer 'yes' if the activities considered are conducted with the intention of gathering survey information to inform the leasing, construction, or operation of wind turbines.

   *No*

5. Is the proposed action authorized, permitted, licensed, funded, or being carried out by a Federal agency in whole or in part?

   **Note for projects in Pennsylvania**: Projects requiring authorization under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act would be considered as having a federal nexus. Since the U.S. Army Corps of Engineers (Corps) has issued the Pennsylvania State Programmatic General Permit (PASPGP), which may be verified by the PA Department of Environmental Protection or certain Conservation Districts, the need to receive a Corps authorization to perform the work under the PASPGP serves as a federal nexus. As such, if proposing to use the PASPGP, you would answer ‘yes’ to this question.

   *Yes*

6. Is the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), or Federal Transit Administration (FTA) funding or authorizing the proposed action, in whole or in part?

   *No*

7. Are you an employee of the federal action agency or have you been officially designated in writing by the agency as its designated non-federal representative for the purposes of Endangered Species Act Section 7 informal consultation per 50 CFR § 402.08?

   **Note:** This key may be used for federal actions and for non-federal actions to facilitate section 7 consultation and to help determine whether an incidental take permit may be needed, respectively. This question is for information purposes only.

   *Yes*

8. Is the lead federal action agency the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC)? Is the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC) funding or authorizing the proposed action, in whole or in part?

   *No*

9. Is the lead federal action agency the Federal Energy Regulatory Commission (FERC)?

   *No*

10. [Semantic] Is the action area located within 0.5 miles of a known bat hibernaculum or winter roost? Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your state wildlife agency.

    **Automatically answered**
    *No*

11. Does the action area contain any winter roosts or caves (or associated sinkholes, fissures, or other karst features), mines, rocky outcroppings, or tunnels that could provide habitat for hibernating bats?

    *No*

12. Does the action area contain (1) talus or (2) anthropogenic or naturally formed rock shelters or crevices in rocky outcrops, rock faces or cliffs?

    *No*

13. Is the action located in New England (CT, MA, ME, NH, RI, or VT)?

    *Yes*

14. Is the action located in one of the counties in New England where bridge assessments are recommended by either the New England or Maine Ecological Services Field Office in their Bridge and Culvert Survey Letter?

    *No*

15. Will the action cause effects to a covered bridge, a bridge with wood or timber as a component of the construction or a bridge with stone or masonry as a component of the construction? Note: see the New England and Maine Ecological Services Bridge and Culvert Survey Letter for more information.

    *No*

16. Is the action in one of the New England counties where culvert assessments are recommended by either the New England or Maine Ecological Services Field Office in their Bridge and Culvert Survey Letter?

    *No*

17. Will the action cause effects to any "cave-like" culvert(s) - a culvert that is long enough (likely greater than 200 feet long) that it remains dark in the middle during daylight hours and maintains relatively stable temperatures. Note: see the New England and Maine Ecological Services Bridge and Culvert Survey Letter for more information.

    *No*

18. Are trees present within 1000 feet of the action area? **Note:** If there are trees within the action area that are of a sufficient size to be potential roosts for bats answer "Yes". If unsure, additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines.

    *Yes*

19. Does the action include the intentional exclusion of bats from a building or building-like structure? **Note:** Exclusion is conducted to deny bats' entry or reentry into a building. To be effective and to avoid harming bats, it should be done according to established standards. If your action includes bat exclusion and you are unsure whether northern long-eared bats or tricolored bats are present, answer "Yes." Answer "No" if there are no signs of bat use in the building/structure. If unsure, contact your local Ecological Services Field Office to help assess whether northern long-eared bats or tricolored bats may be present. Contact a Nuisance Wildlife Control Operator (NWCO) for help in how to exclude bats from a structure safely without causing harm to the bats (to find a NWCO certified in bat standards, search the Internet using the search term "National Wildlife Control Operators Association bats"). Also see the White-Nose Syndrome Response Team's guide for bat control in structures.

    *No*

20. Does the action involve removal, modification, or maintenance of a human-made building-like structure (barn, house, or other building) **known or suspected to contain roosting bats?**

    *No*

21. Will the action cause construction of one or more new roads open to the public?

    For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.).

    *No*

22. Will the action include or cause any construction or other activity that is reasonably certain to increase average night-time traffic permanently or temporarily on one or more existing roads? **Note:** For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.). .

    *No*

23. Will the action include or cause any construction or other activity that is reasonably certain to increase the number of travel lanes on an existing thoroughfare?

    For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.).

    *No*

24. Will the proposed Action involve the creation of a new water-borne contaminant source (e.g., leachate pond, pits containing chemicals that are not NSF/ANSI 60 compliant)?

    **Note:** For information regarding NSF/ANSI 60 please visit https://www.nsf.org/knowledge-library/nsf-ansi-standard-60-drinking-water-treatment-chemicals-health-effects

    *No*

25. Will the proposed action involve the creation of a new point source discharge from a facility other than a water treatment plant or storm water system?

    *No*

26. Will the action include drilling or blasting?

    *No*

27. Will the action involve military training (e.g., smoke operations, obscurant operations, exploding munitions, artillery fire, range use, helicopter or fixed wing aircraft use at night)?

    *No*

28. Will the proposed action involve the use of herbicides or pesticides (e.g., fungicides, insecticides, or rodenticides)?

    *Yes*

29. Will the action include or result in herbicide use that may affect suitable summer habitat for the northern long-eared bat or tricolored bat? **Note:** Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines.

    *No*

30. Will the action include or cause the application or drift of pesticides (e.g., fungicides, insecticides, or rodenticides) into forested areas that are suitable summer habitat for the northern long-eared bat or tricolored bat? Answer "Yes" if the application may result in transport (e.g., in water) or aerial drift of the pesticide into forested areas that are suitable summer habitat for the northern long-eared bat or tricolored bat. **Note:** Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines.

    *No*

31. Will the action include or cause activities that are reasonably certain to cause chronic or intense nighttime noise (above current levels of ambient noise in the area) in suitable summer habitat for the northern long-eared bat or tricolored bat during the active season? Chronic noise is noise that is continuous or occurs repeatedly again and again for a long time. Sources of chronic or intense noise that could cause adverse effects to bats may include, but are not limited to: road traffic; trains; aircraft; industrial activities; gas compressor stations; loud music; crowds; oil and gas extraction; construction; and mining. **Note:** Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines.

    *No*

32. Does the action include, or is it reasonably certain to cause, the use of permanent or temporary artificial lighting within 1000 feet of suitable forested northern long-eared bat or tricolored bat roosting habitat? **Note:** Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines.

    *Yes*

33. Will the action cause an increase in the extent of suitable forested habitat exposed to artificial lighting?

    *No*

34. Will the action include tree cutting or other means of knocking down or bringing down trees, tree topping, or tree trimming?

    *Yes*

35. Is the project related to the production of coal, including projects that support the mining of coal, as well as the production and/or distribution of energy produced from coal?

    *No*

36. Will the proposed action occur exclusively in an already established and currently maintained utility right-of-way?

    *No*

37. Does the action include emergency cutting or trimming of hazard trees in order to remove an imminent threat to human safety or property? See hazard tree note at the bottom of the key for text that will be added to response letters

    **Note:** A "hazard tree" is a tree that is an immediate threat to lives, public health and safety, or improved property.

    *No*

38. Does the project intersect with the 0- 9.9% forest density category?

    **Automatically answered**
    *No*

39. Does the project intersect with the 10.0- 19.9% forest density category map?

    **Automatically answered**
    *No*

40. Does the project intersect with the 20.0- 29.9% forest density category map?

    **Automatically answered**
    *No*

41. Does the project intersect with the 30.0- 100% forest density category map?

    **Automatically answered**
    *Yes*

42. Will the action cause trees to be cut, knocked down, or otherwise brought down across an area greater than 100 acres in total extent?

    *No*

43. Will the proposed action result in the use of prescribed fire?

    **Note:** If the prescribed fire action includes other activities than application of fire (e.g., tree cutting, fire line preparation) please consider impacts from those activities within the previous representative questions in the key. This set of questions only considers impacts from flame and smoke.

    *No*

44. Does the action area intersect the tricolored bat species list area?

    **Automatically answered**
    *Yes*

45. Is the action area located within 0.5-mile of radius of an entrance/opening to any known tricolored bat hibernacula or winter roost?

    Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your state wildlife agency.

    **Automatically answered**
    *No*

46. [Semantic] Is the action area located within 0.25 miles of a culvert that is known to be occupied by northern long-eared or tricolored bats? **Note:** The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

    **Automatically answered**
    *No*

47. Is suitable summer habitat for the tricolored bat present within 1000 feet of project activities? (If unsure, answer ""Yes."") **Note:** If there are trees within the action area that may provide potential roosts for tricolored bats (e.g., clusters of leaves in live and dead deciduous trees, Spanish moss (*Tillandsia usneoides*), clusters of dead pine needles of large live pines) answer ""Yes."" For a complete definition of suitable summer habitat for the tricolored bat, please see the Service's Range-wide Indiana Bat and Northern long-eared Bat Survey Guidelines.

    *Yes*

48. Do any of the trees proposed for cutting or other means of knocking down, bringing down, topping, or trimming provide potential roosts for tricolored bats (e.g., clusters of leaves in live and dead deciduous trees, Spanish moss (*Tillandsia usneoides*), clusters of dead pine needles of large live pine trees)? **Note:** Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines.

    *Yes*

49. Will any tree cutting/trimming or other knocking or bringing down of trees be conducted during the Pup Season for tricolored bat? **Note:** Bat activity periods for your state can be found in Appendix 2 of the Service's Northern Long-eared Bat and Tricolored Bat Voluntary Environmental Review Process for Developmental Projects.

    *No*

50. Do you have any documents that you want to include with this submission?

    *No*

# PROJECT QUESTIONNAIRE

Enter the extent of the action area (in acres) from which trees will be removed - round up to the nearest tenth of an acre. For this question, include the entire area where tree removal will take place, even if some live or dead trees will be left standing.

*1.1*

# IPAC USER CONTACT INFORMATION

Agency: Massachusetts Department of Transportation
Name: Emily Puglisi
Address: 10 Park Plaza
City: Boston
State: MA
Zip: 02116
Email emily.a.puglisi@dot.state.ma.us
Phone: 6178964424

# LEAD AGENCY CONTACT INFORMATION

Lead Agency: Army Corps of Engineers

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DOCUMENT A00850

# MASSACHUSETTS WETLANDS PROTECTION ACT & LEOMINSTER CONSERVATION COMMISSION

# REQUEST FOR DETERMINATION OF APPLICABILITY

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Jacobs

Challenging today.
Reinventing tomorrow.

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March 7, 2025

Leominster Conservation Commission
Leominster City Hall
25 West Street, Room 12
Leominster, MA 01453

**Subject: Request for Determination of Applicability**
**MassDOT Project #613830**
**Reconstruction of Retaining Wall, Sidewalk, and Portion of Roadway – Lancaster St.**
**Leominster, Massachusetts**

Dear Chairman Raymond and Commission Members,

On behalf of the Massachusetts Department of Transportation (MassDOT), Jacobs Engineering (Jacobs) is submitting this Request for Determination of Applicability (RDA) under the Massachusetts Wetlands Protection Act (WPA) and its implementing regulations (310 CMR 10.00) for the proposed reconstruction of an existing deteriorated retaining wall as well as sidewalk and roadway repairs on Lancaster Street in Leominster, Massachusetts (the Site), portions of which lie within the 200-foot Riverfront Area to Fall Brook, a perennial stream.

The Leominster floods that took place in September of 2023 caused significant damage to the City's existing infrastructure. An 80-foot stone masonry wall supporting the 6 Malburn Street property was undermined by the flood waters. A portion of the wall has collapsed and the paved area and roadway in front of the wall has eroded. A temporary pavement patch was installed along the roadway to convey roadway drainage and maintain traffic.

MassDOT is requesting that the Leominster Conservation Commission make a determination on whether the activities depicted on the plans and described in this submission are subject to the Massachusetts Wetlands Protection Act and its implementing regulations (310 CMR 10.00). Please note that as an agency of the Commonwealth, MassDOT is not subject to local regulations, bylaws, and peer review fees. In addition, according to 310 CMR 10.05, MassDOT is exempt from notifying abutters to the project.

## Site Description

Lancaster Street (Route 117) is a secondary roadway owned and maintained by MassDOT. In the vicinity of the project, the roadway runs in a north/south direction providing one travel lane in each direction with double yellow line pavement markings dividing the directional flow of traffic. Route 117 has an average daily traffic (ADT) count of 6,767 vehicles per day (2023 data). The roadway is approximately 40 feet wide with lane widths measuring approximately 20 feet. There

are no shoulders on the roadway within the project limits. A sidewalk begins at Malburn Street and extends along Lancaster Street on the west side of the roadway in a southerly direction for approximately 80 feet. A number of industrial and commercial businesses as well as residences are located in the vicinity of the project. Malburn Street consists of residential homes along a side street that adjoins Lancaster Street.

The project is located in front of 6 Malburn Street (which is a corner lot with Lancaster Street), along Lancaster Street. A residential home sits on this lot (**Figure 1**). A utility pole carrying overhead wires is located near the corner of the two streets. Two catch basins are located at the corner of Malburn Street and Lancaster Street. A 4.5 foot high stone/concrete retaining wall is located along the front of the lot, approximately 8 feet from the edge of pavement, essentially holding in the front lawn. Approximately 43 feet of the wall has collapsed and a portion of the abutting sidewalk and roadway have deteriorated and are in need of repair. This collapse occurred as a result of the extreme flood event in September 2023.

A desktop review of the Site was conducted using available resources such as MassGIS data layers, USGS 7.5 Minute Quadrangle, aerial photography, and FEMA Flood Insurance Rate Maps. It was found that the Site is not located within areas mapped as Outstanding Resource Waters, Areas of Critical Environmental Concern, or Wellhead Protection Areas. In addition, there are no Priority Habitats of Rare Species, Estimated Habitats of Rare Wildlife, or Certified or Potential Vernal Pools that exist within the project limits. (**Figure 2**).

**Wetland Resource Areas**

A perennial stream, Fall Brook, is located approximately 150-feet north of the project site. Fall Brook flows in an easterly direction through a concrete box under Lancaster Street. The stream is approximately 20 to 25 feet wide and is steeply incised. Vegetation along the embankment consists of red maple (*Acer rubrum*), multiflora rose (*Rosa multiflora*), purple loosestrife (*Lythrum salicaria*), and Oriental bittersweet (*Celastrus orbiculatus*). There are no Bordering Vegetated Wetlands in the vicinity of the project site. The Bank of the stream was not field delineated, however it is acknowledged that the project Site lies within jurisdiction. Note that the roadway at the stream crossing lies upgradient of the proposed work.

According to the FEMA Flood Insurance Rate Map (FIRM) community panel number 2503140007B dated 8/16/1982 (**Figure 3**), Fall River is located within a Zone A2 (elevation 314 feet adjacent to the roadway), however, the Site is located outside of any FEMA designated flood zone.

The 200-foot Riverfront Area to Fall Brook extends into the project limits. Riverfront Area is defined in the Massachusetts Wetlands Protection Act Regulations 310 CMR 10.58(2), as the area of land between a river's mean annual high water line measured horizontally outward from the river and a parallel line located 200-feet away. Riverfront Area does not have a buffer zone.

## Project Description

The proposed improvements along Lancaster Street within the project limits includes removing the remaining stone masonry wall and constructing a new wall in the same footprint. The area in front of the wall will be repaved with an asphalt sidewalk and a granite curb will be installed along the gutter line of the roadway. The granite curb will provide a barrier for roadway drainage to prevent future stormwater/flooding impacts to the new wall. A new pedestrian ramp will be installed on Malburn Street to provide pedestrian access to the area. A new deep sump catch basin will also be installed at the northern corner of Malburn Street and Lancaster Street. All ground disturbance and construction activities associated with the project will occur within the existing road right-of-way within previously disturbed areas.

**Wetland Resource Impacts**

Proposed work will occur within the outer 100 feet of the 200-foot Riverfront Area entirely within previously degraded areas. Approximately 1,942 square feet of temporary impacts are proposed within this area as a result of the reconstruction of the retaining wall, sidewalk and edge of roadway as well as the installation of new catch basin. No new impervious surfaces are proposed as a result of this project.

## Regulatory Discussion

Portions of the proposed project are considered minor in nature. As previously stated, work is proposed within the 200-foot Riverfront Area and will occur within previously disturbed areas. According to the Wetlands Protection Act regulations 310 CMR 10.02 (2)(b), certain minor activities within the buffer zone are not subject to regulation.

- Repaving the existing roadway and sidewalk is an exempt activity according to 310 CMR 10.02 (2)(b)2.p. "Pavement repair, resurfacing, and reclamation of existing roadways within the right-of-way configuration provided that the roadway and shoulders are not widened, no staging or stockpiling of materials, all disturbed road shoulders are stabilized within 72 hours of completion of resurfacing and reclamation, and no work on the drainage system is performed, other than adjustment and/or repairs to respective structures within the roadway."

According to the Riverfront Area regulations 310 CMR 10.58 (6)(b), certain minor activities as outlined in 310 CMR 10.02 (2)(b) are exempt from regulation. Regardless of the application of the Minor Activity exemption, the proposed work in the outer 100 feet of the Riverfront Area will not result in a permanent impact to the existing interests provided by the Riverfront Area in that location.

## Summary

MassDOT is requesting that the Leominster Conservation Commission issue a Negative Determination of Applicability, finding that the work described in this RDA is within an area subject

to protection under the Act, but the proposed activities are minor in nature and/or exempt and thus will not require the filing of a Notice of Intent.

We look forward to presenting this project at the next regularly scheduled Leominster Conservation Commission meeting. Should you have any questions or comments regarding the proposed work, please feel free to contact me at susan.mcarthur@jacobs.com or (508) 904-6440.

Thank you,

Susan M. McArthur

Susan McArthur
Senior Environmental Scientist

Copies to: Courtney Walker, MassDOT
MassDEP Central Regional Office

**Massachusetts Department of Environmental Protection**
Bureau of Water Resources - Wetlands

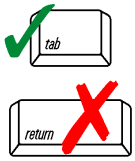
# WPA Form 1- Request for Determination of Applicability

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Leominster
Municipality

## A. General Information

**Important:**
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.




1. Applicant:

| | | |
|---|---|---|
| Courtney | Walker | |
| First Name | Last Name | |
| 10 Park Plaza, Room 7360 | | |
| Address | | |
| Boston | MA | 02116 |
| City/Town | State | Zip Code |
| 857-262-0751 | courtney.l.walker@dot.state.ma.us | |
| Phone Number | Email Address | |

2. Property Owner (if different from Applicant):

| | | |
|---|---|---|
| | | |
| First Name | Last Name | |
| Address | | |
| City/Town | State | Zip Code |
| Phone Number | Email Address (if known) | |

3. Representative (if any)

| | | |
|---|---|---|
| Susan | McArthur | |
| First Name | Last Name | |
| Jacobs Engineering | | |
| Company Name | | |
| 120 St. James Avenue | | |
| Address | | |
| Boston | MA | 02116 |
| City/Town | State | Zip Code |
| 508-904-6440 | susan.mcarthur@jacobs.com | |
| Phone Number | Email Address (if known) | |

## B. Project Description

1. a. Project Location (use maps and plans to identify the location of the area subject to this request):

| | |
|---|---|
| Lancaster Street | Leominster |
| Street Address | City/Town |
| 42.51071 | -71.73794 |
| Latitude (Decimal Degrees Format with 5 digits after decimal e.g. XX.XXXXX) | Longitude (Decimal Degrees Format with 5 digits after decimal e.g. -XX.XXXXX) |
| | |
| Assessors' Map Number | Assessors' Lot/Parcel Number |

How to find Latitude and Longitude

and how to convert to decimal degrees

b. Area Description (use additional paper, if necessary):

The project entails the reconstruction of a stone retaining wall within Riverfront Area.

c. Plan and/or Map Reference(s): (use additional paper if necessary)

| | |
|---|---|
| Lancaster Street Site Plan | 02/26/2025 |
| Title | Date |
| | |
| Title | Date |

**Massachusetts Department of Environmental Protection**
Bureau of Water Resources - Wetlands

# WPA Form 1- Request for Determination of Applicability

Leominster
Municipality

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

## B. Project Description (cont.)

2. a. Activity/Work Description (use additional paper and/or provide plan(s) of Activity, if necessary):

The project entails reconstruction of a retaining wall that has collapsed onto a sidewalk in front of 6 Malburn Street, as well as reconstruction of a portion of sidewalk and adjacent roadway along Lancaster Street within the 200-foot Riverfront Area to Fall Brook in Leominster.

b. Identify provisions of the Wetlands Protection Act or regulations which may exempt the applicant from having to file a Notice of Intent for all or part of the described work (use additional paper, if necessary).

310 CMR 10.02 (2)(b)2.b., 310 CMR 10.02 (2)(b)2.p. and 310 CMR 10.58 (6)(b)

3. a. If this application is a Request for Determination of Scope of Alternatives for work in the Riverfront Area, indicate the one classification below that best describes the project.

- ☐ Single family house on a lot recorded on or before 8/1/96
- ☐ Single family house on a lot recorded after 8/1/96
- ☐ Expansion of an existing structure on a lot recorded after 8/1/96
- ☐ Project, other than a single-family house or public project, where the applicant owned the lot before 8/7/96
- ☐ New agriculture or aquaculture project
- ☐ Public project where funds were appropriated prior to 8/7/96
- ☐ Project on a lot shown on an approved, definitive subdivision plan where there is a recorded deed restriction limiting total alteration of the Riverfront Area for the entire subdivision
- ☐ Residential subdivision; institutional, industrial, or commercial project
- ☐ Municipal project
- ☐ District, county, state, or federal government project
- ☐ Project required to evaluate off-site alternatives in more than one municipality in an Environmental Impact Report under MEPA or in an alternatives analysis pursuant to an application for a 404 permit from the U.S. Army Corps of Engineers or 401 Water Quality Certification from the Department of Environmental Protection.

b. Provide evidence (e.g., record of date subdivision lot was recorded) supporting the classification above (use additional paper and/or attach appropriate documents, if necessary.)

**Massachusetts Department of Environmental Protection**
Bureau of Water Resources - Wetlands
# WPA Form 1- Request for Determination of Applicability
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Leominster
Municipality

## C. Determinations

1. I request the Leominster make the following determination(s). Check any that apply:
Conservation Commission

☐ a. whether the **area** depicted on plan(s) and/or map(s) referenced above is an area subject to jurisdiction of the Wetlands Protection Act.

☐ b. whether the **boundaries** of resource area(s) depicted on plan(s) and/or map(s) referenced above are accurately delineated.

☒ c. whether the **Activities** depicted on plan(s) referenced above is subject to the Wetlands Protection Act and its regulations.

☐ d. whether the area and/or Activities depicted on plan(s) referenced above is subject to the jurisdiction of any **municipal wetlands' ordinance** or **bylaw** of:

Name of Municipality

☐ e. whether the following **scope of alternatives** is adequate for Activities in the Riverfront Area as depicted on referenced plan(s).

## D. Signatures and Submittal Requirements

I hereby certify under the penalties of perjury that the foregoing Request for Determination of Applicability and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge.

I further certify that the property owner, if different from the applicant, and the appropriate DEP Regional Office were sent a complete copy of this Request (including all appropriate documentation) simultaneously with the submittal of this Request to the Conservation Commission.

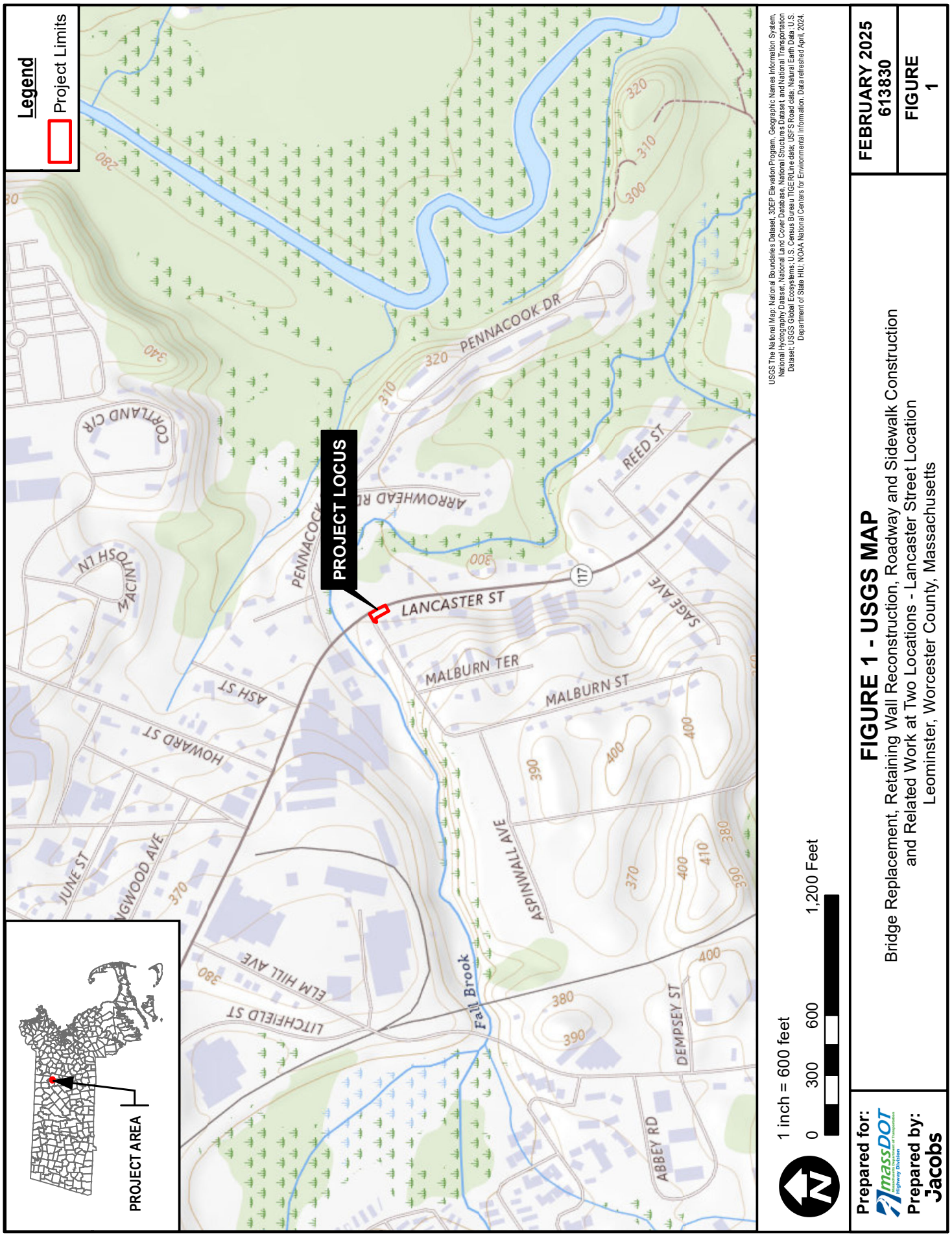
Failure by the applicant to send copies in a timely manner may result in dismissal of the Request for Determination of Applicability.

Signatures:

I also understand that notification of this Request will be placed in a local newspaper at my expense in accordance with Section 10.05(3)(b)(1) of the Wetlands Protection Act regulations.

Courtney Walker — Signature of Applicant
3/7/2025 — Date

Susan M. McArthur — Signature of Representative (if any)
03/07/2025 — Date


Legend
Project Limits
PROJECT LOCUS
LANCASTER ST
PENNACOOK DR
MALBURN TER
MALBURN ST
ASPINWALL AVE
SAGE AVE
REED ST
ELM HILL AVE
LITCHFIELD ST
DEMPSEY ST
ABBEY RD
ASH ST
HOWARD ST
JUNE ST
Fall Brook
PROJECT AREA
1 inch = 600 feet
0
300
600
1,200 Feet
USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road data; Natural Earth Data; U.S. Department of State HIU; NOAA National Centers for Environmental Information. Data refreshed April, 2024.
FIGURE 1 - USGS MAP
Bridge Replacement, Retaining Wall Reconstruction, Roadway and Sidewalk Construction and Related Work at Two Locations - Lancaster Street Location
Leominster, Worcester County, Massachusetts
Prepared for: massDOT Highway Division
Prepared by: Jacobs
FEBRUARY 2025
613830
FIGURE
1




Prepared for: massDOT Massachusetts Department of Transportation Highway Division

Prepared by: Jacobs

# FIGURE 2 - AERIAL MAP

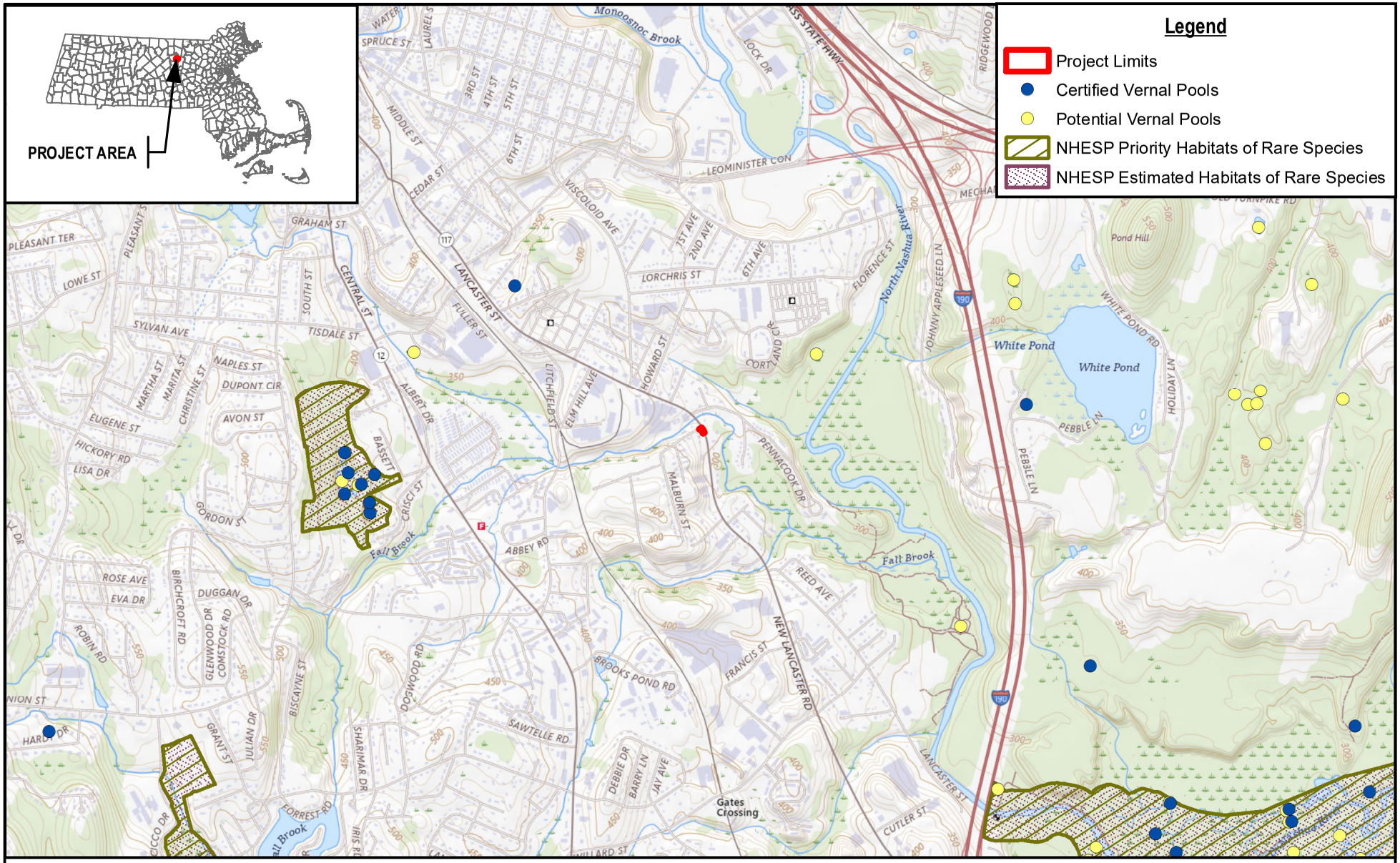
Bridge Replacement, Retaining Wall Reconstruction, Roadway and Sidewalk Construction and Related Work at Two Locations - Lancaster Street Location
Leominster, Worcester County, Massachusetts

FEBRUARY 2025
613830

FIGURE
2

A00850 - 11

Proposal No. 616375-136648




USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road data; Natural Earth Data; U.S. Department of State HIU; NOAA National Centers for Environmental Information. Data refreshed April, 2024.

Environmental Resources Reviewed:
NHESP Potential Vernal Pool, NHESP Certified Vernal Pool, NHESP Priority Habitats of Rare Species, NHESP Estimated Habitats of Rare Species

Prepared for: massDOT Massachusetts Department of Transportation Highway Division

Prepared by: Jacobs

# FIGURE 3 - NHESP MAP

Bridge Replacement, Retaining Wall Reconstruction, Roadway and Sidewalk Construction and Related Work at Two Locations - Lancaster Street Location
Leominster, Worcester County, Massachusetts

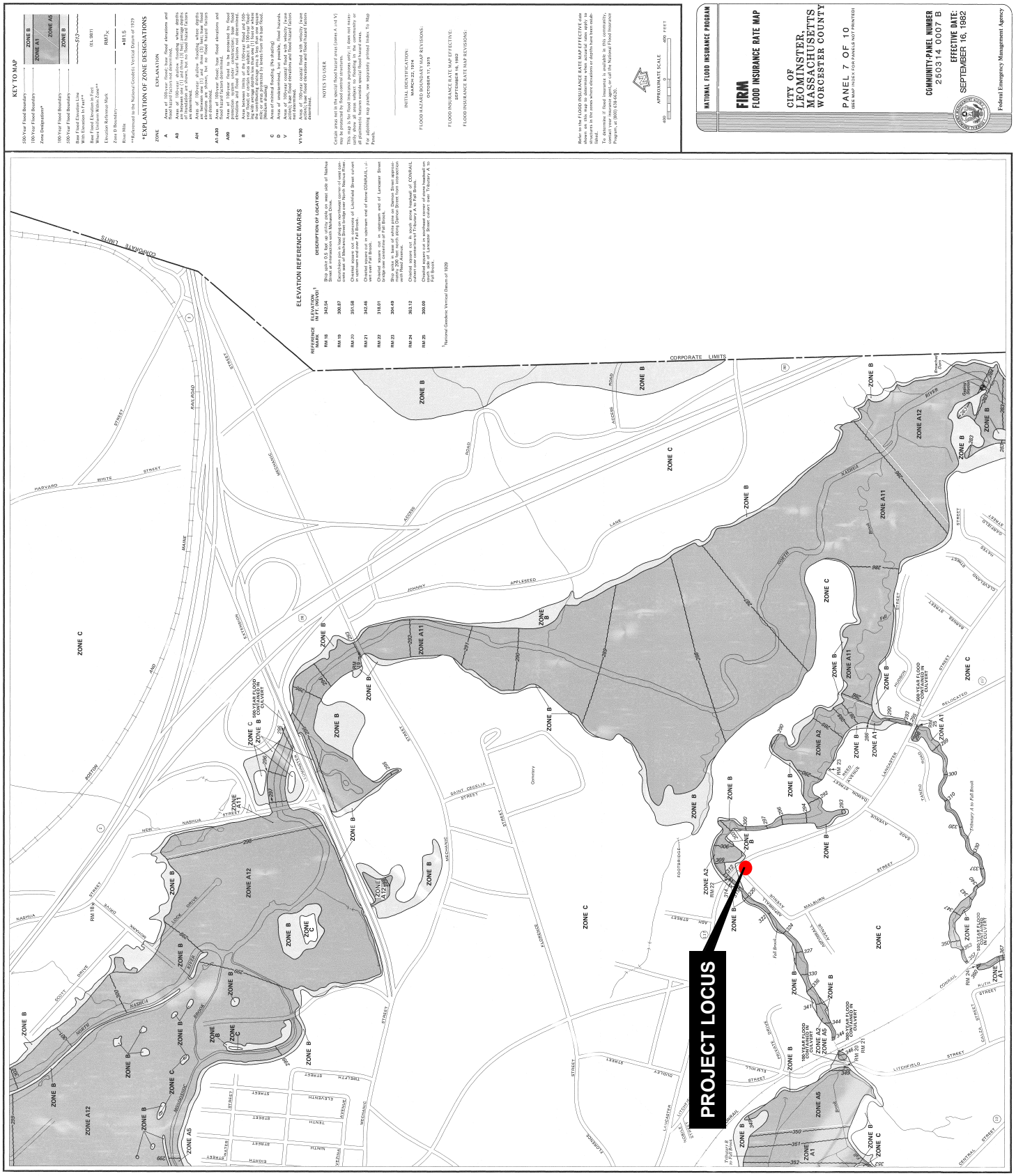
FEBRUARY 2025
613830

FIGURE
3

A00850 - 12

Proposal No. 616375-136648

# FIGURE 4 - FIRM MAP



Jacobs

## PHOTOGRAPHIC LOG

**Site Location:** Lancaster Street (Route 117), Leominster, MA | **Project No.** 613830

| Photo No. | Date: |
|---|---|
| 1 | October 2019 |

**Direction Photo Taken:**
Facing West

**Description:**
View of the retaining wall, sidewalk, and roadway in front of 6 Malburn Street property prior to the collapse of the wall and deterioration of sidewalk. Photo taken using Google Street View.




| Photo No. | Date: |
|---|---|
| 2 | 1/15/2025 |

**Direction Photo Taken:**
Facing South

**Description:**
View of the retaining wall, sidewalk, and roadway in front of 6 Malburn Street as it exists today. Note collapsed section of wall, deteriorated sidewalk and roadway.



Jacobs

## PHOTOGRAPHIC LOG

**Site Location:** Lancaster Street (Route 117), Leominster, MA | **Project No.** 613830

| Photo No. | Date: |
|---|---|
| 3 | 1/15/2025 |

**Direction Photo Taken:**
Facing South

**Description:**
Another view of the wall, roadway, and sidewalk. Malburn Street is on the right. A double catchbasin is located in the foreground.




| Photo No. | Date: |
|---|---|
| 4 | 1/15/2025 |

**Direction Photo Taken:**
Facing Southeast

**Description:**
View of Fall Brook, a perennial stream, located north of the project site.



T1217.22_ENVIRONMENTAL PLANS.DWG Plotted on 4-Mar-2025 2:57 PM

LEOMINSTER
LANCASTER STREET & UNION STREET

| STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|
| MA | - | 1 | 2 |
| PROJECT FILE NO. 613830 | | | |

LANCASTER STREET ENVIRONMENTAL PLAN

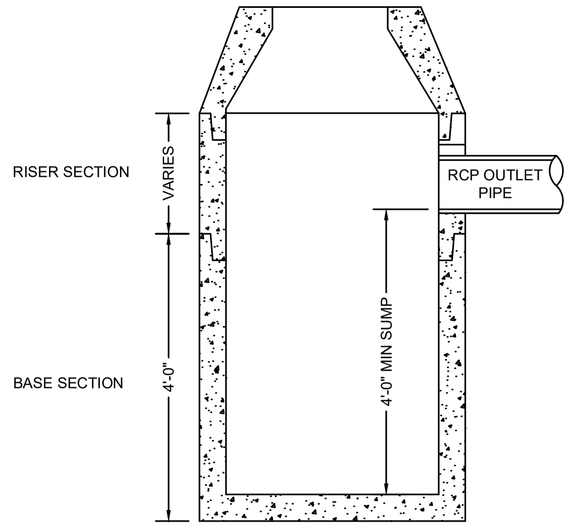
LEGEND

TOTAL PROJECT AREA = 4332 SF
EXISTING IMPERVIOUS AREA = 3250 SF
PROPOSED IMPERVIOUS AREA = 3250 SF (NO CHANGE)
200' RIVERFRONT AREA IMPACTS = 1942 SF
100' RIVERFRONT AREA IMPACTS = 0 SF
NO TREE REMOVAL OR TREE TRIMMING

MALBURN STREET
(PUBLIC-50' WIDE-SEE PLAN 430-18)

LANCASTER STREET
(1948 COUNTY LAYOUT-VARIABLE WIDTH)
1948 COUNTY BASELINE

SCALE: 1" = 20'

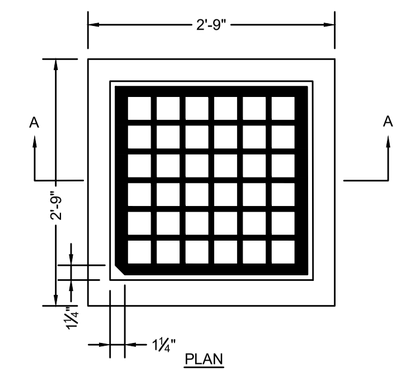



NOTE:

ALL CATCH BASINS SHALL CONFORM TO MASSDOT CONSTRUCTION STANDARD E 201.4.0 EXCEPT FOR 4' SUMP DEPTH AS SHOWN

## DEEP SUMP CATCH BASIN

N.T.S.

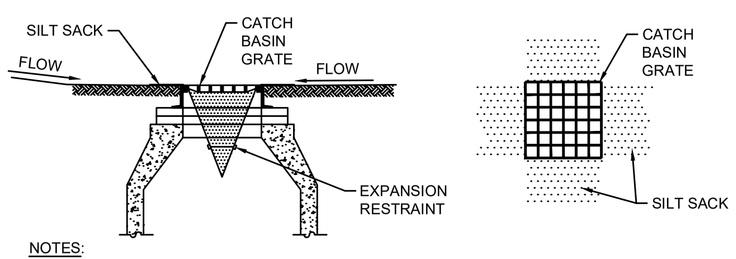



NOTES:

1. FRAME AND COVER SHALL BE RATED FOR HL-93 LOADING.
2. MATERIAL - CAST IRON.
3. MINIMUM FRAME WEIGHT:
   4 FLANGE - 295 LB
   3 FLANGE - 264 LB

## CATCH BASIN FRAME & GRATE (MUNICIPAL STANDARD)

N.T.S.




NOTES:

1. INSTALL SILT SACK IN EXISTING CATCH BASINS BEFORE COMMENCING WORK, AND IN NEW CATCH BASINS IMMEDIATELY AFTER INSTALLATION OF STRUCTURE. MAINTAIN UNTIL BINDER COURSE PAVING IS COMPLETE OR A PERMANENT STAND OF GRASS HAS BEEN ESTABLISHED.
2. GRATE TO BE PLACED OVER SILT SACK.
3. SILT SACK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS AND CLEANING OR REPLACEMENT SHALL BE PERFORMED PROMPTLY AS NEEDED.

## INLET PROTECTION SILT SACK IN CATCH BASIN

N.T.S.

A00850 - 17

613830_HD14_CONSTRUCTION DETAILS.DWG Plotted on 21-Feb-2025 2:14 PM

Proposal No. 616375-136648

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DOCUMENT A00851

# MASSACHUSETTS WETLANDS PROTECTION ACT & LEOMINSTER CONSERVATION COMMISSION

# DETERMINATION OF APPLICABILITY

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**Massachusetts Department of Environmental Protection**
Bureau of Water Resources - Wetlands

# WPA Form 2 – Determination of Applicability

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Leominster
Municipality

## A. General Information

**Important:**
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



From:

Leominster
Conservation Commission

To: Applicant

Courtney Walker
Name
10 Park Plaza, Room 7360
Mailing Address
Boston | MA | 02116
City/Town | State | Zip Code
857-262-0751
Phone Number
courtney.l.walker@dot.state.ma.us
Email Address

Property Owner (if different from applicant):

Name
Mailing Address
City/Town | State | Zip Code
Phone Number
Email Address (if known)

1. Project Location:

Lancaster St
Street Address
42.51071
Latitude (Decimal Degrees Format with 5 digits after decimal e.g. XX.XXXXX)

Leominster
City/Town
-71.73794
Longitude (Decimal Degrees Format with 5 digits after decimal e.g. -XX.XXXXX)

How to find Latitude and Longitude

and how to convert to decimal degrees

Assessors Map/Plat Number

Parcel/Lot Number

2. Date Request Filed:

## B. Determination

Pursuant to the authority of M.G.L. c. 131, § 40, the Conservation Commission considered your Request for Determination of Applicability, with its supporting documentation, and made the following Determination.

Project Description (if applicable):

Reconstruction of a collapsed retaining wall.

Title and Date (or Revised Date if applicable) of Final Plans and Other Documents:

| Title | Date |
|---|---|
| Lancaster Street Site Plan | 2/26/2025 |
| | |
| | |

**Massachusetts Department of Environmental Protection**
Bureau of Water Resources - Wetlands
# WPA Form 2 – Determination of Applicability
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Leominster
Municipality

## B. Determination (cont.)

The following Determination(s) is/are applicable to the proposed site and/or project relative to the Wetlands Protection Act and regulations:

**Positive Determination**
Note: No work within the jurisdiction of the Wetlands Protection Act may proceed until a final Order of Conditions (issued following submittal of a Notice of Intent or Abbreviated Notice of Intent) has been received from the issuing authority (i.e., Conservation Commission or the Department of Environmental Protection).

☐ 1. The area described on the referenced plan(s) is an area subject to jurisdiction under the Act. Removing, filling, dredging, or altering of the area requires the filing of a Notice of Intent.

☐ 2a. The boundary delineations of the following resource areas described on the referenced plan(s) are confirmed as accurate. Therefore, the resource area boundaries confirmed in this Determination are binding as to all decisions rendered pursuant to the Wetlands Protection Act and its regulations regarding such boundaries for as long as this Determination is valid.

☐ 2b. The boundaries of Wetlands Resource Area(s) and Buffer Zone(s) listed below are not confirmed by this Determination, regardless of whether such boundaries are contained on the plans attached to this Determination or to the Request for Determination.

☐ 3. The work described on referenced plan(s) and document(s) is within an area subject to jurisdiction under the Act and will remove, fill, dredge, or alter that area. Therefore, said work requires the filing of a Notice of Intent.

☐ 4. The work described on referenced plan(s) and document(s) is within the Buffer Zone and will alter an Area subject to jurisdiction under the Act. Therefore, said work requires the filing of a Notice of Intent

☐ 5. The area and/or work described on referenced plan(s) and document(s) is subject to review and approval by:

Name of Municipality

Pursuant to the following municipal wetland ordinance or bylaw:

Name | Ordinance or Bylaw Citation

**Massachusetts Department of Environmental Protection**
Bureau of Water Resources - Wetlands

# WPA Form 2 – Determination of Applicability

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Leominster
Municipality

## B. Determination (cont.)

☐ 6. The following area and/or work, if any, is subject to a municipal ordinance or bylaw but not subject to the Massachusetts Wetlands Protection Act:

☐ 7. If a Notice of Intent is filed for the work in the Riverfront Area described on referenced plan(s) and document(s), which includes all or part of the work described in the Request, the applicant must consider the following alternatives. (Refer to the wetland regulations at 10.58(4)(c) 2. for more information about the scope of alternatives requirements):

- ☐ Alternatives limited to the lot on which the project is located.
- ☐ Alternatives limited to the lot on which the project is located, the subdivided lots, and any adjacent lots formerly or presently owned by the same owner.
- ☐ Alternatives limited to the original parcel on which the project is located, the subdivided parcels, any adjacent parcels, and any other land which can reasonably be obtained within the municipality.
- ☐ Alternatives extend to any sites which can reasonably be obtained within the appropriate region of the state.

### Negative Determination

Note: No further action under the Wetlands Protection Act is required by the applicant. However, if the Department is requested to issue a Superseding Determination of Applicability, work may not proceed on this project unless the Department fails to act on such request within 35 days of the date the request is post-marked for certified mail or hand delivered to the Department. Work may then proceed at the owner's risk only upon notice to the Department and to the Conservation Commission. Requirements for requests for Superseding Determinations are listed at the end of this document.

☐ 1. The area described in the Request is not an area subject to jurisdiction under the Act or the Buffer Zone.

☐ 2. The work described in the Request is within an area subject to jurisdiction under the Act, but will not remove, fill, dredge, or alter that area. Therefore, said work does not require the filing of a Notice of Intent.

■ 3. The work described in the Request is within the Buffer Zone, as defined in the regulations, but will not alter an Area subject to jurisdiction under the Act. Therefore, said work does not require the filing of a Notice of Intent, subject to the following conditions (if any).

☐ 4. The work described in the Request is not within an Area subject to jurisdiction under the Act (including the Buffer Zone). Therefore, said work does not require the filing of a Notice of Intent, unless and until said work alters an Area subject to jurisdiction under the Act.

**Massachusetts Department of Environmental Protection**
Bureau of Water Resources - Wetlands
# WPA Form 2 – Determination of Applicability
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Leominster
Municipality

## B. Determination (cont.)

☐ 5. The area described in the Request is subject to jurisdiction under the Act. Since the work described therein meets the requirements for the following exemption, as specified in the Act and the regulations, no Notice of Intent is required:

Exempt Activity (site applicable statutory/regulatory provisions)

☐ 6. The area and/or work described in the Request is not subject to additional review and approval by:

Name of Municipality

Pursuant to a municipal wetlands' ordinance or bylaw.

Name

Ordinance or Bylaw Citation

## C. Authorization

This Determination is issued to the applicant and delivered as follows:

☐ By hand delivery on

Date

☒ By certified mail, return receipt request on

4/10/2025
Date

Certified Mail Number

A copy of this Determination has been sent on the same date, considered the date of issuance, **to** the appropriate DEP Regional Office and the property owner (if not the applicant) in the manner as follows:

**DEP**

☒ By eDEP DOA Submittal Platform (Attach this form and supporting documents)

☐ By USPS mail

Date

☐ By hand delivery

Date

**Property Owner (if not applicant)**

☐ By mail

Date

☐ By hand delivery

Date

**Massachusetts Department of Environmental Protection**
Bureau of Water Resources - Wetlands

# WPA Form 2 – Determination of Applicability

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Leominster
Municipality

## C. Authorization (cont.)

This Determination is valid for **three years** from the date of issuance (except Determinations for Vegetation Management Plans which are valid for the duration of the Plan). This Determination does not relieve the applicant from complying with all other applicable federal, state, or local statutes, ordinances, bylaws, or regulations.

This Determination must be signed by a majority of the Conservation Commission. As noted above, a copy must be sent to the appropriate DEP Regional Office (see https://www.mass.gov/service-details/massdep-regional-offices-by-community) and the property owner (if different from the applicant) on the same date that the Applicant is issued this Determination.

Leominster Conservation Commission
Issuing Authority

Signatures:

| Signature | Printed Name |
|---|---|
| | J.M. Cichy |
| | Charles P. Raymond |
| | Richard Bullick |
| | Robert Sicard |
| | Nicholas L. Ventsi |
| | |
| | |
| | |

## D. Appeals

The applicant, owner, any person aggrieved by this Determination, any owner of land abutting the land upon which the proposed work is to be done, 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 Department of Environmental Protection Regional Office (see https://www.mass.gov/service-details/massdep-regional-offices-by-community) to issue a Superseding Determination of Applicability. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and Fee Transmittal Form (see 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 Determination. 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. The request shall state clearly and concisely the objections to the Determination which is being appealed. To the extent that the Determination is based on a municipal ordinance or bylaw and not on the Massachusetts Wetlands Protection Act or regulations, the Department of Environmental Protection has no appellate jurisdiction.

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

# Request for Departmental Action Fee Transmittal Form

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

DEP File Number:

Provided by DEP

## A. Request Information

1. Location of Project

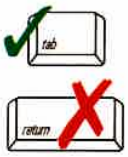
a. Street Address

b. City/Town, Zip

c. Check number

d. Fee amount

**Important:** When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.




2. Person or party making request (if appropriate, name the citizen group's representative):

Name

Mailing Address

City/Town

State

Zip Code

Phone Number

Fax Number (if applicable)

3. Applicant (as shown on Determination of Applicability (Form 2), Order of Resource Area Delineation (Form 4B), Order of Conditions (Form 5), Restoration Order of Conditions (Form 5A), or Notice of Non-Significance (Form 6)):

Name

Mailing Address

City/Town

State

Zip Code

Phone Number

Fax Number (if applicable)

4. DEP File Number:

## B. Instructions

1. When the Departmental action request is for (check one):

☐ Superseding Order of Conditions – Fee: $120 (single family house projects) or $245 (all other projects)

☐ Superseding Determination of Applicability – Fee: $120

☐ Superseding Order of Resource Area Delineation – Fee: $120

Send this form and check or money order, payable to the *Commonwealth of Massachusetts,* to:

Department of Environmental Protection
Box 4062
Boston, MA 02211

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

# Request for Departmental Action Fee Transmittal Form

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

DEP File Number:

Provided by DEP

## B. Instructions (cont.)

2. On a separate sheet attached to this form, state clearly and concisely the objections to the Determination or Order which is being appealed. To the extent that the Determination or Order is based on a municipal bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.

3. Send a **copy** of this form and a **copy** of the check or money order with the Request for a Superseding Determination or Order by certified mail or hand delivery to the appropriate DEP Regional Office (see https://www.mass.gov/service-details/massdep-regional-offices-by-community).

4. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

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DOCUMENT A00875

# POLICY DIRECTIVE P-22-001
# AND
# POLICY DIRECTIVE P-22-002

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massDOT Massachusetts Department of Transportation Highway Division

Number: P-22-001
Date: 9/23/22

# POLICY DIRECTIVE

Jonathan Gulliver (signature on original)
HIGHWAY ADMINISTRATOR

## Off-Site Stockpiling of Soil from MassDOT Construction Projects

### Purpose

The purpose of this Policy Directive is to formally establish a policy and procedures for managing and stockpiling soil generated and transported from MassDOT construction projects. This Policy Directive does not supersede any Federal, State, or Local regulations.

### Date of Effect

This Policy Directive is effective immediately for all projects, including active construction projects.

For active construction projects and for other projects advertised prior to October 15, 2022, changes to the contract documents needed to implement the requirements of this Policy Directive will be considered on a case-by-case basis and shall be approved by the District Highway Director, as necessary.

For projects advertised on or after October 15, 2022, MassDOT will include the requirements and implementation procedures of this Policy Directive in the construction contract documents.

### Policy Requirements

This policy is intended to prevent the off-site relocation of excavated soil generated from MassDOT projects to areas near residential receptors and to control potential fugitive dusts and/or contaminants. To that end, excavated soil may not be moved from the project site without knowledge of the content of the material. Knowledge may include visual field observations for presence of staining, odor, and/or debris, screening with a photoionization detector (PID), laboratory analysis, and/or site history. Pavement millings and other non-soil materials are not subject to the requirements of this Policy Directive.

Moving soil from a MassDOT project site to a temporary off-site storage location must be approved in writing by the District Highway Director.

The Contractor must select a storage location that is at least 500 feet away from residential receptors, as defined herein to include, but not be limited to, residential dwellings, residentially

zoned property, schools, daycare facilities, playgrounds, parks, recreational areas, hospitals, elderly housing and convalescent facilities.

Temporary off-site storage of excavated soil from a MassDOT project is only permissible at a location approved and permitted by MassDOT. The temporary storage location should be located within the same municipality where the soil was excavated, where possible. Stockpiled soil must be securely covered, and appropriate measures must be taken to minimize fugitive dust and erosion.

Signs indicating the source of the soil, the date the soil was generated, and contact information must be erected and maintained until the stockpiled soils are transported to a disposal facility or reused on the project site.

**Implementation Procedures**

To ensure that off-site storage of excavated soils is managed properly on MassDOT projects, this policy requires the following:

1. **Off-Site Stockpile Storage Locations**
    a. The Contractor shall provide proposed off-site storage locations to the Engineer for approval at least 30 days prior to transporting soil off site. Off-site storage locations should be in the same municipality as the work site.
    b. The Contractor shall keep excavated soil on site until adequately characterized to the satisfaction of the Engineer.
    c. The Contractor shall provide notification of the approved off-site storage location to the local Board of Health and the Town Manager's/Mayor's Office at least 7-days prior to transporting soil off site.
    d. The Contractor shall provide the Engineer with at least 3-days' notice prior to transporting soil off site.
    e. For off-site storage locations on MassDOT property, the Contractor is required to obtain an Access Permit through the District Permits Office prior to storage of soil or other materials. MassDOT will issue these permits at no cost to the Contractor. Information to be submitted by the Contractor as part of the permit application shall include:
        i. A description of material to be stored off-site, including available analytical data;
        ii. A figure of the location with distances to residences and residential receptors; and
        iii. Anticipated duration of temporary storage.
    f. Stockpile locations should not be within 500 feet of residential receptors (e.g., residential dwellings, residentially zoned property, schools, daycare facilities, playgrounds, parks, recreational areas, hospitals, elderly housing and convalescent facilities).
        i. If the stockpile location must be within 500 feet of residential receptors, then soil must be less than RCS-1 (per 310 CMR 40.1600) and free of potentially hazardous or regulated items.

g. For off-site storage locations on non-MassDOT property, the Contractor must notify the property owner(s) at least 7 days prior to transporting material.
h. Exceptions to these rules will be reviewed by MassDOT and may be approved by the District Highway Director on a case-by-case basis.

**2. Off-Site Stockpile Management**

a. The Contractor shall keep soil stockpiles on impermeable surfaces (e.g., asphalt or concrete) or on 10-mil polyethylene sheeting.
b. The Contractor shall cover soil stockpiles with 10-mil polyethylene sheeting and surround with a berm made of hay bales, straw wattles, or similar.
    i. Piles that are actively being worked on must be covered and re-secured at the end of the work shift.
c. The Contractor shall label stockpiles with signs, including:
    i. Location of origin (including any Release Tracking Numbers)
    ii. Stockpile ID number (including MassDOT District office-assigned tracking ID, if different)
    iii. Date of initial accumulation
    iv. Applicable telephone numbers for the Contractor and MassDOT.
d. The Contractor shall mitigate fugitive dust at storage locations under the direction of an appropriately trained/certified environmental professional.
e. The Contractor shall remedy noncompliance with this policy within 48 hours.
f. The Contractor shall remedy noncompliance with this policy on the SAME DAY for potentially hazardous material, as determined by the Engineer.
g. The Contractor shall handle excavated soil according to federal, state, and local regulations.
h. The Contractor shall use appropriate shipping documents for all movements of excavated soil on public roadways (e.g., Bill of Lading, Material Shipping Record, Manifest, Asbestos Waste Shipment Record, etc.).

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massDOT Massachusetts Department of Transportation Highway Division

Number: P-22-002
Date: 9/23/22

# POLICY DIRECTIVE

Jonathan Gulliver (signature on original)
HIGHWAY ADMINISTRATOR

## Use of MassDOT Property for Staging and other Construction-Related Operations

### Purpose

This Policy Directive is intended to address the use of MassDOT property by MassDOT Contractors for construction staging and other construction-related operations that are not specifically defined in the construction contract. Such use of MassDOT property will only be allowed if permitted by the District Office in accordance with 700 CMR 13.00, Approval of Access to MassDOT Highways and Other Property. This includes the use of MassDOT property for staging, laydown, and storage of equipment and materials, including soil excavated from a project site.

This Policy Directive requires the Contractor/applicant to obtain a Non-Vehicular Access Permit from MassDOT to use MassDOT property for these purposes.

This Policy Directive is effective immediately and applies to all MassDOT construction projects.

### General Permit Considerations and Conditions

In addition to other normal MassDOT Access Permit procedures, MassDOT shall consider the following during the application, review, implementation and monitoring processes of Access Permits required by this Policy Directive:

- Storage and placement of the Contractor's equipment and materials should not be allowed within the clear zone of the roadway.
- Stockpiled soils should not be located within 500 feet of residential receptors, as defined herein to include, but not be limited to, residential dwellings, residentially zoned property, schools, daycare facilities, playgrounds, parks, recreational areas, hospitals, elderly housing and convalescent facilities.
- The Contractor/applicant shall identify the access/egress locations of the proposed storage areas. MassDOT will only approve locations determined to be safe for roadway users, construction workers and the general public.
- The Contractor may be required to submit a Traffic Management Plan and/or Lighting Plan for MassDOT review and approval as part of the permit application, depending on the proposed use of the area.

- The Contractor shall submit the permit application through MassDOT's online State Highway Access Permit System (SHAPS).
- MassDOT will waive the permit application fee for any application received from a MassDOT Contractor for any permit required by this Policy Directive and will waive any subsequent amendment and extension fees that may otherwise be required.
- MassDOT will review the permit application in accordance with applicable standard procedures and will apply standard permit terms and conditions, as necessary.
- The Resident Engineer will verify that the permit is approved before allowing the Contractor to use the affected area for the requested purpose.
- Areas permitted are for use by the approved applicant only and are not to be shared with or used by other vendors. Subcontractors specifically engaged with the applicant working on the specific MassDOT project will be allowed to use the area in accordance with the terms of the permit.
- Permits are issued on an annual basis and will require the Contractor to file for an extension each year to continue use.

**Exemptions from Permit Requirements**

Equipment and materials being used for active construction operations and located within the work zone of the construction contract are exempt from this permit requirement, provided they do not interfere with the safety or operation of the roadway or the work zone. Examples of these types of exempt uses are:

- Equipment and materials parked or stored within a protected (barriered) work zone.
- Materials placed in the work zone prior to same-day installation or use.
- Soils excavated temporarily and scheduled to be replaced, such as for trenching operations or for installation of drainage structures.

DOCUMENT B00420

**PROPOSAL**

# LEOMINSTER

For: **Culvert Replacement, Culvert Repair and Retaining Wall Replacement and Related Work at Three Locations**

COMMONWEALTH OF MASSACHUSETTS

LOCATION

The work referred to herein is in the City of **LEOMINSTER** in Worcester County, in the Commonwealth of Massachusetts, and is shown by the locus map (Document 00331) in the Proposal Pamphlet, the work locations extend as follows:

**Pleasant Street**

**Beginning – Station 10+50.00 +/-**
**Ending –Station 12+55.00 +/-**

**Colburn Street**

**Limit of Work – Station 24+75.00 +/-**

**Union Street**

**Beginning – Station 50+10.00 +/-**
**Bridge BR# L-08-060**
**Ending – Station 50+95.00 +/-**

**Lancaster Street**

**Beginning – Station 9+75.00**
**Ending – Station 11+75.00**

The contract prices shall include the furnishing of all materials (except as otherwise herein specified), the performing of all the labor requisite or proper, the providing of all necessary machinery, tools, apparatus and other means of construction, the doing of all the abovementioned work in the manner set forth, described and shown in the specifications and on the drawings for the work, and in the form of contract, and the completion thereof within **700 CALENDAR DAYS** upon receipt of a Notice to Proceed, except that if the completion date falls between December 1 and March 15 then the same number of days beyond December 1st will be extended after March 15th.

The Work of this project is described by the following Items and quantities.

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massDOT Massachusetts Department of Transportation Highway Division

CMS Contract Management System

| Project # 616375 | Contract # 136648 | | | |
|---|---|---|---|---|
| Location : LEOMINSTER | | | | |
| Description : Culvert Replacement, Culvert Repair and Retaining Wall Replacement and Related Work at Three Locations | | | | |
| **ITEM #** | **QUANTITY** | **ITEM WITH UNIT BID PRICE WRITTEN IN WORDS** | **UNIT PRICE** | **AMOUNT** |
| 100.9 | 1 | STRUCTURE CONDITION SURVEY<br>AT _____<br>LUMP SUM | | |
| 100.91 | 1 | GEOTECHNICAL INSTRUMENTATION AND MONITORING<br>AT _____<br>LUMP SUM | | |
| 101. | 0.3 | CLEARING AND GRUBBING<br>AT _____<br>PER ACRE | | |
| 102. | 0.1 | SELECTIVE CLEARING AND THINNING<br>AT _____<br>PER ACRE | | |
| 102.1 | 155 | TREE TRIMMING<br>AT _____<br>PER FOOT | | |
| 102.3 | 80 | HERBICIDE TREATMENT OF INVASIVE PLANTS<br>AT _____<br>PER HOUR | | |
| 102.33 | 36 | INVASIVE PLANT MANAGEMENT STRATEGY<br>AT _____<br>PER HOUR | | |
| 102.511 | 3 | TREE PROTECTION - ARMORING AND PRUNING<br>AT _____<br>EACH | | |
| 102.521 | 185 | TREE AND PLANT PROTECTION FENCE<br>AT _____<br>PER FOOT | | |

| Project # 616375 | Contract # 136648 | | | |
|---|---|---|---|---|
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| **ITEM #** | **QUANTITY** | **ITEM WITH UNIT BID PRICE WRITTEN IN WORDS** | **UNIT PRICE** | **AMOUNT** |
| 103. | 3 | TREE REMOVED - DIAMETER UNDER 24 INCHES<br>AT _____<br>EACH | | |
| 104. | 4 | TREE REMOVED - DIAMETER 24 INCHES AND OVER<br>AT _____<br>EACH | | |
| 105. | 6 | STUMP REMOVED<br>AT _____<br>EACH | | |
| 120. | 2,850 | EARTH EXCAVATION<br>AT _____<br>PER CUBIC YARD | | |
| 121. | 100 | CLASS A ROCK EXCAVATION<br>AT _____<br>PER CUBIC YARD | | |
| 123. | 1 | MUCK EXCAVATION<br>AT _____<br>PER CUBIC YARD | | |
| 127.11 | 1 | REINFORCED CONCRETE EXCAVATION<br>AT _____<br>LUMP SUM | | |
| 140. | 750 | BRIDGE EXCAVATION<br>AT _____<br>PER CUBIC YARD | | |
| 141. | 975 | CLASS A TRENCH EXCAVATION<br>AT _____<br>PER CUBIC YARD | | |

| Project # 616375 | Contract # 136648 | | | |
|---|---|---|---|---|
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| **ITEM #** | **QUANTITY** | **ITEM WITH UNIT BID PRICE WRITTEN IN WORDS** | **UNIT PRICE** | **AMOUNT** |
| 141.1 | 30 | TEST PIT FOR EXPLORATION<br>AT _____<br>PER CUBIC YARD | | |
| 142. | 5 | CLASS B TRENCH EXCAVATION<br>AT _____<br>PER CUBIC YARD | | |
| 144. | 3 | CLASS B ROCK EXCAVATION<br>AT _____<br>PER CUBIC YARD | | |
| 146. | 4 | DRAINAGE STRUCTURE REMOVED<br>AT _____<br>EACH | | |
| 146.01 | 1 | SANITARY STRUCTURE REMOVED<br>AT _____<br>EACH | | |
| 148. | 275 | DREDGING AND DISPOSING OF MATERIAL<br>AT _____<br>PER CUBIC YARD | | |
| 148.01 | 355 | DREDGING AND STOCKPILING OF STREAMBED MATERIAL<br>AT _____<br>PER CUBIC YARD | | |
| 150. | 50 | ORDINARY BORROW<br>AT _____<br>PER CUBIC YARD | | |
| 151. | 545 | GRAVEL BORROW<br>AT _____<br>PER CUBIC YARD | | |

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| **ITEM #** | **QUANTITY** | **ITEM WITH UNIT BID PRICE WRITTEN IN WORDS** | **UNIT PRICE** | **AMOUNT** |
| 151.1 | 40 | GRAVEL BORROW FOR BRIDGE FOUNDATION<br>AT _____<br>PER CUBIC YARD | | |
| 151.2 | 625 | GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES<br>AT _____<br>PER CUBIC YARD | | |
| 156. | 440 | CRUSHED STONE<br>AT _____<br>PER TON | | |
| 156.1 | 125 | CRUSHED STONE FOR BRIDGE FOUNDATIONS<br>AT _____<br>PER TON | | |
| 160.2 | 1 | CONTROLLED LOW-STRENGTH MATERIAL - MECHANICAL EXCAVATABLE (101-300 PSI)<br>AT _____<br>PER CUBIC YARD | | |
| 170. | 1,470 | FINE GRADING AND COMPACTING - SUBGRADE AREA<br>AT _____<br>PER SQUARE YARD | | |
| 180.01 | 1 | ENVIRONMENTAL HEALTH AND SAFETY PROGRAM<br>AT _____<br>LUMP SUM | | |
| 180.02 | 60 | PERSONAL PROTECTION LEVEL C UPGRADE<br>AT _____<br>PER HOUR | | |
| 180.03 | 100 | LICENSED SITE PROFESSIONAL SERVICES<br>AT _____<br>PER HOUR | | |

| Project # 616375 | Contract # 136648 | | | |
|---|---|---|---|---|
| Location : LEOMINSTER | | | | |
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| **ITEM #** | **QUANTITY** | **ITEM WITH UNIT BID PRICE WRITTEN IN WORDS** | **UNIT PRICE** | **AMOUNT** |
| 181.11 | 2,325 | DISPOSAL OF UNREGULATED SOIL<br>AT _____<br>PER TON | | |
| 181.12 | 70 | DISPOSAL OF REGULATED SOIL - IN-STATE FACILITY<br>AT _____<br>PER TON | | |
| 181.13 | 70 | DISPOSAL OF REGULATED SOIL - OUT-OF-STATE FACILITY<br>AT _____<br>PER TON | | |
| 181.14 | 30 | DISPOSAL OF HAZARDOUS WASTE<br>AT _____<br>PER TON | | |
| 201. | 6 | CATCH BASIN<br>AT _____<br>EACH | | |
| 202. | 1 | MANHOLE<br>AT _____<br>EACH | | |
| 210. | 2 | SANITARY SEWER MANHOLE<br>AT _____<br>EACH | | |
| 222.3 | 7 | FRAME AND GRATE (OR COVER) MUNICIPAL STANDARD<br>AT _____<br>EACH | | |
| 223.1 | 5 | FRAME AND GRATE (OR COVER) REMOVED AND STACKED<br>AT _____<br>EACH | | |

| Project # 616375 | Contract # 136648 | | | |
|---|---|---|---|---|
| Location : LEOMINSTER | | | | |
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| **ITEM #** | **QUANTITY** | **ITEM WITH UNIT BID PRICE WRITTEN IN WORDS** | **UNIT PRICE** | **AMOUNT** |
| 224.12 | 3 | 12 INCH HOOD<br>AT _____<br>EACH | | |
| 227.3 | 10 | REMOVAL OF DRAINAGE STRUCTURE SEDIMENT<br>AT _____<br>PER CUBIC YARD | | |
| 227.31 | 90 | REMOVAL OF DRAINAGE PIPE SEDIMENT<br>AT _____<br>PER FOOT | | |
| 234.12 | 90 | 12 INCH DRAINAGE PIPE - OPTION<br>AT _____<br>PER FOOT | | |
| 238.10 | 30 | 10 INCH DUCTILE IRON PIPE<br>AT _____<br>PER FOOT | | |
| 242.12 | 2 | 12 INCH REINFORCED CONCRETE PIPE FLARED END<br>AT _____<br>EACH | | |
| 250.10 | 290 | 10 INCH POLYVINYLCHLORIDE SANITARY SEWER PIPE<br>AT _____<br>PER FOOT | | |
| 258. | 10 | STONE FOR PIPE ENDS<br>AT _____<br>PER SQUARE YARD | | |
| 271.36 | 75 | 36 INCH PIPE REMOVED AND STACKED<br>AT _____<br>PER FOOT | | |

| Project # 616375 | Contract # 136648 | | | |
|---|---|---|---|---|
| Location : LEOMINSTER | | | | |
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| **ITEM #** | **QUANTITY** | **ITEM WITH UNIT BID PRICE WRITTEN IN WORDS** | **UNIT PRICE** | **AMOUNT** |
| 303.08 | 20 | 8 INCH DUCTILE IRON WATER PIPE (MECHANICAL JOINT)<br>AT _____<br>PER FOOT | | |
| 303.12 | 115 | 12 INCH DUCTILE IRON WATER PIPE (MECHANICAL JOINT)<br>AT _____<br>PER FOOT | | |
| 303.20 | 115 | 20 INCH DUCTILE IRON WATER PIPE (MECHANICAL JOINT)<br>AT _____<br>PER FOOT | | |
| 309. | 4,750 | DUCTILE IRON FITTINGS FOR WATER PIPE<br>AT _____<br>PER POUND | | |
| 358. | 2 | GATE BOX ADJUSTED<br>AT _____<br>EACH | | |
| 373.12 | 115 | 12 INCH WATER PIPE INSULATION<br>AT _____<br>PER FOOT | | |
| 373.20 | 50 | 20 INCH WATER PIPE INSULATION<br>AT _____<br>PER FOOT | | |
| 375.20 | 2 | 20 INCH INSERTION VALVE AND BOX<br>AT _____<br>EACH | | |
| 381.3 | 1 | SERVICE BOX ADJUSTED<br>AT _____<br>EACH | | |

| Project # 616375 | Contract # 136648 | | | |
|---|---|---|---|---|
| Location : LEOMINSTER | | | | |
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| **ITEM #** | **QUANTITY** | **ITEM WITH UNIT BID PRICE WRITTEN IN WORDS** | **UNIT PRICE** | **AMOUNT** |
| 402. | 15 | DENSE GRADED CRUSHED STONE FOR SUB-BASE<br>AT _____<br>PER CUBIC YARD | | |
| 415.2 | 925 | PAVEMENT FINE MILLING<br>AT _____<br>PER SQUARE YARD | | |
| 440. | 2,700 | CALCIUM CHLORIDE FOR ROADWAY DUST CONTROL<br>AT _____<br>PER POUND | | |
| 443. | 13 | WATER FOR ROADWAY DUST CONTROL<br>AT _____<br>PER 1000 GALLONS | | |
| 450.23 | 183 | SUPERPAVE SURFACE COURSE - 12.5 (SSC - 12.5)<br>AT _____<br>PER TON | | |
| 450.32 | 115 | SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC - 19.0)<br>AT _____<br>PER TON | | |
| 450.42 | 175 | SUPERPAVE BASE COURSE - 37.5 (SBC - 37.5)<br>AT _____<br>PER TON | | |
| 451. | 20 | HMA FOR PATCHING<br>AT _____<br>PER TON | | |
| 452. | 215 | ASPHALT EMULSION FOR TACK COAT<br>AT _____<br>PER GALLON | | |

| Project # 616375 | Contract # 136648 | | | |
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| **ITEM #** | **QUANTITY** | **ITEM WITH UNIT BID PRICE WRITTEN IN WORDS** | **UNIT PRICE** | **AMOUNT** |
| 453. | 790 | HMA JOINT ADHESIVE<br>AT _____<br>PER FOOT | | |
| 472. | 30 | TEMPORARY ASPHALT PATCHING<br>AT _____<br>PER TON | | |
| 506. | 560 | GRANITE CURB TYPE VB - STRAIGHT<br>AT _____<br>PER FOOT | | |
| 506.1 | 40 | GRANITE CURB TYPE VB - CURVED<br>AT _____<br>PER FOOT | | |
| 509. | 95 | GRANITE TRANSITION CURB FOR PEDESTRIAN CURB RAMPS - STRAIGHT<br>AT _____<br>PER FOOT | | |
| 509.1 | 35 | GRANITE TRANSITION CURB FOR PEDESTRIAN CURB RAMPS - CURVED<br>AT _____<br>PER FOOT | | |
| 514. | 2 | GRANITE CURB INLET - STRAIGHT<br>AT _____<br>EACH | | |
| 515. | 1 | GRANITE CURB INLET - CURVED<br>AT _____<br>EACH | | |
| 645.172 | 330 | 72 INCH CHAIN LINK FENCE (PIPE TOP RAIL) VINYL COATED (LINE POST OPTION)<br>AT _____<br>PER FOOT | | |

| Project # 616375 | Contract # 136648 | | | |
|---|---|---|---|---|
| Location : LEOMINSTER | | | | |
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| **ITEM #** | **QUANTITY** | **ITEM WITH UNIT BID PRICE WRITTEN IN WORDS** | **UNIT PRICE** | **AMOUNT** |
| 657. | 1,315 | TEMPORARY FENCE<br>AT _____<br>PER FOOT | | |
| 665. | 210 | CHAIN LINK FENCE REMOVED AND STACKED<br>AT _____<br>PER FOOT | | |
| 669. | 200 | FENCE REMOVED AND STACKED<br>AT _____<br>PER FOOT | | |
| 685. | 160 | STONE MASONRY WALL IN CEMENT MORTAR<br>AT _____<br>PER CUBIC YARD | | |
| 697.1 | 9 | SILT SACK<br>AT _____<br>EACH | | |
| 697.2 | 20 | FLOATING SILT FENCE<br>AT _____<br>PER FOOT | | |
| 698.1 | 230 | GEOTEXTILE FABRIC FOR STABILIZATION<br>AT _____<br>PER SQUARE YARD | | |
| 698.3 | 1,200 | GEOTEXTILE FABRIC FOR SEPARATION<br>AT _____<br>PER SQUARE YARD | | |
| 701. | 325 | CEMENT CONCRETE SIDEWALK<br>AT _____<br>PER SQUARE YARD | | |

| Project # 616375 | Contract # 136648 | | | |
|---|---|---|---|---|
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| **ITEM #** | **QUANTITY** | **ITEM WITH UNIT BID PRICE WRITTEN IN WORDS** | **UNIT PRICE** | **AMOUNT** |
| 701.1 | 40 | CEMENT CONCRETE SIDEWALK AT DRIVEWAYS<br>AT _____<br>PER SQUARE YARD | | |
| 701.2 | 60 | CEMENT CONCRETE PEDESTRIAN CURB RAMP<br>AT _____<br>PER SQUARE YARD | | |
| 702. | 45 | HOT MIX ASPHALT SIDEWALK OR DRIVEWAY<br>AT _____<br>PER TON | | |
| 705.2 | 7 | STONE PAVERS REMOVED AND RESET<br>AT _____<br>PER SQUARE YARD | | |
| 711. | 1 | BOUND REMOVED AND RESET<br>AT _____<br>EACH | | |
| 722.3 | 1 | SCHEDULE OF OPERATIONS (TYPE C) - FIXED PRICE $37,500<br>AT Thirty Seven Thousand Five Hundred Dollars<br>LUMP SUM | $37,500.00 | $37,500.00 |
| 740. | 23 | ENGINEER'S FIELD OFFICE AND EQUIPMENT (TYPE A)<br>AT _____<br>PER MONTH | | |
| 748. | 1 | MOBILIZATION<br>AT _____<br>LUMP SUM | | |
| 751. | 285 | LOAM FOR ROADSIDES<br>AT _____<br>PER CUBIC YARD | | |

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| **ITEM #** | **QUANTITY** | **ITEM WITH UNIT BID PRICE WRITTEN IN WORDS** | **UNIT PRICE** | **AMOUNT** |
| 751.1 | 20 | LOAM FOR LAWNS<br>AT _____<br>PER CUBIC YARD | | |
| 751.765 | 55 | COMPOST AND SEED OVER MODIFIED ROCKFILL<br>AT _____<br>PER CUBIC YARD | | |
| 755.35 | 1 | INLAND WETLAND REPLICATION AREA<br>AT _____<br>LUMP SUM | | |
| 755.45 | 125 | WETLAND RESTORATION<br>AT _____<br>PER SQUARE YARD | | |
| 755.75 | 80 | WETLAND SPECIALIST<br>AT _____<br>PER HOUR | | |
| 755.76 | 1 | WETLANDS MONITORING REPORTS<br>AT _____<br>LUMP SUM | | |
| 756. | 1 | NPDES STORMWATER POLLUTION PREVENTION PLAN<br>AT _____<br>LUMP SUM | | |
| 756.1 | 1 | CONSTRUCTION PERIOD POLLUTION PREVENTION AND EROSION AND SEDIMENTATION CONTROL PLAN<br>AT _____<br>LUMP SUM | | |
| 765. | 365 | SEEDING<br>AT _____<br>PER SQUARE YARD | | |

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| **ITEM #** | **QUANTITY** | **ITEM WITH UNIT BID PRICE WRITTEN IN WORDS** | **UNIT PRICE** | **AMOUNT** |
| 765.21 | 15 | ANNUAL COVER CROP FOR NATIVE SEEDING<br>AT _____<br>PER POUND | | |
| 765.442 | 5 | ROADSIDE RIVERBANK SEED MIX<br>AT _____<br>PER POUND | | |
| 765.472 | 5 | STEEP SLOPE MID-HEIGHT MIX<br>AT _____<br>PER POUND | | |
| 765.635 | 1,335 | NATIVE SEEDING AND ESTABLISHMENT<br>AT _____<br>PER SQUARE YARD | | |
| 767.121 | 1,015 | SEDIMENT CONTROL BARRIER<br>AT _____<br>PER FOOT | | |
| 767.122 | 200 | COIR LOG BANK<br>AT _____<br>PER FOOT | | |
| 767.91 | 125 | TIMBER MATTING<br>AT _____<br>PER SQUARE YARD | | |
| 799.775 | 30 | PLANTING - LIVE CUTTINGS<br>AT _____<br>EACH | | |
| 801.412 | 140 | 4 INCH ELECTRICAL CONDUIT - TYPE NM (12 BANK)<br>AT _____<br>PER FOOT | | |

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| **ITEM #** | **QUANTITY** | **ITEM WITH UNIT BID PRICE WRITTEN IN WORDS** | **UNIT PRICE** | **AMOUNT** |
| 832. | 60 | WARNING-REGULATORY AND ROUTE MARKER - ALUMINUM PANEL (TYPE A)<br>AT _____<br>PER SQUARE FOOT | | |
| 847.1 | 6 | SIGN SUP (NOT GUIDE)+RTE MKR W/1 BRKWAY POST ASSEMBLY - STEEL<br>AT _____<br>EACH | | |
| 851.1 | 180 | TRAFFIC CONES FOR TRAFFIC MANAGEMENT<br>AT _____<br>PER DAY | | |
| 852. | 1,150 | SAFETY SIGNING FOR TRAFFIC MANAGEMENT<br>AT _____<br>PER SQUARE FOOT | | |
| 853.1 | 16 | PORTABLE BREAKAWAY BARRICADE TYPE III<br>AT _____<br>EACH | | |
| 853.2 | 110 | TEMPORARY BARRIER (TL-2)<br>AT _____<br>PER FOOT | | |
| 853.22 | 135 | JERSEY BARRIER REMOVED AND STACKED<br>AT _____<br>PER FOOT | | |
| 854.1 | 20 | PAVEMENT MARKING REMOVAL<br>AT _____<br>PER SQUARE FOOT | | |
| 856.12 | 296 | PORTABLE CHANGEABLE MESSAGE SIGN<br>AT _____<br>PER DAY | | |

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| **ITEM #** | **QUANTITY** | **ITEM WITH UNIT BID PRICE WRITTEN IN WORDS** | **UNIT PRICE** | **AMOUNT** |
| 859. | 5,250 | REFLECTORIZED DRUM<br>AT _____<br>PER DAY | | |
| 859.1 | 360 | REFLECTORIZED DRUMS WITH SEQUENTIAL FLASHING WARNING LIGHTS<br>AT _____<br>PER DAY | | |
| 866.106 | 950 | 6 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)<br>AT _____<br>PER FOOT | | |
| 866.112 | 255 | 12 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)<br>AT _____<br>PER FOOT | | |
| 867.106 | 815 | 6 INCH REFLECTORIZED YELLOW LINE (THERMOPLASTIC)<br>AT _____<br>PER FOOT | | |
| 874. | 6 | STREET NAME SIGN<br>AT _____<br>EACH | | |
| 874.2 | 2 | TRAFFIC SIGN REMOVED AND RESET<br>AT _____<br>EACH | | |
| 874.4 | 3 | TRAFFIC SIGN REMOVED AND STACKED<br>AT _____<br>EACH | | |
| 983.1 | 2,460 | RIPRAP<br>AT _____<br>PER TON | | |

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| **ITEM #** | **QUANTITY** | **ITEM WITH UNIT BID PRICE WRITTEN IN WORDS** | **UNIT PRICE** | **AMOUNT** |
| 983.521 | 295 | STREAMBED RESTORATION<br>AT _____<br>PER CUBIC YARD | | |
| 986. | 500 | MODIFIED ROCKFILL<br>AT _____<br>PER TON | | |
| 991.1 | 1 | CONTROL OF WATER - STRUCTURE NO. L-08-060<br>AT _____<br>LUMP SUM | | |
| 991.11 | 1 | CONTROL OF WATER - STRUCTURE NO. L-08-053<br>AT _____<br>LUMP SUM | | |
| 991.12 | 1 | CONTROL OF WATER - STREAM RELOCATION<br>AT _____<br>LUMP SUM | | |
| 995.011 | 1 | CULVERT STRUCTURE, CULVERT NO. L-08-053<br>AT _____<br>LUMP SUM | | |
| 996.319 | 1 | SOIL NAIL WALL<br>AT _____<br>LUMP SUM | | |
| **Total Qty:** | 44,336.4 | | | |