jb

COMMONWEALTH OF MASSACHUSETTS

massDOT
Massachusetts Department of Transportation
Highway Division

CONTRACT DOCUMENTS AND SPECIAL PROVISIONS

PROPOSAL NO.	611942-133627
P.V. =	$2,191,000.00
PLANS	YES

FOR

Federal Aid Project No. HIP(NGB)-003S(928)X
Superstructure Replacement, S-10-024,
County Road over Ironworks Brook

in the Town of

SHEFFIELD

In accordance with the STANDARD SPECIFICATIONS
for HIGHWAYS and BRIDGES dated 2025

This Proposal to be opened and read: **TUESDAY, MARCH 17, 2026 at 2:00 P.M.**

*** THIS PAGE IS INTENTIONALLY LEFT BLANK ***

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 10

DOCUMENT 00760
REQUIRED CONTRACT PROVISIONS FOR FEDERAL-AID
CONSTRUCTION CONTRACTS ..... 00760-1 through 14

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

DOCUMENT 00861
STATE PREVAILING WAGE RATES ..... 00861-1 through 40

TABLE OF CONTENTS (Continued)

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

DOCUMENT 00880
MINIMUM WAGES FOR FEDERAL AND FEDERALLY
ASSISTED CONTRACTS ..... 00880-1 through 28

DOCUMENT A00801
SPECIAL PROVISIONS ..... A00801-1 through 120

DOCUMENT A00802
DETAIL SHEETS ..... A00802-1 through 10

DOCUMENT A00808
PROJECT UTILITY COORDINATION FORM ..... A00808-1 through 4

DOCUMENT A00811
WATERING LOG FOR MASSDOT PLANTINGS ..... 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 158

DOCUMENT A00831
ARMY CORPS OF ENGINEERS VERIFICATION –
PROJECT FILE NUMBER **NAE-2024-02809** &
GENERAL PERMIT NUMBER **NAE-2022-02649** ..... A00831-1 through 130

DOCUMENT A00840
MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
ADMINISTRATIVE COMPLETENESS
AND TECHNICAL DEFICIENCY REVIEW ..... A00840-1 through 148

DOCUMENT A00841
MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
WATER QUALITY CERTIFICATE –
FILING NUMBER: **24-WW11-0067-APP** ..... A00841-1 through 16

DOCUMENT A00842
MASSACHUSETTS DIVISION OF FISHERIES & WILDLIFE
CONDITIONAL NO TAKE LETTER – NHESP FILE No. **25-19928** ..... A00842-1 through 6

DOCUMENT A00844
USFWS - FHWA, FRA & FTA INDIANA BAT & NORTHERN LONG-EARED BAT
PROGRAMMATIC BIOLOGICAL OPINION –
NLAA CONCURRENCE VERIFICATION LETTER ..... A00844-1 through 18

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

DOCUMENT B00420
PROPOSAL ..... B00420-1 through 14

*** END OF DOCUMENT ***

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, MARCH 17, 2026 at 2:00 P.M. **
SHEFFIELD
Federal Aid Project No. HIP(NGB)-003S(928)X
Superstructure Replacement, S-10-024,
County Road over Ironworks Brook

****Date Subject to Change**

PROJECT VALUE = $2,191,000.00

Bidders must be pre-qualified by the Department in the BRIDGE-CONSTRUCTION category 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 $625.00 per ton, Portland cement $425.13 per ton, diesel fuel $2.805 per gallon, and gasoline $2.145 per gallon, and Steel Base Price Index 373.6. 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, FEBRUARY 14, 2026

*** THIS PAGE IS INTENTIONALLY LEFT BLANK ***

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.

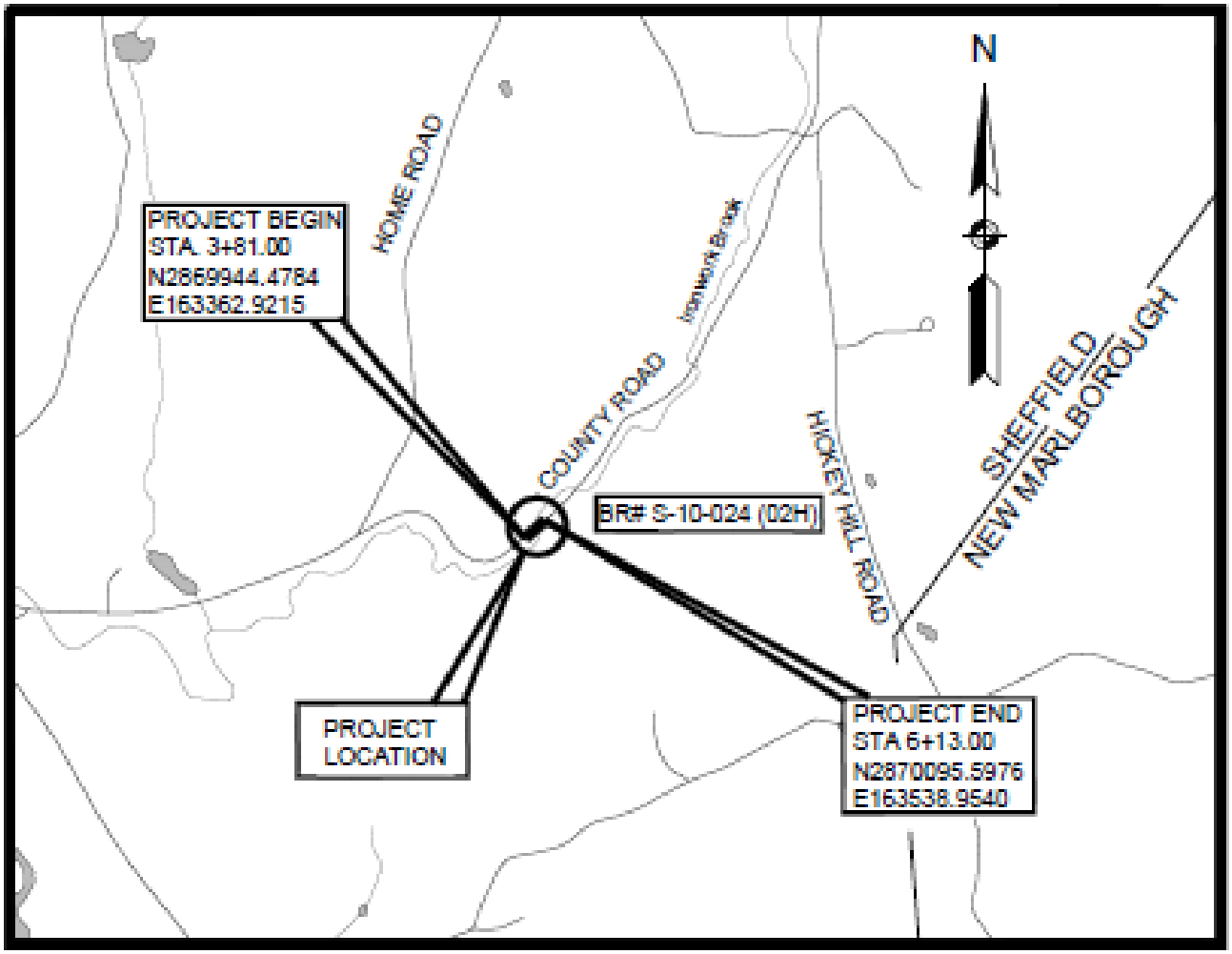
*** END OF DOCUMENT ***

*** THIS PAGE IS INTENTIONALLY LEFT BLANK ***

DOCUMENT 00331

LOCUS MAP

SHEFFIELD
Federal Aid Project No. HIP(NGB)-003S(928)X
Superstructure Replacement, S-10-024,
County Road over Ironworks Brook



LENGTH OF PROJECT = 232.00 FEET = 0.044 MILES

*** THIS PAGE IS INTENTIONALLY LEFT BLANK ***

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: _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

WORK NOT COMPLETED WITHIN SPECIFIED TIME: _____

_____

_____

_____

_____

_____

_____

Revised: 04/28/17

*** END OF DOCUMENT ***

DOCUMENT 00710

GENERAL CONTRACT PROVISIONS

Revised: 04-16-25

NOTICE OF AVAILABILITY

The STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES dated 2025, 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.

*** END OF DOCUMENT ***

*** THIS PAGE IS INTENTIONALLY LEFT BLANK ***

DOCUMENT 00715

SUPPLEMENTAL SPECIFICATIONS

SEPTEMBER 30, 2025

The 2025 *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 2.00: PROPOSAL REQUIREMENTS AND CONDITIONS

Subsection 2.09: Rejection of Proposals
Replace the first bullet in the third paragraph with the following:

- award of the contract would result in the Bidder exceeding the Aggregate Bonding Capacity or the Single Bonding Capacity established by its Surety Company, or the Bidder's Proposal exceeds its Single Contract Limit, or the Bidder was not prequalified in the specified class of work on or before the time of bid opening; or

SECTION 3.00: AWARD AND EXECUTION OF THE CONTRACT

Subsection 3.02: Award of Contract
Replace the third paragraph with the following:

The successful bidder will be notified by mail or otherwise that their bid has been accepted and that they have been awarded the Contract.

SECTION 7.00: LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

Subsection 7.01: Laws to be Observed
In paragraph 701.G Buy America Provisions change Federally-aid to Federal-aid.

Subsection 7.05: Insurance Requirements
Change the title of paragraph A to Workers' Compensation Insurance

Subsection 7.22: Labor, Lodging, Board, Maximum Hours of Employment, Weekly Payment, Keeping of Payroll Records.
Replace this subsection with the following;

Subsection 7.22: Labor, Lodging, Board; Maximum Hours of Employment; Minimum Wage Rates; Payment of Wages; Keeping of Payroll Records

Every employee in public work shall lodge, board and trade where and with whom he elects; and no person or their agents or employees under contract with the commonwealth, a county, city or town, or with a department, board, commission or officer acting therefor, for the doing of public work shall directly or indirectly require, as a condition of employment therein, that the employee shall lodge, board or trade at a particular place or with a particular person. This section shall be made a part of the contract for such employment. (M.G.L. c. 149, § 25).

Every contract, except for the purchase of material or supplies, involving the employment of laborers, workers, mechanics, foremen or inspectors, to which the commonwealth or any county or any town, subject to section thirty, is a party, shall contain a stipulation that no laborer, worker, mechanic, foreman or inspector working within the commonwealth, in the employ of the contractor, sub-contractor or other person doing or contracting to do the whole or a part of the work contemplated by the contract, shall be required or permitted to work more than eight hours in any one day or more than forty-eight hours in any one week, or more than six days in any one week, except in cases of emergency, or, in case any town subject to section thirty-one is a party to such a contract, more than eight hours in any one day, except as aforesaid; provided, that in contracts entered into by the department of highways [a predecessor agency to MassDOT] for the construction or reconstruction of highways there may be inserted in said stipulation a provision that said department, or any contractor or sub-contractor for said department, may employ laborers, workers, mechanics, foreman and inspectors for more than eight hours in any one day in such construction or reconstruction when, in the opinion of the commissioner [currently defined in M.G.L. c. 149, § 1 as the director of the Department of Labor Standards], public necessity so requires. Every such contract not containing the aforesaid stipulation shall be null and void. (M.G.L. c. 149, § 34).

Attention of Bidders is called to M.G.L. c. 149, § 26-27H (the Prevailing Wage Law), requiring that the rate per hour of the wages paid to mechanics and apprentices, teamsters, chauffeurs and laborers in the construction of public works shall not be less than the rate or rates of wages to be determined by the director of the department of labor standards, and M.G.L. c. 149, § 148 requiring the weekly or bi-weekly payment of employees.

The Contractor shall furnish certified copies of any or all payrolls for the Contract, showing the name, address, and occupational classification of each employee on said works, and the hours worked by, and the wages paid to each such employee. Such payroll shall also include the rates paid for rented trucks or rental equipment of any kind used on the work. This requirement shall also apply to the work of any Subcontractor, having a Subcontract for any of the work performed on the project. Such records shall be kept in such manner as the Director of Labor Standards shall prescribe, and shall be open to inspection by the Engineer or any authorized representative of the Department of Labor Standards at any reasonable time and as often as may be necessary.

SECTION 8.00: PROSECUTION AND PROGRESS

Subsection 8.01: Subletting or Assignment of Contract

In the first bullet of the third paragraph replace the title of Subsection 7.22 Labor, Lodging, Board; Maximum Hours of Employment; Minimum Wage Rates; Payment of Wages; Keeping of Payroll Records

SECTION 9.00: MEASUREMENT AND PAYMENT

Subsection 9.03: Payment for Extra Work

Replace 903.B, first paragraph, numbers (2) and (3) with the following.

(2) Plus 13 percent of direct labor, for the estimated costs of Federal Insurance Contribution Act (FICA) including Medicare; Federal Unemployment Tax Act (FUTA); State Unemployment Tax Act (SUTA), which includes Unemployment Insurance, the Workforce Training Fund Program,-Employer Medical Assistance Contribution, and COVID-19 Recovery Assessment; Earned Sick Time (EST) Law (940 CMR 33.00); and Paid Family and Medical Leave (PFML) Act (458 CMR 2.00); or, as an alternative to the above 13 percent, the Contractor may elect to use actual rates for FICA, FUTA, SUTA, EST and PFML provided the actual rates are supported with verifiable documentation and shall be subject to review by MassDOT Audit Operations.

(3) Plus the estimated cost of Workers' Compensation and Liability Insurance, Health, Welfare and Pension benefits, and such additional fringe benefits which the Contractor is required to pay as a result of Union Labor Agreements and/or is required by authorized governmental agencies;

In 903.B, second paragraph, number (3), replace the word "Workmen's" with "Workers'" .

DIVISION II

CONSTRUCTION DETAILS

SECTION 300: WATER SYSTEMS

SUBSECTION 301: WATER SYSTEMS

Subsection 301.60G: Laying Pipe
Revise the third paragraph to read as follows:

Pipe sections shall be laid with the bell on the upgrade end. Before laying the pipe, the outside of the spigot and the inside of the bell shall be wire brushed and wiped clean and dry.

Subsection 301.80: Method of Measurement
Delete the words cast iron in the first paragraph.

Replace the second paragraph with the following;

Fittings, consisting of bends, tees, caps, wyes, sleeves, reducers, increasers, blow-off fittings and other special fittings, apply only when new materials are necessary and which are not specifically provided for under other items in the Proposal. Fittings other than new will not be paid separately but only under the applicable pipe items. When new fittings are measured separately for payment, the length of pipe occupied by the fittings will not be measured for payment.

SECTION 700: INCIDENTAL WORK

SUBSECTION 715: RURAL MAIL BOXES REMOVED AND RESET

Subsection 715: Rural Mail Boxes Removed and Reset
Change the words mail box and mail boxes to the word mailbox or mailboxes where encountered in the title, and all subsections.

SECTION 800: TRAFFIC CONTROL DEVICES

SUBSECTION 850: TRAFFIC CONTROLS FOR CONSTRUCTION AND MAINTENANCE OPERATIONS

Subsection 850.29: Temporary Barrier and Temporary Barrier Removed and Reset
Delete this subsection.

Subsection 850.49: Temporary Barrier
Delete this subsection.

Subsection 850.69: Temporary Barrier and Temporary Barrier Removed and Reset
Delete this subsection.

Subsection 850.80: Method of Measurement
Delete the fifth paragraph from the end of this subsection.

Subsection 850.81: Basis of Payment
Delete the sixth and seventh paragraphs from the end of this subsection.

SUBSECTION 853: TEMPORARY BARRIER

Subsection 853.: Temporary Barrier
Add this new subsection:

DESCRIPTION

853.20: General

Work under this Subsection consists of furnishing, placing, adjusting, resetting, maintaining, and removing temporary barrier.

MATERIALS

853.40: General

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

Material	Section
Precast, Prestressed, and Prefabricated Concrete Products	M4.09.0
Temporary Barrier	M10.16.0
Limited Deflection Temporary Barrier	M10.16.1
Delineators for Temporary Barrier	M10.16.2

The Contractor shall supply a temporary barrier system that meets or exceeds the Test Level (TL) designated in the description of the bid item.

If the Contractor uses a proprietary temporary barrier system, it shall be listed on the QTCE.

Temporary barrier segments that appear to be damaged or in otherwise unsuitable condition may be rejected or ordered to be replaced by the Engineer at no additional cost.

853.41: Deflection

The deflection of a temporary barrier system is defined as the measured deflection, permanent and/or dynamic, during MASH Test Designation 2-11 (for TL-2) or Test Designation 3-11 (for TL-3).

The Contractor shall supply a temporary barrier system that is equal to or less than the maximum allowable deflection (permanent and/or dynamic) for each run of temporary barrier, as shown in the Plans or stated in the Special Provisions. If no distinction between permanent and temporary deflection is shown in the plans or Special Provisions, then dynamic deflection shall govern.

853.42: Precast Concrete Barriers

Precast Concrete Barriers used as temporary barriers shall be fabricated in accordance with M4.09.0: Precast, Prestressed, and Prefabricated Concrete Products. The Contractor shall submit a Certificate of Compliance (CoC) attesting to meeting this requirement.

853.43: Delineation

Delineators installed at 20-ft intervals throughout the entire barrier run shall be included. The delineators shall conform to M10.16.2: Delineators for Temporary Barrier. Delineators that may act as a washer on a bolted connection shall not be used unless specifically allowed by the barrier manufacturer. Delineators that are damaged, are no longer reflective, or go missing while temporary barrier is deployed shall be replaced in kind by the Contractor.

Delineators may be top or side-mounted to the barrier and oriented in a manner to maximize reflectivity to approaching traffic.

Temporary barrier placed on the right side of the travel way, or top-mounted and separating two or more lanes traveling in the same direction, shall use white delineators. Temporary barrier placed on the left side of the travel way shall use amber or yellow delineators; if separating two-way traffic and top-mounted, the delineator shall be double-sided.

853.44: Anchored Barrier

Temporary barrier systems that include an anchor system in order to meet performance requirements of the contract and/or meet MASH testing requirements may be accepted for use at the discretion of the Department.

Barrier that utilizes an anchor system shall use the same pattern, placement, and material of anchors that was used in MASH crash testing.

853.45: Shop Drawings

Within 30 days of the Notice to Proceed, the Contractor shall provide Shop Drawings showing the proposed temporary barrier system and confirming that it conforms to 853.40: General and will meet the allowable deflection requirements as described in 853.41: Deflection.

If anchors are proposed, the means, methods, pattern, placement, and materials for anchoring and subsequent pavement and/or deck repairs following removal of the temporary barrier system shall be included in the Shop Drawing submittal. If the use of an anchor system is rejected by the Department, the Contractor shall select an unanchored system that meets or exceeds the contract specified performance requirements, at no additional cost.

Shop Drawings for proprietary barrier systems shall include manufacturer's instructions for installation.

CONSTRUCTION METHODS

853.60: General

A Traffic Management Plan approved by the Department is required prior to the installation of the temporary barrier system.

The Contractor shall install temporary barrier systems in accordance with the Plans.

Barrier ends shall not be exposed to approaching traffic during installation. Crashworthy shielding or attenuation shall be provided at all times.

Proprietary temporary barrier systems shall be installed per the manufacturer's instructions.

The Contractor shall not place any breaks in the temporary barrier system that will result in sections that are shorter than the tested minimum length-of-need (LON) under MASH Test 2-11 (for TL-2) or 3-11 (for TL-3). Exceptions shall be allowed for gate systems or changeable length segments placed over expansion joints, if those barrier segment types have been determined to be crashworthy per MASH.

Temporary barrier shall not be placed on unpaved surfaces, unless otherwise shown in the Plans.

The Contractor shall not store materials, vehicles, or other equipment within the measured dynamic deflection envelope, as defined in 853.41: Deflection.

853.61: Temporary Barrier Removed and Reset

Temporary Barrier Removed and Reset consists of relocating a string of temporary barrier from one alignment to another to support the sequence and phasing of construction, as shown in the Plans.

Temporary Barrier Removed and Reset does not include moving all or a portion of the temporary barrier system to gain access to a work area, for the convenience of the Contractor, or to realign units that have moved due to construction activities or a traffic incident.

853.62: Quality Control Inspection

After temporary barrier installation is completed, the Contractor shall perform a Quality Control (QC) Inspection in the presence of the Engineer. QC Inspection activities shall include, but are not limited to the following reviews:

- Installation location per the approved Plans.
- Alignment and connection mechanism between adjacent barrier segments.
- Alignment and connection mechanism between barrier segment and attenuator, if present.
- Anchor system installation, if present.

For proprietary barrier systems, the QC Inspection shall also include any manufacturer-specific inspection details or criteria found in the installation instructions.

Work behind the barrier shall not commence until the QC Inspection has been accepted by the Engineer.

COMPENSATION

853.80: Method of Measurement

Temporary Barrier will be measured by the foot installed, in place.

Temporary Barrier Removed and Reset will be measured by the foot removed and reset.

853.81: Basis of Payment

Temporary Barrier will be paid for at the contract unit price per foot which shall provide full compensation for fabrication, storage, transport, furnishment, installation, delineation, alignment, maintenance, repair, and final removal of the temporary barrier.

Temporary Barrier Removed and Reset will be paid for at the contract unit price per foot which shall provide full compensation for removing, relocating, transporting, and installing new anchorage (if used). If more than one accepted temporary barrier system is approved for use in a single contract, the unit cost for Temporary Barrier Removed and Reset shall not differ among systems.

All costs associated with fabrication, installation, and maintenance of temporary barrier delineators shall be considered incidental to the cost of the item.

All costs associated with Shop Drawings and COCs shall be considered incidental to the item.

All costs associated with patching or repairing the road surface or bridge deck due to the installation and removal of temporary barrier and/or anchors for a temporary barrier system shall be considered incidental to the cost of the item.

853.82: Payment Items

Item number	Description	Unit
853.2	Temporary Barrier (TL-2)	Foot
853.21	Temporary Barrier Removed and Reset	Foot
853.23	Temporary Barrier (TL-3)	Foot
853.33	Temporary Barrier – Limited Deflection (TL-3)	Foot

SECTION 900: STRUCTURES

SUBSECTION 902: ULTRA HIGH PERFORMANCE CONCRETE

Subsection 902.32: Mockup
In Table 902.32-1 change the Link Slab width to 2 ft – 0 in. and change the Joint Header width to 0 ft – 6 in. .

Subsection 902.32: - 902.38
Renumber section 902.32 Surface Preparation to 902.33 Surface Preparation and renumber section 902.33 through 902.38 to 902.34 through 902.39.

DIVISION III

MATERIALS SPECIFICATIONS

SECTION M2: AGGREGATES AND RELATED MATERIALS

Subsection M2.01.0 Crushed Stone
Replace the fourth paragraph and the associated asterisk notes with the following;

The crushed stone shall have a maximum 45% wear as determined by the Los Angeles Abrasion Test (AASHTO T 96)

SECTION M5: PIPE, CULVERT SECTIONS AND CONDUIT

Subsection M5.01.0 Joint Materials for Pipe
Replace this subsection with the following;

- Jute or oakum furnished for use in pipe joints shall be of an accepted grade approved for common usage.
- Mortar shall conform to the requirements of M4.04.0: Cementitious Grout, Mortar and Concrete Products
- Standard couplers as approved by the manufacturer shall be used to join corrugated metal pipe
- Rubber ring or plastic gaskets for concrete pipe joints, or manholes section joints shall be of tough, flexible, chemical-resistant material, and of such size and shape as to ensure satisfactory pipe joints when incorporated in the work and shall conform to AWWA C153.
- Rubber gasket joints for ductile iron pipe shall be Styrene-Butadiene Rubber (SBR), Ethylene Propylene Diene Monomer (EPDM) or Nitrile and conform to AWWA C111

Subsection M5.05.03.B Gate Valves
Replace this subsection with the following;

Gate valves shall conform to the requirements of AWWA Standard C500 and/or to the type used by the municipality as specified in the Special Provisions.

SECTION M7: PAINTS, PROTECTIVE COATINGS AND PAVEMENT MARKINGS

Subsection M7.01.04 Fast Drying White and Yellow Waterborne Traffic Paint
Replace the subsection with the following;

Approved waterborne traffic paint shall be tested in accordance with AASHTO M 348 and be listed on the QCML The dry paint film shall be under the Toxicity Characteristic Leaching Procedure (TCLP) limits for all contaminants listed in 40 CFR 261.24. The markings shall be installed using reflective glass beads meeting the requirements of M7.01.07. For waterborne yellow paint use Organic Yellow No. 65 or No. 75 pigment.

SECTION M9: MISCELLANEOUS MATERIALS

Subsection M9.12.0 Reflectors for Barriers
Delete this subsection.

SECTION M10: TRAFFIC CONTROL DEVICES

Subsection M10.16.0: Temporary Barrier
Subsection M10.16.1: Limited Deflection Temporary Barrier
Subsection M10.16.2: Delineators for Temporary Barrier
Add these new subsections.

M10.16.0: Temporary Barrier

All Temporary Barrier shall be tested to MASH crash testing standards and the results of the following crash test designations must fall within the acceptable impact tolerances and evaluation criteria shown in Table 2-2A of MASH:

- Test Level 2: 2-10, 2-11
- Test Level 3: 3-10, 3-11

M10.16.1: Limited Deflection Temporary Barrier

To be classified as a Limited Deflection Temporary Barrier, the results of MASH Test Designation 3-11 must result in a measured dynamic deflection of 24 in. or less.

M10.16.2: Delineators for Temporary Barrier

Delineators for Temporary Barrier shall consist of a housing, retroreflective material, and an adhesive or mechanical fastener.

Housings for Delineators for Temporary Barrier shall be fabricated from a lightweight polymer material. Metal housings shall not be permitted.

Retroreflection shall be achieved using an acrylic reflector or retroreflective sheeting directly applied to the housing. If used, retroreflective sheeting shall be factory applied and conform to ASTM D4956 Type IV, Type V, or Type IX. A minimum of 8 $in.^2$ of reflective material shall be visible on any traffic-facing portion of the delineator.

Delineators shall be attached to temporary barriers using a manufacturer-approved adhesive or mechanical fastener.

<<<<<<<<<<>>>>>>>>>>

END OF SUPPLEMENTAL SPECIFICATIONS

DOCUMENT 00760

FHWA-1273 – Revised October 23, 2023

REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS

I. General
II. Nondiscrimination
III. Non-segregated Facilities
IV. Davis-Bacon and Related Act Provisions
V. Contract Work Hours and Safety Standards Act Provisions
VI. Subletting or Assigning the Contract
VII. Safety: Accident Prevention
VIII. False Statements Concerning Highway Projects
IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
X. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion
XI. Certification Regarding Use of Contract Funds for Lobbying
XII. 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. Form FHWA-1273 must be physically incorporated in each construction contract funded under title 23, United States Code, as required in 23 CFR 633.102(b) (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services). 23 CFR 633.102(e).

The applicable requirements 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 shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider. 23 CFR 633.102(e).

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services) in accordance with 23 CFR 633.102. The 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, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract). 23 CFR 633.102(b).

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. 23 CFR 633.102(d).

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 (23 CFR 230.107(a); 23 CFR Part 230, Subpart A, Appendix A; EO 11246)

The provisions of this section related to 23 CFR Part 230, Subpart A, Appendix A are applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR Part 60, 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; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding $10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR Part 60, and 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; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR Part 230, Subpart A, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

1. Equal Employment Opportunity: Equal Employment Opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (*see* 28 CFR Part 35, 29 CFR Part 1630, 29 CFR Parts 1625-1627, 41 CFR Part 60 and 49 CFR Part 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140, shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. 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. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract. 23 CFR 230.409 (g)(4) & (5).

b. The contractor will accept as its operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, sexual orientation, gender identity, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action or are substantially involved in such action, will be made fully cognizant of and will implement the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer or other knowledgeable company official.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to ensure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action

within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs (i.e., apprenticeship and on-the-job training programs for the geographical area of contract performance). In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. 23 CFR 230.409. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established thereunder. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors, suppliers, and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurances Required:

a. The requirements of 49 CFR Part 26 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 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 are incorporated by reference. 49 CFR Part 21.

11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women.

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of more than $10,000. 41 CFR 60-1.5.

As prescribed by 41 CFR 60-1.8, the contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, sexual orientation, gender identity, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location under the contractor's control where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. 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 V, 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

the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

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 IV. 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 FHWA-1273 in any subcontracts, 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.

V. 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.

* $31 as of January 15, 2023 (See 88 FR 88 FR 2210) 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 IV 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.

VI. 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 Section VI 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 Section VI 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).

VII. 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).

VIII. 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."

IX. 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.

X. 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.

* * * * *

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.

* * * * *

XI. 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.

XII. 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 (23 CFR 633, Subpart B, Appendix B) 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 23 CFR 633.207(e) 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.

*** END OF DOCUMENT ***

*** THIS PAGE IS INTENTIONALLY LEFT BLANK ***

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: 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 (Both Factors used)	0.29 Gallons / CY.	0.15 Gallons / CY
Surfacing Work: All Items containing Hot Mix Asphalt	2.90 Gallons / Ton	Does Not Apply

*** END OF DOCUMENT ***

*** THIS PAGE IS INTENTIONALLY LEFT BLANK ***

DOCUMENT 00813

SPECIAL PROVISIONS

PRICE ADJUSTMENTS FOR STRUCTURAL STEEL AND REINFORCING STEEL

February 4, 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	$0.57
2	ASTM A27 (AASHTO M103) Steel Castings, H-Pile Points & Pipe Pile Shoes (See Note below.)	$0.80
3	ASTM A668 / A668M (AASHTO M102) Steel Forgings	$0.80
4	ASTM A108 (AASHTO M169) Steel Forgings for Shear Studs	$0.83
5	ASTM A709/A709M Grade 36 / AASHTO M270M/M270 Grade 36 or 250 Structural Steel Plate	$0.87
6	ASTM A709/A709M Grade 36 / AASHTO M270M/M270 Grade 36 or 250 Structural Steel Shapes	$0.82
7	ASTM A709/A709M Grade 50 / AASHTO M270M/M270 Grade 50 or 345 Structural Steel Plate	$0.87
8	ASTM A709/A709M Grade 50 / AASHTO M270M/M270 Grade 50 or 345 Structural Steel Shapes	$0.82
9	ASTM A709/A709M Grade 50WT / AASHTO M270M/M270 Grade 50WT or 345WT Structural Steel Plate	$0.90
10	ASTM A709/A709M Grade 50WT / AASHTO M270M/M270 Grade 50WT or 345WT Structural Steel Shapes	$0.83
11	ASTM A709/A709M Grade 50W / AASHTO M270M/M270 Grade 50W 345W Structural Steel Plate	$0.90
12	ASTM A709/A709M Grade 50W / AASHTO M270M/M270 Grade 50W or 345W Structural Steel Shapes	$0.83
13	ASTM A709/A709M Grade HPS 50W / AASHTO M270M/M270 Grade HPS 50W or 345W Structural Steel Plate	$0.94
14	ASTM A709/A709M Grade HPS 70W / AASHTO M270M/M270 Grade HPS 70W or 485W Structural Steel Plate	$1.01
15	ASTM A514/A514M-05 Grade HPS 100W / AASHTO M270M/M270 Grade HPS 100W or 690W Structural Steel Plate	$1.55
16	ASTM A992/A992M Grade 50S / AASHTO M270M/M270 Grade 50S or 345S Structural Steel Plate	$0.90
17	ASTM A992/A992M Grade 50S / AASHTO M270M/M270 Grade 50S or 345S Structural Steel Shapes	$0.83
18	ASTM A276 Type 316 Stainless Steel	$4.65
19	ASTM A240 Type 316 Stainless Steel	$4.65
20	ASTM A148 Grade 80/50 Steel Castings (See Note below.)	$1.60
21	ASTM A53 Grade B Structural Steel Pipe	$1.01
22	ASTM A500 Grades A, B, 36 & 50 Structural Steel Pipe	$1.01
23	ASTM A252, Grades 240 (36 KSI) & 414 (60 KSI) Pipe Pile	$0.80
24	ASTM 252, Grade 2 Permanent Steel Casing	$0.80
25	ASTM A36 (AASHTO M183) for H-piles, steel supports and sign supports	$0.85
26	ASTM A328 / A328M, Grade 50 (AASHTO M202) Steel Sheetpiling	$1.53
27	ASTM A572 / A572M, Grade 50 Sheetpiling	$1.53
28	ASTM A36/36M, Grade 50	$0.87
29	ASTM A570, Grade 50	$0.85
30	ASTM A572 (AASHTO M223), Grade 50 H-Piles	$0.87
31	ASTM A1085 Grade A (50 KSI) Steel Hollow Structural Sections (HSS), heat-treated per ASTM A1085 Supplement S1	$1.01
32	AREA 140 LB Rail and Track Accessories	$0.52

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.

END OF DOCUMENT

THIS PAGE IS INTENTIONALLY LEFT BLANK

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.

*** END OF DOCUMENT ***

*** THIS PAGE IS INTENTIONALLY LEFT BLANK ***

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

*** END OF DOCUMENT ***

*** THIS PAGE IS INTENTIONALLY LEFT BLANK ***

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 ***

*** THIS PAGE IS INTENTIONALLY LEFT BLANK ***

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: 133627 **Project No.** 611942 **Federal Aid No.:** HIP(NGB)-003S(928)X

Location: SHEFFIELD - County Road over Ironworks Brook

Project Description: SHEFFIELD - Superstructure Replacement, S-10-024, County Road over Ironworks Brook

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

*** THIS PAGE IS INTENTIONALLY LEFT BLANK ***

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:**	SHEFFIELD
Contract Number:	133627		
Description of Work:	SHEFFIELD - FAP No. HIP(NGB)-003S(928)X Superstructure Replacement, S-10-024, County Road over Ironworks Brook (611942) $2,191,000.00		
Job Location:	County Road over Ironworks Brook		

Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

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

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
(2 AXLE) DRIVER - EQUIPMENT TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	1/1/2026	$40.95	$16.17	$21.78	$0.00	$0.00	$78.90
	6/1/2026	$41.95	$16.17	$21.78	$0.00	$0.00	$79.90
	12/1/2026	$41.95	$16.17	$23.52	$0.00	$0.00	$81.64
	1/1/2027	$41.95	$16.77	$23.52	$0.00	$0.00	$82.24
(3 AXLE) DRIVER - EQUIPMENT TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	1/1/2026	$41.02	$16.17	$21.78	$0.00	$0.00	$78.97
	6/1/2026	$42.02	$16.17	$21.78	$0.00	$0.00	$79.97
	12/1/2026	$42.02	$16.17	$23.52	$0.00	$0.00	$81.71
	1/1/2027	$42.02	$16.77	$23.52	$0.00	$0.00	$82.31
(4 & 5 AXLE) DRIVER - EQUIPMENT TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	1/1/2026	$41.14	$16.17	$21.78	$0.00	$0.00	$79.09
	6/1/2026	$42.14	$16.17	$21.78	$0.00	$0.00	$80.09
	12/1/2026	$42.14	$16.17	$23.52	$0.00	$0.00	$81.83
	1/1/2027	$42.14	$16.77	$23.52	$0.00	$0.00	$82.43
ADS/SUBMERSIBLE PILOT PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 3) 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 LABORERS LABORERS - ZONE 4 (BUILDING & SITE) For apprentice rates see "Apprentice- LABORER"	12/1/2025	$36.54	$10.15	$9.50	$5.53	$0.00	$61.72
	6/1/2026	$39.04	$10.15	$9.50	$5.53	$0.00	$64.22
	12/1/2026	$41.46	$10.15	$9.50	$5.53	$0.00	$66.64
	6/1/2027	$42.86	$10.15	$9.50	$5.53	$0.00	$68.04
	12/1/2027	$44.26	$10.15	$9.50	$5.53	$0.00	$69.44
	6/1/2028	$45.76	$10.15	$9.50	$5.53	$0.00	$70.94
	12/1/2028	$47.26	$10.15	$9.50	$5.53	$0.00	$72.44
AIR TRACK OPERATOR (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 4 (HEAVY & HIGHWAY) For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"	12/1/2025	$36.71	$10.15	$9.50	$6.60	$0.00	$62.96
	6/1/2026	$38.75	$10.15	$9.50	$6.60	$0.00	$65.00
	12/1/2026	$40.04	$10.15	$9.50	$6.60	$0.00	$66.29
ASBESTOS WORKER (PIPES & TANKS) HEAT & FROST INSULATORS LOCAL 6 HEAT & FROST INSULATORS LOCAL 6 (SPRINGFIELD)	12/1/2025	$40.32	$14.50	$4.30	$6.25	$0.00	$65.37
ASPHALT RAKER LABORERS LABORERS - ZONE 4 (BUILDING & SITE)	12/1/2025	$36.04	$10.15	$9.50	$5.53	$0.00	$61.22
	6/1/2026	$38.54	$10.15	$9.50	$5.53	$0.00	$63.72
	12/1/2026	$40.96	$10.15	$9.50	$5.53	$0.00	$66.14
	6/1/2027	$42.36	$10.15	$9.50	$5.53	$0.00	$67.54
	12/1/2027	$43.76	$10.15	$9.50	$5.53	$0.00	$68.94
	6/1/2028	$45.26	$10.15	$9.50	$5.53	$0.00	$70.44
	12/1/2028	$47.26	$9.90	$9.25	$5.53	$0.00	$71.94
	6/1/2205	$34.29	$9.90	$0.00	$0.00	$0.00	$44.19
	12/1/2205	$36.79	$9.90	$9.25	$5.53	$0.00	$61.47
	6/1/2206	$39.29	$9.90	$9.25	$5.53	$0.00	$63.97
	12/1/2206	$41.46	$9.90	$9.25	$5.53	$0.00	$66.14
	6/1/2207	$43.11	$9.90	$9.25	$5.53	$0.00	$67.79

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	12/1/2207	$44.51	$9.90	$9.25	$5.53	$0.00	$69.19
	6/1/2208	$46.01	$9.90	$9.25	$5.53	$0.00	$70.69
	12/1/2208	$47.01	$10.15	$9.50	$5.53	$0.00	$72.19
For apprentice rates see "Apprentice- LABORER"							
ASPHALT RAKER (HEAVY & HIGHWAY)	12/1/2025	$36.21	$10.15	$9.50	$6.60	$0.00	$62.46
LABORERS LABORERS - ZONE 4 (HEAVY & HIGHWAY)	6/1/2026	$38.25	$10.15	$9.50	$6.60	$0.00	$64.50
	12/1/2026	$39.54	$10.15	$9.50	$6.60	$0.00	$65.79
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
AUTOMATIC GRADER-EXCAVATOR (RECLAIMER) OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98	12/1/2023	$39.56	$13.78	$12.15	$3.00	$0.00	$68.49
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
BACKHOE/FRONT-END LOADER OPERATOR OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98	12/1/2023	$39.56	$13.78	$12.15	$3.00	$0.00	$68.49
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
BARCO-TYPE JUMPING TAMPER	12/1/2025	$36.04	$10.15	$9.50	$5.53	$0.00	$61.22
LABORERS LABORERS - ZONE 4 (BUILDING & SITE)	6/1/2026	$38.54	$10.15	$9.50	$5.53	$0.00	$63.72
	12/1/2026	$40.96	$10.15	$9.50	$5.53	$0.00	$66.14
	6/1/2027	$42.36	$10.15	$9.50	$5.53	$0.00	$67.54
	12/1/2027	$43.76	$10.15	$9.50	$5.53	$0.00	$68.94
	6/1/2028	$45.26	$10.15	$9.50	$5.53	$0.00	$70.44
	12/1/2028	$47.26	$9.90	$9.25	$5.53	$0.00	$71.94
	6/1/2205	$34.29	$9.90	$0.00	$0.00	$0.00	$44.19
	12/1/2205	$36.79	$9.90	$9.25	$5.53	$0.00	$61.47
	6/1/2206	$39.29	$9.90	$9.25	$5.53	$0.00	$63.97
	12/1/2206	$41.46	$9.90	$9.25	$5.53	$0.00	$66.14
	6/1/2207	$43.11	$9.90	$9.25	$5.53	$0.00	$67.79
	12/1/2207	$44.51	$9.90	$9.25	$5.53	$0.00	$69.19
	6/1/2208	$46.01	$9.90	$9.25	$5.53	$0.00	$70.69
	12/1/2208	$47.01	$10.15	$9.50	$5.53	$0.00	$72.19
For apprentice rates see "Apprentice- LABORER"							
BATCH/CEMENT PLANT - ON SITE OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98	12/1/2023	$39.03	$13.78	$12.15	$3.00	$0.00	$67.96
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
BLOCK PAVER, RAMMER / CURB SETTER	12/1/2025	$36.54	$10.15	$9.50	$5.53	$0.00	$61.72
LABORERS LABORERS - ZONE 4 (BUILDING & SITE)	6/1/2026	$39.04	$10.15	$9.50	$5.53	$0.00	$64.22
	12/1/2026	$41.46	$10.15	$9.50	$5.53	$0.00	$66.64
	6/1/2027	$42.86	$10.15	$9.50	$5.53	$0.00	$68.04
	12/1/2027	$44.26	$10.15	$9.50	$5.53	$0.00	$69.44
	6/1/2028	$45.76	$10.15	$9.50	$5.53	$0.00	$70.94
	12/1/2028	$47.26	$10.15	$9.50	$5.53	$0.00	$72.44
For apprentice rates see "Apprentice- LABORER"							
BLOCK PAVER, RAMMER / CURB SETTER (HEAVY &	12/1/2025	$36.71	$10.15	$9.50	$6.60	$0.00	$62.96

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
HIGHWAY)	6/1/2026	$38.75	$10.15	$9.50	$6.60	$0.00	$65.00
LABORERS	12/1/2026	$40.04	$10.15	$9.50	$6.60	$0.00	$66.29
LABORERS - ZONE 4 (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)	2/1/2026	$57.71	$11.49	$15.57	$5.89	$0.00	$90.66
BRICKLAYERS LOCAL 3	8/1/2026	$59.91	$11.49	$15.57	$5.89	$0.00	$92.86
BRICKLAYERS LOCAL 3 (SPRINGFIELD/PITTSFIELD)	2/1/2027	$61.31	$11.49	$15.57	$5.89	$0.00	$94.26

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

Effective Date: 2/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$28.86	$11.49	$15.57	$5.89	$0.00	$61.81
2	60.00	$34.63	$11.49	$15.57	$5.89	$0.00	$67.58
3	70.00	$40.40	$11.49	$15.57	$5.89	$0.00	$73.35
4	80.00	$46.17	$11.49	$15.57	$5.89	$0.00	$79.12
5	90.00	$51.94	$11.49	$15.57	$5.89	$0.00	$84.89

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	$29.96	$11.49	$15.57	$5.89	$0.00	$62.91
2	60.00	$35.95	$11.49	$15.57	$5.89	$0.00	$68.90
3	70.00	$41.94	$11.49	$15.57	$5.89	$0.00	$74.89
4	80.00	$47.93	$11.49	$15.57	$5.89	$0.00	$80.88
5	90.00	$53.92	$11.49	$15.57	$5.89	$0.00	$86.87

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice to Journeyworker Ratio: 1:5							
BULLDOZER/POWER SHOVEL/TREE SHREDDER /CLAM SHELL OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98	12/1/2023	$39.56	$13.78	$12.15	$3.00	$0.00	$68.49
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
CAISSON & UNDERPINNING BOTTOM MAN LABORERS LABORERS - FOUNDATION AND MARINE	12/1/2025	$49.85	$10.15	$9.50	$9.80	$0.00	$79.30
	6/1/2026	$51.40	$10.15	$9.50	$9.80	$0.00	$80.85
	12/1/2026	$52.90	$10.15	$9.50	$9.80	$0.00	$82.35
For apprentice rates see "Apprentice- LABORER"							
CAISSON & UNDERPINNING LABORER LABORERS LABORERS - FOUNDATION AND MARINE	12/1/2025	$48.70	$10.15	$9.50	$9.80	$0.00	$78.15
	6/1/2026	$50.25	$10.15	$9.50	$9.80	$0.00	$79.70
	12/1/2026	$51.75	$10.15	$9.50	$9.80	$0.00	$81.20
For apprentice rates see "Apprentice- LABORER"							
CAISSON & UNDERPINNING TOP MAN LABORERS LABORERS - FOUNDATION AND MARINE	12/1/2025	$49.03	$10.15	$9.50	$9.80	$0.00	$78.48
	6/1/2026	$50.58	$10.15	$9.50	$9.80	$0.00	$80.03
	12/1/2026	$52.08	$10.15	$9.50	$9.80	$0.00	$81.53
For apprentice rates see "Apprentice- LABORER"							
CARBIDE CORE DRILL OPERATOR LABORERS LABORERS - ZONE 4 (BUILDING & SITE)	12/1/2025	$36.04	$10.15	$9.50	$5.53	$0.00	$61.22
	6/1/2026	$38.54	$10.15	$9.50	$5.53	$0.00	$63.72
	12/1/2026	$40.96	$10.15	$9.50	$5.53	$0.00	$66.14
	6/1/2027	$42.36	$10.15	$9.50	$5.53	$0.00	$67.54
	12/1/2027	$43.76	$10.15	$9.50	$5.53	$0.00	$68.94
	6/1/2028	$45.26	$10.15	$9.50	$5.53	$0.00	$70.44
	12/1/2028	$47.26	$9.90	$9.25	$5.53	$0.00	$71.94
	6/1/2205	$34.29	$9.90	$0.00	$0.00	$0.00	$44.19
	12/1/2205	$36.79	$9.90	$9.25	$5.53	$0.00	$61.47
	6/1/2206	$39.29	$9.90	$9.25	$5.53	$0.00	$63.97
	12/1/2206	$41.46	$9.90	$9.25	$5.53	$0.00	$66.14
	6/1/2207	$43.11	$9.90	$9.25	$5.53	$0.00	$67.79
	12/1/2207	$44.51	$9.90	$9.25	$5.53	$0.00	$69.19
	6/1/2208	$46.01	$9.90	$9.25	$5.53	$0.00	$70.69
	12/1/2208	$47.01	$10.15	$9.50	$5.53	$0.00	$72.19
For apprentice rates see "Apprentice- LABORER"							
CARPENTER CARPENTERS CARPENTERS LOCAL 336 - BERKSHIRE COUNTY	9/1/2025	$43.54	$8.56	$11.25	$6.90	$0.00	$70.25
	3/1/2026	$44.44	$8.56	$11.25	$6.90	$0.00	$71.15
	9/1/2026	$45.39	$8.56	$11.25	$6.90	$0.00	$72.10
	3/1/2027	$46.29	$8.56	$11.25	$6.90	$0.00	$73.00

Apprentice: CARPENTER

Effective Date: 9/1/2025

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: CARPENTER

Effective Date: 9/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$19.59	$8.56	$0.00	$1.38	$0.00	$29.53
2	45.00	$19.59	$8.56	$0.00	$1.38	$0.00	$29.53
3	55.00	$23.95	$8.56	$0.00	$2.76	$0.00	$35.27
4	55.00	$23.95	$8.56	$0.00	$2.76	$0.00	$35.27
5	70.00	$30.48	$8.56	$11.25	$4.14	$0.00	$54.43
6	70.00	$30.48	$8.56	$11.25	$4.14	$0.00	$54.43
7	80.00	$34.83	$8.56	$11.25	$5.52	$0.00	$60.16
8	80.00	$34.83	$8.56	$11.25	$5.52	$0.00	$60.16

Apprentice: CARPENTER

Effective Date: 3/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$20.00	$8.56	$0.00	$1.38	$0.00	$29.94
2	45.00	$20.00	$8.56	$0.00	$1.38	$0.00	$29.94
3	55.00	$24.44	$8.56	$0.00	$2.76	$0.00	$35.76
4	55.00	$24.44	$8.56	$0.00	$2.76	$0.00	$35.76
5	70.00	$31.11	$8.56	$11.25	$4.14	$0.00	$55.06
6	70.00	$31.11	$8.56	$11.25	$4.14	$0.00	$55.06
7	80.00	$35.55	$8.56	$11.25	$5.52	$0.00	$60.88
8	80.00	$35.55	$8.56	$11.25	$5.52	$0.00	$60.88

Apprentice to Journeyworker Ratio: 1:5

CARPENTER WOOD FRAME CARPENTERS CARPENTERS-ZONE 3 (Wood Frame)	10/1/2025	$27.75	$7.02	$3.80	$1.00	$0.00	$39.57
	10/1/2026	$28.85	$7.02	$3.80	$1.00	$0.00	$40.67

All Aspects of New Wood Frame Work

Apprentice: CARPENTER WOOD FRAME

Effective Date: 10/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$16.65	$7.02	$0.00	$0.00	$0.00	$23.67
2	60.00	$16.65	$7.02	$0.00	$0.00	$0.00	$23.67
3	65.00	$18.04	$7.02	$0.00	$1.00	$0.00	$26.06
4	70.00	$19.43	$7.02	$0.00	$1.00	$0.00	$27.45
5	75.00	$20.81	$7.02	$3.80	$1.00	$0.00	$32.63
6	80.00	$22.20	$7.02	$3.80	$1.00	$0.00	$34.02
7	85.00	$23.59	$7.02	$3.80	$1.00	$0.00	$35.41
8	90.00	$24.98	$7.02	$3.80	$1.00	$0.00	$36.80

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
CEMENT MASONRY/PLASTERING PLASTERERS AND CEMENT MASONS LOCAL 534 Plasterers and Cement Masons - Zone 2	1/1/2026	$48.13	$13.20	$16.30	$2.93	$1.69	$82.25
	7/1/2026	$49.32	$13.20	$16.30	$2.93	$1.69	$83.44
	1/1/2027	$50.51	$13.20	$16.30	$2.93	$1.69	$84.63
	7/1/2027	$51.70	$13.20	$16.30	$2.93	$1.69	$85.82
	1/1/2028	$52.89	$13.20	$16.30	$2.93	$1.69	$87.01

Apprentice: CARPENTER WOOD FRAME

Effective Date: 10/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$17.31	$7.02	$0.00	$0.00	$0.00	$24.33
2	60.00	$17.31	$7.02	$0.00	$0.00	$0.00	$24.33
3	65.00	$18.75	$7.02	$0.00	$1.00	$0.00	$26.77
4	70.00	$20.20	$7.02	$0.00	$1.00	$0.00	$28.22
5	75.00	$21.64	$7.02	$3.80	$1.00	$0.00	$33.46
6	80.00	$23.08	$7.02	$3.80	$1.00	$0.00	$34.90
7	85.00	$24.52	$7.02	$3.80	$1.00	$0.00	$36.34
8	90.00	$25.97	$7.02	$3.80	$1.00	$0.00	$37.79

Apprentice to Journeyworker Ratio: 1:5

Apprentice: CEMENT MASONRY/PLASTERING

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$24.07	$13.20	$16.30	$0.00	$0.00	$53.57
2	60.00	$28.88	$13.20	$16.30	$2.93	$1.69	$63.00
3	65.00	$31.28	$13.20	$16.30	$2.93	$1.69	$65.40
4	70.00	$33.69	$13.20	$16.30	$2.93	$1.69	$67.81
5	75.00	$36.10	$13.20	$16.30	$2.93	$1.69	$70.22
6	80.00	$38.50	$13.20	$16.30	$2.93	$1.69	$72.62
7	90.00	$43.32	$13.20	$16.30	$2.93	$1.69	$77.44

Apprentice: CEMENT MASONRY/PLASTERING

Effective Date: 7/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$24.66	$13.20	$16.30	$0.00	$0.00	$54.16
2	60.00	$29.59	$13.20	$16.30	$2.93	$1.69	$63.71
3	65.00	$32.06	$13.20	$16.30	$2.93	$1.69	$66.18
4	70.00	$34.52	$13.20	$16.30	$2.93	$1.69	$68.64
5	75.00	$36.99	$13.20	$16.30	$2.93	$1.69	$71.11
6	80.00	$39.46	$13.20	$16.30	$2.93	$1.69	$73.58
7	90.00	$44.39	$13.20	$16.30	$2.93	$0.00	$76.82

Apprentice to Journeyworker Ratio: 1:5

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
CHAIN SAW OPERATOR	12/1/2025	$36.04	$10.15	$9.50	$5.53	$0.00	$61.22
LABORERS	6/1/2026	$38.54	$10.15	$9.50	$5.53	$0.00	$63.72
LABORERS - ZONE 4 (BUILDING & SITE)	12/1/2026	$40.96	$10.15	$9.50	$5.53	$0.00	$66.14
	6/1/2027	$42.36	$10.15	$9.50	$5.53	$0.00	$67.54
	12/1/2027	$43.76	$10.15	$9.50	$5.53	$0.00	$68.94
	6/1/2028	$45.26	$10.15	$9.50	$5.53	$0.00	$70.44
	12/1/2028	$47.26	$9.90	$9.25	$5.53	$0.00	$71.94
	6/1/2205	$34.29	$9.90	$0.00	$0.00	$0.00	$44.19
	12/1/2205	$36.79	$9.90	$9.25	$5.53	$0.00	$61.47
	6/1/2206	$39.29	$9.90	$9.25	$5.53	$0.00	$63.97
	12/1/2206	$41.46	$9.90	$9.25	$5.53	$0.00	$66.14
	6/1/2207	$43.11	$9.90	$9.25	$5.53	$0.00	$67.79
	12/1/2207	$44.51	$9.90	$9.25	$5.53	$0.00	$69.19
	6/1/2208	$46.01	$9.90	$9.25	$5.53	$0.00	$70.69
	12/1/2208	$47.01	$10.15	$9.50	$5.53	$0.00	$72.19
For apprentice rates see "Apprentice- LABORER"							
COMPRESSOR OPERATOR	12/1/2023	$39.03	$13.78	$12.15	$3.00	$0.00	$67.96
OPERATING ENGINEERS LOCAL 98							
OPERATING ENGINEERS LOCAL 98							
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
CRANE OPERATOR	12/1/2023	$43.06	$13.78	$12.15	$3.00	$0.00	$71.99
OPERATING ENGINEERS LOCAL 98							
OPERATING ENGINEERS LOCAL 98							
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							
PAINTERS LOCAL 35 - ZONE 3							

Apprentice: DELEADER (BRIDGE)

Effective Date: 1/1/2026

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

Apprentice to Journeyworker Ratio: 1:1

DEMO: ADZEMAN	12/1/2025	$48.75	$10.15	$9.50	$9.65	$0.00	$78.05
LABORERS	6/1/2026	$50.30	$10.15	$9.50	$9.65	$0.00	$79.60
LABORERS - ZONE 4 (BUILDING & SITE)	12/7/2026	$51.80	$10.15	$9.50	$9.65	$0.00	$81.10
	6/7/2027	$53.40	$10.15	$9.50	$9.65	$0.00	$82.70
	12/6/2027	$55.00	$10.15	$9.50	$9.65	$0.00	$84.30

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	6/5/2028	$56.68	$10.15	$9.50	$9.65	$0.00	$85.98
	12/4/2028	$58.35	$10.15	$9.50	$9.65	$0.00	$87.65
For apprentice rates see "Apprentice- LABORER"							
DEMO: BACKHOE/LOADER/HAMMER OPERATOR	12/1/2025	$49.75	$10.15	$9.50	$9.65	$0.00	$79.05
LABORERS	6/1/2026	$51.30	$10.15	$9.50	$9.65	$0.00	$80.60
LABORERS - ZONE 4 (BUILDING & SITE)	12/7/2026	$52.80	$10.15	$9.50	$9.65	$0.00	$82.10
	6/7/2027	$54.40	$10.15	$9.50	$9.65	$0.00	$83.70
	12/6/2027	$56.00	$10.15	$9.50	$9.65	$0.00	$85.30
	6/5/2028	$57.68	$10.15	$9.50	$9.65	$0.00	$86.98
	12/4/2028	$59.35	$10.15	$9.50	$9.65	$0.00	$88.65
For apprentice rates see "Apprentice- LABORER"							
DEMO: BURNERS	12/1/2025	$49.50	$10.15	$9.50	$9.65	$0.00	$78.80
LABORERS	6/1/2026	$51.05	$10.15	$9.50	$9.65	$0.00	$80.35
LABORERS - ZONE 4 (BUILDING & SITE)	12/7/2026	$52.55	$10.15	$9.50	$9.65	$0.00	$81.85
	6/7/2027	$54.15	$10.15	$9.50	$9.65	$0.00	$83.45
	12/6/2027	$55.75	$10.15	$9.50	$9.65	$0.00	$85.05
	6/5/2028	$57.43	$10.15	$9.50	$9.65	$0.00	$86.73
	12/4/2028	$59.10	$10.15	$9.50	$9.65	$0.00	$88.40
For apprentice rates see "Apprentice- LABORER"							
DEMO: CONCRETE CUTTER/SAWYER	12/1/2025	$49.75	$10.15	$9.50	$9.65	$0.00	$79.05
LABORERS	6/1/2026	$51.30	$10.15	$9.50	$9.65	$0.00	$80.60
LABORERS - ZONE 4 (BUILDING & SITE)	12/7/2026	$52.80	$10.15	$9.50	$9.65	$0.00	$82.10
	6/7/2027	$54.40	$10.15	$9.50	$9.65	$0.00	$83.70
	12/6/2027	$56.00	$10.15	$9.50	$9.65	$0.00	$85.30
	6/5/2028	$57.68	$10.15	$9.50	$9.65	$0.00	$86.98
	12/4/2028	$59.35	$10.15	$9.50	$9.65	$0.00	$88.65
For apprentice rates see "Apprentice- LABORER"							
DEMO: JACKHAMMER OPERATOR	12/1/2025	$49.50	$10.15	$9.50	$9.65	$0.00	$78.80
LABORERS	6/1/2026	$51.05	$10.15	$9.50	$9.65	$0.00	$80.35
LABORERS - ZONE 4 (BUILDING & SITE)	12/7/2026	$52.55	$10.15	$9.50	$9.65	$0.00	$81.85
	6/7/2027	$54.15	$10.15	$9.50	$9.65	$0.00	$83.45
	12/6/2027	$55.75	$10.15	$9.50	$9.65	$0.00	$85.05
	6/5/2028	$57.43	$10.15	$9.50	$9.65	$0.00	$86.73
	12/4/2028	$59.10	$10.15	$9.50	$9.65	$0.00	$88.40
For apprentice rates see "Apprentice- LABORER"							
DEMO: WRECKING LABORER	12/1/2025	$48.75	$10.15	$9.50	$9.65	$0.00	$78.05
LABORERS	6/1/2026	$50.30	$10.15	$9.50	$9.65	$0.00	$79.60
LABORERS - ZONE 4 (BUILDING & SITE)	12/7/2026	$51.80	$10.15	$9.50	$9.65	$0.00	$81.10
	6/7/2027	$53.40	$10.15	$9.50	$9.65	$0.00	$82.70
	12/6/2027	$55.00	$10.15	$9.50	$9.65	$0.00	$84.30
	6/5/2028	$56.68	$10.15	$9.50	$9.65	$0.00	$85.98
	12/4/2028	$58.35	$10.15	$9.50	$9.65	$0.00	$87.65
For apprentice rates see "Apprentice- LABORER"							
DIVER	8/1/2024	$78.11	$10.08	$11.62	$12.67	$0.00	$112.48
PILE DRIVER LOCAL 56							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
PILE DRIVER LOCAL 56 (ZONE 3)							
as of 8-1-24, Apprentices with diving licenses begin at second year. % of Diver wage 70/80/90 2A $69.83, 3A $91.79,4A $102.14 Total Rate							
DIVER TENDER PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 3)	8/1/2024	$49.19	$10.08	$11.62	$12.67	$0.00	$83.56
as of 8-1-24, Apprentices with diving licenses begin at second year. % of Piledriver wage 70/80/90 2A $54.20, 3A $73.93,4A $82.05 Total Rate							
DIVER TENDER (EFFLUENT) PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 3)	8/1/2024	$83.69	$10.08	$11.62	$12.67	$0.00	$118.06
For apprentice rates see "Apprentice- PILE DRIVER"							
DIVER/SLURRY (EFFLUENT) PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 3)	8/1/2024	$117.16	$10.08	$11.62	$12.67	$0.00	$151.53
For apprentice rates see "Apprentice- PILE DRIVER"							
DRAWBRIDGE OPERATOR (Construction) DRAWBRIDGE - SEIU LOCAL 888 DRAWBRIDGE - SEIU LOCAL 888	7/1/2020	$26.77	$6.67	$3.93	$0.00	$0.16	$37.53
ELECTRICIAN (Including Core Drilling) ELECTRICIANS LOCAL 7 ELECTRICIANS LOCAL 7	12/28/2025	$53.26	$13.75	$8.40	$6.96	$0.00	$82.37
	6/28/2026	$54.41	$14.00	$8.43	$7.03	$0.00	$83.87
	1/3/2027	$55.56	$14.25	$8.47	$7.09	$0.00	$85.37

Apprentice: ELECTRICIAN (Including Core Drilling)

Effective Date: 12/28/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	$21.30	$7.65	$0.63	$0.00	$0.00	$29.58
2	45.00	$23.97	$7.65	$0.70	$0.00	$0.00	$32.32
3	50.00	$26.63	$13.75	$7.53	$0.00	$0.00	$47.91
4	55.00	$29.29	$13.75	$7.61	$0.00	$0.00	$50.65
5	65.00	$34.62	$13.75	$9.84	$0.00	$0.00	$58.21
6	70.00	$37.28	$13.75	$11.30	$0.00	$0.00	$62.33

Apprentice: ELECTRICIAN (Including Core Drilling)

Effective Date: 6/28/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	$21.76	$7.80	$0.63	$0.00	$0.00	$30.19
2	45.00	$24.48	$7.80	$0.70	$0.00	$0.00	$32.98
3	50.00	$27.21	$14.00	$7.53	$0.00	$0.00	$48.74
4	55.00	$29.93	$14.00	$7.61	$0.00	$0.00	$51.54
5	65.00	$35.37	$14.00	$9.84	$0.00	$0.00	$59.21
6	70.00	$38.09	$14.00	$11.30	$0.00	$0.00	$63.39

Apprentice to Journeyworker Ratio: 2:3

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
ELEVATOR CONSTRUCTOR	1/1/2026	$69.23	$16.38	$11.06	$10.70	$0.00	$107.37
ELEVATOR CONSTRUCTORS LOCAL 41 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
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	1/1/2026	$48.46	$16.38	$11.06	$10.70	$0.00	$86.60
ELEVATOR CONSTRUCTORS LOCAL 41 ELEVATOR CONSTRUCTORS LOCAL 41	1/1/2027	$50.56	$16.48	$11.16	$11.00	$0.00	$89.20
For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"							
FENCE & BEAM RAIL ERECTOR	12/1/2025	$36.04	$10.15	$9.50	$5.53	$0.00	$61.22
LABORERS LABORERS - ZONE 4 (BUILDING & SITE)	6/1/2026	$38.54	$10.15	$9.50	$5.53	$0.00	$63.72
	12/1/2026	$40.71	$10.15	$9.50	$5.53	$0.00	$65.89
	6/1/2027	$42.36	$10.15	$9.50	$5.53	$0.00	$67.54
	12/1/2027	$43.76	$10.15	$9.50	$5.53	$0.00	$68.94
	6/1/2028	$45.26	$10.15	$9.50	$5.53	$0.00	$70.44
	12/1/2028	$46.76	$10.15	$9.50	$5.53	$0.00	$71.94
For apprentice rates see "Apprentice- LABORER"							
FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY)	12/1/2025	$36.21	$10.15	$9.50	$6.60	$0.00	$62.46
LABORERS LABORERS - ZONE 4 (HEAVY & HIGHWAY)	6/1/2026	$38.25	$10.15	$9.50	$6.60	$0.00	$64.50
	12/1/2026	$39.54	$10.15	$9.50	$6.60	$0.00	$65.79
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
FIELD ENG.INST/ROD-BLDG,SITE,HVY/HWY OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98	6/1/1999	$18.84	$4.80	$4.10	$0.00	$0.00	$27.74

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
FIELD ENG.PARTY CHIEF:BLDG,SITE,HVY/HWY OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98	6/1/1999	$21.33	$4.80	$4.10	$0.00	$0.00	$30.23
FIELD ENG.SURVEY CHIEF-BLDG,SITE,HVY/HWY OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98	6/1/1999	$22.33	$4.80	$4.10	$0.00	$0.00	$31.23
FIRE ALARM INSTALLER	12/28/2025	$53.26	$13.75	$8.40	$6.96	$0.00	$82.37
ELECTRICIANS LOCAL 7	6/28/2026	$54.41	$14.00	$8.43	$7.03	$0.00	$83.87
ELECTRICIANS LOCAL 7	1/3/2027	$55.56	$14.25	$8.47	$7.09	$0.00	$85.37
For apprentice rates see "Apprentice- ELECTRICIAN"							
FIRE ALARM REPAIR / MAINTENANCE	12/28/2025	$53.26	$13.75	$8.40	$6.96	$0.00	$82.37
/ COMMISSIONING	6/28/2026	$54.41	$14.00	$8.43	$7.03	$0.00	$83.87
ELECTRICIANS LOCAL 7 ELECTRICIANS LOCAL 7	1/3/2027	$55.56	$14.25	$8.47	$7.09	$0.00	$85.37
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"							
FIREMAN OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98	12/1/2023	$39.03	$13.78	$12.15	$3.00	$0.00	$67.96

Apprentice: FIREMAN

Effective Date: 12/1/2023

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$23.42	$13.78	$12.15	$3.00	$0.00	$52.35
2	70.00	$27.32	$13.78	$12.15	$3.00	$0.00	$56.25
3	80.00	$31.22	$13.78	$12.15	$3.00	$0.00	$60.15
4	90.00	$35.13	$13.78	$12.15	$3.00	$0.00	$64.06

Apprentice to Journeyworker Ratio: 1:6

FLAGGER & SIGNALER (HEAVY & HIGHWAY)	12/1/2025	$28.09	$10.15	$9.50	$6.60	$0.00	$54.34
LABORERS	6/1/2026	$29.21	$10.15	$9.50	$6.60	$0.00	$55.46
LABORERS - ZONE 4 (HEAVY & HIGHWAY)	12/1/2026	$29.21	$10.15	$9.50	$6.60	$0.00	$55.46
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
FLOORCOVERER	9/1/2025	$43.44	$8.56	$11.25	$6.90	$0.00	$70.15
FLOORCOVERERS LOCAL 2168	3/1/2026	$44.34	$8.56	$11.25	$6.90	$0.00	$71.05
FLOORCOVERERS LOCAL 2168 ZONE III	9/1/2026	$45.29	$8.56	$11.25	$6.90	$0.00	$72.00
	3/1/2027	$46.19	$8.56	$11.25	$6.90	$0.00	$72.90

Apprentice: FLOORCOVERER

Effective Date: 9/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$19.55	$8.56	$0.00	$1.38	$0.00	$29.49
2	45.00	$19.55	$8.56	$0.00	$1.38	$0.00	$29.49

Construction

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

Apprentice: FLOORCOVERER

Effective Date: 9/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
3	55.00	$23.89	$8.56	$0.00	$2.76	$0.00	$35.21
4	55.00	$23.89	$8.56	$0.00	$2.76	$0.00	$35.21
5	70.00	$30.41	$8.56	$11.25	$4.14	$0.00	$54.36
6	70.00	$30.41	$8.56	$11.25	$4.14	$0.00	$54.36
7	80.00	$34.75	$8.56	$11.25	$5.52	$0.00	$60.08
8	80.00	$34.75	$8.56	$11.25	$5.52	$0.00	$60.08

Apprentice: FLOORCOVERER

Effective Date: 3/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$19.95	$8.56	$0.00	$1.38	$0.00	$29.89
2	45.00	$19.95	$8.56	$0.00	$1.38	$0.00	$29.89
3	55.00	$24.39	$8.56	$0.00	$2.76	$0.00	$35.71
4	55.00	$24.39	$8.56	$0.00	$2.76	$0.00	$35.71
5	70.00	$31.04	$8.56	$11.25	$4.14	$0.00	$54.99
6	70.00	$31.04	$8.56	$11.25	$4.14	$0.00	$54.99
7	80.00	$35.47	$8.56	$11.25	$5.52	$0.00	$60.80
8	80.00	$35.47	$8.56	$11.25	$5.52	$0.00	$60.80

Apprentice Notes

Steps are 750 hrs.

Apprentice to Journeyworker Ratio: 1:1

FORK LIFT OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98	12/1/2023	$39.25	$13.78	$12.15	$3.00	$0.00	$68.18
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
GENERATORS/LIGHTING PLANTS OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98	12/1/2023	$35.80	$13.78	$12.15	$3.00	$0.00	$64.73
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) GLAZIERS LOCAL 1333 GLAZIERS LOCAL 1333	6/1/2025	$43.13	$10.80	$8.25	$5.50	$0.00	$67.68
	6/1/2026	$44.73	$11.20	$8.40	$6.05	$0.00	$70.38
	6/1/2027	$46.73	$11.60	$8.55	$6.60	$0.00	$73.48
	6/1/2028	$48.73	$12.00	$8.70	$7.20	$0.00	$76.63

Construction

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

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

Effective Date: 6/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$21.57	$10.80	$8.25	$5.50	$0.00	$46.12
2	56.25	$24.26	$10.80	$8.25	$5.50	$0.00	$48.81
3	62.50	$26.96	$10.80	$8.25	$5.50	$0.00	$51.51
4	68.75	$29.65	$10.80	$8.25	$5.50	$0.00	$54.20
5	75.00	$32.35	$10.80	$8.25	$5.50	$0.00	$56.90
6	81.25	$35.04	$10.80	$8.25	$5.50	$0.00	$59.59
7	87.50	$37.74	$10.80	$8.25	$5.50	$0.00	$62.29
8	93.75	$40.43	$10.80	$8.25	$5.50	$0.00	$64.98

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

Effective Date: 6/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$22.37	$11.20	$8.40	$6.05	$0.00	$48.02
2	56.25	$25.16	$11.20	$8.40	$6.05	$0.00	$50.81
3	62.50	$27.96	$11.20	$8.40	$6.05	$0.00	$53.61
4	68.75	$30.75	$11.20	$8.40	$6.05	$0.00	$56.40
5	75.00	$33.55	$11.20	$8.40	$6.05	$0.00	$59.20
6	81.25	$36.34	$11.20	$8.40	$6.05	$0.00	$61.99
7	87.50	$39.14	$11.20	$8.40	$6.05	$0.00	$64.79
8	93.75	$41.93	$11.20	$8.40	$6.05	$0.00	$67.58

Apprentice to Journeyworker Ratio: 3:1

GRADER/TRENCHING MACHINE/DERRICK OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98	12/1/2023	$39.56	$13.78	$12.15	$3.00	$0.00	$68.49
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
HVAC (DUCTWORK) SHEETMETAL WORKERS LOCAL 63 SHEETMETAL WORKERS LOCAL 63	7/1/2025	$43.48	$12.94	$11.01	$8.72	$2.13	$78.28
	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) ELECTRICIANS LOCAL 7 ELECTRICIANS LOCAL 7	12/28/2025	$53.26	$13.75	$8.40	$6.96	$0.00	$82.37
	6/28/2026	$54.41	$14.00	$8.43	$7.03	$0.00	$83.87
	1/3/2027	$55.56	$14.25	$8.47	$7.09	$0.00	$85.37
For apprentice rates see "Apprentice- ELECTRICIAN"							
HVAC (TESTING AND BALANCING - AIR) SHEETMETAL WORKERS LOCAL 63 SHEETMETAL WORKERS LOCAL 63	7/1/2025	$43.48	$12.94	$11.01	$8.72	$2.13	$78.28
	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

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	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) PLUMBERS & PIPEFITTERS LOCAL 104 PLUMBERS & PIPEFITTERS LOCAL 104	9/17/2025	$52.26	$12.00	$10.85	$7.10	$0.00	$82.21
	3/17/2026	$54.26	$12.00	$10.85	$7.10	$0.00	$84.21
	9/17/2026	$56.26	$12.00	$10.85	$7.10	$0.00	$86.21
	3/17/2027	$58.26	$12.00	$10.85	$7.10	$0.00	$88.21
	9/17/2027	$60.26	$12.00	$10.85	$7.10	$0.00	$90.21
	3/17/2028	$62.26	$12.00	$10.85	$7.10	$0.00	$92.21
	9/17/2028	$64.26	$12.00	$10.85	$7.10	$0.00	$94.21
	3/17/2029	$66.26	$12.00	$10.85	$7.10	$0.00	$96.21
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"							
HVAC MECHANIC PLUMBERS & PIPEFITTERS LOCAL 104 PLUMBERS & PIPEFITTERS LOCAL 104	9/17/2025	$52.26	$12.00	$10.85	$7.10	$0.00	$82.21
	3/17/2026	$54.26	$12.00	$10.85	$7.10	$0.00	$84.21
	9/17/2026	$56.26	$12.00	$10.85	$7.10	$0.00	$86.21
	3/17/2027	$58.26	$12.00	$10.85	$7.10	$0.00	$88.21
	9/17/2027	$60.26	$12.00	$10.85	$7.10	$0.00	$90.21
	3/17/2028	$62.26	$12.00	$10.85	$7.10	$0.00	$92.21
	9/17/2028	$64.26	$12.00	$10.85	$7.10	$0.00	$94.21
	3/17/2029	$66.26	$12.00	$10.85	$7.10	$0.00	$96.21
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"							
HYDRAULIC DRILLS (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 4 (HEAVY & HIGHWAY)	12/1/2025	$36.71	$10.15	$9.50	$6.60	$0.00	$62.96
	6/1/2026	$38.75	$10.15	$9.50	$6.60	$0.00	$65.00
	12/1/2026	$40.04	$10.15	$9.50	$6.60	$0.00	$66.29
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
INSULATOR (PIPES & TANKS) HEAT & FROST INSULATORS LOCAL 6 HEAT & FROST INSULATORS LOCAL 6 (SPRINGFIELD)	9/1/2025	$48.27	$14.75	$9.52	$10.09	$0.00	$82.63
	9/1/2026	$51.01	$14.75	$9.52	$10.09	$0.00	$85.37

Apprentice: INSULATOR (PIPES & TANKS)

Effective Date: 9/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$24.14	$14.75	$9.27	$5.05	$0.00	$53.21
2	60.00	$28.96	$14.75	$9.32	$6.05	$0.00	$59.08
3	70.00	$33.79	$14.75	$9.37	$7.06	$0.00	$64.97
4	80.00	$38.62	$14.75	$9.42	$8.07	$0.00	$70.86

Apprentice: INSULATOR (PIPES & TANKS)

Effective Date: 9/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$25.51	$14.75	$9.27	$5.05	$0.00	$54.58
2	60.00	$30.61	$14.75	$9.32	$6.05	$0.00	$60.73

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
3	70.00	$35.71	$14.75	$9.37	$7.06	$0.00	$66.89
4	80.00	$40.81	$14.75	$9.42	$8.07	$0.00	$73.05

Apprentice to Journeyworker Ratio: 1:4

IRONWORKER/WELDER IRONWORKERS LOCAL 7 IRONWORKERS LOCAL 7 (SPRINGFIELD AREA)	3/16/2024	$40.66	$8.25	$12.70	$10.00	$0.00	$71.61

Apprentice: IRONWORKER/WELDER

Effective Date: 3/16/2024

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$24.40	$8.25	$12.70	$10.00	$0.00	$55.35
2	70.00	$28.46	$8.25	$12.70	$10.00	$0.00	$59.41
3	75.00	$30.50	$8.25	$12.70	$10.00	$0.00	$61.45
4	80.00	$32.53	$8.25	$12.70	$10.00	$0.00	$63.48
5	85.00	$34.56	$8.25	$12.70	$10.00	$0.00	$65.51
6	90.00	$36.59	$8.25	$12.70	$10.00	$0.00	$67.54

Apprentice to Journeyworker Ratio: 1:4

JACKHAMMER & PAVING BREAKER OPERATOR LABORERS LABORERS - ZONE 4 (BUILDING & SITE)	12/1/2025	$36.04	$10.15	$9.50	$5.53	$0.00	$61.22
	6/1/2026	$38.54	$10.15	$9.50	$5.53	$0.00	$63.72
	12/1/2026	$40.96	$10.15	$9.50	$5.53	$0.00	$66.14
	6/1/2027	$42.36	$10.15	$9.50	$5.53	$0.00	$67.54
	12/1/2027	$43.76	$10.15	$9.50	$5.53	$0.00	$68.94
	6/1/2028	$45.26	$10.15	$9.50	$5.53	$0.00	$70.44
	12/1/2028	$47.26	$9.90	$9.25	$5.53	$0.00	$71.94
	6/1/2205	$34.29	$9.90	$0.00	$0.00	$0.00	$44.19
	12/1/2205	$36.79	$9.90	$9.25	$5.53	$0.00	$61.47
	6/1/2206	$39.29	$9.90	$9.25	$5.53	$0.00	$63.97
	12/1/2206	$41.46	$9.90	$9.25	$5.53	$0.00	$66.14
	6/1/2207	$43.11	$9.90	$9.25	$5.53	$0.00	$67.79
	12/1/2207	$44.51	$9.90	$9.25	$5.53	$0.00	$69.19
	6/1/2208	$46.01	$9.90	$9.25	$5.53	$0.00	$70.69
	12/1/2208	$47.01	$10.15	$9.50	$5.53	$0.00	$72.19

For apprentice rates see "Apprentice- LABORER"

LABORER LABORERS LABORERS - ZONE 4 (BUILDING & SITE)	12/1/2025	$35.79	$10.15	$9.50	$5.53	$0.00	$60.97
	6/1/2026	$38.29	$10.15	$9.50	$5.53	$0.00	$63.47
	12/1/2026	$40.71	$10.15	$9.50	$5.53	$0.00	$65.89
	6/1/2027	$42.11	$10.15	$9.50	$5.53	$0.00	$67.29
	12/1/2027	$43.51	$10.15	$9.50	$5.53	$0.00	$68.69
	6/1/2028	$45.01	$10.15	$9.50	$5.53	$0.00	$70.19

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	12/1/2028	$46.51	$10.15	$9.50	$5.53	$0.00	$71.69

Apprentice: LABORER

Effective Date: 12/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$21.47	$10.15	$9.50	$5.53	$0.00	$46.65
2	70.00	$25.05	$10.15	$9.50	$5.53	$0.00	$50.23
3	80.00	$28.63	$10.15	$9.50	$5.53	$0.00	$53.81
4	90.00	$32.21	$10.15	$9.50	$5.53	$0.00	$57.39

Apprentice: LABORER

Effective Date: 6/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$22.97	$10.15	$9.50	$5.53	$0.00	$48.15
2	70.00	$26.80	$10.15	$9.50	$5.53	$0.00	$51.98
3	80.00	$30.63	$10.15	$9.50	$5.53	$0.00	$55.81
4	90.00	$34.46	$10.15	$9.50	$5.53	$0.00	$59.64

Apprentice to Journeyworker Ratio: 1:5

LABORER (HEAVY & HIGHWAY)	12/1/2025	$35.96	$10.15	$9.50	$6.60	$0.00	$62.21
LABORERS	6/1/2026	$38.00	$10.15	$9.50	$6.60	$0.00	$64.25
LABORERS - ZONE 4 (HEAVY & HIGHWAY)	12/1/2026	$39.29	$10.15	$9.50	$6.60	$0.00	$65.54

Apprentice: LABORER (HEAVY & HIGHWAY)

Effective Date: 12/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$21.88	$10.15	$9.50	$6.60	$0.00	$48.13
2	70.00	$25.52	$10.15	$9.50	$6.60	$0.00	$51.77
3	80.00	$29.17	$10.15	$9.50	$6.60	$0.00	$55.42
4	90.00	$32.81	$10.15	$9.50	$6.60	$0.00	$59.06

Apprentice: LABORER (HEAVY & HIGHWAY)

Effective Date: 6/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$22.80	$10.15	$9.50	$6.60	$0.00	$49.05
2	70.00	$26.60	$10.15	$9.50	$6.60	$0.00	$52.85
3	80.00	$30.40	$10.15	$9.50	$6.60	$0.00	$56.65
4	90.00	$34.20	$10.15	$9.50	$6.60	$0.00	$60.45

Apprentice to Journeyworker Ratio: 1:5

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
LABORER: CARPENTER TENDER LABORERS LABORERS - ZONE 4 (BUILDING & SITE)	12/1/2025	$35.79	$10.15	$9.50	$5.53	$0.00	$60.97
	6/1/2026	$38.29	$10.15	$9.50	$5.53	$0.00	$63.47
	12/1/2026	$40.71	$10.15	$9.50	$5.53	$0.00	$65.89
	6/1/2027	$42.11	$10.15	$9.50	$5.53	$0.00	$67.29
	12/1/2027	$43.51	$10.15	$9.50	$5.53	$0.00	$68.69
	6/1/2028	$45.01	$10.15	$9.50	$5.53	$0.00	$70.19
	12/1/2028	$46.51	$10.15	$9.50	$5.53	$0.00	$71.69
For apprentice rates see "Apprentice- LABORER"							
LABORER: CEMENT FINISHER TENDER LABORERS LABORERS - ZONE 4 (BUILDING & SITE)	12/1/2025	$35.79	$10.15	$9.50	$5.53	$0.00	$60.97
	6/1/2026	$38.29	$10.15	$9.50	$5.53	$0.00	$63.47
	12/1/2026	$40.71	$10.15	$9.50	$5.53	$0.00	$65.89
	6/1/2027	$42.11	$10.15	$9.50	$5.53	$0.00	$67.29
	12/1/2027	$43.51	$10.15	$9.50	$5.53	$0.00	$68.69
	6/1/2028	$45.01	$10.15	$9.50	$5.53	$0.00	$70.19
	12/1/2028	$46.51	$10.15	$9.50	$5.53	$0.00	$71.69
For apprentice rates see "Apprentice- LABORER"							
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER LABORERS LABORERS - ZONE 4 (BUILDING & SITE)	12/1/2025	$34.63	$10.15	$9.50	$5.41	$0.00	$59.69
	6/1/2026	$36.67	$10.15	$9.50	$5.41	$0.00	$61.73
	12/1/2026	$37.96	$10.15	$9.50	$5.41	$0.00	$63.02
	6/1/2027	$39.26	$10.15	$9.50	$5.41	$0.00	$64.32
	12/1/2027	$40.56	$10.15	$9.50	$5.41	$0.00	$65.62
	6/5/2028	$41.91	$10.15	$9.50	$5.41	$0.00	$66.97
	12/4/2028	$43.26	$10.15	$9.50	$5.41	$0.00	$68.32
For apprentice rates see "Apprentice- LABORER"							
LABORER: MASON TENDER LABORERS LABORERS - ZONE 4 (BUILDING & SITE)	12/1/2025	$37.79	$10.15	$9.50	$5.53	$0.00	$62.97
	6/1/2026	$40.29	$10.15	$9.50	$5.53	$0.00	$65.47
	12/1/2026	$42.71	$10.15	$9.50	$5.53	$0.00	$67.89
	6/1/2027	$44.11	$10.15	$9.50	$5.53	$0.00	$69.29
	12/1/2027	$45.51	$10.15	$9.50	$5.53	$0.00	$70.69
	6/1/2028	$47.01	$10.15	$9.50	$5.53	$0.00	$72.19
	12/1/2028	$48.51	$10.15	$9.50	$5.53	$0.00	$73.69
For apprentice rates see "Apprentice- LABORER"							
LABORER: MASON TENDER (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 4 (HEAVY & HIGHWAY)	12/1/2025	$36.21	$10.15	$9.50	$6.60	$0.00	$62.46
	6/1/2026	$38.25	$10.15	$9.50	$6.60	$0.00	$64.50
	12/1/2026	$39.54	$10.15	$9.50	$6.60	$0.00	$65.79
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
LABORER: MULTI-TRADE TENDER LABORERS LABORERS - ZONE 4 (BUILDING & SITE)	12/1/2025	$35.79	$10.15	$9.50	$5.53	$0.00	$60.97
	6/1/2026	$38.29	$10.15	$9.50	$5.53	$0.00	$63.47
	12/1/2026	$40.71	$10.15	$9.50	$5.53	$0.00	$65.89
	6/1/2027	$42.11	$10.15	$9.50	$5.53	$0.00	$67.29
	12/1/2027	$43.51	$10.15	$9.50	$5.53	$0.00	$68.69
	6/1/2028	$45.01	$10.15	$9.50	$5.53	$0.00	$70.19
	12/1/2028	$46.51	$10.15	$9.50	$5.53	$0.00	$71.69
For apprentice rates see "Apprentice- LABORER"							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
LABORER: TREE REMOVER LABORERS LABORERS - ZONE 4 (BUILDING & SITE)	12/1/2025	$35.79	$10.15	$9.50	$5.53	$0.00	$60.97
	6/1/2026	$38.29	$10.15	$9.50	$5.53	$0.00	$63.47
	12/1/2026	$40.71	$10.15	$9.50	$5.53	$0.00	$65.89
	6/1/2027	$42.11	$10.15	$9.50	$5.53	$0.00	$67.29
	12/1/2027	$43.51	$10.15	$9.50	$5.53	$0.00	$68.69
	6/1/2028	$45.01	$10.15	$9.50	$5.53	$0.00	$70.19
	12/1/2028	$46.51	$10.15	$9.50	$5.53	$0.00	$71.69

This classification applies to the removal of standing trees, and the trimming and removal of branches and limbs when related to public works construction or site clearance incidental to construction . For apprentice rates see "Apprentice- LABORER"

LASER BEAM OPERATOR LABORERS LABORERS - ZONE 4 (BUILDING & SITE)	12/1/2025	$36.04	$10.15	$9.50	$5.53	$0.00	$61.22
	6/1/2026	$38.54	$10.15	$9.50	$5.53	$0.00	$63.72
	12/1/2026	$40.96	$10.15	$9.50	$5.53	$0.00	$66.14
	6/1/2027	$42.36	$10.15	$9.50	$5.53	$0.00	$67.54
	12/1/2027	$43.76	$10.15	$9.50	$5.53	$0.00	$68.94
	6/1/2028	$45.26	$10.15	$9.50	$5.53	$0.00	$70.44
	12/1/2028	$47.26	$9.90	$9.25	$5.53	$0.00	$71.94
	6/1/2205	$34.29	$9.90	$0.00	$0.00	$0.00	$44.19
	12/1/2205	$36.79	$9.90	$9.25	$5.53	$0.00	$61.47
	6/1/2206	$39.29	$9.90	$9.25	$5.53	$0.00	$63.97
	12/1/2206	$41.46	$9.90	$9.25	$5.53	$0.00	$66.14
	6/1/2207	$43.11	$9.90	$9.25	$5.53	$0.00	$67.79
	12/1/2207	$44.51	$9.90	$9.25	$5.53	$0.00	$69.19
	6/1/2208	$46.01	$9.90	$9.25	$5.53	$0.00	$70.69
	12/1/2208	$47.01	$10.15	$9.50	$5.53	$0.00	$72.19

For apprentice rates see "Apprentice- LABORER"

LASER BEAM OPERATOR (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 4 (HEAVY & HIGHWAY)	12/1/2025	$36.21	$10.15	$9.50	$6.60	$0.00	$62.46
	6/1/2026	$38.25	$10.15	$9.50	$6.60	$0.00	$64.50
	12/1/2026	$39.54	$10.15	$9.50	$6.60	$0.00	$65.79

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

MARBLE & TILE FINISHERS BRICKLAYERS LOCAL 3 BRICKLAYERS LOCAL 3 (SPR/PITT) - MARBLE & TILE	2/1/2026	$46.64	$11.49	$15.10	$5.68	$0.00	$78.91
	8/1/2026	$48.40	$11.49	$15.10	$5.68	$0.00	$80.67
	2/1/2027	$49.52	$11.49	$15.10	$5.68	$0.00	$81.79

Apprentice: MARBLE & TILE FINISHERS

Effective Date: 2/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$23.32	$11.49	$15.10	$5.68	$0.00	$55.59
2	60.00	$27.98	$11.49	$15.10	$5.68	$0.00	$60.25
3	70.00	$32.65	$11.49	$15.10	$5.68	$0.00	$64.92
4	80.00	$37.31	$11.49	$15.10	$5.68	$0.00	$69.58
5	90.00	$41.98	$11.49	$15.10	$5.68	$0.00	$74.25

Construction

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

Apprentice: MARBLE & TILE FINISHERS

Effective Date: 8/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$24.20	$11.49	$15.10	$5.68	$0.00	$56.47
2	60.00	$29.04	$11.49	$15.10	$5.68	$0.00	$61.31
3	70.00	$33.88	$11.49	$15.10	$5.68	$0.00	$66.15
4	80.00	$38.72	$11.49	$15.10	$5.68	$0.00	$70.99
5	90.00	$43.56	$11.49	$15.10	$5.68	$0.00	$75.83

Apprentice to Journeyworker Ratio: 1:5

MECH. SWEEPER OPERATOR (ON CONST. SITES) OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98	12/1/2023	$39.56	$13.78	$12.15	$3.00	$0.00	$68.49

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MECHANIC/WELDER/BOOM TRUCK OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98	12/1/2023	$39.03	$13.78	$12.15	$3.00	$0.00	$67.96

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MILLWRIGHT (Zone 3) MILLWRIGHTS LOCAL 1121 MILLWRIGHTS LOCAL 1121 - Zone 3	1/5/2026	$45.70	$10.08	$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	$25.14	$10.08	$0.00	$5.36	$0.00	$40.58
2	65.00	$29.71	$10.08	$0.00	$6.34	$0.00	$46.13
3	75.00	$34.28	$10.08	$11.47	$7.31	$0.00	$63.14
4	85.00	$38.85	$10.08	$11.47	$8.29	$0.00	$68.69

Apprentice Notes

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

Apprentice to Journeyworker Ratio: 1:4

MORTAR MIXER LABORERS LABORERS - ZONE 4 (BUILDING & SITE)	12/1/2025	$36.04	$10.15	$9.50	$5.53	$0.00	$61.22
	6/1/2026	$38.54	$10.15	$9.50	$5.53	$0.00	$63.72
	12/1/2026	$40.96	$10.15	$9.50	$5.53	$0.00	$66.14
	6/1/2027	$42.36	$10.15	$9.50	$5.53	$0.00	$67.54
	12/1/2027	$43.76	$10.15	$9.50	$5.53	$0.00	$68.94
	6/1/2028	$45.26	$10.15	$9.50	$5.53	$0.00	$70.44
	12/1/2028	$47.26	$9.90	$9.25	$5.53	$0.00	$71.94
	6/1/2205	$34.29	$9.90	$0.00	$0.00	$0.00	$44.19

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	12/1/2205	$36.79	$9.90	$9.25	$5.53	$0.00	$61.47
	6/1/2206	$39.29	$9.90	$9.25	$5.53	$0.00	$63.97
	12/1/2206	$41.46	$9.90	$9.25	$5.53	$0.00	$66.14
	6/1/2207	$43.11	$9.90	$9.25	$5.53	$0.00	$67.79
	12/1/2207	$44.51	$9.90	$9.25	$5.53	$0.00	$69.19
	6/1/2208	$46.01	$9.90	$9.25	$5.53	$0.00	$70.69
	12/1/2208	$47.01	$10.15	$9.50	$5.53	$0.00	$72.19

For apprentice rates see "Apprentice- LABORER"

OILER — 12/1/2023 — $35.02 — $13.78 — $12.15 — $3.00 — $0.00 — $63.95
OPERATING ENGINEERS LOCAL 98
OPERATING ENGINEERS LOCAL 98

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

OTHER POWER DRIVEN EQUIPMENT - CLASS VI — 12/1/2023 — $32.74 — $13.78 — $12.15 — $3.00 — $0.00 — $61.67
OPERATING ENGINEERS LOCAL 98
OPERATING ENGINEERS LOCAL 98

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

PAINTER (BRIDGES/TANKS) — 1/1/2026 — $59.56 — $10.35 — $12.00 — $12.60 — $0.00 — $94.51
PAINTERS LOCAL 35
PAINTERS LOCAL 35 - ZONE 3

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) * — 1/1/2026 — $42.03 — $10.35 — $12.00 — $8.35 — $0.00 — $72.73
* If 30% or more of surfaces to be painted are new construction,
NEW paint rate shall be used.
PAINTERS LOCAL 35
PAINTERS LOCAL 35 - ZONE 3

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	$21.02	$10.35	$0.00	$0.00	$0.00	$31.37
2	55.00	$23.12	$10.35	$0.00	$4.59	$0.00	$38.06

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
3	60.00	$25.22	$10.35	$0.00	$5.01	$0.00	$40.58
4	65.00	$27.32	$10.35	$0.00	$5.43	$0.00	$43.10
5	70.00	$29.42	$10.35	$12.00	$5.85	$0.00	$57.62
6	75.00	$31.52	$10.35	$12.00	$6.26	$0.00	$60.13
7	80.00	$33.62	$10.35	$12.00	$6.68	$0.00	$62.65
8	90.00	$37.83	$10.35	$12.00	$7.52	$0.00	$67.70

Apprentice to Journeyworker Ratio: 1:1

PAINTER (SPRAY OR SANDBLAST, REPAINT) PAINTERS LOCAL 35 PAINTERS LOCAL 35 - ZONE 3	1/1/2026	$39.35	$10.35	$12.00	$8.35	$0.00	$70.05

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	$19.68	$10.35	$0.00	$0.00	$0.00	$30.03
2	55.00	$21.64	$10.35	$0.00	$4.59	$0.00	$36.58
3	60.00	$23.61	$10.35	$0.00	$5.01	$0.00	$38.97
4	65.00	$25.58	$10.35	$0.00	$5.43	$0.00	$41.36
5	70.00	$27.55	$10.35	$12.00	$5.85	$0.00	$55.75
6	75.00	$29.51	$10.35	$12.00	$6.26	$0.00	$58.12
7	80.00	$31.48	$10.35	$12.00	$6.68	$0.00	$60.51
8	90.00	$35.42	$10.35	$12.00	$7.52	$0.00	$65.29

Apprentice to Journeyworker Ratio: 1:1

PAINTER / TAPER (BRUSH, NEW) * * If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 PAINTERS LOCAL 35 - ZONE 3	1/1/2026	$40.63	$10.35	$12.00	$8.35	$0.00	$71.33

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	$20.32	$10.35	$0.00	$0.00	$0.00	$30.67
2	55.00	$22.35	$10.35	$0.00	$4.59	$0.00	$37.29
3	60.00	$24.38	$10.35	$0.00	$5.01	$0.00	$39.74
4	65.00	$26.41	$10.35	$0.00	$5.43	$0.00	$42.19
5	70.00	$28.44	$10.35	$12.00	$5.85	$0.00	$56.64
6	75.00	$30.47	$10.35	$12.00	$6.26	$0.00	$59.08

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							
7 / 80.00		$32.50	$10.35	$12.00	$6.68	$0.00	$61.53
8 / 90.00		$36.57	$10.35	$12.00	$7.52	$0.00	$66.44
Apprentice to Journeyworker Ratio: 1:1							
PAINTER / TAPER (BRUSH, REPAINT) PAINTERS LOCAL 35 PAINTERS LOCAL 35 - ZONE 3	1/1/2026	$37.95	$10.35	$12.00	$8.35	$0.00	$68.65
Apprentice: PAINTER / TAPER (BRUSH, REPAINT)							
Effective Date: 1/1/2026							
Step / Percent / Apprentice Base Wage							
1 / 50.00		$18.98	$10.35	$0.00	$0.00	$0.00	$29.33
2 / 55.00		$20.87	$10.35	$0.00	$4.59	$0.00	$35.81
3 / 60.00		$22.77	$10.35	$0.00	$5.01	$0.00	$38.13
4 / 65.00		$24.67	$10.35	$0.00	$5.43	$0.00	$40.45
5 / 70.00		$26.57	$10.35	$12.00	$5.85	$0.00	$54.77
6 / 75.00		$28.46	$10.35	$12.00	$6.26	$0.00	$57.07
7 / 80.00		$30.36	$10.35	$12.00	$6.68	$0.00	$59.39
8 / 90.00		$34.16	$10.35	$12.00	$7.52	$0.00	$64.03
Apprentice to Journeyworker Ratio: 1:1							
PAINTER TRAFFIC MARKINGS (HEAVY/HIGHWAY)	12/1/2025	$35.96	$10.15	$9.50	$6.60	$0.00	$62.21
LABORERS LABORERS - ZONE 4 (HEAVY & HIGHWAY)	6/1/2026	$38.00	$10.15	$9.50	$6.60	$0.00	$64.25
	12/1/2026	$39.29	$10.15	$9.50	$6.60	$0.00	$65.54
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
PANEL & PICKUP TRUCKS DRIVER	1/1/2026	$40.78	$16.17	$21.78	$0.00	$0.00	$78.73
TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	6/1/2026	$41.78	$16.17	$21.78	$0.00	$0.00	$79.73
	12/1/2026	$41.78	$16.17	$23.52	$0.00	$0.00	$81.47
	1/1/2027	$41.78	$16.77	$23.52	$0.00	$0.00	$82.07
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 3)	8/1/2024	$49.19	$10.08	$11.62	$12.67	$0.00	$83.56
For apprentice rates see "Apprentice- PILE DRIVER"							
PILE DRIVER PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 3)	8/1/2024	$49.19	$10.08	$11.62	$12.67	$0.00	$83.56

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: PILE DRIVER							
Effective Date: 8/1/2024							
Step / Percent		**Apprentice Base Wage**	**Health**	**Pension**	**Annuity**	**Supplemental Unemployment**	**Total Rate**
1 / 45.00		$22.14	$10.08	$0.00	$2.53	$0.00	$34.75
2 / 55.00		$27.05	$10.08	$0.00	$5.07	$0.00	$42.20
3 / 70.00		$34.43	$10.08	$11.62	$7.60	$0.00	$63.73
4 / 80.00		$39.35	$10.08	$11.62	$10.14	$0.00	$71.19
Apprentice to Journeyworker Ratio: 1:5							
PIPELAYER	12/1/2025	$36.04	$10.15	$9.50	$5.53	$0.00	$61.22
LABORERS	6/1/2026	$38.54	$10.15	$9.50	$5.53	$0.00	$63.72
LABORERS - ZONE 4 (BUILDING & SITE)	12/1/2026	$40.96	$10.15	$9.50	$5.53	$0.00	$66.14
	6/1/2027	$42.36	$10.15	$9.50	$5.53	$0.00	$67.54
	12/1/2027	$43.76	$10.15	$9.50	$5.53	$0.00	$68.94
	6/1/2028	$45.26	$10.15	$9.50	$5.53	$0.00	$70.44
	12/1/2028	$47.26	$9.90	$9.25	$5.53	$0.00	$71.94
	6/1/2205	$34.29	$9.90	$0.00	$0.00	$0.00	$44.19
	12/1/2205	$36.79	$9.90	$9.25	$5.53	$0.00	$61.47
	6/1/2206	$39.29	$9.90	$9.25	$5.53	$0.00	$63.97
	12/1/2206	$41.46	$9.90	$9.25	$5.53	$0.00	$66.14
	6/1/2207	$43.11	$9.90	$9.25	$5.53	$0.00	$67.79
	12/1/2207	$44.51	$9.90	$9.25	$5.53	$0.00	$69.19
	6/1/2208	$46.01	$9.90	$9.25	$5.53	$0.00	$70.69
	12/1/2208	$47.01	$10.15	$9.50	$5.53	$0.00	$72.19
For apprentice rates see "Apprentice- LABORER"							
PIPELAYER (HEAVY & HIGHWAY)	12/1/2025	$36.21	$10.15	$9.50	$6.60	$0.00	$62.46
LABORERS	6/1/2026	$38.25	$10.15	$9.50	$6.60	$0.00	$64.50
LABORERS - ZONE 4 (HEAVY & HIGHWAY)	12/1/2026	$39.54	$10.15	$9.50	$6.60	$0.00	$65.79
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
PLUMBER & PIPEFITTER	9/17/2025	$52.26	$12.00	$10.85	$7.10	$0.00	$82.21
PLUMBERS & PIPEFITTERS LOCAL 104	3/17/2026	$54.26	$12.00	$10.85	$7.10	$0.00	$84.21
PLUMBERS & PIPEFITTERS LOCAL 104	9/17/2026	$56.26	$12.00	$10.85	$7.10	$0.00	$86.21
	3/17/2027	$58.26	$12.00	$10.85	$7.10	$0.00	$88.21
	9/17/2027	$60.26	$12.00	$10.85	$7.10	$0.00	$90.21
	3/17/2028	$62.26	$12.00	$10.85	$7.10	$0.00	$92.21
	9/17/2028	$64.26	$12.00	$10.85	$7.10	$0.00	$94.21
	3/17/2029	$66.26	$12.00	$10.85	$7.10	$0.00	$96.21
Apprentice: PLUMBER & PIPEFITTER							
Effective Date: 9/17/2025							
Step / Percent		**Apprentice Base Wage**	**Health**	**Pension**	**Annuity**	**Supplemental Unemployment**	**Total Rate**
1 / 45.00		$23.52	$12.00	$10.85	$0.00	$0.00	$46.37

Construction

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

Apprentice: PLUMBER & PIPEFITTER

Effective Date: 9/17/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
2	50.00	$26.13	$12.00	$10.85	$0.00	$0.00	$48.98
3	55.00	$28.74	$12.00	$10.85	$0.00	$0.00	$51.59
4	60.00	$31.36	$12.00	$10.85	$0.00	$0.00	$54.21
5	65.00	$33.97	$12.00	$10.85	$0.00	$0.00	$56.82
6	70.00	$36.58	$12.00	$10.85	$0.00	$0.00	$59.43
7	75.00	$39.20	$12.00	$10.85	$0.00	$0.00	$62.05
8	80.00	$41.81	$12.00	$10.85	$0.00	$0.00	$64.66
9	85.00	$44.42	$12.00	$10.85	$7.10	$0.00	$74.37
10	85.00	$44.42	$12.00	$10.85	$7.10	$0.00	$74.37

Apprentice: PLUMBER & PIPEFITTER

Effective Date: 3/17/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$24.42	$12.00	$10.85	$0.00	$0.00	$47.27
2	50.00	$27.13	$12.00	$10.85	$0.00	$0.00	$49.98
3	55.00	$29.84	$12.00	$10.85	$0.00	$0.00	$52.69
4	60.00	$32.56	$12.00	$10.85	$0.00	$0.00	$55.41
5	65.00	$35.27	$12.00	$10.85	$0.00	$0.00	$58.12
6	70.00	$37.98	$12.00	$10.85	$0.00	$0.00	$60.83
7	75.00	$40.70	$12.00	$10.85	$0.00	$0.00	$63.55
8	80.00	$43.41	$12.00	$10.85	$0.00	$0.00	$66.26
9	85.00	$46.12	$12.00	$10.85	$7.10	$0.00	$76.07
10	85.00	$46.12	$12.00	$10.85	$7.10	$0.00	$76.07

Apprentice Notes

**1:1,2:5,3:9,4:12

Apprentice to Journeyworker Ratio: 1:1

PNEUMATIC CONTROLS (TEMP.) PLUMBERS & PIPEFITTERS LOCAL 104 PLUMBERS & PIPEFITTERS LOCAL 104	9/17/2025	$52.26	$12.00	$10.85	$7.10	$0.00	$82.21
	3/17/2026	$54.26	$12.00	$10.85	$7.10	$0.00	$84.21
	9/17/2026	$56.26	$12.00	$10.85	$7.10	$0.00	$86.21
	3/17/2027	$58.26	$12.00	$10.85	$7.10	$0.00	$88.21
	9/17/2027	$60.26	$12.00	$10.85	$7.10	$0.00	$90.21
	3/17/2028	$62.26	$12.00	$10.85	$7.10	$0.00	$92.21
	9/17/2028	$64.26	$12.00	$10.85	$7.10	$0.00	$94.21
	3/17/2029	$66.26	$12.00	$10.85	$7.10	$0.00	$96.21

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

PNEUMATIC DRILL/TOOL OPERATOR (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 4 (HEAVY & HIGHWAY)	12/1/2025	$36.21	$10.15	$9.50	$6.60	$0.00	$62.46
	6/1/2026	$38.25	$10.15	$9.50	$6.60	$0.00	$64.50
	12/1/2026	$39.54	$10.15	$9.50	$6.60	$0.00	$65.79

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
POWDERMAN & BLASTER	12/1/2025	$36.79	$10.15	$9.50	$5.53	$0.00	$61.97
LABORERS	6/1/2026	$39.29	$10.15	$9.50	$5.53	$0.00	$64.47
LABORERS - ZONE 4 (BUILDING & SITE)	12/1/2026	$41.71	$10.15	$9.50	$5.53	$0.00	$66.89
	6/1/2027	$43.11	$10.15	$9.50	$5.53	$0.00	$68.29
	12/1/2027	$44.51	$10.15	$9.50	$5.53	$0.00	$69.69
	6/1/2028	$46.01	$10.15	$9.50	$5.53	$0.00	$71.19
	12/1/2028	$47.51	$10.15	$9.50	$5.53	$0.00	$72.69
For apprentice rates see "Apprentice- LABORER"							
POWDERMAN & BLASTER (HEAVY & HIGHWAY)	12/1/2025	$36.96	$10.15	$9.50	$6.60	$0.00	$63.21
LABORERS	6/1/2026	$39.00	$10.15	$9.50	$6.60	$0.00	$65.25
LABORERS - ZONE 4 (HEAVY & HIGHWAY)	12/1/2026	$40.29	$10.15	$9.50	$6.60	$0.00	$66.54
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
PUMP OPERATOR (CONCRETE)	12/1/2023	$39.56	$13.78	$12.15	$3.00	$0.00	$68.49
OPERATING ENGINEERS LOCAL 98							
OPERATING ENGINEERS LOCAL 98							
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
PUMP OPERATOR (DEWATERING, OTHER)	12/1/2023	$39.03	$13.78	$12.15	$3.00	$0.00	$67.96
OPERATING ENGINEERS LOCAL 98							
OPERATING ENGINEERS LOCAL 98							
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
READY-MIX CONCRETE DRIVER	5/1/2024	$26.14	$11.82	$7.25	$0.00	$0.00	$45.21
TEAMSTERS 404 - Construction Service (Northampton)							
TEAMSTERS 404 - Construction Service (Northampton)							
RIDE-ON MOTORIZED BUGGY OPERATOR	12/1/2025	$36.04	$10.15	$9.50	$5.53	$0.00	$61.22
LABORERS	6/1/2026	$38.54	$10.15	$9.50	$5.53	$0.00	$63.72
LABORERS - ZONE 4 (BUILDING & SITE)	12/1/2026	$40.96	$10.15	$9.50	$5.53	$0.00	$66.14
	6/1/2027	$42.36	$10.15	$9.50	$5.53	$0.00	$67.54
	12/1/2027	$43.76	$10.15	$9.50	$5.53	$0.00	$68.94
	6/1/2028	$45.26	$10.15	$9.50	$5.53	$0.00	$70.44
	12/1/2028	$47.26	$9.90	$9.25	$5.53	$0.00	$71.94
	6/1/2205	$34.29	$9.90	$0.00	$0.00	$0.00	$44.19
	12/1/2205	$36.79	$9.90	$9.25	$5.53	$0.00	$61.47
	6/1/2206	$39.29	$9.90	$9.25	$5.53	$0.00	$63.97
	12/1/2206	$41.46	$9.90	$9.25	$5.53	$0.00	$66.14
	6/1/2207	$43.11	$9.90	$9.25	$5.53	$0.00	$67.79
	12/1/2207	$44.51	$9.90	$9.25	$5.53	$0.00	$69.19
	6/1/2208	$46.01	$9.90	$9.25	$5.53	$0.00	$70.69
	12/1/2208	$47.01	$10.15	$9.50	$5.53	$0.00	$72.19
For apprentice rates see "Apprentice- LABORER"							
ROLLER OPERATOR	12/1/2023	$38.42	$13.78	$12.15	$3.00	$0.00	$67.35
OPERATING ENGINEERS LOCAL 98							
OPERATING ENGINEERS LOCAL 98							
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
ROOFER (Coal tar pitch) ROOFERS LOCAL 248 ROOFERS LOCAL 248	10/2/2025	$44.73	$10.60	$8.70	$10.00	$0.00	$74.03
	7/16/2026	$46.73	$10.60	$8.70	$10.00	$0.00	$76.03
For apprentice rates see "Apprentice- ROOFER"							
ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg) ROOFERS LOCAL 248 ROOFERS LOCAL 248	10/2/2025	$44.23	$10.60	$8.70	$10.00	$0.00	$73.53
	7/16/2026	$46.23	$10.60	$8.70	$10.00	$0.00	$75.53
ROOFER SLATE / TILE / PRECAST CONCRETE ROOFERS LOCAL 248 ROOFERS LOCAL 248	10/2/2025	$44.73	$10.60	$8.70	$10.00	$0.00	$74.03
	7/16/2026	$46.73	$10.60	$8.70	$10.00	$0.00	$76.03
For apprentice rates see "Apprentice- ROOFER"							
SCRAPER OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98	12/1/2023	$39.03	$13.78	$12.15	$3.00	$0.00	$67.96
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
SELF-POWERED ROLLERS AND COMPACTORS (TAMPERS) OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98	12/1/2023	$38.42	$13.78	$12.15	$3.00	$0.00	$67.35
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
SELF-PROPELLED POWER BROOM OPERATING ENGINEERS LOCAL 98 OPERATING ENGINEERS LOCAL 98	12/1/2023	$35.80	$13.78	$12.15	$3.00	$0.00	$64.73
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
SHEETMETAL WORKER SHEETMETAL WORKERS LOCAL 63 SHEETMETAL WORKERS LOCAL 63	7/1/2025	$43.48	$12.94	$11.01	$8.72	$2.13	$78.28
	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: 7/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$19.57	$5.82	$4.95	$0.00	$0.85	$31.19
2	50.00	$21.74	$6.47	$5.51	$0.00	$0.94	$34.66
3	55.00	$23.91	$7.12	$9.91	$0.00	$1.15	$42.09
4	60.00	$26.09	$7.76	$9.91	$0.00	$1.23	$44.99
5	65.00	$28.26	$8.41	$9.91	$0.00	$1.31	$47.89
6	70.00	$30.44	$9.06	$9.91	$0.00	$1.39	$50.80
7	75.00	$32.61	$9.71	$9.91	$0.00	$1.47	$53.70
8	80.00	$34.78	$10.35	$9.91	$8.72	$1.78	$65.54
9	85.00	$36.96	$11.00	$9.91	$8.72	$1.86	$68.45
10	90.00	$39.13	$11.65	$9.91	$8.72	$1.94	$71.35

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: SHEETMETAL WORKER							
Effective Date: 7/1/2026							
Step / Percent		**Apprentice Base Wage**					
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 to Journeyworker Ratio: 1:3							
SPECIALIZED EARTH MOVING EQUIP < 35 TONS TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	1/1/2026	$41.24	$16.17	$21.78	$0.00	$0.00	$79.19
	6/1/2026	$42.24	$16.17	$21.78	$0.00	$0.00	$80.19
	12/1/2026	$42.24	$16.17	$23.52	$0.00	$0.00	$81.93
	1/1/2027	$42.24	$16.77	$23.52	$0.00	$0.00	$82.53
SPECIALIZED EARTH MOVING EQUIP > 35 TONS TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	1/1/2026	$41.53	$16.17	$21.78	$0.00	$0.00	$79.48
	6/1/2026	$42.53	$16.17	$21.78	$0.00	$0.00	$80.48
	12/1/2026	$42.53	$16.17	$23.52	$0.00	$0.00	$82.22
	1/1/2027	$42.53	$16.77	$23.52	$0.00	$0.00	$82.82
SPRINKLER FITTER SPRINKLER FITTERS LOCAL 669 SPRINKLER FITTERS LOCAL 669	1/1/2026	$53.25	$13.60	$7.45	$9.41	$0.00	$83.71
	4/1/2026	$56.54	$13.60	$7.45	$9.41	$0.00	$87.00
	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
	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: 1/1/2026							
Step / Percent		**Apprentice Base Wage**					
1 / 43.00		$26.94	$9.64	$0.00	$0.00	$0.00	$36.58
2 / 48.00		$30.08	$9.64	$0.00	$0.00	$0.00	$39.72
3 / 52.00		$32.58	$13.60	$7.45	$1.15	$0.00	$54.78
4 / 56.00		$35.09	$13.60	$7.45	$1.15	$0.00	$57.29
5 / 59.00		$36.97	$13.60	$7.45	$1.40	$0.00	$59.42
6 / 64.00		$40.10	$13.60	$7.45	$1.40	$0.00	$62.55

Construction

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

Apprentice: SPRINKLER FITTER

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
7	68.00	$42.61	$13.60	$7.45	$1.40	$0.00	$65.06
8	72.00	$45.12	$13.60	$7.45	$1.40	$0.00	$67.57
9	76.00	$47.62	$13.60	$7.45	$1.40	$0.00	$70.07
10	80.00	$50.13	$13.60	$7.45	$1.40	$0.00	$72.58

Apprentice: SPRINKLER FITTER

Effective Date: 4/1/2026

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 to Journeyworker Ratio: 1:1

TELECOMMUNICATION TECHNICIAN	12/28/2025	$53.26	$13.75	$8.40	$6.96	$0.00	$82.37
TELECOMMUNICATION TECHNICIAN	6/28/2026	$54.41	$14.00	$8.43	$7.03	$0.00	$83.87
ELECTRICIANS LOCAL 7	1/3/2027	$55.56	$14.25	$8.47	$7.09	$0.00	$85.37
ELECTRICIANS LOCAL 7							

For apprentice rates and ratios see "Apprentice- ELECTRICIAN"

Apprentice: TELECOMMUNICATION TECHNICIAN

Effective Date: 12/28/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	$21.30	$7.65	$0.63	$0.00	$0.00	$29.58
2	45.00	$23.97	$7.65	$0.70	$0.00	$0.00	$32.32
3	50.00	$26.63	$13.75	$7.53	$0.00	$0.00	$47.91
4	55.00	$29.29	$13.75	$7.61	$0.00	$0.00	$50.65
5	65.00	$34.62	$13.75	$9.84	$0.00	$0.00	$58.21
6	70.00	$37.28	$13.75	$11.30	$0.00	$0.00	$62.33

Construction

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

Apprentice: TELECOMMUNICATION TECHNICIAN

Effective Date: 6/28/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	$21.76	$7.80	$0.63	$0.00	$0.00	$30.19
2	45.00	$24.48	$7.80	$0.70	$0.00	$0.00	$32.98
3	50.00	$27.21	$14.00	$7.53	$0.00	$0.00	$48.74
4	55.00	$29.93	$14.00	$7.61	$0.00	$0.00	$51.54
5	65.00	$35.37	$14.00	$9.84	$0.00	$0.00	$59.21
6	70.00	$38.09	$14.00	$11.30	$0.00	$0.00	$63.39

Apprentice to Journeyworker Ratio: 1:1

TERRAZZO FINISHERS BRICKLAYERS LOCAL 3 BRICKLAYERS LOCAL 3 (SPR/PITT) - MARBLE & TILE	2/10/2026	$68.24	$11.49	$15.57	$8.02	$0.00	$103.32
	8/1/2026	$70.44	$11.49	$15.57	$8.02	$0.00	$105.52
	2/1/2027	$71.84	$11.49	$15.57	$8.02	$0.00	$106.92

Apprentice: TERRAZZO FINISHERS

Effective Date: 2/10/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$34.12	$11.49	$15.57	$8.02	$0.00	$69.20
2	60.00	$40.94	$11.49	$15.57	$8.02	$0.00	$76.02
3	70.00	$47.77	$11.49	$15.57	$8.02	$0.00	$82.85
4	80.00	$54.59	$11.49	$15.57	$8.02	$0.00	$89.67
5	90.00	$61.42	$11.49	$15.57	$8.02	$0.00	$96.50

Apprentice: TERRAZZO FINISHERS

Effective Date: 8/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$35.22	$11.49	$15.57	$8.02	$0.00	$70.30
2	60.00	$42.26	$11.49	$15.57	$8.02	$0.00	$77.34
3	70.00	$49.31	$11.49	$15.57	$8.02	$0.00	$84.39
4	80.00	$56.35	$11.49	$15.57	$8.02	$0.00	$91.43
5	90.00	$63.40	$11.49	$15.57	$8.02	$0.00	$98.48

Apprentice to Journeyworker Ratio: 1:5

TERRAZZO MECHANIC BRICKLAYERS LOCAL 3 BRICKLAYERS LOCAL 3 (SPR/PITT) - MARBLE & TILE	2/1/2026	$69.32	$11.49	$15.57	$7.99	$0.00	$104.37
	8/1/2026	$71.52	$11.49	$15.57	$7.99	$0.00	$106.57
	2/1/2027	$72.92	$11.49	$15.57	$7.99	$0.00	$107.97

Construction

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

Apprentice: TERRAZZO MECHANIC

Effective Date: 2/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$34.66	$11.49	$15.57	$7.99	$0.00	$69.71
2	60.00	$41.59	$11.49	$15.57	$7.99	$0.00	$76.64
3	70.00	$48.52	$11.49	$15.57	$7.99	$0.00	$83.57
4	80.00	$55.46	$11.49	$15.57	$7.99	$0.00	$90.51
5	90.00	$62.39	$11.49	$15.57	$7.99	$0.00	$97.44

Apprentice: TERRAZZO MECHANIC

Effective Date: 8/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$35.76	$11.49	$15.57	$7.99	$0.00	$70.81
2	60.00	$42.91	$11.49	$15.57	$7.99	$0.00	$77.96
3	70.00	$50.06	$11.49	$15.57	$7.99	$0.00	$85.11
4	80.00	$57.22	$11.49	$15.57	$7.99	$0.00	$92.27
5	90.00	$64.37	$11.49	$15.57	$7.99	$0.00	$99.42

Apprentice to Journeyworker Ratio: 1:5

TEST BORING DRILLER	12/1/2025	$52.70	$10.15	$9.50	$9.80	$0.00	$82.15
LABORERS	6/1/2026	$54.25	$10.15	$9.50	$9.80	$0.00	$83.70
LABORERS - FOUNDATION AND MARINE	12/1/2026	$55.75	$10.15	$9.50	$9.80	$0.00	$85.20
For apprentice rates see "Apprentice- LABORER"							
TEST BORING DRILLER HELPER	12/1/2025	$48.82	$10.15	$9.50	$9.80	$0.00	$78.27
LABORERS	6/1/2026	$50.37	$10.15	$9.50	$9.80	$0.00	$79.82
LABORERS - FOUNDATION AND MARINE	12/1/2026	$51.87	$10.15	$9.50	$9.80	$0.00	$81.32
For apprentice rates see "Apprentice- LABORER"							
TEST BORING LABORER	12/1/2025	$48.70	$10.15	$9.50	$9.80	$0.00	$78.15
LABORERS	6/1/2026	$50.25	$10.15	$9.50	$9.80	$0.00	$79.70
LABORERS - FOUNDATION AND MARINE	12/1/2026	$51.75	$10.15	$9.50	$9.80	$0.00	$81.20
For apprentice rates see "Apprentice- LABORER"							
TRACTORS	12/1/2023	$38.42	$13.78	$12.15	$3.00	$0.00	$67.35
OPERATING ENGINEERS LOCAL 98							
OPERATING ENGINEERS LOCAL 98							
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
TRAILERS FOR EARTH MOVING EQUIPMENT	1/1/2026	$41.82	$16.17	$21.78	$0.00	$0.00	$79.77
TEAMSTERS JOINT COUNCIL NO. 10	6/1/2026	$42.82	$16.17	$21.78	$0.00	$0.00	$80.77
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	12/1/2026	$42.82	$16.17	$23.52	$0.00	$0.00	$82.51
	1/1/2027	$42.82	$16.77	$23.52	$0.00	$0.00	$83.11

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
TUNNEL WORK - COMPRESSED AIR	12/1/2025	$60.93	$10.15	$9.50	$10.25	$0.00	$90.83
LABORERS	6/1/2026	$62.48	$10.15	$9.50	$10.25	$0.00	$92.38
LABORERS (COMPRESSED AIR)	12/1/2026	$63.98	$10.15	$9.50	$10.25	$0.00	$93.88
For apprentice rates see "Apprentice- LABORER"							
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE)	12/1/2025	$62.93	$10.15	$9.50	$10.25	$0.00	$92.83
LABORERS	6/1/2026	$64.48	$10.15	$9.50	$10.25	$0.00	$94.38
LABORERS (COMPRESSED AIR)	12/1/2026	$65.98	$10.15	$9.50	$10.25	$0.00	$95.88
For apprentice rates see "Apprentice- LABORER"							
TUNNEL WORK - FREE AIR	12/1/2025	$53.00	$10.15	$9.50	$10.25	$0.00	$82.90
LABORERS	6/1/2026	$54.55	$10.15	$9.50	$10.25	$0.00	$84.45
LABORERS (FREE AIR TUNNEL)	12/1/2026	$56.05	$10.15	$9.50	$10.25	$0.00	$85.95
For apprentice rates see "Apprentice- LABORER"							
TUNNEL WORK - FREE AIR (HAZ. WASTE)	12/1/2025	$55.00	$10.15	$9.50	$10.25	$0.00	$84.90
LABORERS	6/1/2026	$56.55	$10.15	$9.50	$10.25	$0.00	$86.45
LABORERS (FREE AIR TUNNEL)	12/1/2026	$58.05	$10.15	$9.50	$10.25	$0.00	$87.95
For apprentice rates see "Apprentice- LABORER"							
VAC-HAUL	1/1/2026	$41.24	$16.17	$21.78	$0.00	$0.00	$79.19
TEAMSTERS JOINT COUNCIL NO. 10	6/1/2026	$42.24	$16.17	$21.78	$0.00	$0.00	$80.19
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	12/1/2026	$42.24	$16.17	$23.52	$0.00	$0.00	$81.93
	1/1/2027	$42.24	$16.77	$23.52	$0.00	$0.00	$82.53
WAGON DRILL OPERATOR (HEAVY & HIGHWAY)	12/1/2025	$36.21	$10.15	$9.50	$6.60	$0.00	$62.46
LABORERS	6/1/2026	$38.25	$10.15	$9.50	$6.60	$0.00	$64.50
LABORERS - ZONE 4 (HEAVY & HIGHWAY)	12/1/2026	$39.54	$10.15	$9.50	$6.60	$0.00	$65.79
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
WATER METER INSTALLER	9/17/2025	$52.26	$12.00	$10.85	$7.10	$0.00	$82.21
PLUMBERS & PIPEFITTERS LOCAL 104	3/17/2026	$54.26	$12.00	$10.85	$7.10	$0.00	$84.21
PLUMBERS & PIPEFITTERS LOCAL 104	9/17/2026	$56.26	$12.00	$10.85	$7.10	$0.00	$86.21
	3/17/2027	$58.26	$12.00	$10.85	$7.10	$0.00	$88.21
	9/17/2027	$60.26	$12.00	$10.85	$7.10	$0.00	$90.21
	3/17/2028	$62.26	$12.00	$10.85	$7.10	$0.00	$92.21
	9/17/2028	$64.26	$12.00	$10.85	$7.10	$0.00	$94.21
	3/17/2029	$66.26	$12.00	$10.85	$7.10	$0.00	$96.21

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

Marine Drilling

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
BLASTER MARINE DRILLING MARINE DRILLING	1/1/2018	$41.82	$7.63	$2.35	$1.25	$0.00	$53.05
BOAT CAPTAIN MARINE DRILLING MARINE DRILLING	1/1/2018	$33.87	$7.63	$2.35	$0.95	$0.00	$44.80
BOAT CAPTAIN / Over 1,000 hp MARINE DRILLING MARINE DRILLING	1/1/2018	$38.06	$7.63	$2.35	$1.25	$0.00	$49.29
CORE DRILLER MARINE DRILLING MARINE DRILLING	1/1/2018	$31.43	$7.63	$2.25	$0.65	$0.00	$41.96
CORE DRILLER HELPER MARINE DRILLING MARINE DRILLING	1/1/2018	$28.47	$7.63	$2.35	$0.65	$0.00	$39.10
DRILLER MARINE DRILLING MARINE DRILLING	1/1/2018	$39.70	$7.63	$2.35	$1.25	$0.00	$50.93
ENGINEER MARINE DRILLING MARINE DRILLING	1/1/2018	$39.69	$7.63	$2.25	$1.25	$0.00	$50.82
HELPER MARINE DRILLING MARINE DRILLING	1/1/2018	$34.24	$7.63	$2.35	$0.65	$0.00	$44.87
MACHINIST MARINE DRILLING MARINE DRILLING	1/1/2018	$38.88	$7.63	$2.35	$0.95	$0.00	$49.81
OILER - MARINE DRILLING MARINE DRILLING MARINE DRILLING	1/1/2018	$34.24	$7.63	$2.35	$0.65	$0.00	$44.87
TUG DECKHAND MARINE DRILLING MARINE DRILLING	1/1/2018	$27.61	$7.63	$2.35	$0.65	$0.00	$38.24
WELDER MARINE DRILLING MARINE DRILLING	1/1/2018	$38.88	$7.63	$2.35	$0.95	$0.00	$49.81

Op Eng Marine (Dredging Work)

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
BOAT OPERATOR OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS - MARINE DIVISION	10/1/2017	$29.26	$7.63	$2.35	$0.95	$0.00	$40.19
CERTIFIED WELDER OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS - MARINE DIVISION	10/1/2017	$31.09	$7.63	$2.35	$1.25	$0.00	$42.32
CHIEF WELDER/ CHIEF MATE OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS - MARINE DIVISION	10/1/2017	$33.02	$7.63	$2.35	$1.25	$0.00	$44.25
DERRICK / SPIDER / SPILLBARGE OPERATOR OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS - MARINE DIVISION	10/1/2017	$33.02	$7.63	$2.35	$1.25	$0.00	$44.25
DRAG BARGE OPERATOR / WELDER / MATE OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS - MARINE DIVISION	10/1/2017	$30.24	$7.63	$2.35	$0.95	$0.00	$41.17
ENGINEER / ELECTRICIAN OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS - MARINE DIVISION	10/1/2017	$33.02	$7.63	$2.35	$1.25	$0.00	$44.25
LICENSED BOAT OPERATOR OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS - MARINE DIVISION	10/1/2017	$33.02	$7.63	$2.35	$1.25	$0.00	$44.25
LICENSED TUG OPERATOR OVER 1000HP OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS - MARINE DIVISION	10/1/2017	$38.18	$7.63	$2.35	$1.25	$0.00	$49.41
MAINTENANCE ENGINEER OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS - MARINE DIVISION	10/1/2017	$33.03	$7.63	$2.35	$1.25	$0.00	$44.26
OILER - MARINE DIVISION OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS - MARINE DIVISION	10/1/2017	$24.30	$7.63	$2.35	$0.65	$0.00	$34.93
OPERATOR / LEVERMAN OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS - MARINE DIVISION	10/1/2017	$38.18	$7.63	$2.35	$1.25	$0.00	$49.41
RODMAN / SCOWMAN OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS - MARINE DIVISION	10/1/2017	$24.30	$7.63	$2.35	$0.65	$0.00	$34.93
SHOREMAN / DECKHAND OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS - MARINE DIVISION	10/1/2017	$24.30	$7.63	$2.35	$0.65	$0.00	$34.93

Outside Electrical

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
EQUIPMENT OPERATOR OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42 OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42 For apprentice rates see "Apprentice- LINEMAN"	9/1/2019	$44.67	$8.00	$12.55	$0.00	$0.00	$65.22
GROUNDMAN OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42 OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42 For apprentice rates see "Apprentice- LINEMAN"	9/1/2019	$30.58	$8.00	$5.48	$0.00	$0.00	$44.06
GROUNDMAN / TRUCK DRIVER OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42 OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42 For apprentice rates see "Apprentice- LINEMAN"	9/1/2019	$39.97	$8.00	$10.96	$0.00	$0.00	$58.93
HEAVY EQUIPMENT OPERATOR OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42 OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42 For apprentice rates see "Apprentice- LINEMAN"	9/1/2019	$47.01	$8.00	$13.22	$0.00	$0.00	$68.23
JOURNEYMAN LINEMAN OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42 OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42	9/1/2019	$51.71	$8.00	$15.55	$0.00	$0.00	$75.26

Apprentice: JOURNEYMAN LINEMAN

Effective Date: 9/1/2019

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$31.03	$8.00	$3.43	$0.00	$0.00	$42.46
2	65.00	$33.61	$8.00	$3.51	$0.00	$0.00	$45.12
3	70.00	$36.20	$8.00	$3.59	$0.00	$0.00	$47.79
4	75.00	$38.78	$8.00	$5.16	$0.00	$0.00	$51.94
5	80.00	$41.37	$8.00	$5.24	$0.00	$0.00	$54.61
6	85.00	$43.95	$8.00	$5.32	$0.00	$0.00	$57.27
7	90.00	$46.54	$8.00	$7.40	$0.00	$0.00	$61.94

Apprentice to Journeyworker Ratio: 1:2

TELEDATA CABLE SPLICER OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42 OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42	2/4/2019	$30.73	$4.70	$0.92	$2.25	$0.00	$38.60
TELEDATA LINEMAN/EQUIPMENT OPERATOR OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42 OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42	2/4/2019	$28.93	$4.70	$0.89	$2.25	$0.00	$36.77
TELEDATA WIREMAN/INSTALLER/TECHNICIAN OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42 OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42	2/4/2019	$28.93	$4.70	$0.89	$2.25	$0.00	$36.77
TRACTOR-TRAILER DRIVER OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42	9/1/2019	$44.67	$8.00	$12.55	$0.00	$0.00	$65.22

Outside Electrical

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42							

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.

*** THIS PAGE IS LEFT BLANK INTENTIONALLY ***

DOCUMENT 00870

STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS (EXECUTIVE ORDER 11246)

Revised April 9, 2019

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 (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in Paragraphs 7a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. 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, Executive Order 11246, or the regulations promulgated pursuant thereto.

6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

    a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and 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 where there is an obligation to do so under 41 CFR Part 60-3.

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 pursuant to Executive Order 11246.

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as 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: SMSA Counties: 1123 Boston-Lowell-Brockton-Lawrence-Haverhill, MA-NH	4.0
MA Essex, MA Middlesex, MA Norfolk, MA Plymouth, 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 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

*** THIS PAGE IS INTENTIONALLY LEFT BLANK ***

General Decision Number: MA20260016 01/02/2026

Superseded General Decision Number: MA20250016

State: Massachusetts

Construction Type: Highway

County: Berkshire County in Massachusetts.

HIGHWAY CONSTRUCTION PROJECTS

Modification Number	Publication Date
0	01/02/2026

ENGI0004-019 06/01/2025

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
Group 1	$ 57.83	33.70
Group 2	$ 57.18	33.70

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

POWER EQUIPMENT OPERATORS CLASSIFICATIONS
Group 1: Broom/Sweeper; Crane; Gradall; Post Driver (Guardrail/Fences)
Group 2: Bulldozer; Grader/Blade

ENGI0098-010 12/01/2024

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
Group 1	$ 42.88	31.04+A
Group 2	$ 42.57	31.04+A
Group 4	$ 39.12	31.04+A

Footnote:
A. Paid Holidays: New year's Day, Washington's Birthday, Memorial Day, Independence Day, Labor Day, Columbus Day, Veterans Day, Thanksgiving Day and Christmas Day

POWER EQUIPMENT OPERATORS CLASSIFICATIONS
Group 1: Backhoe/Excavator/Trackhoe; Bobcat/Skid Steer/Skid Loader; Loader
Group 2: Milling Machine; Paver (Asphalt, Aggregate, and Concrete)
Group 4: Roller

IRON0007-027 09/16/2025

	Rates	Fringes
IRONWORKER (ORNAMENTAL AND STRUCTURAL)	$ 41.89	33.90

LABO0473-007 12/01/2024

	Rates	Fringes
LABORER (Common or General)	$ 31.54	26.65
TRAFFIC CONTROL (Flagger)	$ 27.01	26.65

LABO0596-005 06/01/2025

	Rates	Fringes
LABORER (Form Work Only)	$ 35.00	26.91

PAIN0035-023 07/01/2024

	Rates	Fringes
PAINTER (Steel)	$ 56.76	36.00

SUMA2014-006 01/11/2017

	Rates	Fringes
CARPENTER	$ 44.11	21.41
CEMENT MASON/CONCRETE FINISHER	$ 52.13	20.89
ELECTRICIAN	$ 47.13	13.41
IRONWORKER, REINFORCING	$ 46.21	21.27
LABORER: Asphalt, Includes Raker, Shoveler, Spreader and Distributor	$ 33.10	18.09
LABORER: Concrete Saw (Hand Held/Walk Behind)	$ 44.43	14.18
LABORER: Landscape	$ 36.62	16.00
OPERATOR: Forklift	$ 51.63	0.00
OPERATOR: Mechanic	$ 48.14	17.02
OPERATOR: Piledriver	$ 43.87	18.04

PAINTER: Spray (Linestriping)....$ 38.30 17.43

TRAFFIC CONTROL:
Laborer-Cones/
Barricades/Barrels -
Setter/Mover/Sweeper.....$ 43.73 15.06

TRUCK DRIVER: Concrete Truck....$ 33.69 15.79

TRUCK DRIVER: Dump Truck.....$ 38.94 12.00

TRUCK DRIVER: Flatbed Truck.....$ 48.53 0.00

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 $13.30 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2025. 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.

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.

==========

END OF GENERAL DECISION

General Decision Number: MA20260010 01/02/2026

Superseded General Decision Number: MA20250010

State: Massachusetts

Construction Types: Heavy (Heavy and Marine)

Counties: Berkshire, Franklin, Hampden and Hampshire Counties in Massachusetts.

HEAVY CONSTRUCTION PROJECTS; AND MARINE CONSTRUCTION PROJECTS

Modification Number	Publication Date
0	01/02/2026

BOIL0029-001 01/01/2025

	Rates	Fringes
BOILERMAKER	$ 50.62	28.82

BRMA0001-005 08/01/2023

SPRINGFIELD CHAPTER

	Rates	Fringes
BRICKLAYER BRICKLAYERS; CEMENT MASONS; PLASTERERS; STONE MASONS; MARBLE, TILE & TERRAZZO WORKERS	$ 50.81	32.27

BRMA0001-007 08/01/2023

SPRINGFIELD/PITTSFIELD CHAPTER
BERKSHIRE COUNTY

	Rates	Fringes
BRICKLAYER BRICKLAYERS; CEMENT MASONS; PLASTERERS; STONE MASONS; MARBLE, TILE & TERRAZZO WORKERS	$ 50.81	32.27

CARP0056-004 08/01/2024

	Rates	Fringes
DIVER TENDER	$ 61.70	35.47
DIVER	$ 78.11	35.47

CARP0056-009 08/01/2024

	Rates	Fringes
PILEDRIVERMAN	$ 51.97	35.47

CARP0336-005 09/01/2025

FRANKLIN COUNTY (Erving, Orange, North Orange, and Warwick)

	Rates	Fringes
CARPENTER	$ 43.33	27.82

CARP0336-010 09/01/2025

BERKSHIRE

	Rates	Fringes
CARPENTER	$ 43.33	27.82

CARP0336-012 09/01/2025

HAMPDEN; HAMPSHIRE; AND FRANKLIN (Remainder of County)

	Rates	Fringes
CARPENTER	$ 43.33	27.82

CARP1121-004 04/21/2025

	Rates	Fringes
MILLWRIGHT	$ 43.42	33.00

ELEC0007-002 06/29/2025

HAMPDEN (Except Chester & Holyoke); HAMPSHIRE (Belchertown, Ware)

	Rates	Fringes
ELECTRICIAN	$ 52.16	29.56

ELEC0007-003 06/29/2025

BERKSHIRE; FRANKLIN; HAMPDEN (Chester, Holyoke); HAMPSHIRE (Except Belchertown, Ware)

	Rates	Fringes
ELECTRICIAN	$ 52.16	29.56

ENGI0098-007 12/01/2024

	Rates	Fringes
Power equipment operators:		
Group 1	$ 42.88	31.04+A
Group 2	$ 42.57	31.04+A
Group 3	$ 42.35	31.04+A
Group 4	$ 39.12	31.04+A
Group 5	$ 38.00	31.04+A
Group 6	$ 36.06	31.04+A
Group 7	$ 54.38	31.04+A
Group 8	$ 44.06	31.04+A
Group 9	$ 44.37	31.04+A
Group 10	$ 46.38	31.04+A
Group 11	$ 47.38	31.04+A
Group 12	$ 48.88	31.04+A
Group 13	$ 49.88	31.04+A
Group 14	$ 50.88	31.04+A
Group 15	$ 52.38	31.04+A

HAZARDOUS WASTE PREMIUM $2.00

FOOTNOTE FOR POWER EQUIPMENT OPERATORS:
Group 8 and Group 9 are per day wages.
A. Paid Holidays: New year's Day, Washington's Birthday, Memorial Day, Independence Day, Labor Day, Columbus Day, Veterans Day, Thanksgiving Day and Christmas Day

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

Group 1: Shovels; crawlers and truck cranes including all tower; self-propelled hydraulic cranes 10 tons and over; draglines; clam shells; cableways; shaft hoists; mucking machines derricks; backhoes; bulldozers; gradalls; elevating graders; pile drivers; concrete pavers; trenching machines; front end loaders- 5 1/2 cu yds and over; dual drum paver; automatic grader-excavator(C.M.I. or equal); scrapers towing pan or wagon; tandem dozers or push cats(2 units in tandem); shotcrete machine; tunnel boring machine; combination backhoe/loader 3/4 cu yd hoe or over; jet engine dryer; tree shredder; post hole digger; post hole hammer; post extractor; truck mounted concrete pump with boom; roto-mill; Grader; Horizontal Drilling Machine; John Henry Rock Drill and similar equipment.

Group 2: Rotary drill with mounted compressor; compressor house (3 to 6 compressors); rock and earth boring machines (excluding McCarthy and similar drills); front end loaders 4 cu yds to 5 1/2 cu yds); forklifts-7 ft lift and over 3 ton capacity; scraper 21 yds and over (struck load); sonic hammer console; reclaimers road planer/milling machine; cal tracks; ballast regulators; rail anchor machines; switch tampers, asphalt pavers; mechanic; welder and transfer machine.

Group 3: Combination backhoe/loader up to 3/4 cu yd; scrapers up to 21 cu yd (struck load, self propelled or tractor drawn); tireman; front end loaders up to 4 yds; well drillers; engineer or fireman on high pressure boiler; self-loading batch plant; well point operators electric pumps used in well point system; pumps, 16 inches and over (total discharge); compressor, one or two 900 cu ft and over; powered grease truck; tunnel locomotives and dingys; grout pumps; hydraulic jacks; boom truck; hydraulic cranes-up to 10 ton.

Group 4: Asphalt rollers; self-powered rollers and compactors; tractor without blade drawing sheepsfoot roller; rubber tire roller; vibratory roller or other type of compactors including machines for pulverizing and aerating soil; york rake.

Group 5: Hoists; conveyors; power pavement breakers; self-powered concrete pavement finishing machines; two bag mixers with skip; McCarthy and similar drills; batch plants (not self loading); bulk cement plants; self-propelled material spreaders; three or more 10 KW light plants; 30 KW or more generators; power broom.

Group 6: Compressor (one or two) 315 cu ft to 900 cu ft; pumps 4 inches to 16 inches (total discharge).

Group 7: Compressors up to 315 cu ft; small mixers with skip; pumps up to 4 inches; power heaters; oiler; A-frame trucks; forklifts-up to 7 ft. lift and up to 3 ton capacity; hydro broom; stud welder.

Group 8: Truck crane crews

Group 9: Oiler

Group 10: Master Mechanic

Group 11: Boom lengths over 150 feet including jib

Group 12: Boom lengths over 200 feet including jib

Group 13: Boom lengths over 250 feet including jib

Group 14: Boom lengths over 300 feet including jib

Group 15: Boom lengths over 350 feet including jib

IRON0007-014 09/16/2025

BERKSHIRE (Becket, East Otis, Hinsdale, Monterey, New Marlboro, North Otis, Otis, Peru, Sandisfield, Savoy, Sheffield, Washington, Windsor); FRANKLIN; HAMPDEN; HAMPSHIRE

	Rates	Fringes
IRONWORKER	$ 41.89	33.90

IRON0012-003 07/01/2025

BERKSHIRE (Lee)

	Rates	Fringes
IRONWORKER	$ 40.75	31.91

IRON0012-004 07/01/2025

BERKSHIRE (Remainder of County)

	Rates	Fringes
Ironworkers:		
Sheeter	$ 41.00	31.91
Structural, Ornamental, Reinforcing, Fence Erector, Machinery Mover, Rigger, Rodman, Stone Derrickman	$ 40.75	31.91

LABO0022-002 12/01/2024

FRANKLIN (Orange, Warwick)

	Rates	Fringes
Laborers:		
GROUP 1	$ 38.95	29.70
GROUP 2	$ 39.20	29.70
GROUP 3	$ 39.70	29.70
GROUP 4	$ 39.95	29.70
GROUP 5	$ 39.70	29.70
GROUP 6	$ 40.95	29.70

LABORERS CLASSIFICATIONS

GROUP 1: Laborers; carpenter tenders; cement finisher tenders, plasterer tenders

GROUP 2: Asphalt raker; fence and guard rail erector; laser beam operator; mason tenmder; pipelayer; pneumatic drill operator; pneumatic tool operator; wagon drill operatorm jackhammer operator, pavement breaker, carbide core drilling machine, chain saw operator, barco type jumping tampers, concrete pump, motorized mortar miner, ride-on motorized buggy

GROUP 3: Air track operator; block paver; rammer; curb setter, hydraulic and similar self-powered drills

GROUP 4: Blaster; powderman

GROUP 5: Precast floor and roof, plank erector

GROUP 6: Asbestos Abatement, Toxic and Hazardous waste laborers

---

LABO0473-005 12/01/2024

FRANKLIN (Except Orange and Warrick); HAMPDEN and HAMPSHIRE COUNTIES (with the exception of Chesterfield, Cummington, Goshen, Middlefield, Plainfield, and Worthington)

	Rates	Fringes
Laborers:		
Group 1	$ 35.00	29.70
Group 2	$ 35.00	29.70
Group 3	$ 35.00	29.70
Group 4	$ 35.00	29.70
Group 5	$ 27.01	29.70
Group 6	$ 35.00	29.70

LABORERS CLASSIFICATIONS

Group 1: Carpenter tenders, cement finisher tenders, laborers, wrecking laborers

Group 2: Asphalt rakers, fence and guard rail erectors, laser beam operator, mason tender, pipelayer, pneumatic drill operator, pneumatic tool operator, wagon drill operator

Group 3: Air track operator, block pavers, rammers, curb setters

Group 4: Blasters, powdermen

Group 5: Flaggers

Group 6: Asbestos abatement, toxic and Hazardous waste laborers

---

LABO0473-006 12/01/2024

BERKSHIRE; HAMPSHIRE COUNTIES (the towns of Chesterfield, Cummington, Goshen, Middlefield, Plainfield, and Worthington only)

	Rates	Fringes
Laborers:		
Group 1	$ 33.99	26.65
Group 2	$ 33.99	26.65
Group 3	$ 33.99	26.65
Group 4	$ 33.99	26.65
Group 5	$ 27.01	26.65
Group 6	$ 33.99	26.65

LABORERS CLASSIFICATIONS

Group 1: Carpenter tenders, cement finisher tenders, laborers, wrecking laborers

Group 2: Asphalt rakers, fence and guard rail erectors, laser beam operator, mason tender, pipelayer, pneumatic drill operator, pneumatic tool operator, wagon drill operator

Group 3: Air track operator, block pavers, rammers, curb setters

Group 4: Blasters, powdermen

Group 5: Flaggers

Group 6: Asbestos abatement, toxic and Hazardous waste laborers

---

LABO1421-002 12/02/2024

	Rates	Fringes
Laborers:		
Group 1	$ 46.25	29.70
Group 2	$ 47.00	29.70
Group 3	$ 47.25	29.70
Group 4	$ 42.25	29.70
Group 5	$ 45.35	29.70
Group 6	$ 46.25	29.70

Group 1: Adzeman, Wrecking Laborer.
Group 2: Burners, Jackhammers.
Group 3: Small Backhoes, Loaders on tracks, Bobcat Type Loaders, Hydraulic ""Brock"" Type Hammer Operators, Concrete Cutting Saws.
Group 4: Yardman (Salvage Yard Only).
Group 5: Yardman, Burners, Sawyers.
Group 6: Asbestos, Lead Paint, Toxic and Hazardous Waste.

PAIN0035-010 07/01/2024

	Rates	Fringes
PAINTER		
NEW CONSTRUCTION:		
Brush, Taper	$ 38.78	31.85
Spray, Sandblast	$ 39.48	31.85
REPAINT:		
Bridge	$ 56.76	31.85
Brush, Taper	$ 35.40	31.85
Spray, Sandblast	$ 36.80	31.85

PLUM0004-003 09/01/2025

FRANKLIN (Orange)

	Rates	Fringes
Plumber and Steamfitter	$ 55.00	31.57

PLUM0104-004 09/17/2025

BERKSHIRE (Becket, Otis, Sandisfield); FRANKLIN (Except Monroe, Rowe, and the Western part of Charlemont); HAMPDEN; HAMPSHIRE

	Rates	Fringes
Plumbers and Pipefitters	$ 52.26	31.05

FOOTNOTE:
A. Two paid holidays, Independence Day and Labor Day, provided the employee has been employed seven days prior to the holiday by the same employer

---

PLUM0104-009 09/17/2025

BERKSHIRE (Except Otis, Becket, Sandisfield); FRANKLIN (Monroe, Rowe and the Western part of Charlemont)

	Rates	Fringes
Plumber and Steamfitter	$ 52.26	31.05

FOOTNOTE FOR PLUMBERS & STEAMFITTERS:
A. Paid holidays: Independence Day and Labor Day, provided the employee has been employed seven days prior to the holiday by the same employer.

TEAM0379-001 06/01/2025

	Rates	Fringes
Truck drivers:		
Group 1	$ 40.78	37.35+a+b
Group 2	$ 40.95	37.35+a+b
Group 3	$ 41.02	37.35+a+b
Group 4	$ 41.14	37.35+a+b
Group 5	$ 41.24	37.35+a+b
Group 6	$ 41.53	37.35+a+b
Group 7	$ 41.82	37.35+a+b

POWER TRUCKS $.25 DIFFERENTIAL BY AXLE
TUNNEL WORK (UNDERGROUND ONLY) $.40 DIFFERENTIAL BY AXLE
HAZARDOUS MATERIALS (IN HOT ZONE ONLY) $2.00 PREMIUM

TRUCK DRIVERS CLASSIFICATIONS

Group 1: Station wagons; panel trucks; and pickup trucks

Group 2: Two axle equipment; & forklift operator

Group 3: Three axle equipment and tireman

Group 4: Four and Five Axle equipment

Group 5: Specialized earth moving equipment under 35 tons other than conventional type trucks; low bed; vachual; mechanics, paving restoration equipment

Group 6: Specialized earth moving equipment over 35 tons

Group 7: Trailers for earth moving equipment (double hookup)

FOOTNOTES:

A. PAID HOLIDAYS: New Year's Day, Washington's Birthday, Memorial Day, Independence Day, Labor Day, Patriot's Day, Columbus Day, Veteran's Day, Thanksgiving Day and Christmas Day

B. PAID VACATION: Employees with 4 months to 1 year of service receive 1/2 day's pay per month; 1 week vacation for 1 - 5 years of service; 2 weeks vacation for 5 - 10 years of service; and 3 weeks vacation for more than 10 years of service

---

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 $13.30 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2025. 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.

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.

==========

END OF GENERAL DECISION

*** THIS PAGE IS INTENTIONALLY LEFT BLANK ***

General Decision Number: MA20260006 01/30/2026

Superseded General Decision Number: MA20250006

State: Massachusetts

Construction Type: Heavy Dredging

Counties: Massachusetts Statewide.
STATEWIDE

Massacusetts All Dredging, except self-propelled hopper dredges, on the Atlantic Coast & tributary waters emptying into the Atlantic Ocean.

Modification Number	Publication Date
0	01/02/2026
1	01/30/2026

* ENGI0025-001 10/01/2025

STATEWIDE

	Rates	Fringes
Dredging:		
CLASS A1	$ 48.48	15.34+a+b
CLASS A2	$ 43.20	14.99+a+b
CLASS B1	$ 41.93	14.90+a+b
CLASS B2	$ 39.46	14.73+a+b
CLASS C1	$ 38.38	14.66+a+b
CLASS C2	$ 37.15	14.57+a+b
CLASS D	$ 30.86	14.15+a+b

CLASSIFICATIONS:
CLASS A1: Deck Captain; Mechanical Dredge Operator, Leverman, Licensed Tug Operator over 1000 HP.
CLASS A2: Crane Operator (360 swing).
CLASS B1: Derrick Operator (180 swing), Spider/Spill Barge Operator, Engineer, Electrician, Chief Welder, Chief Mate, Fill Placer, Operator II, Maintenance Engineer, Licensed Boat Operator, Licensed Crew Boat Operator.
CLASS B2: Certified Welder.
CLASS C1: Mate, Drag Barge Operator, Assistant Fill Placer, Welder, Steward.
CLASS C2: Boat Operator.
CLASS D: Oiler, Deckhand, Shoreman, Rodman, Scowman, Cook, Messman, Porter/Janitor.

INCENTIVE PAY: (Add to Hourly Rate)
Operator (NCCCO License/Certification) $1.80 Licensed Tug Operator over 1000 HP (Assigned as Master) (USCG licensed Master of Towing Vessels (MOTV) $1.80; Licensed Boat Operator (Assigned as lead boat captain) USCG licensed boat operator $1.30; Engineer (QMED and Tankerman endorsement or licensed engineer (USCG) $1.80
Oiler (QMED and Tankerman endorsement (USCG) $1.80; All classifications (Tankerman endorsement only) USCG $1.55; Deckhand or Mate (AB with Lifeboatman endorsement (USCG) $1.80; All classifications (lifeboatman endorsement only (USCG) $1.55; Welder (ABS certification) $1.55

FOOTNOTES APPLICABLE TO ABOVE CRAFTS:
a. PAID HOLIDAYS: New Year's Day, Martin Luther King, Jr.'s Birthday, Memorial Day, Good Friday, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day and Christmas Day
b. VACATION: Eight percent (8%) of the straight time rate, multiplied by the total hours worked.

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 $13.30 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2025. 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 withinthe 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.

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.

==========

END OF GENERAL DECISION

DOCUMENT A00801

SPECIAL PROVISIONS

SHEFFIELD
Federal Aid Project No HIP(NGB)-003S(928)X
Superstructure Replacement, S-10-024,
County Road over Ironworks Brook

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 2025 Standard Specifications *for Highways and Bridges, the Supplemental Specifications* contained in this book, the *Construction Standard Details* in effect as of June 2025, the *1990 Standard Drawings for Signs and Supports*, the 2015 *Overhead Signal Structure and Foundation Standard Drawings*, the *2009 Manual on Uniform Traffic Control Devices (MUTCD) with Revisions 1, 2, and 3 and the November 2022 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.

The work under this Contract consists of the superstructure replacement of MassDOT Bridge No. S-10-024 (02H); County Road over Ironwork Brook in the Town of Sheffield. It includes the demolition of the existing bridge superstructure, partial demolition of the bridge substructure, the construction of a new single span bridge superstructure and modifications to the existing abutments and wingwalls. The proposed bridge is comprised of hot mix asphalt overlay on a reinforced concrete deck with spread deck beams supported by reinforced concrete abutments.

Work under this Contract also includes approach roadway work to the limits shown on the Plans including, but not limited to, roadway reconstruction, mill and overlay, profile adjustment, roadway embankment work, highway guardrail, and other safety elements as shown on the Plans. The project includes full roadway closure of County Road during construction with an approved detour plan. But driveway access to 620 County Road must be maintained at all times.

The Contractor shall, as part of this work, coordinate with all utility owners before and during construction, including their temporary and permanent relocation requirements.

The Contractor shall satisfy themselves by their own investigation and research regarding conditions and measurements affecting the work to be done.

The term "Engineer" in this Contract shall mean "Massachusetts Department of Transportation, Highway Division" unless otherwise specified.

SUBSECTION 7.05 INSURANCE REQUIREMENTS

The insurance requirements set forth in this subsection are in addition to the requirements of the Standard Specifications.

7.05.B: Public Liability Insurance 1. and
7.05.B: Public Liability Insurance 2.

The Massachusetts Department of Transportation and applicable railroads shall be named as additional insureds.

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.

WORK SCHEDULE

The proposed work hours shall conform to Subsection 7.09 of the Standard Specifications and be subject to the written approval of the Engineer.

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.

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.

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.

By December 31, 2025, 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.

CONTRACTUAL MILESTONES

This Contract contains the following Contractual Milestones that are to be included in the Contractor's Baseline Contract Progress Schedule submission. The Contractor shall identify the completion of the work pertaining to each Contractual Milestone through the inclusion of a Finish Milestone and hammock activities in the accepted baseline Contract Progress Schedule using the stated description.

MS#01 – Contractor Field Completion: The Contractor shall achieve Contractor Completion within **884 calendar days from Notice to Proceed**.

> **Contractor Field Completion** Contractor Field Completion shall be defined as the date of completion of all physical contract work, including the punch list, and the Contractor has fully de-mobilized from field operations.

MS#02 –Substantial Completion: The Contractor shall achieve Substantial Completion within **854 calendar days from Notice to Proceed.**

> **Substantial Completion** shall be described as the date that a walkthrough of the entire contract work has been performed by the Resident Engineer and the work required by the contract, including paperwork, has been completed. This excludes work having a contract price of less than one percent of the adjusted contract price including overruns, underruns, and all contract amendments. All material submittals must be received by the District Materials Lab. The Substantial Completion includes the initiation of seeding interim acceptance, as well as the final acceptance and release of final payment.

MS#03 – Full Beneficial Use: The Contractor shall achieve Full Beneficial Use (within **523 calendar days from Notice to Proceed**.

> **Full Beneficial Use (FBU)** Contract Milestone per the following requirements: The majority of contract Work has been completed, and the asset(s) has been opened for full multi-modal transportation use, except for limited contract work Items that do not materially impair or hinder the intended public use of the transportation facility. All anticipated lane takings have been completed, except for minor, short-term work Items and as defined in Subsection 8.03 - Prosecution of Work.

Note: Winter work operations as required for utility relocation. Detour set-up is contingent upon the completion of the utility relocations. Should the utility relocation finish early, the implementation of the detour should be shifted earlier as well.

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 either a traffic level 2 (0.3-10.0 million 18-kip (80-kn) ESALs) or a traffic level 3 (≥10.0 million 18 kip ESALs) as directed by the Engineer. Contractor will be provided with traffic information for the design mix at each location where work order is being requested.

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.

SUBSECTION 8.14 (Continued)

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.

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.

SUBSECTION 8.14 (Continued)

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.

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.

SUBSECTION 8.14 (Continued)

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.

BUILD AMERICA BUY AMERICA PREFERENCE (Continued)

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.

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.

HOLIDAY WORK RESTRICTIONS (Continued)

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 to 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.

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.

ENVIRONMENTAL PERMITTING

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. 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 1 Highway Director and Resident Engineer in writing at least 60 days prior to desired commencement of the proposed activity. All environmental submittals, including any Contract with Local, State, or Federal environmental agencies, must be coordinated with the District 1 Environmental Engineer. The Contractor is expected to fully cooperate with requests for information and provide the 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.

A Massachusetts Department of Environmental Protection (MassDEP) Water Quality Certification and Army Corps of Engineers (ACOE) General Permits (GPs) have been issued for this project. The Contractor shall adhere to the requirements of these documents.

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

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 or town of project, or at minimum, within county, of construction operations.

NATIONAL GRID EMERGENCY TELEPHONE NUMBERS

ELECTRIC:
Outage/ Emergency: 1-800-465-1212
New Service: 1-800-375-7405
Customer Support: 1-800-322-3223

NOTICE TO OWNERS OF UTILITIES

(Supplementing Subsection 7.13)

Written notice shall be given by the Contractor to all public service corporations or officials owning or having charge of publicly or privately owned utilities of his/her intention to commence operations affecting such utilities at least one week in advance of such operations. The Contractor shall, at the same time, file a copy of each notice with the Engineer.

Before the Contractor begins any work or operation that might damage subsurface structures, he/she shall carefully locate all such structures and conduct his operations so as to avoid any damage to them.

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 1

Select the Town of SHEFFIELD and then locate the utility.

The utility contact list is for guidance only and is not guaranteed to be complete or up to date.

Notification Of Public Officials

Town officials are shown at website https://www.mass.gov/lists/massachusetts-cities-and-towns and select the required City/Town website.

State Police are shown at website https://www.mass.gov/info-details/massachusetts-state-police-troop-boundaries. Select the area of jurisdiction to find the local station.

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 FHWA, 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 AMMs

- 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.

- On 5/29/2025, MassDOT Highway Division Environmental Services conducted a northern long-eared bat summer presence/absence survey, in accordance with the 2024 survey guidelines. The survey did confirm the presence of NLEB and/or TCB. If work is proposed by the Contractor past 5/29/2030, additional review is required by the MassDOT Highway Division's Environmental Services Section, and additional review and restrictions may be required by the USFWS.

NORTHERN LONG-EARED BAT AND TRICOLORED BAT PROTECTION
(Continued)

Lighting AMMs

- Direct temporary lighting away from suitable habitat during the active season: **April 15 to October 31**

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 **April 15 to October 31**

- 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. If this restriction needs to be waived at any location(s) the Resident Engineer shall send a locus map of the proposed work to MassDOT Highway Division's Environmental Services Section for review and a determination if the restriction can be waived.

Bridge AMMs

- On 5/29/2025, MassDOT Highway Division Environmental Services, conducted a northern long-eared bat bridge/structure bat assessment, in accordance with the USFWS guidelines. The assessment did not find presence of, or evidence of use by bats, and as stated within the guidelines, the assessment is valid for two years. If bridge work is not complete before 5/29/2027, assessment of the bridge for the presence of, or evidence of use by, bats shall be completed by the MassDOT Wildlife Unit prior to continuing bridge work. The Contractor shall notify the MassDOT Wildlife Unit no later than fourteen (14) days prior to 5/29/2027 to provide adequate time for inspection. If bats are found to be present, or, if there is evidence of bat usage, work at the bridge shall not commence until after the MassDOT Wildlife Unit has completed coordination with the US Fish and Wildlife Service to determine the appropriate follow up or mitigation actions.

PIGEON WASTE

The Contractor shall remove and dispose of the pigeon waste and any other debris accumulated on the steel members and bridge seats in areas where work is being performed. Pigeon waste and debris material contaminants will require special handling and disposal in accordance with all Federal, state, and local requirements. No separate payment will be made for removal and disposal of pigeon waste. Cost shall be incidental to the contract pay Items.

GENERAL REQUIREMENTS FOR DEMOLITION AND WORK INVOLVING PAINTED STEEL

(02/06/2020)

Demolition and work involving painted steel shall conform to the requirements of Subsection 961 of the Standard Specifications.

Work Involving Painted Steel

Hazardous materials shall be removed in the immediate area of any intended welding, heating, saw cutting or burning of steel. Hazardous material removal is required to allow the demolition of structural steel, railings, drainage systems, utility supports, steel lamp posts, etc.

The Contractor shall assume that the coatings on the steel contain lead (Pb), unless otherwise determined by testing. The Contractor shall certify in writing to the Engineer the results of all testing, and shall also certify that any lead (Pb) coated steel removed from the project was not reused or buried, but was sent to a scrap metal recycling facility.

Implement and maintain programs and procedures, which comply with the requirements of this specification and all applicable standards and regulations. Comply with all applicable regulations even if the regulation is not specifically referenced herein. If a state or local regulation is more restrictive than the regulation of this specification, follow the more restrictive requirements.

This requirement is intended only for the demolition and preparation prior to repair and does not include provisions for recoating of steel.

Environmental

All applicable portions of Subsections 961.65 “Worker Protection” and 961.66 “Environmental Protection and Monitoring” shall be followed when performing this work.

During chemical stripping a hand washing facility may be used in lieu of a decontamination/changing facility.

Hazardous material shall be collected during the disassembly and disposed of as outlined in Subsection 961.68 “Handling of Hazardous Waste and Reporting Release Programs”.

The applicable submittals shall be according to Subsection 961.69 “Submittals”.

GENERAL REQUIREMENTS FOR DEMOLITION AND WORK INVOLVING PAINTED STEEL (Continued)

Cleaning/Removal

Cutting Or Burning Of Steel

All surfaces to be welded, heated, saw cut or burned shall be cleaned so as to remove all contaminants and/or hazardous materials, which could be discharged to the environment as a function of the subsequent operations.

Lead paint shall be removed in its entirety in an area prescribed by a 6 inch (15 cm) minimum offset from the required work. The paint removal operation may be dry abrasive blasting, wet abrasive blasting or chemical stripping.

Proper level of containment shall be used when performing this work in accordance with Subsection 961.67 "Containment". Full containment is not required during chemical stripping operation however; the Contractor shall install proper shielding and/or tarpaulins under the chemical stripping operations in order to catch all debris generated during this procedure. A cleaned area must be inspected and approved before the demolition operations are started.

During cleaning operations the Contractor shall be required to furnish and erect temporary floodlights illuminating the steel surface at a minimum of 30-foot candles. This lighting shall be used in areas where there is insufficient lighting for proper cleaning operations and inspection. The Contractor shall supply electrical power.

The Contractor shall provide support for interim and final inspection of the bridge during cleaning operations. This support shall include the necessary traffic controls and safe access to the work.

Mechanical Disassembly Of Steel

All surfaces to be mechanically disassembled by shear cutting or removing bolts or rivets shall not require deleading. When shear cutting or removing bolts or rivets, the Contractor shall not use any method that will cause dust and/or particles to be emitted and/or dispersed into the environment to an extent that would expose the workers above the Action Levels of 30µg/m3.

For purposes of limiting the lead (Pb) dust, the Contractor will be required to dampen the lead paint work areas.

The Contractor shall install a proper shielding and/or tarpaulins under all lead-paint-coated surfaces to be shear cut or bolts or rivets ordered removed in order to catch any loose lead paint chips, dust or particles.

SECTION 722
CONSTRUCTION SCHEDULING
DESCRIPTION

722.20 General

The Contractor's approach to prosecution of the Work shall be disclosed to the Department by submission of a Critical Path Method (CPM) schedule and a cost/resource loaded Construction Schedule as defined by the schedule type set forth below. These requirements are in addition to any requirements imposed in other sections.

This section establishes the requirement for scheduling submissions. There are four schedule types identified as types A, B, C and D.

All schedules shall be prepared and submitted in accordance with this specification and the instructions contained in the Construction Schedule Toolkit located on the MassDOT-Highway Division website at https://www.mass.gov/info-details/massdot-highway-contractors-schedule-toolkit.

Type A –

- Schedule Planning Session
- Baseline CPM Schedule
  - Monthly Update CPM Schedule
  - Short-term Construction Schedule
  - Contract Schedule Update Meeting
  - Cost-loaded & Resource Loaded CPM
  - Resources Graphic Reporting
  - Cash Flow Projections from the CPM
  - Cash Flow Charts
  - Monthly Projected Spending Report (PSR)
  - Contractor-furnished CPM software and computer

Type B –

- Schedule Planning Session
- Baseline CPM Schedule
- Monthly Update CPM Schedule
- Short-term Construction Schedule
- Contract Schedule Update Meeting
- Cost-loaded & Resource Loaded CPM
- Monthly Projected Spending Report (PSR)
- Contractor-furnished CPM software and computer

Type C –

- Schedule Planning Session
- Baseline CPM Schedule
- Monthly Update CPM Schedule
- Short-term Construction Schedule
- Contract Schedule Update Meeting
- Monthly Projected Spending Report (PSR)
- Contractor-furnished CPM software and computer

SECTION 722 (Continued)

Type D -

- Bar chart schedule updated monthly or at the request of the Engineer
- Short-term Construction Schedule
- Monthly Projected Spending Report (PSR)

EQUIPMENT, PERSONNEL

722.40 General

A. **Software Requirements**

The Contractor shall use Primavera P6 computer scheduling software.

In addition to the requirements of Section 740 – Engineer's Field Office and Equipment, the Contractor shall provide to the Department one (1) copy of the scheduling software, one (1) software license and one (1) computer capable of running the scheduling software for the duration of the Contract. This computer and software shall be installed in the Engineer's Field Office. The computer and software shall be maintained and serviced at no additional cost to the Department.

B. Scheduler Requirements

The Scheduler shall be approved by the Engineer.

For Type A, B and C Schedules the name of the Contractor's Project Scheduler together with his/her qualifications shall be submitted to the Department for approval by the Engineer within seven (7) Calendar Days after NTP. The Project Scheduler shall have a minimum of five (5) years of project CPM scheduling experience, three (3) years of which shall be on projects of similar scope and value as the project for which the Project Scheduler is being proposed. References shall be provided from past projects that can attest to the capabilities of the Project Scheduler.

SCHEDULING METHODS

722.60 General

A. **Schedule Planning Session**

The Contractor shall conduct a schedule planning session prior to submission of the Baseline Schedule. This session will be attended by the Department and its consultants. During this session, the Contractor shall present its planned approach to the project including, but not limited to:

1. the Work to be performed by the Contractor and its subcontractors;
2. the planned construction sequence and phasing; planned crew sizes;
3. summary of equipment types, sizes, and numbers to be used for each work activity;
4. all early work related to third party utilities;
5. identification of the most critical submittals and projected submission timelines;
6. estimated durations of major work activities;
7. the anticipated Critical Path of the project and a summary of the activities on that Critical Path;
8. a summary of the most difficult schedule challenges the Contractor is anticipating and how it plans to manage and control those challenges;

SECTION 722 (Continued)

9. a summary of the anticipated quarterly cash flow over the life of the project.

This will be an interactive session and the Contractor shall answer all questions that the Department and its consultants may have. The Contractor shall provide a written summary of the information presented and discussed during the session to the Engineer. The Contractor's Baseline Schedule and accompanying Schedule Narrative shall incorporate the information discussed at this Schedule Planning Session.

B. **Schedule Reviews by the Department**

1. Baseline Schedule Reviews
   The Engineer will respond to the Baseline Schedule Submission within thirty (30) Calendar Days of receipt providing comments, questions and/or disposition that either accepts the schedule or requires revision and resubmittal. Rejected Baseline Schedules shall be resubmitted within fifteen (15) Calendar Days after receipt of the Engineer's comments.
2. Contract Progress Schedule / Monthly Update Reviews / Recovery Schedules
   The Engineer will respond to each submittal within twenty-one (21) Calendar Days. Rejected schedules shall be resubmitted by the Contractor within five (5) Calendar Days after receipt of the Engineer's comments.

The Engineer's review comments shall not be construed as direction to change the Contractor's means and methods. The review and acceptance of the CPM schedule does not relieve the Contractor of the responsibility for accomplishing the work within the contract required completion dates. Omissions and errors in the accepted CPM schedule shall not excuse performance less than that required by the Contract.

722.61 Schedule Content and Preparation Requirements

All schedules shall be prepared and submitted in accordance with the instructions contained in the Construction Schedule Toolkit located on the MassDOT-Highway Division website at:
https://www.mass.gov/info-details/massdot-highway-contractors-schedule-toolkit
and the following:

A. **LOGIC**

The schedules shall divide the Work into activities with appropriate logic ties to show:

1. conformance with the requirements of this Section and Division I, Subsection 8.02 - Schedule of Operations
2. the Contractor's overall approach to the planning, scheduling, and execution of the Work
3. conformance with any additional sequences of Work required by the Contract Documents, including, but not limited to, Subsection 8.03 - Prosecution of Work and Subsection 8.06 – Limitations of Operations.

SECTION 722 (Continued)

B. **ACTIVITIES**

The schedule shall clearly define the progression of the Work from the Notice to Proceed (NTP) to Contractor Field Completion (CFC) by using separate activities, or including attributes within appropriate activities, to address each of the following:

1. Notice to Proceed
2. Work Breakdown Structure
3. The Critical Path is clearly defined and organized.
4. Float shall be clearly identified.
5. Detailed activities to satisfy permit requirements.
6. Subcontractor approvals at fifteen (15) Calendar Days from submittal to response
7. The preparation and submission of shop drawings, procedures, and other required submittals, with a planned duration that is to be demonstrated to the Engineer as reasonable.
8. The review and return of shop drawings, procedures, and other required submittals, approved or with comments, the duration of which shall be thirty (30) Calendar Days, unless otherwise specified or as approved by the Engineer.
9. Procurement of fabricated materials and equipment with long lead times, including time for review and approval of submittals required before procuring and fabricating.
10. Each component of the Work defined by specific activities.
11. Right-of-Way (ROW) takings that have been identified in the Contract.
12. Early Utility Relocation (by others) that has been identified in the Contract.
13. Interfaces with adjacent work, utility companies, other public agencies, sensitive abutters, and/or any other third-party work affecting the Contract.
14. Utility work to be performed in accordance with the Project Utility Coordination (PUC) Form as provided in Section 8.14 - Utilities Coordination, Documentation and Monitoring Responsibilities
15. Access Restraints – restrictions on access to areas of the Work that are defined by the Department in the bid package, in Subsection 8.06 – Limitations of Operations or elsewhere in the Contract
16. Limitations of Work – time of year restrictions and any other limitations identified in the contract
17. Traffic work zone set-up and removal, night work and phasing
18. Material Certifications
19. Milestones listed in Subsection 8.03 - Prosecution of Work or elsewhere in the Contract Documents
20. For Type A and B Contracts only: All items to be paid for, including all Unit Price and Lump Sum pay items, shall be identified by activity. This shall include all non-construction activities such as engineering work; purchase of permanent materials and equipment, purchase of structural steel stock, equipment procurement, equipment delivery to the site or storage location and the representative amount of overhead/indirect costs that was included in the Contractor's Bid Prices.

SECTION 722 (Continued)

21. Contractor's request for validation of FBU (ready to open to traffic)
22. Full Beneficial Use (FBU) Contract Milestone per the following requirements: The majority of contract Work has been completed and the asset(s) has been opened for full multi-modal transportation use, except for limited contract work items that do not materially impair or hinder the intended public use of the transportation facility. All anticipated lane takings have been completed, except for minor, short term work items and as defined in Subsection 8.03 - Prosecution of Work
23. The Department's confirmation of completed work to allow for FBU.
24. Contractor's request for validation of Substantial Completion
25. Department generated punch list of twenty-one (21) Calendar Days
26. Substantial Completion Contract Milestone as defined in the standard specifications.
27. Punch list Completion Period of at least thirty (30) Calendar Days per the requirements of Subsections 5.11 - Final Acceptance, 7.15 - Claims Against Contractors for Payment of Labor, Materials and Other Purposes
28. Contractor confirmation that all punchlist work and documentation has been completed.
29. Physical Completion of the Work Contract Milestone per the requirements of Subsections 5.11 - Final Acceptance and 8.03 - Prosecution of Work
30. Documentation Completion per the requirements of Subsections 5.11 - Final Acceptance and 8.03 - Prosecution of Work
31. Contractor Field Completion Contract Milestone (which can also be considered the completion date) per the following requirements: All physical contract Work is complete including punchlist. The Contractor has fully de-mobilized from field operations and as defined in Subsection 5.11

C. **EARLY AND LATE DATES**

Early Dates shall be based on proceeding with the Work or a designated part of the Work exactly on the date when the corresponding Contract Time commences. Late Dates shall be based on completing the Work or a designated part of the Work exactly on the corresponding Contract Time, even if the Contractor anticipates early completion.

D. **DURATIONS**

Activity durations shall be in Work Days. Planned Original Durations shall be established with consideration of resources and production rates that correspond to the Contractor's Bid Price. Within all of the Department-required schedules, the Contractor shall plan the Work using durations for all physical construction activities of no less than one (1) Work Day and no greater than fourteen (14) Work Days, unless approved by the Engineer as part of the Baseline Schedule Review.

SECTION 722 (Continued)

Should there be an activity with a duration that is determined by the Engineer to be unreasonable, the Contractor will be asked to provide a basis of the duration using bid documents, historic production rates for similar work, or other form of validation that is acceptable to the Engineer. Should the Contractor and the Engineer be unable to agree on reasonable activity durations, the Engineer will, at a minimum, note the disagreement in the Baseline Schedule Review along with a duration the Engineer considers reasonable and the basis for that duration. A schedule that contains a substantial number of activities with durations that are deemed unreasonable by the Engineer will not be accepted.

E. MATERIALS ON HAND

The Contractor shall identify in the Baseline Schedule all items of permanent materials (Materials On Hand) for which the Contractor intends to request payment prior to the incorporation of such items into the Work.

F. ACTIVITY DESCRIPTIONS

The Contractor shall use activity descriptions in all schedules that clearly describe the work to be performed using a combination of words, structure numbers, station numbers, bid item numbers, work breakdown structure (WBS) and/or elevations in a concise and compact label.

G. ACTIVITY IDENTIFICATION NUMBERS

The Contractor shall use the activity identification numbering system specified in the MassDOT Highway Division Contractor Construction Schedule Toolkit.

H. ACTIVITY CODES

The Contractor shall use the activity codes specified in the MassDOT Highway Division Contractor Construction Schedule Toolkit.

I. CALENDARS

Different calendars may be created and assigned to all activities or to individual activities. Calendars define the available hours of work in each Calendar Day, holidays and general or project-specific non-Work Days such as Fish Migration Periods, time-of-year (TOY) restrictions and/or area roadway restrictions. All calendars shall extend two years beyond the current project completion date.

Project Special Provisions identify specific calendar restrictions some examples of special calendars include, but are not limited to:

- Winter Shutdown Period, specific work is required by separate special provision to be performed during the winter. See Special Provision 8.03 (if applicable)
- Peak traffic hours on heavily traveled roadways. This shall be from 6:30 am to 9:30 am and from 3:30 pm to 7:00 pm, unless specified differently elsewhere in the Contract.
- Special requirements by sensitive abutters, railroads, utilities and/or other state agencies as defined in the Contract.
- Planting seasons for trees, shrubs and grasses and wetlands mitigation work.

SECTION 722 (Continued)

- Cape Cod and the Islands Summer Roadway Work Restrictions: A general restriction against highway and bridge construction is enforced between Memorial Day and Labor Day, unless otherwise directed by the Engineer. Cape Ann Summer Roadway Work Restrictions: While there are no general restrictions for Cape Ann as there are for Cape Cod and the Islands, project-specific restrictions may be enforced.
- Turtle and/or Fish Migration Periods and/or other in-water work restrictions: Refer to the Project Special Provisions for specific restrictions.
- Working over Waterways Restricted Periods.
- Night-time paving and striping operations, traffic, and temperature restrictions.
- Utility Restrictions shall be as specified within the Contract.

J. **FLOAT**

For the calculation of float in the CPM schedule, the setting for *Retained Logic* is required for all schedule submissions, starting with the Baseline Schedule Submission. Should the Contractor have a reason to propose that an alternative calculation setting such as *Progress Override* be used, the Contractor shall obtain the Engineer's approval prior to modifying to this setting.

K. **COST AND RESOURCE LOADING (Types A and B only)**

For all Type A and B Schedules, the Contractor shall provide a cost and resource-loaded schedule with an accurate allocation of the costs and resources necessary to complete the Work. The costs and resources shall be assigned to all schedule activities in order to enable the Contractor to efficiently execute the Contract requirements and the Engineer to validate the original plan, monitor progress, provide cash flow projections, and analyze delays.

1. Each schedule activity shall have an assigned cost that accurately represents the value of the Work. Each schedule activity shall have its resources assigned to it by craft and the anticipated hours to accomplish the work. Each schedule activity's equipment resources shall be assigned to it by equipment type and hours operated. Front-loading or other unbalancing of the cost distribution will not be permitted.
2. The sum of the cost of all schedule activities shall be equal to the Contractor's Bid Price.
3. Indicating the labor hours per individual, per day, by craft and equipment hours/day will be acceptable.
4. The Engineer reserves the right to use the cost-loading as a means to resolve changes, disputes, time entitlement evaluations, increases or decreases in the scope of Work, unit price renegotiations and/or claims.
5. For all Type A and B Schedules, all subnets, fragnets, Proposal Schedules, and Recovery Schedules shall be cost and resource- loaded to help to quickly validate and monitor the duration of the Work to be performed.
6. For Type A Schedules, cost-loading of the schedule will also be used for cash flow projection purposes.
7. The cost-loading of each activity shall indicate the portion of the cost for that activity that is applicable to a specific bid item (cost account.) The total cost for each cost account must equal the bid item price.

SECTION 722 (Continued)

L. **NOT TO BE USED IN THE CONTRACTOR'S CPM SCHEDULE**

1. Milestones or constraint dates not specified in the Contract.
2. Scheduled work not required for the accomplishment of a Contract Milestone
3. Use of activity durations, logic ties and/or sequences deemed unreasonable by the Engineer.
4. Delayed starts of follow-on trades.
5. Float suppression techniques.
6. Leads such as leads, lags, SS, SF, & FF relationships without the expressed permission of the Department.

722.62 Submittal Requirements

All schedules shall be prepared and submitted in accordance with the requirements listed below.

Each monthly Contract Progress Schedule submittal shall be uniquely identified.

Each Submission shall, at a minimum, include the following:

a. Narrative
b. Schedule submittals shall be signed by the Scheduler
c. Schedule Printout - All Activities
d. Schedule Printout - Critical Path Layout
e. Schedule Printout - Remaining Work
f. Schedule Printout - Top 3 Float Path
g. Work Breakdown Structure (WBS) Summary
h. Project Spending Report (PSR) in Portable Document Format (.PDF)
i. Project Spending Report (PSR) in Microsoft Excel spreadsheet (.XLS)
j. Oracle Primavera P6 Schedule File (.XER)

All digital file submittals will be labeled with the following information.

- Contract Number
- Project Number
- Project locations (i.e., town(s))
- Brief description
- Submittal description (i.e., UP07)
- Data Date (MM-DD-YY)
- File Description (i.e., Critical Path)

Example: C110464 (P606309) - Orange Route 2 over 202 – UP23 (07-15-22) - Critical Path

A. **Narratives**

A written narrative shall be submitted with every schedule submittal. The narrative shall:

1. itemize and describe the flow of work for all activities on the Critical Path in a format that includes any changes made to the schedule since the previous Contract Progress Schedule / Monthly Update or the Baseline Schedule, whichever is most recent.
2. provide a description of any specification requirements that are not being followed. Identify those that are improvements and those that are not considered to be meeting the requirements.

SECTION 722 (Continued)

3. provide all references to any Notice of Delay that has been issued, within the time period of the Contract Progress Schedule Update, by letter to the Engineer. Note that any Notice of Delay that is not issued by letter will not be recognized by the Engineer. See Subsection 722.64.A – Notice of Delay.
4. provide a description of each third-party utility's planned vs. actual progress and note any that are trending late or are late per the durations and commitments as provided in the PUC Form; provide a description of the five (5) most important responses needed from the Department and the need date for the responses in order to maintain the current Schedule of Record.
5. provide a description of all critical issues that are not within the control of the Contractor or the Department (third party) and any impact they had or may have on the Critical Path.
6. provide a description of any possible considerations to improve the probability of completing the project early or on time.
7. compare Early and Late Dates for activities on the Critical Path and describe reasons for changes in the top three (3) most critical paths.
8. describe the Contractor's plan, approach, methodologies, and resources to be employed for completing the various operations and elements of the Work for the top three (3) most critical paths. For update schedules, describe and propose changes to those plans and verify that a Proposal Schedule is not required.
9. describe, in general, the need for shifts that are not 5 days/week, 8 hours/day, the holidays that are inserted into each calendar and a tabulation of each calendar that has been used in the schedule.
10. describe any out-of-sequence logic and provide an explanation of why each out-of-sequence activity does not require a correction, if one has not been provided, and an adequate demonstration that these changes represent the basis of how these activities will be built, including considerations for resources, dependencies, and previously approved production rates.
11. identify any possible duration increases resulting from actual or anticipated unit price item quantity overruns as compared to the baseline duration, with a corresponding suggestion to mitigate any possible delays to the Critical Path. If the delay is anticipated to impact the Critical Path, refer to Subsections 4.06 – Increased or Decreased Contract Quantities and 8.10 – Determination and Extension of Contract Time for Completion and submit a letter to the Engineer notifying of a potential delay.
12. include a schedule log consisting of the name of the schedule, the data date and the date submitted.
13. include and describe any notifications, communications and coordination meetings with third-parties such as utility companies that occurred from the last update including personnel names, job titles and contact information, date of meeting(s)/correspondence(s), topics discussed, and reasons the third party provided for deviations from the PUC form.

SECTION 722 (Continued)

B. **CPM Bar Charts**

One (1) timescaled bar chart containing all activities shall be prepared and submitted using a scale that yields readable plots and that meets the requirements of Subsection 722.61 – Schedule Content and Preparation Requirements Activities shall be linked by logic ties and shown on their Early Dates. Critical Paths shall be highlighted, and Total Float shall be shown for all activities.

A second timescaled bar chart shall also be prepared containing only the Critical Path or, if the Critical Path is not the longest path, the Longest Path using a scale that yields readable plots and that meets the requirements of Subsection 722.61 – Schedule Content and Preparation Requirements. Activities shall be linked by logic ties and shown on their Early Dates. Total Float shall be shown for all activities.

C. Detailed Activity Schedule Comparisons

A Detailed Activity Schedule Comparison (DASC) is a simple reporting tool in the format of a graphical report that will provide Resident Engineers with immediate, timely and up-to-date information. The DASC consists of an updated bar chart that overlays the current time period's bar chart onto the previous time period's bar chart for an easily read comparison of progress during the present and previous reporting periods.

D. Activity Cost Report and Monthly Cash Flow Projections (Type A only)

With each Contractor Quantity Estimate (CQE), the Contractor shall submit an Activity Cost Report and Cash Flow Projection that includes all activities grouped by Contract Bid Item.

The Activity Cost Report shall be generated from the Schedule of Record and shall be the basis of the Monthly Cash Flow Projection. Within each contract Bid Item, activities shall be sequenced by ascending activity identification number and shall show:

1. activity ID and description,
2. forecast start and finish dates for each activity and,
3. when submitted as a revised schedule, actual start, and finish dates for each completed activity.
4. any variance to the estimated contract quantity shall be shown.

E. Resource Graphs (Type A only)

Monthly and cumulative resource graphs for the remaining Contract period using the Early Dates and Late Dates in the Contract Progress Schedule shall be included as part of each schedule submittal.

SECTION 722 (Continued)

F. Projected Spending Reports

A Projected Spending Report (PSR) shall be prepared and submitted monthly. The PSR shall indicate the monthly spending (cash flow) projection for each month from NTP to Contractor Field Completion (CFC). Each month's actual spending shall be calculated using all CQEs paid during that month. The Projected Spending Report (PSR) shall be depicted in a tabular format and provided in both an .XLS and .PDF.

722.63. Progress Schedule Requirements

A. Baseline Schedule

The Baseline Schedule shall be due thirty (30) Calendar Days after Notice to Proceed (NTP). The Baseline Schedule shall only reflect the Work awarded to the Contractor and shall not include any additional work involving Extra Work Orders or any other type of alleged delay. The Baseline Schedule shall be prepared and submitted in accordance with Subsections 722.61 - Schedule Content and Preparation Requirements and 722.62 - Submittal Requirements. Once the Baseline Schedule has been accepted by the Engineer, with or without comments, it shall represent the as-planned schedule for the Work and become the Contract Progress Schedule of Record until such time as the schedule is updated or revised under Subsections 722.63.C - Contract Progress Schedules / Monthly Updates, 722.64.C - Recovery Schedules and 722.64.D - Proposal Schedules.

The Cost and Resource-Loading information (Types A and B only) shall be provided by the Contractor within forty-five (45) Calendar Days after NTP.

The Engineer's review comments on the Baseline Schedule and the Contractor's responses to them will be maintained for the duration of the Contract and will be used by the Engineer to monitor the Contractor's work progress by comparing it to the Contract Progress Schedule / Monthly Update.

B. Interim Progress-Only Schedule Submissions

The first monthly update of the Contract Progress Schedule/Monthly Update is due within seventy (70) Calendar Days after Notice to Proceed (NTP.) The Baseline Schedule review period ends at sixty (60) Calendar Days after NTP, see Subsection 722.60.B - Schedule Reviews by the Department. If the Baseline Schedule has not been accepted within sixty (60) Calendar Days after NTP, an Interim Progress-Only Schedule shall be due within seventy (70) Calendar Days after NTP. The purpose of the Interim Progress-Only Schedule is to document the actual progress of all activities, including non-construction activities, from NTP until the Baseline Schedule is accepted.

SECTION 722 (Continued)

C. Contract Progress Schedules / Monthly Updates

The first Contract Progress Schedule shall be submitted by the Contractor no later than seventy (70) Calendar Days after NTP. The data date for this first Progress Schedule shall be two months (approximately sixty (60) Calendar Days) after NTP. Subsequent Progress Schedules shall be submitted monthly.

Each Contract Progress Schedule shall reflect progress up to the data date. Updated progress shall be limited to asbuilt sequencing and asbuilt dates for completed and inprogress activities. Asbuilt data shall include actual start dates, remaining Work Days and actual finish dates for each activity, but shall not change any activity descriptions, the Original Durations, or the Original Resources (as planned at the time of bid), without the acceptance of the Engineer. If any activities have been completed out-of-sequence, the Contractor shall propose new logic ties for affected in-progress and future activities that accurately reflect the previously approved sequencing. Alternatively, the Contractor may submit to the Engineer for approval an explanation of why an out-of-sequence activity does not require a correction and an adequate demonstration that the changes accurately represent how the activities will be built, including considerations for resources, dependencies, and previously approved production rates. Once approved by the Engineer, the Contractor may incorporate the changes in the next Contract Progress Schedule/Monthly Update with the affected activities clearly identified and explained in the Schedule Narrative.

No revisions to logic ties, sequence, description, or duration of future activities; or planned resource costs shall be made without prior approval by the Engineer.

Any proposed logic changes for in-progress or future activities shall be submitted to the Engineer for approval before being incorporated into a Contract Progress Schedule. The logic changes must be submitted using a Proposal Schedule or a schedule fragnet submission. Once approved by the Engineer, the Contractor may incorporate the logic in the next Contract Progress Schedule/Monthly Update with the affected activities clearly identified and explained in the Schedule Narrative.

For any proposed changes to the original sequence, description or duration of future activities, the Contractor shall submit to the Engineer for approval an explanation of how the proposed description or duration change reflects how the activity will be progressed, including considerations for resources and previously approved production rates. Any description or duration change that does not accurately reflect how the activity will be progressed will not be approved by the Engineer. Once approved by the Engineer, the Contractor may incorporate the changes in the next Contract Progress Schedule/Monthly Update with the affected activities clearly identified and explained in the Schedule Narrative.

Contract Progress Schedules that extend performance beyond the Contract Time or beyond any Contract Milestone shall not be approved by the Engineer. The Contractor shall submit a Recovery Schedule, or a Time Entitlement Analysis, if any Contract Progress Schedule/Monthly Update indicates a failure to meet the Contract Dates.

SECTION 722 (Continued)

D. Short-Term Construction Schedule

The Contractor shall provide a Short-Term Construction Schedule that details daily work activities, including any multiple shift work that the Contractor intends to conduct, in a spreadsheet format. The daily activities shall directly correspond to the Contract Progress Schedule activities, with a matching reference to the activity identification number in the Contract Progress Schedule and may be at a greater level of detail. The Short-Term Construction Schedule shall be submitted every two weeks. It shall display all work for a thirty-five (35) Calendar Day period consisting of completed work for the two (2) week period prior and all planned work for the following three (3) week period. The initial submission shall be provided no later than thirty (30) Calendar Days after NTP or as required by the Engineer.

The Contractor shall be prepared to discuss the Short-Term Construction Schedule, in detail, with the Engineer in order to coordinate field inspection staff requirements, the schedule of work affecting abutters and any corresponding work with affected utilities. Short-Term Construction Schedules shall be prepared and submitted in accordance with Subsections 722.61 - Schedule Content and Preparation Requirements and 722.62 - Submittal Requirements.

722.64 Impacted Schedule Requirements

A. Notice of Delay

The Contractor shall notify the Engineer in writing, with copies to the District and State Construction Engineers, within fifteen (15) of the start of any delays to the Critical Path that are caused by actions or inactions that were not within the control of the Contractor. Delay notifications that are not provided in a letter to the Engineer, such as a delay notification in the schedule narrative, will not be recognized as contractual notice in the determination of any Time Extension related to the impacts to the work associated with this specific alleged delay. Should such a delay continue for more than one (1) week, the Contractor shall note it in the Schedule Narrative until the delay is no longer impacting the Critical Path for the completion of the Contract Milestones. The Engineer will evaluate the alleged delay and its impact and will respond to the Contractor within ten (10) Calendar Days after receipt of a notice of delay.

B. Time Entitlement Analysis

A Time Entitlement Analysis (TEA) shall consist of a descriptive narrative, prepared in accordance with Subsection 722.62.A - Narratives, and an as-built CPM schedule, which may be in the form of a schedule fragnet that has been developed from the project's Contract Progress Schedule of Record, and illustrates the impact of a delay to the Critical Path, Contract Milestones and/or Contract Completion Date as required in Subsection 8.10 - Determination and Extension of Contract Time for Completion. TEAs shall also be used to determine the schedule impact of proposed Extra Work Orders (EWO) as also required in Subsection 8.10.

TEAs shall be prepared and submitted in accordance with the requirements of Subsections 722.61 - Schedule Content and Preparation Requirements and 722.62 - Submittal Requirements and shall be based on the Contract Progress Schedule of Record applicable at the start of the delay or impact from an EWO. A TEA fragnet must start with a specific new activity describing the work contained in either a Notice of Delay previously submitted to the Department per Subsection 722.64.A - Notice of Delay or an EWO.

SECTION 722 (Continued)

TEAs shall be submitted:

1. as part of any Extra Work Order that may impact Contract Time,
2. with a request for a Time Extension,
3. within fifteen (15) Calendar Days after a request for a TEA by the Engineer for any other reason.

A TEA shall be submitted to the Engineer before any Time Extension is granted to the Contractor. Time Extensions will not be granted unless the TEA accurately reflects an evaluation of all past delays and the actual events that occurred that impacted the Critical Path. The TEA must also demonstrate a plan for the efficient completion of all of the remaining work through an optimized CPM Schedule. The analysis shall include all delays, including Contractor-caused delays, and shall be subdivided into timeframes and causes of delays.

TEAs shall incorporate any proposed activities, logic ties, resource considerations, and activity costs required to demonstrate the schedule impacts most efficiently in addition to detailing all impacts to existing activities, logic ties, the Critical Path, Contract Milestones, and the Contract Completion Date. In addition, TEAs shall accurately reflect any changes made to activities, logic ties, restraints, and activity costs, necessitated by an Extra Work Order or other schedule impact, for the completion of the remaining work. The Contractor shall provide TEAs that demonstrate that all delays have been mitigated to the fullest extent possible without requiring an Equitable Adjustment to the original bid basis.

All TEAs shall clearly indicate any overtime hours, additional shifts and the resources that are proposed to be incorporated in the schedule. The Engineer shall have final discretion over the use of overtime hours and additional shifts. The Engineer shall have the right to require that overtime hours and/or additional shifts be used to minimize the duration of Time Extensions if it is determined to be in the best interest of the Department to do so.

When accepted, the changes included in a TEA shall be incorporated into the next Contract Progress Schedule per the requirements of Subsection 722.63.C - Contract Progress Schedules / Monthly Updates. During the review of any TEA, all Contract Progress Schedules shall continue to be submitted as required.

The Engineer may request that the Contractor prepare a Proposal Schedule or a Recovery Schedule to further mitigate any delays that are shown in the accepted TEA or Contract Progress Schedule.

C. Recovery Schedules

The Contractor shall promptly report to the Engineer all schedule delays during the prosecution of the Work. Contract Progress Schedules that predict performance extended beyond the Contract Time or beyond any Contract Milestone shall not be approved as the schedule of record. This requirement is critical to the Department's ability to make informed decisions regarding Contract Time and costs.

The Contractor shall submit a Recovery Schedule within fifteen (15) Calendar Days of a Contract Progress Schedule submission that shows failure to meet the Contract Dates unless a recovery schedule is waived by the Department. Waiving the recovery schedule does not relieve the contractor of the responsibility for the delay. The Department may revoke the waiver of a Recovery Schedule, at which time a Recovery Schedule shall be submitted within fifteen (15) Calendar Days of the Contractor being notified.

Changes represented in accepted Recovery Schedules shall be incorporated into the next Contract Progress Schedule.

SECTION 722 (Continued)

D. Proposal Schedules

A Proposal Schedule is an alternative schedule used to evaluate proposed changes to the Contract scope or significant alternatives to previously approved approaches to complete the Work, which may include changes to activity durations, logic, and sequence. For Types A and B Schedules, the Proposal Schedule shall be cost and resource loaded.

A Proposal Schedule may be requested by the Department at any time or may be offered by the Contractor. The Engineer may request that the Contractor prepare a Proposal Schedule to further mitigate any delays that are shown in an accepted TEA or Contract Progress Schedule.

The Contractor shall submit the Proposal Schedule within thirty (30) Calendar Days of a request from the Department.

The Proposal Schedule shall not be considered a Schedule of Record until the logic, durations, narrative, and basis of the Proposal Schedule have been accepted by the Engineer. If the Proposal Schedule took the form of a fragnet, it must be incorporated into the Contract Progress Schedule of Record showing the current progress of all other activities and the impacts/results of the changes made by the Proposal Schedule before the Proposal Schedule is accepted by the Department.

Proposal Schedules shall clearly indicate any proposed acceleration including overtime hours, additional shifts, and the resources that are proposed to be incorporated in the schedule. The Engineer shall have final discretion over the use of overtime hours and additional shifts. Proposal Schedules that contain a cost element shall be submitted with a separate Cost Proposal.

Changes represented in the accepted Proposal Schedules shall be incorporated into the next Contract Progress Schedule. During the review of any Proposal Schedule, all Contract Progress Schedules shall continue to be required every month.

E. Disputes

All schedules shall be submitted, reviewed, dispositioned, and accepted in the timely manner specified herein so as to provide the greatest possible benefit to the execution of this Contract.

The Contractor may dispute a decision by the Engineer by filing a claim notice within seven (7) days after the Contractor's request for additional time has been denied or if the Contractor does not accept the number of days granted in a time extension. The Contractor's claim notice shall include a revised time entitlement analysis that sufficiently explains the basis of the time-related claim. Failure to submit the required time entitlement analysis with the claim notice shall result in denial of the Contractor's claim. A determination on the Contractor’s claim shall be in accordance with Subsection 7.16 Claims of Contractor for Compensation. Pending resolution of any dispute, the last schedule accepted by the Engineer will remain the Contract Schedule of Record.

SECTION 722 (Continued)

722.65 Schedule Type D Requirements

This section is to detail the requirements for Type D Schedules and is separate from the requirements listed above. These schedules are intended for a project in which a more formal schedule would not be practical.

Schedules for Type D projects shall be submitted for each work assignment. The Schedule Type D shall be submitted electronically in .XLS and .PDF format and meet the following requirements.

The schedule requirements for work assignments that are anticipated to last three weeks or less shall conform to the requirements for Short-term Construction Schedules below.

Work assignments that are anticipated to last longer than three weeks shall submit a bar chart baseline and provided update schedules upon request of the engineer as required under Bar Chart Schedule below in addition to meeting the Short-term Construction schedule requirements.

A. **Bar Chart Schedule**

A Bar Chart that shall include the following:

- Work Assignment start date.
- Activities to identify.
  - Major work operations broken down to be no longer than 14 days.
  - Procurement of fabricated materials and equipment with long lead times, including time for review and approval of submittals required before procuring and fabricating.
  - The preparation and submission of shop drawings, procedures, and other required submittals, with a planned duration that is to be demonstrated to the Engineer as reasonable.
  - The review and return of shop drawings, procedures, and other required submittals, approved or with comments, the duration of which shall be shown as thirty (30) Calendar Days,
  - Detailed activities to satisfy permit requirements.
  - Subcontractor approvals at fifteen (15) Calendar Days from submittal to response
  - Project Close out activities including a 21-calendar day creation of a punchlist activity and 30 calendar day minimum completion of punchlist activity.
- Interfaces with adjacent work, utility companies, other public agencies, sensitive abutters, and/or any other third-party work affecting the Contract.
- Access Restraints – restrictions on access to areas of the Work
- Traffic work zone set-up and removal, night work and phasing
- Contract Milestones including Full beneficial Use, Substantial Completion and Contractor Field Completion

The Bar Char Schedule shall be provided at the beginning of the project and updated with each work order created for the project.

SECTION 722 (Continued)

B. **Short-Term Construction Schedule**

The Contractor shall provide a Short-Term Construction Schedule that details daily work activities, including any multiple shift work that the Contractor intends to conduct, in a spreadsheet format. The daily activities shall directly correspond to the Contract Progress Schedule activities, with a matching reference to the activity identification number in the Contract Progress Schedule and may be at a greater level of detail. See schedule toolkit for suggested format.

The Short-Term Construction Schedule shall be submitted every two weeks. It shall display all work for a thirty-five (35) Calendar Day period consisting of completed work on the assignment for the two week period prior and all planned work for the following three week period. The initial submission shall be provided no later than thirty (30) Calendar Days after NTP or as required by the Engineer.

The Contractor shall be prepared to discuss the Short-Term Construction Schedule, in detail, with the Engineer in order to coordinate field inspection staff requirements, the schedule of work affecting abutters and any corresponding work with affected utilities.

C. **Project Spending Report (PSR)**

A Projected Spending Report (PSR) shall be prepared and submitted monthly. The PSR shall be for all active work assignments, broken down by work assignment. The PSR shall indicate the monthly spending (cash flow) projection for each month from NTP to Contractor Field Completion (CFC). Each month's actual spending shall be calculated using all CQEs paid during that month. The Projected Spending Report (PSR) shall be depicted in a tabular format and provided in both an .XLS and .PDF

SECTION 722 (Continued)

COMPENSATION

722.80 Method of Measurement

Schedule of Operations (Type A, B and C)

The project bid documents specify the fixed-price amounts to be paid to the Contractor for the Project Schedule requirements contained herein. Each bidder shall include this fixed price bid item amounts in their bid. Failure to do so may be grounds for the rejection of the bid.

This fixed price amount is for payment purposes only and is separate from what the Department considers to be the Contractor's General Condition costs. If the Contractor deems it necessary to include additional costs to provide all of the requirements of this section, these additional costs shall be included in the Contractor's overall bid price.

All required schedule-related work, including, but not limited to computers, computer software, the planning and coordination with utilities, training, schedule preparation and schedule submittals will be paid for under the fixed price amount.

Twenty percent (20%) of this pay item will be paid upon the Engineer's acceptance of the Contractor's Baseline Schedule, prepared and submitted in accordance with Subsection 722.63.A.

The remaining eighty percent (80%) of this pay item will be paid in equal monthly installments distributed across the Contract Duration from Notice to Proceed (NTP) to Contractor Field Completion (CFC), less the 2 months required for the submittal and review of the Baseline Schedule in accordance with the following formula:

$$\text{Monthly Payment} = \frac{\text{Remaining Fixed Price amount (80\% of the Item Cost.)}}{\text{Contract Duration in whole months} - 2 \text{ months}}$$

The Schedule of Operations pay item will be adjusted to pay for only the actual quantity of schedules that have been submitted in accordance with this section.

Should there be a Time Extension granted to the Contractor, the Engineer may provide an Equitable Adjustment for additional Contract Progress Schedule Updates at intervals directed by the Engineer. The monthly payment will be the basis for this Equitable Adjustment.

Schedule of Operations (Type D)

For projects assigned with Type D schedule requirements, all scheduling work shall be considered incidental to the project with no separate payment under this section.

SECTION 722 (Continued)

722.81 Basis of Payment

The timely and accurate submission of the Baseline Schedule is critical to the Contract and the Department's ability to make informed decisions. Only payments under Item 740 - Engineer's Field Office and Item 748 – Mobilization will be made until the Baseline Schedule is accepted by the Engineer.

All required schedule-related work, including, but not limited to computers, computer software, the planning and coordination with utilities, training, schedule preparation and schedule submittals (including monthly progress schedules, short-term schedules, project spending reports, TEAs, recovery schedules or impacted schedules) shall be included in this work.

No payment for any other pay item will be processed beyond seventy-five (75) Calendar Days from Notice to Proceed (NTP) until the Baseline Schedule is accepted by the Engineer. Until the Engineer's acceptance of the Baseline Schedule, the combined total of all payments made to the Contractor will be limited to an amount no greater than the total price for Item 748 - Mobilization or 3% of the contract price, whichever is less.

All Contract Progress Schedule Updates submitted later than ten (10) Calendar Days after the CQE (Contract Quantity Estimate) completion date, or greater than forty (40) Calendar Days from the Data Date of the previous submission, will be deemed to be no longer useful and will not qualify for payment. The late submission of Impacted schedules, including TEAs, recovery schedules and proposal schedules will result in the forfeiture of the monthly payment for the month in which they were due and subsequent months until the submission is made. Late submission of missed submittals will not result in recovery of the previously forfeited portion of the Schedule of Operations Fixed Price Payment Item.

Failure to submit schedules as and when required may result in the forfeiture of that portion of the Schedule of Operations Fixed Price Payment and/or the withholding of the full or partial CQE payments by the Engineer.

Failure to submit schedules that are acceptable to the Engineer may result in the forfeiture of that portion of the Schedule of Operations Fixed Price Payment and/or the withholding of the full or partial CQE payments by the Engineer.

The Schedule of Operations pay item will be adjusted to pay for only the actual quantity of schedules that have been submitted in accordance with this section.

The Contractor's failure or refusal to comply with the requirements of this Section shall be reasonable evidence that the Contractor is not prosecuting the Work with due diligence and may result in the Engineer withholding of full or partial payments of all work performed.

722.82 Payment Items

722.1	SCHEDULE OF OPERATIONS (TYPE A) - FIXED PRICE $_____	LUMP SUM
722.2	SCHEDULE OF OPERATIONS (TYPE B) - FIXED PRICE $_____	LUMP SUM
722.3	SCHEDULE OF OPERATIONS (TYPE C) - FIXED PRICE $_____	LUMP SUM

ITEM 102.01 SELECTIVE CLEARING AND GRUBBING LUMP SUM

The Work under this Item shall conform to the relevant provisions of Subsection 101 of the Standard Specifications and the following:

CONSTRUCTION METHODS

The work shall consist of limited clearing, grubbing, and thinning of vegetation such as small trees, shrubs, and limbs as may be necessary to complete the work and as directed by the Engineer. The Contractor shall remove all required vegetation, plant growth, roots, and any dead or dying plant material including previously fallen trees, branches, and other debris within the right of way, extended over the right of way or interfering with the performance of work under this contract.

Clearing will include removing trees required to provide the clearance required for relocated utility lines. This will include trees within 15' of the centers of the proposed pole line.

The Engineer may direct that specific stumps remain to avoid destabilization of the slope adjacent to the brook.

BASIS OF PAYMENT

Item 102.01 will be paid at the contract LUMP SUM price, which price shall be full compensation for any labor, tools, equipment, materials, disposal, and all incidental costs required to complete the work.

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.

ITEM 102.511 (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, 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 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 107.855 PRESSURE INJECTION OF CRACKS FOOT

The work under this Item shall conform to the relevant provisions of Subsection 901 of the Standard Specifications and the following:

The work involves the repair of cracks, as may be required, in the existing concrete substructure at locations designated by the Engineer.

The Engineer shall verify in the field which cracks shall be repaired by the pressure injection. The Contractor shall provide the Engineer clear access in order to facilitate the inspection.

The anticipated locations for this type of repair are the portions of the existing abutment and wingwalls that are to remain. Cracks designated for repair by pressure injection shall be bonded by penetration with an epoxy adhesive in accordance with the epoxy manufacturer's recommendations and the following:

The Contractor shall submit for review and approval, all the manufacturer's literature completely describing products. The materials shall be delivered clearly marked with legible and intact labels containing the manufacturer's name, brand name and identification of the contents of containers. The materials shall be stored in areas where temperatures conform to the manufacturer's recommendations and instructions. Only products listed on the MassDOT Research and Materials Section's Qualified Construction Materials List may be used.

The Contractor shall comply with the manufacturer's instructions and recommendations regarding safety, mixing, surface preparation, application, etc. The surrounding work, vehicles, planting materials and Items of similar nature, shall be protected from damage by epoxy injection materials and operations.

The Work under this Item shall not be performed when the ambient or concrete temperature is expected to fall below 50° F during the work or for 24 hours following the completion of the work.

The pressure injection of crack products and manufacturers shall be listed on the MassDOT Qualified Construction Materials List for the pressure injection of cracks application.

ITEM 107.855 (Continued)

EQUIPMENT FOR METERING, MIXING, AND INJECTING

A. Type: The equipment used to meter and mix the two injection adhesive components and inject the mixed adhesive into the crack shall be portable, positive displacement type pumps with interlock to provide positive ratio control of exact proportions of the two components at the nozzle. The pumps shall be electric or air-powered and shall provide in-line mixing and metering system and shall contain drain-back plugs.

B. Discharge Pressure: The injection equipment shall have the capability of discharging the mixed adhesive at pressures up to 200 psi and maintaining that pressure.

C. Ratio Tolerance: The equipment shall have the capability of maintaining the mix ratio for the injection adhesive prescribed by the manufacturer of the adhesive within a tolerance of plus or minus five percent by volume at any discharge pressure up to 200 psi.

D. The Contractor shall verify that cracks and adjacent surfaces are dry or damp, and free of standing water, dirt, dust, paint, grease, oil, rust, efflorescence, or other foreign matter which would interfere with adhesion of epoxy materials or would otherwise be detrimental to the application of epoxy injection surface seal system.

APPLICATION

A. Application of Surface Seal
   1. Seal cracks to be injected with surface sealer material in such a manner that minimal defacing or discoloration of concrete surfaces shall result.
   2. Provide entry ports in surface seals spaced at intervals not less than the concrete thickness at that location but provide additional entry ports spaced as required to accomplish travel of injected material between ports and fill cracks completely with epoxy.

B. Epoxy Injection
   1. Inject epoxy under constant pressure in accordance with procedures as recommended by the manufacturer or as required to obtain 100 percent penetration of cracks without inclusion of air pockets or voids in epoxy and as required to achieve structural bonding.
   2. Begin injection of epoxy at lower entry port and continue until there is an appearance of epoxy at entry port directly adjacent to or above entry port being pumped, thus indicating epoxy travel.
   3. When epoxy travel is indicated, discontinue injection on entry port being pumped, seal it, and transfer epoxy injection to next adjacent port.
   4. Perform epoxy injection continuously until cracks are completely filled.
   5. Finishing Requirements:
      (a) When cracks are completely filled, cure epoxy for sufficient time to allow removal of surface seal without any draining or runback of epoxy material from cracks.

      (b) Remove surface seals and clean concrete surfaces as required to produce a workmanlike finish.

ITEM 107.855 (Continued)

6. Special Requirements:
   (a) If Penetration of Cracks is Impossible: Immediately notify the Engineer.
   (b) Modifications to Epoxy Injection Installation

C. Filling of Field Control Testing Core Holes

This procedure consists of using two-component bonding agent applied to surfaces of cored holes followed by application of grout mix placed by hand trowel, thoroughly rodded and tamped in place, and finished to match finish and texture of existing concrete to the satisfaction of the Engineer. Submit materials and procedures required to the Engineer for acceptance before proceeding with the work.

METHOD OF MEASUREMENT

Item 107.855, Pressure Injection of Cracks will be measured for payment per FOOT of crack repairs complete in place.

BASIS OF PAYMENT

Item 107.855, Pressure Injection of Cracks will be paid at the contract unit price per FOOT which price shall be full compensation for all labor, equipment, materials, submittals, testing and incidental costs required to complete the work.

ITEM 114.11 DEMOLITION OF SUPERSTRUCTURE OF BRIDGE NO. S-10-024 (02H) LUMP SUM

The work under this Item shall conform to the relevant provisions of Subsection 112 of the Standard Specifications and the following:

The work shall consist of the removal and satisfactory disposal of the steel beam superstructure; including concrete safety curbs, the existing bridge reinforced concrete deck, the existing bridge steel diaphragms and stringers, bridge railing and posts, bearings, and any miscellaneous debris encountered with the demolition. The use of explosives for demolition purposes is strictly prohibited.

The Contractor shall take precautions to prevent debris caused from the demolition of the superstructure from entering the waterway. No foreign material or debris resulting from the Contractor's operations shall be permitted to enter or remain in the waterway. The Contractor shall be required to remove any debris which is generated by demolition from the site immediately and to restore portions of the site affected by the operation to their original undisturbed condition or better. Removal of debris generated by demolition will be performed at the Contractor's own expense.

All materials removed in this demolition shall become the property of the Contractor and shall be recycled, reused, or disposed of in accordance with all applicable Local, State, and Federal requirements. The Contractor shall be responsible for protecting the existing utilities that pass over, under, near, and/or are attached to the bridge from any damage.

The Contractor shall submit their proposed method of demolition including equipment, tools, devices, protection methods, etc. to the Engineer for approval. The demolition procedure and any necessary calculations and drawings shall bear the stamp of a Professional Engineer Registered in the Commonwealth of Massachusetts, certifying that all existing structural members are suitably braced and supported throughout the demolition process. Work shall not commence until the Engineer has given written approval of the method of demolition.

The Contractor shall also submit the crane/equipment capacity, location, radii of movement, etc. to the Engineer for approval for all stages of demolition. The submittal will specify that the requirements for equipment and all procedures utilized will be in conformance with the intent of Subsection 960.61, Steel Erection, of the Standard Specifications. The submittal shall include drawings and calculations of all loads and selection of crane/equipment and lifting hardware and shall be stamped by a Professional Engineer Registered in the Commonwealth of Massachusetts. If the Contractor intends to place cranes/excavators behind the existing abutments, stability calculations shall be performed checking the existing abutments, using all intended construction loads and shall be included with the calculation package discussed herein.

The Contractor shall take care not to damage any adjacent bridge structure to remain. Any damage shall be repaired by the Contractor to the satisfaction of the Engineer at the Contractor's expense.

ITEM 114.11 (Continued)

MassDOT does not guarantee or represent that the bridge materials will coincide with any descriptions contained herein or represented on the Plans. The Contractor must satisfy themselves by their own investigation and research regarding all conditions and materials affecting the work to be done. Plans of the existing structure are available and may be viewed at the office of Plans and Records, Massachusetts Department of Transportation, 10 Park Plaza, Boston, MA.

The Contractor shall take care not to damage any existing structural components that have been designated to remain during the construction, or any newly constructed structural components, as shown on the Contract Drawings. Any structural components so designated that are damaged or otherwise made unsatisfactory for continued use by the Contractor's operations, as determined by the Engineer, shall be replaced or repaired to the satisfaction of the Engineer by the Contractor at their own expense.

Surplus material not required for use on this project and all materials used under this Item shall become the property of the Contractor unless otherwise stated in the Contract Drawings or in these Special Provisions and shall be removed from the job site at their expense.

No demolition work shall be started until all utility companies involved have been notified and the Contractor has received approval from the Engineer as to the equipment, procedures, and operation schedule to be used during the demolition and reconstruction periods. The Contractor shall work in conjunction with the utility companies involved at the project site to provide for all possible cooperation toward the satisfactory completion of the work with minimal delay and inconvenience. The Contractor shall protect any existing utility lines during his operations. If any utilities are damaged due to the Contractor’s negligence, the Contractor shall make repairs at his/her own expense.

DUST CONTROL

Due to the proximity of residential housing, the Contractor shall control, contain, and/or prevent the excessive air-borne dust associated with demolition of the bridge materials as designated on the plans.

The Contractor is required to remove any debris, tools, or other material that falls into Ironwork Brook immediately at their own expense.

All materials removed under Item 114.1 shall become the property of the Contractor and shall be satisfactorily disposed of by him/her.

ITEM 114.11 (Continued)

BASIS OF PAYMENT

Item 114.11, Demolition of Superstructure of Bridge No. S-10-024 (02H), will be paid for at the contract LUMP SUM price, which price shall be considered full compensation for all labor, materials, equipment, sawcutting, submittals, engineering services and all incidental costs required to complete the work.

All costs for permits, dump fees, special handling of hazardous materials, etcetera, shall be included in the cost of this Item. No additional compensation shall be made if the materials or work prove to be different from that inferred or described herein, or shown on any Plans.

The Contractor will make their own investigation of the structure to be demolished including the materials that are part of or may be stored in the structure. No separate payment shall be made for miscellaneous removals and disposals that are not specifically listed for payment under another Item, but all costs in connection therewith shall be included under this Item.

Temporary Protective shielding to be used in conjunction with this Item is specified and paid for separately under Item 994.01

Partial removal of the substructures, as shown on the plans, will be paid for separately under Item 127.1, Reinforced Concrete Excavation.

Dust Control shall be paid for under Item 443.

ITEM 127.1 REINFORCED CONCRETE EXCAVATION CUBIC YARD

The work under this Item shall conform to the relevant provisions of Subsections 112, 120 and 140 of the Standard Specifications and the following:

The Work under this Item, shall include sawcutting, excavation, and removal of the existing reinforced and/or unreinforced concrete abutments and concrete wingwalls to the limits shown on the drawings. All work shall be completed *in the dry*. The limits of concrete removal shall be as indicated on the plans or as directed by the Engineer.

Ground penetrating radar was previously used to map the locations of concrete deterioration on the existing abutments and wingwalls. The Contractor shall be responsible for verifying/sounding and marking on the portion of abutments/wingwalls, which is to remain, the limits of concrete deterioration/removal. The proposed/marked limits of reinforced concrete excavation shall be verified by the Engineer before reinforced concrete excavation begins.

All concrete materials removed shall become the property of the Contractor and shall be properly disposed, away from the work site. The use of explosives for concrete excavation/removal purposes is strictly prohibited.

At the location of concrete repairs, the Contractor shall carefully remove the concrete around the existing reinforcing steel. Existing reinforcing steel rendered unsuitable for reuse during construction due to negligence on the part of the Contractor shall be replaced at the Contractor's expense.

All excavations shall be squared off by saw-cutting. The Contractor shall not remove any concrete beyond the specified limits unless ordered to do so by the Engineer. Any existing concrete designated to be retained during construction that is damaged by the Contractor's operation shall be replaced at the Contractor's expense.

Included under this Item are all costs in connection with the cleaning, cutting, and bending of the existing reinforcing steel designated to be retained.

Immediately before preparation for placement of new concrete, the exposed area to be patched/repaired shall be free of foreign materials. These materials shall be removed by grit blasting or wire brushing and by use of compressed air. No grease, dust, rust, or laitance will be allowed to remain on reinforcing steel and exposed concrete surfaces.

All costs in connection with sawcutting shall be considered incidental to this Item. Concrete excavation within close proximity of demolition limits shall be performed by electric or pneumatic hammer, shall weigh not in excess of thirty-five (35) pounds and shall be approved by the Engineer in advance. The Engineer may reject the use of any method or equipment that may cause damage to the existing substructure to remain.

The Contractor’s operations shall not result in any damage to adjacent structures or foundations. Any damage to adjacent structures, that are to remain, that are damaged as a result of the Contractor’s operations, shall be repaired by the Contractor to the satisfaction of the Engineer and at no additional expense.

ITEM 127.1 (Continued)

The Contractor shall take all measures necessary to ensure that concrete, reinforcing steel, other demolition materials, tools and equipment will be prevented from falling or entering Ironworks Brook below and shall submit a plan, schedule and procedure for approval prior to performing the work.

METHOD OF MEASUREMENT

Item 127.1, Reinforced Concrete Excavation will be measured for payment per CUBIC YARD of reinforced concrete removed complete, except that for which payment is provided elsewhere. Only the actual quantities of materials removed and approved by the Engineer will be measured for payment.

BASIS OF PAYMENT

Item 127.1, Reinforced Concrete Excavation will be paid at the contract unit price per CUBIC YARD, which price shall be considered full compensation for all labor, tools, materials, equipment, sawcutting and all incidental costs required to complete the work.

Cutting the concrete prior to demolition, removal of loose material, and debris; and proper disposal of waste shall be considered incidental to the work of this Item.

Removal and proper disposal of any existing fittings, existing appurtenances, or existing elements attached to, embedded in, or abutting the concrete that is actually removed will be considered as incidental to the work of this Item.

Debris from construction must be carefully contained within the work zones and prevented from falling into the waterway below. No foreign material or debris resulting from the Contractor's operations shall be permitted to enter or remain in the waterway. The Contractor shall be required to remove the debris from the site immediately and to restore portions of the site affected by the operation to their original undisturbed condition or better. Removal of debris generated by demolition and construction will be performed at the Contractor's own expense. Contractor shall be responsible for dust control as the result of the demolition operations.

Temporary Protective shielding to be used in conjunction with this Item is specified and paid for separately under Item 994.01

ITEM 156.5 CRUSHED STONE FOR FILTER BLANKET CUBIC YARD

The work under this Item shall conform to the relevant provisions of Subsections 150 and 983 of the Standard Specifications and the following:

The work under this Item shall include placing crushed stone for filter blanket to the limits shown on the Plans for use as a bedding element for Riprap. The crushed stone shall conform to Section M2.01.4 of the Standard Specifications.

The crushed stone shall be placed as shown in the details on the Plans and in conformance with the Standard Specifications.

METHOD OF MEASUREMENT

Item 156.5, Crushed Stone for Filter Blanket will be measured for payment per CUBIC YARD of crushed stone placed.

BASIS OF PAYMENT

Ite, 156.5, Crushed Stone for Filter Blanket will be paid for at the contract unit price per CUBIC YARD, which price shall be full compensation for all labor, tools, material, equipment and all incidental costs required to complete the work.

The required geotextile fabric for erosion control will be paid for under Item 698.4 Geotextile Fabric for Permanent Erosion Control.

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 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). LSP hours for groundwater management (including characterization, obtaining off-site discharge permits, compliance testing, etc.) is incidental to Item 183.1.

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 402.13 PAVEMENT MILLING MULCH FOR SHOULDERS FOOT

The work to be done under this Item shall conform to the relevant provisions of Subsection 769 of the Standard Specifications and the following:

The work consists of earthworks to install pavement millings mulch for shoulders at the edge of pavement. The existing shoulder shall be prepared for pavement milling mulch as necessary and as directed by the Engineer. The work shall consist of excavation and leveling shoulder area to be mulched. The excavation and leveling of shoulder shall be pushed back down slope on embankment and/or excavated and disposed of on-site level and compacted as directed by the Engineer. Milling mulch shall be graded and compacted to a width of 2 feet and a depth of 6 inches level with the edge of the pavement, or as directed by the Engineer. No geotextile fabric under the pavement millings shall be installed.

MATERIALS

Pavement milling mulch shall meet the specifications M1.10.0. The on-site recycling of pavement millings sourced from the project is encouraged. All pavement milling mulch for shoulders will be accepted based on visual inspection by the Engineer. Mulch material greater than 1 ½ inch shall be removed off-site by the Contractor.

METHOD OF MEASUREMENT

Item 402.13 will be measured for payment per FOOT in the longitudinal direction parallel to the edge of road, complete in place.

BASIS OF PAYMENT

Item 402.13 will be paid at the contract unit price per FOOT of material installed, which price shall be full compensation for all materials, excavation, grading and leveling, compacting and all incidental costs required to complete the work.

ITEM 620.132 GUARDRAIL, TL-3, THRIE BEAM (SINGLE FACED) FOOT
ITEM 627.11 STEEL THRIE BEAM ROUNDED END UNIT (SINGLE FACED) EACH

The work under these Items shall conform to the relevant provisions of Subsection 601 of the Standard Specifications and the following:

The work under this Item includes furnishing and installing Thrie Beam Highway Guardrail and Steel Thrie Beam Rounded End Unit. Materials shall meet the requirements specified in the following Subsection of Division III, Materials:

Guardrail – M8.07.0

CONSTRUCTION METHODS

Guardrail Panel

The rail shall be thrie beam panels erected in a smooth continuous rail conforming to the required line and grade. All rail elements and splices shall be per the plans. The rail shall make full contact at each splice.

METHOD OF MEASUREMENT

Item 620.132 will be measured for payment per FOOT along the top edge of the rail element installed complete in place, from the center of the first mid-span splice to the center of the last mid-span splice.

Item 627.11 will be measured for payment per EACH individual unit installed complete in place as shown on the plans.

BASIS OF PAYMENT

Item 620.132 will be paid for at the contract unit price per EACH installed, including posts, offset blocks, panels and connecting hardware, which price shall be considered full compensation for all labor, tools, material, equipment and all incidental costs required to complete the work.

Item 627.11 will be paid for at the contract unit price per EACH installed, including posts, offset blocks, panels and connecting hardware, which price shall be considered full compensation for all labor, tools, material, equipment and all incidental costs required to complete the work.

ITEM 628.211 TRANSITION TO NCHRP 350 GUARDRAIL (DEEP POST) EACH

The work under this Item shall conform to the relevant provisions of Subsection 601 of the Standard Specifications and the following:

This work shall consist of furnishing and installing a transition section with deep posts from the proposed guardrail to existing NCHRP 350 guardrail in accordance with the details shown on the plans, the latest MassDOT Construction Standard Details, and as directed by the Engineer.

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

Guardrail – M8.07.0

CONSTRUCTION METHODS

The Contractor shall install the transition section at the locations shown on the plans or as designated by the Engineer. Installation shall include all necessary posts, blockouts, rail elements, hardware, backup plates, and connections to existing guardrail and/or bridge rail.

All work shall be performed in accordance with the manufacturer's installation instructions, MassDOT Construction Standards, and AASHTO MASH / NCHRP 350 crash-test requirements for transition systems.

Any damage to galvanizing resulting from fabrication, handling, or installation shall be repaired in accordance with ASTM A780.

METHOD OF MEASUREMENT

Item 628.211 will be measured for payment per EACH unit installed complete in place.

BASIS OF PAYMENT

Item 628.211 will be paid for at the contract unit price per EACH installed, including posts, offset blocks, panels and connecting hardware, which price shall be considered full compensation for all labor, tools, material, equipment and incidental costs required to complete the work.

ITEM 628.241 TRANSITION TO BRIDGE RAIL - CURVED EACH

The work under this Item shall conform to the relevant provisions of Section 600 of the Standard Specifications and the following:

This work shall consist of furnishing and installing a curved transition to bridge rail in accordance with the details shown on the plans, the latest MassDOT Construction Standard Drawings, and as directed by the Engineer.

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

Guardrail – M8.07.0

CONSTRUCTION METHODS

Transition to Bridge Rail - Curved shall be installed at a radius of approximately 6-ft to transition the bridge rail to thrie beam highway guardrail at the residential gravel driveway, as shown on the plans and as directed by the Engineer.

The total length of the transition to bridge rail shall be 19’-6”.

METHOD OF MEASUREMENT

Item 628.241 will be measured for payment per EACH unit installed, complete in place.

BASIS OF PAYMENT

Item 628.241 will be paid for 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 657. TEMPORARY FENCE FOOT
ITEM 657.5 TEMPORARY FENCE REMOVED AND RESET FOOT

The work under these Items shall conform to the relevant provisions of Subsection 644 of the Standard Specifications and the following:

The work under this Item consists of furnishing, installing, removing and resetting, and, subsequently, removing a temporary chain link fence to close off a construction work area from the general public, in accordance with the relevant provisions of Subsection 644, to be located and secured as shown on the Plans, as directed by the Engineer, and the following.

All posts, including end, corner and intermediate brace posts and all gates and gate posts shall be included in the linear foot cost. The fencing height shall be 72 inches minimum. Material need not be new, but shall not be deteriorated nor in any way jeopardize the security purposes intended. All fencing shall meet the approval of the Engineer.

The Contractor shall be responsible for maintenance of the temporary fence; be responsible and cognizant that it remains secure, and that the area is sealed off to the general public at all times. It may be necessary to move sections of temporary fence at times during construction. 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.

The Contractor shall be responsible for maintaining access to the gravel driveway at all times of day and night during the duration of the project.

METHOD OF MEASUREMENT

Item 657. - Temporary Fence will be measured for payment by the FOOT of fence installed, complete in place.

Item 657.5 - Temporary Fence Removed and Reset will be measured for payment by the FOOT of Temporary Fence Removed and Reset.

BASIS OF PAYMENT

Item 657. Temporary Fence will be paid for at the Contract unit price per FOOT, which price shall be considered full compensation for all labor, tools, materials, equipment, and incidental cost necessary to complete the work. The removal and stacking of the fence upon the completion of the project shall be included under this Item.

Item 657.5 Temporary Fence Removed and Reset will be paid for at the contract unit price per FOOT, which price shall be considered full compensation for all labor, tools, materials, equipment, and incidental cost necessary to complete the work.

No additional compensation will be paid for work required to maintain access to the gravel driveway throughout construction. No separate payment will be made for excavation, backfill and necessary new materials, but all costs in connection therewith shall be included in the foot price bid.

ITEM 697.1 SILT SACK EACH

The work under this Item 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 at the new drop inlet installed within the project limits 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 698.4 GEOTEXTILE FABRIC FOR PERMANENT EROSION CONTROL SQUARE YARD

The work under this Item shall consist of furnishing and installing geotextile fabric below Modified Rockfill embankment Slopes and below the crushed stone bedding material for Riprap as shown on the Plans or as required by the Engineer.

The geotextile fabric shall conform to the requirements of Subsection M9.50.0 the MassDOT Standard Specification and AASHTO M288, Class 2, for fabric used for permanent erosion control and must be on the MassDOT QCML. Construction and installation shall be in accordance with AASHTO M288 including Appendix A and the following. Atmospheric exposure of the geotextile fabric to the elements following lay down shall be a maximum of 14 days.

For seams that are sewn in the field, colored thread must be used. The Contractor shall provide at least a six-foot length of sample sewn seam for the approval of the Engineer before the geotextile fabric is installed. The seams sewn for sampling shall be sewn using the same type of equipment and procedures as will be used for the production seams. If seams are sewn in both the machine and cross machine direction, samples of seams for both directions shall be provided. The seam assembly description shall be submitted by the Contractor along with the seam samples. This description shall include the seam type, stitch type, sewing thread, and stitch density.

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 either sewing or 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 avoid 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.

When stone is placed over geotextile fabric, the stone placement shall begin at the toe of slope and proceed up the slope. Placement shall take place so as to avoid stretching and subsequent tearing of the geotextile. Stone shall not be dropped from a height exceeding 24 inches on to the geotextile fabric.

Field monitoring shall be performed to verify that the Stone, Riprap or Rockfill placement does not damage the geotextile. Any geotextile damaged during backfill placement shall be replaced as required by the Engineer, at the Contractor’s expense.

ITEM 698.4 (Continued)

METHOD OF MEASUREMENT

Item 698.4, Geotextile Fabric for Permanent Erosion Control will be measured for payment per SQUARE YARD, 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 the slope, applied per manufacturer's installation recommendations or the Engineer's direction shall be measured for payment.

BASIS OF PAYMENT

Item 698.4. Geotextile Fabric for Permanent Erosion Control will be paid for at the contract unit price per SQUARE YARD, which price shall be full compensation for all labor, materials, equipment, and incidental costs required to complete the work. Overlaps and fold-overs are considered incidental to the unit price and shall not be measured separately for cost.

ITEM 740. ENGINEER'S FIELD OFFICE AND EQUIPMENT (TYPE A) MONTH

The work under this 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 Latest Adobe Acrobat Professional with all security updates Latest Autodesk AutoCAD LT Antivirus software with all current security updates maintained through the life of the contract.
Monitors:	Two 27" LED with Full HD resolution. 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) (not including the bypass tray)
- 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
- 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 ROCK CUBIC YARD

The work under this Item shall conform to the relevant provisions of Subsections 751, 767, and 765 of the Standard Specifications and the following.

The Work consists 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:

Roadside Riverbank Mix (See Item 765.442 Special Provision)

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.

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.

ITEM 751.765 (Continued)

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.

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 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 756.1 CONSTRUCTION PERIOD POLLUTION PREVENTION AND EROSION AND SEDIMENTATION CONTROL PLAN LUMP SUM

The work under this Item 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 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:
    - Application for Water Quality Certification. County Road over Ironwork Brook (S-10-024) Bridge Superstructure Replacement Project, Sheffield, Massachusetts. Prepared by BSC Group on behalf of MassDOT, dated December 19, 2024, with cover letter and attachments. 401 WQC Filing Number: 24-WW11-0067-APP.
    - Plans entitled: "Permit Plans". Sheets 1 through 15. Prepared by BSC Group. Dated December 9, 2024.
    - MassDEP Administrative Completeness and Technical Deficiency Review. 401 Water Quality Certification, Minor Fill Project Certification. Dated January 10, 2025.
    - MassDOT Responses to MassDEP Technical Deficiency Review, with attachments. Prepared by BSC Group on behalf of MassDOT. 401 Water Quality Certification, Minor Fill Project Certification. Dated March 7, 2025.
- 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.
- 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.

ITEM 756.1 (Continued)

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 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 be 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. 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 paid at the contract LUMP SUM price, which price shall be considered full compensation for all work detailed above, including Plan preparation, required revisions, revisions/addenda during construction, inspections and reports.

Work under this Item shall include acceptable completion of the CP/PP, 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.

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 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

Item 765.21, Annual Cover Crop will be measured for payment per pound of seed, complete in place.

BASIS OF PAYMENT

Item 765.21, 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 765.635 Native Seeding and Establishment.

ITEM 765.442 ROADSIDE RIVERBANK 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.

   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

ITEM 765.442 (Continued)

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

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 Mix

765.442 Roadside Riverbank Mix			
	Botanical Name	Common Name	% PLS by Weight
Grass			
	Elymus virginicus	Virginia Wild Rye	28.00%
	Schizachyrium scoparium 'Albany Pine'	Little Bluestem 'Albany Pine'	22.00%
	Elymus riparius	Riverbank Wild Rye	14.70%
	Andropogon gerardii NY Eco	Big Bluestem NY Eco	14.00%
	Panicum virgatum	Switch Grass	5.00%
	Dichanthelium clandestinum 'Tioga'	Deertongue grass 'Tioga'	5.00%
	Carex vulpinoidea	Fox Sedge	2.00%
	Agrostis perennans	Upland Bentgrass	1.50%
	Carex vulpinoidea	Fox Sedge	0.50%
	Poa palustris	Fowl Bluegrass	0.30%
	Juncus effusus	Soft Rush	0.10%
	Juncus tenuis	Path Rush	0.10%
			93.20%
Herb/Forb			
	Chamaecrista fasciculata	Partridge Pea	3.00%
	Penstemon digitalis	Beard-tongue	1.00%
	Verbena hastata	Blue Vervain	0.40%
	Aster puniceus	Aster - Swamp	0.40%
	Aster cordifolius	Blue Wood Aster	0.30%
	Asclepias incarnata	Swamp Milkweed	0.30%
	Desmodium canadense	Showy Tick Trefoil	0.30%
	Monarda fistulosa	Wild Bergamot	0.20%
	Aster novae-angliae	New England Aster	0.20%
	Solidago rigida	Rigid Goldenrod	0.20%
	Eupatorium maculatum	Spotted Joe Pye Weed	0.10%
	Solidago juncea	Early Goldenrod	0.10%
	Euthamia graminifolia	Grass-leaved Goldenrod	0.10%
	Eupatorium perfoliatum	Boneset	0.10%
	Pycnanthemum tenuifolium	Slender Mountain Mint	0.10%
			6.80%
			100.00%
	Seeding Rate: 15.0 lbs PLS/Acre		

Application Rate

Roadside Riverbank Mix: 15.0 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, Roadside Riverbank Mix will be measured for payment by the POUND of Pure Live Seed delivered, complete in place.

BASIS OF PAYMENT

Item 765.442, Roadside Riverbank Mix 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)

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 under this Item 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.

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, Native Seeding and Establishment will be measured for payment by the SQUARE YARD, complete in place.

BASIS OF PAYMENT

Item 765.635, 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 (including 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. If used, Compost Blanket shall be compensated under the respective Item.

If mowing is used to control weeds, it will be considered 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 853.22 TEMPORARY BARRIER REMOVED AND STACKED FOOT

The Work under this Item shall conform to the relevant provisions of Section 850 of the Standard Specifications and the following:

The existing temporary concrete traffic barriers are owned by MassDOT. The Contractor shall coordinate with MassDOT and the town for the removal of the barriers before the start of demolition. The barriers shall be removed and transported to a location within town limits, designated by the Town of Sheffield.

METHOD OF MEASUREMENT

Item 853.22 will be measured for payment by the FOOT of Temporary Barrier Removed and Stacked.

BASIS OF PAYMENT

Item 853.22 will be paid at the contract unit price per FOOT, which price shall include all labor, equipment, materials, dismantling, removal, transportation and unloading of the existing concrete barriers, and all incidental costs required to complete the work.

The barriers shall be unloaded and stored to the satisfaction of MassDOT and the Town.

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.

ITEM 859.1 (Continued)

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 874.4 TRAFFIC SIGN REMOVED AND STACKED EACH

The work under this Item shall conform to the relevant provisions of Subsection 850 of the Standard Specifications and the following:

The work shall consist of removing and stacking existing regulatory, warning and directional signs and supports. Signs and attached hardware shall be carefully removed from their supports. The supports and existing foundations shall be removed to a depth of at least 6 inches below the existing ground and the holes backfilled with gravel. The surface shall be patched with material that matches the existing ground and as directed by the Engineer.

The signs and supports shall be removed and temporarily stacked in a stockpile on-site for removal by the Town of Sheffield. The Contractor shall be responsible for the signs and shall replace or repair any damage due to construction with no additional compensation. Signs not required by the Town shall be removed and discarded by the Contractor away from the site.

If signs are attached to existing light poles, utility poles or traffic poles, only the sign and attached hardware shall be removed and stacked.

METHOD OF MEASUREMENT

Item 874.4 Traffic Sign Removed and Stacked will be measured for payment, per EACH sign removed and stacked.

BASIS OF PAYMENT

Item 874.4 Traffic Sign Removed and Stacked will be paid at the contract unit price per EACH, which price shall be full compensation for dismantling, loading, transporting, stacking and storing of the signs and supports as designated above, the excavating and disposal of the existing foundation, and the supplying and placing of compacted gravel backfill where foundations and posts are removed, and the patching of the existing surface, including all labor, material and incidentals to complete the work.

ITEM 909.2 CEMENTITIOUS MORTAR FOR PATCHING SQUARE FOOT

The work under this Item shall include patching existing concrete as shown on the plans and as designated by the Engineer.

This Item is for the repair of deteriorated or spalled areas that are no more than 1½ inch in depth (herein referred to as a surface patch).

The procedure to be used to repair deteriorated or spalled concrete shall be as follows:

The Contractor shall remove all deteriorated or spalled concrete in the areas as shown on the Plans or as designated by the Engineer. Removal of all deteriorated or spalled concrete designated to be removed shall be paid for separately under Item 127.1.

The Contractor shall have the approval of the Engineer certifying that all spalled and deteriorated concrete has been removed from the area to be repaired, prior to repairing the deteriorated area. Immediately prior to placing new concrete or mortar against existing concrete, clean existing surfaces by abrasive blasting or high-pressure water blasting with water containing no detergents nor bond-inhibiting chemicals and apply approved epoxy bonding compound. Preparation for, and application of, epoxy bonding compound shall be considered incidental to the respective concrete or mortar Items.

Concrete at the edges of all areas to be patched using Cementitious Mortar for Patching shall be removed to a minimum depth of ¾" prior to the application of the mortar.

MATERIALS

Materials used to perform this work shall be a two (2) component polymer-modified cementitious, fast setting, trowel grade structural repair mortar listed on the MassDOT Qualified Construction Materials List.

Surface Preparation

Remove all loose or hollow sounding concrete. Remove all dirt and prepare surface in accordance with the manufacturer's recommendations. Areas to be patched must be clean and sound. All loose and disintegrated concrete shall be removed by means of chipping or an equivalent method to a depth where sound concrete is exposed. Minimum patch depth at edges of patch = ¾". Remove all contaminants from existing concrete prior to applying mortar. Chipping methods shall be approved in advance by the Engineer.

The Contractor shall have the approval of the Engineer Certifying that existing concrete has been removed to the required limits and requirements shown on the Plans and as described in these special provisions, and that adequate surface preparation has been achieved before any concrete is placed.

Mixing

Mix manually or mechanically. The mortar shall be prepared in accordance with the Manufacturer's instructions.

ITEM 909.2 (Continued)

Application and Finish

1. At time of application, surfaces should be damp (saturated surface dry) with no glistening water. Mortar must be worked into substrate filling all pores and voids. Force material against edge of repair, working toward center. After filling, consolidate, then screed.

2. Maximum thickness of application in one pass shall be 1". If the depth of patch exceeds 1", mortar shall be placed in multiple passes of approximately equal thickness to reach the maximum thickness of 1½" for horizontal and vertical applications and the maximum thickness of 3" for overhead applications. Before the first pass has achieved an initial set, the surface shall be prepared for the second pass by scratching with a trowel to form a grid of deformation on the surface.

3. Prime as required per the manufacturer's literature and work mix into substrate, filling all pores and voids. Avoid puddling of primer on horizontal substrates.

4. Brush mix over the substrate just before placing the repair. Do not prime until ready to patch. Mortar must be placed while prime coat is wet. Dried prime coat must be removed by mechanical means.

Curing

Use fine mist spray or water, wet burlap, or non-solvent approved curing compound if ambient conditions might cause premature surface drying by high temperatures, low humidity and strong winds.

If necessary, protect newly applied mortar from rain. To prevent freezing, cover with insulating material.

Limitations

1. Mortar minimum application thickness 1/8".

2. Minimum ambient and surface temperatures 7.2 deg. C (45 deg. F) and rising at a time of application.

3. Apply only on clean, sound substrate. Surface should be damp but free from standing water (saturated surface dry).

4. Mortar must be mixed to a uniform consistency – no lumps; do not over mix (3 min. Maximum).

5. Do not use Solvent-type curing compound.

6. Caution: Contains cement and a polymer which may, in certain cases, cause skin irritation. Cleanliness is required. In Case of skin contact or contact with eyes, wash thoroughly with water. If eye contact, consult nearest doctor.

ITEM 909.2 (Continued)

Submittals

Prior to the commencement of any work under this Item, the Contractor shall submit to the Engineer for review and approval all materials to be used under this Items.

METHOD OF PAYMENT

Item 909.2, Cementitious Mortar for Patching will be measured for payment by the SQUARE FOOT of patch area accepted by the Engineer, complete in place.

BASIS OF PAYMENT

Item 909.2, Cementitious Mortar for Patching will be paid for at the Contract unit price per SQUARE FOOT, which price shall include labor, materials, equipment, and incidental costs required to complete the work.

No separate payment will be made for surface preparation, but all costs in connection therewith shall be included in the Contract unit price bid.

The removal of deteriorated concrete will be paid for separately under Item 127.1.

ITEM 912. DRILLING AND GROUTING DOWELS EACH

The work under this Item shall consist of furnishing of all material, products, equipment, and labor for drilling and grouting reinforcing bars. The embedment length, edge distance, and core hole diameter shall conform to the minimum dimensions or the recommendations of the manufacturer. The method and equipment used to core the holes, the final embedment length, and diameter of the core hole shall be submitted to the Engineer for approval.

MATERIALS

The grout to be used for this work shall be a non-shrink cementitious mortar. Materials used to perform this work shall be listed on the MassDOT Qualified Construction Materials List. The minimum required compressive strength of the grout at 28 days shall be 6000psi. The Contractor shall submit proposed materials to the Engineer for review and approval. Epoxy, vinyl, or polyester resin adhesives shall not be utilized.

Reinforcing steel shall meet the requirements of AASHTO M31 Grade 60. All reinforcing steel dowels shall be epoxy-coated, in accordance with ASTM A775, MassDOT Standard Specifications M8.01.7 and shall be on the Qualified Construction Materials List.

CONSTRUCTION METHODS

All holes shall be diamond core drilled. The inner surfaces of the diamond core drilled holes shall be scored to develop sufficient keying action. The method of scoring of the hole's inner surfaces shall be subject to the approval of the Engineer. The minimum depth of the drilled holes shall be as shown on the plans. However, the depth of the drilled hole shall be modified as required to comply with the minimum depth of the hole specified in the product literature of the cementitious mortar selected by the Contractor. The hole depth shall correspond to the depth required to develop the full (100%) yield strength of the reinforcing bars. The holes shall be blown clear of any debris and shall have the approval of the Engineer prior to the placement of any grout material.

The drilling operation shall be performed without damage to any existing reinforcing that is to remain in place. Any damage to any existing portion of the structure that is to remain in place shall be repaired to a condition equal to or better than the existing condition prior to the beginning of the Contractor's operations and shall be repaired at the Contractor's expense.

The Contractor shall strictly follow the recommendations of the manufacturer for minimum and maximum temperatures during grout placement as well as any other recommendations for mixing and placing the grout material prior to the placement of the dowels. Any excessive grout around the hole after placement of the dowels shall be struck off smooth while the grout is still fresh.

The Contractor shall arrange with the materials manufacturer or distributor, to have the services of a competent field representative at the work site prior to any drilling of the proposed holes for the dowls (reinforcing bars), to instruct the work crews in proper dowel installation procedures.

ITEM 912. (Continued)

The field representative shall remain at the job site after work commences and continue to instruct until the representative and the Contractor and Engineer, are satisfied that the crew has mastered the technique of installing the bolts successfully. The representative shall make periodic visits to the project as the work progresses and shall confer on each visit with the Contractor and Engineer. The manufacturer's field representative must be fully qualified to perform the work and shall be subject to the approval of the Engineer.

METHOD OF MEASUREMENT

Item 912. will be measured for payment per EACH, dowel (reinforcing bar) drilled and grouted and completed in place.

BASIS OF PAYMENT

Item 912. will be paid for at the contract unit price per EACH, which price shall be considered full compensation for all required labor, tools, equipment, manufacturer's field representative and materials, including steel reinforcing bars regardless of length and size, to complete the work.

The furnishing of the Steel Dowels shall be included in the cost of this Item.

ITEM 983.12 RIPRAP WITH GRAVEL PACKED VOIDS TON

The work under this Item shall conform to the relevant provisions of Subsection 983 of the Standard Specifications and the following:

Riprap shall conform to the requirements of M2.02.0 Materials Specification. Riprap shall be placed on the areas, depths contours, and grades designated on the plans in a manner that will produce a well-graded mass of stone with the minimum practicable percentage of voids. Riprap protection shall be placed to its full thickness in one operation in such a manner to avoid displacing the underlying material. Placing of riprap in layers, by dumping into chutes or by placing by similar methods that are likely to cause segregation will not be permitted.

The riprap will be placed in accordance with the relevant provisions of section 983. After the riprap has been placed, gravel/natural streambed material (Item 983.521) will be used to pack any voids that are present. The riprap and gravel will provide a level area for the placement of the streambed materials. If sufficient suitable natural streambed material is unavailable to pack the voids in the riprap, gravel conforming to M1.03.0 Type B, Gravel Borrow shall be used. All costs associated with the material and placement of the material shall be considered incidental to this Item.

CONSTRUCTION METHODS

Riprap shall be placed upon an approved bed of crushed stone over geotextile fabric to the lines and grades shown on the plans and as directed. Riprap shall have a minimum thickness of 3 feet.

METHOD AND MEASUREMENT

Item 983.12 Riprap With Gravel Packed Voids will be measured for payment per TON of riprap placed complete in place.

BASIS OF PAYMENT

Item 983.12 Riprap With Gravel Packed Voids will be paid at the contract unit price per TON, which price shall be considered full compensation for all labor, materials, tools, equipment, transportation and incidental costs necessary to complete the work.

Excavation for riprap shall be paid for under Item 143. “Channel Excavation”. Streambed/Bank Restoration material will be paid for separately under Item 983.521 “Streambed/Bank Restoration”. Crushed stone will be paid for separately under Item 156.5 “Crushed Stone for Filter Blanket”. Geotextile fabric will be paid for separately under Item 698.4 “Geotextile Fabric for Permanent Erosion Control”.

Gravel to pack the voids shall be included in the bid price for this Item, and no additional payment will be provided.

ITEM 983.521 STREAMBED/BANK RESTORATION CUBIC YARD

This work shall consist of removing, stockpiling, and replacing streambed material in the proposed bridge superstructure replacement and the upstream and downstream approaches in the limits of work. The stream bed 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 (Figure A & B).

The Contractor shall coordinate with Subcontractors 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. 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. The Geomorphologist shall be onsite during 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.

MATERIAL

The streambed material excavated from the existing streambed shall be removed and stockpiled to facilitate reinstallation and replication of the natural streambed. The excavated streambed material shall also be reused to fill the voids in the proposed riprap placed below the top streambed restoration layer.

In the event that the excavated material is not suitable or there is not enough available suitable material, additional streambed restoration material shall be locally sourced that matches the composition of the existing native stream bed. The following gradation sampled from a similar streambed surface shall be used as a guide.

ITEM 983.521 (Continued)

Stream Bed Material Gradation

Particle	Percent (%) Composition
Boulder	5
Cobble	40
Gravel	25
Sand	30

The streambed material shall be approved by the Resident Engineer and Geomorphologist prior to use.

Related Items

Crushed Stone. Shall conform to the requirements of 156.5 Crushed Stone for Filter Blanket and shall be paid for under that Item.

Riprap Stone shall conform to the requirements of Item 983.12 Riprap with Gravel Packed Voids and shall be paid for under that Item.

CONSTRUCTION

Channel

The streambed material shall be reinstalled over riprap (MassDOT Item 983.12, as depicted on the plans, to an average thickness of 6 inches, with variations in thickness as necessary to replicate existing channel conditions. The initial placement of streambed material shall fill the voids in the underlying riprap. 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 on top of the riprap to restore streambed habitat and fish passage. The streambed materials shall be installed during normal low water conditions behind control of water in accordance with the environmental permits.

Completion

Once all material has been placed in the stream channel and approved by the Geomorphologist and Resident Engineer, the Contractor shall remove the control of water 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.

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 and other aquatic organisms following construction.

ITEM 983.521 (Continued)

METHOD OF MEASUREMENT

Item 983.521, Streambed/Bank Restoration will be measured for payment per CUBIC YARD of material placed and accepted for restoration of the streambed within the limits shown on the Plans as approved by the Resident Engineer and Geomorphologist.

BASIS OF PAYMENT

Item 983.521, Streambed/Bank Restoration will be paid for at the contract unit price per CUBIC YARD, which price shall be full compensation for excavating, stockpiling, transporting, and placing the material specified and for furnishing all labor, tools, equipment, testing, and incidentals necessary to complete the work.

The Geomorphologist will be provided by MassDOT at no cost to the Contractor.

FIGURES

Figure A: Upstream of Bridge



ITEM 983.521 (Continued)

Figure B: Downstream of Bridge



ITEM 991.1 CONTROL OF WATER – STRUCTURE NO. S-10-024 (02H) LUMP SUM

The Work under this Item shall conform to the relevant provisions of Subsection 140 of the Standard Specifications and the following:

This Item includes all dewatering necessary to accomplish the installation of the proposed scour protection.

The temporary control of water design elevation of 754.8 is based on the phased installation of the control of water system, depicted in the environmental permits, where the channel width at the bridge is reduced to 13'-0". The design flood frequency of 2 years corresponds to the control of water being in place for not more than 1 year, see Bridge Drawing 2 of 19.

Any pumping and dewatering measures to construct the proposed bridge superstructure, partially demolish the existing bridge, and install natural streambed material riprap, crushed stone, geotextile fabric, etc. shall be considered incidental to this Item.

Channel diversions and dewatering of excavation shall be conducted to ensure that removal and construction of bridge substructure and installation of the proposed scour protection are done "in the dry."

As part of the work under this Item, it is the responsibility of the Contractor to determine the need and extent of stream diversions, sedimentation basins and dewatering techniques and sedimentation controls needed to control water and sediment at the site. Prior to starting the excavation and partial demolition operations, the Contractor shall submit working drawings and the methods and materials they propose to use for the Engineer's approval. These plans shall be in conformance with the environmental permits, plans and these specifications. The Contractor shall install all erosion control measures and turbidity barriers prior to proceeding with the approved water control plans. The materials and methods not specifically mentioned under this Item shall comply with the standard specifications where applicable.

Approval of the working drawings does not relieve the Contractor of the responsibility of providing for the safety and successful completion of the work.

CONSTRUCTION METHODS

Plans and Calculations for dewatering measures shall be developed by the Contractor for this Item, prepared and stamped by a Professional Engineer of the appropriate discipline registered in the Commonwealth of Massachusetts and submitted for the review of the Engineer prior to the start of construction.

Stream restrictions shall be conducted in such a manner as to minimize siltation and prevent contamination of the waterway.

Maximum screen sizes on the inlet side of all pumps shall not exceed ½ in (12.7 mm).

ITEM 991.1 (Continued)

Recommended devices to control water at the site include, but are not limited to:

- Sandbag dams installed at the top of the excavation to provide control of water.
- Installation of precast concrete median barriers or blocks covered with sedimentation fabric and sandbags to reduce water infiltration.
- Portable cofferdam system comprised of steel frames covered by an impervious fabric membrane.

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/her judgment the Contractor's water control operations are failing to produce adequate results or are posing a threat to the environment.

The Contractor shall provide the means of removing all sediment from water pumped from the excavation areas; this shall include the use of filter bags, sedimentation basins, check dams, sedimentation fences or tanks.

Maintenance of Control of Water System:

1. Throughout the dewatering operations, the Control of Water system shall be inspected regularly by the Contractor and properly maintained. Sufficient surplus materials and equipment shall be available on site to carry out any repair work that may be required. The Town of Sheffield shall be provided with a 24-hour emergency telephone number at which the Contractor may be reached.

1. Inspection of the dewatering operations shall take place a minimum of two times daily. Repair of damages shall take place immediately. Basin outlets are to be cleaned daily. Debris shall be removed immediately. Remove filter bag when water flow in exceeds flow out. Dispose of sediments at a location approved by the Engineer.

2. The Contractor shall inspect erosion controls that surround the outlet daily and shall immediately replace any that are damage. Placement of the filter bag shall be determined in the field based upon site conditions in a location approved by the Engineer.

BASIS FOR PAYMENT

Item 991.1 will be paid at the contract LUMP SUM price, which price shall be considered full payment for all labor, materials, equipment, submittals, engineering services and all incidental costs required to complete the work.

Partial payments shall be made at the following percentages:

Approval of the Control of Water submittal	20%
Accepted Installation of Control of Water	60%
Satisfactory removal of the Control of Water	20%

ITEM 994.01 TEMPORARY PROTECTIVE SHIELDING LUMP SUM
BRIDGE NO. S-10-024 (02H)

The work under this Item shall consist of designing, furnishing, fabricating, erecting, maintaining, and subsequent removal of temporary deck underside and abutment shielding. The design shall be performed by a Professional Engineer registered in the Commonwealth of Massachusetts. Temporary deck underside and abutment protective shielding shall be utilized to provide for the protection of the brook beneath the bridge from falling debris during the demolition. Protective shielding shall be installed prior to the demolition of the superstructure and partial demolition of the substructure. During concrete repairs to the portion of the abutment to remain all work shall be completed behind a control of water system in the dry. All debris shall not be allowed to enter the brook.

SUBMITTALS

The Contractor shall submit shop drawings, working drawings, and associated design calculations, stamped by a Professional Engineer registered in the Commonwealth of Massachusetts, of all proposed shielding to the Engineer for approval prior to installation. The drawings shall include all details of all connections, brackets, and fasteners. The protective shielding shall be designed to support all construction and dead loads safely; and to be sealed tightly at all joints. The shielding shall be placed in a manner as to prevent it from being blown out by the wind. If, in the opinion of the Engineer, the shielding is not secure, then the Contractor shall remove it and install it to the satisfaction of the Engineer at no additional cost to the State.

All shielding shall meet the following minimum requirements:

1. Protective shielding shall not be installed until the Engineer's review has been completed. No portion of the bridge deck shall be removed until the Protective Shielding is in place and complete.
2. The shielding shall extend a sufficient distance beyond the deck limits and walls sufficient to contain any debris. The shielding shall extend the full length of the bridge span. The Contractor may use the existing abutments/wingwalls as supports for the protective shielding. All spaces along the perimeter of the shielding and at the seams shall be sealed to prevent dust and debris from escaping and falling into the brook below.
3. Shielding shall be designed to safely withstand all loads it would be subjected to during construction. The design shall also include a complete description of the equipment and construction methods proposed for the deck and partial demolition removal and the maximum size of the excavated concrete.
4. The shielding shall be maintained and remain in place until the superstructure is completely removed and substructure is partially removed. Shielding shall be removed only upon approval of the Engineer. All materials used in the shielding systems, shall become the property of the Contractor, and shall be properly removed from the site at the completion of the project.

BASIS OF PAYMENT

Item 994.01will be paid for at the contract LUMP SUM price, which price shall be considered full compensation for all labor, materials, equipment, submittals, engineering services and all incidental costs required to complete the work.

ITEM 995. BRIDGE SUPERSTRUCTURE, BRIDGE NO. S-10-024 (02H) 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 consist of all materials, equipment and labor needed for the construction of the following components and Sub-Items included hereinafter under Basis of Partial Payments.

The work does not include any Items listed separately in the proposal. Payment for materials shown on the Plans as being part of this 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 backwalls at abutments.
- Cast-in-place concrete abutment caps.
- Cast-in-place concrete abutment diaphragms.
- Cast-in-place concrete curtain walls.
- Cast-in-place concrete wingwall caps.
- Cast-in-place concrete deck slab.
- Cast-in-place concrete safety curbs.
- S3-TL4 bridge Railing.
- Precast concrete deck beams, S36-18.
- Precast concrete approach slabs.
- Precast concrete guardrail transitions.
- Elastomeric bearings.
- Damp-proofing.
- Sprayed applied waterproofing membrane for bridge decks.
- Sawing and Sealing joints in asphalt pavement.
- Steel reinforcement for structures, epoxy coated.

SAWING AND SEALING JOINTS IN ASPHALT PAVEMENT AT BRIDGES

The work under this heading consists of making a sealed kerf across the full width of the finished asphalt pavement at bridge abutments where called for on the Plans. The shape, width, and depth of the kerf shall be as shown on the Plans.

Prior to the start of the asphalt pavement operation, the Contractor shall place a mark on each curb or barrier on either side of the paved roadway. These marks shall be aligned with the actual end of the bridge deck and shall be placed so that they will not be covered or otherwise obscured by the asphalt pavement.

ITEM 995. (Continued)

After the completion of the paving operation, the Contractor shall snap a straight chalk line on the pavement between these two marks. The Contractor shall then saw cut the pavement along this line to the depth, width and shape as shown on the Plans. The equipment shall be approved by the Engineer prior to commencing work.

After completing the saw cutting, the Contractor shall clean the saw groove of any dust and debris with an oil free air blast. If the groove was wet sawn, the groove shall be cleaned with a water blast to remove any remaining slurry and debris, vacuumed with a Wet-or-Dry vacuum to remove any standing water, and then dried with an air blast from a Hot-Air-Lance.

Once the groove is clean and dry, the Contractor shall fill it completely with a Hot Applied Crack Sealer meeting the requirements of M3.05.2 in accordance with the manufacturer's application instructions and restrictions regarding ambient and material temperatures. The crack sealer shall be thoroughly cured prior to opening the road to traffic. To reduce tackiness, only boiler slag aggregate (black beauty) shall be scattered over the sealer when required by the Engineer. Conventional sand shall not be used for this purpose.

PRECAST APPROACH SLABS AND PRECAST HIGHWAY GUARDRAIL TRANSITIONS

General.
The work under this Heading consists of fabricating, transporting and installing Precast Approach Slabs and Precast Highway Guardrail Transitions 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

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.

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.

ITEM 995. (Continued)

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).

CONSTRUCTION METHODS – PLANT FABRICATION

A. 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.

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.

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.

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.

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.

ITEM 995. (Continued)

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.

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.

Prior to the erection, the Contractor shall submit an Erection Procedure 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 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 shall, at a minimum, include the following:

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.

ITEM 995. (Continued)

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 (>300 PSI) 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.

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 Closure Pours and Grouted Keyways.
Immediately prior to erecting the Precast Concrete Bridge Elements, the closure pours and 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 closure pour concrete or 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. The surfaces of the closure pours and 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. 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.

ITEM 995. (Continued)

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. 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.

PRESTRESSED CONCRETE SPREAD DECK BEAMS (S36-18)

A. General.

The work under this Heading consists of fabricating, transporting and installing Prestressed Concrete Spread Deck Beams (S36-18), and includes all necessary labor, materials, and equipment to complete the work as shown on the Plans. The Precast, Prestressed, and Prefabricated Concrete 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
Prestressing Strands	AASHTO M 203
Welded Steel Wire Fabric	M8.01.2
Mechanical Reinforcing Bar Splicer	M8.01.9
Strand Chuck	M8.15.0
Lifting Devices	PCI MNL-116

1. Reinforcement and Prestressing Strands.

The size and grade of steel reinforcement and prestressing strands shall be as indicated on the plans. All reinforcing steel shall be epoxy coated, Grade 60. All prestressing strands shall be uncoated.

2. Threaded Inserts

Threaded inserts are permissible in Prestressed Concrete Beams for installing formwork, utility supports, or deck drains. Threaded inserts shall be hot dip galvanized or made of stainless steel and shall not come in contact with the reinforcing steel. The number of threaded inserts installed for the Contractor's convenience shall be kept to a minimum.

ITEM 995. (Continued)

CONSTRUCTION METHODS – PLANT FABRICATION

A. 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 Prestressed Concrete Beam or control section. The Contractor shall schedule the meeting, which shall include representatives of the Fabricator and MassDOT.

B. Reinforcement.

The reinforcing bars shall be installed in accordance with Subsection 901.35 of the Standard Specifications, 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.

C. Placing and Tensioning Strands.

Placing and tensioning strands shall be in accordance with PCI MNL-116. The location of all prestressing strands shall be as indicated 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 Prestressed Concrete Beams 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.

Where applicable, the material used for forming voids in concrete deck beams and box beams shall be sufficiently strong and resistant to water to support the wet concrete, which is to be packed around the void forms, without collapsing. The void forms shall be securely anchored so that no movement will occur during placing and consolidation of the concrete. Void drains shall be installed at the locations shown on the plans and Fabricator shall ensure that the drains are in contact with the void form. After the beams have been cast and removed from the forms, the Fabricator shall check that the drains are still in contact with the void form by inserting a rigid probe into the drain for a distance greater than the thickness of the concrete at the void drain.

ITEM 995. (Continued)

CONSTRUCTION METHODS – FIELD CONSTRUCTION

A. General.

All of the Contractor's field personnel involved in the erection and assembly of the Prestressed Concrete Beams shall have knowledge of and follow the approved Erection Procedure and Quality Control Plan for Prestressed Concrete Beam 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 Prestressed Concrete Beam'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 Prestressed Concrete Beams prior to installation.

B. Erection Procedure and Quality Control Plan for Prestressed Concrete Beam Assembly.

Prior to the erection, the Contractor shall submit an Erection Procedure and a Quality Control Plan for Prestressed Concrete Beam Assembly for approval by the Engineer. This submittal shall include computations and drawings for the transport, hoisting, erection and handling of the Prestressed Concrete Beams. The Erection Procedure and Quality Control Plan for Prestressed Concrete Beam 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 Prestressed Concrete Beam Assembly shall, at a minimum, include the following:

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) Steel reinforcing details, and location and details of lifting devices
(b) Minimum concrete compressive strength for handling the Prestressed Concrete Beams.
(c) Concrete stresses during handling, transport, and erection.
(d) Crane capacities, pick radii, sling geometry, and lifting hardware.
(e) Verification that the equipment can handle all pick loads and weights with the required factor of safety.
(f) Evaluation of construction sequence and evaluation of any geometric conflicts in the lifting of the Prestressed Concrete Beams and setting them on the abutments and piers.
(g) Design of crane supports including verification of subgrade for support.
(h) Location and design of all temporary bracing that will be required during erection.

ITEM 995. (Continued)

2. Quality Control Plan for Prestressed Concrete Beam Assembly

The Quality Control Plan for Prestressed Concrete Beam 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 Prestressed Concrete Beams 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.

At a minimum, the Quality Control Plan for Prestressed Concrete Beam Assembly shall include the following:

(a) Listing of the equipment, materials, and personnel including their assigned responsibilities that will be used to erect and assemble the Prestressed Concrete Beams on site.
(b) Documentation of all preparatory work necessary for moving personnel, equipment, supplies, and incidentals to the project site before beginning work.
(c) Detailed schedule showing the sequence of operations that the Contractor will follow to complete the field construction from setting working points and working lines to the casting of closure pours and the curing of the closure pour concrete, as described below and as called for on the plans.
(d) Contractor's means for ensuring that the Prestressed Concrete Beam shall align to the roadway profile and cross slope and means for adjusting the final deck slab elevation.
(e) Timeline and descriptions of Quality Control activities to be followed throughout the field construction operations including methods and procedures for controlling tolerance limits both horizontally and vertically.

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. Prestressed Concrete Spread Deck Beams.

1. Beam Layout and Erection.

Prestressed concrete beams shall be installed to the line and grade shown on the plans in accordance with the Contractor's approved Erection Procedure and Assembly Plan.

2. Concrete Deck Slab Placement.

Prior to casting the deck, the abutments and piers shall be prepared for the placement of the deck concrete as called for on the plans and the Contractor shall cut the lifting devices off below the top of the beam.

The top of the beam shall be clean and free of all laitance. Deck concrete shall be placed against the beam concrete without the use of any bonding agents.

After the formwork has been removed, all threaded inserts that have been cast into the beams for support of the formwork shall be plugged with a grout of the same color as that of the precast concrete.

ITEM 995. (Continued)

SCHEDULE OF BASIS FOR PARTIAL PAYMENT

Within 10 days from the date of the Notice to Proceed, the Contractor shall submit, on Contractor's Proposal Form, a schedule of unit prices for the major component sub-Items that make up Item 995. The bridge structure Lump Sum breakdown quantities provided in the proposal form are estimated and are not guaranteed. The total of all partial payments for this Item 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., no further compensation will be allowed. The schedule on the proposal form applies only to Bridge No. S-10-024 (02H). 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.

BRIDGE STRUCTURE NO. S-10-024 (02H)

SUB-ITEM NO.	ITEM DESCRIPTION	QTY.	UNIT	UNIT PRICE	TOTAL
482.31	SAWING AND SEALING JOINTS IN ASPHALT PAVEMENT AT BRIDGES	70	FT		
904.3	4000 PSI, 3/4 INCH, 610 CEMENT CONCRETE	110	CY		
910.1	STEEL REINFORCEMENT FOR STRUCTURES – EPOXY COATED	14,600	LB		
916.001	PRECAST APPROACH SLAB	8	EA		
916.002	PRECAST HIGHWAY GUARDRAIL TRANSITION	4	EA		
922.	LAMINATED ELASTOMERIC BEARING PAD WITHOUT ANCHOR BOLTS	20	EA		
930.303	PRESTRESSED CONCRETE DECK BEAMS (S36-18)	150	FT		
964.1	EPOXY BONDING COMPOUND	400	SF		
965.	MEMBRANE WATERPROOFING FOR BRIDGE DECKS	925	SF		
970.	DAMP-PROOFING	1,200	SF		
975.1	METAL BRIDGE RAILING (3 RAIL), STEEL (TYPE S3-TL4)	80	FT		

TOTAL LUMP SUM FOR ITEM 995. = _____

*** END OF DOCUMENT ***

—PRELIMINARY ESTIMATE OF QUANTITIES — DETAIL SHEET— PAGE 1 OF 10

CITY/TOWN:	SHEFFIELD	YEAR:	2026
STA:	3+81.00 TO 6+13.00	ROAD:	COUNTY ROAD
TYPE OF PROJECT:	ROADWAY RECONSTRUCTION & BRIDGE REPLACEMENT	CLASS:	RURAL MAJOR COLLECTOR
		DATE:	JANUARY 13, 2026

Unclassified Excavation	300.00 CY	Gravel Borrow	150.00 CY
Loam for Roadsides	10.00 CY	Gravel Borrow for Backfilling Structures & Pipes	110.00 CY
Class A Trench Excavation	5.00 CY	Dense Graded Crushed Stone for Sub-Base	50.00 CY
Class B Trench Excavation	5.00 CY	Crushed Stone	30.00 TON
Class B Rock Excavation	15.00 CY	Crushed Stone for Filter Blanket	20.00 CY
Bridge Excavation	150.00 CY	Riprap with Gravel Packed Void	126.00 TON
Channel Excavation	98.00 CY	Modified Rockfill	35.00 TON

SURFACE AREAS

PROPOSED FULL DEPTH PAVEMENT - ROADWAY = 427.27 SY
PROPOSED FULL DEPTH PAVEMENT - BRIDGE = 98.51 SY
PROPOSED FINE MILLING = 150.00 SY
PROPOSED HOT MIX ASPHALT DRIVEWAY APRON = 17.26 SY
PROPOSED GRAVEL DRIVEWAY = 62.68 SY

PROPOSED FULL DEPTH PAVEMENT - ROADWAY

SURFACE: 1-½" SUPERPAVE SURFACE COURSE - 9.5 (SSC - 9.5) OVER
0.06-0.08 GAL/SY TACK COAT OVER
INTERMEDIATE: 2-½" SUPERPAVE INTERMEDIATE COURSE - 12.5 (SIC – 12.5) OVER
0.06-0.08 GAL/SY TACK COAT OVER
BASE: 4 ½" SUPERPAVE BASE COURSE - 37.5 (SBC - 37.5) OVER
SUB-BASE: 4" DENSE GRADED CRUSHED STONE FOR SUB-BASED PLACED OVER
8" GRAVEL BORROW (M1.03.0 TYPE b)

PROPOSED FULL DEPTH PAVEMENT - BRIDGE

SURFACE: 1-½" SUPERPAVE BRIDGE COURSE - 9.5 POLYMER (SSC-B-9.5-P) OVER
0.06-0.08 GAL/SY TACK COAT OVER
INTERMEDIATE: 1-½" SUPERPAVE BRIDGE PROTECTIVE COURSE - 9.5 POLYMER
(SPC-B-9.5-P) OVER
MEMBRANE WATERPROOFING (SPRAY APPLIED)

—PRELIMINARY ESTIMATE OF QUANTITIES — DETAIL SHEET— PAGE 2 OF 10

CITY/TOWN:	SHEFFIELD	YEAR:	2026
STA:	3+81.00 TO 6+13.00	ROAD:	COUNTY ROAD
TYPE OF PROJECT:	ROADWAY RECONSTRUCTION & BRIDGE REPLACEMENT	CLASS:	RURAL MAJOR COLLECTOR
		DATE:	JANUARY 13, 2026

PROP RESURFACING OVERLAY TRANSITION AT LIMITS OF WORK

SURFACE: 1 ½" SUPERPAVE SURFACE COURSE - 9.5 (SSC - 9.5) OVER
0.07-0.09 GAL/SY TACK COAT OVER
1 ½" PAVEMENT FINE MILLING

PROPOSED HOT MIX ASPHALT DRIVEWAY APRON

SURFACE: 1 ½" HMA SURFACE COURSE
INTERMEDIATE 2 ½" HMA INTERMEDIATE COURSE
SUBBASE: 8" GRAVEL BORROW (M1.03.0 TYPE b)

PROPOSED GRAVEL DRIVEWAY

SURFACE: 12" GRAVEL BORROW (M1.03.0 TYPE b) OVER COMPACTED SUBGRADE

ITEM 102.01 SELECTIVE CLEARING AND GRUBBING

LOCATION	FROM STA	TO STA	SIDE
COUNTY ROAD	1+63±	4+62±	RT
COUNTY ROAD	4+09±	4+95±	LT
COUNTY ROAD	4+97±	7+09±	RT
COUNTY ROAD	5+29±	5+79±	LT

ITEM 102.511 TREE PROTECTION – ARMORING AND PRUNING

For the protection and pruning of existing trees within the limits of the project, where other erosion & sediment controls are not being used, and as directed by the Engineer.

ITEM 102.521 TREE AND PLANT PROTECTION FENCE

For the protection of existing trees and plants within the limits of the project, where other erosion & sediment controls are not being used, and as directed by the Engineer.

LOCATION	FROM STA	TO STA	SIDE
COUNTY ROAD	4+97±	7+08±	LT

ITEM 206. DROP INLET, TYPE A

STRUCTURE	STREET	STATION	OFFSET/SIDE	RIM ELEV	INVERT ELEV
1	COUNTY ROAD	5+46.92, 26.96' RT		759.68	757.74

ITEM 222. FRAME AND GRATE - MASSDOT BAR TYPE

STRUCTURE	STREET	STATION	OFFSET/SIDE
1	COUNTY ROAD	5+46.92, 26.96' RT	

ITEM 227.4 MASONRY PLUG

Where shown on the Drainage Plans and as directed by the Engineer, including at the following locations:

LOCATION	FROM STA	SIDE
GRAVEL DRIVEWAY	0+20.49	BOTH

ITEM 234.12 12 INCH DRAINAGE PIPE - OPTION

STREET	FROM STA.	TO STA.	SIDE
COUNTY ROAD	5+47.71	5+64.25	24.68 RT / 23.29 LT

ITEM 258. STONE FOR PIPE ENDS

STREET	FROM STA.	TO STA.	OFFSET/SIDE
COUNTY ROAD	5+61.74	5+68.72	23.45 LT

ITEM 402.13 PAVEMENT MILLING MULCH FOR SHOULDERS

STREET	FROM STA.	TO STA.	SIDE
COUNTY ROAD	3+81.00	4+19.11	LT
COUNTY ROAD	5+48.40	6+13.00	RT
CONTINGENCY			

ITEM 504. GRANITE CURB TYPE VA4 – STRAIGHT

For use where new curb is required.

STREET	FROM STA.	TO STA.	SIDE
COUNTY ROAD	4+44.15	4+61.05	RT
COUNTY ROAD	4+65.73	4+82.63	LT
COUNTY ROAD	5+30.38	5+47.27	LT
COUNTY ROAD	5+08.79	5+12.95	RT

ITEM 504.1 GRANITE CURB TYPE VA4 – CURVED

For use where new curved curb is required.

STREET	FROM STA.	TO STA.	SIDE
COUNTY ROAD	5+12.95	5+16.93	RT

ITEM 620.131 GUARDRAIL, DEEP POST (SINGLE FACED)

LOCATION	FROM STA	TO STA	SIDE
COUNTY ROAD	4+19.17	4+31.67	RT
COUNTY ROAD	4+34.49	4+53.24	LT

ITEM 620.132 GUARDRAIL, TL-3, THRIE BEAM (SINGLE FACED)

LOCATION	FROM STA	TO STA	SIDE
COUNTY ROAD	5+16.95	4+97.19	RT

ITEM 627.1 TRAILING ANCHORAGE

LOCATION	FROM STA	TO STA	SIDE
COUNTY ROAD	4+25.11	4+34.49	LT

ITEM 627.11 STEEL THRIE BEAM ROUNDED END UNIT (SINGLE FACED)

LOCATION	FROM STA	TO STA	SIDE
COUNTY ROAD	4+97.19	4+95.41	RT

ITEM 627.83 GUARDRAIL TANGENT END TREATMENT, TL-3

LOCATION	FROM STA	TO STA	SIDE
COUNTY ROAD	5+59.77	6+00.62	LT

ITEM 628.211 TRANSITION TO NCHRP 350 GUARDRAIL (DEEP POST)

LOCATION	FROM STA	TO STA	SIDE
COUNTY ROAD	3+84.80	4+19.17	RT

ITEM 628.24 TRANSITION TO BRIDGE RAIL

LOCATION	FROM STA	TO STA	SIDE
COUNTY ROAD	4+31.67	4+62.89	RT
COUNTY ROAD	4+53.24	4+84.47	LT
COUNTY ROAD	5+28.53	5+59.77	LT

ITEM 628.241 TRANSITION TO BRIDGE RAIL - CURVED

LOCATION	FROM STA	TO STA	SIDE
COUNTY ROAD	5+05.54	5+16.95	RT

CITY/TOWN:	SHEFFIELD	YEAR:	2026
STA:	3+81.00 TO 6+13.00	ROAD:	COUNTY ROAD
TYPE OF PROJECT:	ROADWAY RECONSTRUCTION & BRIDGE REPLACEMENT	CLASS:	RURAL MAJOR COLLECTOR
		DATE:	JANUARY 13, 2026

ITEM 657. TEMPORARY FENCE

To be used to secure the project area and prevent access to the site by the general public, and as directed by the Engineer.

ITEM 657.5 TEMPORARY FENCE REMOVED AND RESET

To be used for the removal, relocation, and installation of temporary fence, and as directed by the Engineer.

ITEM 697.1 SILT SACK

STRUCTURE	STREET	STATION	OFFSET/SIDE
1	COUNTY ROAD	5+46.92, 26.96 RT	

ITEM 698.4 GEOTEXTILE FABRIC FOR PERMANENT EROSION CONTROL

To be used for slope stabilization, scour protection, and as directed by the Engineer.

ITEM 751. LOAM FOR ROADSIDES

To be spread as needed at all areas within the limit of work, where shown on the Cross Sections and/or as directed by the Engineer.

STREET	FROM STA.	TO STA.	SIDE
COUNTY ROAD	3+81.00	4+95.45	LT
COUNTY ROAD	3+81.00	4+60.17	RT
COUNTY ROAD	5+32.33	6+13.00	LT
COUNTY ROAD	4+99.60	6+13.00	RT
COUNTY ROAD	4+86.02	5+18.60	RT

ITEM 751.765 COMPOST AND SEED OVER MODIFIED ROCK

STREET	FROM STA.	TO STA.	SIDE
COUNTY ROAD	4+25.00	4+58.33	RT

ITEM 765.21 ANNUAL COVER CROP FOR NATIVE SEEDING

STREET	FROM STA.	TO STA.	SIDE
COUNTY ROAD	3+81.00	4+95.45	LT
COUNTY ROAD	3+81.00	4+60.17	RT
COUNTY ROAD	5+32.33	6+13.00	LT
COUNTY ROAD	4+99.60	6+13.00	RT
COUNTY ROAD	4+86.02	5+18.60	RT
COUNTY ROAD	4+25.00	4+58.33	RT

ITEM 765.442 ROADSIDE RIVERBANK MIX

STREET	FROM STA.	TO STA.	SIDE
COUNTY ROAD	3+81.00	4+95.45	LT
COUNTY ROAD	3+81.00	4+60.17	RT
COUNTY ROAD	5+32.33	6+13.00	LT
COUNTY ROAD	4+99.60	6+13.00	RT
COUNTY ROAD	4+86.02	5+18.60	RT
COUNTY ROAD	4+25.00	4+58.33	RT

ITEM 765.635 NATIVE SEEDING AND ESTABLISHMENT

STREET	FROM STA.	TO STA.	SIDE
COUNTY ROAD	3+81.00	4+95.45	LT
COUNTY ROAD	3+81.00	4+60.17	RT
COUNTY ROAD	5+32.33	6+13.00	LT
COUNTY ROAD	4+99.60	6+13.00	RT
COUNTY ROAD	4+86.02	5+18.60	RT
COUNTY ROAD	4+25.00	4+58.33	RT

ITEM 767.121 SEDIMENT CONTROL BARRIER

STREET	FROM STA.	TO STA.	SIDE
COUNTY ROAD	3+73±	4+96±	LT
COUNTY ROAD	3+73±	4+59±	RT
COUNTY ROAD	5+25±	6+15±	LT
COUNTY ROAD	4+86±	4+89±	RT
CONTINGENCY			

ITEM 769. PAVEMENT MILLING MULCH UNDER GUARD RAIL

STREET	FROM STA.	TO STA.	SIDE
COUNTY ROAD	3+84.80	4+62.89	RT
COUNTY ROAD	4+19.11	4+84.47	LT
COUNTY ROAD	5+05.54	4+89.61	RT
COUNTY ROAD	5+28.53	6+10.62	LT

ITEM 832. WARNING-REGULATORY AND ROUTE MARKER - ALUMINUM PANEL (TYPE A)

STREET	STA.	SIDE
COUNTY ROAD	4+48.96	RT
COUNTY ROAD	4+64.37	LT

ITEM 847.1 SIGN SUP (N/GUIDE)+RTE MKR W/1 BRKWAY POST ASSEMBLY - STEEL

STREET	STA.	SIDE
COUNTY ROAD	4+48.96	RT
COUNTY ROAD	4+64.37	LT

ITEM 853.1 PORTABLE BREAKAWAY BARRICADE TYPE III

STREET	FROM STA.	TO STA.
COUNTY ROAD	4+42±	4+42±
COUNTY ROAD	5+19±	5+19±

ITEM 853.21 TEMPORARY BARRIER REMOVED AND RESET

STREET	FROM STA.	TO STA.
COUNTY ROAD	4+22±	4+22±
COUNTY ROAD	5+27±	5+27±
AT INTERSECTION WITH HICKEY HILL RD		

ITEM 853.22. TEMPORARY BARRIER REMOVED AND STACKED

For existing barrier to be removed and stacked as directed by the Engineer and/or the Town.

ITEM 853.23 TEMPORARY BARRIER (TL-3)

STREET	FROM STA.	TO STA.
COUNTY ROAD	4+22±	4+22±
COUNTY ROAD	5+27±	5+27±

ITEM 866.106 6 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC)

STREET	FROM STA.	TO STA.	SIDE
COUNTY ROAD	3+81.00	6+13.00	LT
COUNTY ROAD	3+81.00	6+13.00	RT

ITEM 867.106 6 INCH REFLECTORIZED YELLOW LINE (THERMOPLASTIC)

STREET	FROM STA.	TO STA.	SIDE
COUNTY ROAD	3+81.00	6+13.00	LT
COUNTY ROAD	3+81.00	6+13.00	RT

ITEM 874.4 TRAFFIC SIGN REMOVED AND STACKED

STREET	STA.	OFFSET	SIDE
COUNTY ROAD	2+82.88	13.10	RT
COUNTY ROAD	3+34.76	13.71	RT
COUNTY ROAD	4+61.63	14.81	RT
COUNTY ROAD	4+70.99	14.54	LT
COUNTY ROAD	6+55.32	14.80	LT
COUNTY ROAD	7+43.59	13.86	LT

—PRELIMINARY ESTIMATE OF QUANTITIES — DETAIL SHEET— PAGE 10 OF 10

CITY/TOWN:	SHEFFIELD	YEAR:	2026
STA:	3+81.00 TO 6+13.00	ROAD:	COUNTY ROAD
TYPE OF PROJECT:	ROADWAY RECONSTRUCTION & BRIDGE REPLACEMENT	CLASS:	RURAL MAJOR COLLECTOR
		DATE:	JANUARY 13, 2026

ITEM 904. 4000 PSI, 3/4 INCH, 610 CEMENT CONCRETE

For use in the construction of the proposed, 12” concrete headwall. The center of headwall location is provided in the table below.

STREET	FROM STA.	SIDE
COUNTY ROAD	5+64.58	LT

Item 905.2 5000 PSI, 3/8 INCH, 710 HP CEMENT CONCRETE

For use in the repair of the existing wingwalls. The center of each wingwall location is provided in the table below.

STREET	STA.	SIDE
COUNTY ROAD	4+97.79	LT
COUNTY ROAD	5+28.00	LT
COUNTY ROAD	4+64.04	RT
COUNTY ROAD	4+93.12	RT

ITEM 910.1 STEEL REINFORCEMENT FOR STRUCTURES - EPOXY COATED

For use in the construction of the proposed, 12” concrete headwall and for use in the construction of the proposed bridge superstructure. The center of headwall location is provided in the table below. Refer to the special provisions for ITEM number 995. and the structural plans for the location of steel reinforcement to be used in the construction of the proposed bridge superstructure.

STREET	FROM STA.	SIDE
COUNTY ROAD	5+64.58	LT

DOCUMENT A00808

PROJECT UTILITY COORDINATION FORM

*** THIS PAGE IS INTENTIONALLY LEFT BLANK ***

Project Utilities Coordination (PUC) Form

CONTACTS AND GENERAL UTILITY INFORMATION

Printed: 4/22/2024

City/Town:	Project File #:	PUC Completed by:	Utility Pole Set:	
Sheffield	611942	Shane Burdick	National Grid	
Route/Street:	**Resident Engineer:**	**Mass DOT PM:**	**Scheduled Ad Date:**	**Total Poles Relocated:**
County Road over Ironworks Brook	*TBD*	Kristine Chestna	3/6/2027	5 Permanent

Consultant:	Contact:	Cell #	Office #	Email
BSC Group	Kathryn Eagan	(603) 249-6736	(617) 896 - 4315	keagan@bscgroup.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	Donald Taggart		(413) 207-5620	donald.taggart@nationalgrid.com	X		X				X		X		X
Charter (CATV)	John Leone		(518) 640-8864	John.leone@charter.com	X		X				X		X		X
Pike (Verizon)	Kyle Sawin		(413) 362-9346	ksawin@pike.com	X		X				X		X		X
National Grid	Sandra Annis	(413)-531-8482		sandra.annis@nationalgrid.com											
Verizon	Paul Styspeck	(413) 787-1845	(413) 575-7058	paul.m.styspeck@verizon.com											

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:

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 Town of Sheffield. The information provided is the best available information prior to project advertisement.

PUC FORM - CONTINUED

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

4/22/2024
PRINTED

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 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 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	Contractor and Utility are working on-site - but NOT in the same vicinity	Potential Access Restraint (Yes/No)	Reason/Note (optional)
Phase 1	C		Enabling' work by the Contractor -**Note 90 day lead time due to supply shortages** Site clearing and pole locations surveyed. (DOT will stake pole locations within 5 days of being notified clearing has been completed. National Grid will need 5 days after the staking for the poles to clear their DIG-SAFE). All contractor enabling work can be concurrent with the required 90 day lead time. * Contractor to schedule a utility meeting to confirm all poles are staked correctly at least 30 days prior to first pole set / scheduled move.							
			UTILITY OPERATIONS - Pole Set / Temporary Overhead Relocation							
Task: 1			***Utility Co. - National Grid***							
		U	Civil: install 2 caissons (p26-50 & p27)	2	X		X		Yes	
		U	Install/replace/relocate 5 poles, 2 anchors (incl. deep set 5ft new midspan p27-25)	4	X		X		Yes	
		U	Transfer existing spacer cable to new pole top hardware	3	X		X		Yes	
		U	Transfer existing equipment (transformer)	1	X		X		Yes	
					X		X		Yes	
			Sub-Total	**10**						
Task: 2			***Utility Co. - Charter***							
		U	Build new plant onto the new poles.	2	X		X		Yes	
		U	Splice cable lines.	2	X		X		Yes	
		U	De-relash fiber onto new strand.	2	X		X		Yes	
		U	Wreckout old cable plant.	2	X		X		Yes	
			Sub-Total	**8**						
Task: 3			***Utility Co. - Verizon***							
		U	Verizon Construction Place new guywire	1	X		X		Yes	
		U	Verizon Line Place new 10M strand	3	X		X		Yes	
		U	Verizon Line Place aerial cables & stubs	4	X		X		Yes	
		U	Verizon Line place aerial CU terminal & service drops	2	X		X		Yes	
		U	Verizon Splice aerial CU cables & aerial fiber cables	11	X		X		Yes	
		U	Verizon Splice conformance test aerial CU & aerial fiber	5	X		X		Yes	
		U	Verizon Splice Trimout aerial CU cables & aerial fiber cables	3	X		X		Yes	
		U	Verizon Line to remove old cables	3	X		X		Yes	
		U	Verizon Line Remove old aerial CU terminal & old service drops	1	X		X		Yes	
		U	Verizon Construction Remove old JO poles, guys, & anchors	2	X		X		Yes	
			Sub-Total	**35**						

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 and underground conduit installations however, typically have 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 noted).
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.

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: SHEFFIELD Project File Number: 611942

Contract Number: 133627

Project Description: SHEFFIELD Superstructure Replacement, S-10-024, County Road over Ironworks Brook

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: _____

*** THIS PAGE IS INTENTIONALLY LEFT BLANK ***

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

*** THIS PAGE IS INTENTIONALLY LEFT BLANK ***

Maura Healey, Governor
Kimberley Driscoll, Lieutenant Governor
Monica Tibbits-Nutt, Secretary & CEO
Jonathan L. Gulliver, Highway Administrator

massDOT
Massachusetts Department of Transportation
Highway Division

December 20, 2024

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 611942
County Road over Ironwork Brook (S-10-024)
Bridge Superstructure Replacement Project
Sheffield, Massachusetts
Joint 401 WQC And Section 404 MA General Permit Pre-Construction Notification (PCN)

Dear Mr. Vasconcelos,

The Massachusetts Department of Transportation – Highway Division (MassDOT) (the Applicant) is submitting this application for a Massachusetts Section 401 Water Quality Certification (401 WQC) (BRP WW 11 – Minor Project Certification) under the Federal Water Pollution Control Act (33 U.S.C. 1341 et seq., S.401), Massachusetts Clean Water Act, (M.G.L. c.21 Ss26-53), Surface Water Quality Standards (314 CMR 4.00), and 401 Water Quality Certification (314 CMR 9.00). This joint application for a Pre-Construction Notification (PCN) is being submitted concurrently to the U.S. Army Corps of Engineers (USACE), pursuant to Section 404 of the United States Clean Water Act (33 U.S.C.1251) to authorize project activities associated with the replacement of the structurally deficient, functionally obsolete bridge structure (S-10-024) that carries County Road over Ironwork Brook in Sheffield, MA (42.109071 N, -73.315874 W). The proposed span length of the bridge will increase from 27.9 feet to 28.5 feet. Additional activities include widening portions of the existing roadway from approximately 20-feet to 26-feet wide over the bridge for safety. Steel guardrail will also be extended along the approaches to the bridge. This project is being filed under the MassDOT bridge exemption as specified in the 2014 Transportation Bond Bill. The replacement is the functional equivalent and in similar horizontal and vertical alignment to the existing bridge. The replacement structure will slightly improve openness and habitat connectivity while also minimizing disturbances to the surrounding environment.

The PCN is being submitted under the General Permits (GPs) for the Commonwealth of Massachusetts for activities resulting in permanent and temporary fill to jurisdictional Waters of the United States (WOTUS). This project is eligible under General Permit 23 – Linear Transportation Projects and Stream Crossings. As a result of the proposed work, approximately 573 square feet (sf) of permanent impacts and approximately 490 sf of temporary impacts below the Ordinary High Water (OHW) Mark of the stream are anticipated. This includes excavation and subsequent installation of approximately 96 cubic yards (cy) of modified rockfill for scour control. Impacts will be the result of access for removal/installation of the top portion of the bridge structure and the placement of rockfill. The majority of the abutments and walls below OHW will remain in place. The proposed work will result in 12 linear feet (lf) of permanent bank impacts for bridge wall scour protection and 21 lf of temporary bank impacts during construction due to

Ten Park Plaza, Suite 4160, Boston, MA 02116
Tel: 857-368-4636, TTY: 857-368-0655
mass.gov/massdot

dewatering activities. Finally, 123 lf of temporary/in-kind bank impact will occur from dewatering and access to remove and replace the top portion bridge walls. 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.

If you have questions regarding the subject project, please contact me by email at courtney.l.walker@dot.state.ma.us, or at (857) 262-0757.

Sincerely

Courtney Walker

Courtney Walker, Wetlands and Water Resources Coordinator (Bridges)
MassDOT - Highway Division, Environmental Services

CC: Kevin Newton (USACE)
Heidi Davis, (MassDEP)
Tyler Lewis (MassDEP)
Sheffield Conservation Commission
Diana Walden, BSC Group
Kristine Chestna, MassDOT (Project Manager)
Ryan Hale (MassDEP)
Michael Joa (MassDOT Wetlands)
Micah Morrison, PE, BSC Group
Sara Kreisel, PWS, BSC Group

Ten Park Plaza, Suite 4160, Boston, MA 02116
Tel: 857-368-4636, TTY: 857-368-0655
mass.gov/massdot

Maura Healey, Governor
Kimberley Driscoll, Lieutenant Governor
Monica Tibbits-Nutt, Secretary & CEO
Jonathan L. Gulliver, Highway Administrator

massDOT
Massachusetts Department of Transportation
Highway Division

December 20, 2024

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 611942
County Road over Ironwork Brook (S-10-024)
Bridge Superstructure Replacement Project
Sheffield, Massachusetts
Joint 401 WQC And Section 404 MA General Permit Pre-Construction Notification (PCN)

Dear Ms. Davis,

The Massachusetts Department of Transportation – Highway Division (MassDOT) (the Applicant) is submitting this application for a Massachusetts Section 401 Water Quality Certification (401 WQC) (BRP WW 11 – Minor Project Certification) under the Federal Water Pollution Control Act (33 U.S.C. 1341 et seq., S.401), Massachusetts Clean Water Act, (M.G.L. c.21 Ss26-53), Surface Water Quality Standards (314 CMR 4.00), and 401 Water Quality Certification (314 CMR 9.00). This joint application for a Pre-Construction Notification (PCN) is being submitted concurrently to the U.S. Army Corps of Engineers (USACE), pursuant to Section 404 of the United States Clean Water Act (33 U.S.C.1251) to authorize project activities associated with the replacement of the structurally deficient bridge structure (S-10-024) that carries County Road over Ironwork Brook in Sheffield, MA (42.109071 N, -73.315874 W). The proposed span length of the bridge will increase from 27.9 feet to 28.5 feet. Additional activities include widening portions of the existing roadway from approximately 20-feet to 26-feet wide over the bridge for safety. Steel guardrail will also be extended along the approaches to the bridge. This project is being filed under the MassDOT bridge exemption as specified in the 2014 Transportation Bond Bill. The replacement is the functional equivalent and in similar horizontal and vertical alignment to the existing bridge. The replacement structure will slightly improve openness and habitat connectivity while also minimizing disturbances to the surrounding environment.

The PCN is being submitted under the General Permits (GPs) for the Commonwealth of Massachusetts for activities resulting in permanent and temporary fill to jurisdictional Waters of the United States (WOTUS). This project is eligible under General Permit 23 – Linear Transportation Projects and Stream Crossings. As a result of the proposed work, approximately 573 square feet (sf) of permanent impacts and approximately 490 sf of temporary impacts below the Ordinary High Water (OHW) Mark of the stream are anticipated. This includes excavation and subsequent installation of approximately 96 cubic yards (cy) of modified rockfill for scour control. Impacts will be the result of access for removal/installation of the top portion of the bridge structure and the placement of rockfill. The majority of the abutments and walls below OHW will remain in place. The proposed work will result in 12 linear feet (lf) of permanent bank

Ten Park Plaza, Suite 4160, Boston, MA 02116
Tel: 857-368-4636, TTY: 857-368-0655
mass.gov/massdot

impacts for bridge wall scour protection and 21 lf of temporary bank impacts during construction due to dewatering activities. Finally, 123 lf of temporary/in-kind bank impact will occur from dewatering and access to remove and replace the top portion bridge walls. Efforts have been made to avoid, minimize, and mitigate impacts where possible.

A pre-application meeting with MassDEP took place on December 10, 2024. 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 certifying authority review and take action on this CWA 401 certification request within the applicable reasonable period of time.

If you have questions regarding the subject project, please contact me by email at courtney.l.walker@dot.state.ma.us, or at (857) 262-0757.

Sincerely

Courtney Walker

Courtney Walker, Wetlands and Water Resources Coordinator (Bridges)
MassDOT - Highway Division, Environmental Services

CC: Ryan Hale (MassDEP)
Tyler Lewis (MassDEP)
Kevin Newton (USACE)
Sheffield Conservation Commission
Diana Walden, BSC Group
Kristine Chestna, MassDOT (Project Manager)
Dan Vasconcelos, (USACE)
Michael Joa (MassDOT Wetlands)
Micah Morrison, PE, BSC Group
Sara Kreisel, PWS, BSC Group

Ten Park Plaza, Suite 4160, Boston, MA 02116
Tel: 857-368-4636, TTY: 857-368-0655
mass.gov/massdot

PUBLIC NOTICE

Massachusetts Department of Environmental Protection
Division of Wetlands and Waterways
100 Cambridge Street, Suite 900
Boston, MA 02114

Pursuant to 33 U.S.C. 1341 M.G.L. c. 21 §§ 26 - 53, notice is given of a 401 Water Quality Certification application for fill associated with the superstructure replacement of Bridge No. S-10-024 carrying County Road over Ironworks Brook in the Town of Sheffield, Massachusetts by the Massachusetts Department of Transportation – Highway Division, 10 Park Plaza, Room 7360, Boston, MA 02116. The proposed bridge will feature two 11-foot travel lanes and two 2-foot shoulders. Associated work will include channel scour protection, streambed restoration, roadway reconstruction, and the installation of guardrail. 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 Heidi Davis, MassDEP Wetlands Program, 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 within 21 days of this notice 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.

MassDOT Project 611942 County Road over Ironwork Brook (S-10-024) Bridge Superstructure Replacement Project

Sheffield, Massachusetts

Section 401 MassDEP WQC & Section 404 USACE PCN

December 19, 2024

PREPARED FOR

Massachusetts Department of Transportation – Highway Division
10 Park Plaza
Boston, MA 02116

PREPARED BY

BSC GROUP
BUILD | SUPPORT | CONNECT
1 Mercantile Street,
Suite 610,
Worcester, MA 01606

Table of Contents

MassDOT Project 611942
County Road over Ironwork Brook (S-10-024)
Bridge Superstructure Replacement Project
Joint 401 WQC and USACE Pre-Construction Notification

USACE Application Form, PCN Appendix B
401 WQC Form - BRP – WW 11 Minor Project Certification

Attachment A	Project Narrative
Attachment B	USGS Locus Map Environmental Resources Map Soils Map FEMA FIRM Map Site Photographs
Attachment C	Alternatives Analysis / Stream Crossing Evaluation Worksheet USGS Stream Stats
Attachment D	Wetland Delineation Forms Habitat Assessment Map NHESP No-Take Letter USFWS IPaC species List
Attachment E	MA Historical Coordination Tribal Coordination
Attachment F	Stormwater Management Report
Attachment G	Project Plans Construction Details Specifications

BSC GROUP
BUILD | SUPPORT | CONNECT

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

First - Courtney Middle - Last - Walker

Company - MassDOT - Highway Division

E-mail Address - Courtney.I.Walker@dot.state.ma.us

6. APPLICANT'S ADDRESS:

Address- 10 Park Plaza, Room 7360

City - Boston State - MA Zip - 02116 Country - USA

7. APPLICANT'S PHONE NOs. with AREA CODE

a. Residence b. Business c. Fax d. Mobile

857-262-0757

8. AUTHORIZED AGENT'S NAME AND TITLE (*agent is not required*)

First - Sara Middle - Last - Kreisel

Company - BSC Group, Inc

E-mail Address - skreisel@bscgroup.com

9. AGENT'S ADDRESS:

Address- 1 Mercantile Street, Suite 610

City - Worcester State - MA Zip - 01608 Country USA

10. AGENT'S PHONE NOs. with AREA CODE

a. Residence b. Business c. Fax d. Mobile

617-896-4579

STATEMENT OF AUTHORIZATION

11. I hereby authorize, BSC Group 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.

Courtney Walker — SIGNATURE OF APPLICANT

12/20/24 — DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME or TITLE (*see instructions*)

MassDOT 611942 - County Road Bridge Superstructure Replacement, S-10-024, Over Ironwork Brook

13. NAME OF WATERBODY, IF KNOWN (*if applicable*)

Ironwork Brook

14. PROPOSED ACTIVITY STREET ADDRESS (*if applicable*)

County Road

City: Sheffield State: MA Zip: 01257

15. LOCATION OF PROPOSED ACTIVITY (*see instructions*)

Latitude: 42.109075 °N Longitude: -73.315876 °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:

GP 23: Linear Transportation Projects and Stream Crossings

19. DESCRIPTION OF PROPOSED GENERAL PERMIT ACTIVITY (*see instructions*)

Bridge superstructure removal, replacement, and installation of scour protection rockfill in WOTUS.

20. DESCRIPTION OF PROPOSED MITIGATION MEASURES (*see instructions*)

Sedimentation barriers, such as compost filter tubes, will be installed at the downgradient limits of work. Disturbed areas within affected resources will be stabilized and restored following the completion of project activities. All stockpile locations and staging areas will be located within the existing roadway layout. All discharge resulting from dewatering activities shall be directed to temporary sedimentation basin/bags as specified by the contractor to control turbidity. Scour protection and disturbed areas in the channel will be surfaced with streambed materials.

21. PURPOSE OF GENERAL PERMIT ACTIVITY (*Describe the reason or purpose of the project, see instructions*)

The purpose of the Project is to improve public safety and maintain through-travel on County Road, by replacing the structurally deteriorating bridge superstructure and to improve vehicle and bicycle infrastructure. The replacement bridge will meet current American Association of State Highway and Transportation Officials (AASHTO) standards and improve the current substandard vertical clearance over Ironwork Brook. The bridge will remain in the same general alignment.

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
573 (stream)	12 (Bank)	96 (stream)	Permanent	Installation of modified Rockfill for scour protection
490 (stream)	21 (Bank)		Temporary	Control of water during construction
	123 (Bank)		Temporary	Removal and replacement of bridge walls/abutments

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*)

Massachusetts Section 401 Water Quality Certification (401 WQC) BRP WW 11 – Minor Fill & Excavation Project Certification

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*)

The project will incur less than the 200 lf of bank impact identified as requiring compensatory mitigation. Most of the impact is a temporary/in-kind removal and replacement of the bridge structure. No impacts to vegetated wetlands are proposed.

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*)

Northern long-eared bat (Myotis septentrionalis)(endangered) ; monarch butterfly (Danaus plexippus)(candidate species)

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*)

Joseph Huggins Farm (SHE.120) and William Stevens House (SHE.208) are within 0.75 miles of the project area, but there are no historic properties in or adjacent to the project limits. Please see Attachment E for further information.

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":

N/A

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: N/A

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.

Individual BRP 11 Minor fill Project Certification (to be submitted concurrently)

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*)

N/A

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.

Courtney Walker	Dec 20, 2024		Dec 20, 2024
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.

Mass.Gov State Offices & Courts State Topics State Website Accessibility FAQs

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

WW11 - 401 Minor Fill and Excavation Project Application

1	2 Application Information	3 Documents	4 Special Fee Provision	5 Review	6 Application Submitted

Step 5: 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

Permittee

Individual
MassDOT Highway Division
10 Park Plaza
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 1-1 of 1

Contact Type	Name	Organization Name	Contact Person	Action
Application Prepared By	SARA KREISEL			Edit/View

Primary Project Location

Ironwork Brook | 0 N/A Sheffield MA 01257

Other Primary Location Info

Parcel ID:	N/A
Municipality :	SHEFFIELD

Project Information

Project Name:	MassDOT Project 611942 County Road over Ironwork Brook (S-10-024) Bridge Superstructure Replacement Project
Proposed Activity:	The project proposes to replace the structurally deficient, functionally obsolete bridge superstructure that carries County Road over Ironwork Brook in Sheffield, MA, along a similar horizontal and vertical alignment. Scour protection will be installed through removing and replacing material with appropriately-sized riprap.
Will the project occur in multiple municipalities?:	No

Additional Project Sites

Additional Project Sites
No Custom Lists data for the sub group above.

Project Type

Commercial / Industrial:	No
Utility:	No
Real Estate Subdivision:	No
Institutional:	No
Other:	Yes
Please provide additional information for the selection of your project type:	Transportation

Proposed Areal Extent Info

Bordering Vegetated Wetland (sqft):	0
Isolated Vegetated Wetland (sqft):	0
Non-tidal Land Under Water (sqft):	1063
Salt Marsh (sqft):	0
Land Under the Ocean (sqft):	0
Intertidal Zone (sqft):	0
Total cumulative loss (sqft):	1063

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:	0
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?:	Yes
If yes, does the Permittee presently hold a "no adverse effect determination" and/or a "no take determination", or a Conservation and Management Permit from the Natural Heritage and Endangered Species Program of the Massachusetts Division of Fisheries and Wildlife? Also, please attach a document 'NHESP Determination Letter or Conservation Management Permit' in the document section.:	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 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):	
Date of USACE PCN Authorization (if available):	

Documents

Documents:	Please upload 2 Required Document(s) which are mandatory to submit this Application: 1. Alternatives Analysis 2. Site Plans

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
MassDOT 611942_Sheffield_County Road_Alternatives.pdf	Alternatives Analysis	197.85 KB	10/17/2024	MassDOT 611942_Sh... read more	Actions
MassDOT 611942_Sheffield County Road Environmental Plans.pdf	Site Plans	4.44 MB	12/11/2024	MassDOT 611942_Sh... read more	Actions

Special Fee Provision

Exemption:	No
Exclusion (special agreement or policy):	Yes
Provide agreement code or policy name:	MassDOT

Application Submitter

Individual
SARA KREISEL
Boston, MA, 02127
United States

Telephone #:617-896-4579
E-mail:skreisel@bscgroup.com

I certify that I am familiar with the work proposed and that to the best of my knowledge and belief the information contained in this application is true, complete, and accurate.

☐ By checking this box, I agree to the above certification. Date:

Continue Application » Save and resume later

© 2015 Commonwealth of Massachusetts.
Mass.Gov® is a registered service mark of the Commonwealth of Massachusetts.
Mass.Gov® Site Policies

Attachment A

MassDOT Project 611942
County Road over Ironwork Brook (S-10-024)
Bridge Superstructure Replacement Project
Joint 401 WQC and USACE Pre-Construction Notification

Project Narrative

BSC GROUP
BUILD | SUPPORT | CONNECT

BSC GROUP

ATTACHMENT A – PROJECT NARRATIVE
MASSDOT PROJECT 611942 - COUNTY ROAD OVER IRONWORK BROOK (S-10-024)
401 WQC & USACE PRE-CONSTRUCTION NOTIFICATION
SHEFFIELD, MA

1. Introduction

The Massachusetts Department of Transportation – Highway Division (MassDOT) (the Applicant) is submitting this application for a Massachusetts 401 Water Quality Certification (401 WQC) BRP WW 11 – Minor Project Certification under the Federal Water Pollution Control Act (33 U.S.C. 1341 et seq., S.401), Massachusetts Clean Water Act, (M.G.L. c.21 Ss26-53), Surface Water Quality Standards (314 CMR 4.00), and 401 Water Quality Certification (314 CMR 9.00). This joint application for a Pre-Construction Notification is being submitted concurrently to the U.S. Army Corps of Engineers (USACE), pursuant to Section 404 of the United States Clean Water Act (33 U.S.C.1251) to authorize project activities associated with the superstructure replacement of the bridge that carries County Road over Ironwork Brook (Bridge No. S-10-024) (hereby referred to as "the bridge") in Sheffield, MA (See **Attachment B** for Site Figures and Photographs). The existing bridge is structurally deficient, functionally obsolete, and undersized. The Applicant proposes to replace the superstructure with a new superstructure in a similar horizontal and vertical alignment. The project involves mitigation measures intended to address existing structural and hydraulic deficiencies, while also minimizing disturbances to the surrounding environment and improving openness.

Due to the nature of the superstructure replacement activities, impacts to jurisdictional resource areas are unavoidable. As a result of the proposed work, approximately 573 square feet (sf) of permanent impacts and approximately 490 sf of temporary impacts to Waters of the United States (WOTUS) are anticipated, including approximately 96 cubic yards (cy) of excavation and subsequent installation of riprap for the streambed and scour protection around the abutments. Impacts will be the result of access necessary to remove and install the bridge superstructure, while retaining the portions of the walls and abutments at and below the Ordinary High Water Mark (OHWM) of the stream. Temporary impacts will be necessary for dewatering and phasing of water control. Permanent impacts include the installation of riprap for scour protection of the new structure and roadway. Additionally, the proposed work will result in 12 linear feet (lf) of permanent bank impacts for slight bridge wall adjustments/scour protection and 21 lf of temporary bank impacts during construction access. Finally, 123 lf of temporary/in-kind bank access impact will occur to remove and replace the bridge walls above OHWM. A majority of the proposed impacts are redevelopment in nature and occur within previously disturbed or structured areas. Efforts have been made to avoid and minimize impacts where possible, and mitigation measures, such as installation of sedimentation barriers, defined areas for stockpiling and stages and requirements for a Construction Water Management Plan, will be implemented to minimize disturbance during construction.

The following sections detail the site conditions and the proposed project activities. As a bridge replacement project, the project has been designed to comply to the maximum extent practicable, with the Massachusetts Stream Crossing Standards as referenced in the general conditions of the USACE General Permits (GPs) for the Commonwealth of Massachusetts. While standards could not be fully met, the design improves openness and habitat connectivity. Authorization is being requested pursuant to GP 23: Linear Transportation Projects and Stream Crossings.

This project is being filed under the MassDOT bridge exemption as specified in the 2014 Transportation Bond Bill, and therefore the project does not require Chapter 91, MA Environmental Policy Act (MEPA) or Wetlands Protection Act (WPA) permitting.

Please refer to Project Site Plans (**Attachment G**) for additional detail.

2. Existing Conditions

The project site is located on County Road, approximately 3 miles east of the intersection with State Route 7 (Main Street) in Sheffield, MA. County Road is functionally classified as a major arterial and collector road according to MassDOT guidelines. It is a two-lane paved road situated in a northeast-southwest orientation. While the area is generally characterized by evergreen and deciduous forest, wetlands, roadways, and single-family residential development, the project area is limited to previously disturbed existing roadway and embankments. The adjacent jurisdictional resource areas are encumbered by the existing bridge and crossing. The project area relies on country drainage, whereby stormwater flow travels along the approach roadway and informally runs off down the side slopes. There are no water, sewer, or gas mains in the vicinity of the existing structure; however, there are overhead utility lines along the southern side of the roadway. The project area occurs entirely within the existing state roadway layout.

The existing structure consists of a 27.92-foot wide by 7.23-foot (rise) single span steel beam superstructure supported by two concrete abutments. The actual clear span width for the channel is on a 25.38-foot wide skew and a 20-foot wide square. While the out-to-out measurement of the road section and structure is 29.3 feet, the angled length measurement of the crossing is approximately 37.5 to 38 feet. The road has a slope of 1.00% at the crossing, and the low chord on the existing superstructure is set at an elevation of 758.12 feet. The restricted roadway consists of two 10-foot-wide travel lanes with existing concrete barriers on either side for a total roadway width of 20-feet. There are no sidewalks on the bridge. The bridge is considered structurally deficient due to 100% section loss found at two beams and severe deterioration on two other beams.

Waters of the United States

BSC Group, Inc. (BSC) Wetland Scientists delineated the boundary of existing jurisdictional resource areas within and in the immediate vicinity of the bridge in June 2019. Boundaries were revisited and refreshed in July 2023. Wetlands were delineated in accordance with the methods in the USACE 1987 Wetland Delineation Manual and 2012 Northcentral and Northeast Regional Supplement. Existing conditions, stream banks, and vegetated wetlands, in relation to the proposed activities are shown in mapping and photos in Attachment B and Project Site Plans in Attachment G. Delineation forms and additional information is in Attachment D.

Waterbody/Waters of the US

Stream 1 (Ironwork Brook):

Ironwork Brook is a perennial stream and Coldwater Fisheries Resource (CFR) that generally flows in a northeast-to-southwest orientation before discharging into the Housatonic River, approximately 2 miles southwest of the project area. According to the USGS StreamStats Report for this area, the drainage area at the County Road bridge crossing is approximately 8.28 square miles and the bankfull width is approximately 37.4 feet. Ironwork Brook was directly observed as being a dynamic waterway with a bankfull width of 20 to 30 feet upstream and downstream of the existing crossing, and a bankfull depth of 2 to 3 feet deep or more. The average bankfull width was established at 26 feet. Deeper pools were present upstream and downstream of the crossing. The banks of Ironwork Brook are moderately incised, eroded, and undercut. The banks and waterway are also well-vegetated with mature woody canopy cover in the riparian corridor. The streambed of Ironwork Brook is generally characterized by gravel and sand with cobbles and boulders. The OHWM of Ironwork Brook is established at the observed bankfull conditions, and all areas below this limit are jurisdictional WOTUS with direct, relatively permanent connection to traditional navigable waters.

Stream 2 (Intermittent Stream):

Stream 2 is a hillside intermittent stream that flows steeply downgradient, north to south in Wetland 2. It is approximately 2 feet wide, and several inches deep, characterized by herbaceous vegetation, and numerous root systems within the streambed. The entire streambed of Stream 2 constitutes WOTUS and is generally characterized by gravel and sand with cobbles.

Vegetated Wetlands / Waters of the US

While the wetlands delineated on-site are hydrologically connected, two distinct wetland areas were identified within proximity of the project site, directly associated with the banks of Ironwork Brook, as described below. Delineation forms are in **Attachment D**:

Wetland 1 (PSS / PEM)

This wetland borders Ironwork Brook to the north of the bridge. The wetland boundary of Wetland 1 was marked with sequentially numbered pink survey flags (W1-101 – W2-102. Dominant vegetation within the wetland is characterized by a palustrine forested canopy (PFO) and herbaceous groundcover vegetation including: eastern hemlock (*Tsuga canadensis*), red oak (*Quercus rubra*), eastern white pine (*Pinus strobus*), American hornbeam (*Carpinus caroliniana*), spotted touch-me-not (*Impatiens capensis*), eastern skunk cabbage (*Symplocarpus foetidus*), jack-in-the-pulpit (*Arisaema triphyllum),* and cinnamon fern (*Osmundastrum cinnamomeum*).

Wetland 2 (PSS / PEM)

Wetland 2 borders Stream 2 on the northwest side of Ironwork Brook and on the northwest side of County Road. The wetland boundary of Wetland 2 was marked as two open-features with sequentially numbered pink survey flags (W2-100s, 200s, 300s, 400s) and connects to Wetland 1 off-site from the project limits. Dominant vegetation within the wetland is characterized by palustrine forested canopy (PFO) and emergent (PEM) vegetation at the mowed roadway shoulders, including eastern hemlock, red oak, eastern white pine, American hornbeam spotted touch-me-not, eastern skunk cabbage, jack-in-the-pulpit, and purple loosestrife (*Lythrum salicaria*).

FEMA Floodplain

The Zone A/100-year floodplain is the estimated maximum lateral extent of flood water which will theoretically result from the statistical 100-year or 1% annual chance frequency storm. According to the FEMA Flood Insurance Rate Maps for Sheffield (Community Panel Number 250041013B dated September 16, 1981), the project does not lie within a mapped Zone A floodplain or floodway.

Rare, Threatened, and Endangered Species and Habitat

Based on review of MassMapper, which contains most-recently published, publicly available data issued by the Natural Heritage and Endangered Species Program (NHESP), the project area is located within mapped priority habitat (PH 859) for state-listed rare and endangered species and is also listed as a Core Habitat (BioMap2). No certified vernal pools (CVP) or potential vernal pools (PVP) are mapped near this crossing. MassDOT coordinated with NHESP, and NHESP has determined that the Project as currently proposed will not result in a prohibited Take of state-listed species (NHESP File No. 22-41320) (**Attachment D**).

According to the US Fish and Wildlife Service (USFWS) Information for Planning and Consulting (IPaC) tool, the Northern Long-eared Bat (NLEB) (*Myotis septentrionalis*) is listed as *endangered* within the limits of the project area (USFWS IPaC Species List). NHESP has no records of winter hibernacula within ¼ mile of the project site, nor known maternity roost trees within 150 feet. The current USFWS IPaC Species List is included in **Attachment D**. Approximately one-tenth acre of tree-clearing, grubbing, and trimming is proposed. MassDOT anticipates completing an acoustic survey and bridge assessment prior to construction, or a time-of-year (TOY) restriction for tree clearing and bridgework will be applied to the Project. A formal Programmatic Biological Opinion (PBO) will be completed at that time and a determination of Not Likely to Adversely Affect (NLAA) the species is anticipated. The project will minimize disturbance to additional vegetation to the maximum extent practicable. The project will comply with avoidance and mitigation measures (AMMs) as required by the USFWS and USACE for construction.

The IPaC also identified the Monarch Butterfly (*Danaus plexippus*) within the project area. However, it is currently listed as a Candidate by USFWS and therefore, no conservation measures are required at this time.

The project does not occur within Essential Fish Habitat (EFH) mapped locations.

Other Environmental Resources

According to MassGIS data layers and classifications provided in 314 CMR 4.00, the project area does not fall within an Outstanding Resource Waters (ORW) nor Areas of Critical Environmental Concern (ACEC) (301 CMR 12.00). Ironwork Brook is considered a Coldwater Fishery (CFR) and is therefore a Critical Area for stormwater management calculations. It is not listed as an EPA impaired waterway. Additionally, the work will not be completed within 0.25 miles of the Housatonic River nor within 0.25 miles of a National Wild and Scenic River. There are no National Wildlife Refuges, National Forests, National Marine Sanctuaries, National Parks, nor any other areas administered by the National Park Service, U.S. Fish and Wildlife Service, or U.S. Forest Service, and USACE project lands and easements within the project vicinity.

3. Alternative Analysis

The existing bridge over Ironwork Brook is structurally deficient due to section loss and deterioration on the fascia beams. The road surface has already been narrowed and restricted with the use of protective jersey barriers.

The design of the bridge has been analyzed by engineers with three possible alternatives: a no-build, a superstructure replacement (Alternative 1, *Preferred Alternative*) or full bridge replacement (Alternative 2). Please refer to **Attachment C** for a detailed analysis of the different stream crossing alternatives and their abilities to meet Stream Crossing Standards.

No-Build Alternative

While the no-build alternative does not fully meet stream crossing standards (specifically not meeting 1.2 bankfull width), it also would not result in any impacts to wetland resource areas. However, in order to reduce the risk of damage or injury from any type of bridge failure and restore the full capacity of the roadway, it is necessary to replace the bridge superstructure. Therefore, a no-build alternative would result in continued deterioration to the point that the bridge and roadway connection would be closed.

Alternative 1 (Superstructure Replacement)

The option of the superstructure replacement (Alternative 1) meets the standards to the maximum extent practicable and was selected for the reduced time of construction, cost, and limited environmental impacts proposed. Retaining most of the substructure does not allow for increasing the width of the clear span (does not fully meet stream crossing standards (specifically not meeting 1.2 bankfull width), but it does limit overall impacts to jurisdictional WOTUS. In total, there are 1,063 sf of temporary and permanent impacts to the streambed, and no impacts to vegetated wetlands.

Alternative 2 (Full Bridge Replacement)

Alternative 2, a full bridge replacement (full replacement of the bridge deck, sub- and superstructure, and abutments), would be able to meet a more optimal and compliant bankfull width accommodation (and would meet Stream Crossing Standards). However, there is limited feasibility for construction of this alternative due to an existing adjacent driveway and private property, as well as ability to meet the existing roadway profile. The design would require a re-alignment of the downstream portion of the stream due to the need for additional retaining walls, which would then require significantly more impacts to jurisdictional WOTUS in order to tie-into stream layout / banks. In total, there would be approximately 1,894 sf of temporary and permanent impacts to the streambed.

4. Proposed Project

The purpose of the project is to replace the superstructure of a structurally deficient bridge with a new superstructure along a similar horizontal and vertical alignment over Ironwork Brook. The existing *substructure* at and below OHWM will remain and be reused to limit environmental impacts in the proposed project. The full sequence of project activities will take one construction season (approximately 9 months) to complete. The project involves bridge mitigation measures intended to address existing structural deficiencies, while also minimizing disturbances to the surrounding environment and maintaining openness. The proposed replacement bridge will carry two lanes of traffic on County Road. The roadway width will increase by approximately 6-feet from the current restricted roadway width and will include safety improvements by adding a MassDOT approved crash tested guardrail system. Roadway reconstruction of County Road will occur 100-feet to the west of the bridge and 103-feet to the east for improved roadway approaches. The total length of the project area is approximately 232-feet, including the bridge. The following project components detail the proposed project activities. Please refer to Project Site Plans (**Attachment G**) for additional details.

- Proposed Bridge – The proposed bridge will be comprised of prestressed concrete deck beams with a reinforced concrete deck. The proposed span length, centerline of bearing to centerline of bearing, will increase from 27.92-feet to 28.5-feet. The overall transverse width of the bridge will be 29.25-feet to accommodate safety improvements. However, at the angle of the stream, the length of the crossing is approximately 37.5 feet. In accordance with the MassDOT Bridge Manual for a Rural Major Collector Road, the proposed bridge has been designed to meet the 25-year flood frequency storm event.
- Channel Scour Protection– The channel scour protection will consist of 36-inches of riprap (M2-02-0: riprap) placed below natural streambed material. In terms of riprap, each stone shall not weigh less than 50 lb, and at least 75% of the volume shall consist of stones weighing not less than 500 lb each. In addition, 12-inches of crushed stone is proposed below the riprap. Where possible, the voids between the riprap will be filled with natural streambed material.

  Due to the meandering stream channel geometry, and as part of the hydraulic analysis, a bend scour analysis was performed in accordance with HEC-23, Section 4.3.5 Scour at Protected Bendways. Based on BSC Group's existing conditions survey, the bottom of the existing abutment footings are approximately 5-feet below the bottom of the streambed. The design scour depths, which included the bend scour, was determined to be 5.01 feet. Under existing conditions, there are large angular stones that armor the bank of Ironwork Brook both upstream and downstream of the crossing (**Attachment B**, Photos 3-6). The large stones act as scour countermeasures for both bend and abutment scour. Between the existing angular stones and the proposed scour countermeasures, the abutments as considered scour stable. In addition, a large natural boulder and lodged tree root wad are present just upstream before the abutment. The project limits don't include moving these features and contractors can be instructed to saw and remove the remaining tree trunk (to prevent future debris jams at the bridge), but retain the stump and root wad as it currently stands at the bank.
- Streambed Reconstruction Prior to streambed excavation, natural streambed material will be removed and stockpiled on-site for use during restoration to ensure the sizing and arrangement of materials are similar under pre- and post-construction conditions. Approximately 96 cy of material will be removed and subsequently replaced with riprap for scour protection. In total, approximately 6-inches of natural streambed material will be overlaid over the riprap. Upon completion of the proposed bridge replacement activities, the streambed elevation will be restored to its pre-construction condition and profile.
- Roadway Reconstruction – Portions of the road will be widened, and the slopes reduced. However, in areas where slopes with a 1:2 vertical: horizontal ratio or less exist, they will be regraded (without impacting the brook).
- Installation of Guardrail and Repaving Activity – Bridge superstructure replacement activities provide an opportunity to make safety improvements to existing conditions surrounding the bridge. The existing functional roadway width will expand from approximately 20-feet to 26-feet wide over the bridge for safety, and regaining the currently restricted areas. The widened roadway will meet the existing roadway width at the limits of the project. The approaches to the bridge will be repaved following the completion of project activities. Extended steel guardrail is proposed along the approaches to the bridge to replace existing non-functioning guardrail posts.

Work in Wetland and Waterbody Areas

The superstructure replacement project is considered a redevelopment project. Impacts to WOTUS are unavoidable; however, upon completion of the project, slopes will be stabilized, and the streambed will be restored to match the adjacent natural stream channel. The outcome will result in an improvement over existing conditions. No work is proposed within vegetated wetlands at the Project site. A description of the impacts to the wetland and waterbodies is provided below.

Table 1 below provides an overview of impacts with regard to each feature:

Table 1 – Summary of Wetland and Waterbody Impacts

Resource Area	Impact Type	Surface Area Impacts Square Feet (SF) / Linear Feet (LF)	Impacted Volume (CY / CF)
Waterbody/Waters of the US (WOTUS)	Permanent	573 sf	96 cy (replacement)
	Temporary	490 sf	0 cy
Bank	Permanent	12 lf	
	Temporary	144 lf *	

*Approximately 123 lf of this total is due to access/dewatering at each bank/bridge wall while removing the superstructure.

Ironwork Brook: Waterbody/Water of the US

The existing Bank along all four quadrants of the bridge will be impacted to some extent as a result of the proposed project. Approximately 12 lf of temporary Bank impacts are identified due to the installation of an adjacent splash pad. Approximately 9 lf of temporary Bank impacts are proposed due to control of water sandbags and erosion and sedimentation controls. An additional 123 lf of temporary dewatering bank impacts are proposed to access the removal and replacement of the superstructure, but structural changes at the OHWM will be avoided. Unavoidable permanent alteration of approximately 12 lf of the bank will occur due to proposed scour protection at the bridge abutments. The bank will generally be reconstructed to tie-into the existing channel at the completion of construction, to the extent practicable.

A total of approximately 1,063 sf of permanent and temporary impacts below the Ordinary High Water Mark of Ironwork Brook (WOTUS) are proposed due to scour protection, and temporary construction needs for control of water. The center of the existing stream channel will not be disturbed. Sandbags will be used during construction to create a safe dry-working environment for the new scour protection to be placed along the existing abutments. This allows water to continue to flow through the channel in phases, resulting in 490 sf of temporary impacts to the streambed. Approximately 573 sf permanent impacts will be required for the installation of riprap (scour protection) to protect the existing substructure, and the reinstallation of streambed material. Removal of approximately 96 cy of natural streambed material is necessary to install the riprap. The material will be stockpiled and reused as practicable during restoration over the riprap. In total, approximately 6-inches of natural streambed material will be surfaced over the riprap. Upon completion of the proposed bridge replacement activities, the streambed elevation will be restored to its pre-construction condition and profile. Please refer to Project Site Plans (**Attachment G**) for additional details.

Impacts to the waterbody were avoided and mitigated to the maximum extent practicable. Examples of how this was accomplished include but are not limited to: proposing the superstructure replacement rather than replacing the entire bridge, pulling back stone outlet protection from the edge of the stream bank / bed at the proposed drainage outlet, by phasing project activities, and by limiting alteration within resource areas. Measures are further explained in Section7.

5. Stormwater Management

MassDEP's stormwater management standards were incorporated into the 401 WQC Regulations on January 2, 2008 (see 314 CMR 9.06(6)(a)). According to the Regulations, the proposed work is considered a redevelopment project. The Project area currently exhibits country drainage where stormwater flows across the roadway and informally runs off down the side slopes. The limited existing space within the state-owned roadway layout makes it difficult to significantly alter existing conditions to accommodate stormwater control measures. Since the proposed superstructure replacement is considered a redevelopment project and will not significantly increase the amount of impervious area at the site, the project should meet all applicable standards of the MassDEP Stormwater Management Handbook to the maximum extent practicable. In accordance with the DEP Stormwater Management Handbook, Standards 1,8, 9, and 10 must be met fully, while the remaining standards must be met to the maximum extent practicable. With Critical Areas present in some portions of the project area, Standard #6 also requires that direct discharges are pulled back and the best treatment available is provided.

There are no existing stormwater control measures at the project site. An informal ditch system is present along with a culvert under the existing driveway. The existing culvert will be abandoned, and drainage will be directed to a new a deep sump drop inlet, which will discharge to a stone outfall pad on the north side of County Road before reaching Ironwork Brook. This provides some improvement to TSS removal on a portion of the project area drainage. A comprehensive review of the site was performed to identify stormwater control measures (SCMs) and Low Impact Development Techniques (LIDs) that could be incorporated to provide improvements over existing conditions. The site already utilizes country drainage, with runoff sheet flowing off the roadway, which will be maintained in the proposed conditions. Steep slopes are within close vicinity on both sides of the roadway. Additionally, there are stone outcrops along the steep slopes in some locations. A grass swale along the southeast- side of County Road is proposed to direct runoff to the deep sump drop inlet, which will provide greater TSS removal. Creating a water quality swale at this location was not feasible due to the steep slopes and stone outcrops mentioned. On the west side of the bridge, wetland resource areas are also within close proximity to the edge of the roadway; therefore, making it infeasible to incorporate SCMs or LIDs. A Stormwater Management Memorandum which addressed compliance with each Standard, has been prepared for this project, and is included in **Attachment F**.

6. Construction Considerations and Sequencing

Installation of the recommended scour protection will require a control of water system during construction. Control of water during construction typically includes water diversion and dewatering operations to maintain dry conditions during scour protection placement. The control of water system is the responsibility of the Contractor. Typical systems for water diversion primarily include cofferdams, which can incorporate steel sheet piling, large sandbags, or other proprietary systems. The implemented control of water system will be based on site constraints, actual flowrates during construction, and specific project permitting requirements. For the purpose of the permit applications, it is assumed that sandbag diversions will be adequate and preferrable. Final means and methods are up to the Contractor.

The temporary excavation support system will be selected by the Contractor. The Contractor will select the support of excavation based on site constraints, traffic control plan and other methods of construction.

It is anticipated that an excavator located behind each of the existing abutments will conduct most of the demolition/construction activities. Additional typical construction equipment that may be used to complete the project may include backhoes, bobcats, a crane, trucks/dump trucks, asphalt pavers, compactors, miscellaneous hand tools, etc. Based on previous bridge construction for a similar bridge on County Road, the limits of work shown should be sufficient for demolition/construction and staging. No additional or temporary accessway or road will be required.

The construction sequence is generally proposed as outlined below:

- A construction start notification will be made to required Agencies prior to the start of work.
- Meeting of construction personnel, site inspectors, and a wetland scientist will occur to discuss expectations and environmental permit requirements.
- At the start of construction activities, the limits of the adjacent existing wetlands will be marked in the field using brightly colored flagging.
- Install detour signage.
- Closure of existing roadway.
- Installation of erosion controls (Construction Phase 1).
- Removal of existing superstructure of bridge (Construction Phase 2).
- Installation of cofferdams/sandbags (Construction Phase 2 & 3).
- Water handling and dewatering.
- Placement of riprap for scour protection / placement of natural substrate in streambed.
- Removal of cofferdams/sandbags.
- Installation of new bridge superstructure (Construction Phase 4).
- Construction and pavement of roadway approaches and related work.
- Site restoration including site stabilization and seeding.
- Remove detour signs.
- Open new bridge to traffic.
- Remove erosion and sedimentation controls.

7. Mitigation Measures

The proposed project will occur within the jurisdictional limits of WOTUS; therefore, the project has been designed to incorporate construction Best Management Practices (BMPs) to ensure adequate protection to jurisdictional wetland areas within proximity of the project location. This will be achieved specifically by phasing project activities and 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.

Invasive species present in the project vicinity, such as elsewhere along the roadside and the streambanks included: Japanese barberry (*Berberis thunbergii*), winged euonymus (burning bush), bush honeysuckle (*Lonicera spp*.), Asiatic bittersweet (*Celastrus orbiculatus*), garlic mustard (*Alliaria petiolata*), multiflora rose (*Rosa multiflora*), and common reed (*Phragmites australis).* The presence of invasive species was limited in the project area; therefore, the need for management is not anticipated.

Erosion and Sedimentation Controls

Sedimentation barriers, such as compost filter tubes, or similiar, will be installed at the downgradient limits of work. Sedimentation barriers will be checked on a weekly basis and following significant storm / rainfall events. Sediment controls will remain in-place during all phases of the project and will be removed once the area is sufficiently stabilized. Please refer to Attachment G (Site Plans) for erosion and sedimentation control details and the proposed locations of controls.

Construction Stockpiling Locations and Staging Areas

All stockpile and staging areas will be located within the existing roadway layout; and while locations are to be determined by the Contractor, they will need to be approved 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). Stockpiled streambed material will be stored at a location within the existing work limits. Staging and storage areas will be outside of all jurisdictional resource areas where feasible and practicable.

Water Control Measures and Dewatering

Prior to in-water work, cofferdams will be installed to allow construction activities to occur in dry conditions. As such, work will require dewatering. The contractor will be required to develop and maintain a Construction Water Management Plan that is prepared in accordance with all requirements, including but not limited to the MassDOT contract design documents. The means and methods of dewatering shall be as determined by the contractor, pending MassDOT review and acceptance. Flow shall be maintained within the existing channel.

All discharge resulting from dewatering activities shall be directed to temporary sedimentation/filter bag basins as specified by the contractor to control turbidity. At no time shall the discharge be directly released into adjacent resource areas, nor will any settling tank/basin be located within a jurisdictional resource area. If stone or other erosion control is utilized at the outlet of the settling tank/basin, this material will be removed, and the area will be restored to existing conditions prior to the completion of the project. Please refer to Attachment G, Project Site Plans for additional detail on proposed water control measures.

8. Stream Crossing General Standards Compliance

The proposed project design complies with the Massachusetts Stream Crossing Standards to the maximum extent practicable. The proposed project meets all Stream Crossing Standards except for Standard 3. Significantly greater disturbances to jurisdictional resource areas would be required to fully meet Standard 3, and no substructure construction is proposed. The proposed design mitigates for the existing scouring and will not act as a physical barrier to fish and wildlife passage. Please refer to Attachment C for further stream crossing alternate analysis and compliance with Stream Crossing Standards.

The following outlines compliance with the Stream Crossing General Standards:

1. *Spans (bridges, 3-sided box culverts, open-bottom culverts or arches) that preserve the natural stream channel are strongly preferred.*

   Meets standard. The existing and proposed structures are span bridges, and the natural stream channel will be returned to preconstruction conditions.

2. *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*
   - *When embedment material includes elements > 15 inches in diameter, embedment depths should be at least twice the D84 (particle width larger than 84 % of particles) of the embedment material.*

   N/A, the existing abutments are to remain and have approximately 5.5-feet of embedment. This design will have approximately 7.35-feet of available clearance throughout the full length of the bridge with a natural stream bottom.

3. *Spans channel width (a minimum of 1.2 times the bankfull width).*

   Does not meet fully meet Standard. According to field measurements, bankfull width is 26 feet. To meet the Standard, the crossing would need to be 31.2 feet wide. The design intent is to provide a new superstructure with a natural stream bottom in accordance with the MassDOT publication *Design of Bridges and Culverts for Wildlife Passage at Freshwater Streams* (December 2010). Since the substructure is in good shape, replacing the substructure was not considered within the scope. This will minimize overall environmental impacts as a result of the project. Due to the preferred design of the bridge, the bridge abutments will not be replaced and the crossing's skewed opening of 25.38 feet wide will remain the same which, being similar to bankfull width, does not provide a significant constraint on the stream.

4. *Natural bottom substrate within the structure.*

   Meets Standard. Streambed material removed during construction from the existing channel will be reused on top of the riprap scour protection. Specifically, natural stream bottom at 6-inches thick will be placed over 3-feet of riprap and 1-foot crushed stone. The streambed will be designed to tie-into the existing grade up and downstream of the crossing and will be returned to pre-construction conditions.

5. *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.*

   Meets Standard. Improved flow conditions through the bridge, with increased hydraulic opening to be able to handle required flow. The proposed streambed will be restored with appropriate natural streambed conditions and characteristics.

6. *Openness> 0.82 feet (0.25 meters).*

   Meets Standard. The existing openness ratio is well above optimal standards and the proposed openness ratio is improved slightly to 3.92.

7. *Banks should be present on each side of the stream matching the horizontal profile of the existing stream and banks.*

   Meets Standard. The proposed design will match the horizontal profile of the existing stream and associated banks.

9. Summary

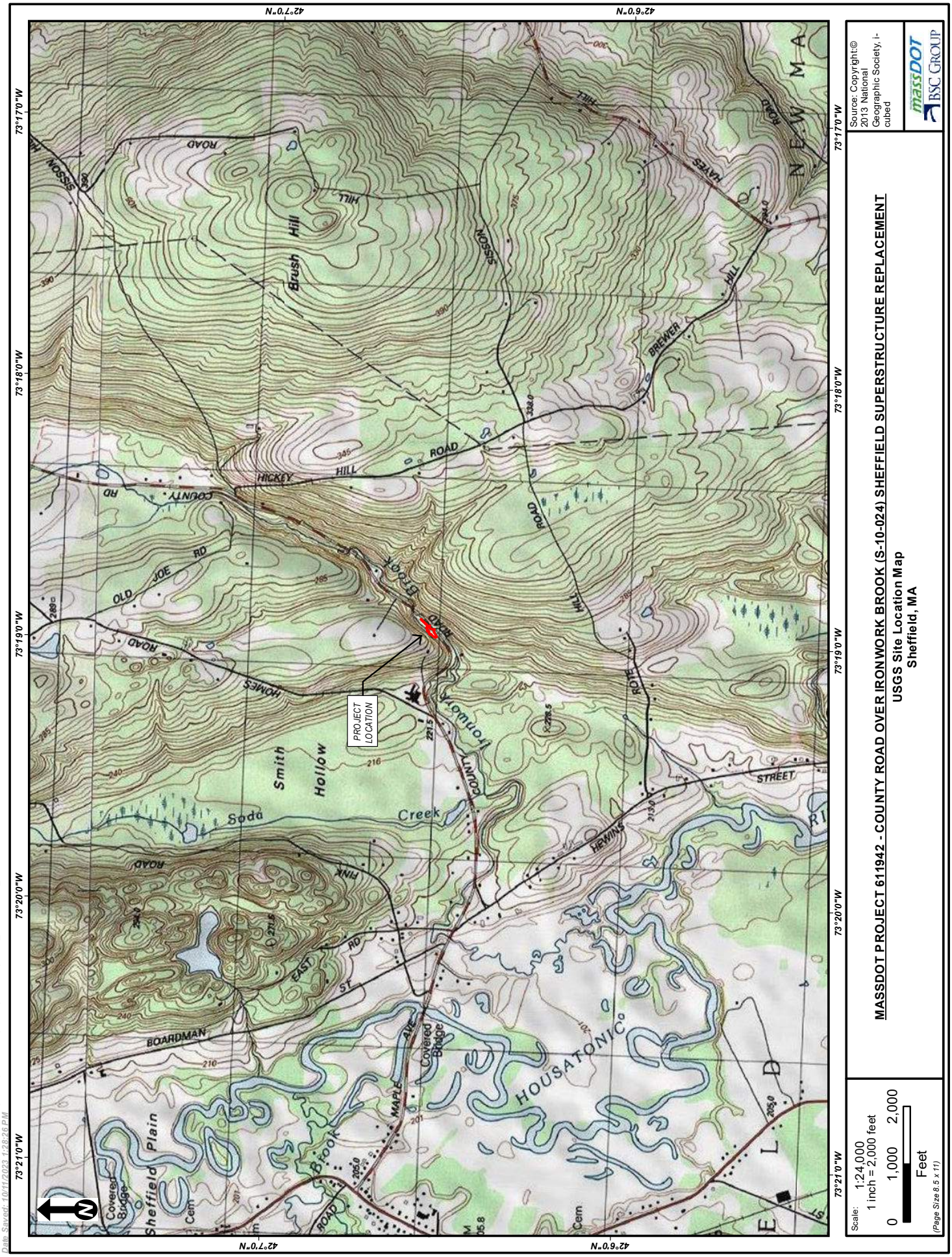
MassDOT is proposing to replace a structurally deficient, undersized bridge superstructure at County Road over Ironwork Brook. The design approach taken was to first avoid impacts to WOTUS where feasible, and where unavoidable, to minimize the impacts to the extent practicable and mitigate where applicable. The application further demonstrates that the project can be constructed in accordance with the Massachusetts Stream Crossing Standards to the maximum extent practicable. Throughout the project design process, the project team has carefully considered various 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. As such, the applicant requests project authorization from MassDEP and the USACE with a waiver from the Time of Year Restriction established under USACE PCN General Condition 20.

Attachment B

MassDOT Project 611942
County Road over Ironwork Brook (S-10-024)
Bridge Superstructure Replacement Project
Joint 401 WQC and USACE Pre-Construction Notification

USGS Locus Map
Environmental Resources Map
Soils Map
FEMA FIRM Map
Photographs

BSC GROUP
BUILD | SUPPORT | CONNECT



MASSDOT PROJECT 611942 - COUNTY ROAD OVER IRONWORK BROOK (S-10-024) SHEFFIELD SUPERSTRUCTURE REPLACEMENT

USGS Site Location Map
Sheffield, MA

Scale: 1:24,000
1 inch = 2,000 feet
0 1,000 2,000
Feet
(Page Size 8.5 x 11)

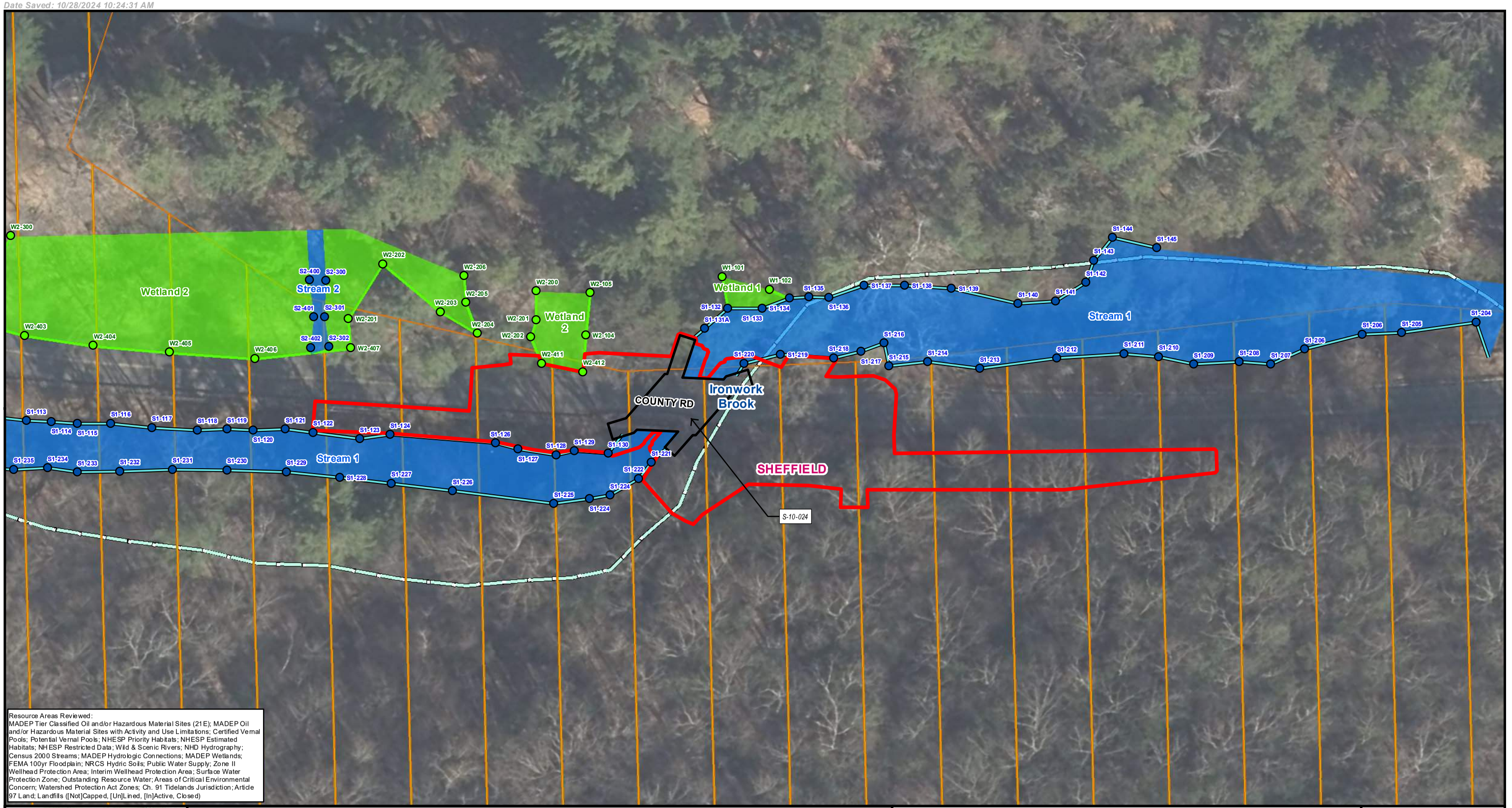
Source: Copyright © 2013 National Geographic Society, i-cubed

massDOT | BSC GROUP

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.

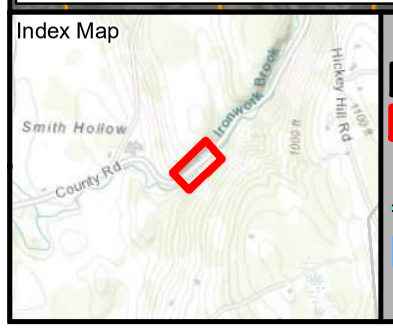
File Location: G:\GIS Prj\28450111\Output\Maps\MXD\ReportMaps\CountyRoad_USGSLocus_20231011.mxd
Date Saved: 10/11/2023 1:28:26 PM

File Location: G:\GISPrj\2845011\Output\Maps\MXD\ReportMaps\CountyRoad_ER_20231011.mxd
Date Saved: 10/28/2024 10:24:31 AM



Resource Areas Reviewed:
MADEP Tier Classified Oil and/or Hazardous Material Sites (21E); MADEP Oil and/or Hazardous Material Sites with Activity and Use Limitations; Certified Vernal Pools; Potential Vernal Pools; NHESP Priority Habitats; NHESP Estimated Habitats; NHESP Restricted Data; Wild & Scenic Rivers; NHD Hydrography; Census 2000 Streams; MADEP Hydrologic Connections; MADEP Wetlands; FEMA 100yr Floodplain; NRCS Hydric Soils; Public Water Supply; Zone II Wellhead Protection Area; Interim Wellhead Protection Area; Surface Water Protection Zone; Outstanding Resource Water; Areas of Critical Environmental Concern; Watershed Protection Act Zones; Ch. 91 Tidelands Jurisdiction; Article 97 Land; Landfills ([Not]Capped, [Un]Lined, [In]Active, Closed)

Index Map



Legend

- Existing Bridge
- Limit of Work
- Bank Flag
- Field Delineated Bank
- Field Delineated Stream Area
- Wetland Flag
- Field Delineated Wetland Line
- Field Delineated Wetland Area
- MADEP Hydrologic Connections
- Coldwater Fisheries Resources
- NHESP Priority Habitats

N

1 inch = 50 feet
0 25 50
Feet

*Indicates Layers Set to Transparency

MASSDOT PROJECT 611942
COUNTY ROAD OVER IRONWORK BROOK (S-10-024)
SHEFFIELD SUPERSTRUCTURE REPLACEMENT

Environmental Resources Map

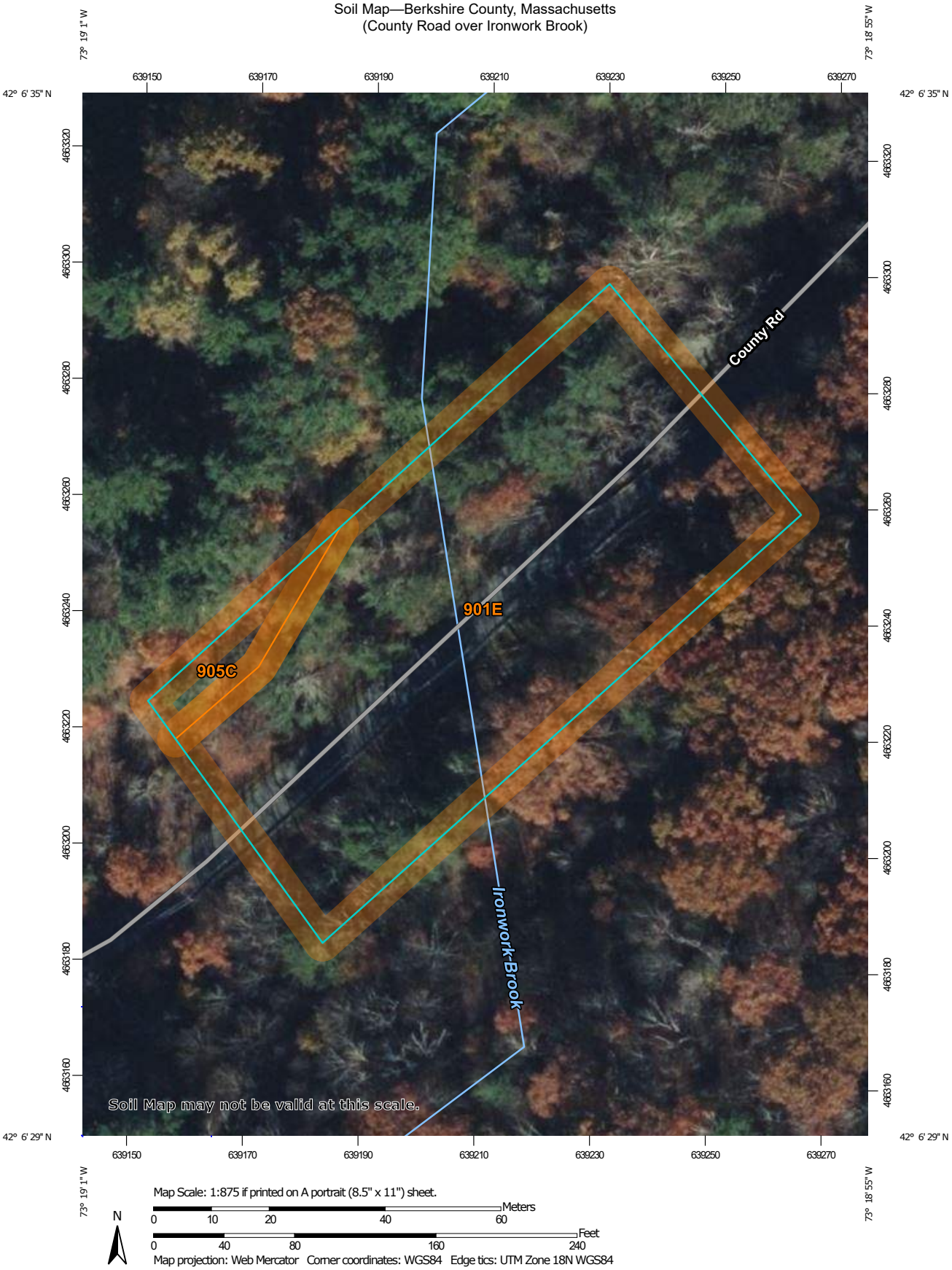
Sheffield, MA

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

massDOT
BSC GROUP

THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.

Soil Map—Berkshire County, Massachusetts
(County Road over Ironwork Brook)



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 1:25,000.

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: Berkshire County, Massachusetts
Survey Area Data: Version 18, Sep 12, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 15, 2021—Nov 8, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

A00830 - 33

Proposal No. 611942-133627

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
901E	Berkshire-Marlow association, 15 to 45 percent slopes, extremely stony	1.3	95.3%
905C	Peru-Marlow association, 3 to 15 percent slopes, extremely stony	0.1	4.7%
Totals for Area of Interest		**1.4**	**100.0%**

APPROXIMATE SCALE
400
0
400 FEET
NATIONAL FLOOD INSURANCE PROGRAM
FIRM
FLOOD INSURANCE RATE MAP
TOWN OF
SHEFFIELD,
MASSACHUSETTS
BERKSHIRE COUNTY
PANEL 13 OF 18
(SEE MAP INDEX FOR PANELS NOT PRINTED)
COMMUNITY-PANEL NUMBER
250041 0013 B
EFFECTIVE DATE:
SEPTEMBER 16, 1981
federal emergency management agency
federal insurance administration
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.
Approximate
Crossing Location
HOMES
Ironwork
COUNTY
Brook



Photo #1: View east towards County Road bridge (S-10-024) over Ironwork Brook.



Photo #2 : View west towards County Road bridge (S-10-024) over Ironwork Brook.



Photo #3: View south facing downstream at the existing bridge crossing on County Road over Ironwork Brook.



Photo #4: View northwest under the bridge facing upstream at the existing substructure.



Photo #5: View north facing upstream at the existing bridge crossing on County Road over Ironwork Brook.



Photo #6 : Facing southwest, typical conditions of Ironwork Brook just downstream of the bridge crossing.



Photo #7: View west of the southwest quadrant of the existing County Road bridge over Ironwork Brook.



Photo #8 : View east of the southeast quadrant of the existing County Road bridge over Ironwork Brook.



Photo #9: View west of the northwest quadrant of the existing County Road bridge over Ironwork Brook.



Photo #1 0: View of the northeast quadrant of the County Road bridge from the opposite bank. *Facing southeast.*



Photo #11: View northeast of typical conditions of Ironwork Brook upstream of the County Road bridge.

Attachment C

MassDOT Project 611942
County Road over Ironwork Brook (S-10-024)
Bridge Superstructure Replacement Project
Joint 401 WQC and USACE Pre-Construction Notification

Alternatives Analysis / Stream Crossing Evaluation Worksheet
USGS Stream Stats

BSC GROUP
BUILD | SUPPORT | CONNECT

Massachusetts Stream Crossing Standards Evaluation Worksheet

Superstructure Replacement Project

MassDOT 611942, County Road over Ironwork Brook – Alternatives Analysis

Due to existing site conditions, the proposed project was not able to reach full compliance with the Massachusetts Stream Crossing Standards as referenced in the general conditions of the U.S. Army Corps of Engineers General Permits (GPs) for the Commonwealth of Massachusetts. Therefore, it has been designed to meet the Stream Crossing Standards to the maximum extent practicable for a replacement crossing. The following description provides an overview of the bridge design and is followed by an Alternatives Analysis and an evaluation of compliance with the Stream Crossing Standards.

Table 1.0 – Existing Crossing Data

Stream Crossing Standard	**Existing Conditions**
Type of Crossing	Steel Stringers on Concrete/Masonry Abutments
Size	Width: Clear span - **20 feet square (25.38 feet skewed)** Height: **7.23 feet** Crossing Length: **37.5 feet (on angle)** Cross Sectional Area: **144.6 sq. ft.**
Bankfull Width	**26 feet** (Average bankfull width measured in field; USGS StreamStats reporting 37.4 feet with a drainage area = 8.28 square miles)
Openness Ratio	**3.86**
Water Level	Observed Water Elevation (7/19/2021): **751.1±** Ordinary High Water Mark: **752.8±**

A00830 - 43

Proposal No. 611942-133627

Massachusetts Stream Crossing Standards Evaluation Worksheet

Table 2.0 – Proposed Crossing Conditions

Alternative 1 (*Superstructure Replacement*)		
Stream Crossing Standard	**Meets Standard?**	**Comment**
Type of Crossing – S36-18 Prestressed Concrete beams on Existing Abutments	Yes	**Prestressed Concrete Beams on Existing Abutments** Width: Clear span - **20 feet square (25.38 feet skewed)** Height: **7.35-feet** Crossing Length: **37.5 (on angle)** Cross Sectional Area: **147 sq. ft.**
Embedment	Yes	The existing abutments are to remain and have approximately 5.5-feet of embedment. This design will have approximately **7.35 -feet** of available clearance throughout the full length of the bridge
Crossing Span (1.2 Bankfull Width[1])	No	Bankfull Width: **26-feet** (From Field Measurements) Minimum Bankfull Width for Compliance: **31.2-feet** The width of the opening measures **20 feet square (25.38 feet skewed)**.
Openness Ratio (Cross Sectional Area / Crossing Length) General = 0.82 feet Optimum = 1.64 feet	Yes	Proposed Cross Sectional Area: **147** Proposed Openness Ratio: **3.92**
Substrate	Yes	Natural stream bottom material will be placed over rockfill scour protection throughout the full length of the bridge impact areas. Constructed stream grades will match existing (pre-construction) conditions.
Water Depth and Velocity	Yes	Improved flow conditions through bridge, with increased hydraulic opening to be able to handle required flow.

[1] Per the Massachusetts River & Stream Crossing Standards (March 1, 2011, Revised March 8, 2012), Page 18, Item #2 - If it is not possible to meet all of the applicable standards, replacement crossings should be designed to avoid or mitigate the following problems: (1) Inlet drops; (2) Outlet drops; (3) Flow contraction that produces significant turbulence; (4) Tailwater armoring; (5) Tailwater scour pools; (6) Physical barriers to fish and wildlife passage.

A00830 - 44

Proposal No. 611942-133627

Massachusetts Stream Crossing Standards Evaluation Worksheet

Alternative 2 (*Bridge Replacement*)		
Stream Crossing Standard	**Meets Standard?**	**Comment**
Type of Crossing – 3-sided open bottom bridge	Yes	**Proposed Deck Beams on Proposed Abutments**: Width: **41.82-feet** (Measured between inside faces of bridge sidewalls) Height: **7.28-feet** (Measured from top of proposed streambed to bridge soffit) Crossing Length: **42.00-feet** Cross Sectional Area: **270.03 sq. ft.**
Embedment	Yes	The proposed bridge will be embedded at **4.00-feet** below the existing streambed at the proposed inlet and outlet locations at the north & south abutment. This design will have approximately **7.28-feet** of available clearance throughout the full length of the bridge
Crossing Span (1.2 Bankfull Width[2])	Yes	Bankfull Width: **26-feet** (From Field Measurements) Minimum Bankfull Width for Compliance: **31.2-feet** The clear span of the bridge measures **41.82-feet**. Which meets the required Bankfull width distance, but because of an existing driveway on southeast corner of the bridge, the location of the east abutment must remain in the same location as the existing.
Openness Ratio (Cross Sectional Area / Crossing Length) General = 0.82 feet Optimum = 1.64 feet	Yes	Proposed Cross Sectional Area: **270.03 sq. ft.** Proposed Openness Ratio: **5.75**
Substrate	Yes	Natural stream bottom will be placed over riprap throughout the full length of the bridge. Constructed stream grades will match existing (pre-construction) conditions.
Water Depth and Velocity	Yes	Hydraulic Report prepared for the project indicates the post-construction water depth during storm events is lower than pre-construction conditions.

[2] Per the Massachusetts River & Stream Crossing Standards (March 1, 2011, Revised March 8, 2012), Page 18, Item #2 - If it is not possible to meet all of the applicable standards, replacement crossings should be designed to avoid or mitigate the following problems: (1) Inlet drops; (2) Outlet drops; (3) Flow contraction that produces significant turbulence; (4) Tailwater armoring; (5) Tailwater scour pools; (6) Physical barriers to fish and wildlife passage.

A00830 - 45

Proposal No. 611942-133627

Massachusetts Stream Crossing Standards Evaluation Worksheet

Evaluation Criteria	No Build Alternative	Alternative 1 *Preferred Alternative*: **Superstructure Replacement with Prestressed Concrete Beams on Existing Abutments** **25.38'W X 7.35'H X 37.11'L (dimensions)**	Alternative 2: **Proposed Bridge Replacement with Deck Beams on Proposed Abutments** **41.82'W X 7.28'H X 42.00'L (dimensions)**
1) potential for downstream flooding	No change	Based on the hydraulic model there is no increase in the proposed tailwater depth relative to the existing condition. The proposed opening will not increase downstream water surface elevations.	Because the water surface elevations through the bridge for all design floods decreased compared to the existing conditions model.
2) upstream and downstream habitat	No improvement.	Maintained flow conditions. Scour condition addressed.	Improved flow conditions. Scour condition addressed.
3) potential for erosion and head- cutting	No change	Erosion and head-cutting issues improved.	Erosion and head-cutting issues improved.
4) stream stability	No change	Scour issues addressed. Scour protection material sized for stability at the design event, is provided (below top layer of natural material) through the full length of the proposed bridge.	Scour issues addressed. Scour protection material sized for stability at the design event, is provided (below top layer of natural material) through the full length of the proposed bridge.
5) habitat fragmentation caused by the crossing	No change, minimal fragmentation	No change, minimal fragmentation since existing conditions and Alternative 1 both meet a greater than optimal openness ratio.	Increased openness but maintains minimal fragmentation
6) amount of stream mileage made accessible	No change	No change	No change

A00830 - 46

Proposal No. 611942-133627

Massachusetts Stream Crossing Standards Evaluation Worksheet

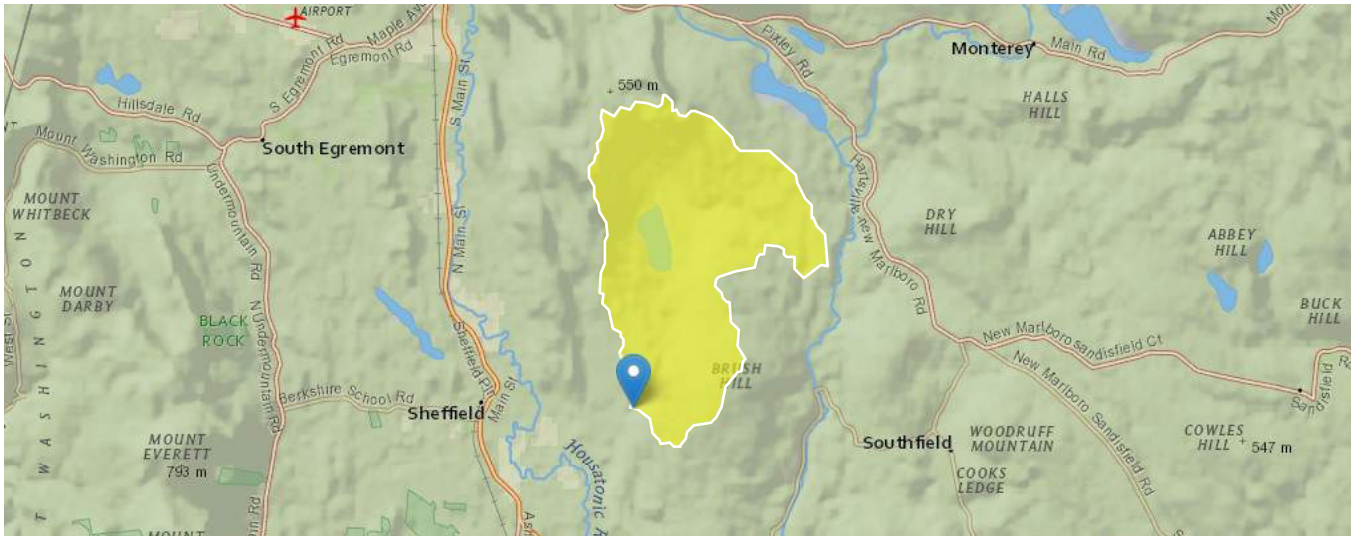
Evaluation Criteria	**No Build Alternative**	**Alternative 1 *Preferred Alternative*:** **Superstructure Replacement with Prestressed Concrete Beams on Existing Abutments** **25.38'W X 6.82'H X 37.11'L (dimensions)**	**Alternative 2:** **Proposed Bridge Replacement with Deck Beams on Proposed Abutments** **41.82'W X 6.96'H X 37.11'L (dimensions)**
7) storm flow conveyance	100-year event water Cross Sectional Area: **183.50 sq. ft.**	100-year event water Cross Sectional Area: **186.54 sq. ft.**	100-year event water Cross Sectional Area: **270.03 sq. ft.**
8) engineering design constraints	No change, no improvements	No change, no improvements	The clear span of the bridge measures **41.82-feet**. Which meets the required Bankfull width distance, but because of an existing driveway on southeast corner of the bridge, the location of the east abutment must remain in the same location as the existing. Minimal stream flow improvements.
9) hydrologic constraints	Passes Design storm	Passes Design storm	Passes Design storm
10) impacts to wetlands that would occur	No construction impacts to adjacent wetland resource areas.	Minimal construction impacts to adjacent wetland areas.	Permanent impacts to adjacent wetland resource areas.
11) potential to affect property and infrastructure	None	None	None
12) cost of replacement	N/A	Proposed Replacement Cost: $2,300,000	Proposed Replacement Cost: $5,200,000

A00830 - 47

Proposal No. 611942-133627

MassDOT 611942 - County Road over Ironwork Brook (S-10-024), StreamStats Report

Region ID: MA
Workspace ID: MA20231128161003715000
Clicked Point (Latitude, Longitude): 42.10914, -73.31589
Time: 2023-11-28 11:10:17 -0500



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLDEM10M	Mean basin slope computed from 10 m DEM	11.17	percent
DRNAREA	Area that drains to a point on a stream	8.28	square miles
ELEV	Mean Basin Elevation	1100	feet
LC06STOR	Percentage of water bodies and wetlands determined from the NLCD 2006	9.64	percent

Peak-Flow Statistics

Peak-Flow Statistics Parameters [Peak Statewide 2016 5156]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	8.28	square miles	0.16	512
ELEV	Mean Basin Elevation	1100	feet	80.6	1948
LC06STOR	Percent Storage from NLCD2006	9.64	percent	0	32.3

Peak-Flow Statistics Flow Report [Peak Statewide 2016 5156]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PIL	PIU	ASEp
50-percent AEP flood	285	ft^3/s	142	572	42.3
20-percent AEP flood	480	ft^3/s	236	978	43.4
10-percent AEP flood	641	ft^3/s	307	1340	44.7

Statistic	Value	Unit	PIL	PIU	ASEp
4-percent AEP flood	881	ft^3/s	407	1910	47.1
2-percent AEP flood	1080	ft^3/s	482	2420	49.4
1-percent AEP flood	1300	ft^3/s	561	3010	51.8
0.5-percent AEP flood	1550	ft^3/s	648	3710	54.1
0.2-percent AEP flood	1900	ft^3/s	757	4770	57.6

Peak-Flow Statistics Citations

Zarriello, P.J.,2017, Magnitude of flood flows at selected annual exceedance probabilities for streams in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2016–5156, 99 p. (https://dx.doi.org/10.3133/sir20165156)

Bankfull Statistics

Bankfull Statistics Parameters [Bankfull Statewide SIR2013 5155]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	8.28	square miles	0.6	329
BSLDEM10M	Mean Basin Slope from 10m DEM	11.17	percent	2.2	23.9

Bankfull Statistics Parameters [Appalachian Highlands D Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	8.28	square miles	0.07722	940.1535

Bankfull Statistics Parameters [New England P Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	8.28	square miles	3.799224	138.999861

Bankfull Statistics Parameters [USA Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	8.28	square miles	0.07722	59927.7393

Bankfull Statistics Flow Report [Bankfull Statewide SIR2013 5155]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	ASEp
Bankfull Width	37.4	ft	21.3
Bankfull Depth	1.86	ft	19.8
Bankfull Area	68.9	ft^2	29
Bankfull Streamflow	258	ft^3/s	55

Bankfull Statistics Flow Report [Appalachian Highlands D Bieger 2015]

Statistic	Value	Unit
Bieger_D_channel_width	36.5	ft
Bieger_D_channel_depth	2.06	ft
Bieger_D_channel_cross_sectional_area	76.4	ft^2

Bankfull Statistics Flow Report [New England P Bieger 2015]

Statistic	Value	Unit
Bieger_P_channel_width	45.7	ft
Bieger_P_channel_depth	2.19	ft
Bieger_P_channel_cross_sectional_area	102	ft^2

Bankfull Statistics Flow Report [USA Bieger 2015]

Statistic	Value	Unit
Bieger_USA_channel_width	26.1	ft
Bieger_USA_channel_depth	1.89	ft
Bieger_USA_channel_cross_sectional_area	53.5	ft^2

Bankfull Statistics Flow Report [Area-Averaged]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	ASEp
Bankfull Width	37.4	ft	21.3
Bankfull Depth	1.86	ft	19.8
Bankfull Area	68.9	ft^2	29
Bankfull Streamflow	258	ft^3/s	55
Bieger_D_channel_width	36.5	ft	
Bieger_D_channel_depth	2.06	ft	
Bieger_D_channel_cross_sectional_area	76.4	ft^2	
Bieger_P_channel_width	45.7	ft	
Bieger_P_channel_depth	2.19	ft	
Bieger_P_channel_cross_sectional_area	102	ft^2	
Bieger_USA_channel_width	26.1	ft	
Bieger_USA_channel_depth	1.89	ft	
Bieger_USA_channel_cross_sectional_area	53.5	ft^2	

Bankfull Statistics Citations

Bent, G.C., and Waite, A.M.,2013, Equations for estimating bankfull channel geometry and discharge for streams in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2013–5155, 62 p., (http://pubs.usgs.gov/sir/2013/5155/)

Bieger, Katrin; Rathjens, Hendrik; Allen, Peter M.; and Arnold, Jeffrey G.,2015, Development and Evaluation of Bankfull Hydraulic Geometry Relationships for the Physiographic Regions of the United States, Publications from USDA-ARS / UNL Faculty, 17p. (https://digitalcommons.unl.edu/usdaarsfacpub/1515?utm_source=digitalcommons.unl.edu%2Fusdaarsfacpub%2F1515&utm_medium=PDF&utm_campaign=PDFCoverPages)

USGS Data Disclaimer: Unless otherwise stated, all data, metadata and related materials are considered to satisfy the quality standards relative to the purpose for which the data were collected. Although these data and associated metadata have been reviewed for accuracy and completeness and approved for release by the U.S. Geological Survey (USGS), no warranty expressed or implied is made regarding the display or utility of the data for other purposes, nor on all computer systems, nor shall the act of distribution constitute any such warranty.

USGS Software Disclaimer: This software has been approved for release by the U.S. Geological Survey (USGS). Although the software has been subjected to rigorous review, the USGS reserves the right to update the software as needed pursuant to further analysis and review. No warranty, expressed or implied, is made by the USGS or the U.S. Government as to the functionality of the software and related material nor shall the fact of release constitute any such warranty. Furthermore, the software is released on condition that neither the USGS nor the U.S. Government shall be held liable for any damages resulting from its authorized or unauthorized use.

USGS Product Names Disclaimer: Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Application Version: 4.18.1
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

Attachment D

MassDOT Project 611942
County Road over Ironwork Brook (S-10-024)
Bridge Superstructure Replacement Project
Joint 401 WQC and USACE Pre-Construction Notification

Wetland Delineation Forms
Habitat Assessment Map
NHESP No Take Letter
USFWS IPAC Species Letter

BSC GROUP
BUILD | SUPPORT | CONNECT

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: County Road over Ironwork Brook Bridge Replacement City/County: Sheffield Sampling Date: 07/19/2023

Applicant/Owner: MassDOT - Highway Division State: MA Sampling Point: W1/W2 -Wet

Investigator(s): Jonathan Kuziel Section, Township, Range:

Landform (hillside, terrace, etc.): Hillside Local relief (concave, convex, none): Concave/Linear Slope (%): 0-15

Subregion (LRR or MLRA): LRR R, MLRA 144B Lat: 42.109348 Long: -73.316094 Datum: WGS

Soil Map Unit Name: Berkshire-Marlow association, 15 to 45 percent slopes, extremely stony (901E) NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area**	
Hydric Soil Present?	Yes X	No	**within a Wetland?**	**Yes** X **No**
Wetland Hydrology Present?	Yes X	No	If yes, optional Wetland Site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No	Depth (inches):
Water Table Present?	Yes X	No	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes X	No	Depth (inches):

Wetland Hydrology Present? **Yes** X **No**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: W1/W2 -Wet

Tree Stratum (Plot size: 30 feet)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Tsuga canadensis*	10	Yes	FACU*
2. *Quercus rubra*	10	Yes	FACU
3. *Pinus strobus*	10	Yes	FACU
4.			
5.			
6.			
7.			
	30	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Carpinus caroliniana*	3	Yes	FAC
2. *Tsuga canadensis*	3	Yes	FACU*
3.			
4.			
5.			
6.			
7.			
	6	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Osmundastrum cinnamomeum*	3	No	FACW
2. *Impatiens capensis*	50	Yes	FACW
3. *Symplocarpus foetidus*	10	No	OBL
4. *Arisaema triphyllum*	3	No	FAC
5. *Solidago*	3	No	
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	69	=Total Cover	
Woody Vine Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10
FACW species	53	x 2 =	106
FAC species	6	x 3 =	18
FACU species	33	x 4 =	132
UPL species	0	x 5 =	0
Column Totals:	102 (A)		266 (B)

Prevalence Index = B/A = 2.61

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W1/W2 -Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	100					Loamy/Clayey	
3-12	10YR 6/2	80	10YR 6/6	20	C	M	Loamy/Clayey	Prominent redox concentrations
12-18+	10YR 6/2	80	10YR 6/6	20	C	M	Loamy/Clayey	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: County Road over Ironwork Brook Bridge Replacement City/County: Sheffield Sampling Date: 07/19/2023

Applicant/Owner: MassDOT - Highway Division State: MA Sampling Point: W1/W2 -upl

Investigator(s): Jonathan Kuziel Section, Township, Range:

Landform (hillside, terrace, etc.): Hillside Local relief (concave, convex, none): Concave/Linear Slope (%): 0-15

Subregion (LRR or MLRA): LRR R, MLRA 144B Lat: 42.109348 Long: -73.316094 Datum: WGS

Soil Map Unit Name: Berkshire-Marlow association, 15 to 45 percent slopes, extremely stony (901E) NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area**
Hydric Soil Present?	Yes ____	No X	**within a Wetland?** **Yes** X **No** ____
Wetland Hydrology Present?	Yes X	No ____	If yes, optional Wetland Site ID:

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ____ High Water Table (A2)
- X Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ Marl Deposits (B15)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- X Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No ____	Depth (inches): ____
Water Table Present?	Yes X	No ____	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): ____

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: W1/W2 -upl

Tree Stratum (Plot size: 30 feet)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Tsuga canadensis*	10	Yes	FACU*
2. *Quercus rubra*	10	Yes	FACU
3. *Pinus strobus*	10	Yes	FACU
4.			
5.			
6.			
7.			
	30	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Euonymus alatus*	30	Yes	UPL
2. barberry	30	Yes	
3. *Carpinus caroliniana*	30	Yes	FAC
4.			
5.			
6.			
7.			
	90	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Polystichum acrostichoides*	10	Yes	FACU
2. *Toxicodendron radicans*	10	Yes	FAC
3. *Alliaria petiolata*	10	Yes	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	30	=Total Cover	
Woody Vine Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 22.2% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	40	x 3 =	120
FACU species	50	x 4 =	200
UPL species	30	x 5 =	150
Column Totals:	120 (A)		470 (B)

Prevalence Index = B/A = 3.92

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W1/W2 -upl

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/2	100					Loamy/Clayey	
4-18	10YR 6/2	100					Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

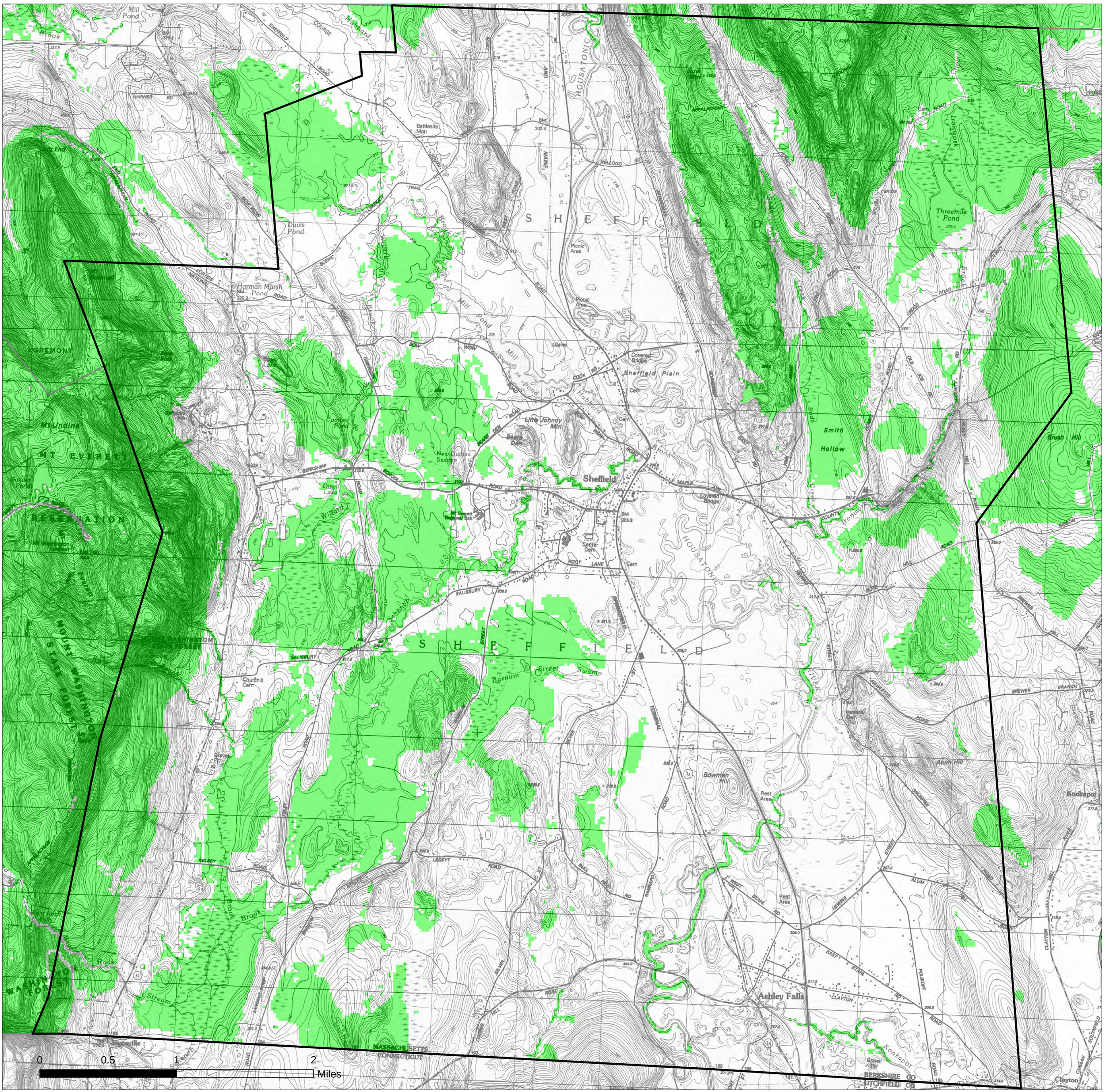
Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

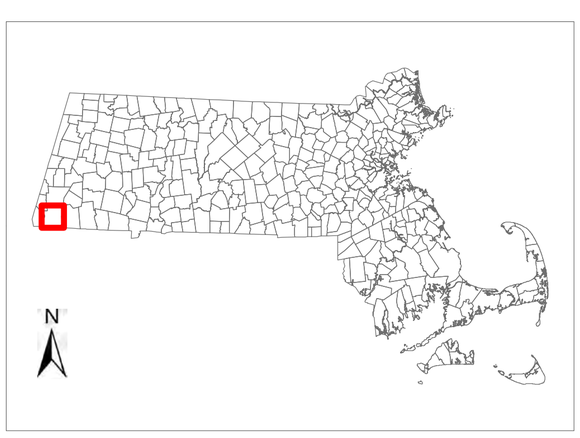
Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

Habitat of Potential Regional or Statewide Importance
Town of SHEFFIELD, MA



Habitat of Potential Regional or Statewide Importance



Updated July 23, 2021

MassDEP's Massachusetts Wildlife Habitat Protection Guidance for Inland Wetlands (June 2006) adopted a new approach for assessing wildlife habitat impacts associated with work in wetlands. This approach utilizes maps developed at the University of Massachusetts Amherst using the Conservation Assessment and Prioritization System (CAPS). The maps depict Habitat of Potential Regional or Statewide Importance that may trigger more intensive review under the MA Wetlands Protection Act. For more information on how to assess wildlife habitat impacts, see Section III of the Guidance document: https://www.mass.gov/doc/massachusetts-wildlife-habitat-protection-guidance-for-inland-wetlands/download.

CAPS is an approach to prioritizing land for conservation/protection based on the assessment of ecological integrity for various ecological communities (e.g. forested wetland, shrub swamp, headwater stream) within an area. The CAPS model assesses ecological integrity of the Massachusetts landscape as influenced by environmental stressor metrics (e.g. pollution, fragmentation). It relies on data that are broadly available across Massachusetts. Ecological features which are not consistently surveyed or uniformly available, such as certified vernal pools, rare species habitat, and contamination sites are not included in the CAPS analysis. When available, this more specific ecological information may be used in conjunction with the CAPS outputs to better understand particular sites in Massachusetts and support informed conservation decision-making. For more information on the statewide maps produced by the CAPS model, see: http://www.umasscaps.org.

These maps were prepared by the University of Massachusetts Amherst, with funding from the Massachusetts Department of Environmental Protection.

UMass Amherst

MassDEP

UMass Extension
CENTER FOR AGRICULTURE

While the project area is generally characterized by evergreen and deciduous forest, wetlands, roadways, and single-family residential development, the project area is limited to previously disturbed existing roadway, and jurisdictional resource areas encumbered by the existing bridge. The forest is dominated by a mix of eastern hemlock (*Tsuga canadensis*), red oak (*Quercus rubra*) and white pine (*Pinus strobus*). Low-lying vegetation includes winged euonymus *(Euonymus alatus*), common barberry (*Berberis vulgaris)* and musclewood (*Carpinus caroliniana*). Herbaceous vegetation in the vicinity of the Project area includes christmas fern (*Polystichum acrostichoides*), poison ivy (*Toxicodendron radicans)* and garlic mustard (*Alliaria petiolate*).

The riverine forested area in the project vicinity serves as habitat for a variety of species, as indicated by physical evidence of their presence (i.e. prints, scat, feathers, etc.) or that were directly seen by delineators in the field such as wild turkey (*Meleagris gallopavo*), northern flicker (*Colaptes auratus*), pileated woodpecker (*Dryocopus pileatus*), and white-tailed deer (*Odocoileus virginianus*).

State- and federally-listed species are discussed further in the project narrative (**Attachment A**) and in coordination documentation with USFWS, and NHESP.

MASSWILDLIFE

DIVISION OF
FISHERIES & WILDLIFE

1 Rabbit Hill Road, Westborough, MA 01581
p: (508) 389-6300 | f: (508) 389-7890
MASS.GOV/MASSWILDLIFE

December 14, 2022

David Paulson
Massachusetts Department of Transportation
10 Park Plaza, Room 4260
Boston MA 02116

RE: Project Location: County Road over Ironworks Brook, Sheffield
Project Description: Replace bridge, restore streambed and install scour protection
NHESP File No.: 22-41320

Dear Applicant:

Thank you for submitting the MESA Project Review Checklist, site plans and other required materials to the Natural Heritage and Endangered Species Program of the MA Division of Fisheries & Wildlife (the "Division") for review pursuant to the Massachusetts Endangered Species Act (MESA) (MGL c.131A) and its implementing regulations (321 CMR 10.00).

Based on a review of the information that was provided and the information that is currently contained in our database, the Division has determined that this project, as currently proposed, **will not result in a prohibited Take** of state-listed rare species. This determination is a final decision of the Division of Fisheries & Wildlife pursuant to 321 CMR 10.18. Any changes to the proposed project or any additional work beyond that shown on the site plans may require an additional filing with the Division pursuant to the MESA. This project may be subject to further review if no physical work is commenced within five years from the date of issuance of this determination, or if there is a change to the project.

Please note that this determination addresses only the matter of state-listed species and their habitats. If you have any questions regarding this letter please contact Melany Cheeseman, Endangered Species Review Assistant, at (508) 389-6357.

Sincerely,

Everose Schlüter

Everose Schlüter, Ph.D.
Assistant Director

cc: Kylie Abouzeid, Massachusetts Department of Transportation

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: 10/25/2024 15:00:01 UTC
Project Code: 2024-0026529
Project Name: 611942 - SHEFFIELD- SUPERSTRUCTURE REPLACEMENT, S-10-024, COUNTY ROAD OVER IRONWORK BROOK

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

Updated 4/12/2023 - Please review this letter each time you request an Official Species List, we will continue to update it with additional information and links to websites may change.

About Official Species Lists

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Federal and non-Federal project proponents have responsibilities under the Act to consider effects on listed species.

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested by returning to an existing project's page in IPaC.

Endangered Species Act Project Review

Please visit the "**New England Field Office Endangered Species Project Review and**

Consultation" website for step-by-step instructions on how to consider effects on listed species and prepare and submit a project review package if necessary:

https://www.fws.gov/office/new-england-ecological-services/endangered-species-project-review

NOTE Please do not use the **Consultation Package Builder** tool in IPaC except in specific situations following coordination with our office. Please follow the project review guidance on our website instead and reference your **Project Code** in all correspondence.

Northern Long-eared Bat - (**Updated 4/12/2023**) The Service published a final rule to reclassify the northern long-eared bat (NLEB) as endangered on November 30, 2022. The final rule went into effect on March 31, 2023. You may utilize the **Northern Long-eared Bat Rangewide Determination Key** available in IPaC. More information about this Determination Key and the Interim Consultation Framework are available on the northern long-eared bat species page:

https://www.fws.gov/species/northern-long-eared-bat-myotis-septentrionalis

For projects that previously utilized the 4(d) Determination Key, the change in the species' status may trigger the need to re-initiate consultation for any actions that are not completed and for which the Federal action agency retains discretion once the new listing determination becomes effective. If your project was not completed by March 31, 2023, and may result in incidental take of NLEB, please reach out to our office at newengland@fws.gov to see if reinitiation is necessary.

Additional Info About Section 7 of the Act
Under section 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to determine whether projects may affect threatened and endangered species and/or designated critical habitat. If a Federal agency, or its non-Federal representative, determines that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Federal agency also may need to consider proposed species and proposed critical habitat in the consultation. 50 CFR 402.14(c)(1) specifies the information required for consultation under the Act regardless of the format of the evaluation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/service/section-7-consultations

In addition to consultation requirements under Section 7(a)(2) of the ESA, please note that under sections 7(a)(1) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species. Please contact NEFO if you would like more information.

Candidate species that appear on the enclosed species list have no current protections under the

ESA. The species' occurrence on an official species list does not convey a requirement to consider impacts to this species as you would a proposed, threatened, or endangered species. The ESA does not provide for interagency consultations on candidate species under section 7, however, the Service recommends that all project proponents incorporate measures into projects to benefit candidate species and their habitats wherever possible.

Migratory Birds

In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see:

https://www.fws.gov/program/migratory-bird-permit

https://www.fws.gov/library/collections/bald-and-golden-eagle-management

Please feel free to contact us at **newengland@fws.gov** with your **Project Code** in the subject line if you need more information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat.

Attachment(s): Official Species List

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

PROJECT SUMMARY

Project Code: 2024-0026529

Project Name: 611942 - SHEFFIELD- SUPERSTRUCTURE REPLACEMENT, S-10-024, COUNTY ROAD OVER IRONWORK BROOK

Project Type: Bridge - Replacement

Project Description: 611942 - SHEFFIELD- SUPERSTRUCTURE REPLACEMENT, S-10-024, COUNTY ROAD OVER IRONWORK BROOK

The current proposal is to replace the superstructure and keep the curb-to-curb width the same as the original (2-11-11-2). Bridge rails will be standard S3-TL4 with precast highway guardrail transitions. The top portion of the abutments will be demolished to below the bottom of the bridge seat and reconstructed with reinforced concrete. Approximately 100-ft of the existing roadway approaches will be reconstructed as necessary with appropriate guardrail transitions. The residential driveway near the southeast corner of the bridge will require accommodation. The designer will investigate and document the possible use of spread deck beams with a cast-in-place concrete deck to decrease the total superstructure depth and to minimize the new reinforced concrete cap. A galvanized steel superstructure replacement alternative will also be considered. A complete bridge replacement alternative will also be investigated to allow cost and constructability comparisons to a superstructure replacement. The bridge alignment and profile will remain approximately the same while increasing the hydraulic opening under the bridge.

Tricolored Bat: Proposed Endangered Species only. The project action will not jeopardize the continued existence of a proposed species. Monarch Butterfly: Candidate Species only, no conservation measures at this time.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.1091675,-73.31584989999999,14z



Counties: Berkshire County, Massachusetts

ENDANGERED SPECIES ACT SPECIES

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Endangered
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: Private Entity
Name: Hana Isihara
Address: 1 Mercantile Street
Address Line 2: Suite 610
City: Worcester
State: MA
Zip: 01608
Email hisihara@bscgroup.com
Phone: 6178964454

LEAD AGENCY CONTACT INFORMATION

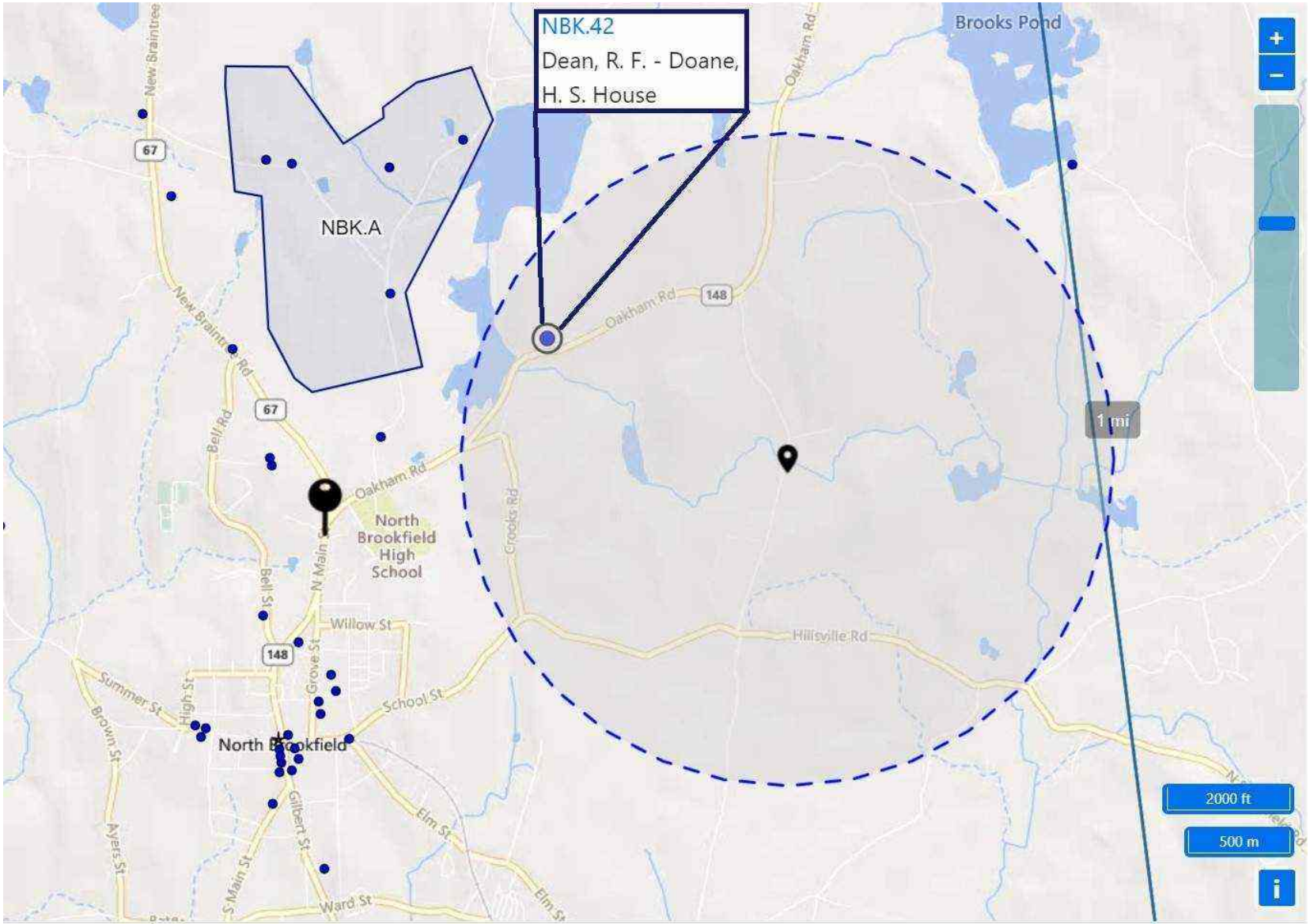
Lead Agency: Federal Highway Administration

Attachment E

MassDOT Project 611942
County Road over Ironwork Brook (S-10-024)
Bridge Superstructure Replacement Project
Joint 401 WQC and USACE Pre-Construction Notification

MA Historical Coordination
Tribal Coordination

BSC GROUP
BUILD | SUPPORT | CONNECT



Demolished?	MHC #	Historic Name	Common Name	Address	Designations	Architectural Style
	NBK.42	Dean, R. F. - Doane, H. S. House	Valley View School	Oakham Rd North Brookfield		Federal;

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

PROJECT NOTIFICATION FORM

Project Name:	Replacement of Bridge S-10-024 (MassDOT #611942)
Location /Address:	County Road over Ironworks Brook
City/Town:	Sheffield
Project Proponent	
Name:	Massachusetts Department of Transportation
Address:	10 Park Plaza
City/Town/Zip/Telephone:	Boston, MA 02116 / T: 207-590-4999

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)**
FHWA (lead agency)	Federal Aid funding
US Army Corps of Engineers	Section 404 permit

Project Description (narrative):

The Massachusetts Department of Transportation (MassDOT) proposes to replace Bridge S-10-024, which carries County Road over Ironworks Brook in Sheffield. Bridge S-10-024, constructed in 1939, consists of a single-span steel stringer superstructure supported on reinforced concrete abutments with wingwalls. The bridge has two-rail welded steel pipe railings.

The proposed work will include replacement of the bridge superstructure on existing alignment with a structure the same width as existing. The new superstructure will consist of single-span precast concrete deck beams with cast-in-place reinforced concrete deck. The existing substructure will be rehabilitated and remain in place. Proposed repairs include removal and replacement of the existing bridge seats and backwalls at both abutments, as well as partial-depth to full-depth concrete excavation at select locations along the breastwalls and wingwalls, to remove and repair deteriorated concrete. The bridge will have painted steel picketed S3-TL4 railings. The road will be closed for the duration of construction and traffic will be detoured to the west along Home Road and Crossing Road.

Roadway reconstruction along the bridge approaches will extend approximately 100' to the north and south of the bridge, encompassing a total project length of 232 feet. The proposed bridge and approach roadway cross-section will include a single 11'-wide travel lane in either direction with 2'-wide shoulders, matching the existing cross-section along County Road. Work will also include full-depth pavement reconstruction along the bridge approaches; minor roadway widening along the bridge approaches, to provide a consistent cross-section; installation of guardrail to replace existing galvanized steel W-beam located at the southeast and northwest corners of the bridge, with new guardrail installed at the other two corners where none currently exists; installation of riprap scour prevention material around the bridge abutments and wingwalls, overlaid with natural streambed material infill; selective tree clearing and stump grubbing adjacent to the

bridge, and to the northeast along existing overhead utility lines; installation of appropriate pavement markings and signs; installation of temporary erosion and sedimentation controls, and related work. Drainage improvements will also be constructed, to prevent any roadway erosion due to runoff from a driveway ditch immediately northeast of the bridge. A catch basin and cross-culvert will be installed to the north of the bridge, discharging to the brook at the northwestern corner of the bridge.

Does the project include demolition? If so, specify nature of demolition and describe the building(s) which are proposed for demolition.

Bridge S-10-024 will be removed and replaced. The bridge was reviewed by Kurt Jergensen, Historic Bridge Specialist, and determined to be ineligible for listing in the National Register. The bridge is a typical mid-20th century steel stringer design with no architectural character and standard engineering details.

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).

Bridge S-10-024 will be removed and replaced on the same alignment with a structure the same width as existing. The proposed roadway cross-section will match the existing width along the approaches.

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.

Review of both the National Register of Historic Places and the Inventory of Historic and Archaeological Assets revealed no National Register-listed or Inventoried districts/areas or individual properties within or adjacent to the project area.

Review of the MHC archaeological base maps revealed several recorded pre-Contact archaeological sites in the vicinity of the project area. These pre-Contact sites include: 19-BK-212, Garlic Glen #1 site, a Late Archaic period flake scatter located approximately 0.50 mile to the west; 19-BK-200, Maple Shade Farm site, a findspot located approximately 0.84 mile to the southwest; 19-BK-104, Rote Hill Brook site, an Archaic period campsite located approximately 0.98 mile to the southwest; 19-BK-102, Greene's Backyard site, a Middle Archaic through Middle Woodland period campsite located approximately 0.90 mile to the west; 19-BK-101, Clark's Field site, a Middle Archaic through Late Woodland period campsite located approximately 1.20 miles to the west; 19-BK-103, Chapin Farm site, a Middle Archaic through Late Woodland period campsite located approximately 1.22 miles to the west. Although undisturbed areas near the Housatonic River and along the river valley to the west of the current project's direct area of potential effect (APE) are likely to be sensitive for pre-Contact resources, it is the opinion of the MassDOT Archaeologist that the APE has low sensitivity based on the impacts of past roadway and bridge construction, as well as unfavorable conditions (steep slopes). The proposed bridge will be located on the same alignment and ground disturbance will be minimized by reuse of the existing abutments.

What is the total acreage of the project area?

Woodland	<1	acres	Productive Resources:		
Wetland		acres	Agriculture		acres
Floodplain	<1	acres	Forestry		acres
Open Space		acres	Mining/Extraction		acres
Developed		acres	Total Project Acreage	<2	acres

What is the acreage of the proposed new construction? <1 acres

What is the present land use of the project area?
The Project area is situated amid dense woodland along a narrow, steeply-sloped valley sloping down toward the Housatonic River floodplain off to the west.

Please attach a copy of the section of the USGS quadrangle map which clearly marks the project location.

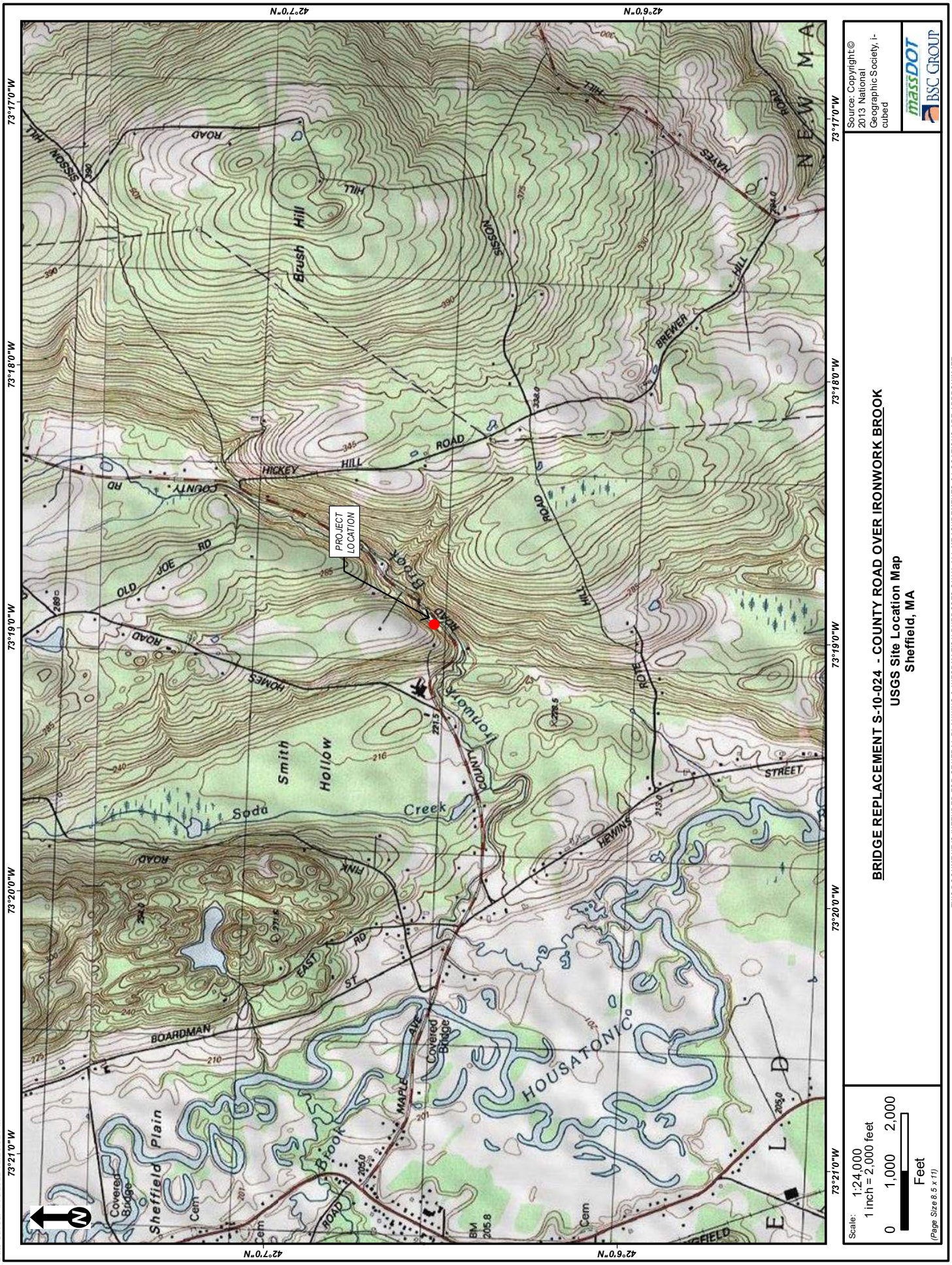
This Project Notification Form has been submitted to the MHC in compliance with 950 CMR 71.00.

Signature of person submitting this form: Kurt Jergensen **Date:** 5/6/2024

Name: Kurt Jergensen
Address: 10 Park Plaza
City/Town/Zip: Boston, MA 02116
Telephone: 207-590-4999

REGULATORY AUTHORITY

950 CMR 71.00: M.G.L. c. 9, §§ 26-27C as amended by St. 1988, c. 254.


PROJECT LOCATION
Brush Hill
Smith Hollow
Soda Creek
Sheffield Plain
HOUSATONIC
BRIDGE REPLACEMENT S-10-024 - COUNTY ROAD OVER IRONWORK BROOK
USGS Site Location Map
Sheffield, MA
Scale: 1:24,000
1 inch = 2,000 feet
0 1,000 2,000
Feet
(Page Size 8.5 x 11)
Source: Copyright © 2013 National Geographic Society, i-cubed
massDOT
BSC GROUP
THIS DOCUMENT IS INTENDED FOR GENERAL PLANNING & INFORMATION PURPOSES ONLY. ALL MEASUREMENTS & LOCATIONS ARE APPROXIMATE.
File Location: \\bscbosiwor\GIS\WORK\GISPrj\28409001\OutputMaps\MXD\ReportMaps\CountyRd_USGSLocus_2020413.mxd
Date Saved: 4/13/2022 12:26:32 PM

Jergensen, Kurt E. (DOT)

From: Jergensen, Kurt E. (DOT)
Sent: Monday, May 6, 2024 2:37 PM
To: Bettina Washington
Cc: Harwood, Jameson (DOT)
Subject: Sheffield, Bridge S-10-024 superstructure replacement (MassDOT #611942)
Attachments: Sheffield 611942 PNF.pdf; Locus map.pdf; 611942_75% Highway Plans.pdf; 611942 1st Bridge Structural Plan.pdf

Dear Ms. Washington,

MassDOT is submitting the enclosed information regarding the above-noted project to the Wampanoag Tribe of Gay Head (Aquinnah) to meet the Section 106 consultation requirements of the 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 either myself or Jameson.

Thank you very much.

Kurt Jergensen
Historic Bridge Specialist
Environmental Services
MassDOT, Highway Division
Ten Park Plaza, Boston, MA 02116
Cell: 207-590-4999

Jergensen, Kurt E. (DOT)

From: Microsoft Outlook
To: Bettina Washington
Sent: Monday, May 6, 2024 2:37 PM
Subject: Relayed: Sheffield, Bridge S-10-024 superstructure replacement (MassDOT #611942)

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: Sheffield, Bridge S-10-024 superstructure replacement (MassDOT #611942)



Jergensen, Kurt E. (DOT)

From: Jergensen, Kurt E. (DOT)
Sent: Monday, May 6, 2024 2:59 PM
To: Robinson, David S (EEA)
Cc: Harwood, Jameson (DOT)
Subject: Sheffield, Bridge S-10-024 superstructure replacement (MassDOT #611942)
Attachments: Sheffield 611942 PNF.pdf; Locus map.pdf; 611942_75% Highway Plans.pdf; 611942 1st Bridge Structural Plan.pdf

Dear Mr. Robinson,

MassDOT is submitting the enclosed information regarding the above-noted project to the Board of Underwater Archaeological Resources to meet the Section 106 consultation requirements of the 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 either myself or Jameson.

Thank you very much.

Kurt Jergensen
Historic Bridge Specialist
Environmental Services
MassDOT, Highway Division
Ten Park Plaza, Boston, MA 02116
Cell: 207-590-4999

Jergensen, Kurt E. (DOT)

From: Microsoft Outlook
To: Robinson, David S (EEA)
Sent: Monday, May 6, 2024 2:59 PM
Subject: Delivered: Sheffield, Bridge S-10-024 superstructure replacement (MassDOT #611942)

Your message has been delivered to the following recipients:

Robinson, David S (EEA) (David.S.Robinson@mass.gov)

Subject: Sheffield, Bridge S-10-024 superstructure replacement (MassDOT #611942)



Sheffield, Bridge S-10-024 sup...

Jergensen, Kurt E. (DOT)

From: Jergensen, Kurt E. (DOT)
Sent: Monday, May 6, 2024 2:42 PM
To: David Weeden
Cc: 106Review@mwtribe-nsn.gov; Harwood, Jameson (DOT)
Subject: Sheffield, Bridge S-10-024 superstructure replacement (MassDOT #611942)
Attachments: Sheffield 611942 PNF.pdf; Locus map.pdf; 611942_75% Highway Plans.pdf; 611942 1st Bridge Structural Plan.pdf

Dear Mr. Weeden,

MassDOT is submitting the enclosed information regarding the above-noted project to the Mashpee Wampanoag Tribe to meet the Section 106 consultation requirements of the 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 either myself or Jameson.

Thank you very much.

Kurt Jergensen
Historic Bridge Specialist
Environmental Services
MassDOT, Highway Division
Ten Park Plaza, Boston, MA 02116
Cell: 207-590-4999

Jergensen, Kurt E. (DOT)

From: Microsoft Outlook
To: David Weeden; 106Review@mwtribe-nsn.gov
Sent: Monday, May 6, 2024 2:42 PM
Subject: Relayed: Sheffield, Bridge S-10-024 superstructure replacement (MassDOT #611942)

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)

106Review@mwtribe-nsn.gov (106Review@mwtribe-nsn.gov)

Subject: Sheffield, Bridge S-10-024 superstructure replacement (MassDOT #611942)



Sheffield, Bridge S-10-024 sup...

Jergensen, Kurt E. (DOT)

From: Jergensen, Kurt E. (DOT)
Sent: Monday, May 6, 2024 2:56 PM
To: Tashtesook@aol.com
Cc: markandrews0563@outlook.com; Harwood, Jameson (DOT)
Subject: Sheffield, Bridge S-10-024 superstructure replacement (MassDOT #611942)
Attachments: Sheffield 611942 PNF.pdf; Locus map.pdf; 611942_75% Highway Plans.pdf; 611942 1st Bridge Structural Plan.pdf

Dear Mr. Brown,

MassDOT is submitting the enclosed information regarding the above-noted project to the Narragansett Indian Tribe to meet the Section 106 consultation requirements of the 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 either myself or Jameson.

Thank you very much.

Kurt Jergensen
Historic Bridge Specialist
Environmental Services
MassDOT, Highway Division
Ten Park Plaza, Boston, MA 02116
Cell: 207-590-4999

Jergensen, Kurt E. (DOT)

From: Microsoft Outlook
To: Tashtesook@aol.com; markandrews0563@outlook.com
Sent: Monday, May 6, 2024 2:57 PM
Subject: Relayed: Sheffield, Bridge S-10-024 superstructure replacement (MassDOT #611942)

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: Sheffield, Bridge S-10-024 superstructure replacement (MassDOT #611942)



Sheffield, Bridge S-10-024 sup...

Jergensen, Kurt E. (DOT)

From: Jergensen, Kurt E. (DOT)
Sent: Monday, May 6, 2024 3:00 PM
To: thpo
Cc: Harwood, Jameson (DOT)
Subject: Sheffield, Bridge S-10-024 superstructure replacement (MassDOT #611942)
Attachments: Sheffield 611942 PNF.pdf; Locus map.pdf; 611942_75% Highway Plans.pdf; 611942 1st Bridge Structural Plan.pdf

Dear Dr. Bendremer,

MassDOT is submitting the enclosed information regarding the above-noted project to the Stockbridge-Munsee Band of Mohicans to meet the Section 106 consultation requirements of the 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 either myself or Jameson.

Thank you very much.

Kurt Jergensen
Historic Bridge Specialist
Environmental Services
MassDOT, Highway Division
Ten Park Plaza, Boston, MA 02116
Cell: 207-590-4999

Jergensen, Kurt E. (DOT)

From: Microsoft Outlook
To: thpo
Sent: Monday, May 6, 2024 3:00 PM
Subject: Relayed: Sheffield, Bridge S-10-024 superstructure replacement (MassDOT #611942)

Delivery to these recipients or groups is complete, but no delivery notification was sent by the destination server:

thpo (thpo@mohican-nsn.gov)

Subject: Sheffield, Bridge S-10-024 superstructure replacement (MassDOT #611942)



Sheffield, Bridge S-10-024 sup...

Attachment F

MassDOT Project 611942
County Road over Ironwork Brook (S-10-024)
Bridge Superstructure Replacement Project
Joint 401 WQC and USACE Pre-Construction Notification

Stormwater Management Report

BSC GROUP
BUILD | SUPPORT | CONNECT

Template Version: November 2023

To: MassDOT	Date: Thursday, December 19, 2024
	Project #: 611942
From: BSC Group	Re: *County Road Bridge Superstructure Replacement*

This Stormwater Management Memorandum has been prepared to show compliance with the Massachusetts Stormwater Management Standards in accordance with the Massachusetts Water Quality Certification Regulations (314 CMR 9.00) to support the Project's Section 401 Water Quality Certificate Application.

Project Description

The Applicant, MassDOT, is proposing Project 611942 to construct a bridge superstructure replacement (the Project) located in Sheffield, MA. As proposed, the Project consists of preserving the existing substructure and replacing the superstructure of bridge # S-10-024 (02H), carrying County Road over the Ironwork Brook. The Project will include related highway work required to install the proposed bridge superstructure such as mill and overlay transitions, full depth pavement reconstruction, drainage upgrades, safety upgrades, and the partial reconstruction of a nearby gravel driveway.

Existing and Proposed Drainage Conditions

The existing roadway is a 2-lane, 2-way road which is classified as a rural major collector and serves as the primary East-West route through the NE quadrant of the town of Sheffield. The area for the proposed superstructure replacement of Bridge S-10-024 consists of approximately 232 feet of roadway along County Road centered on the bridge over Ironwork Brook. The bridge is located approximately one mile east of County Road's intersection with Maple Avenue and Hewins Street. The roadway is approximately 23' wide with 10' lanes and 1.5' shoulders and averages 790 vehicles per day.

The proposed conditions of the site will increase lane and shoulder width to 11' lanes with 2' shoulders. The project also involves partially rebuilding an intersecting gravel driveway to allow for the increased road width, and the installation of precast highway transitions and associated guardrail

The project area is 10,294 SF. In existing conditions, 6,197 SF is impervious area. The Project proposes to increase the impervious area by 294 SF to 6,491 SF. The approximately 4.2% increase in impervious area is largely due to the increased road width associated with widening the bridge superstructure.

The existing roadway largely uses country drainage to facilitate flow to the nearby, Ironwork Brook. There is an existing 12" corrugated metal pipe under the gravel driveway that allows runoff from the east side of the driveway to flow to the brook. The driveway area and an area of County Road east of the driveway and to the right of the baseline contribute runoff to this culvert. Due to the partial rebuilding of the driveway, the existing culvert would need to be replaced to function. Due to the steep slopes west of the driveway, replacing the culvert would be difficult to construct. It was determined that the existing pipe should be plugged and abandoned, and the runoff directed towards County Road. In the proposed condition, runoff that used to flow towards the culvert under the driveway will be directed towards a proposed drop inlet and carried under County Road via a 12" corrugated plastic pipe culvert. The proposed drainage changes will upgrade the existing condition by providing a drop inlet with a sump to remove additional TSS. The proposed culvert outfall will be treated with stone outlet protection for erosion control and energy dissipation.

County Road slopes from higher elevations in the east to lower elevations to the west. The roadway generally follows the Ironwork Brook valley profile. The brook is a tributary of the Housatonic River and the Housatonic watershed, and the greater Long Island Sound watershed.

Existing watershed patterns remain effectively unchanged in the proposed condition. In the existing and proposed conditions, the roadway is normally crowned, and runoff leaves the roadway by country drainage. The length of curbing required for bridge rail to guardrail transitions will increase at each corner of the bridge by less than 25'. This increased length of curbing is required to ensure that the safety rail is installed in accordance with the PDDG and maintains its crash rating. Additionally, runoff will be directed down grade and will exit the roadway via country drainage as it does in the existing conditions. In the existing condition, driveway runoff and some roadway runoff is collected by a culvert and transported to the other side of the driveway to the brook. There is no existing erosion control protecting the slope down to the brook. In the proposed conditions, the same watershed is directed to a drop inlet and transported to the other side of the roadway to the brook. Overall, the drainage patterns are either maintained or are improved due to the drop inlet sump and proposed stone for erosion control.

There are no existing or proposed stormwater control measures (SCM). There is a ditch of undefined width and shape that facilitates water to the driveway culvert. In the proposed condition, the grassed side slope will be graded to allow water to flow towards the proposed drop inlet.

There are 2 discharge points within the project area. The first is the Ironwork Brook. The northeastern, southwestern, and southeastern quadrants of the project drain to the Ironwork Brook, near the proposed bridge. The northwestern quadrant drains away from the brook and the proposed bridge. While the culvert outfall is relocated upstream in the proposed condition, both discharge points remain effectively the same.

The Project will include the construction of one drop inlet with a deep, 4' sump and 1 run of 12 inch diameter pipe option, 54' long. Also proposed is a concrete headwall and stone outlet protection. The proposed drop inlet and pipe run will replace the existing, 12 inch diameter, corrugated metal pipe culvert, which will be plugged at both ends and filled with controlled density fill.

The capacity of the system was designed to facilitate a 10 year, 24 hour storm and will maintain or improve the existing capacity of the system.

The project limits were designed to minimize impacts to the environmental resources in the area. The Ironwork Brook is a DFW Coldwater Fisheries resource. There are no Areas of Critical Environmental Concern or Outstanding Resource Waters located within or near the project area.

Massachusetts Department of Environmental Protection (MassDEP) – Stormwater Management Standards

As demonstrated below, the proposed Project complies with the MassDEP Stormwater Management Standards (the Standards). Under the Stormwater Management Standards, the Project is considered a redevelopment project because it involves maintenance and improvement of an existing roadway. The existing bridge is posted for weight limits and is necked down to direct traffic away from weaker superstructure members, creating a narrow, one lane bridge. The current condition of the bridge requires vehicles to slow to a posted advisory speed of 10 mph to maintain safety. The proposed superstructure replacement is considered maintenance which is required to maintain the function, safety and longevity of the roadway. Increased impervious cover is required to facilitate the maintenance of the bridge, provide drainage upgrades, and provide a safe corridor for vehicular traffic. The proposed features that increase impervious cover are wider lanes and shoulders. Approximately 115 SF of impervious cover increase is due to widening over the waterbody, the rest of the impervious area increase, 179 SF, is required for minimum shoulder widths and transitioning the proposed pavement width back down to the existing pavement width. The existing and proposed driveway are both approximately 730 SF with a net increase/decrease of 0 SF. The Project has been designed to meet the Stormwater Management Standards to the maximum extent practicable and to improve upon existing conditions.

Standard 1: No New Untreated Discharges

No new stormwater conveyance (e.g. outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.

Existing drainage patterns remain effectively unchanged in the proposed conditions. In the existing and proposed conditions, runoff leaves the roadway by country drainage. In the existing condition, driveway runoff and some roadway runoff is collected by a culvert and transported to the other side of the driveway to the brook. There is no existing erosion control protecting the slope down to the brook. In the proposed conditions, the same watershed is directed to a drop inlet and transported to the other side of the roadway to the brook. Overall, the drainage patterns are either maintained or are improved due to the drop inlet sump and proposed stone for erosion control.

The Project has been designed to fully comply with Standard 1.

No new stormwater outfalls are proposed for the Project. The existing culvert outfall was relocated approximately 115 feet further upstream from its original location. The new outfall will be treated with a 4' deep sump drop inlet. Due to the headwall being located adjacent to the stream bed with steep slopes down from the headwall to the stream bank, the proposed outfall will include stone for scour and erosion protection to improve upon existing conditions.

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. Table 1 includes a summary of impervious cover impacts, which can be used as a metric to understand impacts to peak discharge rates following development.

Approximately 70% of the proposed increase in impervious area is due to the installation of the 5-foot HMA apron at the existing driveway. In existing conditions, the surface material of the apron is compacted gravel which is acting as an impervious surface; therefore, there are no increased flooding concerns. Approximately 115 SF or 40% of this increase is runoff that would have landed directly onto the waterbody in the existing conditions. This rainfall will now fall onto the bridge, and then drain to the brook. This increased path length will create a small benefit to the time of concentration for rainfall in this area. The other 179 SF of impervious cover increase is required to provide adequate shoulder widths and transitioning the proposed pavement width back down to the existing pavement width. Considering the minor increase of this area, the project will have a negligible effect on the existing peak rate, the receiving water body, and downstream flooding.

Table 1: Existing and proposed impervious cover

Existing Impervious Area (sq. ft)	Proposed Impervious Area (sq. ft)	Change In Impervious Area (sq. ft)	Percent Increase in Impervious Area (%)
6,197	6,491	294	4.2

Table 2: Peak Flow Discharge Rate

Storm Event	Pre-Development Peak Discharge Rate (cfs)	Post-Development Peak Discharge Rate (cfs)	Change in Peak Discharge Rate (cfs)
2-Year	0.35	0.37	0.02
10-Year	0.69	0.71	0.02
100-Year	1.53	1.56	0.03

Standard 3: Stormwater Recharge

Loss of annual recharge to groundwater shall be eliminated or minimized through the use of environmentally sensitive site design, low impact development techniques, stormwater 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 types. 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. The purpose of this standard is to replenish groundwater by ensuring that the infiltration volume of precipitation into the ground under post-development conditions is at least as much as the infiltration volume under pre-development conditions.

Existing country drainage has been maintained on all sides of the project. There is a ditch of undefined width and shape that facilitates water to the driveway culvert. Where the existing culvert inlet is relocated, roadway runoff will exit the travel way and enter a grassed area. This grassed area will be graded to allow runoff to flow towards the proposed drop inlet. A water quality swale is generally not feasible in this area due to existing utility poles, stone outcrops, and steep slopes. The proposed condition is designed to maintain the existing stormwater management layout and its ability to infiltrate.

Existing groundwater recharge conditions are maintained.

Standard 4: Water Quality

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:

- *a) Suitable practices for source control and pollution prevention are identified in a long-term pollution prevention plan, and thereafter are implemented and maintained.*
- *b) Structural stormwater best management practices are sized to capture the required water quality volume determined in accordance with the Massachusetts Stormwater Handbook; and*
- *c) 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.

There is no existing treatment of total suspended solids within the project limits. In the proposed condition, a deep sump drop inlet will capture 25% of total suspended solids from a contributing impervious area (within project limits) of approximately 1,000 SF, improving the existing condition.

A Long-Term Pollution Prevention Plan (LTPPP) has been developed for the project in compliance with Standard 4. The Standard 9 section of this document includes the LTPPP.

Standard 5: Land Uses with Higher Potential Pollutant Loads (LUHPPLs)

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 LUHPPLs 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.

The project is located within a Critical Area, the Ironwork Brook is identified as a Cold-Water Fishery. The drop inlet with a deep, 4' sump, scour protection, and stone outlet protection will provide increased treatment to surface runoff over existing conditions.

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the Maximum Extent Practicable

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.

As a bridge superstructure replacement, the Project is considered a redevelopment and has been designed to comply with the Stormwater Management Standards to the maximum extent practicable.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Controls

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 Project has been designed to fully comply with Standard 8.

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 sediment control barriers and tree protection fences. The proposed E&S measures will be provided downstream of the project and will minimize the impact of sediment and debris on the brook from construction activities.

Standard 9: Operation and Maintenance Plan

A Long-Term Operation and Maintenance (O&M) Plan shall be developed and implemented to ensure that stormwater management systems function as designed.

The Project has been designed to fully comply with Standard 9.

The County Road bridge over Ironwork Brook included in this project is not owned by MassDOT. The O&M Plan will be implemented by the municipality. Appendix B includes the O&M Plan for this project.

Long-term pollution prevention for the Project includes litter pick-up, inspection and maintenance of stormwater assets, maintenance of landscaped areas, snow and ice management, street sweeping, prohibition of illicit discharges, and spill prevention and response.

Standard 10: Prohibition of Illicit Discharges

All illicit discharges to the stormwater management system are prohibited.

The Project has been designed to fully comply with Standard 10.

Illicit Discharge Statement

The project's stormwater management system, as shown on the plans submitted with this report, have 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.

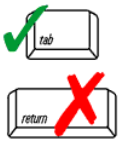
Attachments: Appendix A – Stormwater Checklist
Appendix B – O&M Plan

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



12/19/2024
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

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

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.

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

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.

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

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.

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

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.

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

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.

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

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.

Reconstruction of County Road and Bridge S-10-024 Replacement

Stormwater Management System Operation and Maintenance Plan and Long-Term Pollution Prevention Plan

Sheffield, MA

PREPARED FOR



10 Park Plaza
Boston, MA 02116

PREPARED BY



BSC Group
803 Summer Street
Boston, MA, 02127

10/28/2024

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 3

2 **Long-Term Pollution Prevention Plan 4**

2.1 Practices for Long-Term Pollution Prevention 4
2.1.1 Litter Pick-up 4
2.1.2 Inspection and Maintenance of Stormwater Assets 4
2.1.3 Maintenance of Landscaped Areas 5
2.1.4 Snow and Ice Management 5
2.1.5 Prohibition of Illicit Discharges 5

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 the Reconstruction of County Road and Bridge S-10-024 Replacement, Sheffield, MA. 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) 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 Town of Sheffield (or the Town) 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 addressed to Town of Sheffield Highway Department located at Pike Road East Sheffield, MA 01257, phone (413) 229-7030.

1.2 Inspection and Maintenance Measures and Record-Keeping

See the Permit Plans for the proposed stormwater system within the project limits. The stormwater management system covered by this O&M Plan consists of the following measures:

- One (1) deep sump drop inlet
- Fifty-three (53) feet of corrugated plastic (HDPE) pipe
- One (1) stone outfall approximately thirty-two (32) square feet in area

Overall, the Town will perform maintenance at an interval that maintains the functionality of the catch basin (e.g., sump is less than 50% full of sediment). Catch basin inspections,

including documentation of sediment accumulation, and maintenance will generally occur simultaneously.

The table below summarizes data that is generally collected for each asset type. For all assets, the inspector and inspection date are recorded. Photo documentation of structure condition is taken and attached to the inspection record.

Inspection Form	Applicable Stormwater Assets	Information Collected
Inlets	› Catch basins	› Sediment accumulation › Trash/Debris accumulation › Signs of contamination › Frame and grate condition › Overall structure condition
Storm Discharge Points	› Pipe Outlets	› Presence of flow › Signs of contaminated flow › Sediment accumulation › Level of erosion › Pipe condition › Scour protection condition › Overall structure condition

Maintenance actions will not occur at any set frequency, but rather will be based on condition and impact to functionality and safety. Maintenance to be performed on the stormwater system includes:

- Clear inlet and remove and properly dispose of sediment, trash, leaf litter, debris, and vegetation.
- Regrade areas that show signs of ponding and channelization.
- Repair or replace structural components
- Repair damaged or eroded areas.
- Provide or rehabilitate erosion control at the outlet
- Regrade and replace the channel materials
- Remove woody growth
- Stabilize or reconstruct eroded areas

Based on the results of the inspection, the Town will make repairs in accordance with standard practices. Maintenance will be prioritized given the urgency of the required maintenance and availability of staff, contracts, etc. Maintenance may require contracting if existing contracts are unavailable to perform the work. 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

The Town performs maintenance for stormwater management systems as part of their routine operation and maintenance budget for roadways and bridges. Budgets are managed by the Town and vary by fiscal year, depending on funding sources.

2

Long-Term Pollution Prevention Plan

This Long-Term Pollution Prevention Plan (LTPPP) describes the approach for pollution prevention and related maintenance activities for Reconstruction of County Road and Bridge S-10-024 Replacement, Sheffield, 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 the stormwater management system
- 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

The Town 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

The Town will conduct inspection and maintenance of drainage infrastructure 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 the Town's standard practices.

The Town does minimizes the use of fertilizers, herbicides, and pesticides for the maintenance of facilities. Fertilizer is used to ensure the survival of new plantings and herbicides to control invasive plants. As needed, review by the Local Conservation Commission is performed.

2.1.4 Snow and Ice Management

Snow and Ice Management will be conducted consistent with the practices outlined in the Town of Sheffield Snow Plowing Guidelines

The Town will use sand and salt when there are hazardous ice or slippery conditions. The Town is concerned about the effect of such chemicals on the environment and will limit its use for that reason.

2.1.5 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 MS4 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 Project. Should an interconnection to the stormwater management system be identified, the Highway Superintendent will confirm if the connections are authorized. For unauthorized connections, the Highway Superintendent will investigate the connections and if they are determined to be illicit, the connections will be managed through the Town's Illicit Discharge Detection and Elimination (IDDE) program and/or through other agencies.

Attachment G

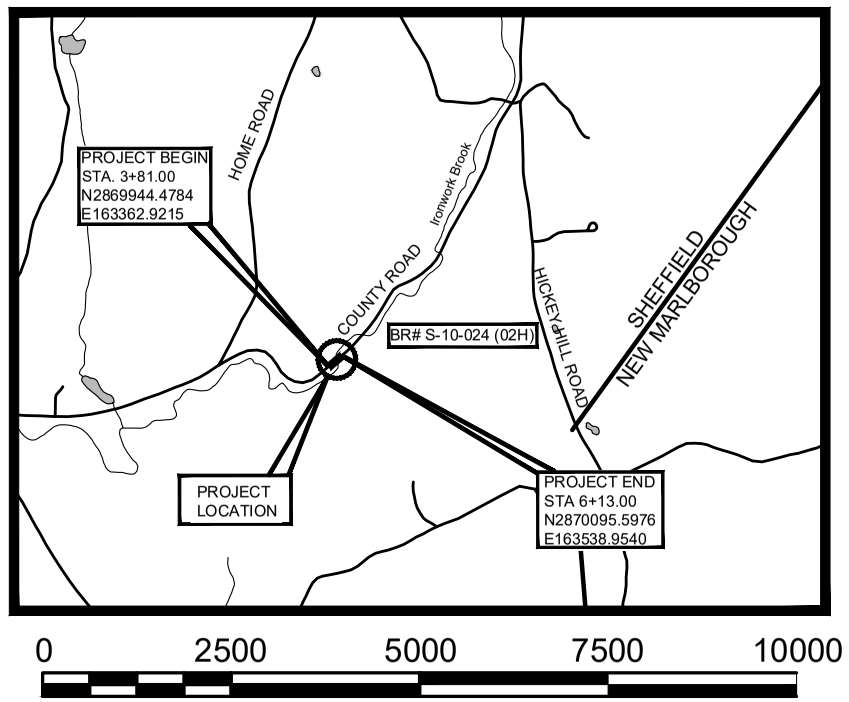
MassDOT Project 611942
County Road over Ironwork Brook (S-10-024)
Bridge Superstructure Replacement Project
Joint 401 WQC and USACE Pre-Construction Notification

Project Plans
Construction Details
Specification

BSC GROUP
BUILD | SUPPORT | CONNECT

PERMIT PLANS

INDEX	
SHEET NO.	DESCRIPTION
1	INDEX
2	EXISTING CONDITIONS
3 - 5	PROPOSED CONDITIONS
6	EXISTING SOUTH ELEVATION
7	PROPOSED SOUTH ELEVATION
8	PROPOSED ROADWAY PROFILE
9	IMPACTS
10 - 14	CONTROL OF WATER
15	DRAINAGE & SEDIMENT CONTROL DETAILS



SCALE: 1" = 2500'

LENGTH OF PROJECT = 232.00 FEET = 0.044 MILES

IMPACTS TO WATERS OF THE UNITED STATES			
WATERS OF THE US (WATERBODY)	PERMANENT IMPACT	573	SF
	TEMPORARY IMPACT	490	SF
	PERMANENT IMPACT - DREDGE/FILL	96 / 96	CY
	TEMPORARY IMPACT - DREDGE/FILL	0 / 0	CY
BANK/ ORDINARY HIGH WATER (OHW)	PERMANENT IMPACT	12	LF
	TEMPORARY IMPACT	144	LF

NOTES:
1. HORIZONTAL DATUM IS BASED OFF OF THE NORTH AMERICAN DATUM (NAD) 1983
2. ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

PREPARED FOR:
massDOT Massachusetts Department of Transportation Highway Division
MASSDOT HIGHWAY DIVISION
10 PARK PLAZA, BOSTON, MA 02116

Source:

TITLE SHEET & INDEX

BRIDGE SUPERSTRUCTURE REPLACEMENT PROJECT
COUNTY ROAD OVER IRONWORK BROOK
SHEFFIELD, MA
BERKSHIRE COUNTY

Job No.: 28409.00 Date: 12/9/2024
Scale: N/A Revised:
Description: INDEX Figure: 1 OF 15

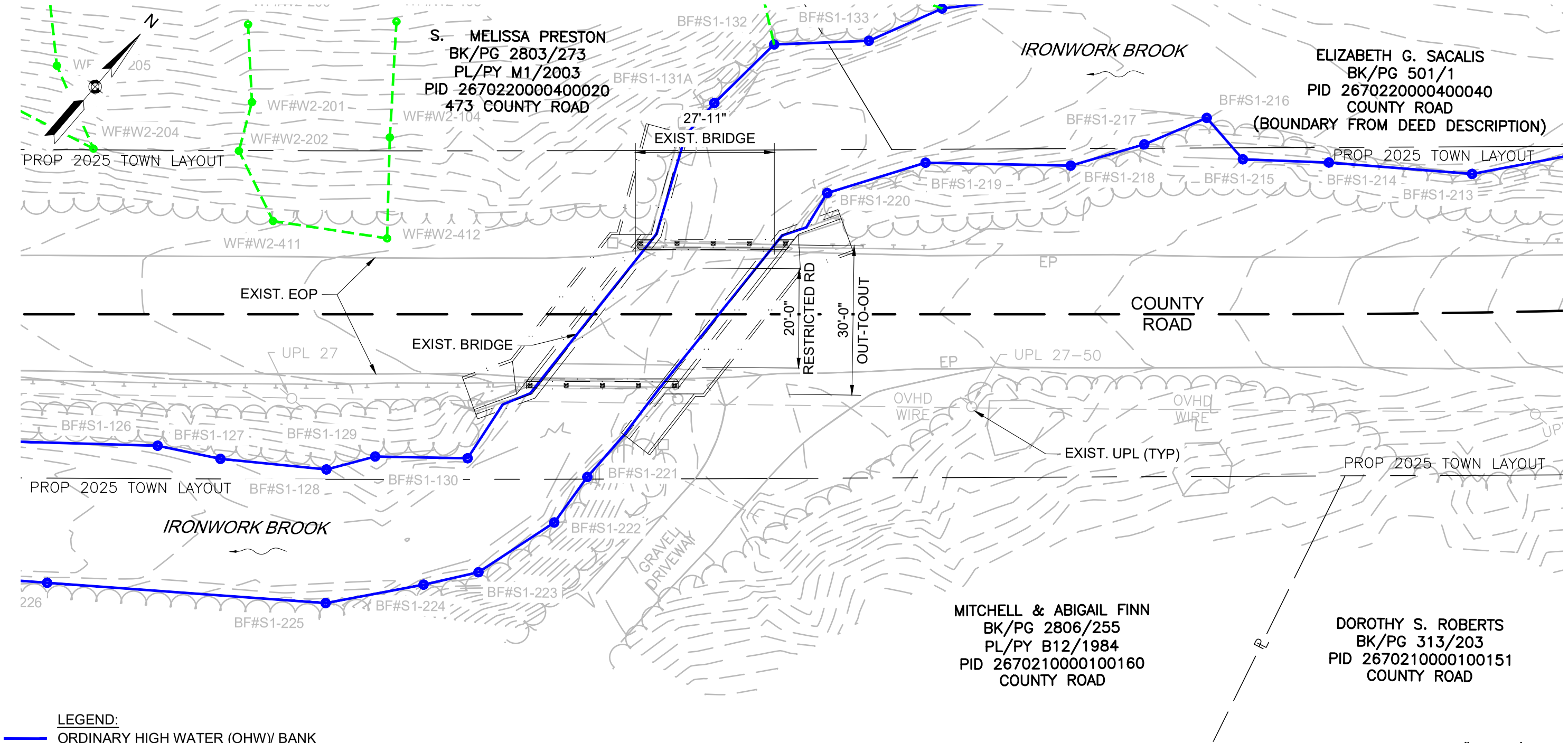
BSC GROUP
BUILD | SUPPORT | CONNECT
803 SUMMER STREET
BOSTON, MASSACHUSETTS 02127
617-896-4300 | www.bscgroup.com

File: P:\2840900\Environmental\Drawings\Progress\1 - 2840900_(INDEX).dwg

A00830 - 110
Proposal No. 611942-133627

A00830 - 111

Proposal No. 611942-133627



LEGEND:
ORDINARY HIGH WATER (OHW)/ BANK
DELINEATED VEGETATED WETLAND

PREPARED FOR:
massDOT Massachusetts Department of Transportation Highway Division
MASSDOT HIGHWAY DIVISION
10 PARK PLAZA, BOSTON, MA 02116

Source:

EXISTING CONDITIONS

BRIDGE SUPERSTRUCTURE REPLACEMENT PROJECT
COUNTY ROAD OVER IRONWORK BROOK
SHEFFIELD, MA
BERKSHIRE COUNTY

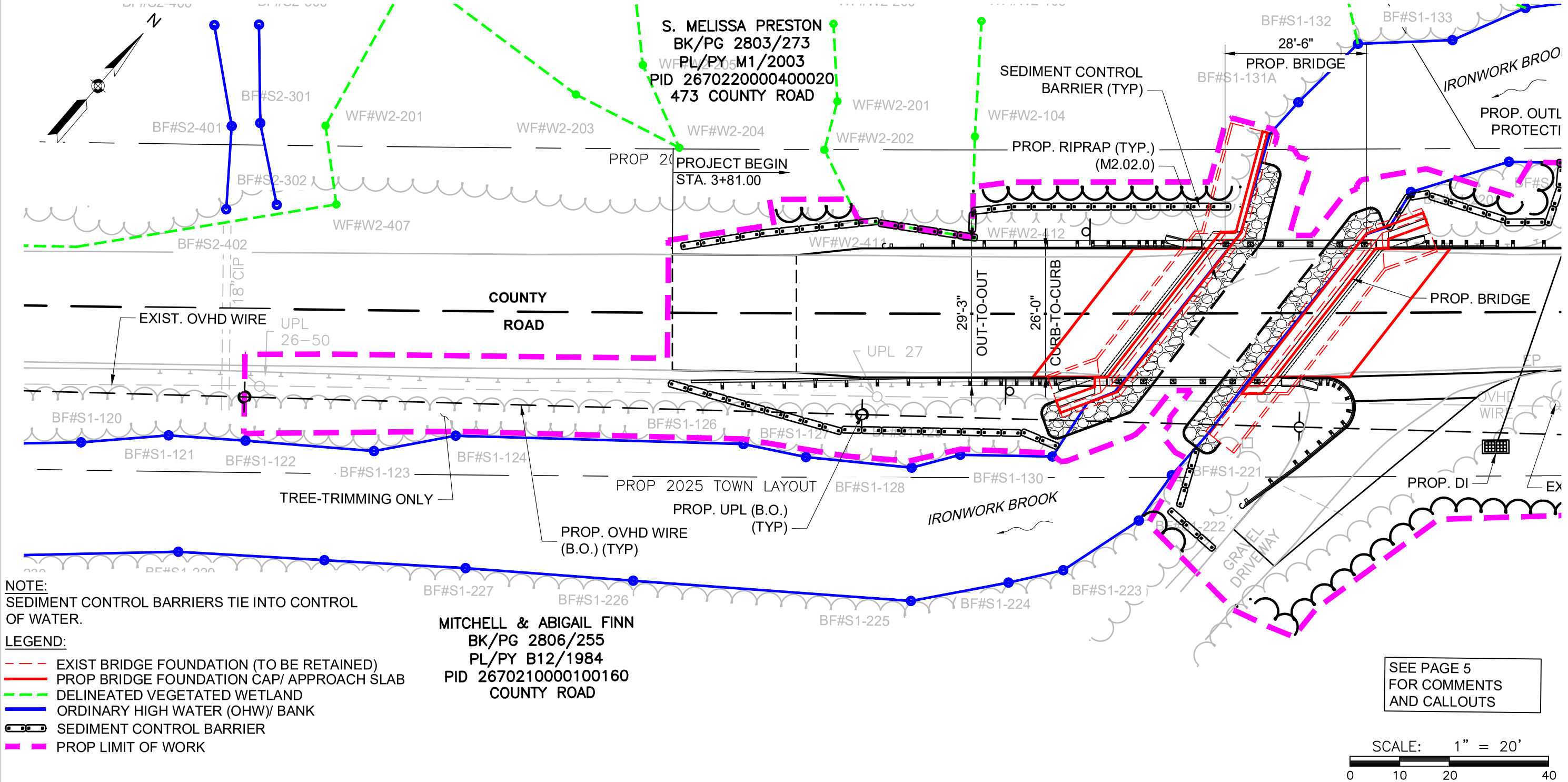
Job No.: 28409.00 Date: 12/9/2024
Scale: 1" = 20' Revised:
Description: EX COND Figure: 2 OF 15

BSC GROUP
BUILD | SUPPORT | CONNECT
803 SUMMER STREET
BOSTON, MASSACHUSETTS 02127
617-896-4300 | www.bscgroup.com

File: P:\2840900\Environmental\Drawings\Progress\2 - 2840900_(EC).dwg

A00830 - 112

Proposal No. 611942-133627



NOTE:
SEDIMENT CONTROL BARRIERS TIE INTO CONTROL OF WATER.

LEGEND:

- EXIST BRIDGE FOUNDATION (TO BE RETAINED)
- PROP BRIDGE FOUNDATION CAP/ APPROACH SLAB
- DELINEATED VEGETATED WETLAND
- ORDINARY HIGH WATER (OHW)/ BANK
- SEDIMENT CONTROL BARRIER
- PROP LIMIT OF WORK

SEE PAGE 5 FOR COMMENTS AND CALLOUTS

SCALE: 1" = 20'

0 10 20 40

PREPARED FOR:
massDOT Massachusetts Department of Transportation Highway Division
MASSDOT HIGHWAY DIVISION
10 PARK PLAZA, BOSTON, MA 02116

Source:

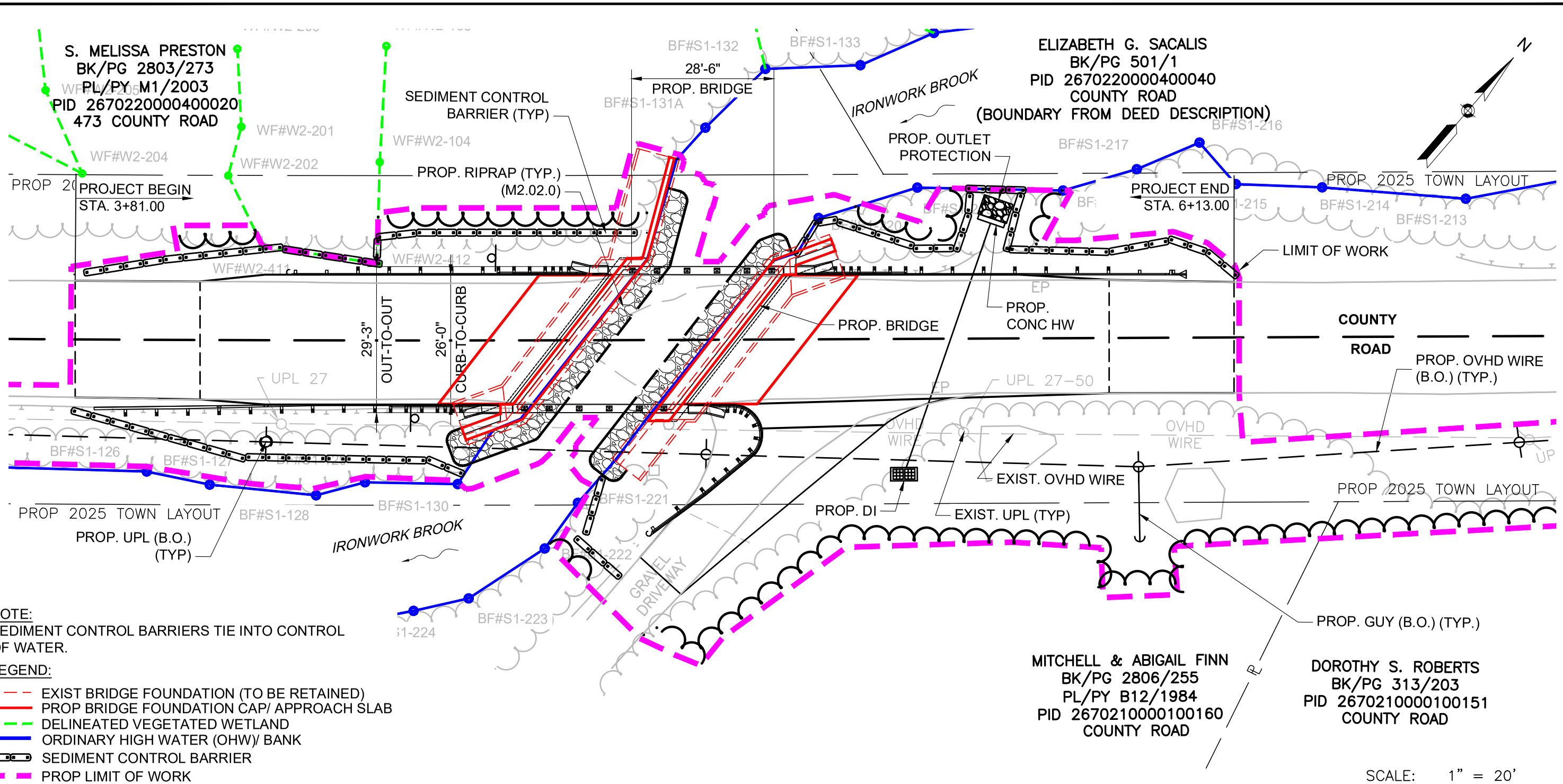
PROPOSED CONDITIONS - 1

BRIDGE SUPERSTRUCTURE REPLACEMENT PROJECT
COUNTY ROAD OVER IRONWORK BROOK
SHEFFIELD, MA
BERKSHIRE COUNTY

Job No.: 28409.00 Date: 12/9/2024
Scale: 1" = 20' Revised:
Description: PROP COND Figure: 3 OF 15

BSC GROUP
BUILD | SUPPORT | CONNECT
803 SUMMER STREET
BOSTON, MASSACHUSETTS 02127
617-896-4300 | www.bscgroup.com

File: P:\2840900\Environmental\Drawings\Progress\3-5 - 2840900_(PR).dwg



NOTE:
SEDIMENT CONTROL BARRIERS TIE INTO CONTROL OF WATER.

LEGEND:

- EXIST BRIDGE FOUNDATION (TO BE RETAINED)
- PROP BRIDGE FOUNDATION CAP/ APPROACH SLAB
- DELINEATED VEGETATED WETLAND
- ORDINARY HIGH WATER (OHW)/ BANK
- SEDIMENT CONTROL BARRIER
- PROP LIMIT OF WORK

MITCHELL & ABIGAIL FINN
BK/PG 2806/255
PL/PY B12/1984
PID 2670210000100160
COUNTY ROAD

DOROTHY S. ROBERTS
BK/PG 313/203
PID 2670210000100151
COUNTY ROAD

SCALE: 1" = 20'
0 10 20 40

PREPARED FOR:
MassDOT Massachusetts Department of Transportation Highway Division
MASSDOT HIGHWAY DIVISION
10 PARK PLAZA, BOSTON, MA 02116

Source:

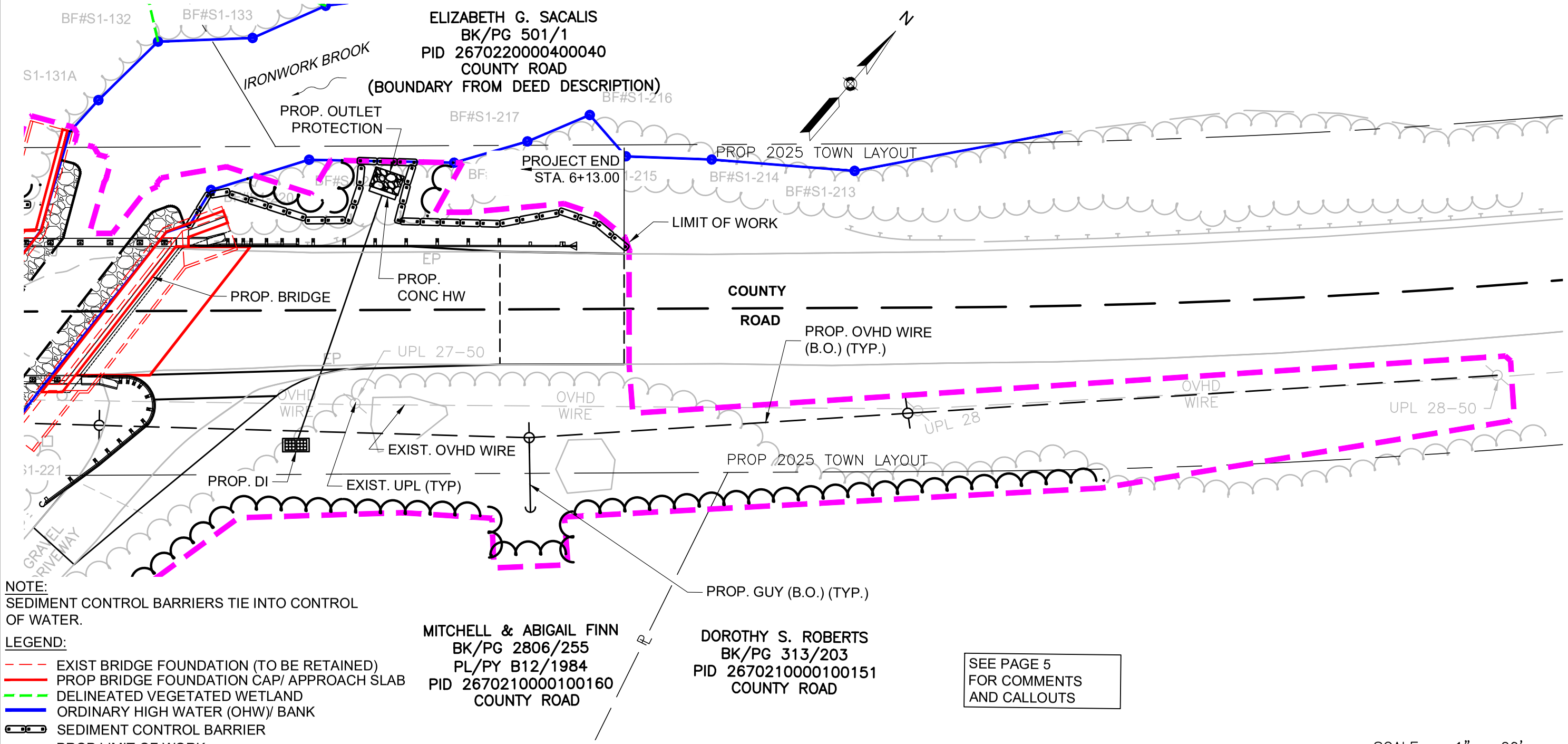
PROPOSED CONDITIONS - 2

BRIDGE SUPERSTRUCTURE REPLACEMENT PROJECT
COUNTY ROAD OVER IRONWORK BROOK
SHEFFIELD, MA
BERKSHIRE COUNTY

Job No.: 28409.00 Date: 12/9/2024
Scale: 1" = 20' Revised:
Description: PROP COND Figure: 4 OF 15

BSC GROUP
BUILD | SUPPORT | CONNECT
803 SUMMER STREET
BOSTON, MASSACHUSETTS 02127
617-896-4300 | www.bscgroup.com

File: P:\2840900\Environmental\Drawings\Progress\3-5 - 2840900_(PR).dwg



NOTE:
SEDIMENT CONTROL BARRIERS TIE INTO CONTROL OF WATER.

LEGEND:

- EXIST BRIDGE FOUNDATION (TO BE RETAINED)
- PROP BRIDGE FOUNDATION CAP/ APPROACH SLAB
- DELINEATED VEGETATED WETLAND
- ORDINARY HIGH WATER (OHW)/ BANK
- SEDIMENT CONTROL BARRIER
- PROP LIMIT OF WORK

PREPARED FOR:
massDOT Massachusetts Department of Transportation Highway Division
MASSDOT HIGHWAY DIVISION
10 PARK PLAZA, BOSTON, MA 02116

Source:

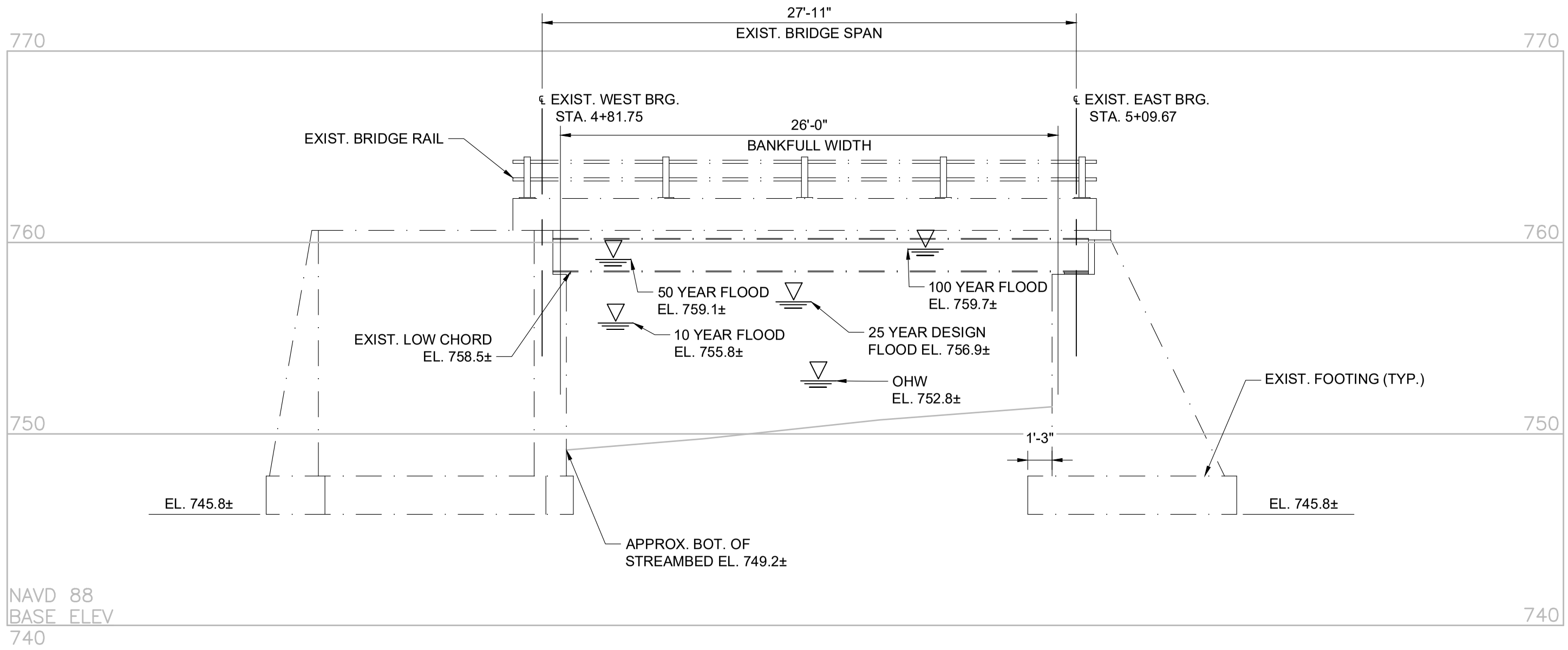
PROPOSED CONDITIONS - 3

BRIDGE SUPERSTRUCTURE REPLACEMENT PROJECT
COUNTY ROAD OVER IRONWORK BROOK
SHEFFIELD, MA
BERKSHIRE COUNTY

Job No.: 28409.00 Date: 12/9/2024
Scale: 1" = 20' Revised:
Description: PROP COND Figure: 5 OF 15

BSC GROUP
BUILD | SUPPORT | CONNECT
803 SUMMER STREET
BOSTON, MASSACHUSETTS 02127
617-896-4300 | www.bscgroup.com

File: P:\2840900\Environmental\Drawings\Progress\3-5 - 2840900_(PR).dwg



PREPARED FOR:
massDOT
Massachusetts Department of Transportation
Highway Division
MASSDOT HIGHWAY DIVISION
10 PARK PLAZA, BOSTON, MA 02116

Source:

EXISTING SOUTH ELEVATION

BRIDGE SUPERSTRUCTURE REPLACEMENT PROJECT
COUNTY ROAD OVER IRONWORK BROOK
SHEFFIELD, MA
BERKSHIRE COUNTY

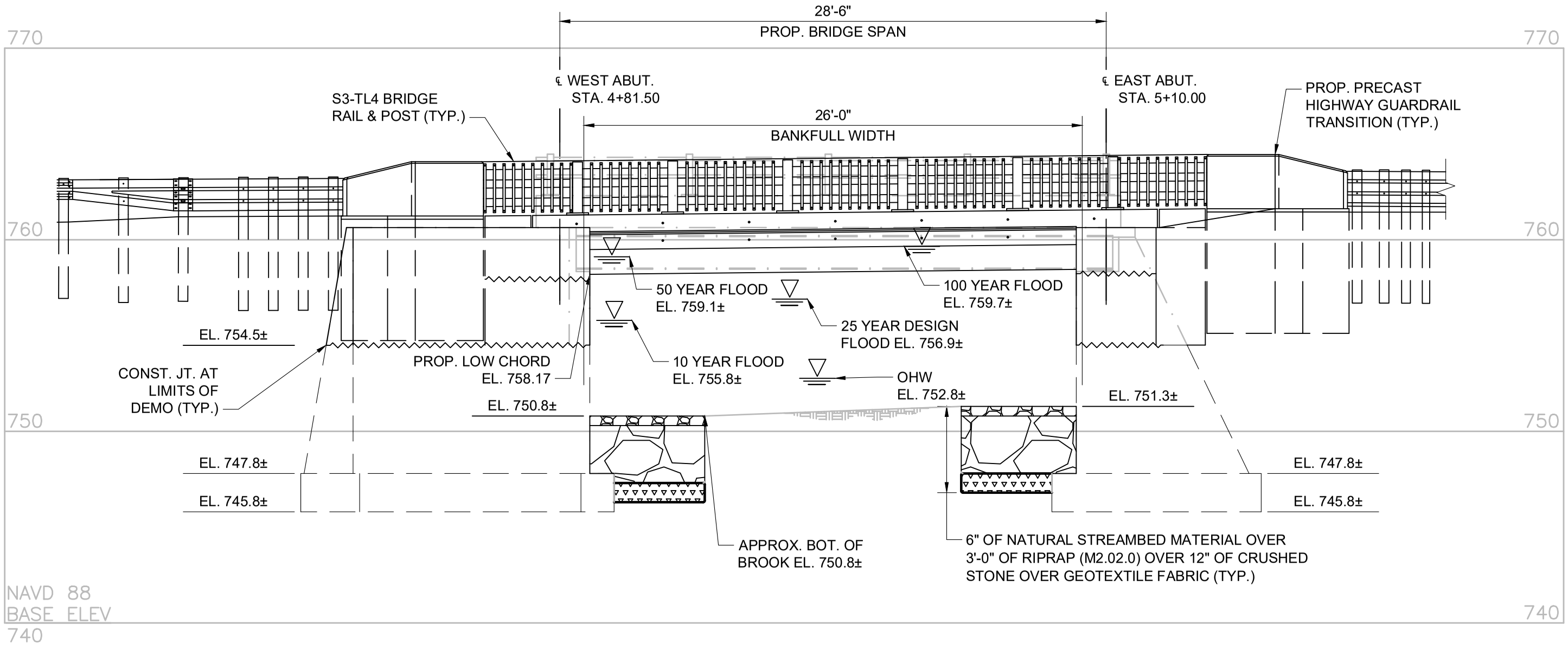
Job No.: 28409.00 Date: 12/9/2024
Scale: 3/16" = 1'-0" Revised:
Description: BR ELEV Figure: 6 OF 15

BSC GROUP
BUILD | SUPPORT | CONNECT
803 SUMMER STREET
BOSTON, MASSACHUSETTS 02127
617-896-4300 | www.bscgroup.com

File: P:\2840900\Environmental\Drawings\Progress\6-7 - 2840900_(BR ELEV).dwg

A00830 - 116

Proposal No. 611942-133627



PREPARED FOR:

massDOT
Massachusetts Department of Transportation
Highway Division

MASSDOT HIGHWAY DIVISION
10 PARK PLAZA, BOSTON, MA 02116

Source:

PROPOSED SOUTH ELEVATION

BRIDGE SUPERSTRUCTURE REPLACEMENT PROJECT
COUNTY ROAD OVER IRONWORK BROOK
SHEFFIELD, MA
BERKSHIRE COUNTY

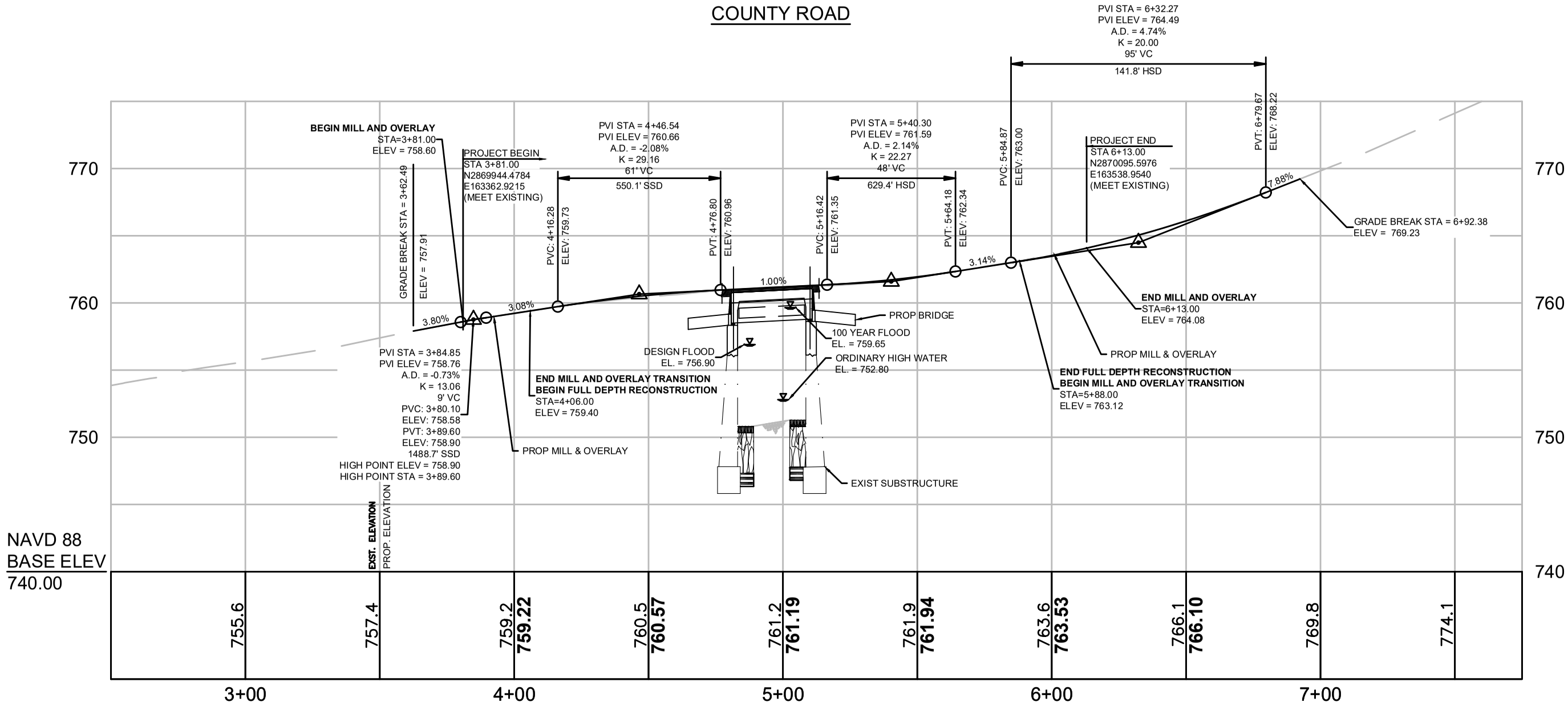
Job No.: 28409.00 Date: 12/9/2024

Scale: 3/16" = 1'-0" Revised:

Description: BR ELEV Figure: 7 OF 15

BSC GROUP
BUILD | SUPPORT | CONNECT
803 SUMMER STREET
BOSTON, MASSACHUSETTS 02127
617-896-4300 | www.bscgroup.com

File: P:\2840900\Environmental\Drawings\Progress\6-7 - 2840900_(BR ELEV).dwg



PREPARED FOR:

massDOT Massachusetts Department of Transportation Highway Division

MASSDOT HIGHWAY DIVISION
10 PARK PLAZA, BOSTON, MA 02116

Source:

PROPOSED ROADWAY PROFILE

BRIDGE SUPERSTRUCTURE REPLACEMENT PROJECT
COUNTY ROAD OVER IRONWORK BROOK
SHEFFIELD, MA
BERKSHIRE COUNTY

Job No.: 28409.00 Date: 12/9/2024

Scale: 1" = 40' Revised:

Description: PROFILE Figure: 8 OF 15

BSC GROUP
BUILD | SUPPORT | CONNECT
803 SUMMER STREET
BOSTON, MASSACHUSETTS 02127
617-896-4300 | www.bscgroup.com

File: P:\2840900\Environmental\Drawings\Progress\8 - 2840900_(PROFILE).dwg

A00830 - 118

Proposal No. 611942-133627

S. MELISSA PRESTON
BK/PG 2803/273
PL/PY M1/2003
PID 2670220000400020
473 COUNTY ROAD

ELIZABETH G. SACALIS
BK/PG 501/1
PID 2670220000400040
COUNTY ROAD
(BOUNDARY FROM DEED DESCRIPTION)

IRONWORK BROOK

TEMP IMPACTS TO WOTUS DUE TO CONTROL OF WATER SANDBAGS (263 S.F.)

TEMP. BANK IMPACTS (4 L.F.)

TEMP. BANK IMPACTS (12 L.F.)

PERM IMPACTS TO WOTUS DUE TO SCOUR PROTECTION (320 S.F./53 C.Y.)

TEMP. BANK IMPACTS (68 L.F.)

TEMP IMPACTS TO WOTUS DUE TO CONTROL OF WATER SANDBAGS (227 S.F.)

TEMP. BANK IMPACTS (55 L.F.)

PERM IMPACTS TO WOTUS DUE TO SCOUR PROTECTION (253 S.F./43 C.Y.)

PERM. BANK IMPACTS (9 L.F.)

TEMP. BANK IMPACTS (2 L.F.)

PERM. BANK IMPACTS (3 L.F.)

TEMP. BANK IMPACTS (3 L.F.)

COUNTY ROAD

PROP 2025 TOWN LAYOUT

NOTE:
SEDIMENT CONTROL BARRIERS TIE INTO CONTROL OF WATER.

LEGEND:
- EXIST BRIDGE FOUNDATION (TO BE RETAINED)
- PROP BRIDGE FOUNDATION CAP/ APPROACH SLAB
- DELINEATED VEGETATED WETLAND
- ORDINARY HIGH WATER (OHW)/ BANK
- SEDIMENT CONTROL BARRIER
- PROP LIMIT OF WORK
- TEMP. IMPACT WOTUS/ WATERBODY
- PERM. IMPACT WOTUS/ WATERBODY
- TEMP. BANK IMPACTS
- PERM. BANK IMPACTS

MITCHELL & ABIGAIL FINN
BK/PG 2806/255
PL/PY B12/1984
PID 2670210000100160
COUNTY ROAD

DOROTHY S. ROBERTS
BK/PG 313/203
PID 2670210000100151
COUNTY ROAD

SCALE: 1" = 20'
0 10 20 40

PREPARED FOR:
massDOT Massachusetts Department of Transportation Highway Division
MASSDOT HIGHWAY DIVISION
10 PARK PLAZA, BOSTON, MA 02116

Source:

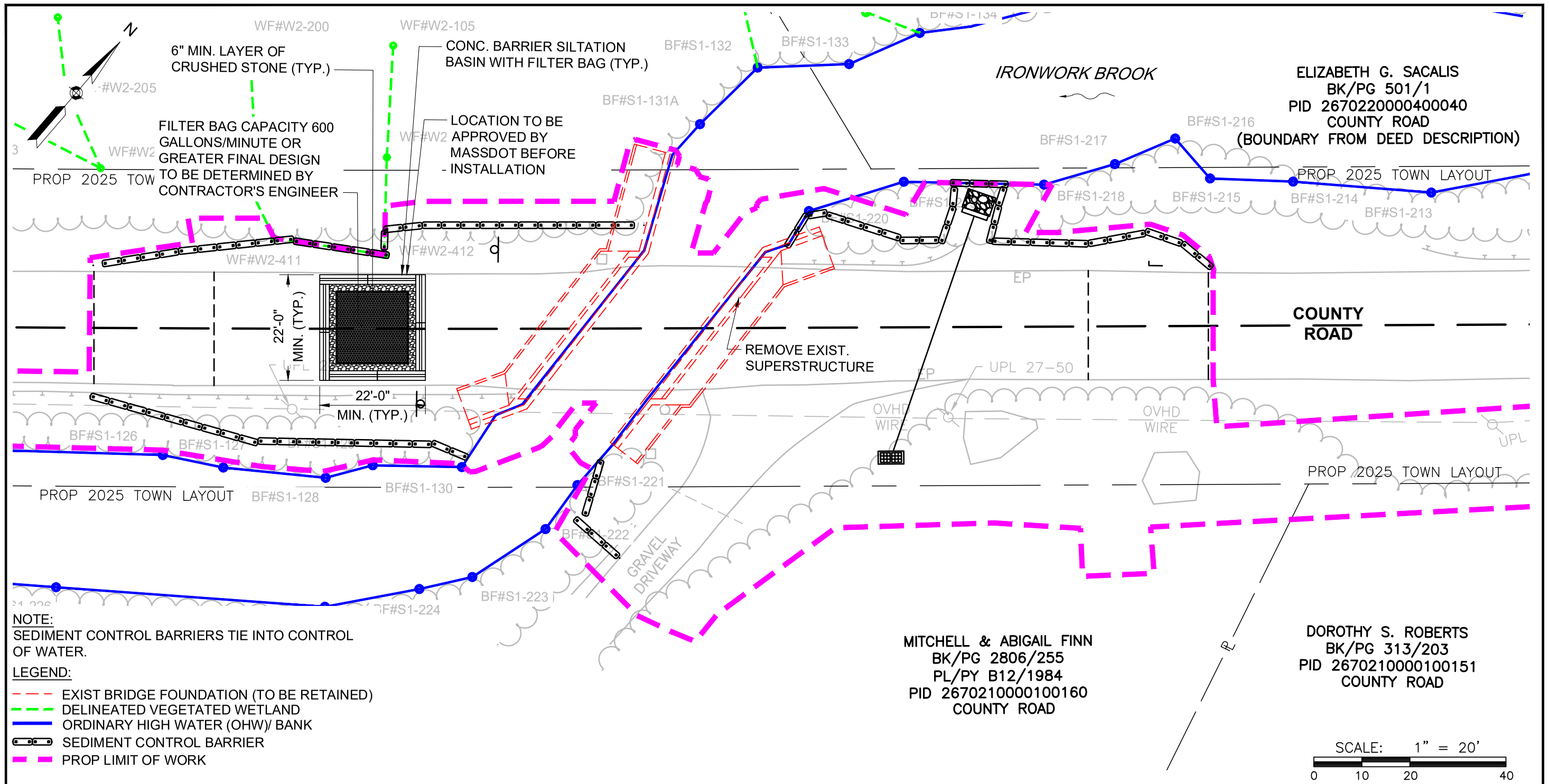
IMPACTS

BRIDGE SUPERSTRUCTURE REPLACEMENT PROJECT
COUNTY ROAD OVER IRONWORK BROOK
SHEFFIELD, MA
BERKSHIRE COUNTY

Job No.: 28409.00 Date: 12/9/2024
Scale: 1" = 20' Revised:
Description: IMPACTS Figure: 9 OF 15

BSC GROUP
BUILD | SUPPORT | CONNECT
803 SUMMER STREET
BOSTON, MASSACHUSETTS 02127
617-896-4300 | www.bscgroup.com

File:P:\2840900\Environmental\Drawings\Progress\9 - 2840900_(IMPACTS).dwg



NOTE:
SEDIMENT CONTROL BARRIERS TIE INTO CONTROL OF WATER.

LEGEND:

- EXIST BRIDGE FOUNDATION (TO BE RETAINED)
- DELINEATED VEGETATED WETLAND
- ORDINARY HIGH WATER (OHW)/ BANK
- SEDIMENT CONTROL BARRIER
- PROP LIMIT OF WORK

PREPARED FOR:
massDOT Massachusetts Department of Transportation Highway Division
MASSDOT HIGHWAY DIVISION
10 PARK PLAZA, BOSTON, MA 02116

Source:

CONTROL OF WATER - PHASE 1

BRIDGE SUPERSTRUCTURE REPLACEMENT PROJECT
COUNTY ROAD OVER IRONWORK BROOK
SHEFFIELD, MA
BERKSHIRE COUNTY

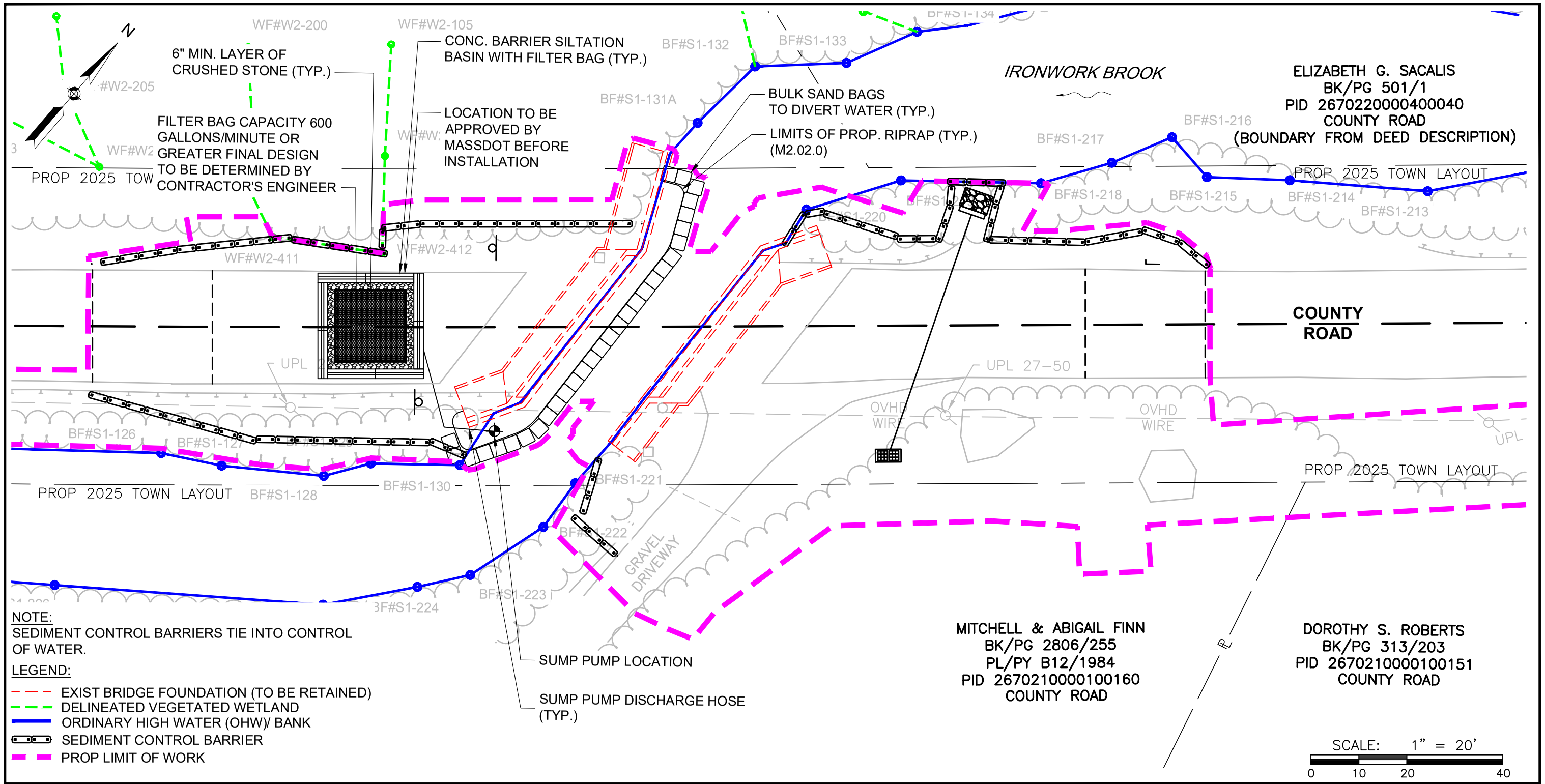
Job No.: 28409.00 Date: 12/9/2024
Scale: 1" = 20' Revised:
Description: COW Figure: 10 OF 15

BSC GROUP
BUILD | SUPPORT | CONNECT
803 SUMMER STREET
BOSTON, MASSACHUSETTS 02127
617-896-4300 | www.bscgroup.com

File: P:\2840900\Environmental\Drawings\Progress\10-14 - 2840900_(COW).dwg

A00830 - 120

Proposal No. 611942-133627



NOTE:
SEDIMENT CONTROL BARRIERS TIE INTO CONTROL OF WATER.

LEGEND:

- EXIST BRIDGE FOUNDATION (TO BE RETAINED)
- DELINEATED VEGETATED WETLAND
- ORDINARY HIGH WATER (OHW)/ BANK
- SEDIMENT CONTROL BARRIER
- PROP LIMIT OF WORK

PREPARED FOR:
massDOT Massachusetts Department of Transportation Highway Division
MASSDOT HIGHWAY DIVISION
10 PARK PLAZA, BOSTON, MA 02116

Source:

CONTROL OF WATER - PHASE 2

BRIDGE SUPERSTRUCTURE REPLACEMENT PROJECT
COUNTY ROAD OVER IRONWORK BROOK
SHEFFIELD, MA
BERKSHIRE COUNTY

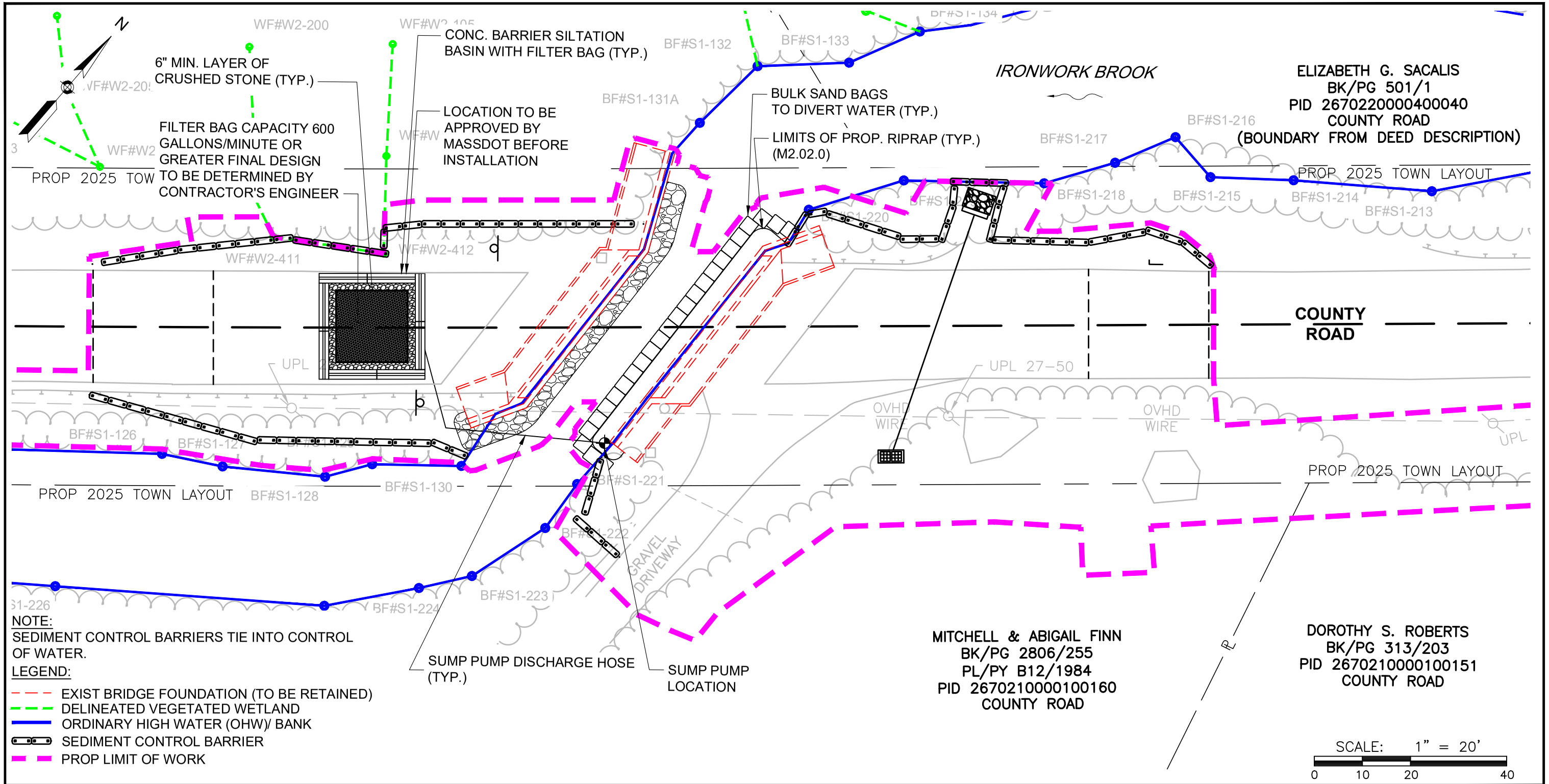
Job No.: 28409.00 Date: 12/9/2024
Scale: 1" = 20' Revised:
Description: COW Figure: 11 OF 15

BSC GROUP
BUILD | SUPPORT | CONNECT
803 SUMMER STREET
BOSTON, MASSACHUSETTS 02127
617-896-4300 | www.bscgroup.com

File: P:\2840900\Environmental\Drawings\Progress\10-14 - 2840900_(COW).dwg

A00830 - 121

Proposal No. 611942-133627



NOTE:
SEDIMENT CONTROL BARRIERS TIE INTO CONTROL OF WATER.

LEGEND:
- EXIST BRIDGE FOUNDATION (TO BE RETAINED)
- DELINEATED VEGETATED WETLAND
- ORDINARY HIGH WATER (OHW)/ BANK
- SEDIMENT CONTROL BARRIER
- PROP LIMIT OF WORK

PREPARED FOR:
massDOT Massachusetts Department of Transportation Highway Division
MASSDOT HIGHWAY DIVISION
10 PARK PLAZA, BOSTON, MA 02116

Source:

CONTROL OF WATER - PHASE 3

BRIDGE SUPERSTRUCTURE REPLACEMENT PROJECT
COUNTY ROAD OVER IRONWORK BROOK
SHEFFIELD, MA
BERKSHIRE COUNTY

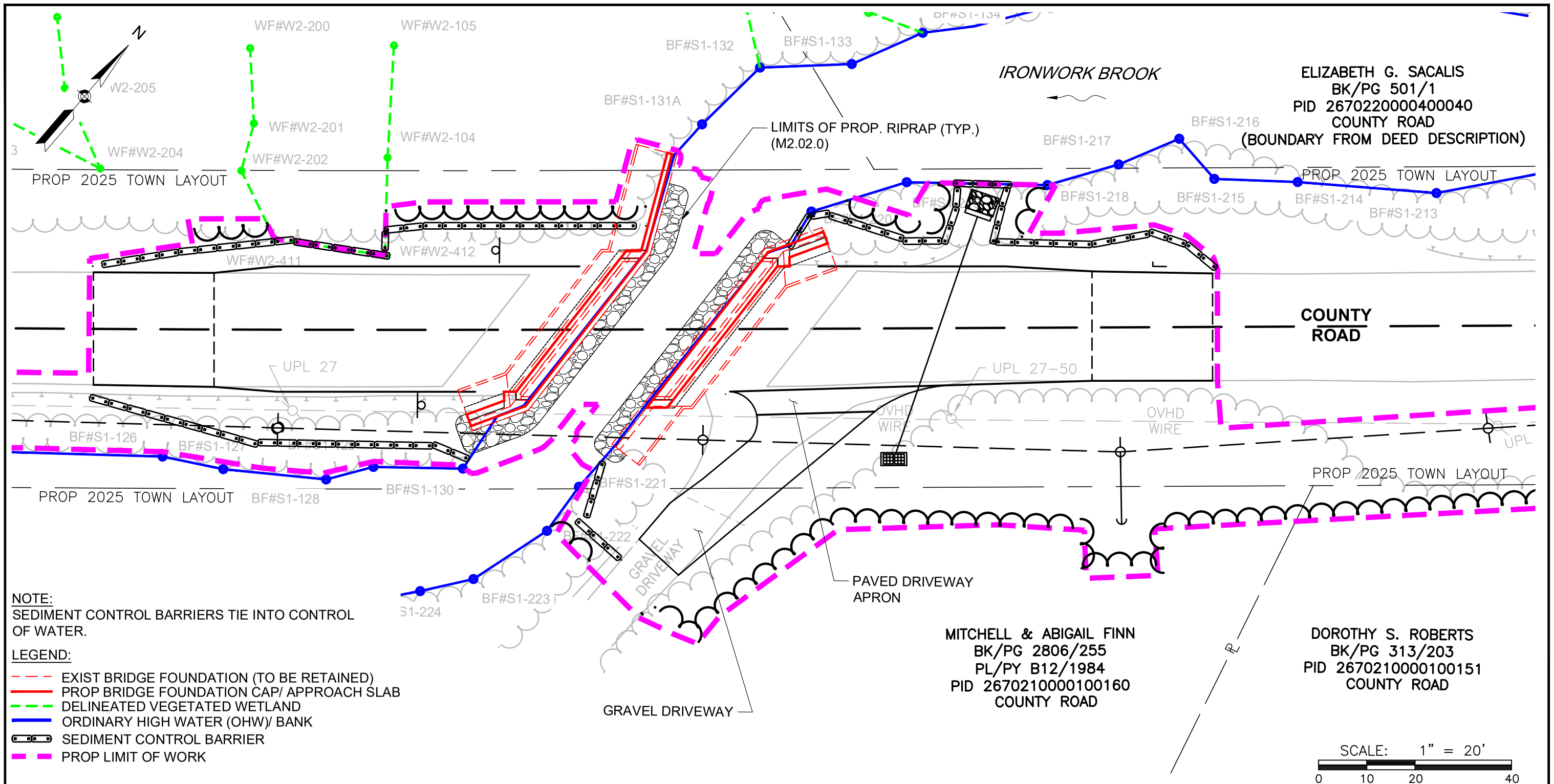
Job No.: 28409.00 Date: 12/9/2024
Scale: 1" = 20' Revised:
Description: COW Figure: 12 OF 15

BSC GROUP
BUILD | SUPPORT | CONNECT
803 SUMMER STREET
BOSTON, MASSACHUSETTS 02127
617-896-4300 | www.bscgroup.com

File: P:\2840900\Environmental\Drawings\Progress\10-14 - 2840900_(COW).dwg

A00830 - 122

Proposal No. 611942-133627



NOTE:
SEDIMENT CONTROL BARRIERS TIE INTO CONTROL OF WATER.

LEGEND:

- EXIST BRIDGE FOUNDATION (TO BE RETAINED)
- PROP BRIDGE FOUNDATION CAP/ APPROACH SLAB
- DELINEATED VEGETATED WETLAND
- ORDINARY HIGH WATER (OHW)/ BANK
- SEDIMENT CONTROL BARRIER
- PROP LIMIT OF WORK

PREPARED FOR:
MassDOT Massachusetts Department of Transportation Highway Division
MASSDOT HIGHWAY DIVISION
10 PARK PLAZA, BOSTON, MA 02116

Source:

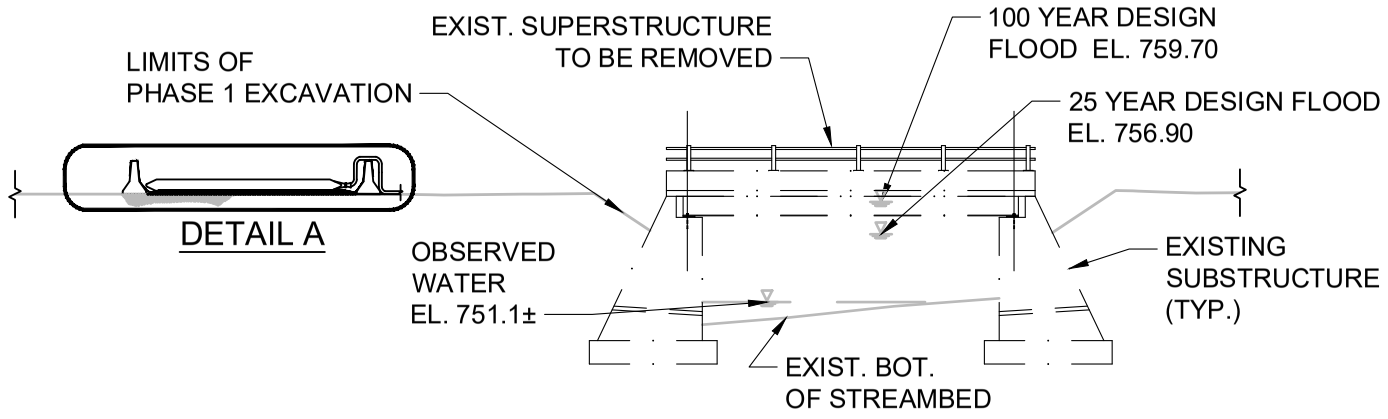
CONTROL OF WATER - PHASE 4

BRIDGE SUPERSTRUCTURE REPLACEMENT PROJECT
COUNTY ROAD OVER IRONWORK BROOK
SHEFFIELD, MA
BERKSHIRE COUNTY

Job No.: 28409.00 Date: 12/9/2024
Scale: 1" = 20' Revised:
Description: COW Figure: 13 OF 15

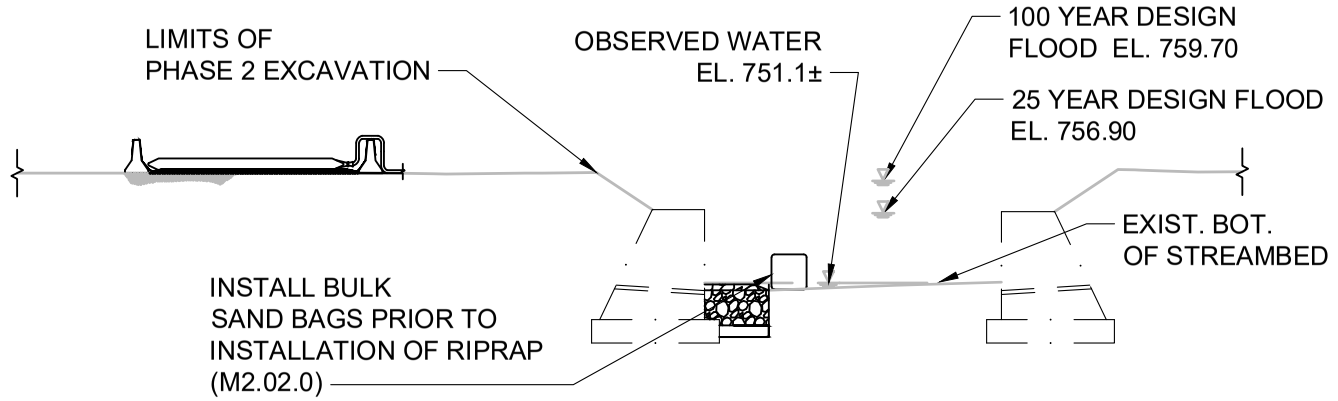
BSC GROUP
BUILD | SUPPORT | CONNECT
803 SUMMER STREET
BOSTON, MASSACHUSETTS 02127
617-896-4300 | www.bscgroup.com

File: P:\2840900\Environmental\Drawings\Progress\10-14 - 2840900_(COW).dwg



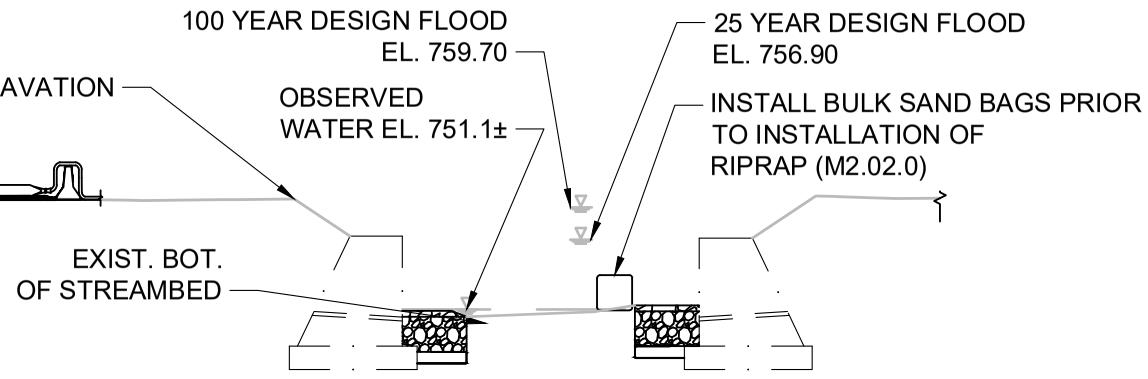
PHASE 1

SCALE: $\frac{1}{16}$" = 1'–0"



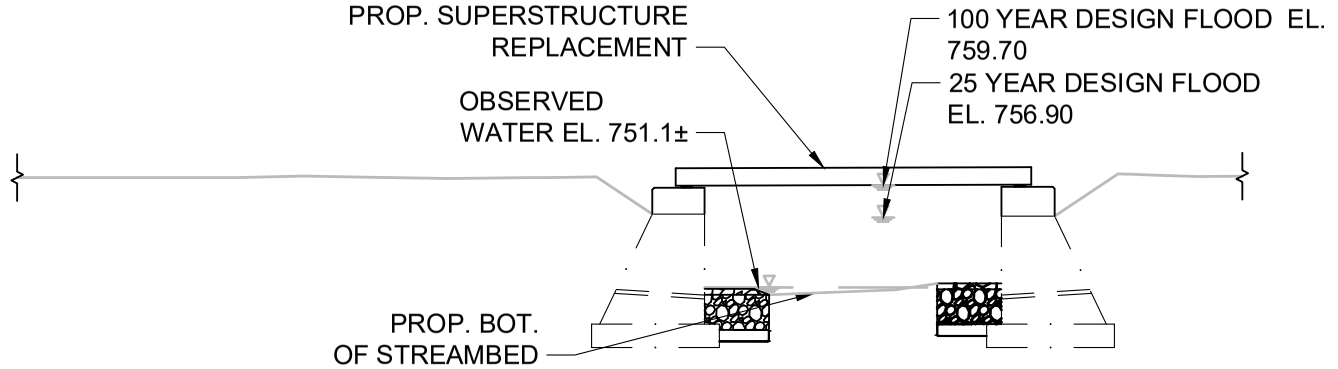
PHASE 2

SCALE: $\frac{1}{16}$" = 1'–0"



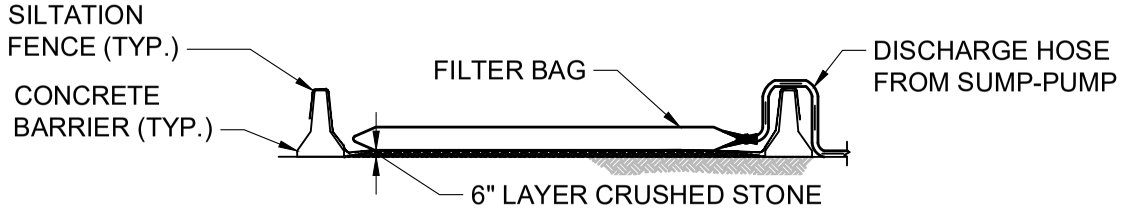
PHASE 3

SCALE: $\frac{1}{16}$" = 1'–0"



PHASE 4

SCALE: $\frac{1}{16}$" = 1'–0"



DETAIL A

SCALE: $\frac{1}{8}$" = 1'–0"

PREPARED FOR:

MASSDOT HIGHWAY DIVISION
10 PARK PLAZA, BOSTON, MA 02116

Source:

CONTROL OF WATER - ELEVATIONS

BRIDGE SUPERSTRUCTURE REPLACEMENT PROJECT
COUNTY ROAD OVER IRONWORK BROOK
SHEFFIELD, MA
BERKSHIRE COUNTY

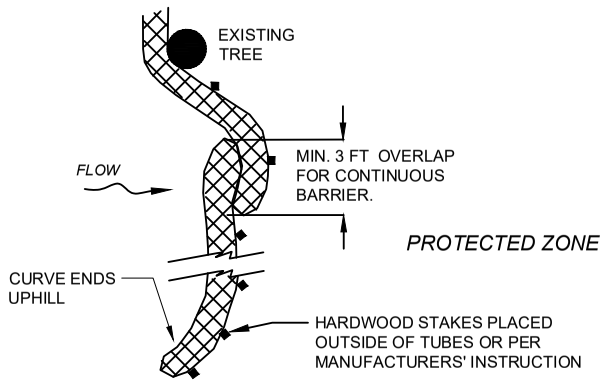
Job No.: 28409.00 Date: 12/9/2024

Scale: 1/16" = 1'-0" Revised:

Description: COW Figure: 14 OF 15

BSC GROUP
BUILD | SUPPORT | CONNECT
803 SUMMER STREET
BOSTON, MASSACHUSETTS 02127
617-896-4300 | www.bscgroup.com

File: P:\2840900\Environmental\Drawings\Progress\10-14 - 2840900_(COW).dwg



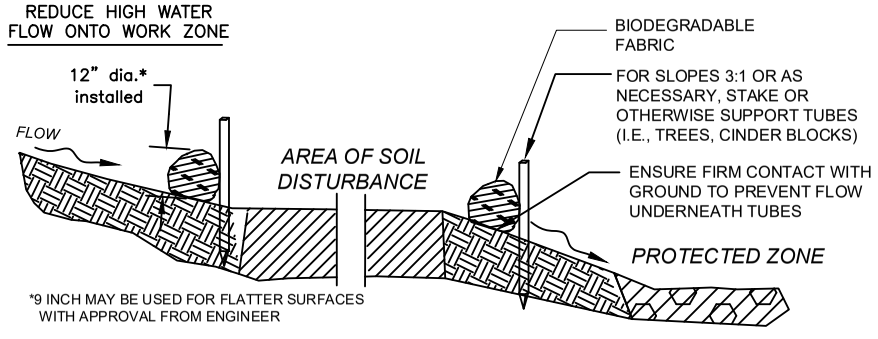
PLACE TUBE AS CLOSE TO LIMIT OF SOIL DISTURBANCE AS POSSIBLE, ALONG CONTOURS, AND PERPENDICULAR TO FLOW.

ADJUST LOCATION AS REQUIRED FOR OPTIMUM EFFECTIVENESS. DO NOT INSTALL IN WATERWAYS.

PLAN VIEW

CAPTURE SEDIMENT AND PREVENT FLOW OFF SITE

REDUCE HIGH WATER FLOW ONTO WORK ZONE

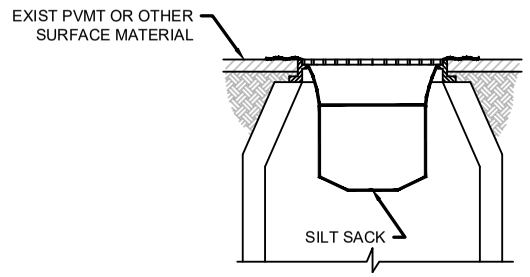


*9 INCH MAY BE USED FOR FLATTER SURFACES WITH APPROVAL FROM ENGINEER

SECTION

SEDIMENT BARRIER - COMPOST FILTER TUBE

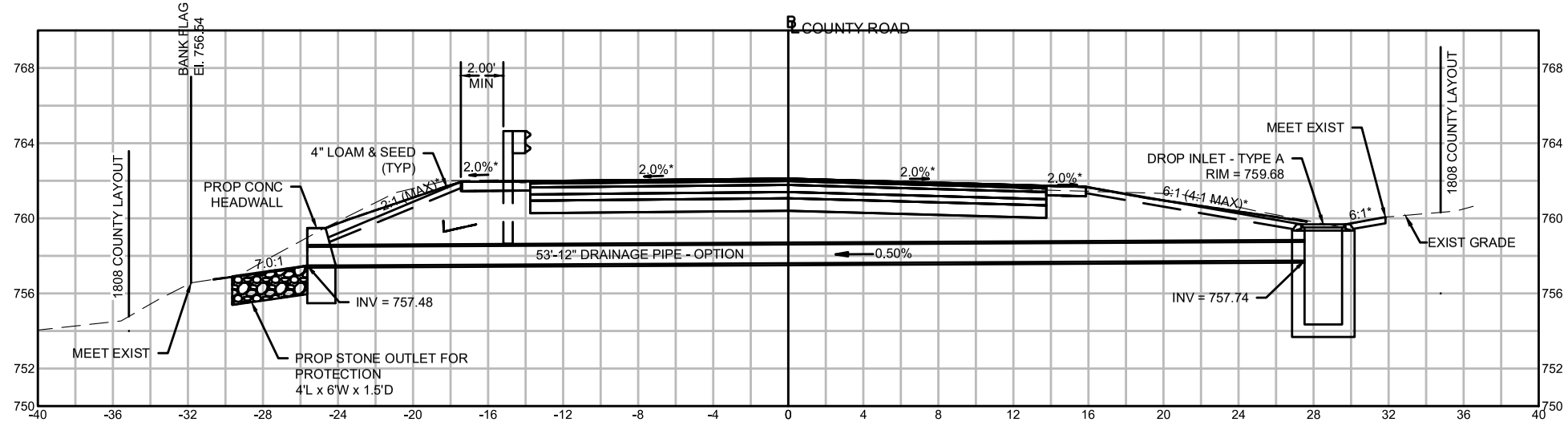
NOT TO SCALE



NOTE:
SILT SACKS TO BE PLACED IN ALL CATCH BASINS IN THE VICINITY OF NEW CONSTRUCTION. CATCH BASINS ARE TO BE PROTECTED AS SHOWN, WITH MINIMUM WEEKLY MAINTENANCE, OR AS REQUIRED AND REPLACED IF NECESSARY.

SILT SACK INLET PROTECTION

SCALE: NONE



5+56.22

NOTES:
1. DETAIL CROSS SECTION SHOWN IS SKEWED TO FOLLOW THE PROPOSED PIPE CENTERLINE AND IS NOT PERPENDICULAR TO THE CONSTRUCTION BASELINE.
2. * ROADWAY SLOPES REPRESENT GRADE MEASURE PERPENDICULAR FROM THE CONSTRUCTION BASELINE.

PRECAST DROP INLET AND CPP INSTALLATION DETAIL

SCALE: NONE

PREPARED FOR:

MASSDOT HIGHWAY DIVISION
10 PARK PLAZA, BOSTON, MA 02116

Source:

DRAINAGE & SEDIMENT CONTROL DETAILS

BRIDGE SUPERSTRUCTURE REPLACEMENT PROJECT
COUNTY ROAD OVER IRONWORK BROOK
SHEFFIELD, MA
BERKSHIRE COUNTY

Job No.: 28409.00 Date: 12/9/2024

Scale: NOT TO SCALE Revised:

Description: COW Figure: 15 OF 15

BSC GROUP
BUILD | SUPPORT | CONNECT
803 SUMMER STREET
BOSTON, MASSACHUSETTS 02127
617-896-4300 | www.bscgroup.com

File: P:\2840900\Environmental\Drawings\Progress\10-14 - 2840900_(COW).dwg

ITEM 102.511 TREE PROTECTION – ARMORING & PRUNING EACH

REV. 2022.01.01 (REV. DATE TO BE REMOVED BY CONTRACTS)

The work under this item shall conform to the relevant provisions of Sections 771 and shall be for furnishing and installing temporary tree trunk protection and for minor limb pruning or removal of lower tree limbs to prevent injury to the tree from construction equipment and activities.

Trunk armoring is for instances where construction activity (the use of heavy equipment) comes close enough to potentially damage the tree trunk or limbs. It is to be used where shown on the plans and as directed 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. Selected material shall be such that installation and removal will not damage the trunk.

Acceptable materials include 2x4 wood cladding with wire or metal strapping, or, for instances when duration of construction activities is less than three months, corrugated plastic pipe mounted with duct tape. Height of cladding shall be from base of tree (including root flare) to the bottom of the first branch, eight feet above the ground, or as required by the Engineer. Material and methods shall be approved by the Engineer.

Other materials or methods may be acceptable if approved by MassDOT Landscape Design or by an Arborist (if included in the contract).

METHODS OF WORK

Prior to construction activities, the Engineer, the Contractor, the Town Tree Warden, and the Arborist (if item is included in the contract), shall review trees noted on the plans to be protected. Final decision as to trees 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 replaced and maintained such that it is effective for as long as required and shall be removed immediately upon completion of work activities adjacent to trees.

Pruning of limbs shall conform to the techniques and standards of the most recent ANSI A300 standards.

DAMAGES & PENALTIES

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 obtain an Arborist. The Arborist shall be approved by MassDOT.

If, based on the recommendations 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, and/or watering, the damage will be repaired as soon as possible within the appropriate season for such work and according to industry standards.

If the Engineer determines that damages are irreparable, the Contractor shall pay for the damages in the amount of $500.00 per diameter inch at breast height (DBH) per tree.

Additionally, if the Engineer determines that the damages are such that the tree is sufficiently compromised as to pose a future safety hazard, the tree shall be removed. Tree removal will include clean up of all wood parts, 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.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 102.511 will be measured and paid at the contract unit price per each. 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.

In the event of tree damage, cost of Arborist services, of remediation measures, and/or tree removal will be borne by the Contractor.

Payment under this item will be scheduled throughout the length of contract:

- 40% of value shall be paid upon installation of trunk armoring and completion of pruning work, if required.
- 60% shall be paid at the end of construction operations that would 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.

In the event of irreparable damage due to lack of proper protective measures being take there will be no compensation in addition to the $500.00 per diameter inch penalty.

ITEM 102.521 TREE AND PLANT PROTECTION FENCE FOOT

REV. 2022.01.01 (REV. DATE TO BE REMOVED BY MASSDOT CONTRACTS)

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 consists of furnishing, installing, removing and resetting, maintaining fence in a vertical and effective position at all times, and final removal of temporary fence.

The purpose of the fence is to prevent damage to tree roots, tree trunks, soil, and all other vegetation within a delineated Tree and Plant Protection Zone (TPPZ) as shown on the plans, as directed by the Engineer, and as described herein.

Protection shall be for the duration of the construction activities unless otherwise directed.

MATERIALS

Temporary Fence shall be such that it provides a minimum 48-inch tall barrier that remains vertical and effective (not sagging) for the duration of period required. Fence shall be plastic orange safety fence (recommended where high visibility is necessary), wooden snow fencing, or other approved material.

Per the Engineer, additional posts, deeper post depths, and/or additional attachments will be used if the fabric or fence sags, leans or otherwise shows signs of failing to create a sufficient barrier to access.

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 for construction areas, staging areas, and stockpile areas as shown on the plans and as directed by the Engineer to establish the Tree and Plant Protection Zone (TPPZ).

Fence shall be located as close to the work zone limit and as far from the trunk 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 as shown on the plans and details. The Drip Line is defined as the limit of tree canopy.

The Contractor shall not engage in any construction activity within the TPPZ without the approval of the Engineer, including: operating, moving or storing equipment; storing supplies or materials; locating temporary facilities including trailers or portable toilets; and shall not permit employees to traverse the area to access adjacent areas of the project or use the area for lunch or any other work breaks.

METHOD OF WORK

Fence shall be installed prior to any construction work or staging activities and shall be installed and maintained in a vertical and effective position at all times.

Fence shall be repositioned where and as necessary for optimum effectiveness. Repositioning shall be incidental to this item. Fence 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 directed by the Engineer, fence, stakes, and other materials 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-inch depth of wood chips or approved matting for root protection, pruning of branches, and/or trunk protection. These protection measures will be paid under applicable items.

Landscaping work specified within the TPPZ shall be accomplished by hand tools. Where hand work 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 intruded upon, at the discretion of the Engineer, the Contractor will be required to provide a more durable barrier (e.g., Jersey Barriers) to secure the area. Cost of furnishing and installing additional or more durable barrier shall be borne by the Contractor.

If the Contractor intrudes into a TPPZ without approval, soil will be considered compacted and tree root damage will be assumed. Action will be taken as specified below.

In the event that 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 obtain an Arborist. The Arborist shall be approved by MassDOT.

In the event of spills, compaction or damage, 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 damages can be remedied by corrective measures, such as repairing trunk or limb injury, soil compaction remediation, pruning, and/or watering, the damage will be repaired as soon as possible within the appropriate season for such work and according to industry standards.

If the Engineer determines that damages are irreparable, the Contractor shall pay for the damages in the amount of $500.00 per diameter inch at breast height (DBH) per tree.

Additionally, if the Engineer determines that the damages are such that the tree is sufficiently compromised as to pose a future safety hazard, the tree shall be removed. Tree removal will include cleanup of all wood parts, 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.

Shrubs will be replaced with a plant of similar species and equal size or the largest size plants reasonably available. The Engineer will approve the size and quality of the replacement plant. Replacement will include a minimum of one year of watering and care.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 102.521 will be measured and paid for payment by the foot of Tree and Plant Protection Fence, complete in place. This includes all labor, materials, equipment, maintenance, final removal and disposal of the protective materials, damages repair, and all incidental cost required to complete the work.

Payment of 40 percent of value will be made upon installation of Fence. The remaining 60 percent will be made when protection materials have been removed and disposed off-site.

No separate payment will be made for costs of remedial actions, including addition of more durable barriers, or arborist services, but all costs in connection therewith shall be included in the Contract unit price bid.

In the event of irreparable damage due to lack of proper protective measures being take there will be no compensation in addition to the $500.00 per diameter inch penalty.

ITEM 209.2 **SPECIAL DROP INLET** **EACH**

DESCRIPTION

The work under this Item shall conform to the relevant provisions of Sections 201 and 220 of the Standard Specifications and the following:

Structure shall have a 4-ft inside diameter, 4-foot deep sump, and a flat top slab.

Method of Measurement

Item 209.2, Special Drop Inlet, will be measured for payment per each structure, complete in place.

Basis of Payment

Item 209.2, Special Drop Inlet, will be paid at the contract unit price per each complete in place, including all labor, equipment, material, and incidental costs needed for installation. Drop Inlet Frame and Grate shall be paid for under Item 222.2 Frame and Grate – MassDOT Drop Inlet.

ITEM 698.4 GEOTEXTILE FABRIC FOR PERMANENT EROSION CONTROL SQUARE YARD

DESCRIPTION

The work performed under this Item shall consist of furnishing and installing geotextile fabric below Modified Rockfill embankment Slopes and channel bed as shown on the Plans or as required by the Engineer.

The geotextile fabric shall conform to the requirements of Subsection M9.50.0 the MassDOT Standard Specification and AASHTO M288, Class 2, for fabric used for permanent erosion control and must be on the MassDOT QCML. Construction and installation shall be in accordance with AASHTO M288 including Appendix A and the following. Atmospheric exposure of the geotextile fabric to the elements following lay down shall be a maximum of 14 days.

For seams that are sewn in the field, colored thread must be used. The Contractor shall provide at least a six-foot length of sample sewn seam for the approval of the Engineer before the geotextile fabric is installed. The seams sewn for sampling shall be sewn using the same type of equipment and procedures as will be used for the production seams. If seams are sewn in both the machine and cross machine direction, samples of seams for both directions shall be provided. The seam assembly description shall be submitted by the Contractor along with the seam samples. This description shall include the seam type, stitch type, sewing thread, and stitch density.

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 either sewing or 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 avoid 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.

When stone is placed over geotextile fabric, the stone placement shall begin at the toe of slope and proceed up the slope. Placement shall take place so as to avoid stretching and subsequent tearing of the geotextile. Stone shall not be dropped from a height exceeding 24 inches on to the geotextile fabric.

Field monitoring shall be performed to verify that the Stone, Riprap or Rockfill placement does not damage the geotextile. Any geotextile damaged during backfill placement shall be replaced as required by the Engineer, at the Contractor’s expense.

METHOD OF PAYMENT AND MEASUREMENT

Geotextile Fabric for Permanent Erosion Control will be measured per Square Yard, complete in place and accepted, as computed from surface measurements parallel to the Riprap. Geotextile fabric placed outside the specified limits will not be measured or paid for, and the Contractor may be required to remove and dispose of the excess material without cost to the Department. No additional measurement shall be made for necessary lap material.

Geotextile Fabric for Permanent Erosion Control will be paid for at the Unit Price per Square Yard, which shall include all labor, materials, equipment, and incidental costs required to complete the work. Overlaps and fold-overs are considered incidental to the unit price and shall not be measured separately for cost.

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 AND BASIS OF PAYMENT

Annual Cover Crop will be measured for payment per pound of seed, complete in place.

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 765.635 Native Seeding and Establishment

ITEM 765.442 ROADSIDE RIVERBANK 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.

   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.

Roadside Riverbank Mix

765.442 Roadside Riverbank Mix			
	Botanical Name	Common Name	% PLS by Weight
Grass			
	Elymus virginicus	Virginia Wild Rye	28.00%
	Schizachyrium scoparium 'Albany Pine'	Little Bluestem 'Albany Pine'	22.00%
	Elymus riparius	Riverbank Wild Rye	14.70%
	Andropogon gerardii NY Eco	Big Bluestem NY Eco	14.00%
	Panicum virgatum	Switch Grass	5.00%
	Dichanthelium clandestinum 'Tioga'	Deertongue grass 'Tioga'	5.00%
	Carex vulpinoidea	Fox Sedge	2.00%
	Agrostis perennans	Upland Bentgrass	1.50%
	Carex vulpinoidea	Fox Sedge	0.50%
	Poa palustris	Fowl Bluegrass	0.30%
	Juncus effusus	Soft Rush	0.10%
	Juncus tenuis	Path Rush	0.10%
			93.20%
Herb/Forb			
	Chamaecrista fasciculata	Partridge Pea	3.00%
	Penstemon digitalis	Beard-tongue	1.00%
	Verbena hastata	Blue Vervain	0.40%
	Aster puniceus	Aster - Swamp	0.40%
	Aster cordifolius	Blue Wood Aster	0.30%
	Asclepias incarnata	Swamp Milkweed	0.30%
	Desmodium canadense	Showy Tick Trefoil	0.30%
	Monarda fistulosa	Wild Bergamot	0.20%
	Aster novae-angliae	New England Aster	0.20%
	Solidago rigida	Rigid Goldenrod	0.20%
	Eupatorium maculatum	Spotted Joe Pye Weed	0.10%
	Solidago juncea	Early Goldenrod	0.10%
	Euthamia graminifolia	Grass-leaved Goldenrod	0.10%
	Eupatorium perfoliatum	Boneset	0.10%
	Pycnanthemum tenuifolium	Slender Mountain Mint	0.10%
			6.80%
			100.00%
	Seeding Rate: 15.0 lbs PLS/Acre		

Application Rate

Roadside Riverbank Mix: 15.0 lbs/acre PLS. In addition, apply 30 pounds of cover crop (grain oats or grain rye) as appropriate to the season.

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 AND BASIS OF PAYMENT

Roadside Riverbank Mix will be measured for payment by the pound of Pure Live Seed delivered and complete in place.

Roadside Riverbank Mix 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 735.635 Native Seeding and Establishment.

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.*

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.

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.

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.

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.

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

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.

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 AND BASIS OF PAYMENT

Native Seeding and Establishment will be measured for payment by the square yard, complete in place.

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. If used, Compost Blanket shall be compensated under the respective item.

Option1: Mowing for weed control will be paid as specified under Item 765.664.

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 765.664 MOWING FOR NATIVE SEED ESTABLISHMENT SQUARE YARD

DESCRIPTION

Item 765.664 Mowing for Native Seed Establishment shall be used solely for the purpose of weed management for upland native seed establishment, only when required by the Landscape Architect and the Engineer, and only during the period prior to weed seed dispersal as specified herein unless otherwise directed.

METHODS

Mowing 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.

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 not occur when ground or grasses are wet. 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.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Mowing for Native Seed Establishment will be measured for payment per Square Yard of area mowed complete in place.

Mowing for Native Seed Establishment will be paid at the contract unit price per Square Yard of area mowed and upon completion during the approved period for mowing as described under Methods. Payment shall include all labor, materials, equipment, traffic controls, and all incidental work required for satisfactory completion of mowing.

ITEM 767.121 SEDIMENT CONTROL BARRIER FOOT

REV. 2022.02.01 (REV. DATE TO BE REMOVED BY MASSDOT CONTRACTS)

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.

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.

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.

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.

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:

- 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 directed by the Engineer at the Contractors expense.

Sedimentation fence used in conjunction with compost filter will be measured and paid for separately under Standard Item 697, Sedimentation Fence.

ITEM 983.12 RIPRAP WITH GRAVEL PACKED VOIDS TON

DESCRIPTION

Description, Materials and Construction Methods shall all be in accordance with the relevant provisions of Section 983 of the Standard Specifications and the following:

Riprap shall conform to the requirements of M2.02.0 Materials Specification. Riprap shall be placed on the areas, depths contours, and grades designated on the plans in a manner that will produce a well-graded mass of stone with the minimum practicable percentage of voids. Riprap protection shall be placed to its full thickness in one operation in such a manner to avoid displacing the underlying material. Placing of riprap in layers, by dumping into chutes or by placing by similar methods that are likely to cause segregation will not be permitted.

The riprap will be placed in accordance with the relevant provisions of section 983. After the riprap has been placed, gravel/natural streambed material will be used to pack any voids that are present. The riprap and gravel will provide a level area for the placement of the streambed materials. If insufficient suitable natural streambed material is unavailable to pack the voids in the riprap, gravel conforming to M1.03.0 Type B, Gravel Borrow shall be used. All costs associated with the material and placement of the material shall be considered incidental to this item.

CONSTRUCTION METHODS

Riprap shall be placed upon an approved bed of crushed stone over geotextile fabric to the lines and grades shown on the plans and as directed. Riprap shall have a minimum thickness of 3 feet.

METHOD AND MEASUREMENT OF PAYMENT

Item 983.12 Riprap With Gravel Packed Voids will be measured by CUBIC YARD complete in place and paid at the Contract Bid Price per CUBIC YARD, which price shall be the full payment of all labor, materials, equipment, transportation and incident costs necessary to complete the work to the satisfaction of the Engineer.

Excavation for riprap shall be paid for under Item 143. “Channel Excavation”. Streambed/Bank Restoration material will be paid for separately under Item 983.521 “Streambed/Bank Restoration”. Crushed stone will be paid for separately under Item 156.5 “Crushed Stone for Filter Blanket”. Geotextile fabric will be paid for separately under Item 698.4 “Geotextile Fabric for Permanent Erosion Control”. Gravel to pack voids shall be included in the bid price for Riprap with Gravel Packed Voids, no additional payment will be provided. Said price shall be considered full compensation for all labor, tools, equipment, and material necessary for the completion of the work.

ITEM 983.522 STREAMBED RESTORATION LUMP SUM

DESCRIPTION

This work shall consist of removing, stockpiling, and replacing river bed material in the proposed bridge replacement and the upstream and downstream approaches in the limits of work. The streambed restoration shall replicate the existing natural channel bed outside the work area in terms of material, rougness, 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 (Figures A).

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 construciton, 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 Wetlands & Wildlife Unit Supervisor, (508) 389-6366 / david.j.paulson@state.ma.us) to set up an initial (virtual or inperson) meeting with MassDOT's Geomorphologist, Contractor, and Resident Engineer. At this meeting, the Geomorphologist will provide an overview of the restoration work. 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 initial virtual meeting to discuss the streambed restoration and material stockpiling with the Geomorphologist and respective parties from MassDOT. The Geomorphologist shall then be given a 1-month notice to schdule an onsite visit during streambed restoration installation. 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 installation.

MATERIAL

The top 1.5 feet of stremabed material excavated from the existing streambed shall be removed and stockpiled to facilitiate reinstallation and replication of the natural streambed. The excavated streambed material below the top 2 feet shall be stockpiled and reused to fill the voids in the proposed riprap placed below the top streambed restoration layer.

In the event that the excavated material is not suitable or 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. The median grain size (D50) is 93 mm (small cobble).

Stream Bed Material Gradation

Particle	**Percent (%) Composition**
Boulder	5
Cobble	40
Gravel	45
Sand	10

The streambed material shall be approved by the Resident Engineer and Geomorphologist prior to use.

Related Items

Crushed Stone. Shall conform to the requirements of Item 156.2 Crushed Stone for Slope Treatment and shall be paid for under that item.

Riprap Stone shall conform to the requirements of Item 983. and shall be paid for under that item.

CONSTRUCTION

Channel

The streambed material shall be reinstalled over riprap (MassDOT Item 983.xx), as depicted on the plans, to an average thickness of 1.5 feet, with variations in thickness as necessary to replicate existing channel conditions. The initial placement of streambed material shall fill / choke the voids in the underlying riprap. 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 on top of the riprap 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.

Completion

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.

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 and other aquatic organims 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.

BASIS OF PAYMENT

The accepted streambed restoration will be paid for on a lump sum basis. Payment will be full compensation for excavating, stockpiling, transporting, and placing the material specified and for furnishing all labor, tools, equipment, testing, and incidentals necessary to complete the work.

The Geomorphologist will be provided by MassDOT at no cost to the Contractor.

FIGURES

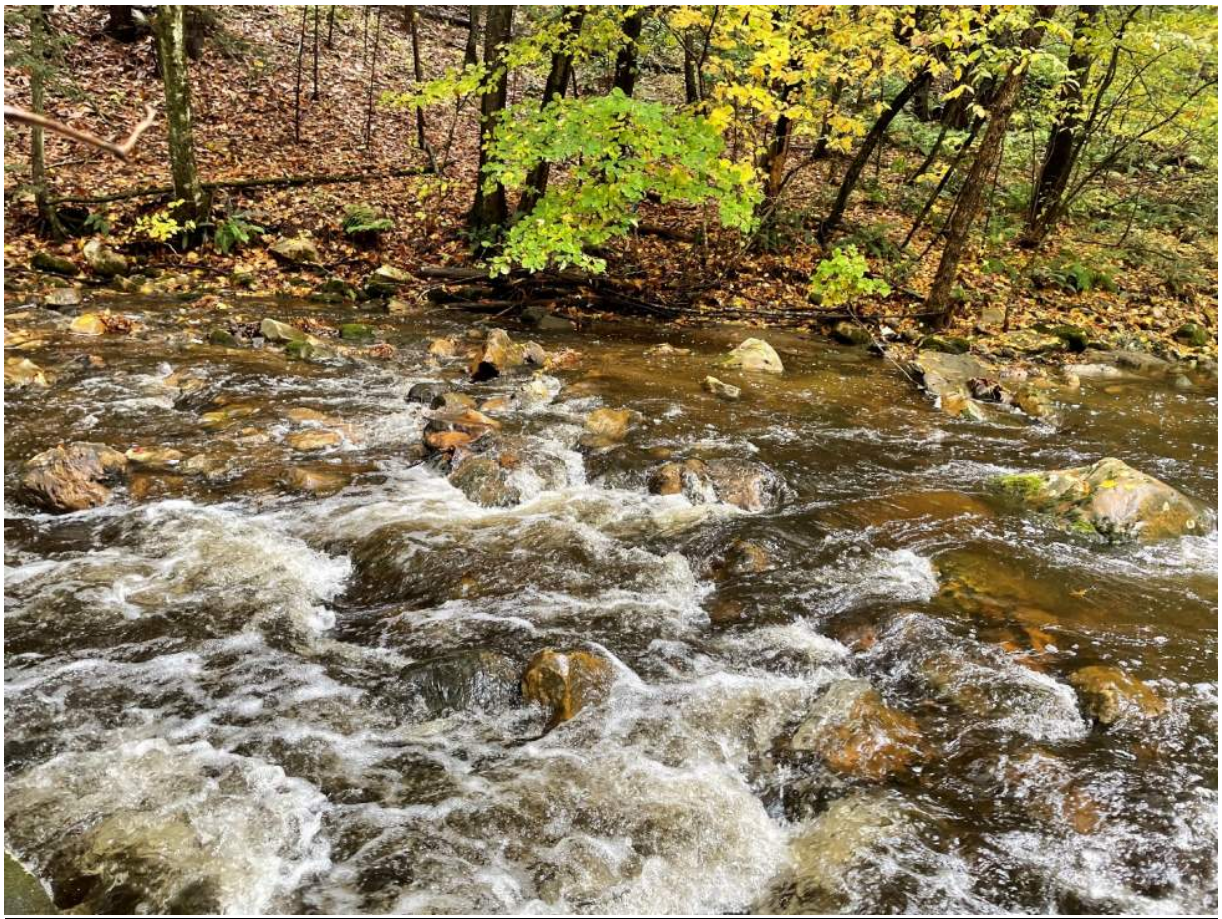


Figure A: Existing Streambed Material Upstream of Bridge (During Higher Flow)

ITEM 991.1 CONTROL OF WATER-STRUCTURE NO. S-10-024 (02H) LUMP SUM

Work under this Item shall conform to the relevant provisions of Section 140 of the Standard Specifications and the following:

This Item includes all dewatering necessary to accomplish the installation of the proposed scour protection.

The temporary control of water design elevation of 754.8 is based on the phased installation of the control of water system, depicted in the environmental permits, where the channel width at the bridge is reduced to 13'-0". The design flood frequency of 2 years corresponds to the control of water being in place for not more than 1 year.

Any pumping and dewatering measures to construct the proposed bridge superstructure, partially demolish the existing bridge, and install natural streambed material riprap, crushed stone, geotextile fabric, etc. shall be considered incidental to this item.

Channel diversions and dewatering of excavation shall be conducted to ensure that removal and construction of bridge substructure and installation of the proposed scour protection are done "in the dry."

As part of the work under this Item, it is the responsibility of the Contractor to determine the need and extent of stream diversions, sedimentation basins and dewatering techniques and sedimentation controls needed to control water and sediment at the site. Prior to starting the excavation and partial demolition operations, the Contractor shall submit working drawings and the methods and materials they propose to use for the Engineer's approval. These plans shall be in conformance with the environmental permits, plans and these specifications. The Contractor shall install all erosion control measures and turbidity barriers prior to proceeding with the approved water control plans. The materials and methods not specifically mentioned under this Item shall comply with the standard specifications where applicable.

Approval of the working drawings does not relieve the Contractor of the responsibility of providing for the safety and successful completion of the work.

CONSTRUCTION METHODS

Plans and Calculations for dewatering measures shall be developed by the Contractor for this Item, prepared and stamped by a Professional Engineer of the appropriate discipline registered in the Commonwealth of Massachusetts and submitted for the review of the Engineer prior to the start of construction.

Stream restrictions shall be conducted in such a manner as to minimize siltation and prevent contamination of the waterway.

Maximum screen sizes on the inlet side of all pumps shall not exceed ½ in (12.7 mm).

Recommended devices to control water at the site include, but are not limited to:

- Sheet Piles.
- Sandbag dams installed at the top of the excavation to provide control of water.
- Installation of precast concrete median barriers or blocks covered with sedimentation fabric and sandbags to reduce water infiltration.
- Portable cofferdam system comprised of steel frames covered by an impervious fabric membrane.

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/her judgment the Contractor's water control operations are failing to produce adequate results or are posing a threat to the environment.

The Contractor shall provide the means of removing all sediment from water pumped from the excavation areas; this shall include the use of filter bags, sedimentation basins, check dams, sedimentation fences or tanks.

Maintenance of Control of Water System:

1. Throughout the dewatering operations, the Control of Water system shall be inspected regularly by the Contractor and properly maintained. Sufficient surplus materials and equipment shall be available on site to carry out any repair work that may be required. The Town of Sheffield shall be provided with a 24 hour emergency telephone number at which the Contractor may be reached.

1. Inspection of the dewatering operations shall take place a minimum of two times daily. Repair of damages shall take place immediately. Basin outlets are to be cleaned daily. Debris shall be removed immediately. Remove filter bag when water flow in exceeds flow out. Dispose of sediments at a location approved by the Engineer.

2. The Contractor shall inspect erosion controls that surround the outlet daily and shall immediately replace any that are damage. Placement of the filter bag shall be determined in the field based upon site conditions in a location approved by the Engineer.

BASIS FOR PAYMENT

Payment under this heading will be made at the Lump Sum Contract Unit Price Bid for this Item, which shall include all labor, materials, equipment and incidental costs required to complete the work.

Partial payments shall be made at the following percentages:

Approval of the Control of Water submittal	20%
Accepted Installation of Control of Water	60%
Satisfactory removal of the Control of Water	20%

DOCUMENT A00831

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

*** THIS PAGE IS INTENTIONALLY LEFT BLANK ***

Regulatory Division
Transportation & Utility Section
File Number: NAE-2024-02809

Courtney Walker
MassDOT - Highway Division
10 Park Plaza
Boston, Massachusetts 02116
Via Email: courtney.l.walker@dot.state.ma.us

Dear Ms. Walker:

This letter is in response to the application you submitted to the U.S. Army Corps of Engineers (USACE), New England District, on December 20, 2024, for a Department of the Army general permit verification. We have assigned this project file number NAE-2024-02809, which you should reference in all correspondence with this office. This letter follows a provisional notification letter from this office, dated February 4, 2025.

A review of the information provided indicates the proposed work includes the permanent discharge of fill material within 573 square feet below the Ordinary High Water (OHW) mark of Ironwork Brook associated with the replacement of the bridge conveying County Road over Ironwork Brook, at Latitude 42.109060º and Longitude -73.316020º, in Sheffield, Berkshire County, Massachusetts. The existing bridge superstructure will be replaced, and the abutments retained. Rip-rap scour protection overtopped with 6" if natural streambed material will be installed in front of the abutments. The project also includes temporary impacts within 490 square feet below OHW due temporary cofferdams and associated dewatering. The work is shown on the enclosed plans titled "BRIDGE SUPERSTRUCTURE REPLACEMENT PROJECT COUNTY ROAD OVER IRONWORK BROOK SHEFFIELD, MA BERKSHIRE COUNTY, on 15 sheets, and dated 12/9/2024.

Based on the information you have provided, we verify that the activity is authorized under General Permit 23 of the June 2, 2023, federal permit known as the Massachusetts General Permits (GPs). If the extent of the project area and/or nature of the authorized impacts to waters are modified, a revised application must be submitted to this office for written approval before work is initiated. You can find a copy of these permits at: https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/.

Any deviation from the terms and conditions of the permit, or your submitted plans, may subject the permittee to the enforcement provisions of our regulations. Therefore,

in the event changes to this project are contemplated, it is recommended you coordinate with this office prior to proceeding with the work. This office must approve any changes before you undertake them. You must perform this work in compliance with the terms and conditions of the GPs listed above and the following special conditions:

Project Specific 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. All construction shall be completed in accordance with the limits of construction and construction sequences detailed on the enclosed plan drawings, titled "BRIDGE SUPERSTRUCTURE REPLACEMENT PROJECT COUNTY ROAD OVER IRONWORK BROOK SHEFFIELD, MA BERKSHIRE COUNTY, on 15 sheets, and dated 12/9/2024. If you change the plans or construction methods for work within or adjacent to Ironwork Brook, please contact us immediately to discuss modification of this authorization. USACE must approve any changes before you undertake them.

4. A conditioned Water Quality Certification (WQC) has been issued by the Massachusetts Department of Environmental Protection for your project and is attached. You must comply with the conditions specified in the WQC.

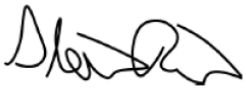
This verification is valid until June 1, 2028. You must commence or be under contract to commence the work authorized herein by June 1, 2028, and complete the work by June 1, 2029. If not, you must contact this office to determine the need for further authorization before beginning or continuing the activity. It is recommended that you contact this office before this authorization expires to discuss if permit reissuance is a possibility.

This GP verification and any associated authorizations does not preclude the necessity to obtain any other federal, state, or local permits, licenses, and/or certifications, which may be required.

If you have any questions related to this verification or have issues accessing documents referenced in this letter, please contact Daniel Vasconcelos, Project Manager, at 978-318-8653, or by email at daniel.b.vasconcelos@usace.army.mil.

This agency continually strives to improve our customer service. To better serve you, please complete the Customer Service Survey located at: https://regulatory.ops.usace.army.mil/customer-service-survey/.

Sincerely,



Stephen Rochette
Acting Chief, Technical Support Branch
Regulatory Division

Enclosures

cc (w/enclosures):
Ed Reiner, U.S. EPA, Region 1 (via reiner.ed@epa.gov)
Heidi Davis, MassDEP (via heidi.davis@mass.gov)
Jaime Iannelli, MassDEP (via Jaime.Iannelli@mass.gov)
Sheffield Conservation Commission (via concom@sheffieldma.gov)
Michael Joa, MassDOT Highway Division (via michael.a.joa@dot.state.ma.us)

Work-Start Notification Form

File Number: NAE-2024-02809 **State: Massachusetts** **County: Berkshire**

Permittee: MassDOT - Highway Division, Courtney Walker
Date Verification Issued: 4/11/2025
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 and cenae-r-tu@usace.army.mil

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**

Compliance Certification Form

File Number: NAE-2024-02809 **State: Massachusetts** **County: Berkshire**

Permittee: MassDOT - Highway Division, Courtney Walker
Date Verification Issued: 4/10/2025
Project Manager: Daniel Vasconcelos

Within one month of completion of the activity authorized by this permit and any mitigation required by the permit (you must submit this form after mitigation is complete, but not the mitigation monitoring, which requires separate submittals), 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 and cenae-r-tu@usace.army.mil

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.

I hereby certify that the work, and mitigation (if applicable), authorized by the above referenced permit has been completed in accordance with the terms and conditions of the said permit including any general or specific conditions.

Date Authorized Work Started: _____ **Completed: _____**

Describe any deviations from permit (attach drawing(s) depicting the deviations):

_____

_____

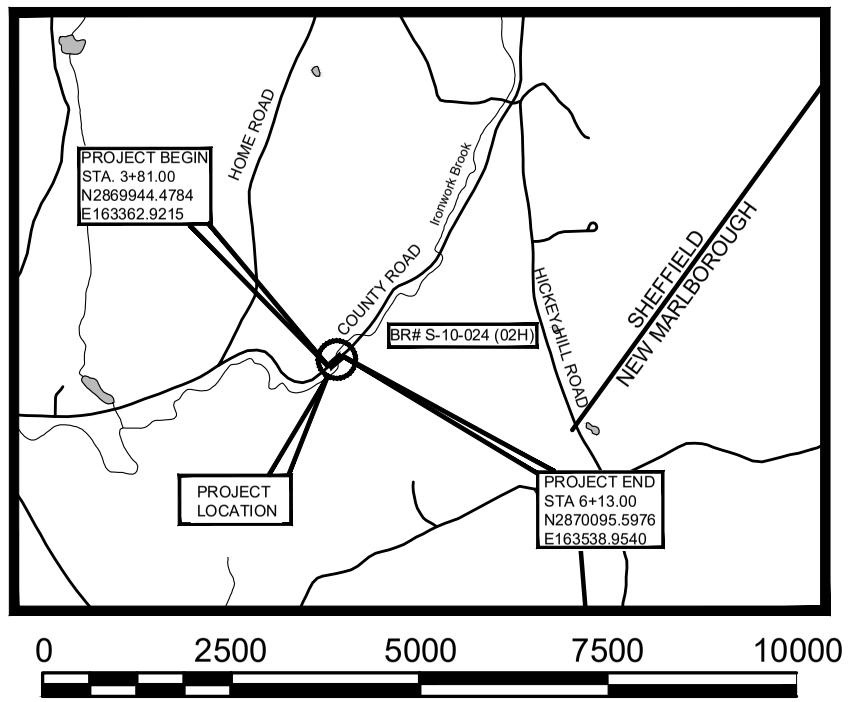
***Note: The description of any deviations on this form does not constitute approval by the USACE.**

_____ _____

Signature of Permittee **Date**

PERMIT PLANS

INDEX	
SHEET NO.	DESCRIPTION
1	INDEX
2	EXISTING CONDITIONS
3 - 5	PROPOSED CONDITIONS
6	EXISTING SOUTH ELEVATION
7	PROPOSED SOUTH ELEVATION
8	PROPOSED ROADWAY PROFILE
9	IMPACTS
10 - 14	CONTROL OF WATER
15	DRAINAGE & SEDIMENT CONTROL DETAILS



SCALE: 1" = 2500'

LENGTH OF PROJECT = 232.00 FEET = 0.044 MILES

IMPACTS TO WATERS OF THE UNITED STATES			
WATERS OF THE US (WATERBODY)	PERMANENT IMPACT	573	SF
	TEMPORARY IMPACT	490	SF
	PERMANENT IMPACT - DREDGE/FILL	96 / 96	CY
	TEMPORARY IMPACT - DREDGE/FILL	0 / 0	CY
BANK/ ORDINARY HIGH WATER (OHW)	PERMANENT IMPACT	12	LF
	TEMPORARY IMPACT	144	LF

NOTES:
1. HORIZONTAL DATUM IS BASED OFF OF THE NORTH AMERICAN DATUM (NAD) 1983
2. ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

PREPARED FOR:
massDOT Massachusetts Department of Transportation Highway Division
MASSDOT HIGHWAY DIVISION
10 PARK PLAZA, BOSTON, MA 02116

Source:

TITLE SHEET & INDEX

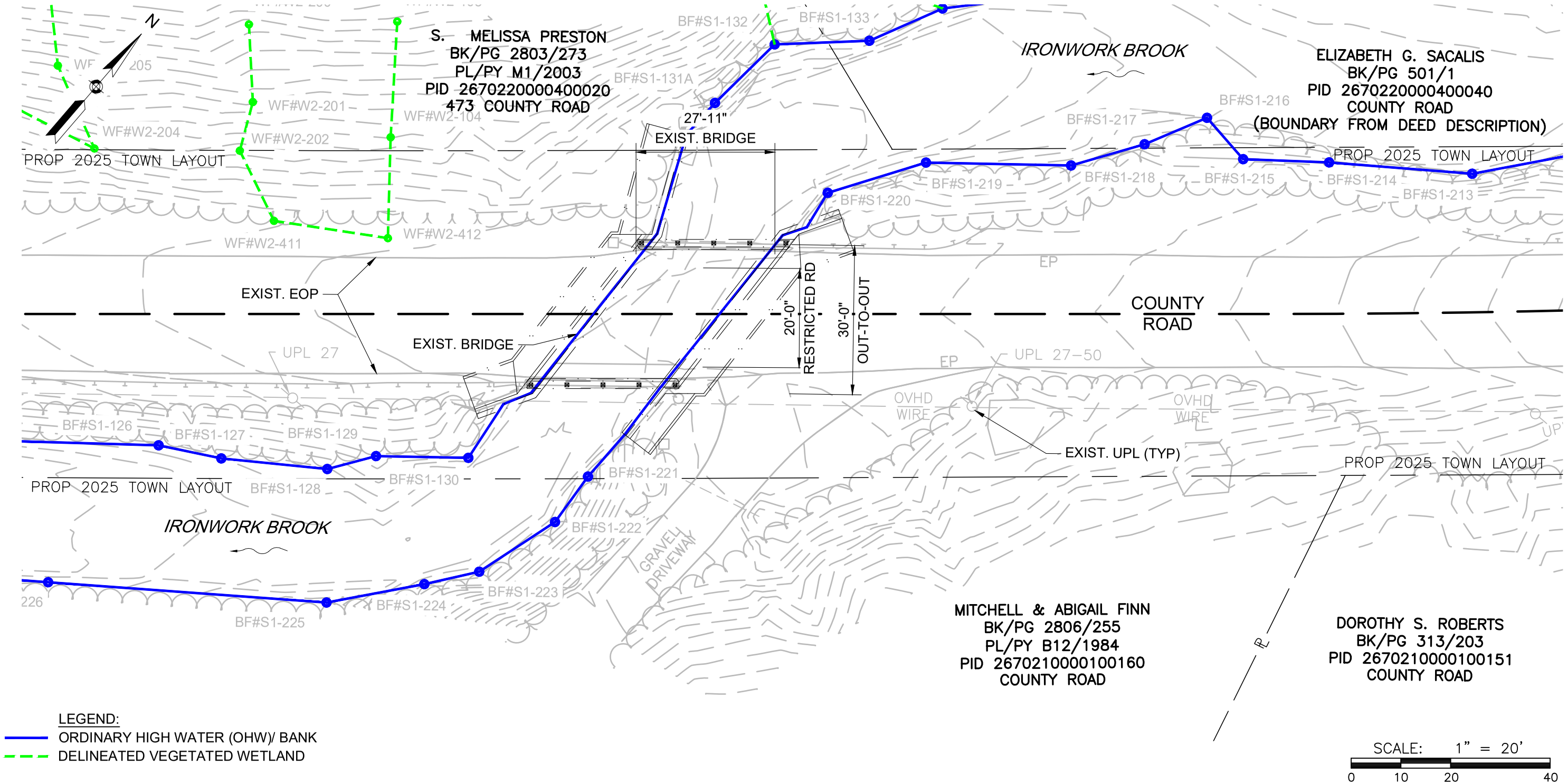
BRIDGE SUPERSTRUCTURE REPLACEMENT PROJECT
COUNTY ROAD OVER IRONWORK BROOK
SHEFFIELD, MA
BERKSHIRE COUNTY

Job No.: 28409.00 Date: 12/9/2024
Scale: N/A Revised:
Description: INDEX Figure: 1 OF 15

BSC GROUP
BUILD | SUPPORT | CONNECT
803 SUMMER STREET
BOSTON, MASSACHUSETTS 02127
617-896-4300 | www.bscgroup.com

File: P:\2840900\Environmental\Drawings\Progress\1 - 2840900_(INDEX).dwg

Proposal No. 611942-133627



LEGEND:
ORDINARY HIGH WATER (OHW)/ BANK
DELINEATED VEGETATED WETLAND

PREPARED FOR:
massDOT Massachusetts Department of Transportation Highway Division
MASSDOT HIGHWAY DIVISION
10 PARK PLAZA, BOSTON, MA 02116

Source:

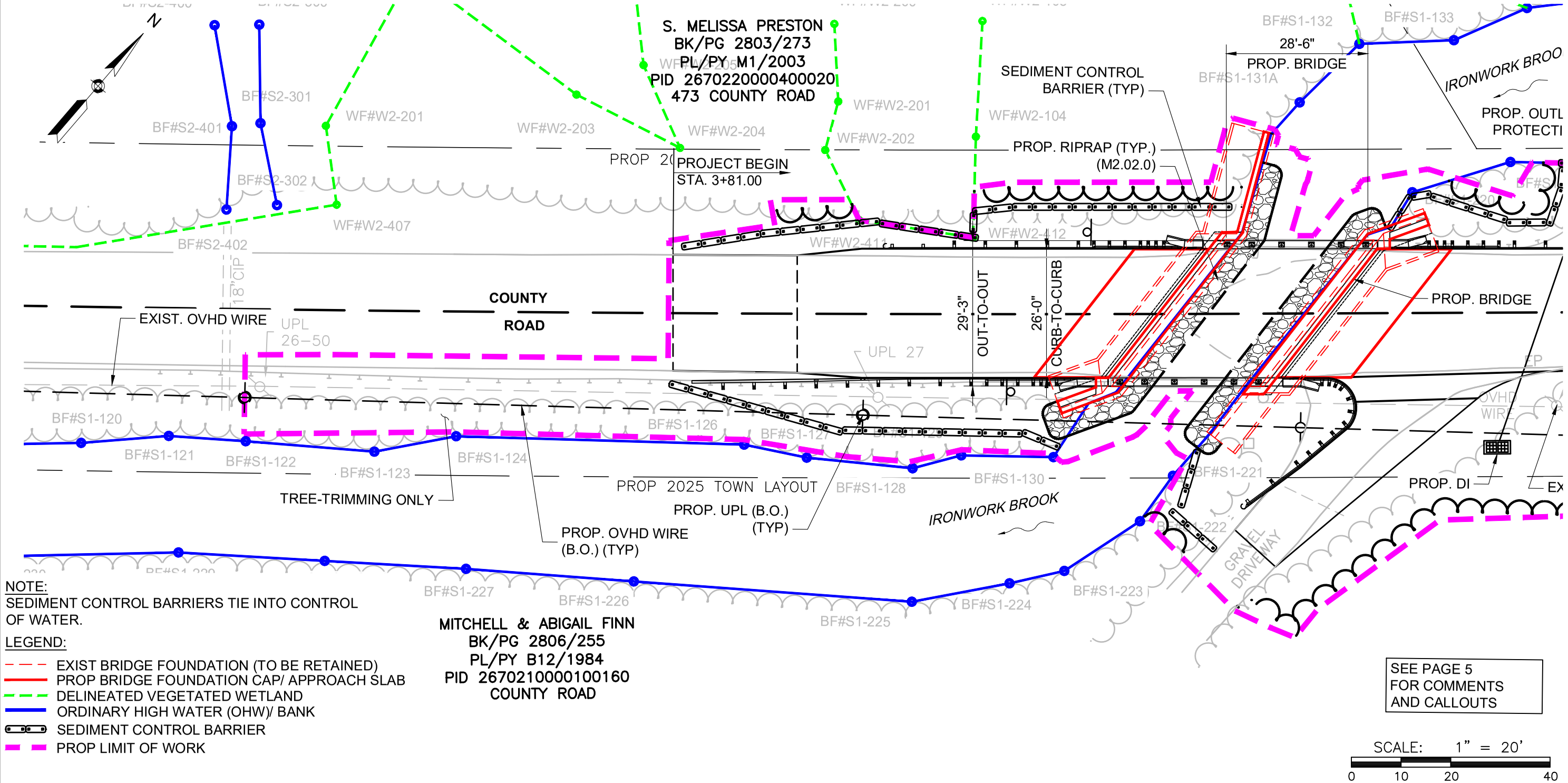
EXISTING CONDITIONS

BRIDGE SUPERSTRUCTURE REPLACEMENT PROJECT
COUNTY ROAD OVER IRONWORK BROOK
SHEFFIELD, MA
BERKSHIRE COUNTY

Job No.: 28409.00 Date: 12/9/2024
Scale: 1" = 20' Revised:
Description: EX COND Figure: 2 OF 15

BSC GROUP
BUILD | SUPPORT | CONNECT
803 SUMMER STREET
BOSTON, MASSACHUSETTS 02127
617-896-4300 | www.bscgroup.com

File: P:\2840900\Environmental\Drawings\Progress\2 - 2840900_(EC).dwg



NOTE:
SEDIMENT CONTROL BARRIERS TIE INTO CONTROL OF WATER.

LEGEND:
- EXIST BRIDGE FOUNDATION (TO BE RETAINED)
- PROP BRIDGE FOUNDATION CAP/ APPROACH SLAB
- DELINEATED VEGETATED WETLAND
- ORDINARY HIGH WATER (OHW)/ BANK
- SEDIMENT CONTROL BARRIER
- PROP LIMIT OF WORK

SEE PAGE 5 FOR COMMENTS AND CALLOUTS

SCALE: 1" = 20'
0 10 20 40

PREPARED FOR:
massDOT Massachusetts Department of Transportation Highway Division
MASSDOT HIGHWAY DIVISION
10 PARK PLAZA, BOSTON, MA 02116

Source:

PROPOSED CONDITIONS - 1

BRIDGE SUPERSTRUCTURE REPLACEMENT PROJECT
COUNTY ROAD OVER IRONWORK BROOK
SHEFFIELD, MA
BERKSHIRE COUNTY

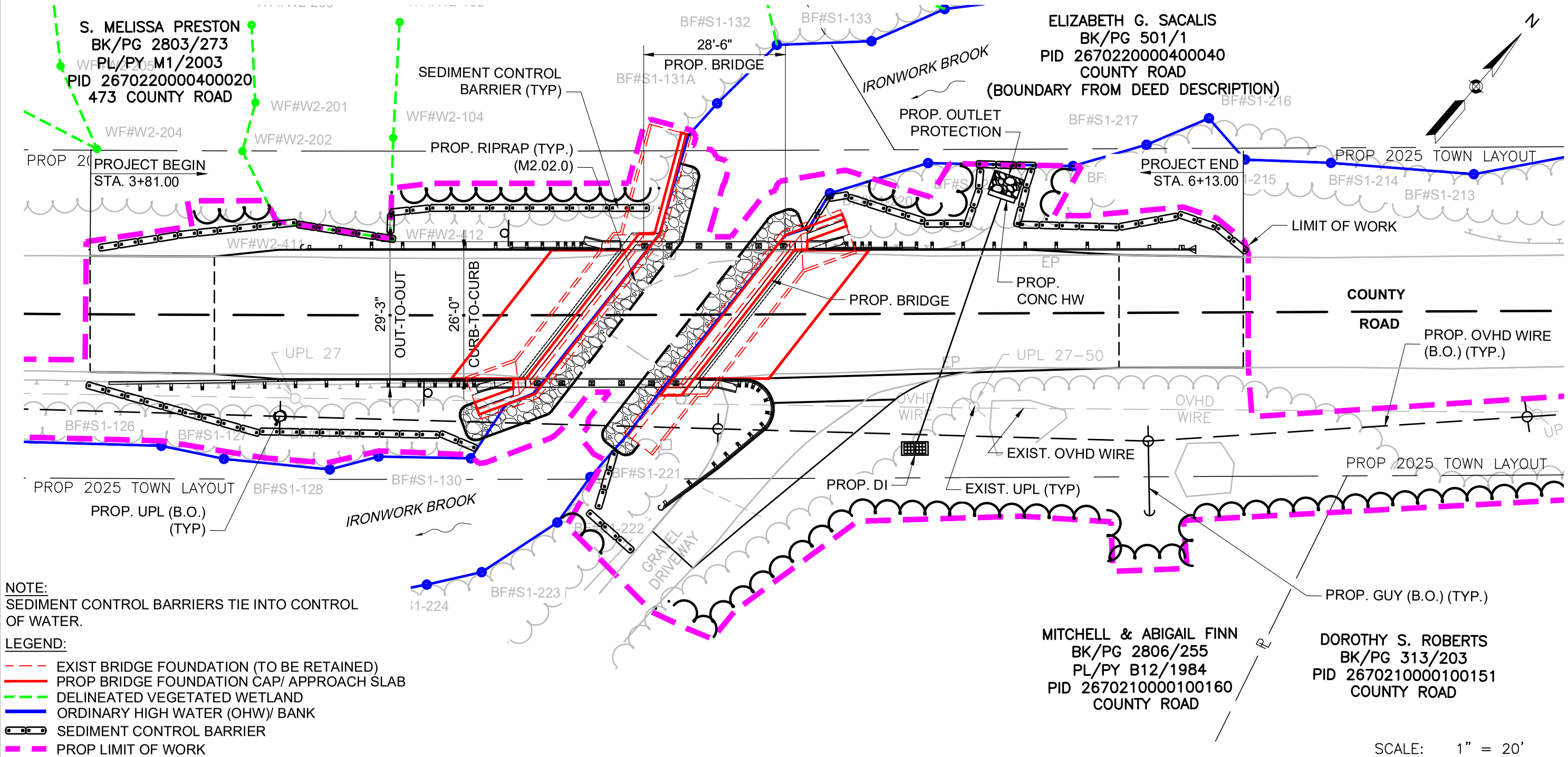
Job No.: 28409.00 Date: 12/9/2024
Scale: 1" = 20' Revised:
Description: PROP COND Figure: 3 OF 15

BSC GROUP
BUILD | SUPPORT | CONNECT
803 SUMMER STREET
BOSTON, MASSACHUSETTS 02127
617-896-4300 | www.bscgroup.com

File: P:\2840900\Environmental\Drawings\Progress\3-5 - 2840900_(PR).dwg

A00831 - 11

Proposal No. 611942-133627



NOTE:
SEDIMENT CONTROL BARRIERS TIE INTO CONTROL OF WATER.

LEGEND:

- EXIST BRIDGE FOUNDATION (TO BE RETAINED)
- PROP BRIDGE FOUNDATION CAP/ APPROACH SLAB
- DELINEATED VEGETATED WETLAND
- ORDINARY HIGH WATER (OHW)/ BANK
- SEDIMENT CONTROL BARRIER
- PROP LIMIT OF WORK

PREPARED FOR:
MassDOT Massachusetts Department of Transportation Highway Division
MASSDOT HIGHWAY DIVISION
10 PARK PLAZA, BOSTON, MA 02116

Source:

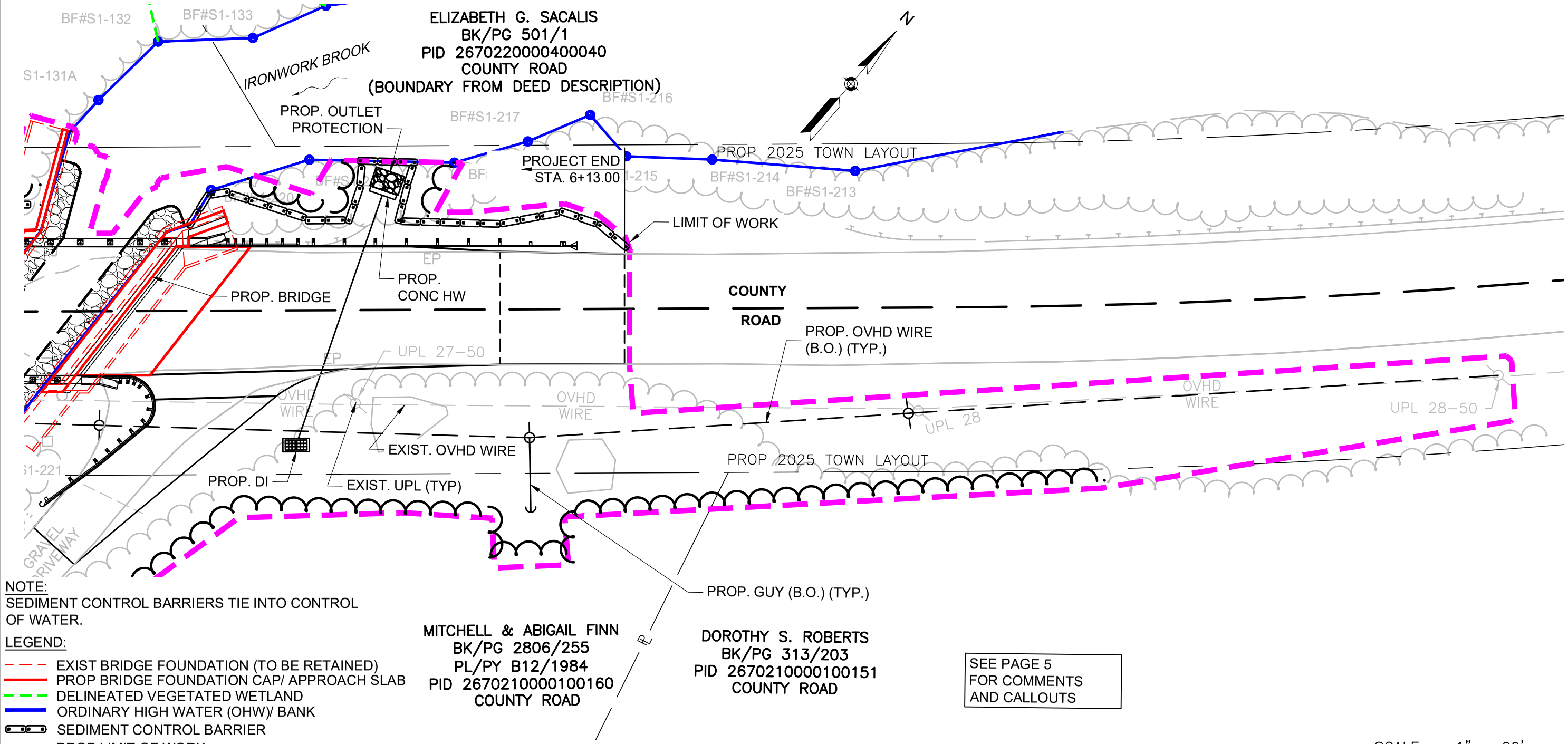
PROPOSED CONDITIONS - 2

BRIDGE SUPERSTRUCTURE REPLACEMENT PROJECT
COUNTY ROAD OVER IRONWORK BROOK
SHEFFIELD, MA
BERKSHIRE COUNTY

Job No.: 28409.00 Date: 12/9/2024
Scale: 1" = 20' Revised:
Description: PROP COND Figure: 4 OF 15

BSC GROUP
BUILD | SUPPORT | CONNECT
803 SUMMER STREET
BOSTON, MASSACHUSETTS 02127
617-896-4300 | www.bscgroup.com

File: P:\2840900\Environmental\Drawings\Progress\3-5 - 2840900_(PR).dwg



NOTE:
SEDIMENT CONTROL BARRIERS TIE INTO CONTROL OF WATER.

LEGEND:

- EXIST BRIDGE FOUNDATION (TO BE RETAINED)
- PROP BRIDGE FOUNDATION CAP/ APPROACH SLAB
- DELINEATED VEGETATED WETLAND
- ORDINARY HIGH WATER (OHW)/ BANK
- SEDIMENT CONTROL BARRIER
- PROP LIMIT OF WORK

PREPARED FOR:
massDOT Massachusetts Department of Transportation Highway Division
MASSDOT HIGHWAY DIVISION
10 PARK PLAZA, BOSTON, MA 02116

Source:

PROPOSED CONDITIONS - 3

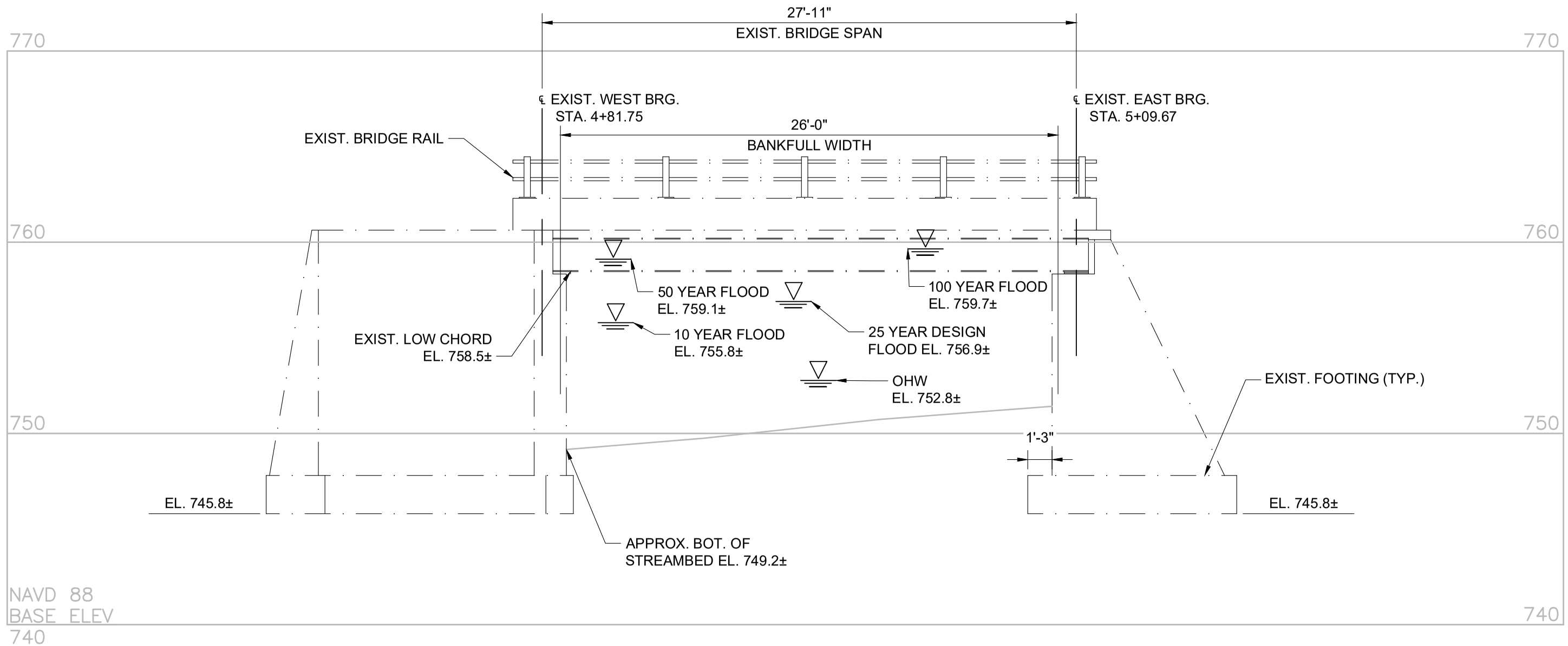
BRIDGE SUPERSTRUCTURE REPLACEMENT PROJECT
COUNTY ROAD OVER IRONWORK BROOK
SHEFFIELD, MA
BERKSHIRE COUNTY

Job No.: 28409.00 Date: 12/9/2024
Scale: 1" = 20' Revised:
Description: PROP COND Figure: 5 OF 15

BSC GROUP
BUILD | SUPPORT | CONNECT
803 SUMMER STREET
BOSTON, MASSACHUSETTS 02127
617-896-4300 | www.bscgroup.com

File: P:\2840900\Environmental\Drawings\Progress\3-5 - 2840900_(PR).dwg

A00831 - 13



PREPARED FOR:
massDOT Massachusetts Department of Transportation Highway Division
MASSDOT HIGHWAY DIVISION
10 PARK PLAZA, BOSTON, MA 02116

Source:

EXISTING SOUTH ELEVATION

BRIDGE SUPERSTRUCTURE REPLACEMENT PROJECT
COUNTY ROAD OVER IRONWORK BROOK
SHEFFIELD, MA
BERKSHIRE COUNTY

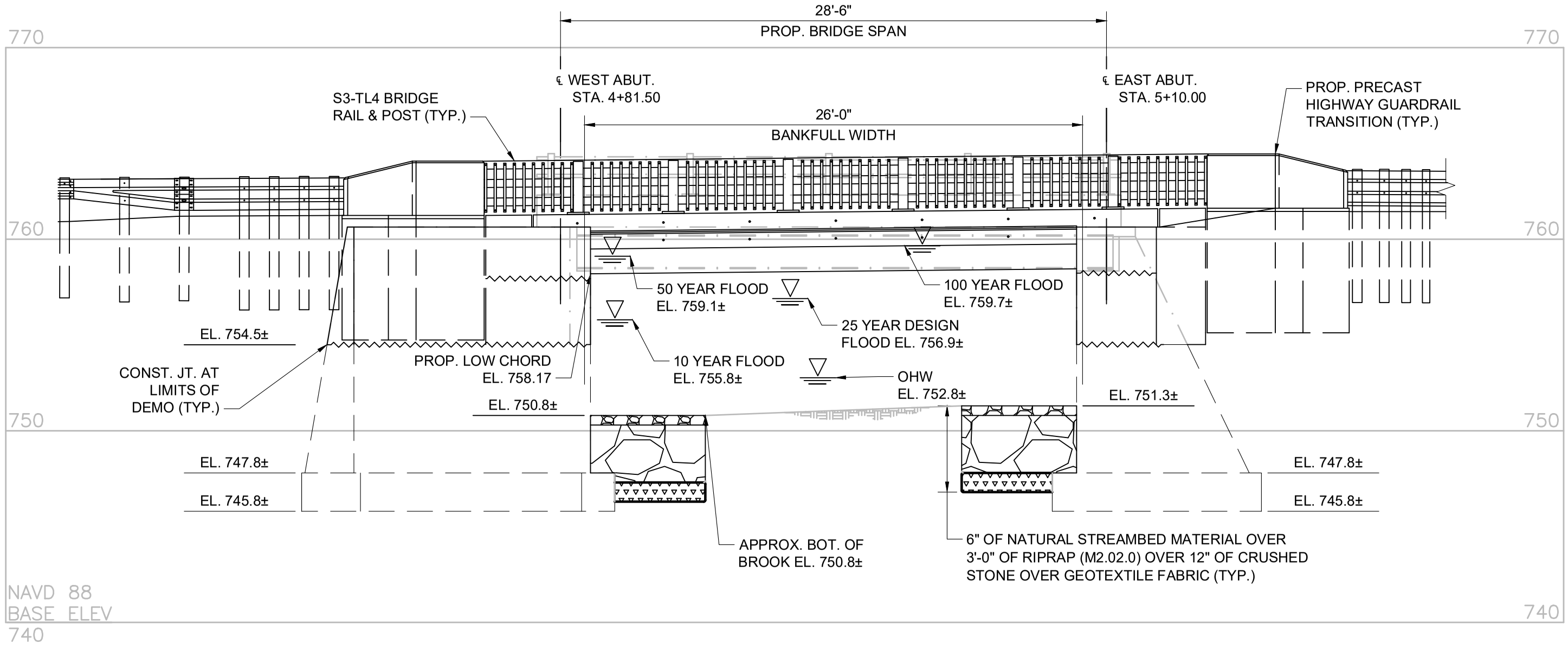
Job No.: 28409.00 Date: 12/9/2024
Scale: 3/16" = 1'-0" Revised:
Description: BR ELEV Figure: 6 OF 15

BSC GROUP
BUILD | SUPPORT | CONNECT
803 SUMMER STREET
BOSTON, MASSACHUSETTS 02127
617-896-4300 | www.bscgroup.com

File: P:\2840900\Environmental\Drawings\Progress\6-7 - 2840900_(BR ELEV).dwg

Proposal No. 611942-133627

A00831 - 14



PREPARED FOR:
massDOT
Massachusetts Department of Transportation
Highway Division

MASSDOT HIGHWAY DIVISION
10 PARK PLAZA, BOSTON, MA 02116

Source:

PROPOSED SOUTH ELEVATION

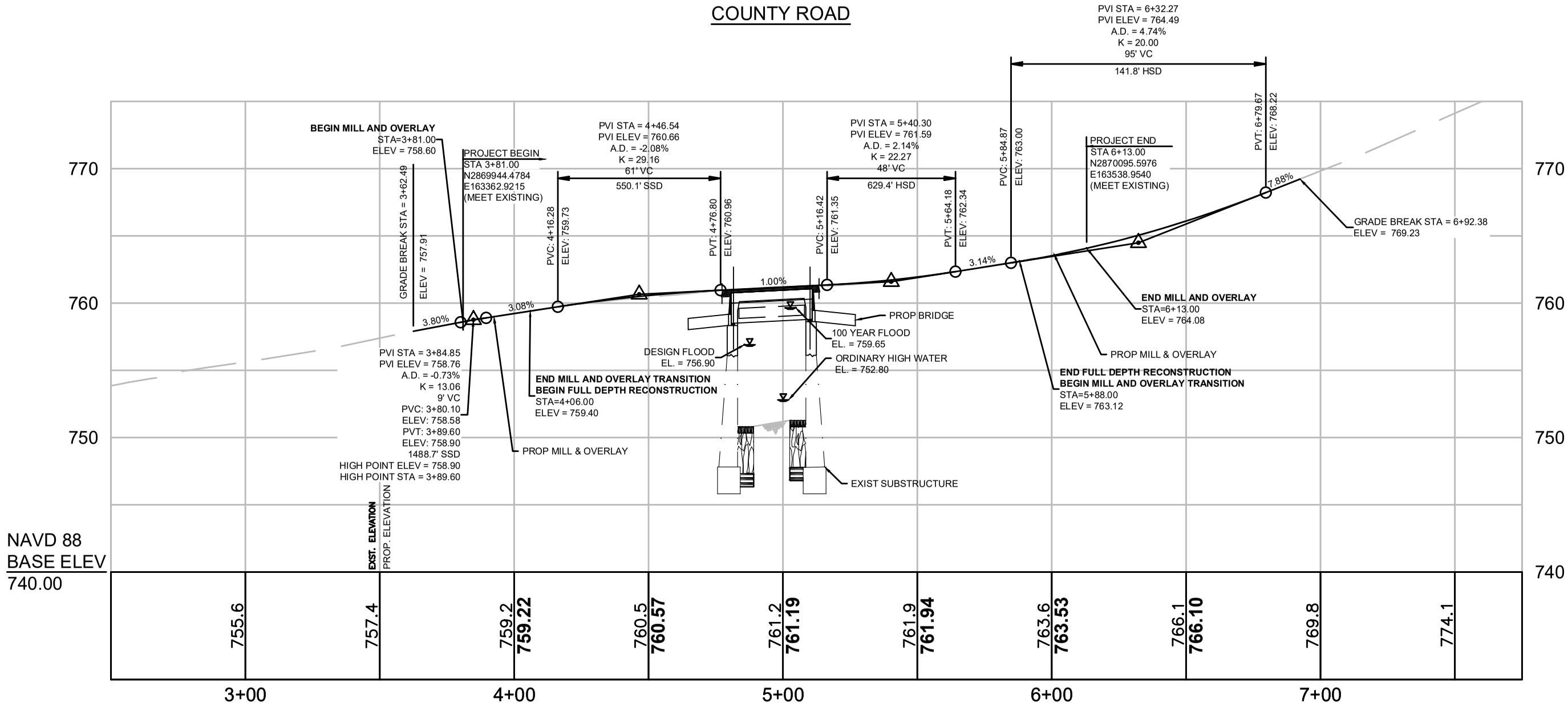
BRIDGE SUPERSTRUCTURE REPLACEMENT PROJECT
COUNTY ROAD OVER IRONWORK BROOK
SHEFFIELD, MA
BERKSHIRE COUNTY

Job No.: 28409.00 Date: 12/9/2024
Scale: 3/16" = 1'-0" Revised:
Description: BR ELEV Figure: 7 OF 15

BSC GROUP
BUILD | SUPPORT | CONNECT
803 SUMMER STREET
BOSTON, MASSACHUSETTS 02127
617-896-4300 | www.bscgroup.com

File: P:\2840900\Environmental\Drawings\Progress\6-7 - 2840900_(BR ELEV).dwg

Proposal No. 611942-133627



PREPARED FOR:

MASSDOT HIGHWAY DIVISION
10 PARK PLAZA, BOSTON, MA 02116

Source:

PROPOSED ROADWAY PROFILE

BRIDGE SUPERSTRUCTURE REPLACEMENT PROJECT
COUNTY ROAD OVER IRONWORK BROOK
SHEFFIELD, MA
BERKSHIRE COUNTY

Job No.: 28409.00 Date: 12/9/2024

Scale: 1" = 40' Revised:

Description: PROFILE Figure: 8 OF 15

BSC GROUP
BUILD | SUPPORT | CONNECT
803 SUMMER STREET
BOSTON, MASSACHUSETTS 02127
617-896-4300 | www.bscgroup.com

File: P:\2840900\Environmental\Drawings\Progress\8 - 2840900_(PROFILE).dwg

A00831 - 16

Proposal No. 611942-133627

S. MELISSA PRESTON
BK/PG 2803/273
PL/PY M1/2003
PID 2670220000400020
473 COUNTY ROAD

ELIZABETH G. SACALIS
BK/PG 501/1
PID 2670220000400040
COUNTY ROAD
(BOUNDARY FROM DEED DESCRIPTION)

IRONWORK BROOK

TEMP IMPACTS TO WOTUS DUE TO CONTROL OF WATER SANDBAGS (263 S.F.)

TEMP. BANK IMPACTS (4 L.F.)

TEMP. BANK IMPACTS (12 L.F.)

PERM IMPACTS TO WOTUS DUE TO SCOUR PROTECTION (320 S.F./53 C.Y.)

TEMP IMPACTS TO WOTUS DUE TO CONTROL OF WATER SANDBAGS (227 S.F.)

TEMP. BANK IMPACTS (68 L.F.)

TEMP. BANK IMPACTS (55 L.F.)

COUNTY ROAD

PROP 2025 TOWN LAYOUT

PERM. BANK IMPACTS (9 L.F.)

TEMP. BANK IMPACTS (2 L.F.)

PERM. BANK IMPACTS (3 L.F.)

TEMP. BANK IMPACTS (3 L.F.)

PERM IMPACTS TO WOTUS DUE TO SCOUR PROTECTION (253 S.F./43 C.Y.)

MITCHELL & ABIGAIL FINN
BK/PG 2806/255
PL/PY B12/1984
PID 2670210000100160
COUNTY ROAD

DOROTHY S. ROBERTS
BK/PG 313/203
PID 2670210000100151
COUNTY ROAD

NOTE:
SEDIMENT CONTROL BARRIERS TIE INTO CONTROL OF WATER.

LEGEND:
- EXIST BRIDGE FOUNDATION (TO BE RETAINED)
- PROP BRIDGE FOUNDATION CAP/ APPROACH SLAB
- DELINEATED VEGETATED WETLAND
- ORDINARY HIGH WATER (OHW)/ BANK
- SEDIMENT CONTROL BARRIER
- PROP LIMIT OF WORK
- TEMP. IMPACT WOTUS/ WATERBODY
- PERM. IMPACT WOTUS/ WATERBODY
- TEMP. BANK IMPACTS
- PERM. BANK IMPACTS

SCALE: 1" = 20'
0 10 20 40

PREPARED FOR:
massDOT Massachusetts Department of Transportation Highway Division
MASSDOT HIGHWAY DIVISION
10 PARK PLAZA, BOSTON, MA 02116

Source:

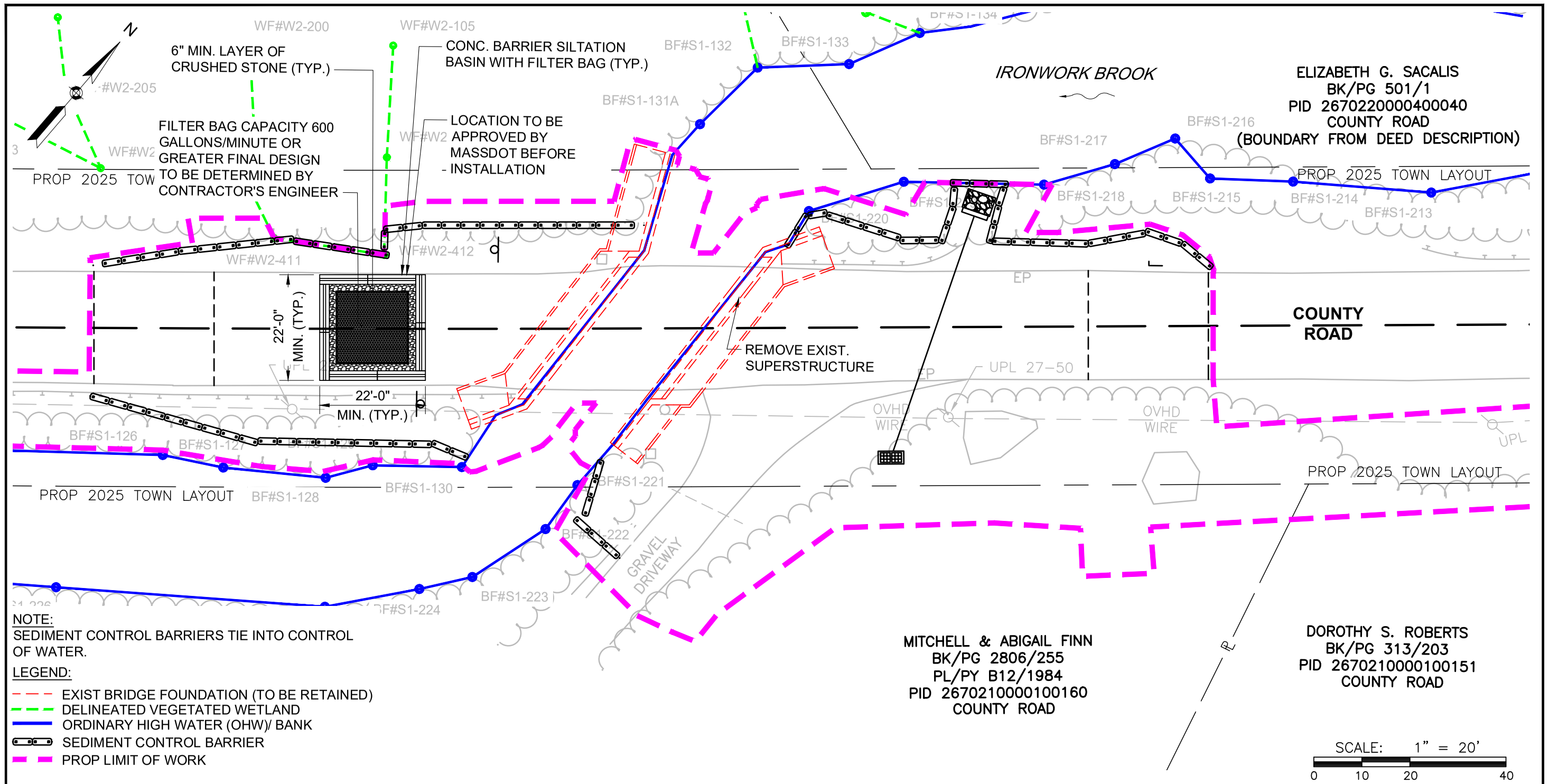
IMPACTS

BRIDGE SUPERSTRUCTURE REPLACEMENT PROJECT
COUNTY ROAD OVER IRONWORK BROOK
SHEFFIELD, MA
BERKSHIRE COUNTY

Job No.: 28409.00 Date: 12/9/2024
Scale: 1" = 20' Revised:
Description: IMPACTS Figure: 9 OF 15

BSC GROUP
BUILD | SUPPORT | CONNECT
803 SUMMER STREET
BOSTON, MASSACHUSETTS 02127
617-896-4300 | www.bscgroup.com

File:P:\2840900\Environmental\Drawings\Progress\9 - 2840900_(IMPACTS).dwg



NOTE:
SEDIMENT CONTROL BARRIERS TIE INTO CONTROL OF WATER.

LEGEND:

- EXIST BRIDGE FOUNDATION (TO BE RETAINED)
- DELINEATED VEGETATED WETLAND
- ORDINARY HIGH WATER (OHW)/ BANK
- SEDIMENT CONTROL BARRIER
- PROP LIMIT OF WORK

PREPARED FOR:
massDOT Massachusetts Department of Transportation Highway Division
MASSDOT HIGHWAY DIVISION
10 PARK PLAZA, BOSTON, MA 02116

Source:

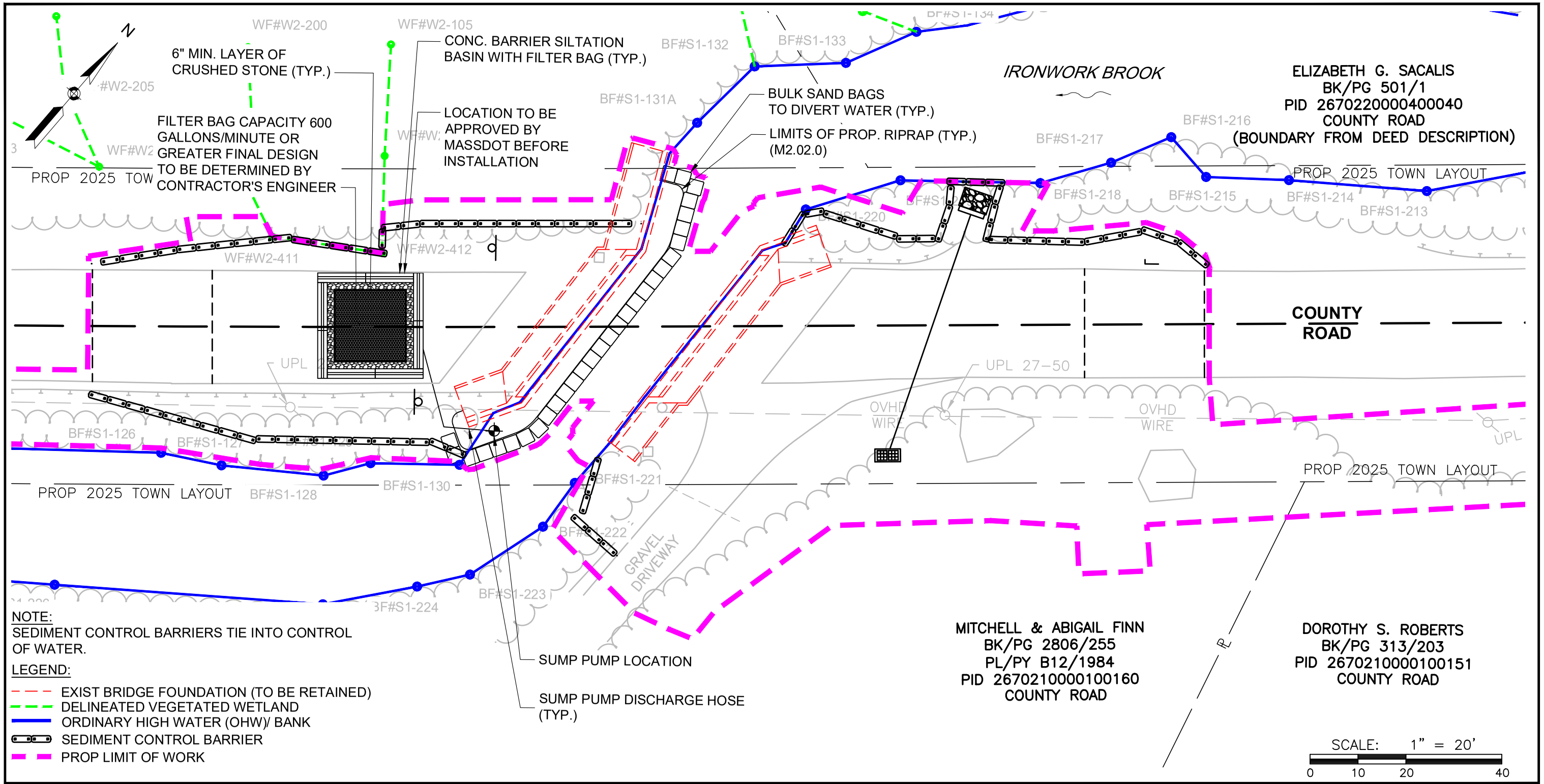
CONTROL OF WATER - PHASE 1

BRIDGE SUPERSTRUCTURE REPLACEMENT PROJECT
COUNTY ROAD OVER IRONWORK BROOK
SHEFFIELD, MA
BERKSHIRE COUNTY

Job No.: 28409.00 Date: 12/9/2024
Scale: 1" = 20' Revised:
Description: COW Figure: 10 OF 15

BSC GROUP
BUILD | SUPPORT | CONNECT
803 SUMMER STREET
BOSTON, MASSACHUSETTS 02127
617-896-4300 | www.bscgroup.com

File: P:\2840900\Environmental\Drawings\Progress\10-14 - 2840900_(COW).dwg



NOTE:
SEDIMENT CONTROL BARRIERS TIE INTO CONTROL OF WATER.

LEGEND:
- EXIST BRIDGE FOUNDATION (TO BE RETAINED)
- DELINEATED VEGETATED WETLAND
- ORDINARY HIGH WATER (OHW)/ BANK
- SEDIMENT CONTROL BARRIER
- PROP LIMIT OF WORK

PREPARED FOR:
massDOT Massachusetts Department of Transportation Highway Division
MASSDOT HIGHWAY DIVISION
10 PARK PLAZA, BOSTON, MA 02116

Source:

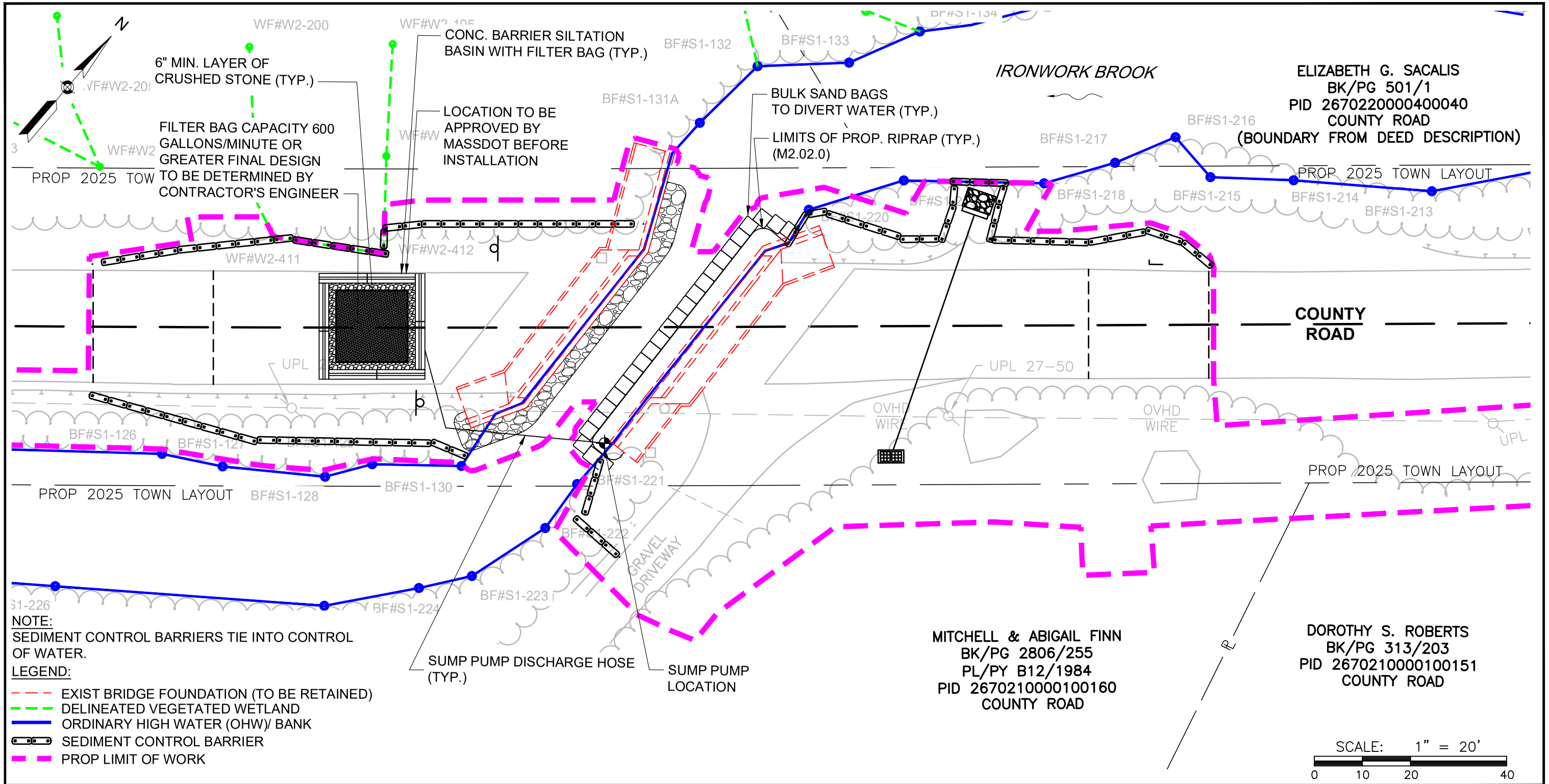
CONTROL OF WATER - PHASE 2

BRIDGE SUPERSTRUCTURE REPLACEMENT PROJECT
COUNTY ROAD OVER IRONWORK BROOK
SHEFFIELD, MA
BERKSHIRE COUNTY

Job No.: 28409.00 Date: 12/9/2024
Scale: 1" = 20' Revised:
Description: COW Figure: 11 OF 15

BSC GROUP
BUILD | SUPPORT | CONNECT
803 SUMMER STREET
BOSTON, MASSACHUSETTS 02127
617-896-4300 | www.bscgroup.com

File: P:\2840900\Environmental\Drawings\Progress\10-14 - 2840900_(COW).dwg



NOTE:
SEDIMENT CONTROL BARRIERS TIE INTO CONTROL OF WATER.

LEGEND:
- EXIST BRIDGE FOUNDATION (TO BE RETAINED)
- DELINEATED VEGETATED WETLAND
- ORDINARY HIGH WATER (OHW)/ BANK
- SEDIMENT CONTROL BARRIER
- PROP LIMIT OF WORK

PREPARED FOR:
massDOT Massachusetts Department of Transportation Highway Division
MASSDOT HIGHWAY DIVISION
10 PARK PLAZA, BOSTON, MA 02116

Source:

CONTROL OF WATER - PHASE 3

BRIDGE SUPERSTRUCTURE REPLACEMENT PROJECT
COUNTY ROAD OVER IRONWORK BROOK
SHEFFIELD, MA
BERKSHIRE COUNTY

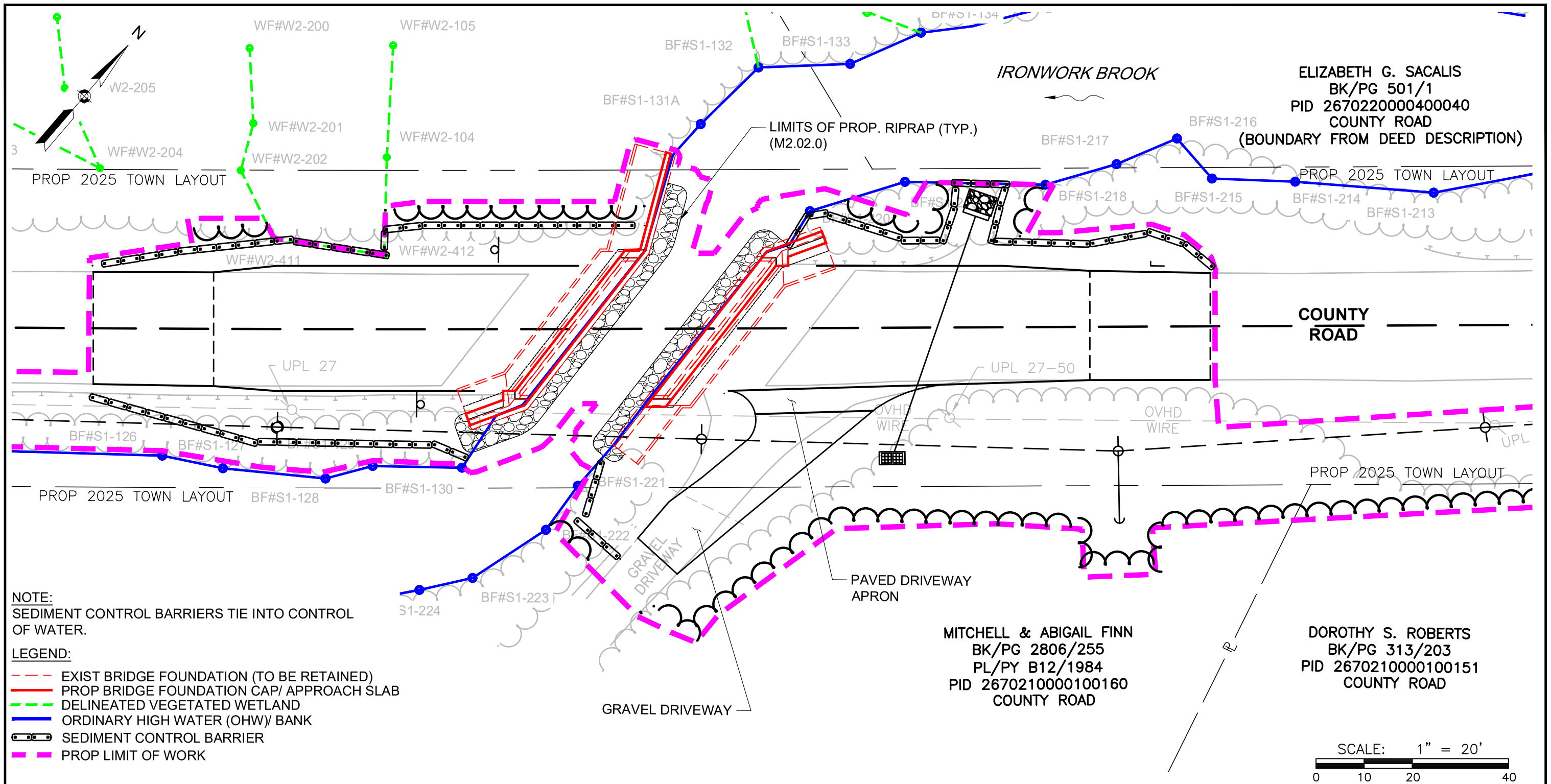
Job No.: 28409.00 Date: 12/9/2024
Scale: 1" = 20' Revised:
Description: COW Figure: 12 OF 15

BSC GROUP
BUILD | SUPPORT | CONNECT
803 SUMMER STREET
BOSTON, MASSACHUSETTS 02127
617-896-4300 | www.bscgroup.com

File: P:\2840900\Environmental\Drawings\Progress\10-14 - 2840900_(COW).dwg

A00831 - 20

Proposal No. 611942-133627



NOTE:
SEDIMENT CONTROL BARRIERS TIE INTO CONTROL OF WATER.

LEGEND:

- EXIST BRIDGE FOUNDATION (TO BE RETAINED)
- PROP BRIDGE FOUNDATION CAP/ APPROACH SLAB
- DELINEATED VEGETATED WETLAND
- ORDINARY HIGH WATER (OHW)/ BANK
- SEDIMENT CONTROL BARRIER
- PROP LIMIT OF WORK

PREPARED FOR:
MassDOT Massachusetts Department of Transportation Highway Division
MASSDOT HIGHWAY DIVISION
10 PARK PLAZA, BOSTON, MA 02116

Source:

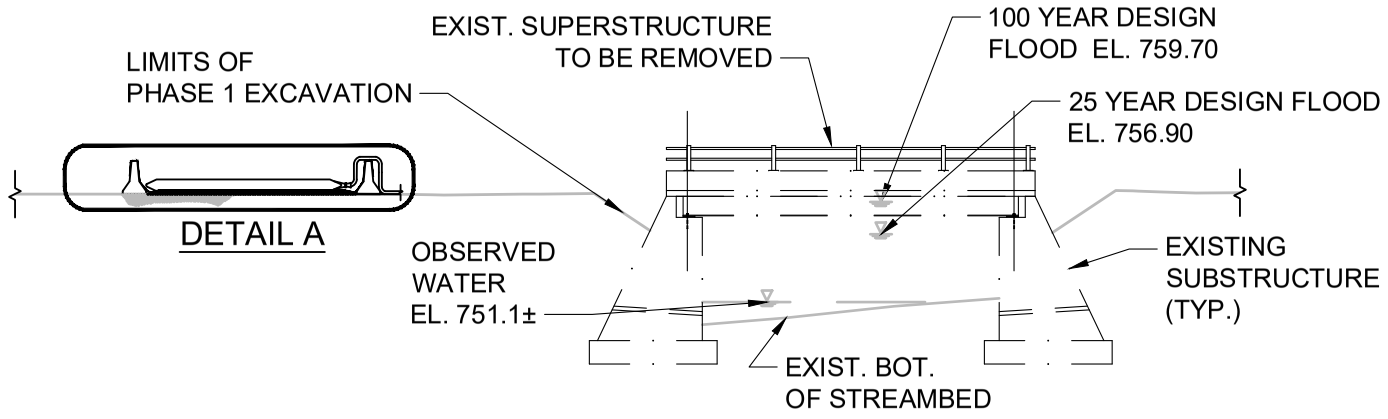
CONTROL OF WATER - PHASE 4

BRIDGE SUPERSTRUCTURE REPLACEMENT PROJECT
COUNTY ROAD OVER IRONWORK BROOK
SHEFFIELD, MA
BERKSHIRE COUNTY

Job No.: 28409.00 Date: 12/9/2024
Scale: 1" = 20' Revised:
Description: COW Figure: 13 OF 15

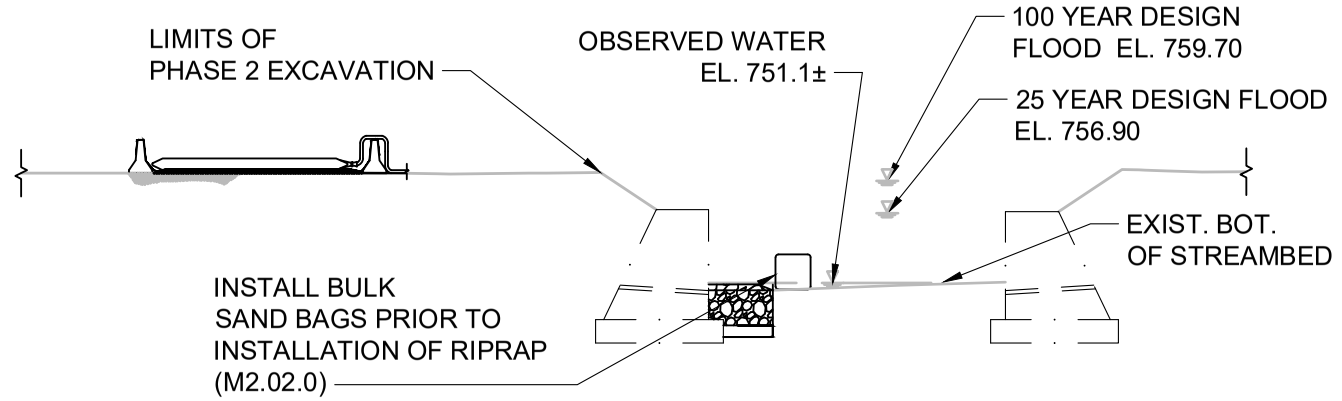
BSC GROUP
BUILD | SUPPORT | CONNECT
803 SUMMER STREET
BOSTON, MASSACHUSETTS 02127
617-896-4300 | www.bscgroup.com

File: P:\2840900\Environmental\Drawings\Progress\10-14 - 2840900_(COW).dwg



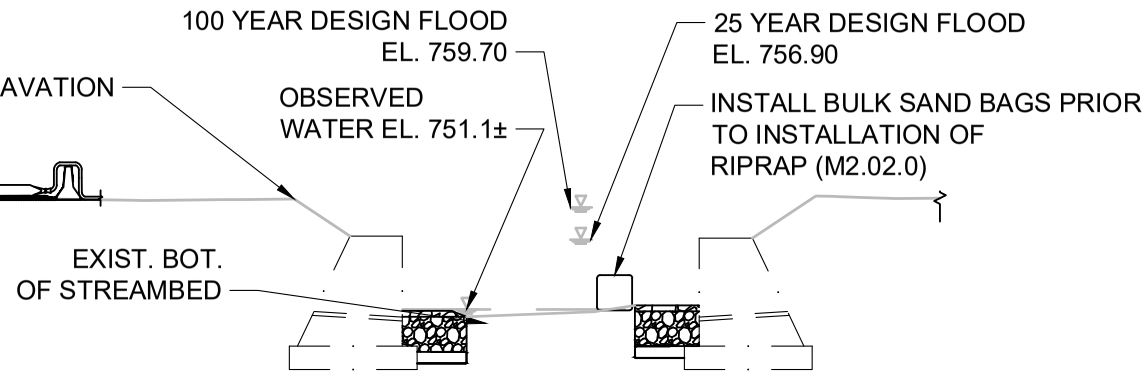
PHASE 1

SCALE: $\frac{1}{16}$" = 1'–0"



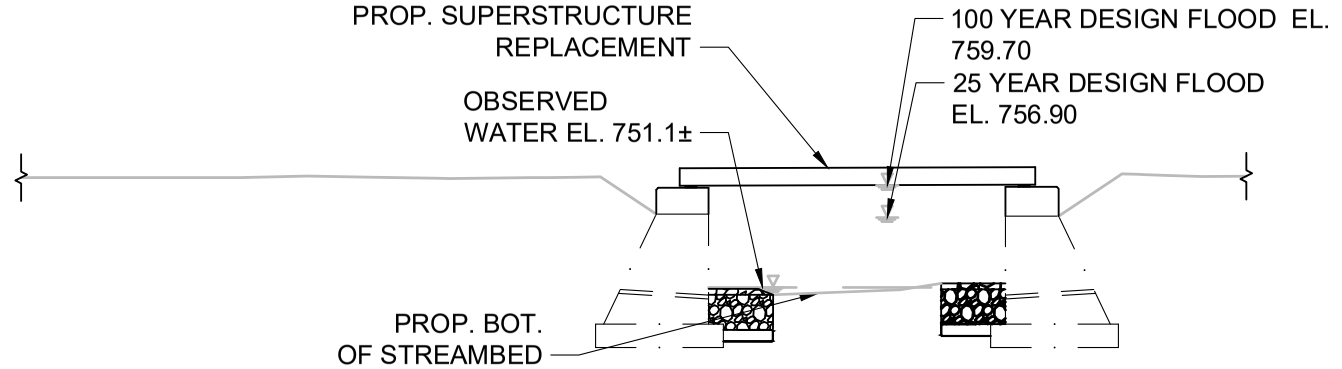
PHASE 2

SCALE: $\frac{1}{16}$" = 1'–0"



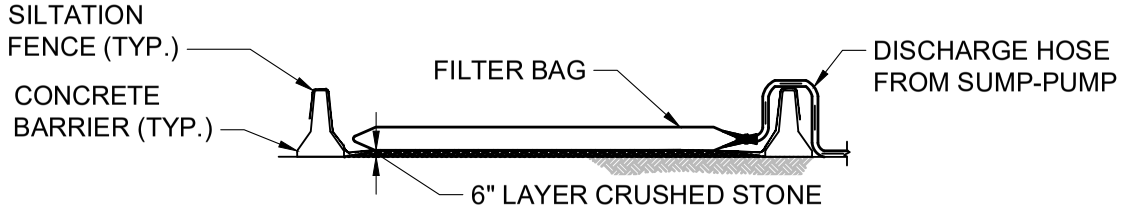
PHASE 3

SCALE: $\frac{1}{16}$" = 1'–0"



PHASE 4

SCALE: $\frac{1}{16}$" = 1'–0"



DETAIL A

SCALE: $\frac{1}{8}$" = 1'–0"

PREPARED FOR:

MASSDOT HIGHWAY DIVISION
10 PARK PLAZA, BOSTON, MA 02116

Source:

CONTROL OF WATER - ELEVATIONS

BRIDGE SUPERSTRUCTURE REPLACEMENT PROJECT
COUNTY ROAD OVER IRONWORK BROOK
SHEFFIELD, MA
BERKSHIRE COUNTY

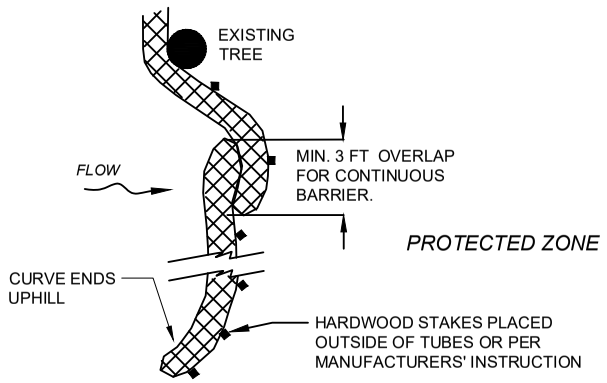
Job No.: 28409.00 Date: 12/9/2024

Scale: 1/16" = 1'-0" Revised:

Description: COW Figure: 14 OF 15

BSC GROUP
BUILD | SUPPORT | CONNECT
803 SUMMER STREET
BOSTON, MASSACHUSETTS 02127
617-896-4300 | www.bscgroup.com

File: P:\2840900\Environmental\Drawings\Progress\10-14 - 2840900_(COW).dwg

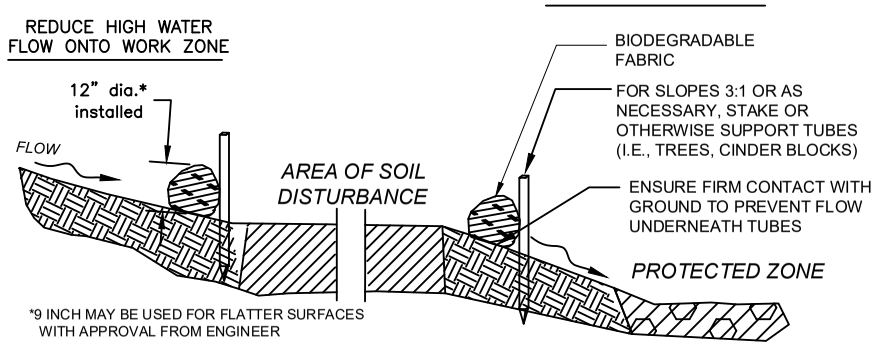


PLACE TUBE AS CLOSE TO LIMIT OF SOIL DISTURBANCE AS POSSIBLE, ALONG CONTOURS, AND PERPENDICULAR TO FLOW.

ADJUST LOCATION AS REQUIRED FOR OPTIMUM EFFECTIVENESS. DO NOT INSTALL IN WATERWAYS.

PLAN VIEW

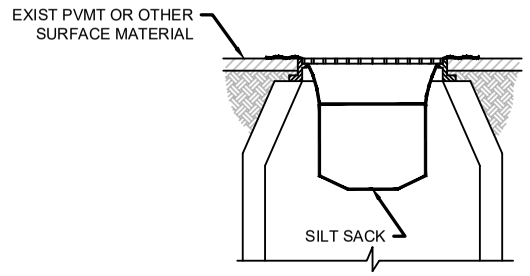
CAPTURE SEDIMENT AND PREVENT FLOW OFF SITE



SECTION

SEDIMENT BARRIER - COMPOST FILTER TUBE

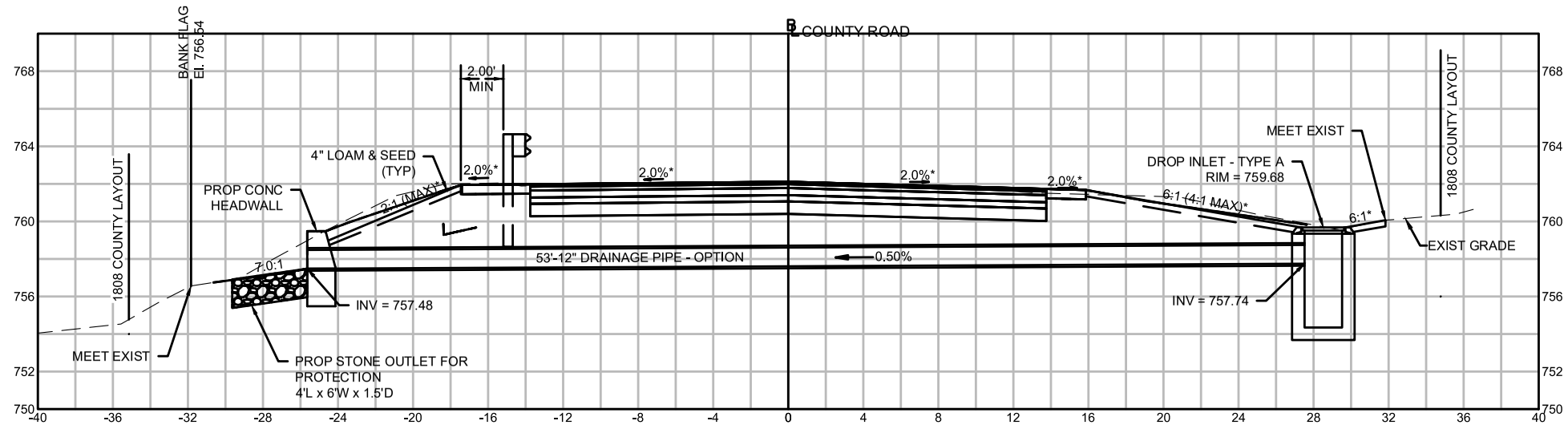
NOT TO SCALE



NOTE:
SILT SACKS TO BE PLACED IN ALL CATCH BASINS IN THE VICINITY OF NEW CONSTRUCTION. CATCH BASINS ARE TO BE PROTECTED AS SHOWN, WITH MINIMUM WEEKLY MAINTENANCE, OR AS REQUIRED AND REPLACED IF NECESSARY.

SILT SACK INLET PROTECTION

SCALE: NONE



5+56.22

NOTES:
1. DETAIL CROSS SECTION SHOWN IS SKEWED TO FOLLOW THE PROPOSED PIPE CENTERLINE AND IS NOT PERPENDICULAR TO THE CONSTRUCTION BASELINE.
2. * ROADWAY SLOPES REPRESENT GRADE MEASURE PERPENDICULAR FROM THE CONSTRUCTION BASELINE.

PRECAST DROP INLET AND CPP INSTALLATION DETAIL

SCALE: NONE

PREPARED FOR:

MASSDOT HIGHWAY DIVISION
10 PARK PLAZA, BOSTON, MA 02116

Source:

DRAINAGE & SEDIMENT CONTROL DETAILS

BRIDGE SUPERSTRUCTURE REPLACEMENT PROJECT
COUNTY ROAD OVER IRONWORK BROOK
SHEFFIELD, MA
BERKSHIRE COUNTY

Job No.: 28409.00 Date: 12/9/2024

Scale: NOT TO SCALE Revised:

Description: COW Figure: 15 OF 15

BSC GROUP
BUILD | SUPPORT | CONNECT
803 SUMMER STREET
BOSTON, MASSACHUSETTS 02127
617-896-4300 | www.bscgroup.com

File: P:\2840900\Environmental\Drawings\Progress\10-14 - 2840900_(COW).dwg

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
100 Cambridge Street Suite 900 Boston, MA 02114 • 617-292-5500

Maura T. Healey
Governor

Kimberley Driscoll
Lieutenant Governor

Rebecca L. Tepper
Secretary

Bonnie Heiple
Commissioner

April 7, 2025

Massachusetts Department of Transportation Highway Division
10 Park Plaza, Room 7360
Boston, MA 02116
ATTN: Courtney Walker

RE: 401 WATER QUALITY CERTIFICATION
BRP WW 11, Minor Fill Project
Bridge Superstructure Replacement (S-10-024), County Road over Ironwork Brook
Sheffield, Massachusetts

401 WQC Filing Number: 24-WW11-0067-APP
USACE Application Number: NAE-2024-02809
MassDOT File Number: 611942

Dear Ms. Walker:

The Massachusetts Department of Environmental Protection (MassDEP) has reviewed your application for a Water Quality Certification (WQC), as referenced above. This application was deemed complete on March 12, 2025. 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 consists of the replacement of the existing bridge superstructure (Bridge No. S-10-024) that carries County Road over Ironwork Brook in Sheffield (the Project). The Project also includes stormwater improvements, scour protection installation, full-depth reconstruction of the approaches, and streambed restoration. The bridge superstructure is stated as needing replacement because it is structurally deficient, outdated, and undersized.

The existing bridge was constructed in 1938 and is oriented northeast/southwest with Ironwork Brook flowing north to south under the bridge. The bridge is approximately 28 feet long, 20 feet wide, and carries two restricted travel lanes (one in each direction) due to concrete barriers on either side. Two reinforced concrete abutments support the single-span superstructure. Stormwater drainage is entirely country drainage, including a ditch along the southeast side of Country Road that conveys stormwater underneath a gravel driveway through a 12-inch corrugated metal pipe (CMP) toward Ironwork Brook.

This information is available in alternate format. Please contact MassDEP at 617-292-5500.
TTY# MassRelay Service 1-800-439-2370
MassDEP Website: www.mass.gov/dep

Printed on Recycled Paper

Ironwork Brook is a tributary of the Housatonic River and is mapped as a Coldwater Fishery Critical Area. An intermittent stream flows through one of two forested Bordering Vegetated Wetlands (BVWs) adjacent to and north of the Project area. In addition, the Project is located within Massachusetts Natural Heritage and Endangered Species Program (NHESP) Priority Habitat of Rare Species (PH 859).

The Project proposes to replace the existing steel beam superstructure with one comprised of prestressed concrete beams in a similar vertical and horizontal alignment. The bridge span will increase in length by about 7 inches, while the width of the new concrete bridge deck will increase by approximately 9 feet to accommodate two 11-foot-wide travel lanes with 2-foot-wide shoulders and guard rails on either side. The roadway approaches 103 feet northeast and 100 feet southwest of the bridge, as well as an adjacent gravel driveway to the northeast, will undergo full-depth pavement reconstruction. In addition, portions of the approaches will be slightly widened and/or regraded to reduce slopes.

During construction, the roadway will be closed to traffic to demolish and replace the existing superstructure and concrete abutments above the Ordinary High Water Mark. Erosion and sedimentation controls will be installed prior to demolition/construction to prevent the migration of sediment to adjacent resource areas. Following demolition, sandbag cofferdams will be installed within Land Under Water (LUW) associated with Ironwork Brook and dewatered to create dry working conditions. Scour protection will be installed as described below, followed by installation of the new superstructure and roadway approach work. Upon completion of construction, side slopes will be stabilized with a native seed mix.

In total, 573 square feet (sf) of permanent fill in LUW is required for the installation of riprap scour protection along the existing abutments. In addition, 490 sf of temporary impact is needed for the placement of sandbag cofferdams within LUW. Once a dry working environment is established, a total of 96 cubic yards (cy) of native streambed material will be dredged and stockpiled. A layer of geo-textile fabric, followed by 12-inches of crushed stone and 3-feet of riprap will be covered with 6-inches of the stockpiled natural substrate. All LUW restoration will be conducted under the supervision of a qualified fluvial geomorphologist, as conditioned herein.

The Project will not result in permanent or temporary impact to BVWs.

An alternatives analysis was completed in accordance with 314 CMR 9.00. The existing bridge is structurally deficient and presents a risk to driver safety and downstream areas of Ironwork Brook should the bridge fail; therefore, a no-build alternative is not practicable to meet project goals. A full bridge replacement was considered but rejected due to access limitations and increased impact to LUW from the additional retaining walls needed to realign the downstream portion of Ironwork Brook. The selected alternative of a superstructure replacement minimizes the overall impact to adjacent resource areas and reduces construction costs and duration.

The Project meets the Stormwater Management Standards to the maximum extent practicable as a redevelopment project per 314 CMR 9.06(6)(6)(a). The proposed widening of County Road will minimally increase impervious surfaces in the Project area by 294 sf. Through a complete evaluation, it was determined that structural Stormwater Control Measures (SCMs) were limited due to the narrow right-of-way, site topography, and bordering resource areas. However, stormwater drainage patterns in the northeast portion of the Project area will be improved through installation of a new deep sump drop

inlet north of the bridge. From the inlet, stormwater will be conveyed underneath County Road through a 12-inch CMP and outlet at a stone protected outfall. This proposed drainage pattern will direct flows away from the existing CMP underneath the gravel driveway and into the drop inlet, thereby eliminating untreated stormwater from discharging into Ironwork Brook. The new deep sump drop inlet will provide 25% pre-treatment total suspended solids (TSS) removal and the stone splash pad will slow flow velocities and promote infiltration.

Stormwater drainage patterns in the remaining portion of the Project area will be maintained, utilizing existing country drainage to avoid creating point source discharges. Stormwater Management Standards 2, 3, and 4 will be met to the maximum extent practicable.

The Project will meet the Stream Crossing Standards, except Standard 3. The bankfull width of Ironwork Brook at the bridge crossing is approximately 26 feet, and a width of 31.2 feet is required to meet 1.2 times bankfull width. Since the bridge abutments will not be replaced, the opening of the crossing will remain at 25.4 feet or 0.98 times the bankfull width. A full bridge replacement needed to meet Standard 3, with additional impacts to LUW, was deemed impracticable given the viable condition of the existing abutments.

Regarding Stream Crossing Standards 4 through 7, natural streambed materials will be reused throughout areas of LUW restoration. Water depth and velocity of the proposed channel will be comparable to the native channel as it will closely match existing conditions upstream and downstream of the bridge crossing. Based on the site plans, the height from the bottom of the stream to the bottom of the proposed superstructure will be greater than 7 feet, creating an openness ratio of 3.92 feet. To ensure safe terrestrial wildlife passage, banks at each corner of the bridge abutments will maintain a similar horizontal profile as the existing stream banks and stone will be strategically placed to fill in voids.

The Project occurs within mapped NHESP Priority Habitat of Rare Species (PH 859). In a letter dated December 14, 2022, NHESP concluded that the Project will not result in a prohibited Take of state-listed rare species. Therefore, the Project complies with 314 CMR 9.06(2).

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. Public notice was provided in The Berkshire Eagle on December 26, 2024. 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 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:

    - Application for Water Quality Certification. County Road over Ironwork Brook (S-10-024) Bridge Superstructure Replacement Project, Sheffield, Massachusetts. Prepared by BSC Group on behalf of MassDOT, dated December 19, 2024, with cover letter and attachments. 401 WQC Filing Number: 24-WW11-0067-APP.
    - Plans entitled: “Permit Plans”. Sheets 1 through 15. Prepared by BSC Group. Dated December 9, 2024.
    - MassDEP Administrative Completeness and Technical Deficiency Review. 401 Water Quality Certification, Minor Fill Project Certification. Dated January 10, 2025.
    - MassDOT Responses to MassDEP Technical Deficiency Review, with attachments. Prepared by BSC Group on behalf of MassDOT. 401 Water Quality Certification, Minor Fill Project Certification. Dated March 7, 2025.

Pre-Construction

2. A qualified **Fluvial Geomorphologist** (FGM) with a minimum of five years of relevant professional experience in stream replacement and restoration projects shall be employed to oversee all LUW replacement and restoration activities as proposed in the application. The name, contact information, and qualifications of the FGM shall be provided to MassDEP for approval with a copy to the Sheffield Conservation Commission prior to the Pre-Construction Meeting required in Condition 4. **(Submittal)**

3. Prior to the Pre-Construction Meeting required in Condition 4, 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 conditions of this WQC. **(Submittal)**

4. A minimum of 21 days prior to the start of ground disturbance, 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 construction contractor, the FGM, 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.**

5. MassDEP shall be copied on applicable submittals to the U.S. Army Corps of Engineers (USACE). These include but are not limited to: Self-Verification Notification Form (SVNF); Pre-Construction Notification (PCN); Work-Start Notification Form; Mitigation Work-Start Notification Form; and Compliance Certification Form. The Work-Start Notification Form shall be submitted at least 14 days before the anticipated start of work and the Compliance Certification Form shall be submitted within 30 days following the completion of the authorized work. **(Submittal)**

6. A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan (CP/PP) shall be developed and implemented as required by 314 CMR 9.06(6)(a)8. A minimum of 14 days prior to the start of work, MassDOT shall submit the CP/PP 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 Final CP/PP (defined herein as including the construction period SWPPP if applicable) must be approved by MassDEP. **(Submittal)**

7. Training regarding erosion and sedimentation controls is required. The RE, 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 Final CP/PP. Proof of completion of the training shall be submitted to MassDEP prior to the start of work. **(Submittal)**

8. 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 wetland resource areas, and the location of construction-period erosion and sedimentation controls. Stockpiles shall be located no less than 50 feet from BVWs, LUW, catch basins, or other drainage conveyances that discharge to BVWs or LUW.

9. A minimum of 14 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 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 requirements of the CP/PP and be specific to the Project. Dewatering and stream bypasses shall be conducted under the supervision of the RE or other project staff with knowledge of these practices and comply with the applicable conditions identified herein. **(Submittal)**

10. 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.

11. Prior to the Pre-Construction Meeting, the boundaries of the BVW adjacent to Ironwork Brook and LUW shall be re-flagged where they are within 50 feet of the limits of work. In the event BVWs and LUW boundaries overlap, the outermost boundary (i.e., closest to the proposed work) shall be flagged. 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 RE. All construction personnel shall be made aware of these markers.

Construction Period

12. **No** permanent or temporary impacts to BVWs shall occur. No more than **573 sf** of permanent and **490 sf** of temporary impacts to LUW shall occur. No more than **96 cy** of dredging in LUW shall occur. All work shall avoid unapproved impacts to BVW and LUW.

13. The Project shall identify one individual with at least three years of experience with construction period erosion and sedimentation control to be responsible for erosion and sedimentation control inspections (CP/PP Inspector). 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 Sheffield Conservation Commission if any unauthorized discharges to BVWs or LUW occur.

14. 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.

15. Copies of CP/PP Inspection and Maintenance Log Forms shall be submitted to MassDEP within 14 days upon request.

16. 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 stabilization has been initiated.

17. Work within LUW shall be conducted in low or no-flow conditions to the extent practicable. Notice shall be provided to MassDEP and the Sheffield 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.

18. 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 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.

19. 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.

20. Stockpiles shall be located no less than 50 feet from BVWs, LUW, catch basins, or other drainage conveyances that discharge to BVWs or LUW.

21. 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.

22. Refueling, washing, and cleaning of vehicles and other construction equipment shall not take place within 50 feet of BVWs 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.

23. 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 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.

24. Construction vehicles and equipment shall not enter the BVW 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 bridge/pier demolition materials.

25. If applicable, sheet piles shall be fully removed from resource areas upon stabilization of the area as required. No portion of sheet piles shall remain unless approved by MassDEP in writing prior to installation. A request to leave sheet piles shall include, but not be limited to, demonstration that full removal of the sheet piles is not feasible or practicable, and an alternatives analysis demonstrating alternative methods to isolate the work area(s) are not feasible or practicable. At no time shall sheet piles be allowed to remain in LUW of a waterway that provides aquatic organism passage.

26. A temporary shielding or containment system shall be in place beneath the bridge structure prior to removal and concrete excavation to prevent debris from falling into the water below. In

the event that any debris accidentally enters Ironwork Brook, it shall be immediately retrieved. Notice shall be provided to MassDEP if debris enters the river and that it has been removed with photo-documentation (if practicable) submitted by email.

Stream Mitigation

27. 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 9 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.

28. 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.

29. Upon completion of the LUW restoration, the FGM shall provide photographs and a summary of the completed work to MassDEP and the Sheffield Conservation Commission. **(Submittal)**

30. 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 .

31. 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

32. All temporary erosion controls shall be removed at the conclusion of work once the surrounding area has achieved final stabilization.

General Conditions

33. Any proposed alterations, minor 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.iannelli@mass.gov. **(Submittal)**

34. This WQC remains in effect for the same duration as the Section 404 permit that requires it.

35. No Special Condition set forth herein shall be construed or operate to prohibit MassDEP from taking enforcement against the MassDOT or its contractors for any failure to comply with the terms and requirements of this WQC.

36. 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.

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
Commissioner's Office
100 Cambridge Street, Suite 900
Boston, MA 02114

b.) Contents of Hearing Request

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):

3. the 401 Certification Transmittal Number;
4. the complete name of the applicant and address of the project;

5. 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;
6. 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;
7. a clear and concise statement that an adjudicatory hearing is being requested;
8. 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
9. 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

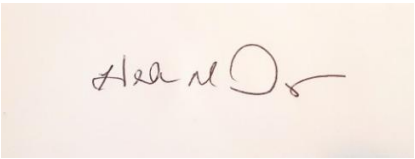
The hearing request along with a DEP Fee Transmittal Form and a valid check or money order payable to the Commonwealth of Massachusetts in the amount of one hundred dollars ($100) must be mailed to:

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 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 Iannelli at heidi.davis@mass.gov and jaime.iannelli@mass.gov.

Very truly yours,



Heidi M. Davis
Highway Unit Supervisor

Ecc: DEP WERO – Michael McHugh
USACE – Dan Vasconcelos
USACE – Kevin Newton
MassDOT – Kristine Chestna
MassDOT – Michael Joa
MassDOT – Amer Raza
BSC Group – Diana Walden
BSC Group – Kathryn Eagan, PE
BSC Group – Micah Morrison, PE
BSC Group – Sara Kreisel, PWS
Sheffield Conservation Commission – TownHall@sheffieldma.gov

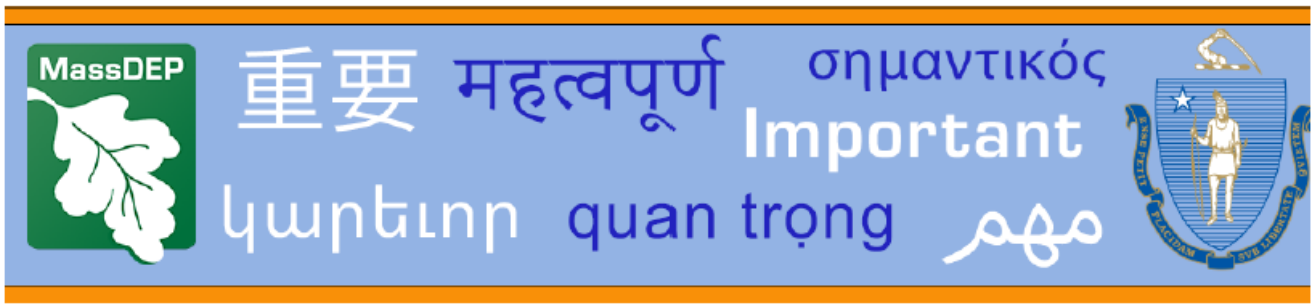
ATTACHMENT A
PRE-CONSTRUCTION SUBMITTAL CHECKLIST

Bridge Superstructure Replacement Project (S-10-024)
County Road over Ironwork Brook
Sheffield, Massachusetts

THIS CHECKLIST MUST BE COMPLETED PRIOR TO THE START OF WORK. 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.

Pre-Construction Meeting Date: _____

Condition	Required Submittal	Due Date	Date Submitted	Date Approved
PRE-CONSTRUCTION SUBMITTAL REQUIREMENTS				
2	Name, contact information, and qualifications of the FGM, including specific experience and years to meet requirement	Prior to Pre-Construction Meeting		
3	Name and contact information of the RE	Prior to Pre-Construction Meeting		
5	USACE Work-Start Notification Form	14 days prior to work start		
6	CP/PP	14 days prior to work start		
7	RE, CP/PP Inspector, and other relevant personnel Verification of SWPPP Training	Prior to work start		
9	Control of Water Plan	14 days prior to work start		



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
ហើយគប្បីត្រូវបានបកប្រែភ្លាមៗ។
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
100 Cambridge Street 9th Floor Boston, MA 02114
TTY# MassRelay Service 1-800-439-2370 • https://www.mass.gov/environmental-justice
(Version revised 8.2.2023) 310 CMR 1.03(5)(a)

Русский Russian

Это чрезвычайно важный документ, и он должен быть немедленно переведен. Если вам нужен перевод этого документа, обратитесь к директору Департамента экологического правосудия MassDEP (MassDEP's Director of Environmental Justice) по телефону, указанному ниже.

العربية Arabic

هذه الوثيقة مهمة وتجب ترجمتها على الفور.

إذا كنت بحاجة إلى ترجمة هذه الوثيقة، فيرجى الاتصال بمدير العدالة البيئية في MassDEP على رقم الهاتف المذكور أدناه.

한국어 Korean

이 문서는 중대하므로 즉시 번역되어야 합니다.
본 문서 번역이 필요하신 경우, 매사추세츠 환경보호부의 "환경정의" 담당자 분께 문의하십시오. 전화번호는 아래와 같습니다.

հայերեն Armenian

Այս փաստաթուղթը կարևոր է, և պետք է անհապաղ թարգմանել այն:
Եթե Ձեզ անհրաժեշտ է թարգմանել այս փաստաթուղթը, դիմեք Մասաչուսեթսի շրջակա միջավայրի պահպանության նախարարության (MassDEP) Բնապահպանական հարցերով արդարադատության ղեկավարին (Director of Environmental Justice)՝ ստորև նշված հեռախոսահամարով

فارسی Farsi Persian

این نوشتار بسیار مهمی است و باید فوراً ترجمه شود.
اگر نیاز به ترجمه این نوشتار دارید لطفاً با مدیر عدالت محیط زیستی MassDEP در شماره تلفن ذکر شده زیر تماس بگیرید.

Français French

Ce document est important et doit être traduit immédiatement. Si vous avez besoin d'une traduction de ce document, veuillez contacter le directeur de la justice environnementale du MassDEP au numéro de téléphone indiqué ci-dessous.

Deutsch German

Dieses Dokument ist wichtig und muss sofort übersetzt werden. Wenn Sie eine Übersetzung dieses Dokuments benötigen, wenden Sie sich bitte an MassDEP's Director of Environmental Justice *(Direktor für Umweltgerechtigkeit in Massachusetts)* unter der unten angegebenen Telefonnummer.

Ελληνική Greek

Το έγγραφο αυτό είναι πολύ σημαντικό και πρέπει να μεταφραστεί αμέσως. Αν χρειάζεστε μετάφραση του εγγράφου αυτού, παρακαλώ επικοινωνήστε με τον Διευθυντή του Τμήματος Περιβαλλοντικής Δικαιοσύνης της Μασαχουσέτης στον αριθμό τηλεφώνου που αναγράφεται παρακάτω

Italiano Italian

Questo documento è importante e deve essere tradotto immediatamente. Se hai bisogno di tradurre questo documento, contatta il Direttore della Giustizia Ambientale di MassDEP al numero di telefono sotto indicato.

Język Polski Polish

Ten dokument jest ważny i powinien zostać niezwłocznie przetłumaczony. Jeśli potrzebne jest tłumaczenie tego dokumentu, należy skontaktować się z dyrektorem ds. sprawiedliwości środowiskowej MassDEP pod numerem telefonu podanym poniżej.

हिन्दी Hindi

यह दस्तावेज महत्वपूर्ण है और इसका अनुवाद तुरंत किया जाना चाहिए। यदि आपको इस दस्तावेज का अनुवाद कराने की जरूरत है, तो कृपया नीचे दिए गए टेलीफोन नंबर पर MassDEP के पर्यावरणीय न्याय निदेशक से संपर्क करें।

Contact Deneen Simpson 857-406-0738
Massachusetts Department of Environmental Protection
100 Cambridge Street 9th Floor Boston, MA 02114
TTY# MassRelay Service 1-800-439-2370 • https://www.mass.gov/environmental-justice
(Version revised 8.2.2023) 310 CMR 1.03(5)(a)

DOCUMENT A00831

U.S. ARMY CORPS OF ENGINEERS
GENERAL PERMIT NUMBER NAE-2022-02649

*** THIS PAGE IS INTENTIONALLY LEFT BLANK ***

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. 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. 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. 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. 6. Activities on USACE properties & USACE-controlled easements. 7. Activities that do not require an IP. Activities that do not require a PCN or an IP may be SV eligible.
Notes: 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. 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: a. Authorized by a local harbormaster/ municipality under MGL Chapter 91 §10A; and b. No interference with navigation; and c. Single boat, single-point and non-commercial; and d. Not associated with a boating facility, and e. Neither placed within nor impact tidal vegetated shallows (e.g., eelgrass); and f. Not located within a USACE Federal navigation project (FNP) or the FNP buffer zone. 2. Existing, authorized moorings are converted from traditional moorings to low impact mooring technology (see note below) and/or helical anchors. 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. 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). 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. 4. Replacement moorings located in tidal vegetated shallows. 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. 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. 3. Intake structures that are dry hydrants used exclusively for firefighting activities with no stream impoundments. 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. 2. Unconfined work or silt producing activities in streams with diadromous fish. 3. Submarine cables, conduits, or pipelines that occur in, over or under navigable waters of the U.S. 4. Stream channelization, relocation, impoundment, or loss of streambed occurs. 5. The activity is placed within and runs parallel to or along a streambed within waters of the U.S. 6. There is a permanent change in preconstruction contours in waters of the U.S. 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. 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: a. Combined permanent and temporary impacts that are ≤5,000 SF. b. Combined permanent and temporary impacts that are ≤1,000 SF in mudflats and natural rocky habitat. 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. 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. 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. 2. Eelgrass (vegetated shallows) planting and transplanting >100 SF in tidal waters. 3. Permanent water impoundments, dam removal, fish ladders, or tide gates. 4. Stream relocation, impoundment, or loss of streambed occurs. 5. Runneling projects with the purpose of restoring saltmarsh by removing excess water that ponds on the saltmarsh surface. 6. The conversion of: (a) a stream or natural wetlands to another aquatic habitat type (e.g., stream to wetland or vice versa, wetland to pond, etc.) or uplands, (b) one wetland type to another (e.g., forested wetland to an emergent wetland). 7. Activities in the Connecticut River from the Turners Falls Dam to the MA/CT border, or Merrimack River from the Essex Dam to the mouth, involving permanent or temporary impacts unless they are performed <5 feet waterward from OHW or HTL and in the dry. This is to protect endangered species. 8. Activities on USACE properties & USACE-controlled easements. 9. Activities that are not eligible for SV and do not require an IP.

Notes:

1. Changes in wetland plant communities that occur when wetland hydrology is more fully restored during wetland rehabilitation activities are not considered a conversion to another aquatic habitat type.
2. See RGL 18-01 for guidance on removal of obsolete dams and other structures from rivers and streams. https://www.usace.army.mil/missions/civil-works/regulatory-program-and-permits/guidance-letters/
3. An ecological reference site may be used for a design basis of the restoration activity. The reference site should possess characteristics of an intact aquatic habitat or riparian area that exists in the region. The reference site shall represent the target habitat type of the proposed activity. A reference site may be required at the discretion of USACE.

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. 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. 2. Devices and activities that are located in tidal vegetated shallows, mud flats, or saltmarsh. 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). 2. Booms placed in navigable waters of the U.S. for oil and hazardous substance containment, absorption and prevention. 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. 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 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. 2. Permanent and temporary impacts in tidal waters or navigable waters of the U.S. 3. Stream channelization, relocation, impoundment, or loss of streambed occurs. 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. 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). 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. 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. 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. 2. Permanent and temporary impacts in tidal waters. 3. Water-based wind or hydrokinetic renewable energy generation projects, and hydropower projects. 4. For all activities eligible for authorization under GP 16: a. The activity occurs in tidal waters or in, over or under navigable waters. b. Stream channelization, relocation, impoundment, or loss of streambed occurs. 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. 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. 2. Stream and wetland crossings that require a PCN per GCs 20 TOY Restrictions and GC 31 Stream Work and Crossings & Wetland Crossings. 3. Stream channelization or relocation resulting in loss of streambed that is ≥200 LF. Stream impoundment activities of any kind. 4. Activities on USACE properties & USACE-controlled easements. 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. 2. The activity occurs in non-tidal navigable waters of the U.S. 3. Stream channelization, relocation, impoundment, loss of streambed, or discharge of tailings into streams occurs. 4. Work on USACE properties & USACE-controlled easements. 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). 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). 2. Permanent and temporary impacts in existing salt marsh, tidal vegetated shallows, or mudflats. 3. Work on USACE properties & USACE-controlled easements. 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. 2. Activities occur in non-tidal navigable waters of the U.S. 3. Stream channelization, relocation, impoundment, loss of streambed, or farm ponds in non-perennial streams occurs. 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.). 2. Permanent and temporary impacts in tidal vegetated shallows. 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). 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.	1. In non-tidal waters, temporary impacts are a) >5,000 SF; b) located in riffle and pool complexes or non-tidal vegetated shallows.
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.	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.
3. Structures in navigable waters of the U.S. provided impacts do not require a PCN and they are left in place ≤30 days.	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
	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 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. 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. 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 Boston, Massachusetts 02114 (617) 292-5695
Northeast Region	150 Presidential Way, Suite 300 Woburn, Massachusetts 01801 (978) 694-3200
Southeast Region	20 Riverside Drive, Route 105 Lakeville, Massachusetts 02347 (508) 946-2800
Central Region	8 New Bond Street Worcester, Massachusetts 01606 (508) 792-7650
Western Region	436 Dwight Street Springfield, Massachusetts 01103 (413) 784-1100

Massachusetts Office of Coastal Zone Management (CZM) Emails may be sent to: czm@mass.gov	
MA Office of Coastal Zone Management	100 Cambridge Street, Suite 900 Boston, Massachusetts 02114 (617) 626-1200
North Shore Region	2 State Fish Pier Gloucester, Massachusetts 01930 (978) 281-3972
South Shore Region	175 Edward Foster Road Scituate, Massachusetts 02066
Cape Cod and Islands Region	3195 Main Street, P.O. Box 220 Barnstable, MA 02630
South Coastal Region	81-B County Road, Suite E Mattapoisett, MA 02739

Massachusetts Historical Commission (MHC)	
Office Location:	220 Morrisey Boulevard Boston, Massachusetts 02125 (617) 727-8470

Massachusetts Board of Underwater Archaeological Resources (BUAR) Emails may be sent to: david.s.robinson@mass.gov	
Office Location:	100 Cambridge Street, Suite 900 Boston, Massachusetts 02114 (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. 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. 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. 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:

*** THIS PAGE IS LEFT BLANK INTENTIONALLY ***

DOCUMENT A00840

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

ADMINISTRATIVE COMPLETENESS AND TECHNICAL DEFICIENCY REVIEW

*** THIS PAGE IS INTENTIONALLY LEFT BLANK ***

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
100 Cambridge Street Suite 900 Boston, MA 02114 • 617-292-5500

Maura T. Healey
Governor

Kimberley Driscoll
Lieutenant Governor

Rebecca L. Tepper
Secretary

Bonnie Heiple
Commissioner

January 10, 2025

Massachusetts Department of Transportation Highway Division
Ten 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: 24-WW11-0067-APP (Minor Fill)

AT: Bridge Superstructure Replacement Project (S-10-024)
County Road over Ironwork Brook
Sheffield, Massachusetts

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 requires proof of public notice in a newspaper of general circulation within the area to be administratively complete.

MassDEP has also completed its Technical Review of the above-referenced application and requests submittal of the following additional information:

General

1. Please note that laydown areas will need to be identified in the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan (CP/PP) that will be conditioned in the WQC. Given space constraints at this site, MassDEP recommends identifying these areas now during the design phase.

This information is available in alternate format. Please contact MassDEP at 617-292-5500.
TTY# MassRelay Service 1-800-439-2370
MassDEP Website: www.mass.gov/dep

Printed on Recycled Paper

2. Will additional dredging be required should the contractor choose to install steel sheet pile cofferdams for water diversion instead of large sandbags as anticipated?

Streambed Reconstruction

3. Based on MassDEP's observations during the pre-application meeting, the thalweg of Ironwork Brook flows directly into the northwestern wingwall resulting in sediment deposition along the eastern side of the brook underneath the bridge. As these conditions will not change under proposed conditions, it appears that similar sediment deposition will continue to occur and will continue to deflect flows to the opposite abutment. Please address.

4. Given the existing flow path, please identify any measures that were considered to direct stream flow away from the northwestern wingwall. MassDEP recommends that streambed design and reconstruction be overseen by a fluvial geomorphologist.

5. Please provide the hydraulic analysis referenced in Section 4.0 of the application that evaluated bend scour.

6. Please explain how erosion and head-cutting issues will be improved under proposed conditions as stated in Table 2.0 of the Massachusetts Stream Crossing Standards Evaluation Worksheet in Attachment C.

7. Proposed channel scour protection will consist of large stones; at least 75% of the volume shall consist of stones weighing not less than 500 pounds each. It is noted that, where possible, the voids between the riprap will be filled with natural streambed material. As the size of these boulders will result in a large volume of interstitial space between boulders, wildlife could possibly be entrapped. Efforts should be made to avoid voids.

Stormwater

8. Please evaluate any potential impacts to the northwestern bridge abutment/wingwall as a result of redirecting stormwater to an outfall upstream of the bridge as compared to the existing system which discharges stormwater downstream of the bridge.

9. The Stormwater Management Report states that due to partial rebuilding of the driveway, the existing culvert that carries runoff underneath the driveway toward Ironwork Brook needs to be replaced to continue to function, and that steep slopes west of the driveway would make replacing the culvert difficult. Please expand on why installation of a new culvert underneath County Road, with an outfall in a steep area, is a better option than replacing the existing culvert to improve existing drainage patterns.

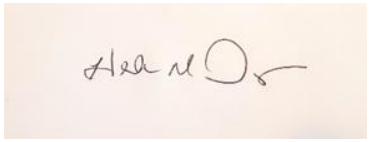
10. Per 314 CMR 9.06(6)(a)6., stormwater discharges within a Zone II or Interim Wellhead Protection Area, and near or to coldwater fisheries, require the use of specific control and pollution measures and specific structural stormwater control measures (SCMs) determined by MassDEP to be suitable for managing discharges to such areas as

provided in the Massachusetts Stormwater Handbook. Redevelopment projects are required to comply only with the pretreatment and structural SCM requirements in Stormwater Standard 6 to the maximum extent practicable. MassDEP understands there are significant constraints to constructing SCMs and Low Impact Development (LID) techniques within the Project limits including steep slopes and proximity to wetland resource areas. Please provide more information on the SCMs and LIDs that were evaluated and expand on why a water quality swale along the southeastern side of County Road, or another SCM and LID technique, is not feasible to achieve 44% total suspended solids (TSS) removal.

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 Iannelli at jaime.iannelli@mass.gov.

Sincerely,



Heidi M. Davis
Highway Unit Supervisor

Ecc: MassDEP WERO – Michael McHugh
USACE – Dan Vasconcelos
USACE – Kevin Newton
MassDOT – Michael Joa
MassDOT – Kristine Chestna
BSC Group – Diana Walden
BSC Group – Micah Morrison, PE
BSC Group – Sara Kreisel, PWS
Sheffield Conservation Commission

Maura Healey, Governor
Kimberley Driscoll, Lieutenant Governor
Monica Tibbits-Nutt, Secretary & CEO
Jonathan L. Gulliver, Highway Administrator

massDOT
Massachusetts Department of Transportation
Highway Division

March 7, 2025

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 611942
County Road over Ironwork Brook (S-10-024)
Bridge Superstructure Replacement Project
Sheffield, Massachusetts
Response to MassDEP Comments

Dear Ms. Davis,

In response to the MassDEP's comments, the Massachusetts Department of Transportation – Highway Division (MassDOT) (the Applicant) is responding to the comments that were provided on January 10, 2025, in response to a Massachusetts Section 401 Water Quality Certification (401 WQC) (BRP WW 11 – Minor Project Certification) application replacement of the structurally deficient bridge structure (S-10-024) that carries County Road over Ironwork Brook in Sheffield, MA (42.109071 N, -73.315874 W). The Project consists of the proposed superstructure replacement in a similar horizontal and vertical alignment to the existing structure. The replacement structure will slightly improve openness and habitat connectivity while also minimizing disturbances to the surrounding environment. Efforts have been made to avoid, minimize, and mitigate impacts where possible.

General

Comment 1. *Please note that laydown areas will need to be identified in the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan (CP/PP) that will be conditioned in the WQC. Given space constraints at this site, MassDEP recommends identifying these areas now during the design phase.*

Response 1: The road will be closed during construction with a detour in place. Based on a completed adjacent bridge project on County Road, the contractor utilized the paved roadway to store equipment and material. Due to the rural location and limited driveways, there will be extensive paved surfaces on the closed road that the contractor can utilize.

Comment 2. *Will additional dredging be required should the contractor choose to install steel sheet pile cofferdams for water diversion instead of large sandbags as anticipated?*

Response 2: It is not anticipated that additional dredge will be required if the contractor chooses to use steel sheet piles instead of large sandbags.

Ten Park Plaza, Suite 4160, Boston, MA 02116
Tel: 857-368-4636, TTY: 857-368-0655
mass.gov/massdot

Streambed Reconstruction

Comment 3. *Based on MassDEP's observations during the pre-application meeting, the thalweg of Ironwork Brook flows directly into the northwestern wingwall resulting in sediment deposition along the eastern side of the brook underneath the bridge. As these conditions will not change under proposed conditions, it appears that similar sediment deposition will continue to occur and will continue to deflect flows to the opposite abutment. Please address.*

Response 3: The location of the thalweg is primarily influenced by the bends in Ironwork Brook both upstream and downstream of the bridge. During the construction of the existing bridge in 1938, large boulders were strategically placed at the ends of the wingwalls to offer protection. In addition, a stacked boulder wall is located at the northeast abutment. Recent tree falls in the area have also resulted in the presence of something similar to a natural root wad immediately adjacent to the boulder on the northwestern bank.

The scour analysis demonstrated that the abutment will be adequately protected with the proposed depth and extent of the riprap, with overlying streambed material. In the years since the construction of the bridge, structural scour (as defined by structural engineering and MassDOT bridge inspection) has not been identified or shown evidence of undermining this abutment, despite the current flow pattern. The designers are reluctant to alter a pattern that has maintained essentially the same depth of material present at the abutment in recent survey, as there was in original construction plans. The sediment deposition on the opposite abutment will be partially addressed through limited material removal, but the aim was to restore to the existing elevations and profile as noted in the stream crossing standards.

As described in more detail in the following response, the design team is concerned that introducing additional boulders or deflectors to redirect the flow would restrict the stream channel, thereby increasing both the velocity and elevation of floods. This concern extends to the stacked stone wall on the opposite bank that already constricts flood flows. As any deflection would push the flow patterns towards the embankment supporting the roadway, the chance of eroding and destabilizing that bank increases. Moreover, if rock vane deflectors were installed, some level of maintenance would be required so they function properly during major storm events. As this project will revert to municipal ownership following construction, the feasibility of this maintenance becomes difficult and less likely to occur.

Comment 4. *Given the existing flow path, please identify any measures that were considered to direct stream flow away from the northwestern wingwall. MassDEP recommends that streambed design and reconstruction be overseen by a fluvial geomorphologist.*

Response 4: BSC believes that redirecting the flow pattern of Ironwork Brook is not advisable for the long-term structural integrity of the bridge. While sediment deposition and build-up is occurring on the inner curve creating deeper flow patterns on the outer abutment, the survey performed at the beginning of

Ten Park Plaza, Suite 4160, Boston, MA 02116
Tel: 857-368-4636, TTY: 857-368-0655
mass.gov/massdot

the bridge design process indicates that the amount of material present at the outer, northwest abutment has not been reduced since completion of construction in 1938. After 80 years, there is not a structural scour hole (loss of adequate or protective material) or undermining at the abutment receiving the flow.

MassDOT and the design team did meet with SLR Consulting and discussed the issue and possible alterations with geomorphologist, Roy Schiff. The general outcome of that meeting is that options are limited to change the scour setting with just a superstructure replacement.

The team considered the following solutions:

Rock Vane Deflectors:

On quick review of the plans, Roy estimated that if the goal were to deflect flow, the project would need two or three rock vane weirs or deflectors on the northwestern bank. The first weir would be located approximately 20 feet from the abutment with 20 feet in between each successive weir upstream.

The design team expresses the following concerns with the constructability and impacts to the project, in addition to the long-term stability:

- The project limits would have to extend almost 60 ft upstream from the existing layout. This would require new landowner easements at a time when the lengthy ROW process is finalizing.

- In order to access the weirs, contractors will need to clear mature trees and grade a swath down the currently stable, opposing bank. Excavators would have to drive down the embankment and across the stream in order to install the weirs along the northwestern bank. This would increase impacts and risk destabilizing the area of the embankment supporting the roadway.

- With the project total dredge volume being close to 100 cubic yards, the installation of the weirs would Increase the dredge volume and exceed the threshold. This would require sediment sampling and delays in permitting.

- The bridge is partially located in NHESP habitat for state-listed plant species and the project currently has a no-take determination. Additional bank work would require returning to NHESP for additional review.

Lowering Deposition Profile

The team discussed removing material and lowering the final profile in the sediment deposition area. The existing material would be replaced with scour protection as proposed, but would be restored shallower, at a lower elevation. It was also discussed that due to the steep topography during major storm events the high flow and velocity is likely to flush the accumulated sediment from under the bridge.

Ten Park Plaza, Suite 4160, Boston, MA 02116
Tel: 857-368-4636, TTY: 857-368-0655
mass.gov/massdot

The design team expresses the following concerns with the constructability, impacts to the project, and long-term stability:

– The current plan is barely able to meet the prescribed scour cover depth. Reducing it further risks destabilization and scour where there is currently not a severe, or structural scour issue.

- With the project total dredge volume being close to 100 cubic yards, additional material removal would Increase the dredge volume and exceed the threshold. This would require sediment sampling and delays in permitting. If we stay in the footprint currently depicted on the plans, so as not to risk exceeding the threshold, there may not be an evenly distributed grade across the area. Additional depressions/channels might inadvertently be formed in comparison to the part of the streambed not replaced with scour material.

The team submits that this bridge replacement was originally a municipal project. MassDOT oversight and construction has led to amendments, and an extended timeline. Changes at this point would result in more scope and delays to the schedule.

Oversight by a geomorphologist would be a feasible option/condition during the construction and streambed restoration.

Comment 5. *Please provide the hydraulic analysis referenced in Section 4.0 of the application that evaluated bend scour.*

Response 5: Please see provided hydraulic analysis/report for the subject project.

Comment 6. *Please explain how erosion and head-cutting issues will be improved under proposed conditions as stated in Table 2.0 of the Massachusetts Stream Crossing Standards Evaluation Worksheet in Attachment C.*

Response 6: Erosion and head-cutting are to be improved by the addition of scour protection along the wingwalls and bridge abutments. The larger stones shall be placed closely together and the intervening spaces filled with smaller stones in such a manner that the entire surface will form a compact mass. The voids will be filled with natural streambed material.

Comment 7. *Proposed channel scour protection will consist of large stones; at least 75% of the volume shall consist of stones weighing not less than 500 pounds each. It is noted that, where possible, the voids between the riprap will be filled with natural streambed material. As the size of these boulders will result in a large volume of interstitial space between boulders, wildlife could possibly be entrapped. Efforts should be made to avoid voids.*

Response 7: The larger stones shall be placed closely together and the intervening spaces filled with smaller stones in such a manner that the entire surface will form a compact mass. The voids will be filled with natural streambed material.

Ten Park Plaza, Suite 4160, Boston, MA 02116
Tel: 857-368-4636, TTY: 857-368-0655
mass.gov/massdot

Stormwater

Comment 8. *Please evaluate any potential impacts to the northwestern bridge abutment/wingwall as a result of redirecting stormwater to an outfall upstream of the bridge as compared to the existing system which discharges stormwater downstream of the bridge.*

Response 8: The contributing drainage area that is being collected by the drop inlet is 99% wooded. The remaining 1% is impervious (3,049 SF). Approximately 90% of this pervious contributing area consists of HSG A and B soils which have a high infiltration rate. Therefore, it is likely that a large portion of the contributing drainage area will infiltrate prior to being collected by the drop inlet. The 3,049 SF of impervious area that is being sent to an outfall upstream rather than downstream as it does in existing conditions, will have a negligible impact on the receiving water body.

Comment 9. *The Stormwater Management Report states that due to partial rebuilding of the driveway, the existing culvert that carries runoff underneath the driveway toward Ironwork Brook needs to be replaced to continue to function, and that steep slopes west of the driveway would make replacing the culvert difficult. Please expand on why installation of a new culvert underneath County Road, with an outfall in a steep area, is a better option than replacing the existing culvert to improve existing drainage patterns.*

Response 9: The existing culvert that carries runoff underneath the driveway is laid approximately 4' underneath the driveway surface. The culvert outlets at the western edge of the driveway, right before a 1.25:1 slope down into the Ironwork Brook. If the culvert were to be replaced in-kind, the perched outlet would need to be eliminated, which in order to lower the outlet of the culvert, significant excavation would be required. This would completely cutoff the residents access from leaving their property, while the culvert was being replaced. Additionally, large portions of steep slopes on either side of the driveway would be disturbed, which are currently relatively stable. Also, due to how much lower of an elevation that Ironwork Brook is compared to the inlet elevation on the east side of the driveway, it would be very difficult to maintain a reasonable slope for a new culvert.

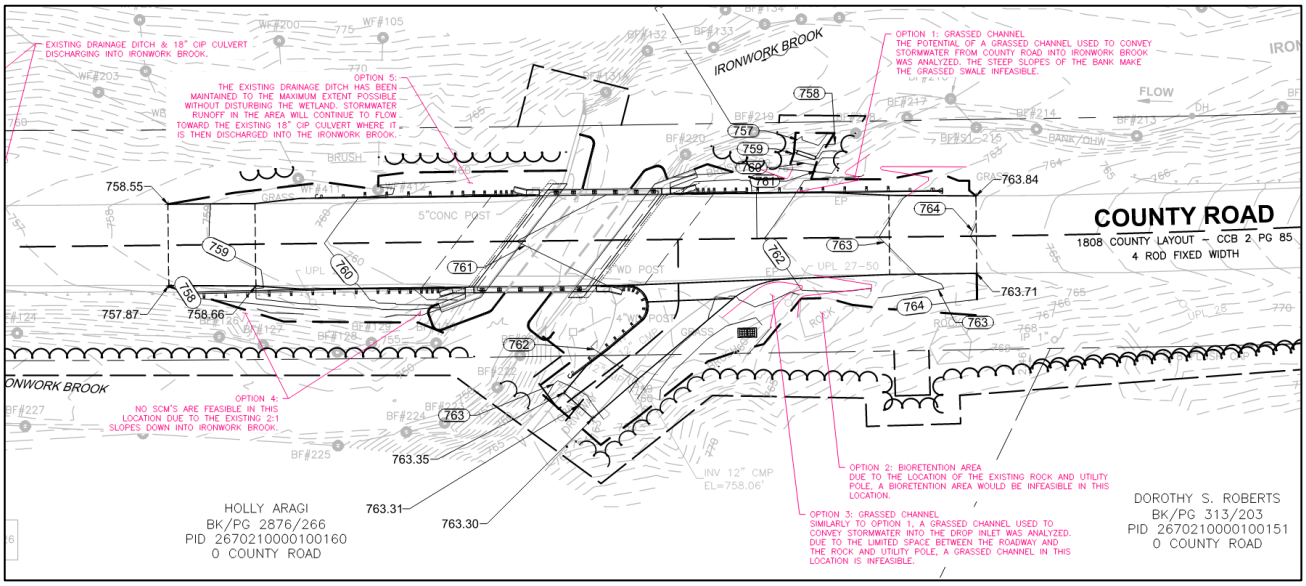
Comment 10. *Per 314 CMR 9.06(6)(a)6., stormwater discharges within a Zone II or Interim Wellhead Protection Area, and near or to coldwater fisheries, require the use of specific control and pollution measures and specific structural stormwater control measures (SCMs) determined by MassDEP to be suitable for managing discharges to such areas as provided in the Massachusetts Stormwater Handbook. Redevelopment projects are required to comply only with the pretreatment and structural SCM requirements in Stormwater Standard 6 to the maximum extent practicable. MassDEP understands there are significant constraints to constructing SCMs and Low Impact Development (LID) techniques within the Project limits including steep slopes and proximity to wetland resource areas. Please provide more information on the SCMs and LIDs that were evaluated and expand on why a water quality swale along the southeastern side of County Road, or another SCM and LID technique, is not feasible to achieve 44% total suspended solids (TSS) removal.*

Ten Park Plaza, Suite 4160, Boston, MA 02116
Tel: 857-368-4636, TTY: 857-368-0655
mass.gov/massdot

Response 10: On the southeastern side of County Road there is approximately 35 LF where a water quality swale may be feasible within the limit of work, northeast of the large existing rock. Water quality swales must be designed to retain and treat the required water quality volume. Approximately 2,420 SF of impervious area would be collected at this location, meaning the required volume of the swale would need to be 202 CF minimum. Due to the space constraints, a correctly sized water quality swale would not be feasible.

SCMs that were ruled out as being feasible due to site constraints include infiltration basins, bioretention areas/swales, detention basins, and stormwater wetlands. For LID techniques, the road already utilizes country drainage, so there is no opportunity to incorporate pavement disconnections. The project has aimed to preserve vegetation and has maintained pre-development drainage patterns as much as possible, however tree clearing is necessary for utility relocation and access for construction. Additionally, due to constructability issues, the culvert under the driveway is now being redirected across County Rd, discharging upstream instead of downstream. Reducing impervious area was also not feasible, as the proposed bridge superstructure is slightly wider than existing conditions to meet design requirements.

As an additional depiction of the alternative SCM options and the reasons for dismissing them, the design team prepared an enclosed graphic with the locations considered. The full-size figure is included with a representative clip provided below.



If you have questions regarding the subject project, please contact me by email at courtney.l.walker@dot.state.ma.us, or at (857) 262-0757.

Ten Park Plaza, Suite 4160, Boston, MA 02116
Tel: 857-368-4636, TTY: 857-368-0655
mass.gov/massdot

Sincerely

Courtney Walker

Courtney Walker, Wetlands and Water Resources Coordinator (Bridges)
MassDOT - Highway Division, Environmental Services

Enc. Hydraulic Analysis
Alternative SCMs Figure

CC: Jamie Iannelli (MassDEP)
Kevin Newton (USACE)
Sheffield Conservation Commission
Michael McHugh, MassDEP WERO
Diana Walden, BSC Group
Kathryn Eagan, PE, BSC Group
Kristine Chestna, MassDOT (Project Manager)
Dan Vasconcelos, (USACE)
Michael Joa (MassDOT Wetlands)
Micah Morrison, PE, BSC Group
Sara Kreisel, PWS, BSC Group

Ten Park Plaza, Suite 4160, Boston, MA 02116
Tel: 857-368-4636, TTY: 857-368-0655
mass.gov/massdot

SHEFFIELD
COUNTY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	--	9	39
PROJECT FILE NO.	611942		

ALTERNATIVE ANALYSIS

611942_ALT-ANALYSIS.DWG Plotted on 4-Mar-2025 12:58 PM

A00840 - 13

Proposal No. 611942-13627

S. MELISSA PRESTON
BK/PG 2803/273
PL/PY M1/2003
PID 2670220000400020
473 COUNTY ROAD

ELIZABETH G. SACALIS
BK/PG 501/1
PID 2670220000400040
COUNTY ROAD
(BOUNDARY FROM DEED DESCRIPTION)

NAD 83

IRONWORK BROOK

EXISTING DRAINAGE DITCH & 18" CIP CULVERT DISCHARGING INTO IRONWORK BROOK.

OPTION 5:
THE EXISTING DRAINAGE DITCH HAS BEEN MAINTAINED TO THE MAXIMUM EXTENT POSSIBLE WITHOUT DISTURBING THE WETLAND. STORMWATER RUNOFF IN THE AREA WILL CONTINUE TO FLOW TOWARD THE EXISTING 18" CIP CULVERT WHERE IT IS THEN DISCHARGED INTO THE IRONWORK BROOK.

OPTION 1: GRASSED CHANNEL
THE POTENTIAL OF A GRASSED CHANNEL USED TO CONVEY STORMWATER FROM COUNTY ROAD INTO IRONWORK BROOK WAS ANALYZED. THE STEEP SLOPES OF THE BANK MAKE THE GRASSED SWALE INFEASIBLE.

OPTION 4:
NO SCM'S ARE FEASIBLE IN THIS LOCATION DUE TO THE EXISTING 2:1 SLOPES DOWN INTO IRONWORK BROOK.

OPTION 2: BIORETENTION AREA
DUE TO THE LOCATION OF THE EXISTING ROCK AND UTILITY POLE, A BIORETENTION AREA WOULD BE INFEASIBLE IN THIS LOCATION.

OPTION 3: GRASSED CHANNEL
SIMILARLY TO OPTION 1, A GRASSED CHANNEL USED TO CONVEY STORMWATER INTO THE DROP INLET WAS ANALYZED. DUE TO THE LIMITED SPACE BETWEEN THE ROADWAY AND THE ROCK AND UTILITY POLE, A GRASSED CHANNEL IN THIS LOCATION IS INFEASIBLE.

COUNTY ROAD
1808 COUNTY LAYOUT – CCB 2 PG 85
4 ROD FIXED WIDTH

758.55
757.87
758.66
763.84
763.71
763.35
763.31
763.30

INV=753.1±'
INV=749.58'
INV 12" CMP
EL=758.06'

BENCHMARK:
RRSPK IN UPL 26
EL=752.46'

HOLLY ARAGI
BK/PG 2876/266
PID 2670210000100160
0 COUNTY ROAD

DOROTHY S. ROBERTS
BK/PG 313/203
PID 2670210000100151
0 COUNTY ROAD

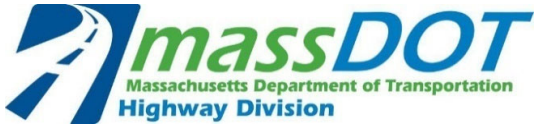
PROP 2025 TOWN LO

0 20 50 100
SCALE: 1" = 20'

HYDRAULIC STUDY REPORT

COUNTY ROAD OVER IRONWORK BROOK
SHEFFIELD, MASSACHUSETTS
BERKSHIRE COUNTY, DISTRICT 1
BRIDGE NO. S-10-024
PROJECT FILE NO. 611942

Prepared for:



Hydraulics Unit
Bridge Section
10 Park Plaza, Suite 6430
Boston, MA 02116

Prepared by:



803 SUMMER STREET
BOSTON, MASSACHUSETTS 02127
617-896-4300

DECEMBER 2021

TABLE OF CONTENTS

1.0 EXECUTIVE SUMMARY 1

2.0 PROJECT DESCRIPTION 1

2.1 Existing Structure 1

2.1.1 Crossed Waterway at the Bridge Location 1

2.1.2 Highway Conveyed 2

2.1.3 Land Use in the Vicinity of the Bridge 2

2.1.4 Special Site Considerations 2

2.2 Proposed Action 2

3.0 DATA COLLECTION 2

4.0 ENGINEERING METHODS 3

4.1 Hydrologic Analysis 3

4.2 Hydraulic Analysis 3

4.2.1 No-Rise Hydraulic Analysis 3

4.2.2 Duplicate Effective Model 4

4.2.3 Existing Conditions Model 4

4.2.4 Proposed Conditions Models 4

4.3 Scour Safety/Stability Analyses 6

4.4 Scour Countermeasure Design 8

5.0 CONCLUSIONS & RECOMMENDATIONS 9

5.1 Conclusions 9

5.2 Recommendations 9

6.0 REFERENCES 12

7.0 APPENDIX 13

7.1 FEMA Documents .....

7.2 Hydrologic Analysis .....

7.3 Hydraulic Analyses .....

7.4 Scour Calculations .....

7.5 Bridge Inspection Reports .....

8.0 FIGURES 14

8.1 Site Location Map .....

8.2 Stream Cross Section Layout Plan .....

8.3 Existing Conditions Bridge Elevation .....

8.4 Photographs .....

List of Tables

Table 4-1: Summary of Peak Flood Discharges 3

Table 4-4: Summary of Hydraulic Performance 5

Table 4-5: Summary of Calculated Scour for Bridges 7

Table 4-7: Summary of Scour Countermeasure Design at Bridge Abutments 8

Table 5-1: Hydraulic Design Data (Existing) 10

Table 5-2: Hydraulic Design Data (Proposed Alternatives 1&2) 11

Table 5-3: Hydraulic Design Data (Proposed Alternative 3) 12

1.0 Executive Summary

The purpose of this report is to present the results of a study conducted at the subject bridge site to evaluate the hydraulic performance and scour safety of the existing bridge and known replacement bridge types. This investigation was conducted in a manner consistent with American Association of State Highway Officials (AASHTO), Federal Highway Administration (FHWA), and Massachusetts Department of Transportation (MassDOT) guidelines for preparation of hydraulic studies at bridge sites.

The scope of work for this investigation consisted of review of pertinent hydrologic and hydraulic data for Ironwork Brook at the project site and a detailed hydraulic analysis. Data collected and hydraulic model computer output is presented in the appendices of this report. A narrative discussion of the problem statement, engineering methods, as well as results and conclusions of the hydraulic study follows.

2.0 Project Description

The bridge is located on County Road over Ironwork Brook, in the Town of Sheffield in Berkshire County, Massachusetts (See Site Location Map, Figure 8.1).

2.1 Existing Structure

The subject bridge is located in the Town of Sheffield, Massachusetts. It is designated as Bridge Number S-10-024. It is a single span steel beam bridge with a reinforced concrete deck, with an approximate rise of 8 feet, an approximate clear span of 25.38 feet and supports a deck with an out-to-out width of approximately 30.00 feet. Based on the field survey and measurements, the low chord elevation is approximately 758.00 (vertical datum NAVD88). An existing conditions sketch of the bridge elevation is included as Figure 8.3.

2.1.1 Crossed Waterway at the Bridge Location

Ironwork Brook, approximately 7.90 miles long, running from Juniper Pond to the confluence with the Housatonic River, is located within the Housatonic River watershed basin. The drainage area at the crossing site is approximately 8.28 square miles and is located to the northeast of the crossing site. The thalweg gradient of the brook's approach channel reach upstream of the crossing is about 0.020 Ft./Ft. The channel bed and overbanks in proximity to the existing bridge waterway opening consist of cobbles, class A, B and C boulders (4 inches to 36+ inches) black, fine to medium sand with little silt, traces of gravel, and traces of organics.

2.1.2 Highway Conveyed

County Road is classified as a Rural Major Collector, as shown on MassDOT's functional classification of roads. As per MassDOT LRFD Bridge Manual Section 1.3.4, the following are the hydraulic and scour design annual exceedance probability (AEP) flood frequencies used for the subject bridge:

- Hydraulic Design Flood = 4% AEP [25-year]
- Scour Design Flood = 2% AEP [50-year]
- Scour Check Flood = 1% AEP [100-year]

2.1.3 Land Use in the Vicinity of the Bridge

Land use near the bridge is largely forest in good condition, agriculture and single-family houses.

2.1.4 Special Site Considerations

The County Road crossing over Ironwork Brook is not located within a National Flood Insurance Program (NFIP) base (100-year) flood Special Hazard Area according to the 1981 Berkshire County Flood Insurance Study (FIS). The present project hydraulic study is the first known detailed engineering assessment of the brook's existing flood regime in the vicinity of the project site. Therefore, there are no special site considerations as part of this study.

2.2 Proposed Action

The principle project objective is to upgrade the existing load and service capacity to current highway standards along County Road. The following are the proposed bridge replacement alternatives considered in this study.

1. Alternative-1: Superstructure replacement with 25.38' (skewed clear span) prestressed concrete beams
2. Alternative-2: Superstructure replacement with 25.38' (skewed clear span) steel beams
3. Alternative-3: Single span structure with 42'-0" (skewed clear span) prestressed concrete beams

3.0 Data Collection

The following references and reports on the study area were available and were used as guidance during the hydrologic and hydraulic model development and analysis:

- Town of Sheffield Flood Insurance Study (FIS), March 16, 1981 **(Reference 2)**

- Base plans for County Road over Ironwork Brook
- Proposed Alternatives Bridge dimensions
- Streambed Sampling Results, prepared by Geosciences Testing and Research, Inc, dated August 7, 2019.

4.0 Engineering Methods

Hydrologic and hydraulic analyses were conducted to estimate the peak discharges and water surface elevations, respectively, at the bridge location. The following sections briefly describe the methodology.

4.1 Hydrologic Analysis

The objective of the hydrologic analysis was to establish the 10% (10-year), 4% (25-year), 2% (50-year), 1% (100-year), and 0.2% (500-year) peak flood discharges for Ironwork Brook and to establish boundary conditions required for the hydraulic and scour analysis. The design flood frequency for a Rural Major Collector road bridge is 4% **(Reference 7)**. The river's drainage area at the bridge location on Ironwork Brook was delineated using United States Geological Survey (USGS) Streamstats Website **(Reference 8)**.

Table 4-1 shows the peak flood discharges used for the hydraulic and scour design. See Appendix 7.2 for hydrologic computations.

Table 4-1: Summary of Peak Flood Discharges

	Drainage Area (sq mi)	10-year (cfs)	25-year (cfs)	50-year (cfs)	100-year (cfs)	500-year (cfs)
Ironwork Brook	8.28	641	881	1080	1300	1900

4.2 Hydraulic Analysis

The scope of the study was to perform a one-dimensional steady-state hydraulic analysis to estimate the design flood elevations for the existing and proposed bridge design. Water surface profiles for the 10%, 4%, 2%, 1%, and 0.2% annual chance peak discharge events were developed in a manner consistent with the applicable NFIP base floodplain development performance standards. The United States Army Corps of Engineers (USACOE) HEC-RAS Version 5.0.7 application was used to develop flood elevation profiles for various return events at the project site **(Reference 4)**. The vertical datum used in all hydraulic models is NAVD 1988 unless otherwise noted.

4.2.1 No-Rise Analysis

Because the existing bridge does not span an effective NFIP regulatory floodway, it was not necessary to perform a "No Rise" base flood elevation profile as part of this study.

4.2.2 Duplicate Effective Model

Because the existing bridge is not located within an effective NFIP Special Flood Hazard Area and is the first known detailed engineering assessment within the project vicinity, it was not necessary to perform a duplicate effective analysis.

4.2.3 Existing Conditions Model

An Existing conditions model (Existing) was created from recent survey information acquired for the project base plan, which included cross section data at approximately 100-foot intervals for a distance of 500 feet upstream and downstream of the crossing. Bridge measurements obtained during a site visit were input into the model. This provided an existing water surface profile and water surface elevations. The Existing Conditions Model required inputting both an upstream and downstream boundary condition to analyze a mixed flow regime. A normal depth of flow based on the approximate downstream channel slope of 0.02807 ft/ft was selected as the downstream boundary condition for Ironwork Brook. The upstream boundary condition was determined by developing a rating curve for the 14-foot x 9-foot box culvert located approximately 500 feet upstream of the project crossing site. A known water surface elevation from the rating curve was then used for each frequency discharge.

4.2.4 Proposed Conditions Models

Proposed conditions models were created by modifying the Existing Conditions Model to include the proposed bridge alternative designs and measurements. As previously indicated, the project includes three bridge alternatives. Alternatives 1 and 2 are hydraulically similar, therefore two Proposed Condition Models were created; one for Alternatives 1 and 2 (Proposed Alternatives 1&2) and one for Alternative-3 (Proposed Alternative 3). The proposed water surface elevations were then compared to the existing conditions model's water surface. Modeling irregularities, findings, and observations are detailed below for the proposed alternative models.

<u>Proposed Alternatives 1&2</u>

The water surface elevation under the bridge for the 10- and 25-year floods match those of the existing conditions model. Since the bridge opening is pressurized during the 50-year flood and greater in both the existing conditions and Proposed Alternatives 1&2 scenarios, the slight increase in low chord elevation in Proposed Alternatives 1&2 has a corresponding increase in water surface elevation due to the backwater effect from the pressure flow region. Since the crossing is not located in a FEMA designated flood zone, and the water surface elevations converge upstream and downstream within the study limits, no negative local, upstream, or downstream impacts are anticipated.

Based on a low chord elevation of 758.13 and a design water surface elevation of 756.90, these alternatives provide approximately 1.23 feet of freeboard for the design flood.

Proposed Alternative 3

The water surface elevations through the bridge for all design floods decrease compared to the existing conditions model. The results also show a drop in velocity from the existing to the proposed sections through the bridge. Based on a low chord elevation of 758.05 and a design water surface elevation of 756.50, this alternative provides approximately 1.55 feet of freeboard for the design flood.

It should be noted that during the 50-year flood event, flow through the bridge for the Existing and Proposed Alternatives 1&2 scenarios will be pressurized at the entrance. Flow through the bridge for the Proposed Alternative 3 scenario will be pressurized at the entrance during the 100-year flood event. Weir flow overtopping the roadway occurs at the 500-year flood event for all scenarios.

All flood simulations were performed in a mixed flow regime and employed the peak discharge rates listed in Table 4-1. Pertinent computational results of the existing and proposed alternatives models are presented in Table 4-4 below.

Table 4-4: Summary of Hydraulic Performance

Model	Return Frequency (Years)	Discharge (Ft^3/S)	Max. Stage U/S Bridge (Ft)	Maximum Velocity in Bridge (Ft/s)
Existing Conditions Model	10	641	755.79	6.54
Low Chord Elev. = 758.00 ft	25	881	756.90	7.25
	50	1080	759.02	7.44
	100	1300	759.61	8.48
	500	1900	761.59	9.95
Proposed Alternatives 1&2 Model	10	641	755.79	6.54
	25	881	756.90	7.25
(Superstructure Replacement)	50	1080	759.11	7.44
Low Chord Elev. = 758.13 ft	100	1300	759.65	8.33
	500	1900	761.52	10.00
Proposed Alternative 3 Model	10	641	755.41	5.50
(Bridge Replacement)	25	881	756.50	5.92
Low Chord Elev. = 758.05 ft	50	1080	757.34	6.17
	100	1300	759.10	6.22
	500	1900	760.31	9.09

*All elevations based on NAVD88 Vertical Datum

4.3 Scour Safety/Stability Analysis

Scour potential at the crossing site under existing and proposed conditions was analyzed using the requirements set forth by MassDOT's LRFD Bridge Manual and AASHTO LRFD Bridge Design Specifications, Sections 1.3 and 2.6 and using the guidelines by FHWA HEC-18 "*Evaluating Scour at Bridges*" **(Reference 5)** and HEC-23, "*Bridge Scour and Stream Instability Countermeasures*" **(Reference 6)**. In accordance with Section 1.3.4 of the LRFD Bridge Manual, for *Rural Major Collector* Highway Classification, the river's 2% (50-year) and 1% (100-year) chance flood events were respectively used as the scour design and scour check events.

The general analytical approach was to estimate long term streambed elevation changes, compute flood related contraction (conveyance reduction) and local (vortex induced) abutment scour depths, then sum the three scour components to yield estimates of total 2% and 1% chance flood related contraction and abutment scour. As indicated above, flow during the 2% chance flood (design event) and 1% chance flood (check event) through the bridge is pressurized. Therefore, contraction scour was calculated using the methodology for Pressure Scour found in Section 6.10 of HEC-18 **(Reference 5)**. Since HEC-18 does not include a methodology to calculate local abutment scour with pressure flow, it is recommended to provide countermeasures at the abutments to the scour depth. Abutment scour was analyzed in this study using the NCHRP 24-20 Abutment Scour Approach **(Reference 5)**.
Additionally, due to the meandering channel geometry, a bend scour analysis was also performed in accordance with HEC-23, Section 4.3.5 *Scour at Protected Bendways*. The results of this analysis were added to the results of the contraction and abutment scour depths.

Based on the guidance in Section 5.2 of HEC-18 **(Reference 5)**, none of the factors that commonly contribute to long-term bed elevation changes appear to be present at the site. Additionally, since historical channel geometry data was unavailable, both the scour design and scour check event analyses assumed that the river's channel bed elevation profile at the project location would not measurably degrade over the replacement bridge's service life. A summary of computed 50- and 100-year flood scour depths under proposed site conditions is presented in Table 4.5.

Streambed sampling was performed in June 2019 (see Appendix 7.4). The sieve analysis results showed black, fine to coarse sands with little silt and traces of gravel and organics. Samples were taken using a shovel and/or hand auger and material greater than 4 inches in diameter was not sampled.

Scour analysis was performed using the D_{50} particle size of 2.9mm for the channel, 0.31mm for the right overbank, and 0.26mm for the left overbank. The computational results of the scour analysis are presented in Table 4-5 below.

Table 4-5: Summary of Calculated Scour for Bridges

Alternative	Return Freq. (yr)	[1] Contraction Scour (ft)	[2] Long Term Degradation (ft)	[3] Abutment Scour (ft)[3]		[4] Design Bend Scour (ft)		[2] + [3] + [4] Design Total Abutment Scour (ft)		Modified Design Scour Depth (ft)[4]	
				Left	Right	Left	Right	Left	Right[2]	Left	Right
Existing Condition	50	4.10[1]	0.00	3.77	1.39	-	4.77	3.77	6.16	3.77	5.01
	100	5.32[1]	0.00	3.95	1.57	-	4.94	3.95	6.51	3.95	5.01
Proposed Alternatives 1&2	50	4.33[1]	0.00	3.79	1.41	-	4.83	3.79	6.24	3.79	5.01
	100	5.42[1]	0.00	3.97	1.59	-	4.77	3.97	6.35	3.97	5.01
Proposed Alternative 3	50	0.10	0.00	0.66	0.00	-	2.82	0.66	2.82	0.66	2.82
	100	0.85[1]	0.00	0.60	0.00	-	3.65	0.60	3.65	0.66	3.65

[1] Pressure flow contraction scour used

[2] Includes bend scour depths

[3] Left/Right correspond to east/west, respectively

[4] Modified scour depths based on engineering judgement and observed/recorded site scour conditions and footing elevations

Per Section 1.3.3.5 B of Part 1 of the LRFD Bridge Manual, Designers should use sound engineering judgement to evaluate the reasonableness of any computed scour depth. The 2020 Routine & Special Member Inspection Report, dated December 10, 2020 (see Appendix 7.5), notes that there is no evidence of scour and erosion of the existing river flow. The existing structure, including the substructure that would be retained in Alternatives 1 & 2, was constructed in 1939. Based on the inspection report and the structure being more than 80 years old, the calculated total scour depths for existing conditions and Alternatives 1 & 2 appear to be unreasonable.

Based on BSC Group's existing conditions survey, the bottom of the existing abutment footings is approximately 5-feet below the bottom of the streambed. Therefore, the calculated scour depths would suggest that the footings would be undermined for the 100-year check flood scour depth. However, as shown in Photo 10 of the 2020 inspection report, there are large angular stones that armor the bank of Ironwork Brook both upstream and downstream of the crossing. These large stones act as scour countermeasures for both bend and abutment scour. Based on this analysis, BSC Group anticipates that providing scour countermeasures, for Alternatives 1 & 2, that protect down to the bottom of the existing footings would be sufficient.

The modified design scour depths in Table 4-5 were determined by capping the maximum scour depth at 5.01 feet, which corresponds to the bottom of the existing footings. See Section 4.4 for the scour countermeasure design for all alternatives.

4.4 Scour Countermeasure Design

Scour countermeasures were sized based on the methodology outlined in Hec-23 **(Reference 6)**. Based on the results of the scour analysis, contraction scour in the channel and overbanks is not a significant concern. However, local abutment scour in the left and right overbanks were found to be potentially problematic. Therefore, scour countermeasures are proposed to protect the left and right abutments from becoming undermined during the Design Scour event. The results are shown below in Table 4-7.

Table 4-7: Summary of Scour Countermeasure Design at Bridge Abutments

Alternative	Riprap Size D_{50} (Inches)	Riprap Selected	Riprap Thickness (ft)
1 & 2	5.7	Modified Rockfill (M2.02.4)	1.0
3	11.9	Dumped Riprap (M2.02.2)	2.0

5.0 Conclusions & Recommendations

5.1 Conclusions

1. The project hydraulic model predicts that all proposed alternatives will safely convey the 4% annual chance design flood event.
2. Analysis performed within this hydraulic study indicate that project activities will not result in any adverse upstream or downstream impacts.
3. The proposed available freeboard above the 4% annual chance design flood is approximately 1.23 feet for Proposed Alternatives 1&2 and approximately 1.55 feet for Proposed Alternative 3.

5.2 Recommendations

1. The information shown in Table 5-2 to Table 5-3 for the recommended alternative should be presented within the Hydraulic Data Tables in the General Notes of the Bridge Sketch and Construction Plan sets.
2. The grades that will exist at the abutments should be stabilized with flexible revetments consisting of MassDOT Standard Specification M2.01.1, crushed stone placed over an appropriate MassDOT Standard Specification M9.50.0 geotextile fabric membrane.
3. The calculated 2% (50-year) chance flood event total scour depth presented in Table 5-2 to Table 5-3 for the recommended alternative should be considered for use as a bridge foundation condition in LRFD strength and service limit state foundation stability determination. Similarly, the calculated 1% (100-year) chance flood event scour depth should be considered for use a bridge foundation condition in the LRFD extreme event limit state foundation stability determination. Also, as the design engineer, BSC Group will be cognizant that the proposed bridge substructure shall meet the foundation scour stability requirements set forth in MassDOT Bridge LRFD Manual **(Reference 7)**, Section 3.2.10.4, and presented below.
4. For new bridges or full bridge replacements, the substructures shall be designed to meet the requirements of Paragraphs 3.2.10.2 and 3.9.10.3 for the calculated design and check scour without using scour countermeasures.
5. For bridge rehabilitation or superstructure replacement projects or projects where the substructure units are to be retained, scour countermeasures may be used to address the scour stability if the existing substructures do not fully meet all the design criteria above without them.

Table 5-1: Hydraulic Design Data (Existing)

Hydraulic Design Data

Drainage Area	8.28 Square Miles
Design Flood Discharge	881 Cubic Feet Per Second
Design Flood Frequency	25 Years
Design Flood Velocity	7.25 Feet Per Second
Design Flood Elevation	756.90 Feet, NAVD 88

Base (100 Year) Flood Data

Base Flood Discharge	1300 Cubic Feet Per Second
Base Flood Elevation	759.61 Feet, NAVD 88

Design and Check Scour Data

Design Scour Return Frequency	2% (50 Years)
Design Flood Abutment Scour Depth	5.01 Feet
Check Scour Return Frequency	1% (100 Years)
Check Flood Abutment Scour Depth	5.01 Feet

Flood of Record

Discharge	None on Record
Frequency	None on Record
Date	None on Record

History of Ice Floes: None documented
Evidence of Scour or Erosion: None documented

Table 5-2: Hydraulic Design Data (Proposed Alternatives 1&2)

Hydraulic Design Data

Drainage Area	8.28 Square Miles
Design Flood Discharge	881 Cubic Feet Per Second
Design Flood Frequency	25 Years
Design Flood Velocity	7.25 Feet Per Second
Design Flood Elevation	756.90 Feet, NAVD 88

Base (100 Year) Flood Data

Base Flood Discharge	1300 Cubic Feet Per Second
Base Flood Elevation	759.65 Feet, NAVD 88

Design and Check Scour Data

Design Scour Return Frequency	2% (50 Years)
Design Flood Abutment Scour Depth	5.01 Feet
Check Scour Return Frequency	1% (100 Years)
Check Flood Abutment Scour Depth	5.01 Feet

Flood of Record

Discharge	None on Record
Frequency	None on Record
Date	None on Record

History of Ice Floes: None documented
Evidence of Scour or Erosion: None documented

Table 5-3: Hydraulic Design Data (Proposed Alternative 3)

Hydraulic Design Data

Drainage Area	8.28 Square Miles
Design Flood Discharge	881 Cubic Feet Per Second
Design Flood Frequency	25 Years
Design Flood Velocity	5.92 Feet Per Second
Design Flood Elevation	756.50 Feet, NAVD 88

Base (100 Year) Flood Data

Base Flood Discharge	1300 Cubic Feet Per Second
Base Flood Elevation	759.10 Feet, NAVD 88

Design and Check Scour Data

Design Scour Return Frequency	2% (50 Years)
Design Flood Abutment Scour Depth	2.82 Feet
Check Scour Return Frequency	1% (100 Years)
Check Flood Abutment Scour Depth	3.65 Feet

Flood of Record

Discharge	None on Record
Frequency	None on Record
Date	None on Record

History of Ice Floes: None documented
Evidence of Scour or Erosion: None documented

6.0 References

6.1 Data Sources

The primary information sources for this report are listed below:

Reference No.	Title
1	Town of Sheffield Flood Insurance Rate Map, Panel 13 of 18, Community Panel Number 250041 00013B, dated September 16, 1981.
2	Town of Sheffield Flood Insurance Study (FIS), dated March 16, 1981.
3	USGS Topographic Maps for Sheffield, Scale 1: 25,000
4	US Army Corps of Engineers (USACOE), Hydrologic Engineering Center, HEC-RAS River Analysis System, Version 5.0.7, released February 2016.
5	Federal Highway Administration (FHWA), Hydraulic Engineering Circular, HEC-18 Evaluating Scour at Bridges, Fifth Edition, April 2012.
6	Federal Highway Administration (FHWA), Hydraulic Engineering Circular, HEC-23 Bridge Scour and Stream Instability Countermeasures: Experience, Selection, and Design Guidance, Third Edition, September 2009.
7	MassDOT Bridge Load and Resistance Factor Design (LRFD) Manual, December 2013 with January 2020 Revisions.
8	United States Geological Survey (USGS), USGS Streamstats in Massachusetts website http://water.usgs.gov/osw/streamstats/massachusetts.html
9	MassDOT Structures Inspection Field Report, Routine & Special Member Inspection, dated December 10, 2020.

7.0 Appendices

7.1 FEMA Documents

7.1.1 FEMA FIRMette

7.2 Hydrologic Analysis

7.2.1 USGS StreamStats Hydrologic Report

7.3 Hydraulic Analyses

7.3.1 Existing Conditions Analysis Results
7.3.2 Proposed Alternatives 1&2 Analysis Results
7.3.3 Proposed Alternative 3 Analysis Results

7.4 Scour Calculations

7.4.1 Streambed Sampling Results
7.4.2 Existing Contraction Scour Calculations
7.4.3 Proposed Alternatives 1&2 Contraction Scour Calculations
7.4.4 Proposed Alternative 3 Contraction Scour Calculations
7.4.5 Abutment Scour Calculations
7.4.6 Bend Scour Calculations
7.4.7 Pressurized Contraction Scour Calculations
7.4.8 Scour Countermeasure Design Calculations

7.5 Bridge Inspection Reports

7.5.1 Bridge Inspection Report, dated December 10, 2020.

8.0 Figures

8.1 Site Location Map
8.2 Stream Cross Section Layout Plan
8.3 Existing Conditions Bridge Elevation
8.4 Photographs

Appendix 7.1.1

FEMA FIRMETTE

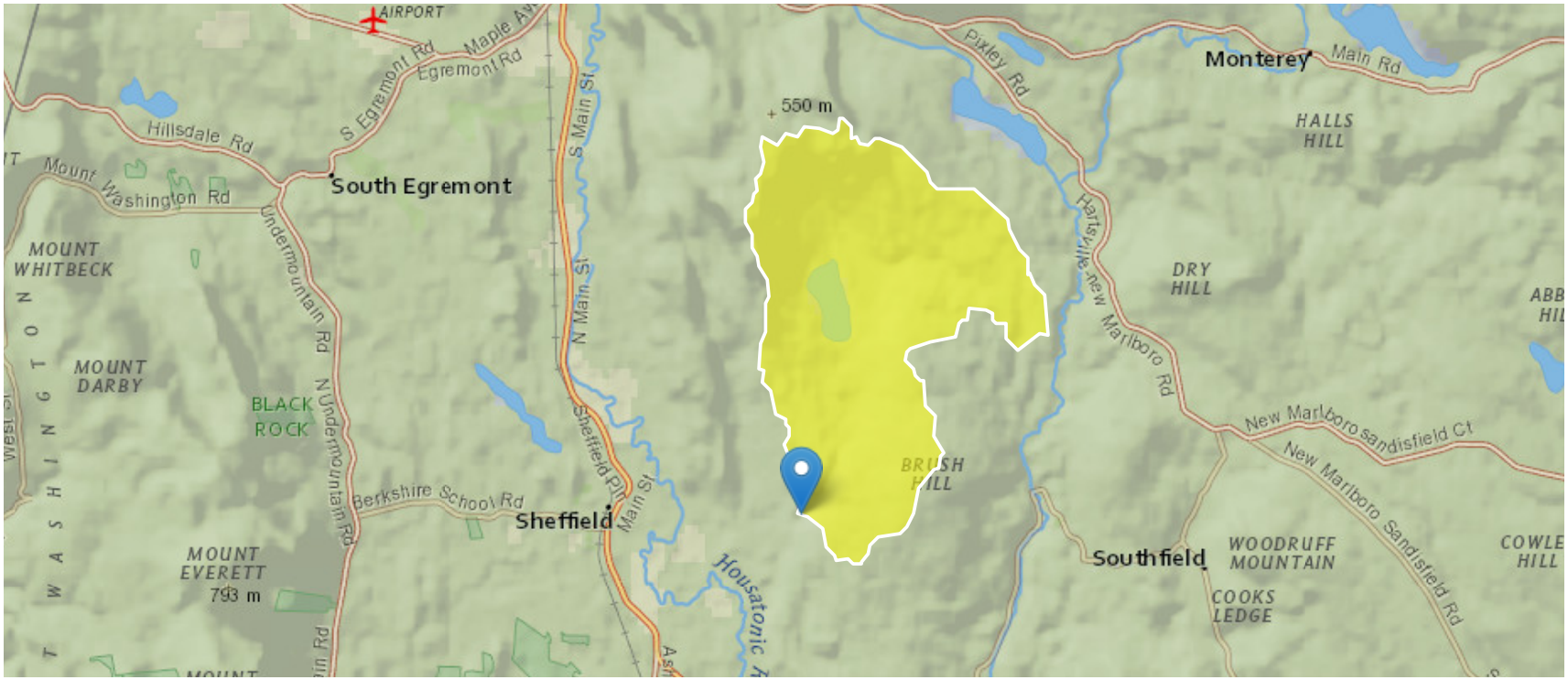

N
PROJECT SITE
ZONE A
ZONE A12
ZONE B
ZONE C
FIRM
TOWN
SHEF
MASS
BERK
PANEL

Appendix 7.2.1

USGS STREAMSTATS HYDROLOGIC REPORT

StreamStats Report

Region ID: MA
Workspace ID: MA20201116193402212000
Clicked Point (Latitude, Longitude): 42.10922, -73.31591
Time: 2020-11-16 14:34:19 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit

A00840 - 34

Proposal No. 611942-133627

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	8.28	square miles
ELEV	Mean Basin Elevation	1100	feet
LC06STOR	Percentage of water bodies and wetlands determined from the NLCD 2006	9.64	percent
BSLDEM10M	Mean basin slope computed from 10 m DEM	11.17	percent

Peak-Flow Statistics Parameters[Peak Statewide 2016 5156]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	8.28	square miles	0.16	512
ELEV	Mean Basin Elevation	1100	feet	80.6	1948
LC06STOR	Percent Storage from NLCD2006	9.64	percent	0	32.3

Peak-Flow Statistics Flow Report[Peak Statewide 2016 5156]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	PIu	SEp
2 Year Peak Flood	285	ft^3/s	142	572	42.3
5 Year Peak Flood	480	ft^3/s	236	978	43.4
10 Year Peak Flood	641	ft^3/s	307	1340	44.7
25 Year Peak Flood	881	ft^3/s	407	1910	47.1
50 Year Peak Flood	1080	ft^3/s	482	2420	49.4
100 Year Peak Flood	1300	ft^3/s	561	3010	51.8
200 Year Peak Flood	1550	ft^3/s	648	3710	54.1
500 Year Peak Flood	1900	ft^3/s	757	4770	57.6

A00840 - 35

Proposal No. 611942-133627

Peak-Flow Statistics Citations

Zarriello, P.J.,2017, Magnitude of flood flows at selected annual exceedance probabilities for streams in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2016–5156, 99 p. (https://dx.doi.org/10.3133/sir20165156)

Bankfull Statistics Parameters [Bankfull Statewide SIR2013 5155]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	8.28	square miles	0.6	329
BSLDEM10M	Mean Basin Slope from 10m DEM	11.17	percent	2.2	23.9

Bankfull Statistics Flow Report [Bankfull Statewide SIR2013 5155]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SEp
Bankfull Width	37.4	ft	21.3
Bankfull Depth	1.86	ft	19.8
Bankfull Area	68.9	ft^2	29
Bankfull Streamflow	258	ft^3/s	55

Bankfull Statistics Citations

Bent, G.C., and Waite, A.M.,2013, Equations for estimating bankfull channel geometry and discharge for streams in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2013–5155, 62 p., (http://pubs.usgs.gov/sir/2013/5155/)

USGS Data Disclaimer: Unless otherwise stated, all data, metadata and related materials are considered to satisfy the quality standards relative to the purpose for which the data were collected. Although these data and associated metadata have been reviewed for accuracy and completeness and approved for release by the U.S. Geological Survey (USGS), no warranty expressed or implied is made regarding the display or utility of the data for other purposes, nor on all computer systems, nor

A00840 - 36

Proposal No. 611942-133627

shall the act of distribution constitute any such warranty.

USGS Software Disclaimer: This software has been approved for release by the U.S. Geological Survey (USGS). Although the software has been subjected to rigorous review, the USGS reserves the right to update the software as needed pursuant to further analysis and review. No warranty, expressed or implied, is made by the USGS or the U.S. Government as to the functionality of the software and related material nor shall the fact of release constitute any such warranty. Furthermore, the software is released on condition that neither the USGS nor the U.S. Government shall be held liable for any damages resulting from its authorized or unauthorized use.

USGS Product Names Disclaimer: Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Application Version: 4.4.0

A00840 - 37

Proposal No. 611942-133627

Appendix 7.3.1

EXISTING CONDITIONS ANALYSIS RESULTS

Existing Conditions Model

HEC-RAS Profile Output Table
HEC-RAS Bridge Output Tables
Water Surface Profiles
Cross Sections

HEC-RAS Plan: EX River: IRONWORK BROOK Reach: IRONWORK BROOK

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
IRONWORK BROOK	3100	10-YEAR	641.00	769.70	775.20	775.20	777.14	0.011227	11.35	65.14	19.72	0.97
IRONWORK BROOK	3100	25-YEAR	881.00	769.70	775.81	776.18	778.53	0.013337	13.52	77.63	21.63	1.08
IRONWORK BROOK	3100	50-YEAR	1080.00	769.70	776.10	776.94	779.68	0.016349	15.56	84.05	22.67	1.21
IRONWORK BROOK	3100	100-YEAR	1300.00	769.70	776.41	777.67	780.95	0.019260	17.56	91.25	23.77	1.32
IRONWORK BROOK	3100	500-YEAR	1900.00	769.70	777.18	779.46	784.27	0.025646	22.12	110.61	26.52	1.56
IRONWORK BROOK	2975	10-YEAR	641.00	764.41	766.78	768.35	772.73	0.107357	19.73	34.95	24.72	2.66
IRONWORK BROOK	2975	25-YEAR	881.00	764.41	767.25	769.03	773.90	0.088264	21.01	47.10	27.53	2.51
IRONWORK BROOK	2975	50-YEAR	1080.00	764.41	767.60	769.54	774.75	0.078655	21.91	57.14	29.65	2.43
IRONWORK BROOK	2975	100-YEAR	1300.00	764.41	767.93	770.09	775.75	0.073748	23.03	67.31	31.65	2.40
IRONWORK BROOK	2975	500-YEAR	1900.00	764.41	768.65	771.36	778.46	0.070264	26.13	91.64	35.36	2.43
IRONWORK BROOK	2900	10-YEAR	641.00	761.34	763.43	764.35	766.28	0.053625	13.81	53.42	42.50	1.88
IRONWORK BROOK	2900	25-YEAR	881.00	761.34	763.68	764.86	767.57	0.061868	16.27	64.15	44.18	2.07
IRONWORK BROOK	2900	50-YEAR	1080.00	761.34	763.86	765.21	768.59	0.067102	18.00	72.37	46.44	2.19
IRONWORK BROOK	2900	100-YEAR	1300.00	761.34	764.05	765.58	769.63	0.071504	19.67	82.05	57.20	2.29
IRONWORK BROOK	2900	500-YEAR	1900.00	761.34	764.48	766.45	772.20	0.080697	23.46	107.50	59.74	2.51
IRONWORK BROOK	2800	10-YEAR	641.00	756.30	759.04	759.72	761.37	0.042446	12.25	52.89	33.56	1.67
IRONWORK BROOK	2800	25-YEAR	881.00	756.30	759.42	760.30	762.33	0.040581	13.71	65.84	35.24	1.69
IRONWORK BROOK	2800	50-YEAR	1080.00	756.30	759.69	760.72	763.08	0.040145	14.81	75.61	37.07	1.71
IRONWORK BROOK	2800	100-YEAR	1300.00	756.30	759.96	761.14	763.87	0.040280	15.95	85.73	39.11	1.75
IRONWORK BROOK	2800	500-YEAR	1900.00	756.30	760.58	762.18	765.86	0.041263	18.62	111.18	42.86	1.83
IRONWORK BROOK	2700	10-YEAR	641.00	753.11	755.83	756.49	758.09	0.025920	12.39	60.51	30.84	1.40
IRONWORK BROOK	2700	25-YEAR	881.00	753.11	756.34	757.10	759.14	0.025196	13.88	77.19	34.17	1.42
IRONWORK BROOK	2700	50-YEAR	1080.00	753.11	758.91	757.68	759.86	0.004006	8.39	179.56	44.44	0.63
IRONWORK BROOK	2700	100-YEAR	1300.00	753.11	759.54	758.16	760.60	0.003919	8.92	208.15	46.41	0.63
IRONWORK BROOK	2700	500-YEAR	1900.00	753.11	761.58	759.35	762.70	0.002952	9.37	310.15	53.99	0.58
IRONWORK BROOK	2645	10-YEAR	641.00	751.25	755.81	754.56	756.49	0.003789	6.68	105.51	28.45	0.58
IRONWORK BROOK	2645	25-YEAR	881.00	751.25	756.95	755.25	757.72	0.003152	7.16	138.86	30.13	0.55
IRONWORK BROOK	2645	50-YEAR	1080.00	751.25	759.05	755.76	759.62	0.001525	6.21	206.23	34.56	0.40
IRONWORK BROOK	2645	100-YEAR	1300.00	751.25	759.66	756.29	760.36	0.001683	6.88	227.80	36.43	0.43
IRONWORK BROOK	2645	500-YEAR	1900.00	751.25	761.59	757.59	762.53	0.001710	8.01	309.95	59.52	0.45
IRONWORK BROOK	2633	10-YEAR	641.00	750.90	755.95	754.07	756.38	0.002073	5.24	125.22	29.70	0.44
IRONWORK BROOK	2633	25-YEAR	881.00	750.90	757.12	754.69	757.61	0.001802	5.70	158.85	30.13	0.42
IRONWORK BROOK	2633	50-YEAR	1080.00	750.90	759.16	755.15	759.55	0.000935	5.04	223.79	30.98	0.32
IRONWORK BROOK	2633	100-YEAR	1300.00	750.90	759.80	755.63	760.27	0.001033	5.59	243.57	31.82	0.34
IRONWORK BROOK	2633	500-YEAR	1900.00	750.90	761.83	756.81	762.40	0.000981	6.30	343.69	76.48	0.34
IRONWORK BROOK	2628	10-YEAR	641.00	750.54	755.87	754.04	756.36	0.002320	5.62	115.67	26.60	0.46
IRONWORK BROOK	2628	25-YEAR	881.00	750.54	757.00	754.70	757.59	0.002090	6.18	145.30	27.03	0.46
IRONWORK BROOK	2628	50-YEAR	1080.00	750.54	759.07	755.17	759.54	0.001091	5.49	204.25	27.78	0.35
IRONWORK BROOK	2628	100-YEAR	1300.00	750.54	759.68	755.68	760.25	0.001225	6.12	221.25	28.04	0.37
IRONWORK BROOK	2628	500-YEAR	1900.00	750.54	761.62	756.97	762.38	0.001260	7.12	291.35	44.23	0.39
IRONWORK BROOK	2623	10-YEAR	641.00	750.05	755.79	754.00	756.33	0.002516	5.90	110.25	25.29	0.48
IRONWORK BROOK	2623	25-YEAR	881.00	750.05	756.90	754.68	757.56	0.002333	6.54	137.42	25.86	0.48
IRONWORK BROOK	2623	50-YEAR	1080.00	750.05	759.02	755.19	759.52	0.001176	5.72	197.48	26.83	0.36
IRONWORK BROOK	2623	100-YEAR	1300.00	750.05	759.61	755.71	760.23	0.001333	6.40	213.40	26.97	0.39
IRONWORK BROOK	2623	500-YEAR	1900.00	750.05	761.59	757.05	762.37	0.001307	7.28	296.04	50.53	0.40
IRONWORK BROOK	2600		Bridge									
IRONWORK BROOK	2578	10-YEAR	641.00	750.00	754.95	753.13	755.40	0.002275	5.61	122.94	32.42	0.46
IRONWORK BROOK	2578	25-YEAR	881.00	750.00	756.08	753.75	756.62	0.002041	6.14	154.17	33.11	0.45
IRONWORK BROOK	2578	50-YEAR	1080.00	750.00	756.89	754.22	757.51	0.001957	6.57	176.68	33.60	0.45
IRONWORK BROOK	2578	100-YEAR	1300.00	750.00	757.71	754.71	758.41	0.001908	7.00	199.19	34.08	0.45
IRONWORK BROOK	2578	500-YEAR	1900.00	750.00	759.55	755.91	760.49	0.001921	8.14	250.02	41.00	0.47
IRONWORK BROOK	2560	10-YEAR	641.00	749.58	753.31	753.31	754.96	0.011617	10.47	69.13	23.55	0.98
IRONWORK BROOK	2560	25-YEAR	881.00	749.58	754.13	754.13	756.11	0.010642	11.53	89.77	26.37	0.97
IRONWORK BROOK	2560	50-YEAR	1080.00	749.58	754.77	754.77	756.96	0.009966	12.21	107.14	28.54	0.96
IRONWORK BROOK	2560	100-YEAR	1300.00	749.58	755.40	755.40	757.82	0.009464	12.89	125.98	30.71	0.96
IRONWORK BROOK	2560	500-YEAR	1900.00	749.58	757.01	757.01	759.86	0.008210	14.19	179.74	36.48	0.93
IRONWORK BROOK	2546	10-YEAR	641.00	749.53	752.85	753.15	754.75	0.016307	11.51	68.32	26.95	1.15
IRONWORK BROOK	2546	25-YEAR	881.00	749.53	753.43	753.90	755.88	0.017020	13.17	84.25	28.07	1.20
IRONWORK BROOK	2546	50-YEAR	1080.00	749.53	753.88	754.46	756.73	0.017027	14.23	97.32	28.98	1.23
IRONWORK BROOK	2546	100-YEAR	1300.00	749.53	754.42	755.07	757.59	0.016258	15.07	113.30	30.95	1.22
IRONWORK BROOK	2546	500-YEAR	1900.00	749.53	755.70	756.53	759.60	0.014842	16.91	155.90	35.40	1.22
IRONWORK BROOK	2475	10-YEAR	641.00	748.27	750.41	751.16	752.95	0.040486	12.85	52.12	30.69	1.66
IRONWORK BROOK	2475	25-YEAR	881.00	748.27	750.80	751.76	754.03	0.040112	14.53	64.37	31.74	1.70
IRONWORK BROOK	2475	50-YEAR	1080.00	748.27	751.09	752.22	754.86	0.040030	15.73	73.68	32.51	1.74
IRONWORK BROOK	2475	100-YEAR	1300.00	748.27	751.38	752.68	755.74	0.040242	16.94	83.19	33.27	1.77
IRONWORK BROOK	2475	500-YEAR	1900.00	748.27	752.13	753.84	757.81	0.038808	19.43	108.71	35.17	1.81
IRONWORK BROOK	2350	10-YEAR	641.00	744.52	748.22	748.38	749.98	0.013678	11.62	79.51	29.17	1.08
IRONWORK BROOK	2350	25-YEAR	881.00	744.52	749.00	749.19	751.09	0.012759	12.80	103.34	32.01	1.08
IRONWORK BROOK	2350	50-YEAR	1080.00	744.52	749.59	749.77	751.90	0.012166	13.59	122.65	34.12	1.08
IRONWORK BROOK	2350	100-YEAR	1300.00	744.52	750.16	750.39	752.72	0.011793	14.40	142.93	36.20	1.08
IRONWORK BROOK	2350	500-YEAR	1900.00	744.52	751.50	751.85	754.67	0.011357	16.32	194.41	41.00	1.10

HEC-RAS Plan: EX River: IRONWORK BROOK Reach: IRONWORK BROOK (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
IRONWORK BROOK	2255	10-YEAR	641.00	743.30	745.77	746.42	748.12	0.027759	12.70	59.51	29.54	1.44
IRONWORK BROOK	2255	25-YEAR	881.00	743.30	746.23	747.11	749.25	0.028479	14.46	73.54	31.06	1.51
IRONWORK BROOK	2255	50-YEAR	1080.00	743.30	746.59	747.62	750.09	0.028424	15.63	84.88	32.24	1.53
IRONWORK BROOK	2255	100-YEAR	1300.00	743.30	746.97	748.15	750.94	0.028043	16.71	97.23	33.48	1.55
IRONWORK BROOK	2255	500-YEAR	1900.00	743.30	747.92	749.42	752.92	0.026251	18.91	130.76	36.63	1.56
IRONWORK BROOK	2163	10-YEAR	641.00	741.50	744.69	744.80	746.15	0.013264	9.91	75.02	31.88	1.03
IRONWORK BROOK	2163	25-YEAR	881.00	741.50	745.19	745.46	747.12	0.014456	11.49	91.30	33.89	1.10
IRONWORK BROOK	2163	50-YEAR	1080.00	741.50	745.54	745.97	747.87	0.015358	12.65	103.49	35.25	1.15
IRONWORK BROOK	2163	100-YEAR	1300.00	741.50	745.89	746.48	748.65	0.016279	13.82	115.99	36.59	1.21
IRONWORK BROOK	2163	500-YEAR	1900.00	741.50	746.71	747.57	750.59	0.018274	16.54	147.13	39.74	1.32
IRONWORK BROOK	2050	10-YEAR	641.00	740.21	742.78	743.06	744.41	0.017667	10.52	70.67	32.78	1.16
IRONWORK BROOK	2050	25-YEAR	881.00	740.21	743.32	743.70	745.34	0.017105	11.78	89.07	34.85	1.18
IRONWORK BROOK	2050	50-YEAR	1080.00	740.21	743.72	744.17	746.05	0.016838	12.68	103.35	36.38	1.20
IRONWORK BROOK	2050	100-YEAR	1300.00	740.21	744.14	744.78	746.76	0.016386	13.50	119.06	43.14	1.20
IRONWORK BROOK	2050	500-YEAR	1900.00	740.21	745.03	746.14	748.48	0.016878	15.70	178.12	88.39	1.26

Plan: EX IRONWORK BROOK IRONWORK BROOK RS: 2600 Profile: 10-YEAR

E.G. US. (ft)	756.33	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	755.79	E.G. Elev (ft)	756.32	755.43
Q Total (cfs)	641.00	W.S. Elev (ft)	755.70	754.75
Q Bridge (cfs)	641.00	Crit W.S. (ft)	754.09	753.29
Q Weir (cfs)		Max Chl Dpth (ft)	5.65	4.75
Weir Sta Lft (ft)		Vel Total (ft/s)	6.35	6.54
Weir Sta Rgt (ft)		Flow Area (sq ft)	100.95	97.98
Weir Submerg		Froude # Chl	0.47	0.53
Weir Max Depth (ft)		Specif Force (cu ft)	364.34	349.87
Min El Weir Flow (ft)	760.59	Hydr Depth (ft)	4.58	4.45
Min El Prs (ft)	758.14	W.P. Total (ft)	31.29	26.47
Delta EG (ft)	0.93	Conv. Total (cfs)	9357.6	11045.3
Delta WS (ft)	0.84	Top Width (ft)	22.05	22.03
BR Open Area (sq ft)	153.26	Frctn Loss (ft)		
BR Open Vel (ft/s)	6.54	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.95	0.78
BR Sel Method	Momentum	Power Total (lb/ft s)	6.00	5.09

Plan: EX IRONWORK BROOK IRONWORK BROOK RS: 2600 Profile: 25-YEAR

E.G. US. (ft)	757.56	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	756.90	E.G. Elev (ft)	757.55	756.65
Q Total (cfs)	881.00	W.S. Elev (ft)	756.78	755.82
Q Bridge (cfs)	881.00	Crit W.S. (ft)	754.80	754.01
Q Weir (cfs)		Max Chl Dpth (ft)	6.73	5.82
Weir Sta Lft (ft)		Vel Total (ft/s)	7.06	7.25
Weir Sta Rgt (ft)		Flow Area (sq ft)	124.81	121.56
Weir Submerg		Froude # Chl	0.48	0.53
Weir Max Depth (ft)		Specif Force (cu ft)	553.32	536.01
Min El Weir Flow (ft)	760.59	Hydr Depth (ft)	5.67	5.52
Min El Prs (ft)	758.14	W.P. Total (ft)	33.45	27.54
Delta EG (ft)	0.94	Conv. Total (cfs)	12745.7	15810.0
Delta WS (ft)	0.82	Top Width (ft)	22.03	22.02
BR Open Area (sq ft)	153.26	Frctn Loss (ft)		
BR Open Vel (ft/s)	7.25	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	1.11	0.86
BR Sel Method	Momentum	Power Total (lb/ft s)	7.86	6.20

Plan: EX IRONWORK BROOK IRONWORK BROOK RS: 2600 Profile: 50-YEAR

E.G. US. (ft)	759.52	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	759.02	E.G. Elev (ft)	759.52	757.51
Q Total (cfs)	1080.00	W.S. Elev (ft)	758.14	756.89
Q Bridge (cfs)	1080.00	Crit W.S. (ft)	755.32	754.54
Q Weir (cfs)		Max Chl Dpth (ft)	8.09	6.89
Weir Sta Lft (ft)		Vel Total (ft/s)	7.05	7.44
Weir Sta Rgt (ft)		Flow Area (sq ft)	153.26	145.08
Weir Submerg		Froude # Chl	0.44	0.50
Weir Max Depth (ft)		Specif Force (cu ft)	786.99	730.19
Min El Weir Flow (ft)	760.59	Hydr Depth (ft)		6.59
Min El Prs (ft)	758.14	W.P. Total (ft)	58.04	28.61
Delta EG (ft)	2.01	Conv. Total (cfs)	12430.5	21219.8
Delta WS (ft)	2.13	Top Width (ft)		22.01
BR Open Area (sq ft)	153.26	Frctn Loss (ft)		
BR Open Vel (ft/s)	7.05	C & E Loss (ft)		

Plan: EX IRONWORK BROOK IRONWORK BROOK RS: 2600 Profile: 50-YEAR (Continued)

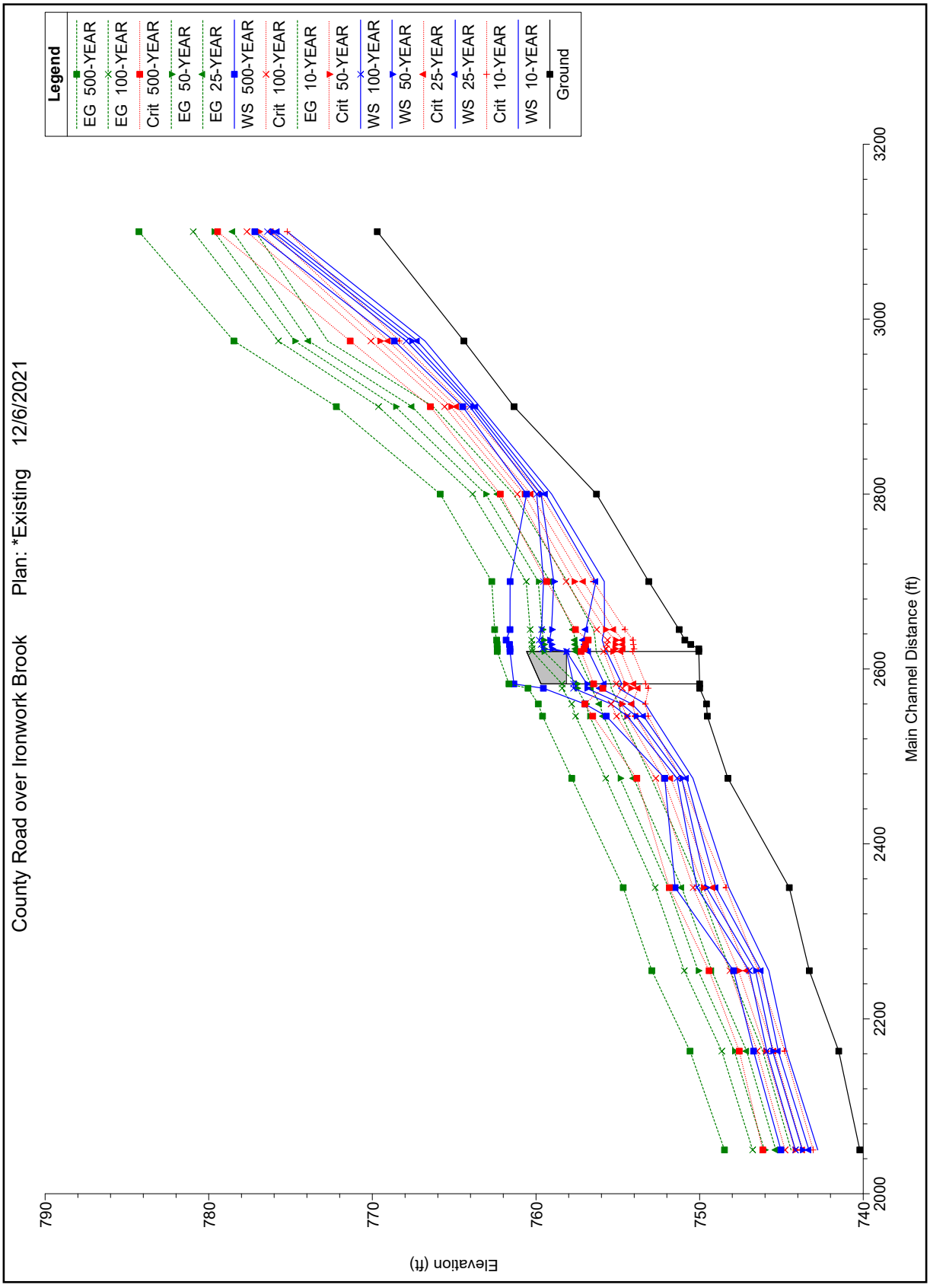
BR Sluice Coef	0.40	Shear Total (lb/sq ft)	1.24	0.82
BR Sel Method	Press Only	Power Total (lb/ft s)	8.77	6.11

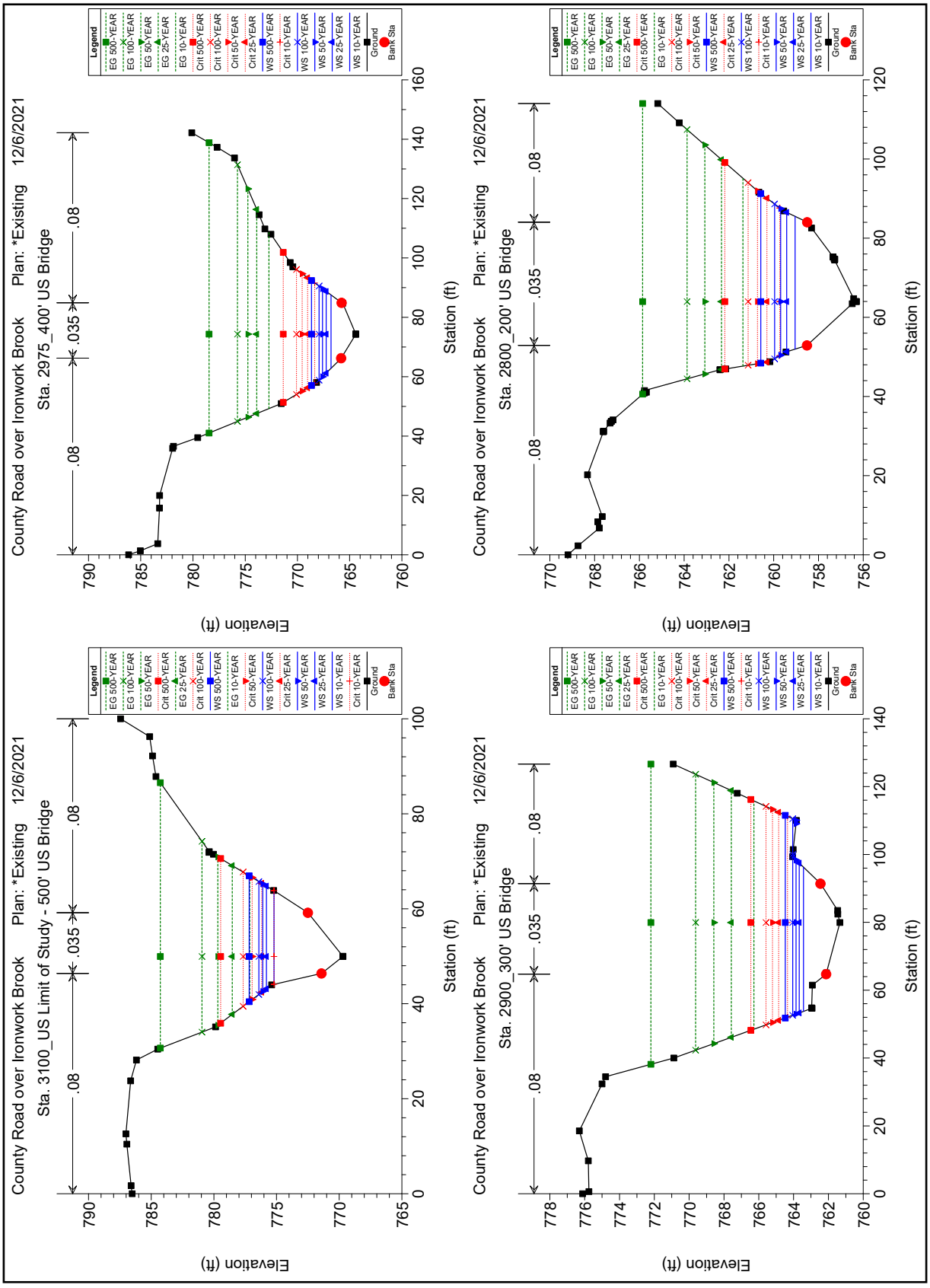
Plan: EX IRONWORK BROOK IRONWORK BROOK RS: 2600 Profile: 100-YEAR

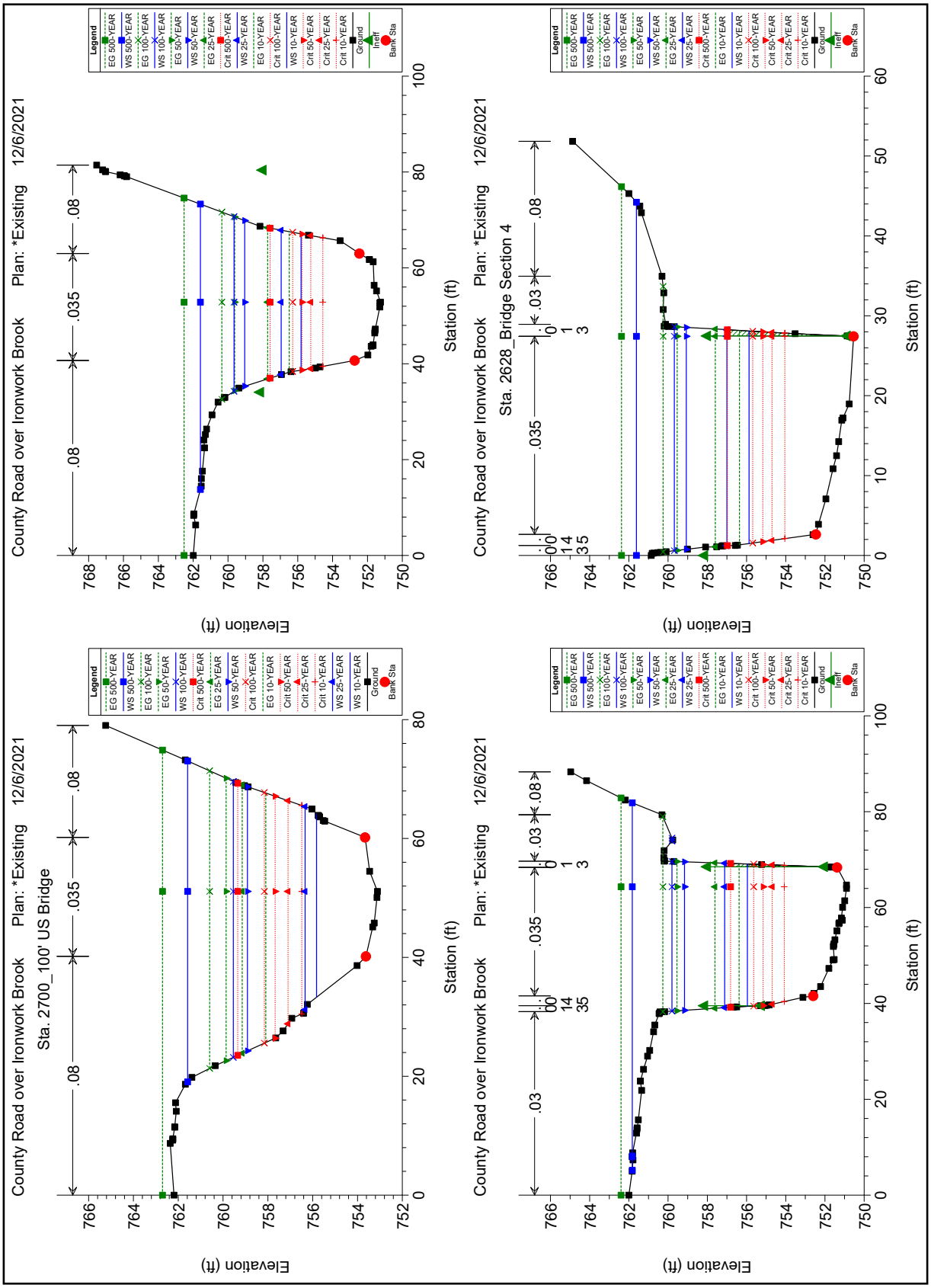
E.G. US. (ft)	760.23	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	759.61	E.G. Elev (ft)	760.23	758.41
Q Total (cfs)	1300.00	W.S. Elev (ft)	758.14	757.71
Q Bridge (cfs)	1300.00	Crit W.S. (ft)	755.87	755.10
Q Weir (cfs)		Max Chl Dpth (ft)	8.09	7.71
Weir Sta Lft (ft)		Vel Total (ft/s)	8.48	7.98
Weir Sta Rgt (ft)		Flow Area (sq ft)	153.26	163.00
Weir Submerg		Froude # Chl	0.53	0.51
Weir Max Depth (ft)		Specif Force (cu ft)	893.18	928.47
Min El Weir Flow (ft)	760.59	Hydr Depth (ft)		7.41
Min El Prs (ft)	758.14	W.P. Total (ft)	58.04	29.42
Delta EG (ft)	1.83	Conv. Total (cfs)	12430.5	25761.7
Delta WS (ft)	1.90	Top Width (ft)		22.00
BR Open Area (sq ft)	153.26	Frctn Loss (ft)		
BR Open Vel (ft/s)	8.48	C & E Loss (ft)		
BR Sluice Coef	0.45	Shear Total (lb/sq ft)	1.80	0.88
BR Sel Method	Press Only	Power Total (lb/ft s)	15.29	7.02

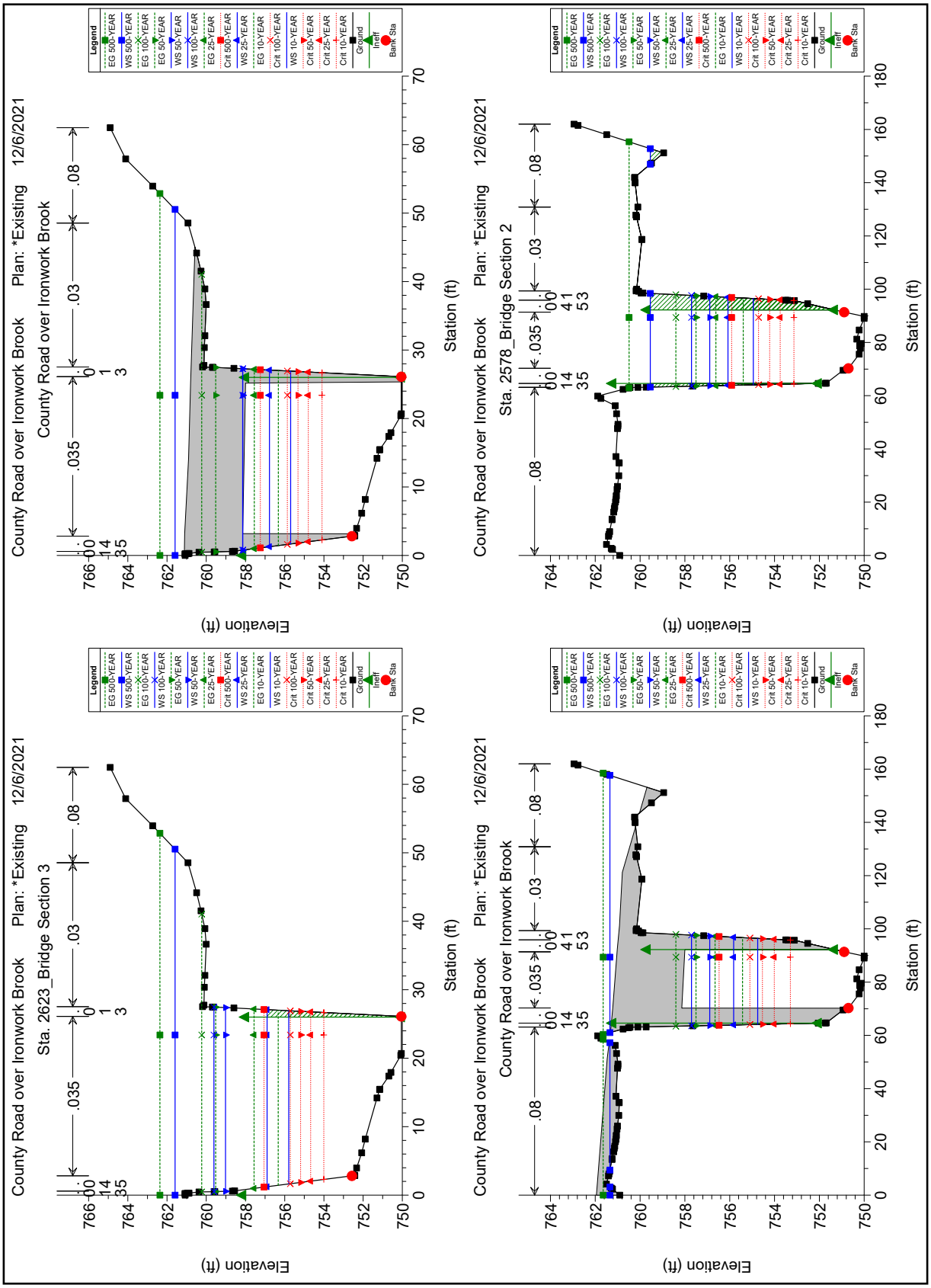
Plan: EX IRONWORK BROOK IRONWORK BROOK RS: 2600 Profile: 500-YEAR

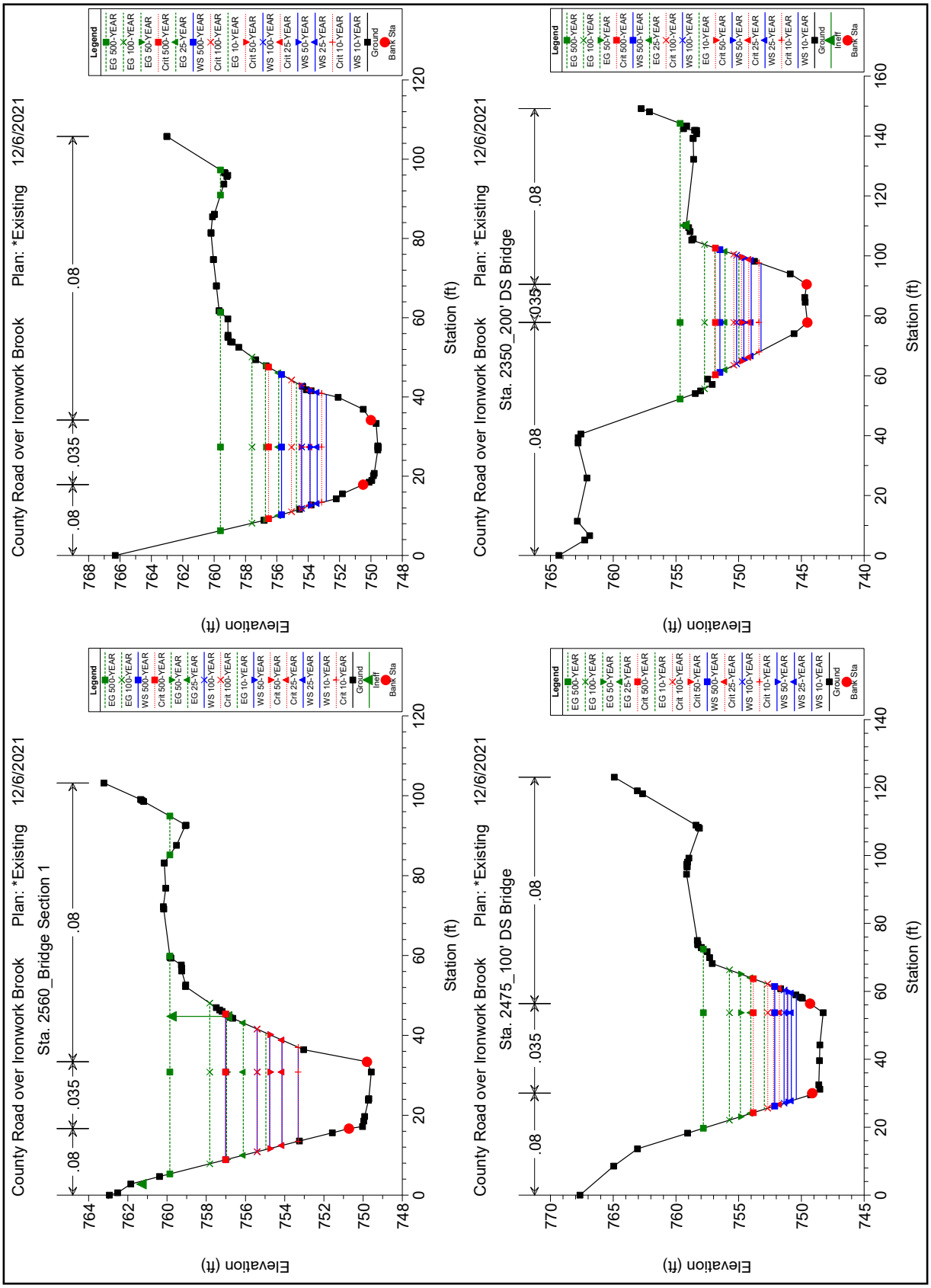
E.G. US. (ft)	762.37	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	761.59	E.G. Elev (ft)	762.37	761.65
Q Total (cfs)	1900.00	W.S. Elev (ft)	761.59	761.35
Q Bridge (cfs)	1651.29	Crit W.S. (ft)	757.24	756.47
Q Weir (cfs)	248.71	Max Chl Dpth (ft)	11.54	11.35
Weir Sta Lft (ft)	0.00	Vel Total (ft/s)	9.95	8.31
Weir Sta Rgt (ft)	52.86	Flow Area (sq ft)	190.89	228.67
Weir Submerg	0.00	Froude # Chl	0.53	0.51
Weir Max Depth (ft)	1.79	Specif Force (cu ft)	1689.03	1809.51
Min El Weir Flow (ft)	760.59	Hydr Depth (ft)	3.78	2.37
Min El Prs (ft)	758.14	W.P. Total (ft)	109.17	155.48
Delta EG (ft)	1.87	Conv. Total (cfs)		
Delta WS (ft)	2.04	Top Width (ft)	50.53	96.60
BR Open Area (sq ft)	153.26	Frctn Loss (ft)		
BR Open Vel (ft/s)	10.77	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)		
BR Sel Method	Press/Weir	Power Total (lb/ft s)		

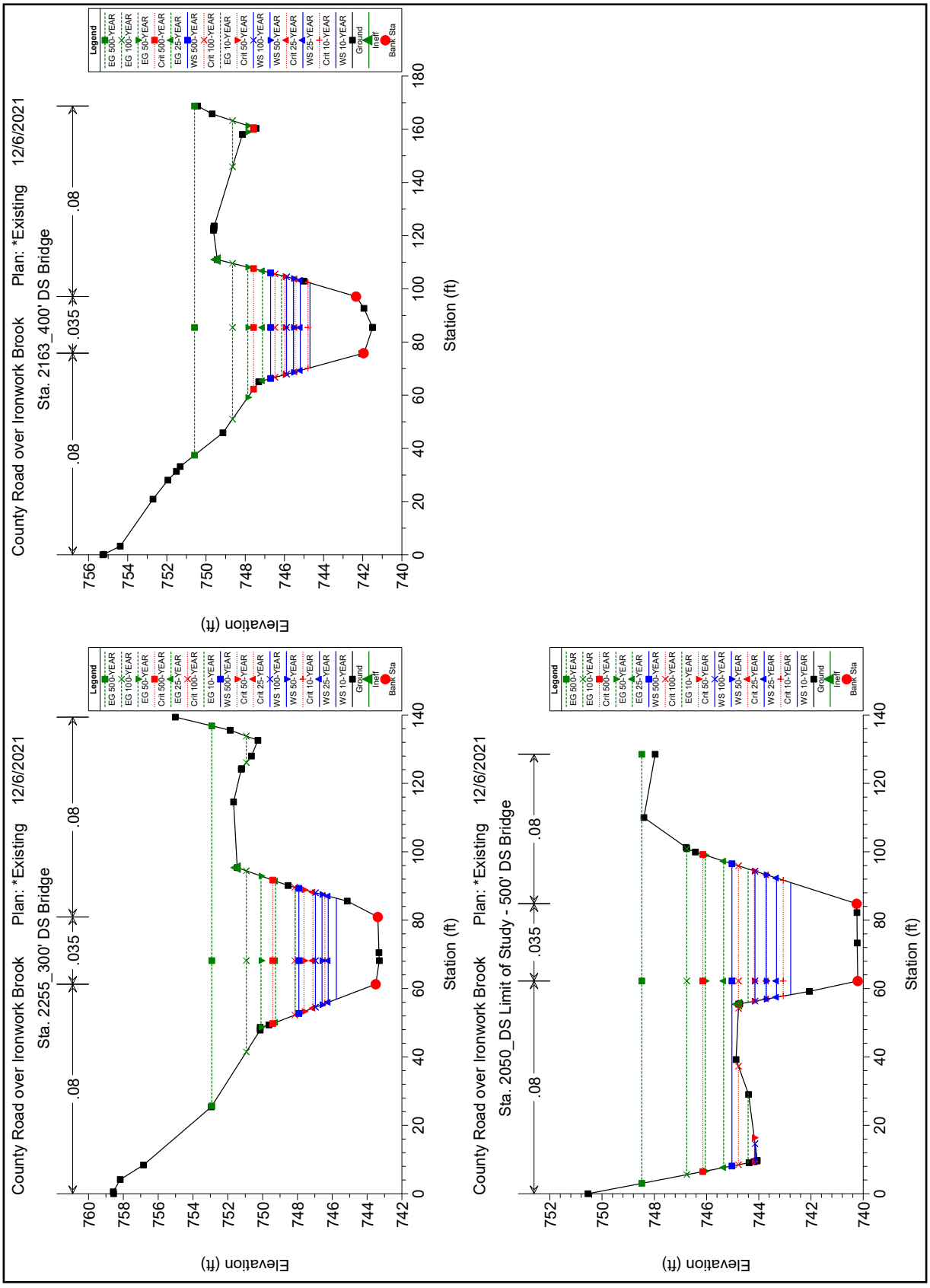

County Road over Ironwork Brook Plan: *Existing 12/6/2021
Legend
EG 500-YEAR
EG 100-YEAR
Crit 500-YEAR
EG 50-YEAR
EG 25-YEAR
WS 500-YEAR
Crit 100-YEAR
EG 10-YEAR
Crit 50-YEAR
WS 100-YEAR
WS 50-YEAR
Crit 25-YEAR
WS 25-YEAR
Crit 10-YEAR
WS 10-YEAR
Ground
Elevation (ft)
790
780
770
760
750
740
Main Channel Distance (ft)
2000
2200
2400
2600
2800
3000
3200


County Road over Ironwork Brook Plan: *Existing 12/6/2021
Sta. 3100_US Limit of Study - 500' US Bridge
Sta. 2975_400' US Bridge
Sta. 2900_300' US Bridge
Sta. 2800_200' US Bridge
.08
.035
.08
Elevation (ft)
Station (ft)
Legend
EG 500-YEAR
EG 100-YEAR
EG 50-YEAR
EG 25-YEAR
EG 10-YEAR
Crit 500-YEAR
Crit 100-YEAR
Crit 50-YEAR
Crit 25-YEAR
Crit 10-YEAR
WS 500-YEAR
WS 100-YEAR
WS 50-YEAR
WS 25-YEAR
WS 10-YEAR
Ground
Bank Sta


County Road over Ironwork Brook Plan: *Existing 12/6/2021
Sta. 2628_Bridge Section 4
.08 .035 .08
.03 0 1 3
.03 .035 .08
.00 14 35
Elevation (ft)
Station (ft)
Legend
EG 500-YEAR
WS 500-YEAR
EG 100-YEAR
WS 100-YEAR
EG 50-YEAR
WS 50-YEAR
EG 25-YEAR
WS 25-YEAR
Crit 500-YEAR
Crit 100-YEAR
Crit 50-YEAR
Crit 25-YEAR
EG 10-YEAR
WS 10-YEAR
Crit 10-YEAR
Ground
Ineff
Bank Sta


County Road over Ironwork Brook Plan: *Existing 12/6/2021
Sta. 2623_Bridge Section 3
Sta. 2578_Bridge Section 2
Elevation (ft)
Station (ft)
Legend
Ground
Ineff
Bank Sta


County Road over Ironwork Brook Plan: *Existing 12/6/2021
Sta. 2560_Bridge Section 1
.08 .035 .08
Elevation (ft)
Station (ft)
Legend
EG 500-YEAR
EG 100-YEAR
EG 50-YEAR
Crit 500-YEAR
EG 25-YEAR
WS 500-YEAR
Crit 100-YEAR
EG 10-YEAR
Crit 50-YEAR
WS 100-YEAR
Crit 25-YEAR
WS 50-YEAR
WS 25-YEAR
Crit 10-YEAR
WS 10-YEAR
Ground
Ineff
Bank Sta
County Road over Ironwork Brook Plan: *Existing 12/6/2021
Sta. 2350_200' DS Bridge
.08 .035 .08
Elevation (ft)
Station (ft)
County Road over Ironwork Brook Plan: *Existing 12/6/2021
Sta. 2475_100' DS Bridge
.08 .035 .08
Elevation (ft)
Station (ft)
County Road over Ironwork Brook Plan: *Existing 12/6/2021
.08 .035 .08
Elevation (ft)
Station (ft)


County Road over Ironwork Brook Plan: *Existing 12/6/2021
Sta. 2163_400' DS Bridge
.08
.035
.08
Elevation (ft)
Station (ft)
Legend
EG 500-YEAR
EG 100-YEAR
EG 50-YEAR
Crit 500-YEAR
EG 25-YEAR
Crit 100-YEAR
EG 10-YEAR
WS 500-YEAR
Crit 50-YEAR
WS 100-YEAR
WS 50-YEAR
Crit 25-YEAR
WS 25-YEAR
Crit 10-YEAR
WS 10-YEAR
Ground
Ineff
Bank Sta
County Road over Ironwork Brook Plan: *Existing 12/6/2021
Sta. 2255_300' DS Bridge
.08
.035
.08
Elevation (ft)
Station (ft)
County Road over Ironwork Brook Plan: *Existing 12/6/2021
Sta. 2050_DS Limit of Study - 500' DS Bridge
.08
.035
.08
Elevation (ft)
Station (ft)

Appendix 7.3.2

PROPOSED ALTERNATIVES 1&2 ANALYSIS RESULTS

Proposed Alternatives 1&2 Model

HEC-RAS Profile Output Table
HEC-RAS Bridge Output Tables
Water Surface Profiles
Cross Sections

HEC-RAS Plan: PRO_Alt 1&2 River: IRONWORK BROOK Reach: IRONWORK BROOK

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
IRONWORK BROOK	3100	10-YEAR	641.00	769.70	775.20	775.20	777.14	0.011227	11.35	65.14	19.72	0.97
IRONWORK BROOK	3100	25-YEAR	881.00	769.70	775.81	776.18	778.53	0.013337	13.52	77.63	21.63	1.08
IRONWORK BROOK	3100	50-YEAR	1080.00	769.70	776.10	776.94	779.68	0.016349	15.56	84.05	22.67	1.21
IRONWORK BROOK	3100	100-YEAR	1300.00	769.70	776.41	777.67	780.95	0.019260	17.56	91.25	23.77	1.32
IRONWORK BROOK	3100	500-YEAR	1900.00	769.70	777.18	779.46	784.27	0.025646	22.12	110.61	26.52	1.56
IRONWORK BROOK	2975	10-YEAR	641.00	764.41	766.78	768.35	772.73	0.107357	19.73	34.95	24.72	2.66
IRONWORK BROOK	2975	25-YEAR	881.00	764.41	767.25	769.03	773.90	0.088264	21.01	47.10	27.53	2.51
IRONWORK BROOK	2975	50-YEAR	1080.00	764.41	767.60	769.54	774.75	0.078655	21.91	57.14	29.65	2.43
IRONWORK BROOK	2975	100-YEAR	1300.00	764.41	767.93	770.09	775.75	0.073748	23.03	67.31	31.65	2.40
IRONWORK BROOK	2975	500-YEAR	1900.00	764.41	768.65	771.36	778.46	0.070264	26.13	91.64	35.36	2.43
IRONWORK BROOK	2900	10-YEAR	641.00	761.34	763.43	764.35	766.28	0.053625	13.81	53.42	42.50	1.88
IRONWORK BROOK	2900	25-YEAR	881.00	761.34	763.68	764.86	767.57	0.061868	16.27	64.15	44.18	2.07
IRONWORK BROOK	2900	50-YEAR	1080.00	761.34	763.86	765.21	768.59	0.067102	18.00	72.37	46.44	2.19
IRONWORK BROOK	2900	100-YEAR	1300.00	761.34	764.05	765.58	769.63	0.071504	19.67	82.05	57.20	2.29
IRONWORK BROOK	2900	500-YEAR	1900.00	761.34	764.48	766.45	772.20	0.080697	23.46	107.50	59.74	2.51
IRONWORK BROOK	2800	10-YEAR	641.00	756.30	759.04	759.72	761.37	0.042446	12.25	52.89	33.56	1.67
IRONWORK BROOK	2800	25-YEAR	881.00	756.30	759.42	760.30	762.33	0.040581	13.71	65.84	35.24	1.69
IRONWORK BROOK	2800	50-YEAR	1080.00	756.30	759.69	760.72	763.08	0.040145	14.81	75.61	37.07	1.71
IRONWORK BROOK	2800	100-YEAR	1300.00	756.30	759.96	761.14	763.87	0.040280	15.95	85.73	39.11	1.75
IRONWORK BROOK	2800	500-YEAR	1900.00	756.30	760.58	762.18	765.86	0.041263	18.62	111.18	42.86	1.83
IRONWORK BROOK	2700	10-YEAR	641.00	753.11	755.83	756.49	758.09	0.025920	12.39	60.51	30.84	1.40
IRONWORK BROOK	2700	25-YEAR	881.00	753.11	756.34	757.10	759.14	0.025196	13.88	77.19	34.17	1.42
IRONWORK BROOK	2700	50-YEAR	1080.00	753.11	759.02	757.68	759.92	0.003740	8.21	184.27	44.78	0.61
IRONWORK BROOK	2700	100-YEAR	1300.00	753.11	759.58	758.16	760.62	0.003826	8.85	210.04	46.55	0.63
IRONWORK BROOK	2700	500-YEAR	1900.00	753.11	761.51	759.35	762.65	0.003045	9.46	306.31	53.59	0.58
IRONWORK BROOK	2645	10-YEAR	641.00	751.25	755.81	754.57	756.49	0.003790	6.68	105.50	28.45	0.58
IRONWORK BROOK	2645	25-YEAR	881.00	751.25	756.95	755.24	757.72	0.003152	7.16	138.86	30.13	0.55
IRONWORK BROOK	2645	50-YEAR	1080.00	751.25	759.14	755.76	759.70	0.001461	6.13	209.45	34.79	0.39
IRONWORK BROOK	2645	100-YEAR	1300.00	751.25	759.69	756.29	760.38	0.001658	6.85	229.12	36.57	0.43
IRONWORK BROOK	2645	500-YEAR	1900.00	751.25	761.52	757.61	762.47	0.001751	8.07	306.02	56.97	0.45
IRONWORK BROOK	2633	10-YEAR	641.00	750.90	755.95	754.07	756.38	0.002073	5.24	125.21	29.70	0.44
IRONWORK BROOK	2633	25-YEAR	881.00	750.90	757.12	754.66	757.61	0.001802	5.70	158.85	30.13	0.42
IRONWORK BROOK	2633	50-YEAR	1080.00	750.90	759.25	755.15	759.63	0.000899	4.98	226.55	31.01	0.31
IRONWORK BROOK	2633	100-YEAR	1300.00	750.90	759.83	755.64	760.30	0.001018	5.56	244.68	32.34	0.34
IRONWORK BROOK	2633	500-YEAR	1900.00	750.90	761.76	756.81	762.35	0.001008	6.36	338.86	71.90	0.35
IRONWORK BROOK	2628	10-YEAR	641.00	750.54	755.87	754.03	756.36	0.002321	5.62	115.66	26.60	0.46
IRONWORK BROOK	2628	25-YEAR	881.00	750.54	757.00	754.69	757.59	0.002090	6.18	145.30	27.03	0.46
IRONWORK BROOK	2628	50-YEAR	1080.00	750.54	759.17	755.19	759.62	0.001049	5.43	206.79	27.82	0.34
IRONWORK BROOK	2628	100-YEAR	1300.00	750.54	759.72	755.69	760.29	0.001208	6.09	222.25	28.05	0.37
IRONWORK BROOK	2628	500-YEAR	1900.00	750.54	761.55	756.97	762.32	0.001291	7.18	288.40	44.04	0.40
IRONWORK BROOK	2623	10-YEAR	641.00	750.05	755.79	754.00	756.33	0.002516	5.90	110.24	25.29	0.48
IRONWORK BROOK	2623	25-YEAR	881.00	750.05	756.90	754.68	757.56	0.002333	6.54	137.42	25.86	0.48
IRONWORK BROOK	2623	50-YEAR	1080.00	750.05	759.11	755.19	759.60	0.001130	5.66	199.98	26.85	0.35
IRONWORK BROOK	2623	100-YEAR	1300.00	750.05	759.65	755.73	760.26	0.001314	6.37	214.38	26.97	0.38
IRONWORK BROOK	2623	500-YEAR	1900.00	750.05	761.52	757.06	762.31	0.001345	7.35	292.36	50.31	0.40
IRONWORK BROOK	2600		Bridge									
IRONWORK BROOK	2578	10-YEAR	641.00	750.00	754.95	753.13	755.40	0.002275	5.61	122.94	32.42	0.46
IRONWORK BROOK	2578	25-YEAR	881.00	750.00	756.08	753.75	756.62	0.002041	6.14	154.17	33.11	0.45
IRONWORK BROOK	2578	50-YEAR	1080.00	750.00	756.89	754.22	757.51	0.001957	6.57	176.68	33.60	0.45
IRONWORK BROOK	2578	100-YEAR	1300.00	750.00	757.71	754.71	758.41	0.001908	7.00	199.19	34.08	0.45
IRONWORK BROOK	2578	500-YEAR	1900.00	750.00	759.55	755.91	760.49	0.001921	8.14	250.02	41.00	0.47
IRONWORK BROOK	2560	10-YEAR	641.00	749.58	753.31	753.31	754.96	0.011617	10.47	69.13	23.55	0.98
IRONWORK BROOK	2560	25-YEAR	881.00	749.58	754.13	754.13	756.11	0.010642	11.53	89.77	26.37	0.97
IRONWORK BROOK	2560	50-YEAR	1080.00	749.58	754.77	754.77	756.96	0.009966	12.21	107.14	28.54	0.96
IRONWORK BROOK	2560	100-YEAR	1300.00	749.58	755.40	755.40	757.82	0.009464	12.89	125.98	30.71	0.96
IRONWORK BROOK	2560	500-YEAR	1900.00	749.58	757.01	757.01	759.86	0.008210	14.19	179.74	36.48	0.93
IRONWORK BROOK	2546	10-YEAR	641.00	749.53	752.85	753.15	754.75	0.016307	11.51	68.32	26.95	1.15
IRONWORK BROOK	2546	25-YEAR	881.00	749.53	753.43	753.90	755.88	0.017020	13.17	84.25	28.07	1.20
IRONWORK BROOK	2546	50-YEAR	1080.00	749.53	753.88	754.46	756.73	0.017027	14.23	97.32	28.98	1.23
IRONWORK BROOK	2546	100-YEAR	1300.00	749.53	754.42	755.07	757.59	0.016258	15.07	113.30	30.95	1.22
IRONWORK BROOK	2546	500-YEAR	1900.00	749.53	755.70	756.53	759.60	0.014842	16.91	155.90	35.40	1.22
IRONWORK BROOK	2475	10-YEAR	641.00	748.27	750.41	751.16	752.95	0.040486	12.85	52.12	30.69	1.66
IRONWORK BROOK	2475	25-YEAR	881.00	748.27	750.80	751.76	754.03	0.040112	14.53	64.37	31.74	1.70
IRONWORK BROOK	2475	50-YEAR	1080.00	748.27	751.09	752.22	754.86	0.040030	15.73	73.68	32.51	1.74
IRONWORK BROOK	2475	100-YEAR	1300.00	748.27	751.38	752.68	755.74	0.040242	16.94	83.19	33.27	1.77
IRONWORK BROOK	2475	500-YEAR	1900.00	748.27	752.13	753.84	757.81	0.038808	19.43	108.71	35.17	1.81
IRONWORK BROOK	2350	10-YEAR	641.00	744.52	748.22	748.38	749.98	0.013678	11.62	79.51	29.17	1.08
IRONWORK BROOK	2350	25-YEAR	881.00	744.52	749.00	749.19	751.09	0.012759	12.80	103.34	32.01	1.08
IRONWORK BROOK	2350	50-YEAR	1080.00	744.52	749.59	749.77	751.90	0.012166	13.59	122.65	34.12	1.08
IRONWORK BROOK	2350	100-YEAR	1300.00	744.52	750.16	750.39	752.72	0.011793	14.40	142.93	36.20	1.08
IRONWORK BROOK	2350	500-YEAR	1900.00	744.52	751.50	751.85	754.67	0.011357	16.32	194.41	41.00	1.10

HEC-RAS Plan: PRO_Alt 1&2 River: IRONWORK BROOK Reach: IRONWORK BROOK (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
IRONWORK BROOK	2255	10-YEAR	641.00	743.30	745.77	746.42	748.12	0.027759	12.70	59.51	29.54	1.44
IRONWORK BROOK	2255	25-YEAR	881.00	743.30	746.23	747.11	749.25	0.028479	14.46	73.54	31.06	1.51
IRONWORK BROOK	2255	50-YEAR	1080.00	743.30	746.59	747.62	750.09	0.028424	15.63	84.88	32.24	1.53
IRONWORK BROOK	2255	100-YEAR	1300.00	743.30	746.97	748.15	750.94	0.028043	16.71	97.23	33.48	1.55
IRONWORK BROOK	2255	500-YEAR	1900.00	743.30	747.92	749.42	752.92	0.026251	18.91	130.76	36.63	1.56
IRONWORK BROOK	2163	10-YEAR	641.00	741.50	744.69	744.80	746.15	0.013264	9.91	75.02	31.88	1.03
IRONWORK BROOK	2163	25-YEAR	881.00	741.50	745.19	745.46	747.12	0.014456	11.49	91.30	33.89	1.10
IRONWORK BROOK	2163	50-YEAR	1080.00	741.50	745.54	745.97	747.87	0.015358	12.65	103.49	35.25	1.15
IRONWORK BROOK	2163	100-YEAR	1300.00	741.50	745.89	746.48	748.65	0.016279	13.82	115.99	36.59	1.21
IRONWORK BROOK	2163	500-YEAR	1900.00	741.50	746.71	747.57	750.59	0.018274	16.54	147.13	39.74	1.32
IRONWORK BROOK	2050	10-YEAR	641.00	740.21	742.78	743.06	744.41	0.017667	10.52	70.67	32.78	1.16
IRONWORK BROOK	2050	25-YEAR	881.00	740.21	743.32	743.70	745.34	0.017105	11.78	89.07	34.85	1.18
IRONWORK BROOK	2050	50-YEAR	1080.00	740.21	743.72	744.17	746.05	0.016838	12.68	103.35	36.38	1.20
IRONWORK BROOK	2050	100-YEAR	1300.00	740.21	744.14	744.78	746.76	0.016386	13.50	119.06	43.14	1.20
IRONWORK BROOK	2050	500-YEAR	1900.00	740.21	745.03	746.14	748.48	0.016878	15.70	178.12	88.39	1.26

Plan: PRO_Alt 1&2 IRONWORK BROOK IRONWORK BROOK RS: 2600 Profile: 10-YEAR

E.G. US. (ft)	756.33	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	755.79	E.G. Elev (ft)	756.32	755.43
Q Total (cfs)	641.00	W.S. Elev (ft)	755.69	754.75
Q Bridge (cfs)	641.00	Crit W.S. (ft)	754.10	753.29
Q Weir (cfs)		Max Chl Dpth (ft)	5.64	4.75
Weir Sta Lft (ft)		Vel Total (ft/s)	6.35	6.54
Weir Sta Rgt (ft)		Flow Area (sq ft)	100.96	97.99
Weir Submerg		Froude # Chl	0.47	0.53
Weir Max Depth (ft)		Specif Force (cu ft)	364.35	349.88
Min El Weir Flow (ft)	760.59	Hydr Depth (ft)	4.58	4.45
Min El Prs (ft)	758.27	W.P. Total (ft)	31.29	26.47
Delta EG (ft)	0.93	Conv. Total (cfs)	9358.8	11045.3
Delta WS (ft)	0.84	Top Width (ft)	22.06	22.04
BR Open Area (sq ft)	156.14	Frctn Loss (ft)		
BR Open Vel (ft/s)	6.54	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.94	0.78
BR Sel Method	Momentum	Power Total (lb/ft s)	6.00	5.09

Plan: PRO_Alt 1&2 IRONWORK BROOK IRONWORK BROOK RS: 2600 Profile: 25-YEAR

E.G. US. (ft)	757.56	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	756.90	E.G. Elev (ft)	757.55	756.65
Q Total (cfs)	881.00	W.S. Elev (ft)	756.78	755.82
Q Bridge (cfs)	881.00	Crit W.S. (ft)	754.77	754.00
Q Weir (cfs)		Max Chl Dpth (ft)	6.73	5.82
Weir Sta Lft (ft)		Vel Total (ft/s)	7.06	7.25
Weir Sta Rgt (ft)		Flow Area (sq ft)	124.83	121.57
Weir Submerg		Froude # Chl	0.48	0.53
Weir Max Depth (ft)		Specif Force (cu ft)	553.38	536.01
Min El Weir Flow (ft)	760.59	Hydr Depth (ft)	5.67	5.52
Min El Prs (ft)	758.27	W.P. Total (ft)	33.46	27.54
Delta EG (ft)	0.94	Conv. Total (cfs)	12749.3	15810.0
Delta WS (ft)	0.82	Top Width (ft)	22.03	22.02
BR Open Area (sq ft)	156.14	Frctn Loss (ft)		
BR Open Vel (ft/s)	7.25	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	1.11	0.86
BR Sel Method	Momentum	Power Total (lb/ft s)	7.85	6.20

Plan: PRO_Alt 1&2 IRONWORK BROOK IRONWORK BROOK RS: 2600 Profile: 50-YEAR

E.G. US. (ft)	759.60	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	759.11	E.G. Elev (ft)	759.60	757.51
Q Total (cfs)	1080.00	W.S. Elev (ft)	758.27	756.89
Q Bridge (cfs)	1080.00	Crit W.S. (ft)	755.32	754.51
Q Weir (cfs)		Max Chl Dpth (ft)	8.22	6.89
Weir Sta Lft (ft)		Vel Total (ft/s)	6.92	7.44
Weir Sta Rgt (ft)		Flow Area (sq ft)	156.14	145.08
Weir Submerg		Froude # Chl	0.43	0.50
Weir Max Depth (ft)		Specif Force (cu ft)	803.03	730.20
Min El Weir Flow (ft)	760.59	Hydr Depth (ft)		6.59
Min El Prs (ft)	758.27	W.P. Total (ft)	58.30	28.61
Delta EG (ft)	2.09	Conv. Total (cfs)	12784.1	21219.8
Delta WS (ft)	2.22	Top Width (ft)		22.01
BR Open Area (sq ft)	156.14	Frctn Loss (ft)		
BR Open Vel (ft/s)	6.92	C & E Loss (ft)		

Plan: PRO_Alt 1&2 IRONWORK BROOK IRONWORK BROOK RS: 2600 Profile: 50-YEAR (Continued)

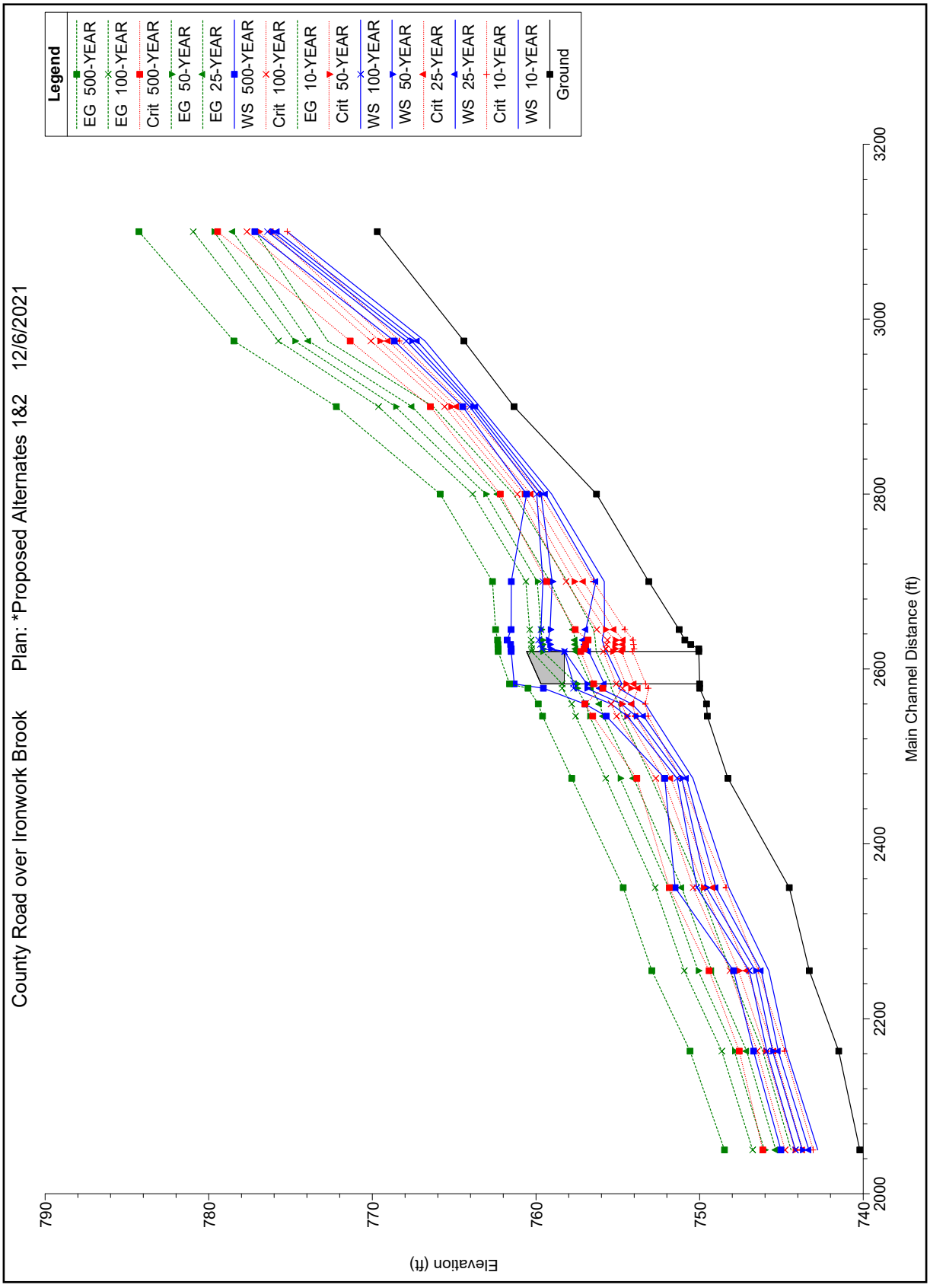
BR Sluice Coef	0.39	Shear Total (lb/sq ft)	1.19	0.82
BR Sel Method	Press Only	Power Total (lb/ft s)	8.25	6.11

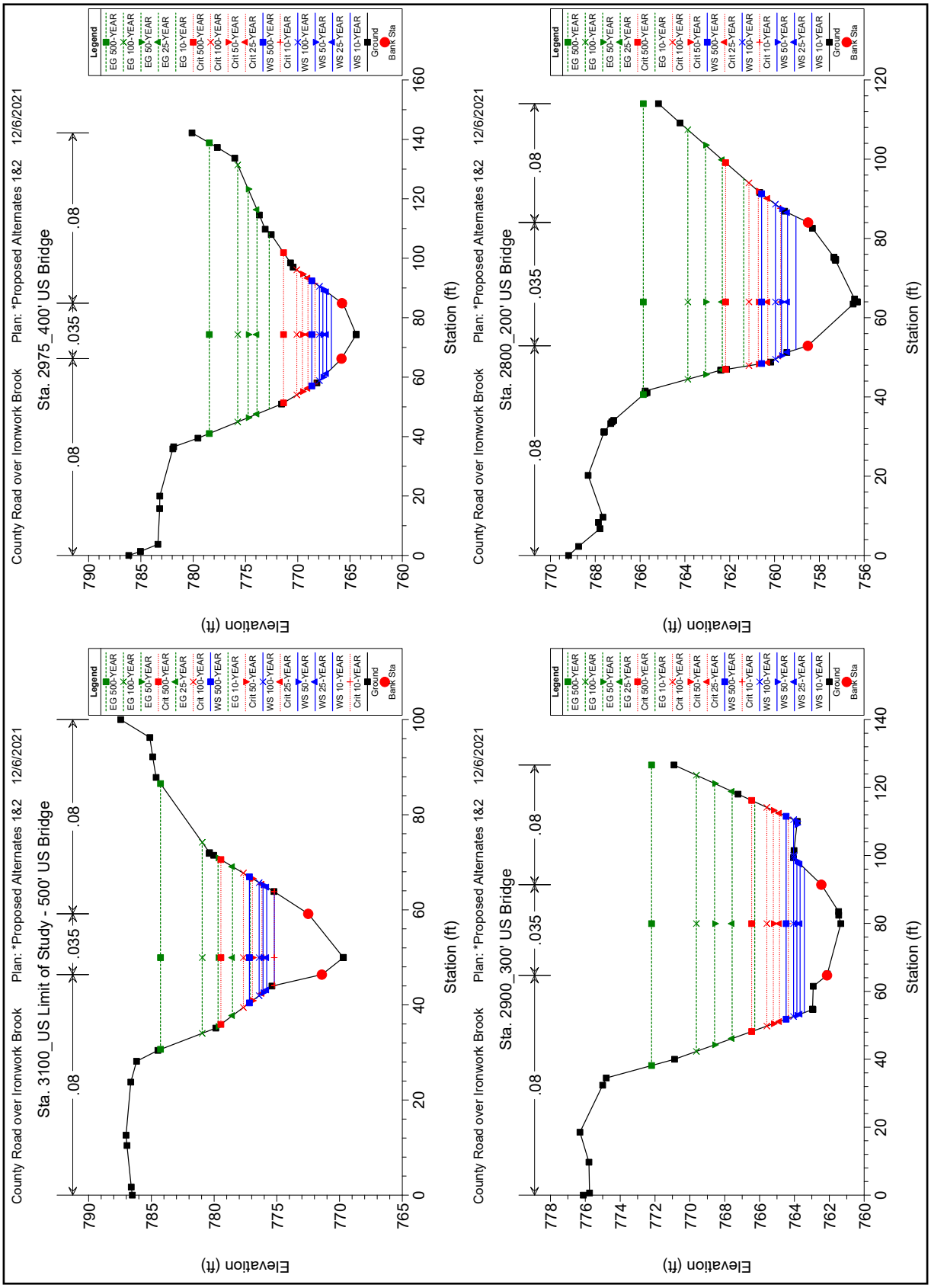
Plan: PRO_Alt 1&2 IRONWORK BROOK IRONWORK BROOK RS: 2600 Profile: 100-YEAR

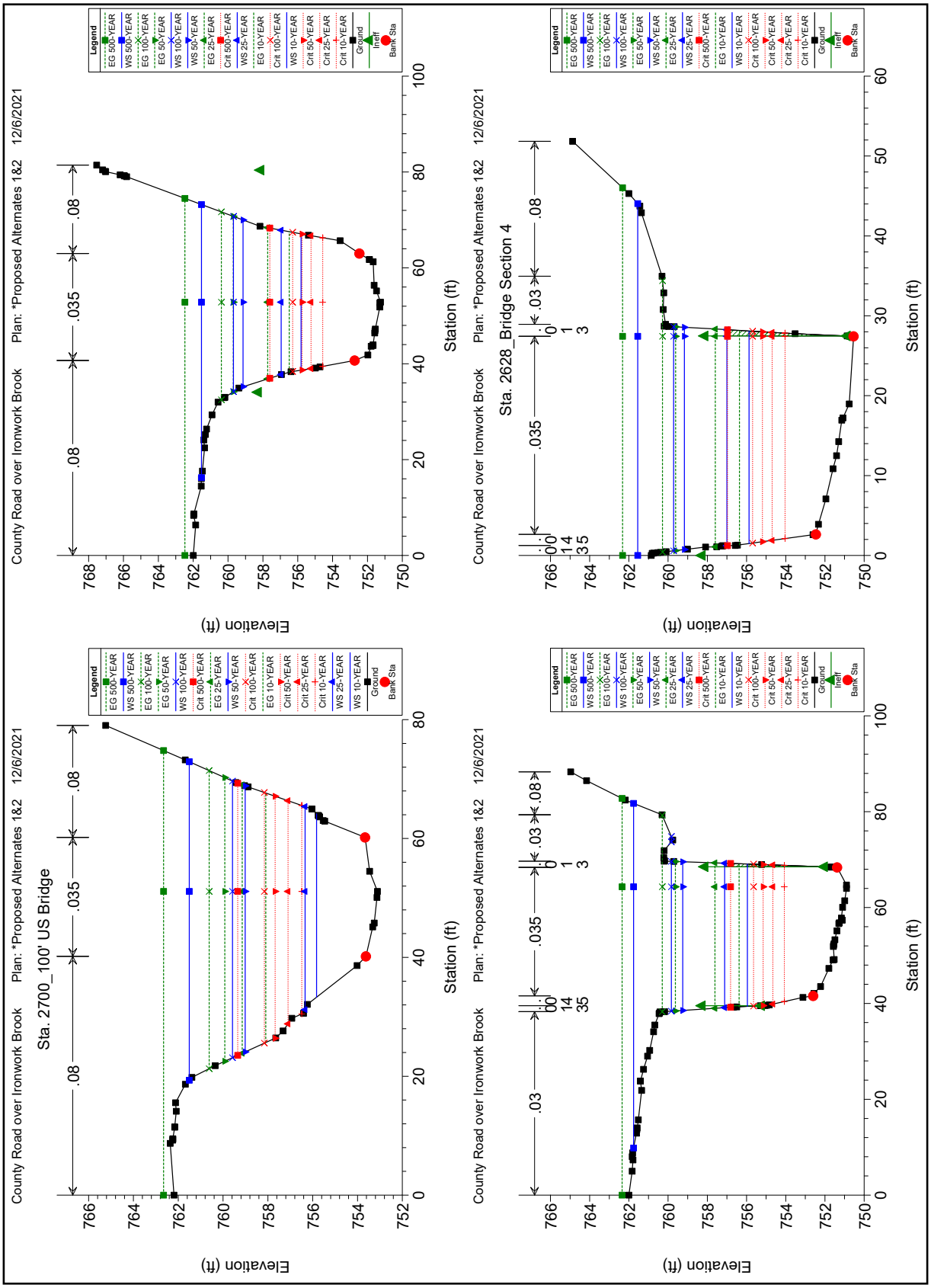
E.G. US. (ft)	760.26	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	759.65	E.G. Elev (ft)	760.26	758.41
Q Total (cfs)	1300.00	W.S. Elev (ft)	758.27	757.71
Q Bridge (cfs)	1300.00	Crit W.S. (ft)	755.88	755.10
Q Weir (cfs)		Max Chl Dpth (ft)	8.22	7.71
Weir Sta Lft (ft)		Vel Total (ft/s)	8.33	7.98
Weir Sta Rgt (ft)		Flow Area (sq ft)	156.14	163.01
Weir Submerg		Froude # Chl	0.51	0.51
Weir Max Depth (ft)		Specif Force (cu ft)	907.25	928.49
Min El Weir Flow (ft)	760.59	Hydr Depth (ft)		7.41
Min El Prs (ft)	758.27	W.P. Total (ft)	58.30	29.42
Delta EG (ft)	1.86	Conv. Total (cfs)	12784.1	25761.7
Delta WS (ft)	1.94	Top Width (ft)		22.01
BR Open Area (sq ft)	156.14	Frctn Loss (ft)		
BR Open Vel (ft/s)	8.33	C & E Loss (ft)		
BR Sluice Coef	0.44	Shear Total (lb/sq ft)	1.73	0.88
BR Sel Method	Press Only	Power Total (lb/ft s)	14.39	7.02

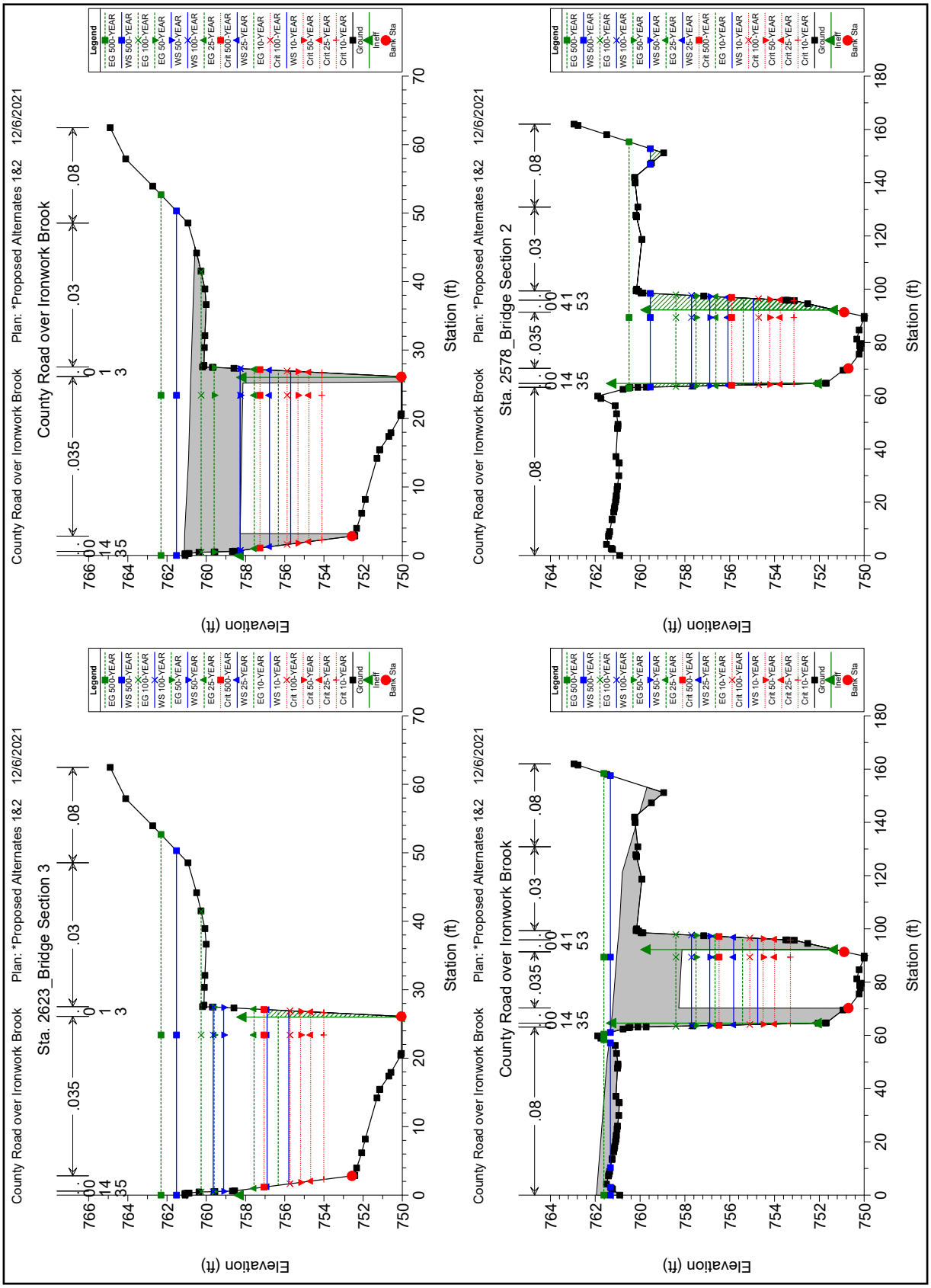
Plan: PRO_Alt 1&2 IRONWORK BROOK IRONWORK BROOK RS: 2600 Profile: 500-YEAR

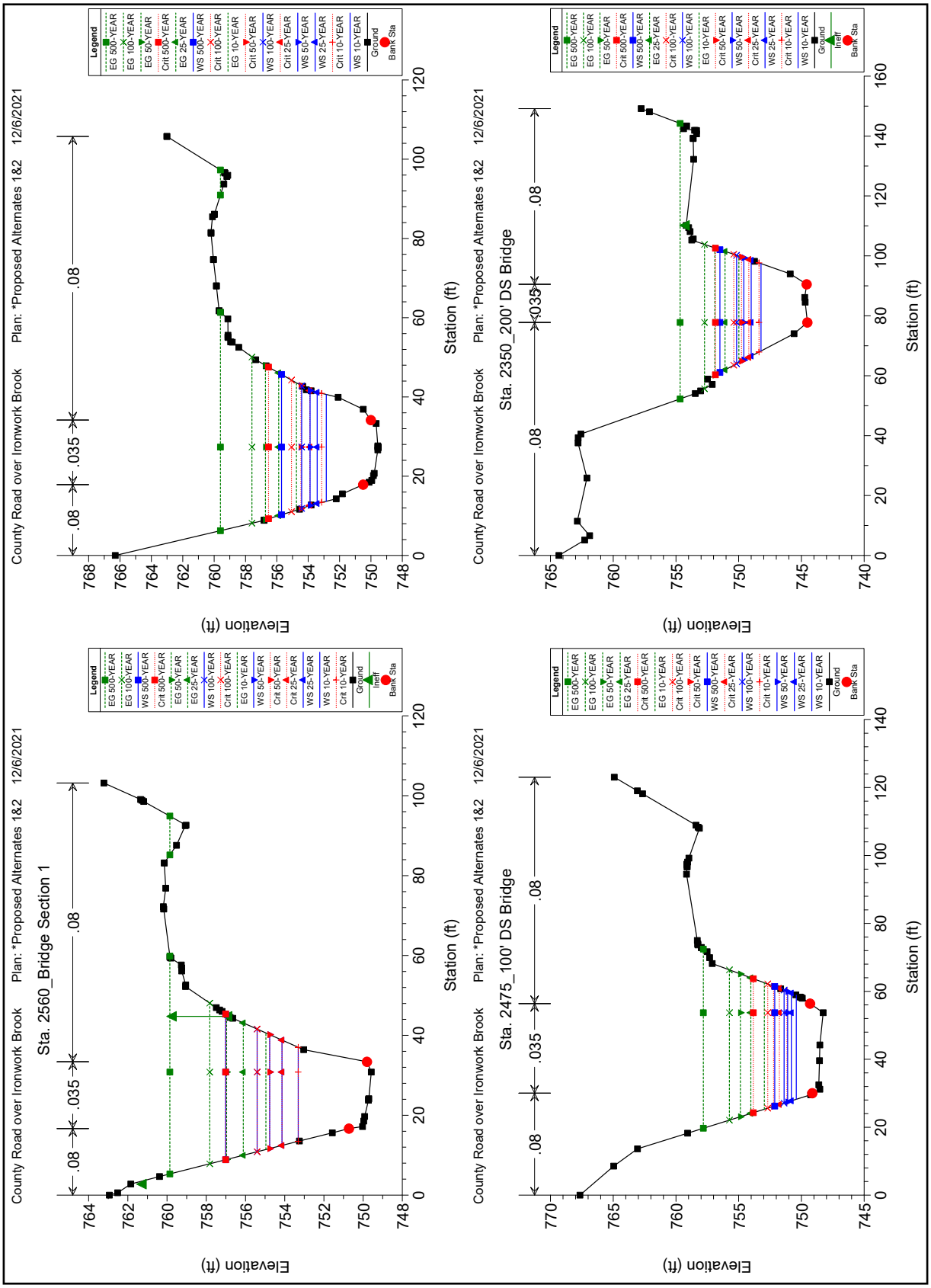
E.G. US. (ft)	762.31	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	761.52	E.G. Elev (ft)	762.31	761.62
Q Total (cfs)	1900.00	W.S. Elev (ft)	761.52	761.33
Q Bridge (cfs)	1665.63	Crit W.S. (ft)	757.26	756.48
Q Weir (cfs)	234.37	Max Chl Dpth (ft)	11.47	11.33
Weir Sta Lft (ft)	0.00	Vel Total (ft/s)	10.00	8.28
Weir Sta Rgt (ft)	52.69	Flow Area (sq ft)	190.09	229.42
Weir Submerg	0.00	Froude # Chl	0.53	0.50
Weir Max Depth (ft)	1.73	Specif Force (cu ft)	1688.50	1811.73
Min El Weir Flow (ft)	760.59	Hydr Depth (ft)	3.78	2.38
Min El Prs (ft)	758.27	W.P. Total (ft)	109.12	155.62
Delta EG (ft)	1.82	Conv. Total (cfs)		
Delta WS (ft)	1.97	Top Width (ft)	50.31	96.49
BR Open Area (sq ft)	156.14	Frctn Loss (ft)		
BR Open Vel (ft/s)	10.67	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)		
BR Sel Method	Press/Weir	Power Total (lb/ft s)		

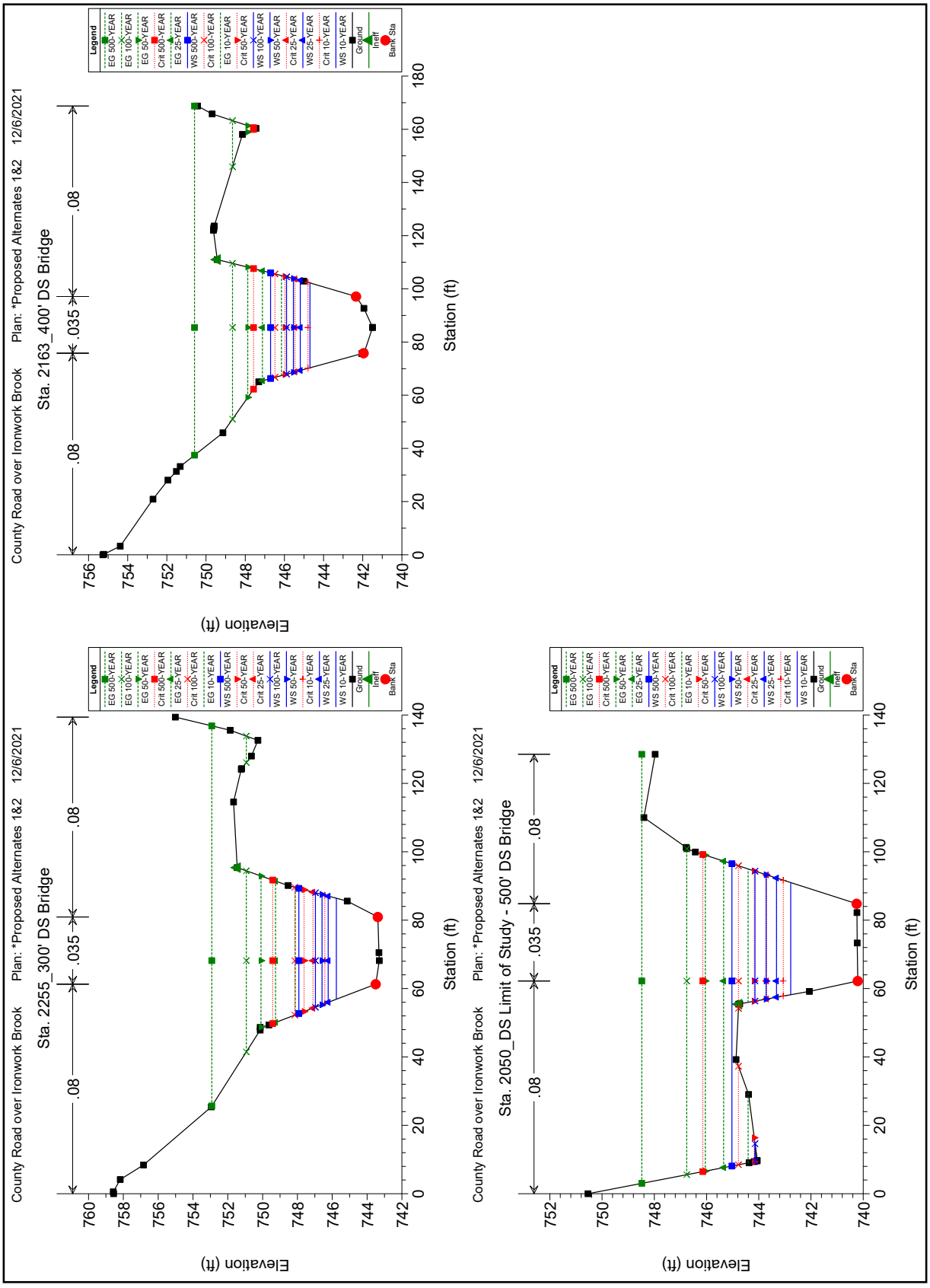

County Road over Ironwork Brook Plan: *Proposed Alternates 1&2 12/6/2021
Legend
EG 500-YEAR
EG 100-YEAR
Crit 500-YEAR
EG 50-YEAR
EG 25-YEAR
WS 500-YEAR
Crit 100-YEAR
EG 10-YEAR
Crit 50-YEAR
WS 100-YEAR
WS 50-YEAR
Crit 25-YEAR
WS 25-YEAR
Crit 10-YEAR
WS 10-YEAR
Ground
Elevation (ft)
790
780
770
760
750
740
Main Channel Distance (ft)
2000
2200
2400
2600
2800
3000
3200


County Road over Ironwork Brook Plan: *Proposed Alternates 1&2 12/6/2021
Sta. 2975_400' US Bridge
Sta. 2800_200' US Bridge
Sta. 2900_300' US Bridge
Sta. 3100_US Limit of Study - 500' US Bridge
.08
.035
.08
Elevation (ft)
Station (ft)
Legend
EG 500-YEAR
EG 100-YEAR
EG 50-YEAR
EG 25-YEAR
EG 10-YEAR
Crit 500-YEAR
Crit 100-YEAR
Crit 50-YEAR
Crit 25-YEAR
Crit 10-YEAR
WS 500-YEAR
WS 100-YEAR
WS 50-YEAR
WS 25-YEAR
WS 10-YEAR
Ground
Bank Sta


County Road over Ironwork Brook
Plan: *Proposed Alternates 1&2
12/6/2021
Sta. 2700_100' US Bridge
Sta. 2628_Bridge Section 4
Elevation (ft)
Station (ft)
Legend
EG 500-YEAR
WS 500-YEAR
EG 100-YEAR
EG 50-YEAR
WS 100-YEAR
WS 50-YEAR
EG 25-YEAR
Crit 500-YEAR
WS 25-YEAR
EG 10-YEAR
Crit 100-YEAR
WS 10-YEAR
Crit 50-YEAR
Crit 25-YEAR
Crit 10-YEAR
Ground
Ineff
Bank Sta
.08
.035
.08
.03
.08
.03
.035
.08


County Road over Ironwork Brook
Plan: *Proposed Alternates 1&2
12/6/2021
County Road over Ironwork Brook
Sta. 2578_Bridge Section 2
Sta. 2623_Bridge Section 3
Elevation (ft)
Station (ft)
Legend
EG 500-YEAR
WS 500-YEAR
EG 100-YEAR
WS 100-YEAR
EG 50-YEAR
WS 50-YEAR
EG 25-YEAR
WS 25-YEAR
EG 10-YEAR
WS 10-YEAR
Crit 500-YEAR
Crit 100-YEAR
Crit 50-YEAR
Crit 25-YEAR
Crit 10-YEAR
Ground
Ineff
Bank Sta


County Road over Ironwork Brook
Plan: *Proposed Alternates 1&2
12/6/2021
Sta. 2560_Bridge Section 1
Sta. 2350_200' DS Bridge
Sta. 2475_100' DS Bridge
Elevation (ft)
Station (ft)
.08
.035
.08
Legend
EG 500-YEAR
EG 100-YEAR
EG 50-YEAR
Crit 500-YEAR
EG 25-YEAR
WS 500-YEAR
Crit 100-YEAR
EG 10-YEAR
Crit 50-YEAR
WS 100-YEAR
Crit 25-YEAR
WS 50-YEAR
WS 25-YEAR
Crit 10-YEAR
WS 10-YEAR
Ground
Ineff
Bank Sta


County Road over Ironwork Brook Plan: *Proposed Alternates 1&2 12/6/2021
Sta. 2163_400' DS Bridge
.08
.035
.08
Elevation (ft)
Station (ft)
Legend
EG 500-YEAR
EG 100-YEAR
EG 50-YEAR
Crit 50-YEAR
EG 25-YEAR
WS 500-YEAR
Crit 100-YEAR
EG 10-YEAR
Crit 25-YEAR
WS 100-YEAR
WS 50-YEAR
Crit 10-YEAR
WS 25-YEAR
WS 10-YEAR
Ground
Ineff
Bank Sta
County Road over Ironwork Brook Plan: *Proposed Alternates 1&2 12/6/2021
Sta. 2255_300' DS Bridge
.08
.035
.08
Elevation (ft)
Station (ft)
County Road over Ironwork Brook Plan: *Proposed Alternates 1&2 12/6/2021
Sta. 2050_DS Limit of Study - 500' DS Bridge
.08
.035
.08
Elevation (ft)
Station (ft)

Appendix 7.3.3

PROPOSED ALTERNATIVE 3 ANALYSIS RESULTS

Proposed Alternative 3 Model

HEC-RAS Profile Output Table
HEC-RAS Bridge Output Tables
Water Surface Profiles
Cross Sections

HEC-RAS Plan: PRO_Alt 3 River: IRONWORK BROOK Reach: IRONWORK BROOK

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
IRONWORK BROOK	3100	10-YEAR	641.00	769.70	775.20	775.20	777.14	0.011229	11.35	65.14	19.72	0.97
IRONWORK BROOK	3100	25-YEAR	881.00	769.70	775.81	776.20	778.53	0.013337	13.52	77.63	21.63	1.08
IRONWORK BROOK	3100	50-YEAR	1080.00	769.70	776.10	776.96	779.68	0.016349	15.56	84.05	22.67	1.21
IRONWORK BROOK	3100	100-YEAR	1300.00	769.70	776.41	777.70	780.95	0.019260	17.56	91.25	23.77	1.32
IRONWORK BROOK	3100	500-YEAR	1900.00	769.70	777.18	779.47	784.27	0.025646	22.12	110.61	26.52	1.56
IRONWORK BROOK	2975	10-YEAR	641.00	764.41	766.78	768.35	772.73	0.107344	19.73	34.95	24.72	2.66
IRONWORK BROOK	2975	25-YEAR	881.00	764.41	767.25	769.06	773.90	0.088255	21.01	47.11	27.53	2.51
IRONWORK BROOK	2975	50-YEAR	1080.00	764.41	767.60	769.56	774.75	0.078789	21.92	57.10	29.64	2.43
IRONWORK BROOK	2975	100-YEAR	1300.00	764.41	767.93	770.09	775.75	0.073748	23.03	67.31	31.65	2.40
IRONWORK BROOK	2975	500-YEAR	1900.00	764.41	768.65	771.37	778.47	0.070359	26.15	91.59	35.35	2.44
IRONWORK BROOK	2900	10-YEAR	641.00	761.34	763.43	764.36	766.28	0.053639	13.81	53.42	42.50	1.88
IRONWORK BROOK	2900	25-YEAR	881.00	761.34	763.68	764.87	767.57	0.061854	16.27	64.16	44.18	2.07
IRONWORK BROOK	2900	50-YEAR	1080.00	761.34	763.86	765.23	768.58	0.067039	18.00	72.39	46.47	2.19
IRONWORK BROOK	2900	100-YEAR	1300.00	761.34	764.05	765.59	769.63	0.071504	19.67	82.05	57.20	2.29
IRONWORK BROOK	2900	500-YEAR	1900.00	761.34	764.48	766.47	772.20	0.080724	23.46	107.49	59.74	2.51
IRONWORK BROOK	2800	10-YEAR	641.00	756.30	759.04	759.73	761.37	0.042440	12.25	52.89	33.56	1.67
IRONWORK BROOK	2800	25-YEAR	881.00	756.30	759.42	760.31	762.33	0.040585	13.71	65.84	35.24	1.69
IRONWORK BROOK	2800	50-YEAR	1080.00	756.30	759.69	760.74	763.08	0.040149	14.82	75.61	37.07	1.71
IRONWORK BROOK	2800	100-YEAR	1300.00	756.30	759.96	761.16	763.87	0.040280	15.95	85.73	39.11	1.75
IRONWORK BROOK	2800	500-YEAR	1900.00	756.30	760.58	762.22	765.86	0.041263	18.62	111.18	42.86	1.83
IRONWORK BROOK	2700	10-YEAR	641.00	753.11	755.83	756.51	758.09	0.025922	12.39	60.51	30.84	1.40
IRONWORK BROOK	2700	25-YEAR	881.00	753.11	756.34	757.11	759.14	0.025193	13.88	77.19	34.17	1.42
IRONWORK BROOK	2700	50-YEAR	1080.00	753.11	756.71	757.69	759.91	0.024819	14.91	90.31	35.76	1.44
IRONWORK BROOK	2700	100-YEAR	1300.00	753.11	758.99	758.18	760.32	0.005501	9.93	183.23	44.70	0.74
IRONWORK BROOK	2700	500-YEAR	1900.00	753.11	760.24	759.35	761.98	0.005662	11.52	241.36	48.79	0.78
IRONWORK BROOK	2645	10-YEAR	641.00	751.25	755.38	754.65	756.25	0.005633	7.78	92.28	28.40	0.70
IRONWORK BROOK	2645	25-YEAR	881.00	751.25	756.50	755.33	757.42	0.004347	8.10	125.73	31.63	0.64
IRONWORK BROOK	2645	50-YEAR	1080.00	751.25	757.35	755.85	758.31	0.003693	8.31	153.88	34.12	0.61
IRONWORK BROOK	2645	100-YEAR	1300.00	751.25	759.12	756.40	759.85	0.002025	7.35	218.87	39.27	0.47
IRONWORK BROOK	2645	500-YEAR	1900.00	751.25	760.40	757.72	761.43	0.002399	8.87	270.36	41.30	0.53
IRONWORK BROOK	2633	10-YEAR	641.00	750.90	755.47	754.15	755.99	0.003061	6.00	118.17	34.04	0.52
IRONWORK BROOK	2633	25-YEAR	881.00	750.90	756.60	754.78	757.16	0.002428	6.28	157.58	35.61	0.48
IRONWORK BROOK	2633	50-YEAR	1080.00	750.90	757.46	755.25	758.06	0.002119	6.49	188.77	36.80	0.46
IRONWORK BROOK	2633	100-YEAR	1300.00	750.90	759.20	755.72	759.68	0.001253	5.90	254.78	39.20	0.37
IRONWORK BROOK	2633	500-YEAR	1900.00	750.90	760.50	756.84	761.22	0.001544	7.25	306.84	40.99	0.42
IRONWORK BROOK	2628	10-YEAR	641.00	750.45	755.38	754.06	755.96	0.003298	6.56	113.70	30.41	0.55
IRONWORK BROOK	2628	25-YEAR	881.00	750.45	756.47	754.70	757.12	0.002824	7.03	147.70	32.06	0.53
IRONWORK BROOK	2628	50-YEAR	1080.00	750.45	757.31	755.18	758.01	0.002551	7.34	175.06	33.32	0.51
IRONWORK BROOK	2628	100-YEAR	1300.00	750.45	759.08	755.68	759.65	0.001521	6.67	236.33	35.99	0.41
IRONWORK BROOK	2628	500-YEAR	1900.00	750.45	760.29	756.91	761.16	0.001958	8.31	280.98	37.68	0.48
IRONWORK BROOK	2623	10-YEAR	641.00	750.00	755.41	753.73	755.90	0.002530	5.94	123.71	30.97	0.48
IRONWORK BROOK	2623	25-YEAR	881.00	750.00	756.50	754.38	757.07	0.002276	6.48	158.33	32.75	0.48
IRONWORK BROOK	2623	50-YEAR	1080.00	750.00	757.34	754.86	757.96	0.002090	6.80	186.27	34.07	0.47
IRONWORK BROOK	2623	100-YEAR	1300.00	750.00	759.10	755.37	759.62	0.001307	6.29	248.52	36.72	0.38
IRONWORK BROOK	2623	500-YEAR	1900.00	750.00	760.31	756.58	761.12	0.001730	7.92	294.31	39.72	0.45
IRONWORK BROOK	2600		Bridge									
IRONWORK BROOK	2578	10-YEAR	641.00	750.00	754.59	752.94	754.96	0.002102	5.13	141.22	38.85	0.44
IRONWORK BROOK	2578	25-YEAR	881.00	750.00	755.64	753.50	756.05	0.001820	5.52	182.72	40.85	0.42
IRONWORK BROOK	2578	50-YEAR	1080.00	750.00	756.44	753.92	756.90	0.001646	5.77	216.42	42.39	0.41
IRONWORK BROOK	2578	100-YEAR	1300.00	750.00	757.25	754.35	757.73	0.001526	6.02	250.90	43.92	0.40
IRONWORK BROOK	2578	500-YEAR	1900.00	750.00	759.14	755.38	759.72	0.001344	6.64	333.13	52.51	0.39
IRONWORK BROOK	2560	10-YEAR	641.00	749.58	754.10	753.09	754.87	0.004550	7.50	100.87	29.76	0.64
IRONWORK BROOK	2560	25-YEAR	881.00	749.58	755.07	753.82	755.96	0.004095	8.14	131.33	32.64	0.62
IRONWORK BROOK	2560	50-YEAR	1080.00	749.58	755.86	754.36	756.80	0.003685	8.47	158.06	34.98	0.61
IRONWORK BROOK	2560	100-YEAR	1300.00	749.58	756.64	754.89	757.64	0.003418	8.84	186.01	37.26	0.59
IRONWORK BROOK	2560	500-YEAR	1900.00	749.58	758.48	756.22	759.63	0.002987	9.68	260.02	43.91	0.58
IRONWORK BROOK	2546	10-YEAR	641.00	749.53	753.16	753.16	754.70	0.011634	10.37	76.97	27.56	0.98
IRONWORK BROOK	2546	25-YEAR	881.00	749.53	753.91	753.91	755.78	0.011090	11.53	98.07	29.04	0.99
IRONWORK BROOK	2546	50-YEAR	1080.00	749.53	754.48	754.48	756.60	0.010742	12.35	115.15	31.17	1.00
IRONWORK BROOK	2546	100-YEAR	1300.00	749.53	755.10	755.10	757.43	0.010142	13.02	135.08	33.31	0.99
IRONWORK BROOK	2546	500-YEAR	1900.00	749.53	756.55	756.55	759.40	0.009242	14.57	187.10	38.31	0.98
IRONWORK BROOK	2475	10-YEAR	641.00	748.27	750.34	751.17	753.10	0.046561	13.41	49.81	30.46	1.77
IRONWORK BROOK	2475	25-YEAR	881.00	748.27	750.73	751.78	754.20	0.045171	15.06	61.91	31.54	1.80
IRONWORK BROOK	2475	50-YEAR	1080.00	748.27	751.02	752.22	755.04	0.044437	16.23	71.18	32.30	1.82
IRONWORK BROOK	2475	100-YEAR	1300.00	748.27	751.32	752.71	755.90	0.043575	17.35	81.02	33.10	1.84
IRONWORK BROOK	2475	500-YEAR	1900.00	748.27	752.09	753.86	757.91	0.040276	19.65	107.35	35.08	1.84
IRONWORK BROOK	2350	10-YEAR	641.00	744.52	748.26	748.38	749.98	0.013209	11.49	80.54	29.30	1.07
IRONWORK BROOK	2350	25-YEAR	881.00	744.52	749.02	749.19	751.09	0.012603	12.75	103.82	32.06	1.07
IRONWORK BROOK	2350	50-YEAR	1080.00	744.52	749.58	749.77	751.90	0.012203	13.60	122.51	34.10	1.08
IRONWORK BROOK	2350	100-YEAR	1300.00	744.52	750.14	750.39	752.72	0.011952	14.46	142.20	36.12	1.09
IRONWORK BROOK	2350	500-YEAR	1900.00	744.52	751.46	751.85	754.68	0.011574	16.42	192.98	40.88	1.11

HEC-RAS Plan: PRO_Alt 3 River: IRONWORK BROOK Reach: IRONWORK BROOK (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
IRONWORK BROOK	2255	10-YEAR	641.00	743.30	745.76	746.42	748.14	0.028205	12.76	59.18	29.50	1.45
IRONWORK BROOK	2255	25-YEAR	881.00	743.30	746.23	747.11	749.26	0.028610	14.48	73.42	31.05	1.51
IRONWORK BROOK	2255	50-YEAR	1080.00	743.30	746.59	747.62	750.09	0.028396	15.62	84.91	32.25	1.53
IRONWORK BROOK	2255	100-YEAR	1300.00	743.30	746.97	748.15	750.93	0.027949	16.69	97.35	33.49	1.55
IRONWORK BROOK	2255	500-YEAR	1900.00	743.30	747.92	749.42	752.91	0.026185	18.89	130.88	36.64	1.56
IRONWORK BROOK	2163	10-YEAR	641.00	741.50	744.70	744.80	746.15	0.013175	9.89	75.20	31.91	1.02
IRONWORK BROOK	2163	25-YEAR	881.00	741.50	745.19	745.46	747.12	0.014435	11.49	91.35	33.90	1.10
IRONWORK BROOK	2163	50-YEAR	1080.00	741.50	745.54	745.97	747.87	0.015361	12.65	103.49	35.25	1.15
IRONWORK BROOK	2163	100-YEAR	1300.00	741.50	745.89	746.48	748.65	0.016287	13.83	115.97	36.59	1.21
IRONWORK BROOK	2163	500-YEAR	1900.00	741.50	746.70	747.57	750.59	0.018285	16.54	147.10	39.73	1.32
IRONWORK BROOK	2050	10-YEAR	641.00	740.21	742.78	743.06	744.41	0.017667	10.52	70.67	32.78	1.16
IRONWORK BROOK	2050	25-YEAR	881.00	740.21	743.32	743.70	745.34	0.017116	11.78	89.05	34.85	1.18
IRONWORK BROOK	2050	50-YEAR	1080.00	740.21	743.72	744.17	746.05	0.016840	12.68	103.34	36.38	1.20
IRONWORK BROOK	2050	100-YEAR	1300.00	740.21	744.14	744.78	746.76	0.016379	13.50	119.08	43.17	1.20
IRONWORK BROOK	2050	500-YEAR	1900.00	740.21	745.03	746.14	748.48	0.016871	15.70	178.16	88.39	1.26

Plan: PRO_Alt 3 IRONWORK BROOK IRONWORK BROOK RS: 2600 Profile: 10-YEAR

E.G. US. (ft)	755.90	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	755.41	E.G. Elev (ft)	755.90	754.98
Q Total (cfs)	641.00	W.S. Elev (ft)	755.34	754.52
Q Bridge (cfs)	641.00	Crit W.S. (ft)	753.75	752.95
Q Weir (cfs)		Max Chl Dpth (ft)	5.34	4.52
Weir Sta Lft (ft)		Vel Total (ft/s)	5.50	5.05
Weir Sta Rgt (ft)		Flow Area (sq ft)	116.49	126.82
Weir Submerg		Froude # Chl	0.46	0.45
Weir Max Depth (ft)		Specif Force (cu ft)	375.41	363.06
Min El Weir Flow (ft)	760.67	Hydr Depth (ft)	3.97	3.96
Min El Prs (ft)	758.45	W.P. Total (ft)	34.33	37.48
Delta EG (ft)	0.94	Conv. Total (cfs)	11854.0	12610.5
Delta WS (ft)	0.82	Top Width (ft)	29.32	32.06
BR Open Area (sq ft)	209.05	Frctn Loss (ft)		
BR Open Vel (ft/s)	5.50	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.62	0.55
BR Sel Method	Momentum	Power Total (lb/ft s)	3.41	2.76

Plan: PRO_Alt 3 IRONWORK BROOK IRONWORK BROOK RS: 2600 Profile: 25-YEAR

E.G. US. (ft)	757.07	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	756.50	E.G. Elev (ft)	757.07	756.08
Q Total (cfs)	881.00	W.S. Elev (ft)	756.41	755.52
Q Bridge (cfs)	881.00	Crit W.S. (ft)	754.43	753.52
Q Weir (cfs)		Max Chl Dpth (ft)	6.41	5.52
Weir Sta Lft (ft)		Vel Total (ft/s)	5.92	5.55
Weir Sta Rgt (ft)		Flow Area (sq ft)	148.74	158.75
Weir Submerg		Froude # Chl	0.46	0.45
Weir Max Depth (ft)		Specif Force (cu ft)	575.07	560.86
Min El Weir Flow (ft)	760.67	Hydr Depth (ft)	4.79	4.95
Min El Prs (ft)	758.45	W.P. Total (ft)	37.44	39.47
Delta EG (ft)	1.02	Conv. Total (cfs)	17064.5	17963.8
Delta WS (ft)	0.87	Top Width (ft)	31.06	32.04
BR Open Area (sq ft)	209.05	Frctn Loss (ft)		
BR Open Vel (ft/s)	5.92	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.66	0.60
BR Sel Method	Momentum	Power Total (lb/ft s)	3.92	3.35

Plan: PRO_Alt 3 IRONWORK BROOK IRONWORK BROOK RS: 2600 Profile: 50-YEAR

E.G. US. (ft)	757.96	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	757.34	E.G. Elev (ft)	757.97	756.93
Q Total (cfs)	1080.00	W.S. Elev (ft)	757.23	756.29
Q Bridge (cfs)	1080.00	Crit W.S. (ft)	754.95	753.96
Q Weir (cfs)		Max Chl Dpth (ft)	7.23	6.29
Weir Sta Lft (ft)		Vel Total (ft/s)	6.17	5.89
Weir Sta Rgt (ft)		Flow Area (sq ft)	174.95	183.47
Weir Submerg		Froude # Chl	0.45	0.45
Weir Max Depth (ft)		Specif Force (cu ft)	758.63	742.90
Min El Weir Flow (ft)	760.67	Hydr Depth (ft)	5.47	5.73
Min El Prs (ft)	758.45	W.P. Total (ft)	39.38	41.02
Delta EG (ft)	1.06	Conv. Total (cfs)	21746.0	22580.2
Delta WS (ft)	0.89	Top Width (ft)	32.02	32.03
BR Open Area (sq ft)	209.05	Frctn Loss (ft)		
BR Open Vel (ft/s)	6.17	C & E Loss (ft)		

Plan: PRO_Alt 3 IRONWORK BROOK IRONWORK BROOK RS: 2600 Profile: 50-YEAR (Continued)

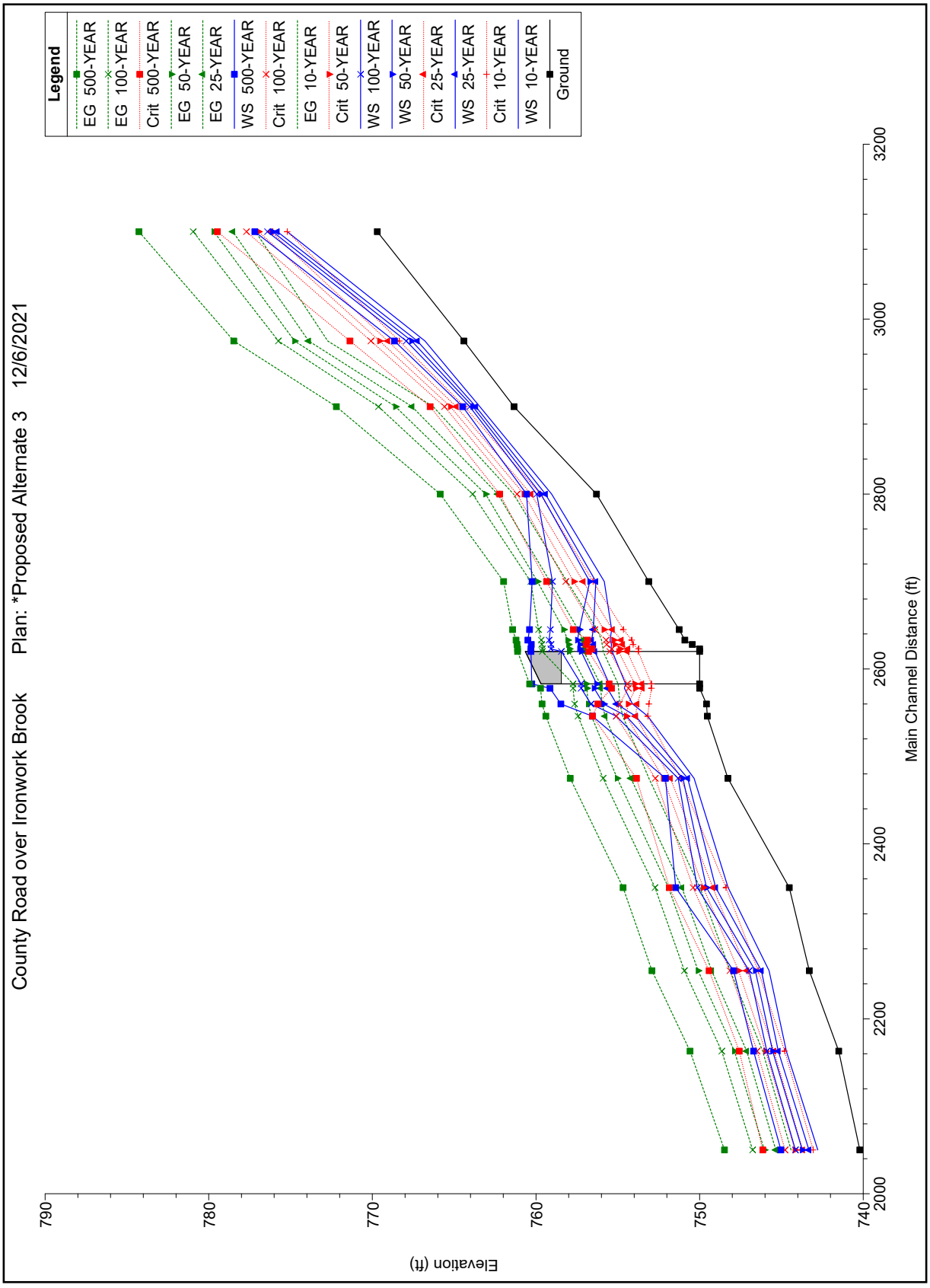
BR Sluice Coef		Shear Total (lb/sq ft)	0.68	0.64
BR Sel Method	Momentum	Power Total (lb/ft s)	4.22	3.76

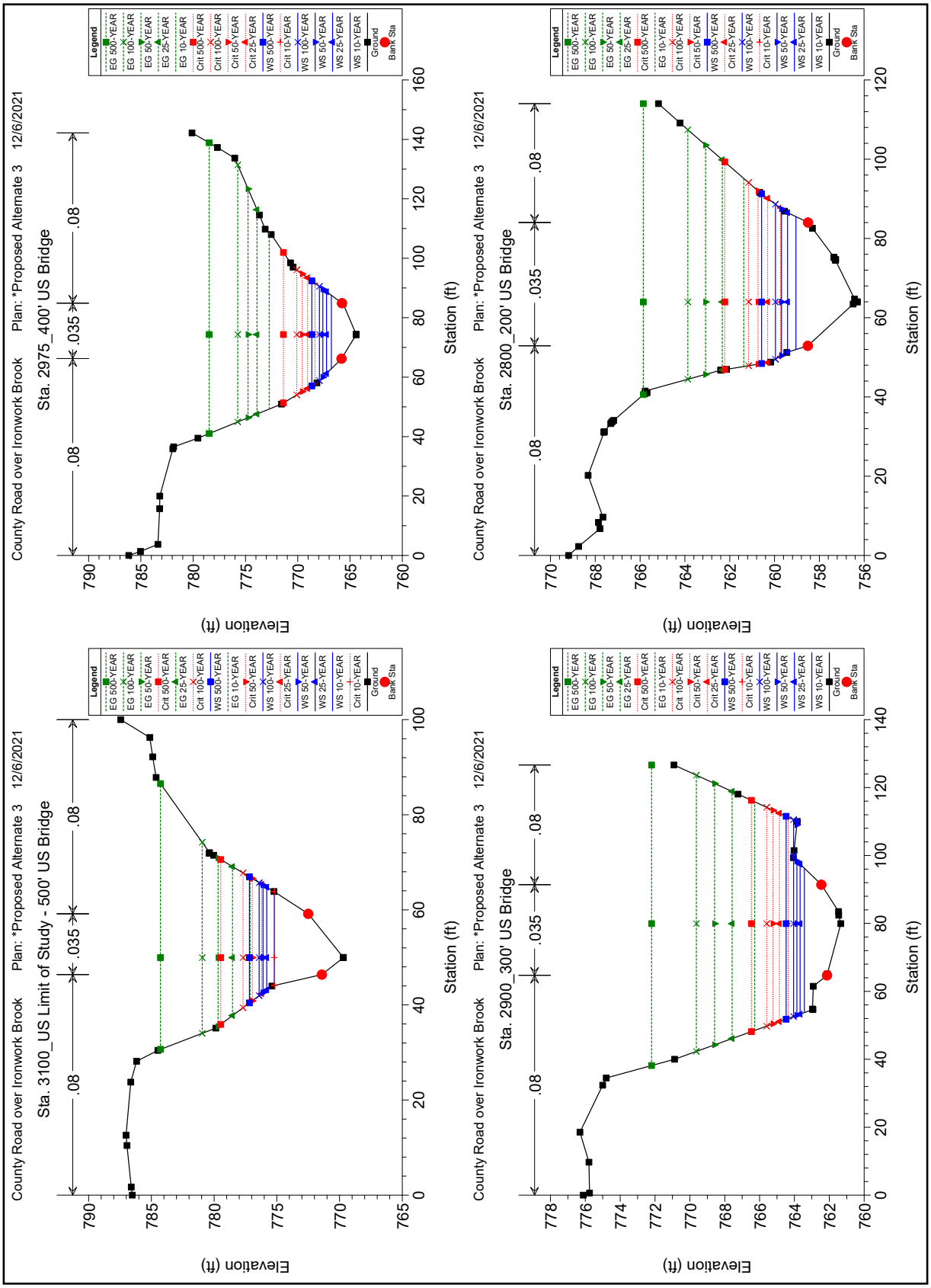
Plan: PRO_Alt 3 IRONWORK BROOK IRONWORK BROOK RS: 2600 Profile: 100-YEAR

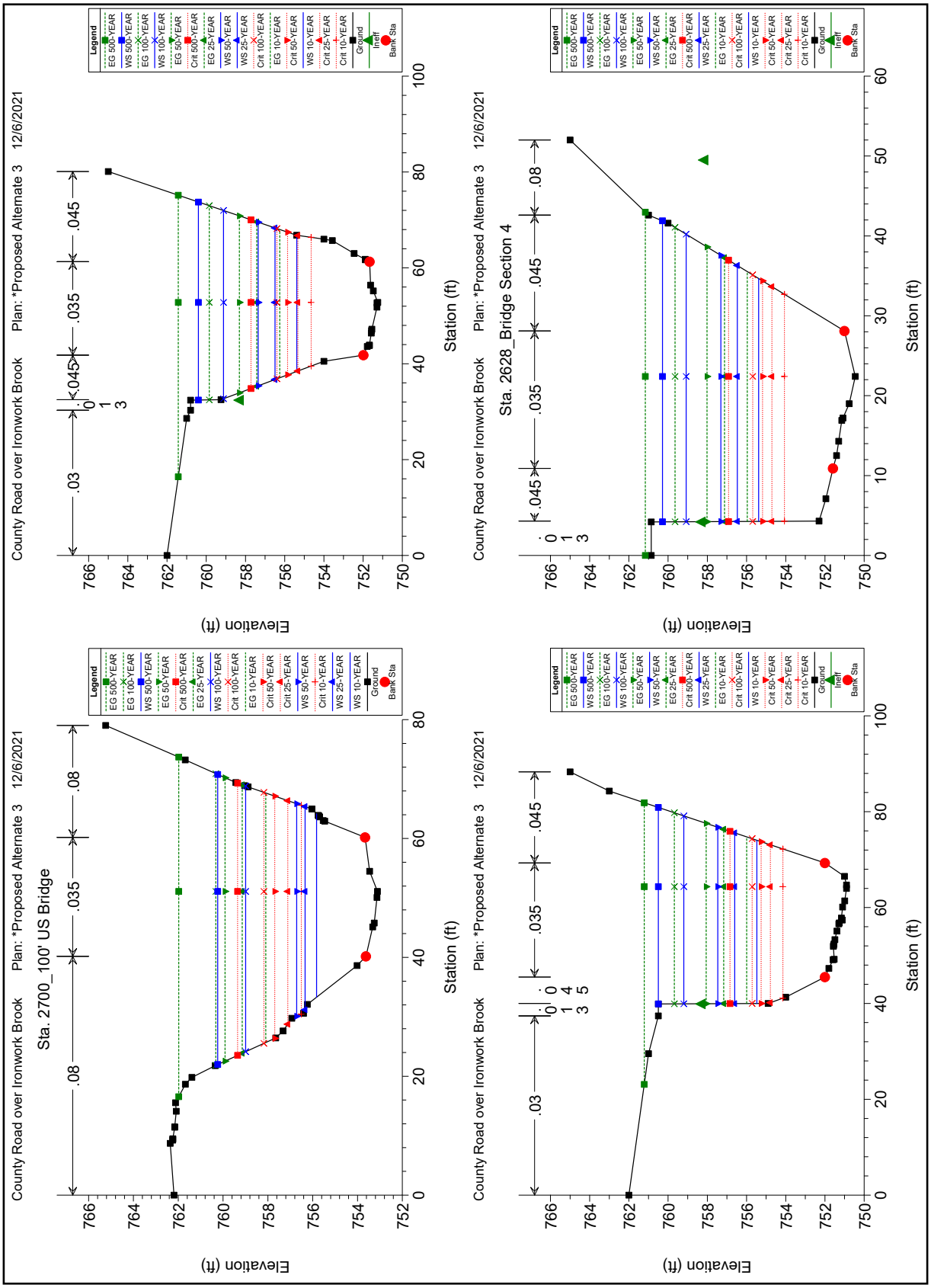
E.G. US. (ft)	759.62	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	759.10	E.G. Elev (ft)	759.62	757.73
Q Total (cfs)	1300.00	W.S. Elev (ft)	758.45	757.25
Q Bridge (cfs)	1300.00	Crit W.S. (ft)	755.49	754.41
Q Weir (cfs)		Max Chl Dpth (ft)	8.45	7.25
Weir Sta Lft (ft)		Vel Total (ft/s)	6.22	6.07
Weir Sta Rgt (ft)		Flow Area (sq ft)	209.05	214.00
Weir Submerg		Froude # Chl	0.41	0.44
Weir Max Depth (ft)		Specif Force (cu ft)	1039.63	985.73
Min El Weir Flow (ft)	760.67	Hydr Depth (ft)		6.68
Min El Prs (ft)	758.45	W.P. Total (ft)	73.66	42.93
Delta EG (ft)	1.88	Conv. Total (cfs)	18371.5	28815.5
Delta WS (ft)	1.85	Top Width (ft)		32.01
BR Open Area (sq ft)	209.05	Frctn Loss (ft)		
BR Open Vel (ft/s)	6.22	C & E Loss (ft)		
BR Sluice Coef	0.37	Shear Total (lb/sq ft)	0.89	0.63
BR Sel Method	Press Only	Power Total (lb/ft s)	5.52	3.85

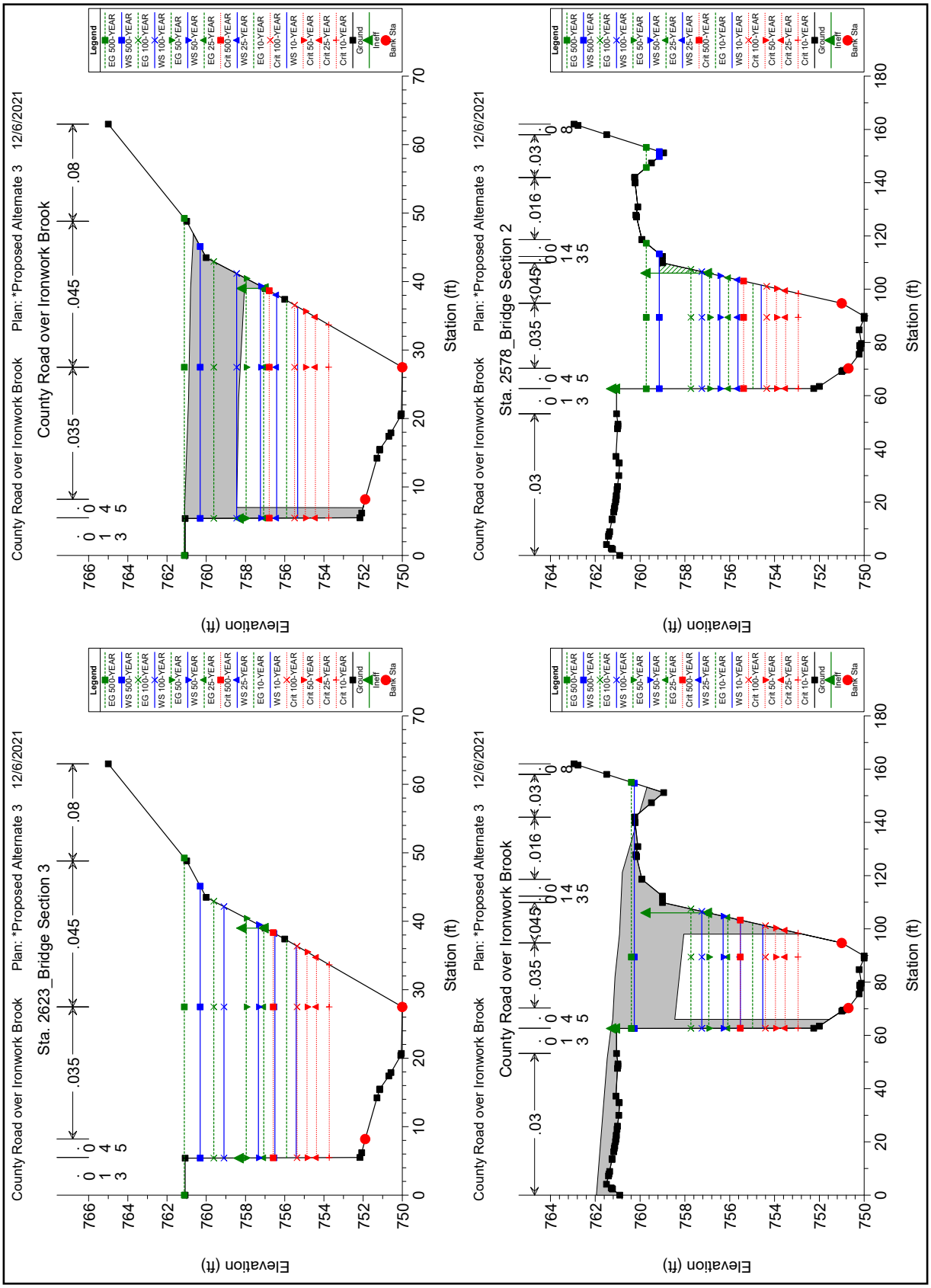
Plan: PRO_Alt 3 IRONWORK BROOK IRONWORK BROOK RS: 2600 Profile: 500-YEAR

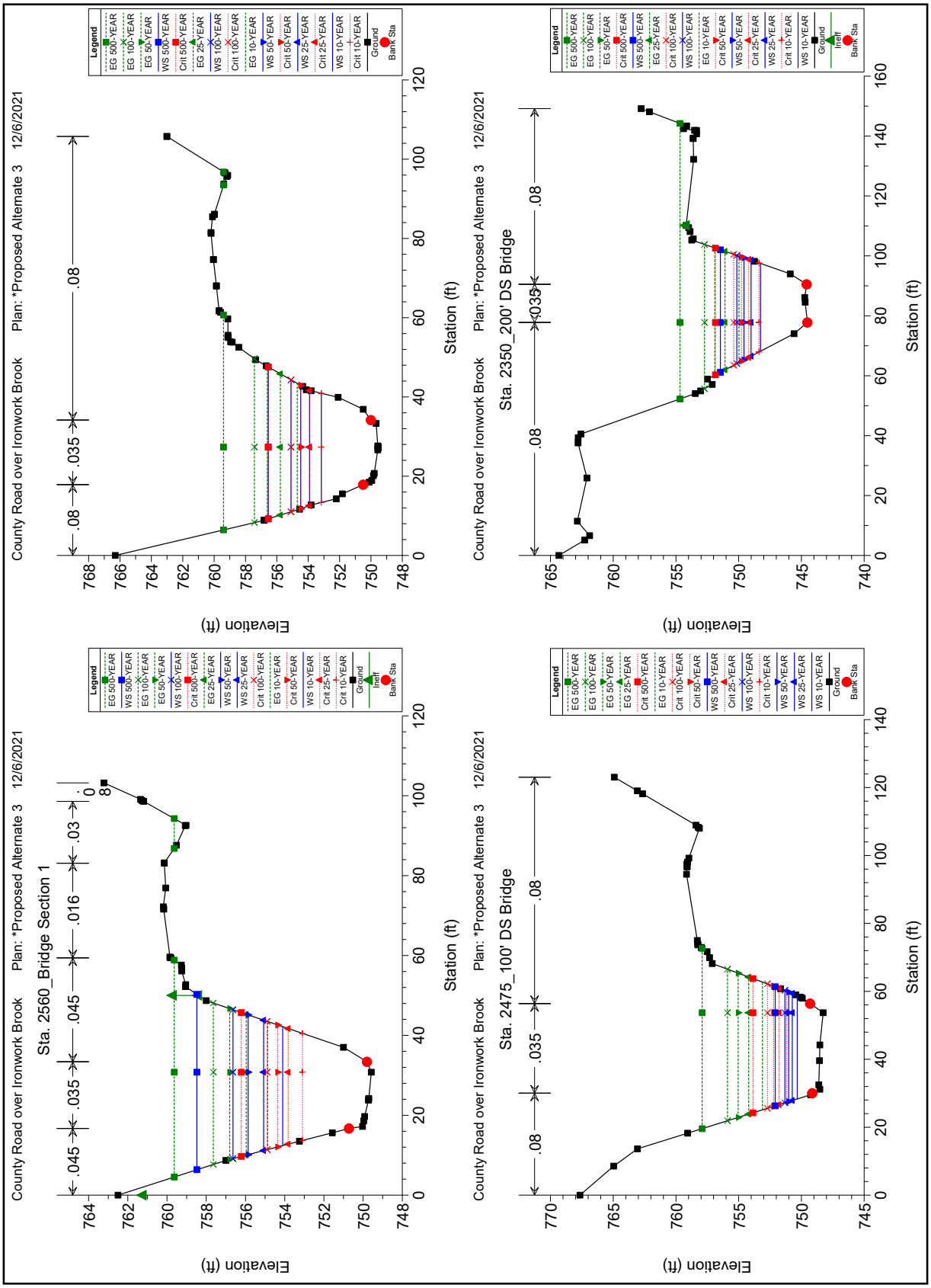
E.G. US. (ft)	761.12	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	760.31	E.G. Elev (ft)	761.12	760.39
Q Total (cfs)	1900.00	W.S. Elev (ft)	760.31	760.26
Q Bridge (cfs)	1886.45	Crit W.S. (ft)	756.79	755.53
Q Weir (cfs)	13.55	Max Chl Dpth (ft)	10.31	10.26
Weir Sta Lft (ft)	0.00	Vel Total (ft/s)	9.09	7.58
Weir Sta Rgt (ft)	49.23	Flow Area (sq ft)	209.05	250.79
Weir Submerg	0.00	Froude # Chl	0.55	0.45
Weir Max Depth (ft)	0.46	Specif Force (cu ft)	1735.49	1924.78
Min El Weir Flow (ft)	760.67	Hydr Depth (ft)		13.96
Min El Prs (ft)	758.45	W.P. Total (ft)	73.66	95.03
Delta EG (ft)	1.40	Conv. Total (cfs)		
Delta WS (ft)	1.17	Top Width (ft)		17.97
BR Open Area (sq ft)	209.05	Frctn Loss (ft)		
BR Open Vel (ft/s)	9.02	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)		
BR Sel Method	Press/Weir	Power Total (lb/ft s)		

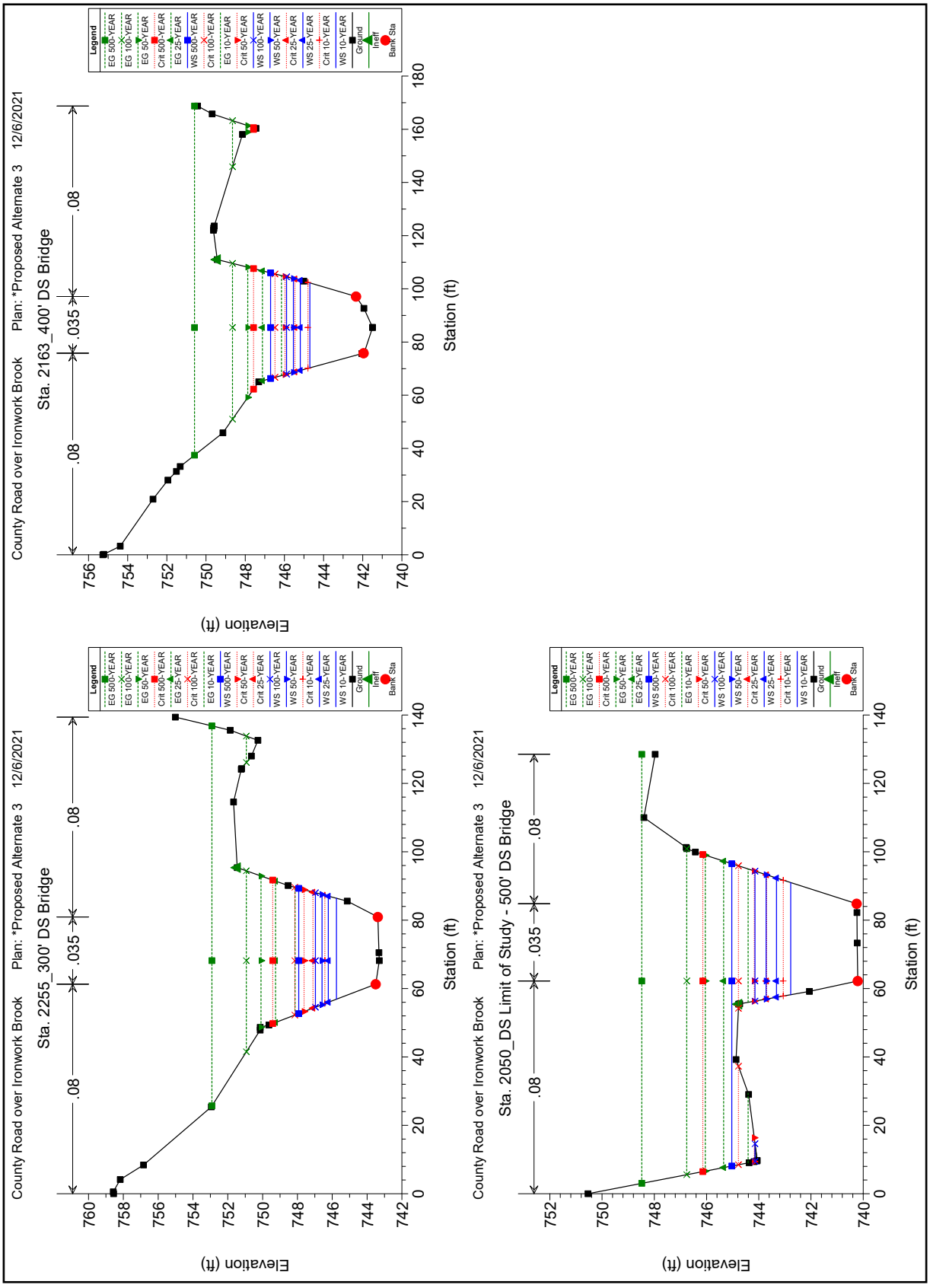

County Road over Ironwork Brook Plan: *Proposed Alternate 3 12/6/2021
Legend
EG 500-YEAR
EG 100-YEAR
Crit 500-YEAR
EG 50-YEAR
EG 25-YEAR
WS 500-YEAR
Crit 100-YEAR
EG 10-YEAR
Crit 50-YEAR
WS 100-YEAR
WS 50-YEAR
Crit 25-YEAR
WS 25-YEAR
Crit 10-YEAR
WS 10-YEAR
Ground
Elevation (ft)
790
780
770
760
750
740
Main Channel Distance (ft)
2000
2200
2400
2600
2800
3000
3200


County Road over Ironwork Brook Plan: *Proposed Alternate 3 12/6/2021
Sta. 2975_400' US Bridge
.08 .035 .08
Legend
EG 500-YEAR
EG 100-YEAR
EG 50-YEAR
EG 25-YEAR
EG 10-YEAR
Crit 500-YEAR
Crit 100-YEAR
Crit 50-YEAR
Crit 25-YEAR
WS 500-YEAR
Crit 10-YEAR
WS 100-YEAR
WS 50-YEAR
WS 25-YEAR
WS 10-YEAR
Ground
Bank Sta
Elevation (ft)
Station (ft)
790 785 780 775 770 765 760
0 20 40 60 80 100 120 140 160
County Road over Ironwork Brook Plan: *Proposed Alternate 3 12/6/2021
Sta. 2800_200' US Bridge
.08 .035 .08
Elevation (ft)
Station (ft)
770 768 766 764 762 760 758 756
0 20 40 60 80 100 120
County Road over Ironwork Brook Plan: *Proposed Alternate 3 12/6/2021
Sta. 3100_US Limit of Study - 500' US Bridge
.08 .035 .08
Elevation (ft)
Station (ft)
790 785 780 775 770 765
0 20 40 60 80 100
County Road over Ironwork Brook Plan: *Proposed Alternate 3 12/6/2021
Sta. 2900_300' US Bridge
.08 .035 .08
Elevation (ft)
Station (ft)
778 776 774 772 770 768 766 764 762 760
0 20 40 60 80 100 120 140


County Road over Ironwork Brook
Plan: *Proposed Alternate 3
12/6/2021
Sta. 2628_Bridge Section 4
Sta. 2700_100' US Bridge
Station (ft)
Elevation (ft)
Legend
EG 500-YEAR
WS 500-YEAR
EG 100-YEAR
WS 100-YEAR
EG 50-YEAR
Crit 50-YEAR
EG 25-YEAR
WS 50-YEAR
WS 25-YEAR
Crit 100-YEAR
EG 10-YEAR
Crit 25-YEAR
WS 10-YEAR
Crit 10-YEAR
Ground
Ineff
Bank Sta


County Road over Ironwork Brook Plan: *Proposed Alternate 3 12/6/2021
County Road over Ironwork Brook
Sta. 2623_Bridge Section 3
Sta. 2578_Bridge Section 2
Elevation (ft)
Station (ft)
Legend
EG 500-YEAR
WS 500-YEAR
EG 100-YEAR
WS 100-YEAR
EG 50-YEAR
WS 50-YEAR
EG 25-YEAR
Crit 500-YEAR
WS 25-YEAR
EG 10-YEAR
WS 10-YEAR
Crit 100-YEAR
Crit 50-YEAR
Crit 25-YEAR
Crit 10-YEAR
Ground
Ineff
Bank Sta


County Road over Ironwork Brook Plan: *Proposed Alternate 3 12/6/2021
Sta. 2560_Bridge Section 1
.045 .035 .045 .016 .03 .0
Elevation (ft)
Station (ft)
Legend
EG 500-YEAR
WS 500-YEAR
EG 100-YEAR
EG 50-YEAR
WS 100-YEAR
Crit 500-YEAR
EG 25-YEAR
WS 50-YEAR
WS 25-YEAR
Crit 100-YEAR
EG 10-YEAR
Crit 50-YEAR
WS 10-YEAR
Crit 25-YEAR
Crit 10-YEAR
Ground
Ineff
Bank Sta
County Road over Ironwork Brook Plan: *Proposed Alternate 3 12/6/2021
Sta. 2475_100' DS Bridge
.08 .035 .08
Elevation (ft)
Station (ft)
County Road over Ironwork Brook Plan: *Proposed Alternate 3 12/6/2021
Sta. 2350_200' DS Bridge
.08 .08 .035 .08
Elevation (ft)
Station (ft)
County Road over Ironwork Brook Plan: *Proposed Alternate 3 12/6/2021
.08 .035 .08 .08
Elevation (ft)
Station (ft)

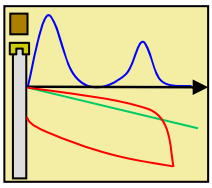

County Road over Ironwork Brook Plan: *Proposed Alternate 3 12/6/2021
Sta. 2163_400' DS Bridge
.08
.035
.08
Elevation (ft)
Station (ft)
Legend
EG 500-YEAR
EG 100-YEAR
EG 50-YEAR
Crit 500-YEAR
EG 25-YEAR
Crit 100-YEAR
EG 10-YEAR
WS 500-YEAR
Crit 50-YEAR
WS 100-YEAR
WS 50-YEAR
Crit 25-YEAR
WS 25-YEAR
Crit 10-YEAR
WS 10-YEAR
Ground
Ineff
Bank Sta
County Road over Ironwork Brook Plan: *Proposed Alternate 3 12/6/2021
Sta. 2255_300' DS Bridge
.08
.035
.08
Elevation (ft)
Station (ft)
County Road over Ironwork Brook Plan: *Proposed Alternate 3 12/6/2021
Sta. 2050_DS Limit of Study - 500' DS Bridge
.08
.035
.08
Elevation (ft)
Station (ft)

Appendix 7.4.1

STREAMBED SAMPLING RESULTS

GEOSCIENCES TESTING AND RESEARCH, INC.

55 Middlesex Street, Suite 225, N. Chelmsford, MA 01863
Ph: (978)251-9395, Fx: (978)251-9396



August 7, 2019 GTR Project #19.187

Mr. Micah Morrison, P.E.
BSC Group
803 Summer Street
Boston, MA 02127

Re: **Streambed Sampling Results**
County Road over Ironworks Brook
Bridge Rehabilitation No. S-10-024
Sheffield, Massachusetts

Dear Micah:

Geosciences Testing and Research, Inc. (GTR) is pleased to present this letter summarizing the results of our Streambed Sampling for County Road over Ironworks Brook Bridge Rehabilitation No. S-10-024 in Sheffield, MA. See Figure 1 for a site locus plan.

The streambed soil sampling was performed by GTR personnel on June 13, 2019. Prior to sampling various Cobbles, Class A, B and C boulders (4 inches to 36+ inches in diameter) were observed within the stream bed and/or along the banks. See Appendix A for photographs of the existing conditions of the stream bed. One (1) bulk soil sample was collected from each of the following areas; Northern Bank (SB-1), Southern Bank (S-2) and the Center of the Channel (S-3) for a total of three (3) samples. The S-1 through S-3 samples were collected at approximately 22 feet upstream from the existing bridge based on an approximate bridge clear span. See Figure 2 for the approximate locations of the streambed samples. The samples were collected by using a shovel and/or hand auger to excavate a shallow test pit approximately 1 foot below existing grade. Material greater than 4-inches in diameter was not sampled.

Sieve analyses were performed in accordance with ASTM D422 on each of the soil samples. See Appendix B for the results of the analyses, the Modified Burmister Soil Classification and the D50 particle sizes for the streambed samples.

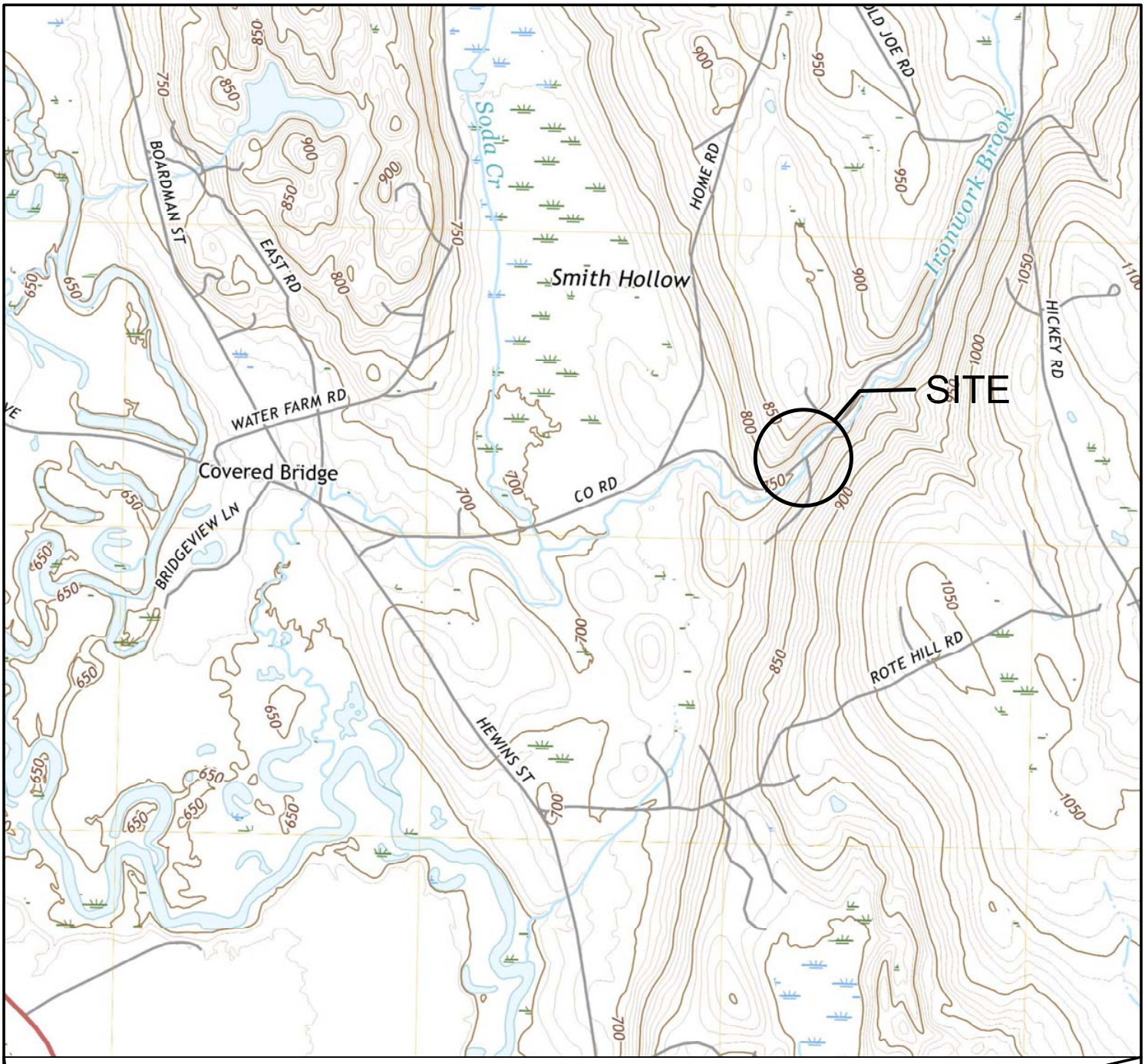
We trust this satisfies your current requirements and have appreciated working with you on this project. Please contact the undersigned if you have any questions.

Sincerely,
Geosciences Testing and Research, Inc.

Curtis A. George, P.E.
Principal

Attachments: Figure 1 and 2, Appendices A and B
19.187 County Road Over Ironwork Brook Sheffield MA - Streambed Sampling.docx

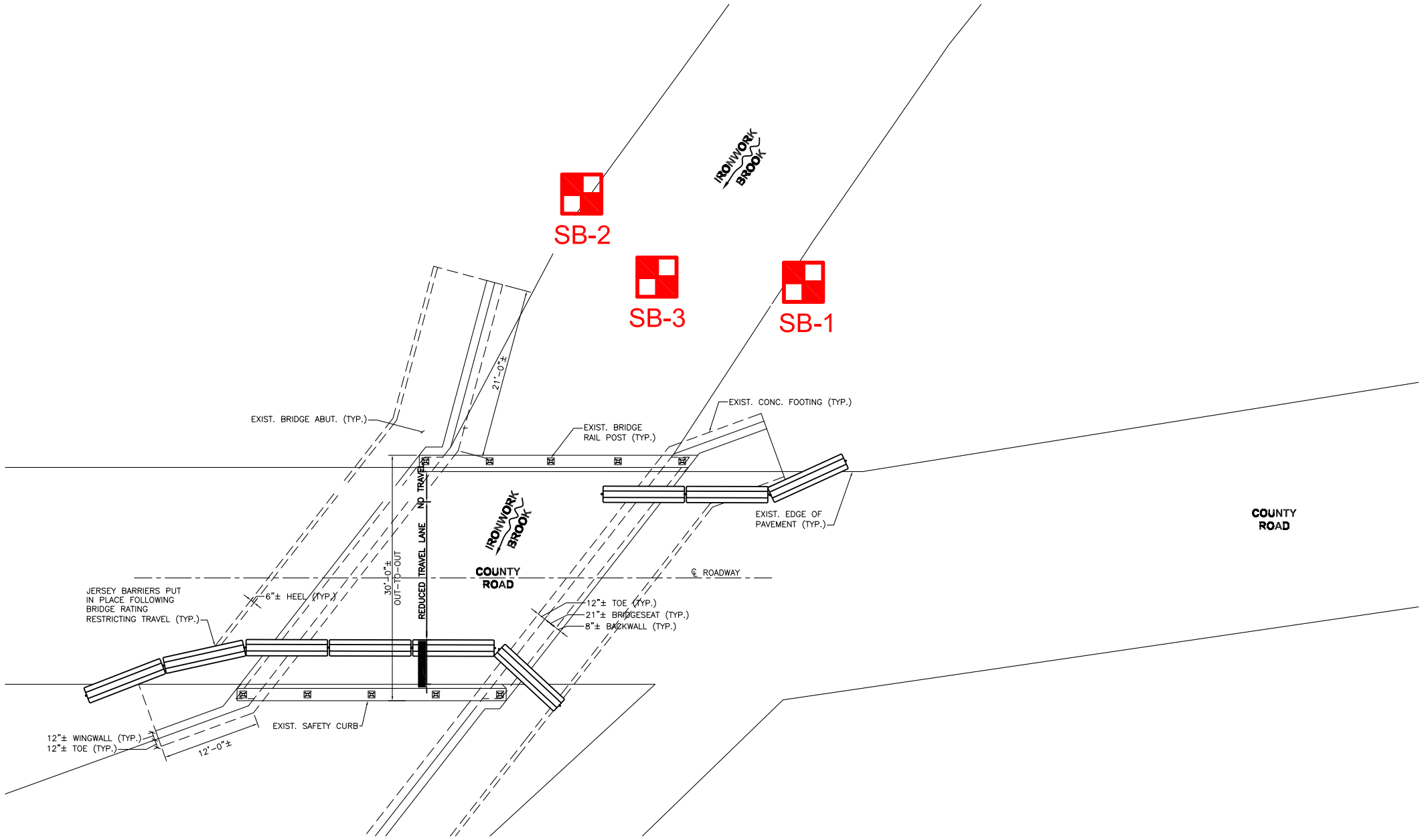
FIGURES



COUNTY RD OVER IRONWORKS BROOK SHEFFIELD, MASSACHUSETTS	LOCUS PLAN

GEOSCIENCES TESTING AND RESEARCH, INC.
55 MIDDLESEX STREET, SUITE 225
NORTH CHELMSFORD, MA. 01863
(TEL) 978-251-9395
(FAX) 978-251-9396

DRAWN BY: SRH	SCALE: N/A	DESIGN BY:	
CHK BY: CAG	PROJECT NO.: 19.187		
DATE: 07/03/2019	SHEET NO.: FIGURE 1		



LEGEND:

SB-1

Approximate location and designation of streambed samples collected by GTR personnel on June 13, 2019.

Notes:

1. The locations of streambed samples should be considered approximate to the degree implied by the method used to locate them. Location determined by tape from existing site features.

COUNTY RD OVER IRONWORKS BROOK SHEFFIELD, MASSACHUSETTS	STREAMBED SAMPLING PLAN

GEOSCIENCES TESTING AND RESEARCH, INC.
55 MIDDLESEX STREET, SUITE 225
NORTH CHELMSFORD, MA. 01863
(TEL) 978-251-9395
(FAX) 978-251-9396

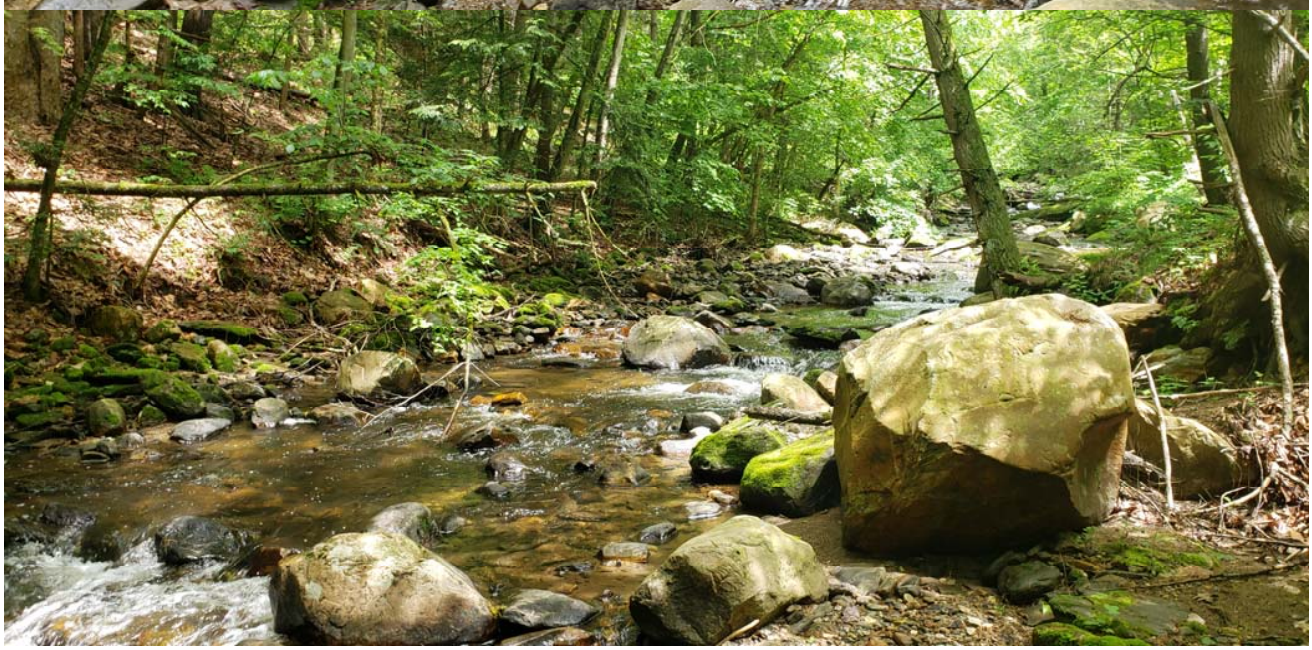
DRAWN BY: SRH	SCALE: N/A	DESIGN BY:	
CHK BY: CAG	PROJECT NO.: 19.187		
DATE: 07/03/2019	SHEET NO.: FIGURE 4		

APPENDIX A

GEOSCIENCES TESTING AND RESEARCH, INC.

55 Middlesex Street, Suite 225, N. Chelmsford, MA 01863
Ph: (978)251-9395, Fx: (978)251-9396





Project: County Road Over Ironwork Brook
Project No: 19.187
Drawn By: CAG
Date: 7/13/19

APPENDIX B

GEOSCIENCE TESTING & RESEARCH, INC.

55 MIDDLESEX ST., SUITE 225, NORTH CHELMSFORD, MA 01863

Phone: (978) 251-9395 Fax: (978) 251-9396

Sieve Analysis Data and Computation Sheet

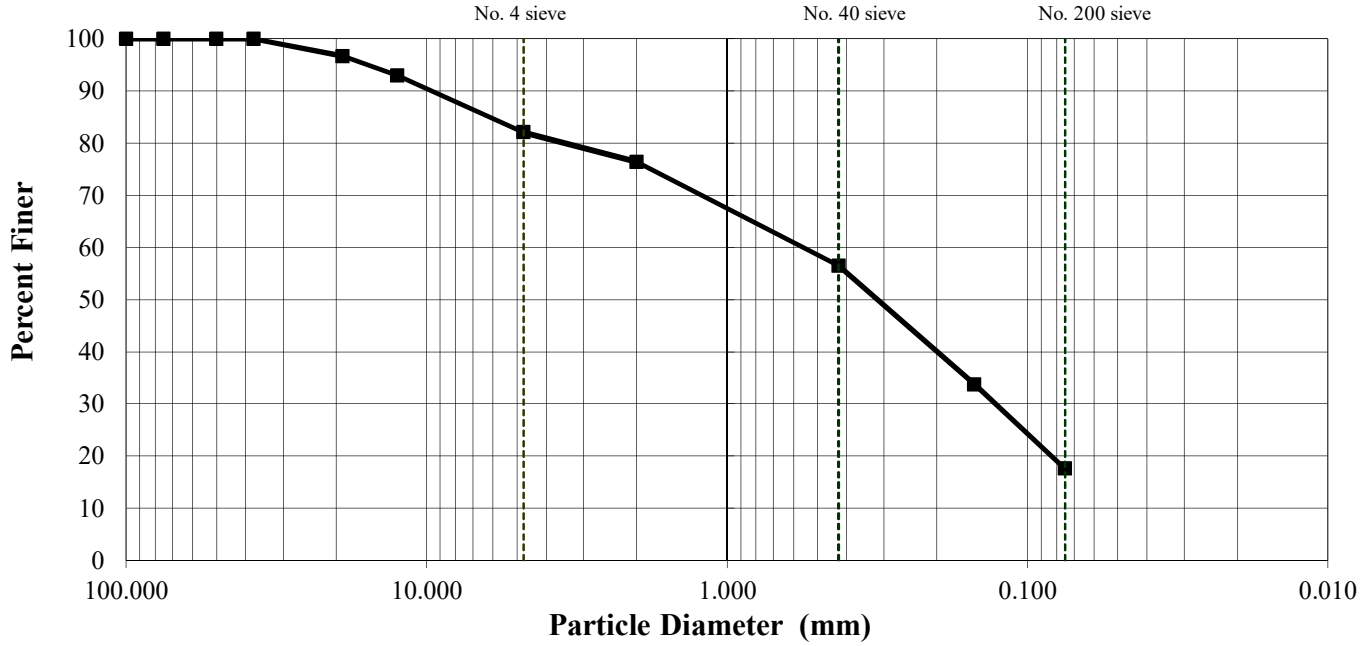
Project Name:	**County Road over Ironwork Brook**	**Sample No:**	**North Overbank S-1**
Project No.:	**19.187**	**Depth:**	**0-1 ft**
Test by:	**Rob Melvin**		
Date:	**7/25/2019**		

Soil Description: **Black, fine to coarse SAND, little Silt, trace Gravel, trace Organics**

No cobbles observed during sampling

Testing done in accordance with ASTM D-422

	Sieve Size	Sieve Opening (mm)	Cum. % Finer
Cobbles	4.0"	100.000	100.0
Coarse Gravel	3.0"	75.000	100.0
	2.0"	50.000	100.0
	1.5"	37.500	100.0
Medium Gravel	0.75"	19.000	96.7
Fine Gravel	0.5"	12.500	93.0
	4	4.750	82.1
Coarse Sand	10	2.000	76.4
Medium Sand	40	0.425	56.5
Fine Sand	100	0.150	33.7
	200	0.075	17.6
Silts & Clays			



Soil Parameters:

D_{10}: < 0.075 mm **D_{30}: .13 mm** **D_{50} = 0.31 mm**

GEOSCIENCE TESTING & RESEARCH, INC.

55 MIDDLESEX ST., SUITE 225, NORTH CHELMSFORD, MA 01863

Phone: (978) 251-9395 Fax: (978) 251-9396

Sieve Analysis Data and Computation Sheet

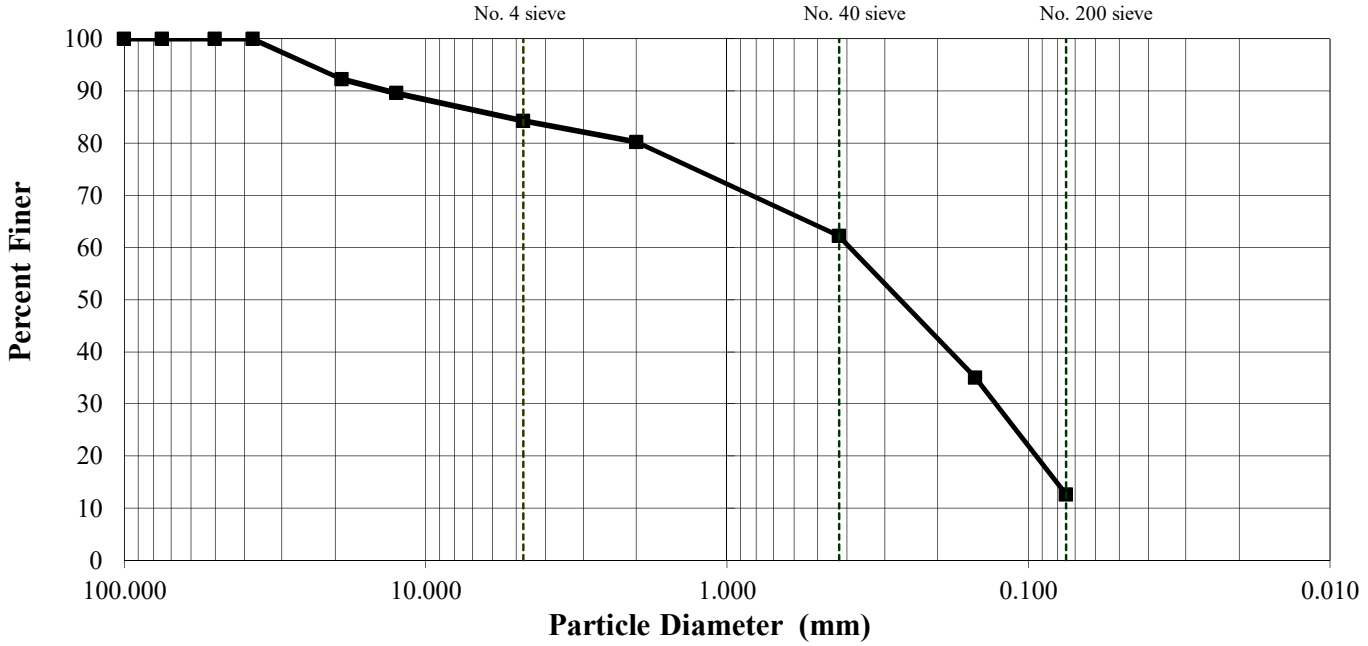
Project Name:	**County Road over Ironwork Brook**	**Sample No:**	**South Overbank S-2**
Project No.:	**19.187**	**Depth:**	**0-1 ft**
Test by:	**Rob Melvin**		
Date:	**7/25/2019**		

Soil Description: **Black, fine to medium SAND, little Silt, trace Gravel, trace Organics**

No cobbles observed during sampling

Testing done in accordance with ASTM D-422

	Sieve Size	Sieve Opening (mm)	Cum. % Finer
Cobbles	4.0"	100.000	100.0
Coarse Gravel	3.0"	75.000	100.0
	2.0"	50.000	100.0
	1.5"	37.500	100.0
Medium Gravel	0.75"	19.000	92.3
Fine Gravel	0.5"	12.500	89.6
	4	4.750	84.3
Coarse Sand	10	2.000	80.2
Medium Sand	40	0.425	62.2
Fine Sand	100	0.150	35.0
	200	0.075	12.6
Silts & Clays			



Soil Parameters:

D_{10}: < 0.075mm **D_{30}: 0.12 mm** **D_{50} = 0.26 mm**

GEOSCIENCE TESTING & RESEARCH, INC.

55 MIDDLESEX ST., SUITE 225, NORTH CHELMSFORD, MA 01863

Phone: (978) 251-9395 Fax: (978) 251-9396

Sieve Analysis Data and Computation Sheet

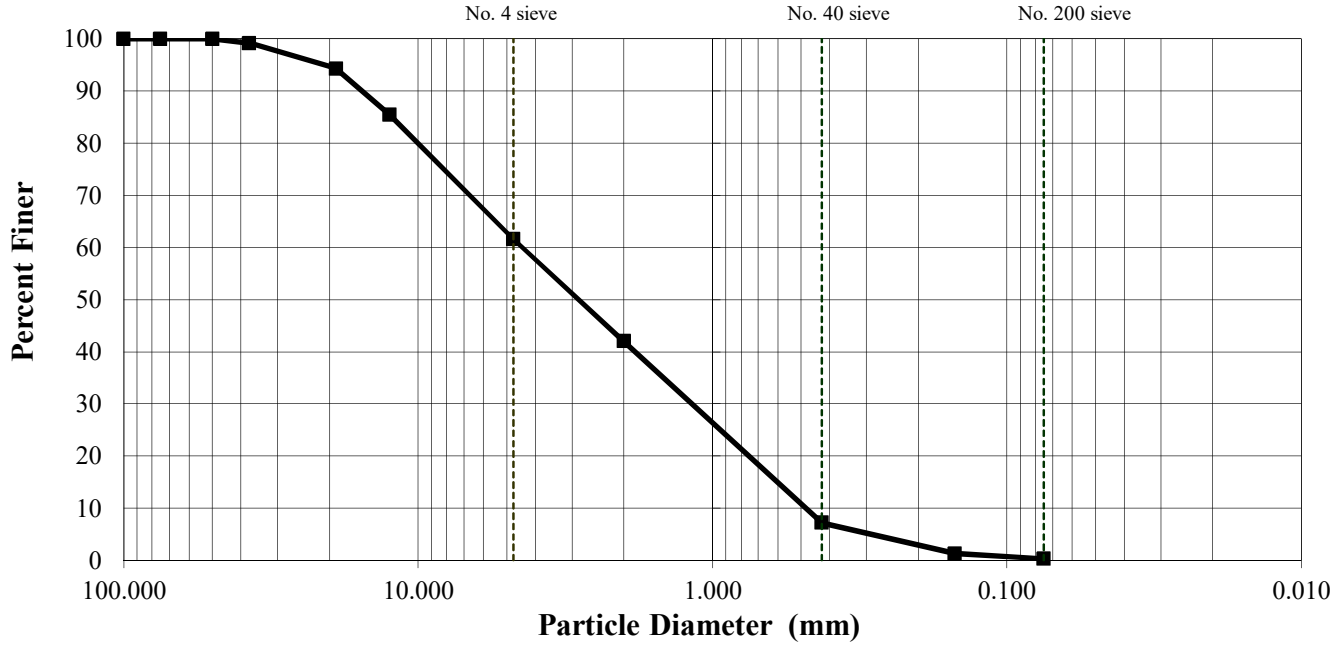
Project Name:	**County Road over Ironwork Brook**	**Sample No:**	**Center S-3**
Project No.:	**19.187**	**Depth:**	**0-1 ft**
Test by:	**Rob Melvin**		
Date:	**7/26/2019**		

Soil Description: **Brown, fine to coarse SAND and fine to medium Gravel, trace Silt**

Cobbles were not sampled.

Testing done in accordance with ASTM D-422

	Sieve Size	Sieve Opening (mm)	Cum. % Finer
Cobbles	4.0"	100.000	100.0
Coarse Gravel	3.0"	75.000	100.0
	2.0"	50.000	100.0
	1.5"	37.500	99.2
Medium Gravel	0.75"	19.000	94.3
Fine Gravel	0.5"	12.500	85.5
	4	4.750	61.6
Coarse Sand	10	2.000	42.0
Medium Sand	40	0.425	7.2
Fine Sand	100	0.150	1.3
	200	0.075	0.3
Silts & Clays			



Soil Parameters:

D_{10}: .49 mm **D_{30}: 1.2 mm** **D_{50} = 2.9 mm**

Appendix 7.4.2

EXISTING CONTRACTION SCOUR CALCULATIONS

Contraction Scour

		Left	Channel	Right
Input Data				
	Average Depth (ft):	3.63	7.78	4.06
	Approach Velocity (ft/s):	1.39	5.49	2.46
	Br Average Depth (ft):		6.57	
	BR Opening Flow (cfs):		1080.00	
	BR Top WD (ft):		22.00	
	Grain Size D50 (mm):	0.26	2.90	0.31
	Approach Flow (cfs):	9.50	1059.40	11.10
	Approach Top WD (ft):	1.88	24.79	1.11
	K1 Coefficient:	0.690	0.640	0.690
Results				
	Scour Depth Ys (ft):		1.97	
	Critical Velocity (ft/s):		3.34	
	Equation:		Live	

Abutment Scour

		Left	Right
Input Data			
	Station at Toe (ft):	3.17	25.35
	Toe Sta at appr (ft):	2.99	26.68
	Abutment Length (ft):	2.23	1.86
	Depth at Toe (ft):	6.60	8.97
	K1 Shape Coef:	0.82 - Vert. with wing walls	
	Degree of Skew (degrees):	15.00	22.00
	K2 Skew Coef:	0.79	0.83
	Projected Length L' (ft):	1.88	2.66
	Avg Depth Obstructed Ya (ft):	4.12	5.85
	Flow Obstructed Qe (cfs):	21.20	48.29
	Area Obstructed Ae (sq ft):	9.18	10.91
Results			
	Scour Depth Ys (ft):	5.74	9.08
	Qe/Ae = Ve:	2.31	4.43
	Froude #:	0.20	0.32
	Equation:	Froehlich	Froehlich

Combined Scour Depths

Left abutment scour + contraction scour (ft):	7.71
Right abutment scour + contraction scour (ft):	11.05

Contraction Scour

		Left	Channel	Right
Input Data				
	Average Depth (ft):	3.91	8.39	4.36
	Approach Velocity (ft/s):	1.62	6.12	2.74
	Br Average Depth (ft):		6.57	
	BR Opening Flow (cfs):		1300.00	
	BR Top WD (ft):		22.00	
	Grain Size D50 (mm):	0.26	2.90	0.31
	Approach Flow (cfs):	12.98	1272.72	14.30
	Approach Top WD (ft):	2.05	24.79	1.20
	K1 Coefficient:	0.690	0.640	0.690
Results				
	Scour Depth Ys (ft):		2.65	
	Critical Velocity (ft/s):		3.38	
	Equation:		Live	

Abutment Scour

		Left	Right
Input Data			
	Station at Toe (ft):	3.17	25.35
	Toe Sta at appr (ft):	2.99	26.68
	Abutment Length (ft):	2.40	1.95
	Depth at Toe (ft):	7.20	9.56
	K1 Shape Coef:	0.82 - Vert. with wing walls	
	Degree of Skew (degrees):	15.00	22.00
	K2 Skew Coef:	0.79	0.83
	Projected Length L' (ft):	3.15	4.21
	Avg Depth Obstructed Ya (ft):	4.41	6.19
	Flow Obstructed Qe (cfs):	27.31	58.54
	Area Obstructed Ae (sq ft):	10.59	12.07
Results			
	Scour Depth Ys (ft):	6.62	10.41
	Qe/Ae = Ve:	2.58	4.85
	Froude #:	0.22	0.34
	Equation:	Froehlich	Froehlich

Combined Scour Depths

Left abutment scour + contraction scour (ft):	9.27
Right abutment scour + contraction scour (ft):	13.06

Appendix 7.4.3

PROPOSED ALTERNATIVES 1&2 CONTRACTION SCOUR CALCULATIONS

Contraction Scour

		Left	Channel	Right
Input Data				
	Average Depth (ft):	3.67	7.87	4.10
	Approach Velocity (ft/s):	1.38	5.43	2.43
	Br Average Depth (ft):		6.7	
	BR Opening Flow (cfs):		1080.00	
	BR Top WD (ft):		22.00	
	Grain Size D50 (mm):		22	
	Approach Flow (cfs):	9.69	1059.10	11.22
	Approach Top WD (ft):	1.90	24.79	1.13
	K1 Coefficient:	0.590	0.590	0.590
Results				
	Scour Depth Ys (ft):		0.27	
	Critical Velocity (ft/s):		6.57	
	Equation:		Clear	

Abutment Scour

		Left	Right
Input Data			
	Station at Toe (ft):	3.17	25.35
	Toe Sta at appr (ft):	2.99	26.68
	Abutment Length (ft):	2.25	1.87
	Depth at Toe (ft):	6.70	9.06
	K1 Shape Coef:	1.00 - Vertical abutment	
	Degree of Skew (degrees):	90.00	90.00
	K2 Skew Coef:	1.00	1.00
	Projected Length L' (ft):	2.25	1.87
	Avg Depth Obstructed Ya (ft):	4.16	5.90
	Flow Obstructed Qe (cfs):	21.41	48.21
	Area Obstructed Ae (sq ft):	9.38	11.05
Results			
	Scour Depth Ys (ft):	6.85	9.95
	Qe/Ae = Ve:	2.28	4.36
	Froude #:	0.20	0.32
	Equation:	Froehlich	Froehlich

Combined Scour Depths

Left abutment scour + contraction scour (ft):	7.12
Right abutment scour + contraction scour (ft):	10.22

Contraction Scour

		Left	Channel	Right
Input Data				
	Average Depth (ft):	3.92	8.43	4.38
	Approach Velocity (ft/s):	1.62	6.09	2.73
	Br Average Depth (ft):		6.70	
	BR Opening Flow (cfs):		1300.00	
	BR Top WD (ft):		22.00	
	Grain Size D50 (mm):	0.26	2.90	0.31
	Approach Flow (cfs):	13.08	1272.57	14.36
	Approach Top WD (ft):	2.06	24.79	1.20
	K1 Coefficient:	0.690	0.640	0.690
Results				
	Scour Depth Ys (ft):		2.57	
	Critical Velocity (ft/s):		3.38	
	Equation:		Live	

Abutment Scour

		Left	Right
Input Data			
	Station at Toe (ft):	3.17	25.35
	Toe Sta at appr (ft):	2.99	26.68
	Abutment Length (ft):	2.41	1.95
	Depth at Toe (ft):	7.23	9.60
	K1 Shape Coef:	0.82 - Vert. with wing walls	
	Degree of Skew (degrees):	15.00	22.00
	K2 Skew Coef:	0.79	0.83
	Projected Length L' (ft):	3.16	3.45
	Avg Depth Obstructed Ya (ft):	4.43	6.21
	Flow Obstructed Qe (cfs):	27.40	58.41
	Area Obstructed Ae (sq ft):	10.67	12.11
Results			
	Scour Depth Ys (ft):	6.64	10.08
	Qe/Ae = Ve:	2.57	4.82
	Froude #:	0.22	0.34
	Equation:	Froehlich	Froehlich

Combined Scour Depths

Left abutment scour + contraction scour (ft):	9.20
Right abutment scour + contraction scour (ft):	12.64

Appendix 7.4.4

PROPOSED ALTERNATIVE 3 CONTRACTION SCOUR CALCULATIONS

Contraction Scour

		Left	Channel	Right
Input Data				
	Average Depth (ft):	3.67	7.87	4.10
	Approach Velocity (ft/s):	1.38	5.43	2.43
	Br Average Depth (ft):		6.70	
	BR Opening Flow (cfs):		1080.00	
	BR Top WD (ft):		32.00	
	Grain Size D50 (mm):	0.26	2.90	.31
	Approach Flow (cfs):	9.69	1059.10	11.22
	Approach Top WD (ft):	1.90	24.79	1.13
	K1 Coefficient:	0.690	0.640	0.690
Results				
	Scour Depth Ys (ft):		0.10	
	Critical Velocity (ft/s):		3.35	
	Equation:		Live	

Abutment Scour

		Left	Right
Input Data			
	Station at Toe (ft):	6.97	39.01
	Toe Sta at appr (ft):	9.67	39.61
	Abutment Length (ft):	8.94	0.00
	Depth at Toe (ft):	7.11	2.10
	K1 Shape Coef:	0.82 - Vert. with wing walls	
	Degree of Skew (degrees):	15.00	22.00
	K2 Skew Coef:	0.79	0.83
	Projected Length L' (ft):	1.49	0.00
	Avg Depth Obstructed Ya (ft):	6.37	
	Flow Obstructed Qe (cfs):	261.65	
	Area Obstructed Ae (sq ft):	56.94	
Results			
	Scour Depth Ys (ft):	8.88	
	Qe/Ae = Ve:	4.60	
	Froude #:	0.32	
	Equation:	Froehlich	Default

Combined Scour Depths

Left abutment scour + contraction scour (ft):	8.88

Contraction Scour

		Left	Channel	Right
Input Data				
	Average Depth (ft):	3.92	8.43	4.38
	Approach Velocity (ft/s):	1.62	6.09	2.73
	Br Average Depth (ft):		6.70	
	BR Opening Flow (cfs):		1300.00	
	BR Top WD (ft):		32.00	
	Grain Size D50 (mm):	0.26	2.90	0.31
	Approach Flow (cfs):	13.08	1272.57	14.36
	Approach Top WD (ft):	2.06	24.79	1.20
	K1 Coefficient:	0.690	0.640	0.690
Results				
	Scour Depth Ys (ft):		0.59	
	Critical Velocity (ft/s):		3.38	
	Equation:		Live	

Abutment Scour

		Left	Right
Input Data			
	Station at Toe (ft):	6.97	39.01
	Toe Sta at appr (ft):	9.67	39.61
	Abutment Length (ft):	9.10	0.00
	Depth at Toe (ft):	7.65	2.64
	K1 Shape Coef:	0.82 - Vert. with wing walls	
	Degree of Skew (degrees):	15.00	22.00
	K2 Skew Coef:	0.79	0.83
	Projected Length L' (ft):	3.16	3.45
	Avg Depth Obstructed Ya (ft):	6.81	
	Flow Obstructed Qe (cfs):	319.53	
	Area Obstructed Ae (sq ft):	61.93	
Results			
	Scour Depth Ys (ft):	10.59	
	Qe/Ae = Ve:	5.16	
	Froude #:	0.35	
	Equation:	Froehlich	Default

Combined Scour Depths

Left abutment scour + contraction scour (ft):	10.59

Appendix 7.4.5

ABUTMENT SCOUR CALCULATIONS

Calculation Sheet

BSC GROUP

Project No. 28409.00
Subject County Road over Ironwork Brook
Location Sheffield, MA

Calc By M. Stephan
Date 12/6/2021
Checked by K. Eagan
Date 12/7/2021

FHWA NCHRP 24-20 Abutment Scour Approach (HEC-18, 8.6.3)

	Existing Scour				Alternative 1&2 Scour				Alternative 3 Scour			
	50-Year Design		100-Year Check		50-Year Design		100-Year Check		50-Year Design		100-Year Check	
	LOB	ROB	LOB	ROB	LOB	ROB	LOB	ROB	LOB	ROB	LOB	ROB
L =	5.0	3.0	6.0	3.5	5.0	3.0	6.0	3.5	3.0	8.0	3.0	9.0
B_f =	5.0	3.0	6.0	3.5	5.0	3.0	6.0	3.5	3.0	8.0	3.0	9.0
Condition =	A	A	A	A	A	A	A	A	A	A	A	A
y_1 =	8.97	8.97	9.56	9.56	9.06	9.06	9.60	9.60	7.34	7.34	9.10	9.10
V_{us} =	5.72	5.72	6.40	6.40	5.66	5.66	6.37	6.37	6.79	6.79	6.29	6.29
q_1 =	51.31	51.31	61.18	61.18	51.28	51.28	61.15	61.15	49.84	49.84	57.24	57.24
Q_{bridge} =	1,080	1,080	1,300	1,300	1,080	1,080	1,300	1,300	1,080	1,080	1,300	1,300
W_{bridge} =	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	35.0	35.0	35.0	35.0
q_{2c} =	49.09	49.09	59.09	59.09	49.09	49.09	59.09	59.09	30.86	30.86	37.14	37.14
q_{2c}/q_1 =	0.96	0.96	0.97	0.97	0.96	0.96	0.97	0.97	0.62	0.62	0.65	0.65
α_A =	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20
y_{cA} =	8.64	8.64	9.28	9.28	8.73	8.73	9.32	9.32	4.87	4.87	6.28	6.28
q_{2f} =	49.09	49.09	59.09	59.09	49.09	49.09	59.09	59.09	30.86	30.86	37.14	37.14
K_u =	11.17	11.17	11.17	11.17	11.17	11.17	11.17	11.17	11.17	11.17	11.17	11.17
D_{50} (mm) =	-	-	-	-	-	-	-	-	-	-	-	-
D_{50} (ft) =	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
V_{fus} =	-	-	-	-	-	-	-	-	-	-	-	-
y_{fus} =	-	-	-	-	-	-	-	-	-	-	-	-
q_f =	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
q_{2f}/q_f =	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
α_B =	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
y_{cB} =	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
y_{max} =	10.36	10.36	11.13	11.13	10.47	10.47	11.19	11.19	5.84	5.84	7.54	7.54
$WSEL_0$ =	759.02		759.61		759.11		759.65		757.34		759.10	
z_0 (L/R) =	752.43	750.05	752.43	750.05	752.43	750.05	752.43	750.05	752.16	750.00	752.16	750.00
y_0 (L/R) =	6.59	8.97	7.18	9.56	6.68	9.06	7.22	9.60	5.18	7.34	6.94	9.10
y_s =	3.77	1.39	3.95	1.57	3.79	1.41	3.97	1.59	0.66	0.00	0.60	0.00
Bend Scour =	0.00	4.77	0.00	4.94	0.00	4.83	0.00	4.77	0.00	2.82	0.00	3.65
y_s Total =	**3.77**	**6.16**	**3.95**	**6.51**	**3.79**	**6.24**	**3.97**	**6.35**	**0.66**	**2.82**	**0.60**	**3.65**

= Inputted Value
= Calculated Value

* In accordance with NCHRP 24-20 approach, abutment scour depths include effects of contraction scour.
** Contraction scour depths in the channel calculated in HEC-RAS. Values presented in Hydraulic Report.

EXAMPLE CALC FOR EXISTING DESIGN SCOUR, LOB

Determine Scour Condition

Projected Length of Embankment, L = 5.0 ft
Floodplain Width, B_f = 5.0 ft
L = 100% > $0.75B_f$

Therefore

Condition A

Condition A (Live-Bed Scour Calculation)

$$y_c = y_1(q_{2c}/q_1)^{6/7} \quad \textit{eq. 8.5}$$

where

y_c =	**8.64**	ft; flow depth including live-bed contraction scour
y_1 =	8.97	ft; upstream flow depth
V_{us} =	5.72	ft/s; upstream velocity
q_1 =	51.31	ft^2/s; upstream unit discharge
q_{2c} =	49.09	ft^2/s; unit discharge in the constricted opening accounting for non-uniform flow distribution
Q_{bridge} =	1,080	cfs; total discharge through bridge opening
W_{bridge} =	22.0	ft; width of bridge opening
q_{2c}/q_1 =	1.0	; for graphical determination of α_A

Condition B (Clear-Water Scour Calculation)

$$y_c = (q_{2f}/K_u D_{50}^{1/3})^{6/7} \quad \textit{eq. 8.7}$$

where

y_c =	**N/A**	ft; flow depth including clear-water contraction scour
Q_{bridge} =	1,080	cfs; total discharge through bridge opening
W_{bridge} =	22.0	ft; width of bridge opening
q_{2f} =	49.09	ft^2/s; unit discharge in the constricted opening accounting for non-uniform flow distribution
K_u =	11.17	;unitless
D_{50} =	-	mm; particle size with 50% finer (for D_{50} > 0.2mm)
D_{50} =	0.0000	ft
V_{fus} =	-	ft/s; floodplain velocity upstream
y_{fus} =	-	ft; depth of flow in floodplain upstream
q_f =	0.0000	ft^2/s; floodplain flow upstream of bridge
q_{2f}/q_f =	0.0000	; for graphical determination of α_B

Determine Maximum Flow Depth Resulting from Abutment Scour

$$y_{max} = \alpha_A y_c \quad \text{or} \quad y_{max} = \alpha_B y_c \quad \textit{eq. 8.3}$$

where

y_{max} =	10.36	ft; maximum flow depth resulting from abutment scour
y_c =	8.64	ft; flow depth including contraction scour
α_A =	1.2	; amplification factor for Condition A
α_B =	0	; amplification factor for Condition B

Determine Abutment Scour Depth

$$y_s = y_{max} - y_0 \quad \textit{eq. 8.4}$$

where

y_s =	**3.77**	ft; left abutment scour depth
y_{max} =	10.36	ft; maximum flow depth including contraction scour
y_0 =	6.59	ft; flow depth prior to scour

Appendix 7.4.6

BEND SCOUR CALCULATIONS

Calculation Sheet

BSC GROUP

Project No.	28409.00	**Calc By**	M. Stephan
Subject	County Road over Ironwork Broo	**Date**	12/6/2021
Location	Sheffield, MA	**Checked by**	K. Eagan
		Date	12/7/2021

Bend scour calculations performed at River Station 2633 Cross Section. Elevations based on NAVD88 vertical datum

Scour at Protected Bendways (HEC-23, Section 4.3.5) (Ex Design Scour)

$D_{mxb}/D_{mnc} = 1.8-0.051(R_c/W)+0.0084(W/D_{mnc})$ eq. 4.5

where:

R_c =	100	ft; centerline radius of the bend
W =	30.98	ft; width of the bend
D_{mxb} =	8.26	ft; maximum water depth in the bend, pre-scour condition
D_{mnc} =	7.22	ft; average water depth in the crossing upstream of the bend, wetted area over width of bend
A =	223.79	sf; wetted area

Check applicability of Maynord's Equation

R_c/W =	3.23					
W/D_{mnc} =	4.29					
1.5	<	R_c/W	<	10	R_c/W = 3.23	
20	>	W/D_{mnc}	<	125	W/D_{mnc} = 20.00	min. value

Solve Equation 4.5

R_c/W =	3.23	
W/D_{mnc} =	20.00	
D_{mxb}/D_{mnc} =	1.80	

Therefore:

D_{mxb} =	13.03	ft

Determine Depth of Bend Scour by comparing pre-scour and calculated D_{mxb}

D_{mxb} (pre-scour)=	8.26	ft
D_{mxb} (calculated)=	13.03	ft
	4.77	ft

Scour at Protected Bendways (HEC-23, Section 4.3.5) (EX Check Scour)

$D_{mxb}/D_{mnc} = 1.8-0.051(R_c/W)+0.0084(W/D_{mnc})$ eq. 4.5

where:

R_c =	100	ft; centerline radius of the bend
W =	31.82	ft; width of the bend
D_{mxb} =	8.9	ft; maximum water depth in the bend, pre-scour condition
D_{mnc} =	7.65	ft; average water depth in the crossing upstream of the bend, wetted area over width of bend
A =	243.57	sf; wetted area

Check applicability of Maynord's Equation

		R_c/W =	3.14			
		W/D_{mnc} =	4.16			
1.5	<	R_c/W	<	10	R_c/W =	3.14
20	>	W/D_{mnc}	<	125	W/D_{mnc} =	20.00

Solve Equation 4.5

R_c/W =	3.14	
W/D_{mnc} =	20.00	
D_{mxb}/D_{mnc} =	1.81	

Therefore:

D_{mxb} =	13.84	ft

Determine Depth of Bend Scour by comparing pre-scour and calculated D_{mxb}

D_{mxb} (pre-scour)=	8.9	ft
D_{mxb} (calculated)=	13.84	ft
	4.94	ft

Scour at Protected Bendways (HEC-23, Section 4.3.5) (Proposed Alternates 1&2 Design Scour)

$D_{mxb}/D_{mnc} = 1.8-0.051(R_c/W)+0.0084(W/D_{mnc})$ eq. 4.5

where:

R_c =	100	ft;	centerline radius of the bend
W =	31.01	ft;	width of the bend
D_{mxb} =	8.35	ft;	maximum water depth in the bend, pre-scour condition
D_{mnc} =	7.31	ft;	average water depth in the crossing upstream of the bend, wetted area over width of bend
A =	226.55	sf;	wetted area

Check applicability of Maynord's Equation

		R_c/W =	3.22			
		W/D_{mnc} =	4.24			
1.5	<	R_c/W	<	10	R_c/W =	3.22
20	>	W/D_{mnc}	<	125	W/D_{mnc} =	20.00

Solve Equation 4.5

R_c/W =	3.22	
W/D_{mnc} =	20.00	
D_{mxb}/D_{mnc} =	1.80	

Therefore:

D_{mxb} =	13.18	ft

Determine Depth of Bend Scour by comparing pre-scour and calculated D_{mxb}

D_{mxb} (pre-scour)=	8.35	ft
D_{mxb} (calculated)=	13.18	ft
	4.83	ft

Scour at Protected Bendways (HEC-23, Section 4.3.5) (Proposed Alternates 1&2 Check Scour)

$D_{mxb}/D_{mnc} = 1.8-0.051(R_c/W)+0.0084(W/D_{mnc})$ eq. 4.5

where:

R_c =	100	ft; centerline radius of the bend
W =	32.34	ft; width of the bend
D_{mxb} =	8.93	ft; maximum water depth in the bend, pre-scour condition
D_{mnc} =	7.57	ft; average water depth in the crossing upstream of the bend, wetted area over width of bend
A =	244.68	sf; wetted area

Check applicability of Maynord's Equation

R_c/W =	3.09
W/D_{mnc} =	4.27

1.5	<	R_c/W	<	10	R_c/W =	3.09
20	>	W/D_{mnc}	<	125	W/D_{mnc} =	20.00

Solve Equation 4.5

R_c/W =	3.09
W/D_{mnc} =	20.00
D_{mxb}/D_{mnc} =	1.81

Therefore:

D_{mxb} =	13.70	ft

Determine Depth of Bend Scour by comparing pre-scour and calculated D_{mxb}

D_{mxb} (pre-scour)=	8.93	ft
D_{mxb} (calculated)=	13.70	ft
	4.77	ft

Scour at Protected Bendways (HEC-23, Section 4.3.5) (Proposed Alternate 3 Design Scour)

$D_{mxb}/D_{mnc} = 1.8-0.051(R_c/W)+0.0084(W/D_{mnc})$ eq. 4.5

where:

R_c =	100	ft; centerline radius of the bend
W =	36.8	ft; width of the bend
D_{mxb} =	6.57	ft; maximum water depth in the bend, pre-scour condition
D_{mnc} =	5.13	ft; average water depth in the crossing upstream of the bend, wetted area over width of bend
A =	188.87	sf; wetted area

Check applicability of Maynord's Equation

		R_c/W =	2.72			
		W/D_{mnc} =	7.17			
1.5	<	R_c/W	<	10	R_c/W =	2.72
20	>	W/D_{mnc}	<	125	W/D_{mnc} =	20.00

Solve Equation 4.5

R_c/W =	2.72	
W/D_{mnc} =	20.00	
D_{mxb}/D_{mnc} =	1.83	

Therefore:

D_{mxb} =	9.39	ft

Determine Depth of Bend Scour by comparing pre-scour and calculated D_{mxb}

D_{mxb} (pre-scour)=	6.57	ft
D_{mxb} (calculated)=	9.39	ft
	2.82	ft

Scour at Protected Bendways (HEC-23, Section 4.3.5) (Proposed Alternate 3 Check Scour)

$D_{mxb}/D_{mnc} = 1.8-0.051(R_c/W)+0.0084(W/D_{mnc})$ eq. 4.5

where:

R_c =	100	ft; centerline radius of the bend
W =	39.2	ft; width of the bend
D_{mxb} =	8.3	ft; maximum water depth in the bend, pre-scour condition
D_{mnc} =	6.50	ft; average water depth in the crossing upstream of the bend, wetted area over width of bend
A =	254.78	sf; wetted area

Check applicability of Maynord's Equation

R_c/W =	2.55
W/D_{mnc} =	6.03

1.5	<	R_c/W	<	10	R_c/W =	2.55
20	>	W/D_{mnc}	<	125	W/D_{mnc} =	20.00

Solve Equation 4.5

R_c/W =	2.55
W/D_{mnc} =	20.00
D_{mxb}/D_{mnc} =	1.84

Therefore:

D_{mxb} =	11.95	ft

Determine Depth of Bend Scour by comparing pre-scour and calculated D_{mxb}

D_{mxb} (pre-scour)=	8.3	ft
D_{mxb} (calculated)=	11.95	ft
	3.65	ft

Appendix 7.4.7

PRESSURIZED CONTRACTION SCOUR CALCULATIONS

Calculate Critical Velocity to Determine Contraction Scour Case (Existing Design)

$V_c = K_u y^{1/6} D^{1/3}$

where:

V_c = 3.33 ft/s; Critical Velocity above which material of size D and smaller will be transported

y = 7.78 ft; average depth of flow upstream of bridge, use Bridge Section 3

$y^{1/6}$ = 1.41 calculated value

K_u = 11.17 dimensionless; English Units

D_{50} = 2.9 mm; mean particle size

D_{50} = 0.0095 ft; calculated

$D_{50}^{1/3}$ = 0.211852 calculated value

V = 5.72 ft/s; mean velocity of flow in channel/overbank area

$\frac{V_c}{3.33} < \frac{V}{5.72}$ Use Live-Bed Contraction Scour

Live-Bed Contraction Scour (Existing Design)

$y_2/y_1 = (Q_2/Q_1)^{6/7}(W_1/W_2)^{k_1}$ eq. 6.2

$y_s = y_2 - y_o$ eq. 6.3.

where:

y_s = 0.83 ft; average contraction scour depth

y_1 = 7.78 ft; average depth in upstream main channel

y_2 = 8.92 ft; average depth in contracted section

y_o = 8.09 ft; existing depth in contraction section before scour

Q_1 = 1080 cfs; flow in upstream channel transporting sediment

Q_2 = 1080 cfs; flow in contraction channel

W_1 = 26.83 ft; top width of upstream main channel transporting sediment

W_2 = 22.00 ft; top width of main channel in contracted section less pier width(s)

k_1 = 0.69 dimensionless; mode of bed material transport

V = 2.261 ft/s; shear velocity in upstream section

T = 0.8528 ft/s; multiply T (m/s) by 3.28

T = 0.26 m/s; fall velocity of bed material, see Table

g = 32.2 ft/s^2; gravitational constant

S_1 = 0.020400 ft/ft; slope of energy grade line of main channel

Contraction Scour for Existing Design Scour Event

y_s = **0.83** **ft**

Use Contraction Scour Depth from Above to Evaluate Pressure Scour Depth

$Q_{ue} = Q_1(h_{ue}/h_u)^{8/7}$ eq. 6.15

Q_{ue} = 1,352 cfs; effective channel discharge for live-bed conditions and bridge overtopping flow

Q_1 = 1,080 cfs: upstream channel discharge as defined for eq. 6.2

h_u = 7.78 ft; upstream channel flow depth as defined for eq. 6.2

h_{ue} = 9.47 ft; effective upstream channel flow depth for live-bed conditions and bridge overtopping

*Values not used if non-overtopping condition

Separation Zone Thickness

$t/h_b = 0.5(h_b h_t/h_u^2)^{0.2}(1-h_w/h_t)^{-0.1}$ eq. 6.16

t = 1.75 ft; separation zone thickness

h_b = 6.57 ft; vertical size of the bridge opening prior to scour

h_t = 1.21 ft; distance from water surface to low chord, $h_u - h_b$

T = 2.9 ft; height of the obstruction, high chord minus low chord

h_w = 0 ft; weir flow height

Calculate Depth of Scour

$y_s = y_2 + t - h_b$ eq. 6.14

y_s = **4.10** **ft**

y_2 = 8.92 ft

t = 1.75 ft

h_b = 6.57 ft

Calculate Critical Velocity to Determine Contraction Scour Case (Existing Check)

$V_c = K_u y^{1/6} D^{1/3}$

where:

V_c = 3.37 ft/s; Critical Velocity above which material of size D and smaller will be transported

y = 8.37 ft; average depth of flow upstream of bridge, use Bridge Section 3

$y^{1/6}$ = 1.42491 calculated value

K_u = 11.17 dimensionless; English Units

D_{50} = 2.9 mm; mean particle size

D_{50} = 0.0095 ft; calculated

$D_{50}^{1/3}$ = 0.211852 calculated value

V = 6.4 ft/s; mean velocity of flow in channel/overbank area

$\frac{V_c}{3.37} < \frac{V}{6.4}$ Use Live-Bed Contraction Scour

Live-Bed Contraction Scour (Existing Check)

$y_2/y_1 = (Q_2/Q_1)^{6/7}(W_1/W_2)^{k_1}$ eq. 6.2

$y_s = y_2 - y_o$ eq. 6.3.

where:

y_s = 1.54 ft; average contraction scour depth

y_1 = 8.37 ft; average depth in upstream main channel

y_2 = 9.63 ft; average depth in contracted section

y_o = 8.09 ft; existing depth in contraction section before scour

Q_1 = 1300 cfs; flow in upstream channel transporting sediment

Q_2 = 1300 cfs; flow in contraction channel

W_1 = 26.97 ft; top width of upstream main channel transporting sediment

W_2 = 22.00 ft; top width of main channel in contracted section less pier width(s)

k_1 = 0.69 dimensionless; mode of bed material transport

V = 2.345 ft/s; shear velocity in upstream section

T = 0.8528 ft/s; multiply T (m/s) by 3.28

T = 0.26 m/s; fall velocity of bed material, see Table

g = 32.2 ft/s^2; gravitational constant

S_1 = 0.020400 ft/ft; slope of energy grade line of main channel

Contraction Scour for Existing Check Scour Event

y_s = 1.54 ft

Use Contraction Scour Depth from Above to Evaluate Pressure Scour Depth

$Q_{ue} = Q_1(h_{ue}/h_u)^{8/7}$ eq. 6.15

Q_{ue} = 1521 cfs; effective channel discharge for live-bed conditions and bridge overtopping flow

Q_1 = 1300 cfs: upstream channel discharge as defined for eq. 6.2

h_u = 8.37 ft; upstream channel flow depth as defined for eq. 6.2

h_{ue} = 9.6 ft; effective upstream channel flow depth for live-bed conditions and bridge overtopping

*Values not used if non-overtopping condition

Separation Zone Thickness

$t/h_b = 0.5(h_b h_t/h_u^2)^{0.2}(1-h_w/h_t)^{-0.1}$ eq. 6.16

t = 2.39 ft; separation zone thickness

h_b = 6.7 ft; vertical size of the bridge opening prior to scour

h_t = 1.67 ft; distance from water surface to low chord, $h_u - h_b$

T = 2.9 ft; height of the obstruction, high chord minus low chord

h_w = 0 ft; weir flow height

Calculate Depth of Scour

$y_s = y_2 + t - h_b$ eq. 6.14

y_s = 5.32 ft

y_2 = 9.63 ft

t = 2.39 ft

h_b = 6.7 ft

Calculate Critical Velocity to Determine Contraction Scour Case (Alt 1&2 Design)

$V_c = K_u y^{1/6} D^{1/3}$

where:

V_c = 3.34 ft/s; Critical Velocity above which material of size D and smaller will be transported

y = 7.87 ft; average depth of flow upstream of bridge, use Bridge Section 3

$y^{1/6}$ = 1.41 calculated value

K_u = 11.17 dimensionless; English Units

D_{50} = 2.9 mm; mean particle size

D_{50} = 0.0095 ft; calculated

$D_{50}^{1/3}$ = 0.211852 calculated value

V = 5.66 ft/s; mean velocity of flow in channel/overbank area

$\frac{V_c}{3.34} < \frac{V}{5.66}$ Use Live-Bed Contraction Scour

Live-Bed Contraction Scour (Alt 1&2 Design)

$y_2/y_1 = (Q_2/Q_1)^{6/7}(W_1/W_2)^{k_1}$ eq. 6.2

$y_s = y_2 - y_o$ eq. 6.3.

where:

y_s = 0.81 ft; average contraction scour depth

y_1 = 7.87 ft; average depth in upstream main channel

y_2 = 9.03 ft; average depth in contracted section

y_o = 8.22 ft; existing depth in contraction section before scour

Q_1 = 1080 cfs; flow in upstream channel transporting sediment

Q_2 = 1080 cfs; flow in contraction channel

W_1 = 26.85 ft; top width of upstream main channel transporting sediment

W_2 = 22.00 ft; top width of main channel in contracted section less pier width(s)

k_1 = 0.69 dimensionless; mode of bed material transport

V = 2.274 ft/s; shear velocity in upstream section

T = 0.8528 ft/s; multiply T (m/s) by 3.28

T = 0.26 m/s; fall velocity of bed material, see Table

g = 32.2 ft/s^2; gravitational constant

S_1 = 0.020400 ft/ft; slope of energy grade line of main channel

Contraction Scour for Alt 1&2 Design Scour Event

y_s = **0.81** **ft**

Use Contraction Scour Depth from Above to Evaluate Pressure Scour Depth

$Q_{ue} = Q_1(h_{ue}/h_u)^{8/7}$ eq. 6.15

Q_{ue} = 1,334 cfs; effective channel discharge for live-bed conditions and bridge overtopping flow

Q_1 = 1,080 cfs: upstream channel discharge as defined for eq. 6.2

h_u = 7.87 ft; upstream channel flow depth as defined for eq. 6.2

h_{ue} = 9.47 ft; effective upstream channel flow depth for live-bed conditions and bridge overtopping

*Values not used if non-overtopping condition

Separation Zone Thickness

$t/h_b = 0.5(h_b h_t/h_u^2)^{0.2}(1-h_w/h_t)^{-0.1}$ eq. 6.16

t = 1.87 ft; separation zone thickness

h_b = 6.57 ft; vertical size of the bridge opening prior to scour

h_t = 1.3 ft; distance from water surface to low chord, $h_u - h_b$

T = 2.9 ft; height of the obstruction, high chord minus low chord

h_w = 0 ft; weir flow height

Calculate Depth of Scour

$y_s = y_2 + t - h_b$ eq. 6.14

y_s = **4.33** **ft**

y_2 = 9.03 ft

t = 1.87 ft

h_b = 6.57 ft

Calculate Critical Velocity to Determine Contraction Scour Case (Proposed Check)

$V_c = K_u y^{1/6} D^{1/3}$

where:

V_c = 3.37 ft/s; Critical Velocity above which material of size D and smaller will be transported

y = 8.41 ft; average depth of flow upstream of bridge, use Bridge Section 3

$y^{1/6}$ = 1.426043 calculated value

K_u = 11.17 dimensionless; English Units

D_{50} = 2.9 mm; mean particle size

D_{50} = 0.0095 ft; calculated

$D_{50}^{1/3}$ = 0.211852 calculated value

V = 6.37 ft/s; mean velocity of flow in channel/overbank area

$\frac{V_c}{3.37} < \frac{V}{6.37}$ Use Live-Bed Contraction Scour

Live-Bed Contraction Scour (Proposed Check)

$y_2/y_1 = (Q_2/Q_1)^{6/7}(W_1/W_2)^{k_1}$ eq. 6.2

$y_s = y_2 - y_o$ eq. 6.3.

where:

y_s = 1.46 ft; average contraction scour depth

y_1 = 8.41 ft; average depth in upstream main channel

y_2 = 9.68 ft; average depth in contracted section

y_o = 8.22 ft; existing depth in contraction section before scour

Q_1 = 1300 cfs; flow in upstream channel transporting sediment

Q_2 = 1300 cfs; flow in contraction channel

W_1 = 26.97 ft; top width of upstream main channel transporting sediment

W_2 = 22.00 ft; top width of main channel in contracted section less pier width(s)

k_1 = 0.69 dimensionless; mode of bed material transport

V = 2.350 ft/s; shear velocity in upstream section

T = 0.8528 ft/s; multiply T (m/s) by 3.28

T = 0.26 m/s; fall velocity of bed material, see Table

g = 32.2 ft/s^2; gravitational constant

S_1 = 0.020400 ft/ft; slope of energy grade line of main channel

Contraction Scour for Proposed Check Scour Event

y_s = 1.46 ft

Use Contraction Scour Depth from Above to Evaluate Pressure Scour Depth

$Q_{ue} = Q_1(h_{ue}/h_u)^{8/7}$ eq. 6.15

Q_{ue} = 1512 cfs; effective channel discharge for live-bed conditions and bridge overtopping flow

Q_1 = 1300 cfs: upstream channel discharge as defined for eq. 6.2

h_u = 8.41 ft; upstream channel flow depth as defined for eq. 6.2

h_{ue} = 9.6 ft; effective upstream channel flow depth for live-bed conditions and bridge overtopping

*Values not used if non-overtopping condition

Separation Zone Thickness

$t/h_b = 0.5(h_b h_t/h_u^2)^{0.2}(1-h_w/h_t)^{-0.1}$ eq. 6.16

t = 2.44 ft; separation zone thickness

h_b = 6.7 ft; vertical size of the bridge opening prior to scour

h_t = 1.71 ft; distance from water surface to low chord, $h_u - h_b$

T = 2.9 ft; height of the obstruction, high chord minus low chord

h_w = 0 ft; weir flow height

Calculate Depth of Scour

$y_s = y_2 + t - h_b$ eq. 6.14

y_s = 5.42 ft

y_2 = 9.68 ft

t = 2.44 ft

h_b = 6.7 ft

Calculate Critical Velocity to Determine Contraction Scour Case (Alt 3 Check)

$V_c = K_u y^{1/6} D^{1/3}$

where:

V_c = 3.35 ft/s; Critical Velocity above which material of size D and smaller will be transported

y = 8.02 ft; average depth of flow upstream of bridge, use Bridge Section 3

$y^{1/6}$ = 1.414802 calculated value

K_u = 11.17 dimensionless; English Units

D_{50} = 2.9 mm; mean particle size

D_{50} = 0.0095 ft; calculated

$D_{50}^{1/3}$ = 0.211852 calculated value

V = 6.29 ft/s; mean velocity of flow in channel/overbank area

$\frac{V_c}{3.35} < \frac{V}{6.29}$ Use Live-Bed Contraction Scour

Live-Bed Contraction Scour (Alt 3 Check)

$y_2/y_1 = (Q_2/Q_1)^{6/7}(W_1/W_2)^{k_1}$ eq. 6.2

$y_s = y_2 - y_o$ eq. 6.3.

where:

y_s = 0.37 ft; average contraction scour depth

y_1 = 8.02 ft; average depth in upstream main channel

y_2 = 8.82 ft; average depth in contracted section

y_o = 8.45 ft; existing depth in contraction section before scour

Q_1 = 1300 cfs; flow in upstream channel transporting sediment

Q_2 = 1300 cfs; flow in contraction channel

W_1 = 36.72 ft; top width of upstream main channel transporting sediment

W_2 = 32.00 ft; top width of main channel in contracted section less pier width(s)

k_1 = 0.69 dimensionless; mode of bed material transport

V = 2.295 ft/s; shear velocity in upstream section

T = 0.8528 ft/s; multiply T (m/s) by 3.28

T = 0.26 m/s; fall velocity of bed material, see Table

g = 32.2 ft/s^2; gravitational constant

S_1 = 0.020400 ft/ft; slope of energy grade line of main channel

Contraction Scour for Alt 3 Check Scour Event

y_s = 0.37 ft

Use Contraction Scour Depth from Above to Evaluate Pressure Scour Depth

$Q_{ue} = Q_1(h_{ue}/h_u)^{8/7}$ eq. 6.15

Q_{ue} = 1778 cfs; effective channel discharge for live-bed conditions and bridge overtopping flow

Q_1 = 1300 cfs: upstream channel discharge as defined for eq. 6.2

h_u = 8.02 ft; upstream channel flow depth as defined for eq. 6.2

h_{ue} = 10.55 ft; effective upstream channel flow depth for live-bed conditions and bridge overtopping

*Values not used if non-overtopping condition

Separation Zone Thickness

$t/h_b = 0.5(h_b h_t/h_u^2)^{0.2}(1-h_w/h_t)^{-0.1}$ eq. 6.16

t = 0.03 ft; separation zone thickness

h_b = 8 ft; vertical size of the bridge opening prior to scour

h_t = 0.02 ft; distance from water surface to low chord, $h_u - h_b$

T = 2.55 ft; height of the obstruction, high chord minus low chord

h_w = 0 ft; weir flow height

Calculate Depth of Scour

$y_s = y_2 + t - h_b$ eq. 6.14

y_s = 0.85 ft

y_2 = 8.82 ft

t = 0.03 ft

h_b = 8 ft

Appendix 7.4.8

SCOUR COUNTERMEASURE DESIGN CALCULATIONS

Calculation Sheet

BSC GROUP

Project No.	28409.00	**Calc By**	M. Stephan
Subject	County Road over Ironwork Brook	**Date**	12/6/2021
Location	Sheffield, MA	**Checked by**	K. Eagan
		Date	12/7/2021

Proposed Alternates 1&2 Countermeasure Stone Sizing - Bridge Abutments (HEC-23, DG4)

Design Storm: 50-year

$$d_{30} = y(S_f C_S C_V C_T)[\frac{(V_{des})}{\sqrt{K_1(S_g - 1)gy}}]^{2.5}$$

d_{30} =	0.35	ft

y =	9.06	ft; local depth of flow	V_{avg} =	5.66	ft/s; average velocity for bridge section 3
S_f =	1.1		R_c =	100	ft
C_S =	0.3		W =	26.85	ft; top width for bridge section 3
C_V =	1.2				
C_T =	1.0		R_c/W =	3.7	< 26
V_{des} =	8.17	f/s			
K_1 =	0.87				
S_g =	2.65		K_1 =	0.87	
g =	32.2	ft/s^2	θ =	26.57	degrees
			Bank Slope =	2.0	Horizontal to 1 Vertical
			θ =	0.46	radians
$d_{50} = 1.20 d_{30}$			14 degrees =	0.24	radians
			32 degrees =	0.56	radians

d_{50} =	0.4	ft
d_{50} =	5.1	in

Per HEC-23, for longitudinal slopes greater than 2%, compare results to sizing of riprap for overtopping flow (DG5)

$$d_{50} = \frac{K_u q_f^{0.52}}{C_u^{0.25} S^{0.75}} \left(\frac{\sin\alpha}{(S_g \cos\alpha - 1)(\cos\alpha \tan\phi - \sin\alpha)} \right)^{1.11}$$

where:

d_{50}	=	Particle size for which 50% is finer by weight, ft (m)
K_u	=	0.525 for English units 0.55 for SI units
q_f	=	Unit discharge at failure, $ft^3/s/ft$ ($m^3/s/m$)
C_u	=	Coefficient of uniformity of the riprap, d_{60}/d_{10}
S	=	Slope of the embankment, ft/ft (m/m)
S_g	=	Specific gravity of the riprap
α	=	Slope of the embankment, degrees
φ	=	Angle of repose of the riprap, degrees

K_u =	0.525	english units	
q_f =	27.20	$ft^3/s/ft$	
Q =	1080	ft^3/s; discharge of design scour event	
P_{wet} =	39.71	ft; total section wetted perimeter at station 2633	
C_u =	1.2	dimensionless; assumed	
S =	0.0204	ft/ft	
S_g =	2.65	dimensionless	
α =	1.17	degrees	
ϕ =	41	degrees; from table for angular stone	

sinα =	0.020
$q_f^{0.52}$ =	5.571
$C_u^{0.25}$ =	1.047
$S^{0.75}$ =	0.054
cosα =	1.000
tanφ =	0.869
d_{50} =	0.5
=	**5.7** in

Compare Results

Value from Section DG4 = 5.1 in

Value from Section DG5 = 5.7 in

Design Stone Size (D_{50}) = **5.7** in

Determine Minimum D_{50} Mass

Average Density of Basalt = 3.0 g/cm^3

= 187.28 lb/ft^3

Required D_{50} Stone Weight = 10.40 lb; assume spherical stone shape

Selected Material:

MassDOT M2.02.4: Modified Rockfill

Minimum specified D_{25} stone size 4 inches

Conclusion

The required median size stone size is less than the median stone size of the selected bank material, modified rockfill

Proposed Alternate 3 Countermeasure Stone Sizing - Bridge Abutments (HEC-23, DG4)

Design Storm: 50-year

$$d_{30} = y\left(S_f C_S C_V C_T\right)\left[\frac{(V_{des})}{\sqrt{K_1\left(S_g - 1\right)gy}}\right]^{2.5}$$

d_{30} =	0.83	ft

y =	7.34	ft; average depth
S_f =	1.1	
C_S =	0.3	
C_V =	1.2	
C_T =	1.0	
V_{des} =	10.16	f/s
K_1 =	0.72	
S_g =	2.65	
g =	32.2	ft/s^2

V_{des} =	10.16	ft/s
V_{avg} =	6.79	ft/s; average velocity for bridge section 3
R_c =	100	ft
W =	34.07	ft; average top width for bridge section 3
R_c/W =	2.9	< 26
K_1 =	0.72	
θ =	33.69	degrees
Bank Slope =	1.5	Horizontal to 1 Vertical
θ =	0.59	radians
14 degrees =	0.24	radians
32 degrees =	0.56	radians

$$d_{50} = 1.20 d_{30}$$

d_{50} =	1.0	ft

d_{50} =	11.9	in

Per HEC-23, for longitudinal slopes greater than 2%, compare results to sizing of riprap for overtopping flow (DG5)

$$d_{50} = \frac{K_u q_f^{0.52}}{C_u^{0.25} S^{0.75}} \left(\frac{\sin\alpha}{(S_g \cos\alpha - 1)(\cos\alpha \tan\phi - \sin\alpha)} \right)^{1.11}$$

where:
- d_{50} = Particle size for which 50% is finer by weight, ft (m)
- K_u = 0.525 for English units; 0.55 for SI units
- q_f = Unit discharge at failure, $ft^3/s/ft$ ($m^3/s/m$)
- C_u = Coefficient of uniformity of the riprap, d_{60}/d_{10}
- S = Slope of the embankment, ft/ft (m/m)
- S_g = Specific gravity of the riprap
- α = Slope of the embankment, degrees
- ϕ = Angle of repose of the riprap, degrees

$\sin\alpha$ = 0.020

$q_f^{0.52}$ = 5.493

$C_u^{0.25}$ = 1.047

$S^{0.75}$ = 0.054

$\cos\alpha$ = 1.000

$\tan\phi$ = 0.869

d_{50} = 0.5

= **5.6** in

K_u = 0.525 english units

q_f = 26.46 $ft^3/s/ft$

Q = 1080 ft^3/s; discharge of design scour event

P_{wet} = 40.81 ft; total section wetted perimeter at bridge section 3

C_u = 1.2 dimensionless; assumed

S = 0.0204 ft/ft

S_g = 2.65 dimensionless

α = 1.17 degrees

ϕ = 41 degrees; from table for angular stone

Compare Results

Value from Section DG4 = 11.9 in

Value from Section DG5 = 5.6 in

Design Stone Size (D_{50}) = **11.9** in

Determine Minimum D_{50} Mass

Average Density of Basalt = 3.0 g/cm^3

= 187.28 lb/ft^3

Required D_{50} Stone Weight = 96.34 lb; assume spherical stone shape

Selected Material:
MassDOT M2.02.2: Dumped Riprap
Minimum specified D_{50} stone weight: 200 lbs

Conclusion
The required median stone weight is less than the median stone weight of the selected bank material, dumped riprap

Appendix 8.5.1

BRIDGE INSPECTION REPORT

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION PAGE 1 OF 17

STRUCTURES INSPECTION FIELD REPORT

ROUTINE & SPECIAL MEMBER INSPECTION

2-DIST	B.I.N.	BR. DEPT. NO.
01	02H	S-10-024

CITY/TOWN	8.-STRUCTURE NO.	11-Kilo. POINT	41-STATUS	90-ROUTINE INSP. DATE
SHEFFIELD	S10024-02H-MUN-NBI	000.000	P:POSTED	DEC 10, 2020

07-FACILITY CARRIED	MEMORIAL NAME/LOCAL NAME	27-YR BUILT	106-YR REBUILT	YR REHAB'D (NON 106)
HWY COUNTY RD		1939	0000	0000

06-FEATURES INTERSECTED	26-FUNCTIONAL CLASS	DIST. BRIDGE INSPECTION ENGINEER
WATER IRONWORK BROOK	Major Collector	L. A. Briggs

43-STRUCTURE TYPE	22-OWNER	21-MAINTAINER	TEAM LEADER
302 : Steel Stringer/Girder	Town Agency	Town Agency	M. P.E. McCabe

107-DECK TYPE	WEATHER	TEMP. (air)	TEAM MEMBERS
1 : Concrete Cast-in-Place	Cloudy	0°C	S. GALE

ITEM 58 — 6

DECK

		DEF
1.Wearing Surface	7	-
2.Deck Condition	6	-
3.Stay in Place Forms	N	-
4.Curbs	H	-
5.Median	N	-
6.Sidewalks	N	-
7.Parapets	N	-
8.Railing	4	S-A
9.Anti Missile Fence	N	-
10.Drainage System	N	-
11.Lighting Standards	N	-
12.Utilities	N	-
13.Deck Joints	N	-
14.	N	-
15.	N	-
16.	N	-

CURB REVEAL (In millimeters)	N	S
	130	80

APPROACHES

		DEF
a. Appr. Pavement Condition	7	-
b. Appr. Roadway Settlement	7	-
c. Appr. Sidewalk Settlement	N	-
d.	N	-

OVERHEAD SIGNS (Attached to bridge) (Y/N) N

		DEF
a. Condition of Welds	N	-
b. Condition of Bolts	N	-
c. Condition of Signs	N	-

ITEM 59 — 4

SUPERSTRUCTURE

		DEF
1.Stringers	N	-
2.Floorbeams	N	-
3.Floor System Bracing	N	-
4.Girders or Beams	4	S-A
5.Trusses - General	N	-
a. Upper Chords	N	-
b. Lower Chords	N	-
c. Web Members	N	-
d. Lateral Bracing	N	-
e. Sway Bracings	N	-
f. Portals	N	-
g. End Posts	N	-
6.Pin & Hangers	N	-
7.Conn Plt's, Gussets & Angles	7	-
8.Cover Plates	N	-
9.Bearing Devices	4	M-P
10.Diaphragms/Cross Frames	7	-
11.Rivets & Bolts	7	-
12.Welds	N	-
13.Member Alignment	7	-
14.Paint/Coating	4	M-P
15.	N	-

Year Painted	X

COLLISION DAMAGE: *Please explain*
None (X) Minor ( ) Moderate ( ) Severe ( )

LOAD DEFLECTION: *Please explain*
None (X) Minor ( ) Moderate ( ) Severe ( )

LOAD VIBRATION: *Please explain*
None (X) Minor ( ) Moderate ( ) Severe ( )

Any Fracture Critical Member: (Y/N) N

Any Cracks: (Y/N) N

ITEM 60 — 6

SUBSTRUCTURE

	Dive	Cur		DEF
1. Abutments			6	
a. Pedestals	N	N		-
b. Bridge Seats	N	6		-
c. Backwalls	N	6		-
d. Breastwalls	N	6		-
e. Wingwalls	N	6		-
f. Slope Paving/Rip-Rap	N	N		-
g. Pointing	N	N		-
h. Footings	N	H		-
i. Piles	N	N		-
j. Scour	N	7		-
k. Settlement	N	7		-
l.	N	N		-
m.	N	N		-
2. Piers or Bents			N	
a. Pedestals	N	N		-
b. Caps	N	N		-
c. Columns	N	N		-
d. Stems/Webs/Pierwalls	N	N		-
e. Pointing	N	N		-
f. Footing	N	N		-
g. Piles	N	N		-
h. Scour	N	N		-
i. Settlement	N	N		-
j.	N	N		-
k.	N	N		-
3. Pile Bents			N	
a. Pile Caps	N	N		-
b. Piles	N	N		-
c. Diagonal Bracing	N	N		-
d. Horizontal Bracing	N	N		-
e. Fasteners	N	N		-

UNDERMINING (Y/N) If YES please explain N

COLLISION DAMAGE:
None (X) Minor ( ) Moderate ( ) Severe ( )

SCOUR: *Please explain*
None (X) Minor ( ) Moderate ( ) Severe ( )

I-60 (Dive Report): N *I-60 (This Report):* 6

93B-U/W (DIVE) Insp 00/00/0000

X=UNKNOWN N=NOT APPLICABLE H=HIDDEN/INACCESSIBLE R=REMOVED

RTN(1)7-96

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
SHEFFIELD	02H	S-10-024	S10024-02H-MUN-NBI	DEC 10, 2020

ITEM 61 — **6**

CHANNEL & CHANNEL PROTECTION

	Dive	Cur	DEF
1.Channel Scour	N	7	-
2.Embankment Erosion	N	7	-
3.Debris	N	7	-
4.Vegetation	N	7	-
5.Utilities	N	N	-
6.Rip-Rap/Slope Protection	N	6	-
7.Aggradation	N	6	-
8.Fender System	N	N	-

STREAM FLOW VELOCITY:
Tidal ( ) High ( ) Moderate ( ) Low (X) None ( )

ITEM 61 (Dive Report): N ***ITEM 61 (This Report):*** 6

93b-U/W INSP. DATE: 00/00/0000

ITEM 36 ***TRAFFIC SAFETY***

	36	COND	DEF
A. Bridge Railing	0	4	S-A
B. Transitions	0	5	M-P
C. Approach Guardrail	0	5	M-P
D. Approach Guardrail Ends	0	0	M-P

WEIGHT POSTING ***Not Applicable*** ☐

	H	3	3S2	Single
Actual Posting	18	25	36	N
Recommended Posting	18	25	36	N

Waived Date: 00/00/0000 **EJDMT Date:** 00/00/0000

Signs In Place (Y=Yes,N=No, NR=NotRequired) Legibility/ Visibility	At bridge E	At bridge W	Other Advance E	Other Advance W
	Y	Y	Y	Y
	8/8	8/8	8/8	8/8

CLEARANCE POSTING ***Not*** X Actual Field Measurement / Posted Clearance

	N ft	N in	S ft	S in	meter
		0		0	
		0		0	

Signs In Place (Y=Yes,N=No, NR=Not Required) Legibility/ Visibility	At bridge N	At bridge S	Advance N	Advance S

ACCESSIBILITY (Y/N/P)

	Needed	Used
Lift Bucket	N	N
Ladder	Y	Y
Boat	N	N
Waders	Y	Y
Inspector 50	N	N
Rigging	N	N
Staging	N	N
Traffic Control	N	N
RR Flagger	N	N
Police	N	N
Other:		
	N	N

TOTAL HOURS 8

PLANS (Y/N): Y

(V.C.R.) (Y/N): N

TAPE#: _____

List of field tests performed:

RATING
Rating Report (Y/N): Y
Date: 11/01/2016
Inspection data at time of existing rating
I 58: **6** I 59: **5** I 60: **6** Date : 02/19/2016

Recommend for Rating or Rerating (Y/N): N

If YES please give priority: HIGH ( ) MEDIUM ( ) LOW ( )

REASON: _____

CONDITION RATING GUIDE

(For Items 58, 59, 60 and 61)

	CODE	CONDITION	DEFECTS
	N	NOT APPLICABLE	
G	9	EXCELLENT	Excellent condition.
G	8	VERY GOOD	No problem noted.
G	7	GOOD	Some minor problems.
F	6	SATISFACTORY	Structural elements show some minor deterioration.
F	5	FAIR	All primary structural elements are sound but may have minor section loss, cracking, spalling or scour.
P	4	POOR	Advanced section loss, deterioration, spalling or scour.
P	3	SERIOUS	Loss of section, deterioration, spalling or scour have seriously affected primary structural components. Local failures are possible. Fatigue cracks in steel or shear cracks in concrete may be present.
C	2	CRITICAL	Advanced deterioration of primary structural elements. Fatigue cracks in steel or shear cracks in concrete may be present or scour may have removed substructure support. Unless closely monitored it may be necessary to close the bridge until corrective action is taken.
C	1	"IMMINENT" FAILURE	Major deterioration or section loss present in critical structural components or obvious vertical or horizontal movement affecting structure stablility. Bridge is closed to traffic but corrective action may put it back in light service.
	0	FAILED	Out of service - beyond corrective action.

DEFICIENCY REPORTING GUIDE

DEFICIENCY: A defect in a structure that requires corrective action.

CATEGORIES OF DEFICIENCIES:

M= Minor Deficiency - Deficiencies which are minor in nature, generally do not impact the structural integrity of the bridge and could easily be repaired. Examples include but are not limited to: Spalled concrete, Minor pot holes, Minor corrosion of steel, Minor scouring, Clogged drainage, etc.

S= Severe/Major Deficiency - Deficiencies which are more extensive in nature and need more planning and effort to repair. Examples include but are not limited to: Moderate to major deterioration in concrete, Exposed and corroded rebars, Considerable settlement, Considerable scouring or undermining, Moderate to extensive corrosion to structural steel with measurable loss of section, etc.

C-S= Critical Structural Deficiency - A deficiency in a structural element of a bridge that poses an extreme unsafe condition due to the failure or imminent failure of the element which will affect the structural integrity of the bridge.

C-H= Critical Hazard Deficiency - A deficiency in a component or element of a bridge that poses an extreme hazard or unsafe condition to the public, but does not impair the structural integrity of the bridge. Examples include but are not limited to: Loose concrete hanging down over traffic or pedestrians, A hole in a sidewalk that may cause injuries to pedestrians, Missing section of bridge railing, etc.

URGENCY OF REPAIR:

I = Immediate- [Inspector(s) immediately contact District Bridge Inspection Engineer (DBIE) to report the Deficiency and to receive further instruction from him/her].

A = ASAP- [Action/Repair should be initiated by District Maintenance Engineer or the Responsible Party (if not a State owned bridge) upon receipt of the Inspection Report].

P = Prioritize- [Shall be prioritized by District Maintenance Engineer or the Responsible Party (if not a State owned bridge) and repairs made when funds and/or manpower is available].

RTB(2)04-07

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION

STRUCTURES INSPECTION FIELD REPORT

ROUTINE & SPECIAL MEMBER INSPECTION

2-DIST	B.I.N.	BR. DEPT. NO.
01	02H	S-10-024

CITY/TOWN	8.-STRUCTURE NO.	11-Kilo. POINT	90-ROUTINE INSP. DATE	93*-SPEC. MEMB. INSP. DATE
SHEFFIELD	S10024-02H-MUN-NBI	000.000	Dec 10, 2020	Dec 10, 2020

07-FACILITY CARRIED	MEMORIAL NAME/LOCAL NAME	27-YR BUILT	106-YR REBUILT	*YR REHAB'D (NON 106)
HWY COUNTY RD		1939	0000	0000

06-FEATURES INTERSECTED	26-FUNCTIONAL CLASS	DIST. BRIDGE INSPECTION ENGINEER
WATER IRONWORK BROOK	Major Collector	L. A. Briggs

43-STRUCTURE TYPE	22-OWNER	21-MAINTAINER	TEAM LEADER
302 : Steel Stringer/Girder	Town Agency	Town Agency	M. P.E. McCabe

107-DECK TYPE	WEATHER	TEMP. (air)	TEAM MEMBERS
1 : Concrete Cast-in-Place	Cloudy	0°C	S. GALE

WEIGHT POSTING — *Not Applicable* ☐

	H	3	3S2	Single
Actual Posting	18	25	36	N
Recommended Posting	18	25	36	N

Waived Date: 00/00/0000 EJDMT Date: 00/00/0000

Signs In Place (Y=Yes,N=No, NR=Not Required)
Legibility/ Visibility

	At bridge E	At bridge W	Advance E	Advance W
Signs In Place	Y	Y	Y	Y
Legibility/ Visibility	8/8	8/8	8/8	8/8

PLANS (Y/N): Y

(V.C.R.) (Y/N): N

TAPE#:

RATING

Rating Report (Y/N): Y Date: 11/01/2016

Recommend for Rating or Rerating (Y/N): N

If YES please give priority: HIGH ( ) MEDIUM ( ) LOW ( )

REASON:

Inspection data at time of existing rating

I 58: 6 I 59: 5 I 60: 6 I 62: - Date : 02/19/2016

SPECIAL MEMBER(S):

	MEMBER	CRACK (Y/N):	WELD'S CONDITION (0-9)	LOCATION OF CORROSION, SECTION LOSS (%), CRACKS, COLLISION DAMAGE, STRESS CONCENTRATION, ETC.	CONDITION PREVIOUS (0-9)	CONDITION PRESENT (0-9)	INV. RATING OF MEMBER FROM RATING ANALYSIS H-20	3	3S2	Deficiencies
A	Item 59.4 - Girders or Beams	N		See remarks in comments section.	4	4	0	0	0	S-A
B										
C										
D										
E										

List of field tests performed:

	I-58	I-59	I-60	I-62
(Overall Previous Condition)	6	4	6	-
(Overall Current Condition)	6	4	6	-

DEFICIENCY: A defect in a structure that requires corrective action.

CATEGORIES OF DEFICIENCIES:

M= Minor Deficiency - Deficiencies which are minor in nature, generally do not impact the structural integrity of the bridge and could easily be repaired. Examples include but are not limited to: Spalled concrete, Minor pot holes, Minor corrosion of steel, Minor scouring, Clogged drainage, etc.

S= Severe/Major Deficiency - Deficiencies which are more extensive in nature and need more planning and effort to repair. Examples include but are not limited to: Moderate to major deterioration in concrete, Exposed and corroded rebars, Considerable settlement, Considerable scouring or undermining, Moderate to extensive corrosion to structural steel with measurable loss of section, etc.

C-S= Critical Structural Deficiency - A deficiency in a structural element of a bridge that poses an extreme unsafe condition due to the failure or imminent failure of the element which will affect the structural integrity of the bridge.

C-H= Critical Hazard Deficiency - A deficiency in a component or element of a bridge that poses an extreme hazard or unsafe condition to the public, but does not impair the structural integrity of the bridge. Examples include but are not limited to: Loose concrete hanging down over traffic or pedestrians, A hole in a sidewalk that may cause injuries to pedestrians, Missing section of bridge railing, etc.

URGENCY OF REPAIR:

I = Immediate- [Inspector(s) immediately contact District Bridge Inspection Engineer (DBIE) to report the Deficiency and to receive further instruction from him/her].

A = ASAP- [Action/Repair should be initiated by District Maintenance Engineer or the Responsible Party (if not a State owned bridge) upon receipt of the Inspection Report].

P = Prioritize- [Shall be prioritized by District Maintenance Engineer or the Responsible Party (if not a State owned bridge) and repairs made when funds and/or manpower is available].

X=UNKNOWN N=NOT APPLICABLE H=HIDDEN/INACCESSIBLE R=REMOVED

F.C.(1)7-96

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
SHEFFIELD	**02H**	**S-10-024**	**S10024-02H-MUN-NBI**	**DEC 10, 2020**

REMARKS

BRIDGE ORIENTATION
County Road travels east and west. Ironwork Brook flows from north to south. This single span structure consists of nine steel beams supporting a reinforced concrete deck with an asphalt wearing surface. The beams and bays are numbered from south to north, downstream to upstream, in accordance with the 2016 Rating Report. See photos 1 & 2.

GENERAL REMARKS
Barriers are in place to take both fascia beams out of service. See photo 1.

ITEM 58 - DECK

Item 58.1 - Wearing Surface
At the west deck end, in the eastbound lane, the wearing surface has minor mapcracking. The mapcracking in the westbound lane was repaired with the approach pavement patch.

Item 58.2 - Deck Condition
All bays have random transverse hairline cracks with moderate efflorescence.

Bays 2, 3 & 8, adjacent to the beams, have cover spalls, up to 12" long x 6" wide.

Along the top flanges of beams 8 & 9, there is evidence of leakage.

The east end of the deck is lifted off the backwall, 1" high. See photo 3.

Item 58.4 - Curbs
Both curbs are behind barriers. See photos 1 & 4.

There is debris along both curbs, approximately 1" deep.

The north curb is spalled, 50% of length x 1" deep.

The south curb has two spalls. One is at the east end, 3' long x 2" deep. The other is at mid-span, 2' long x 1" deep.

Item 58.8 - Railing
Both railings are behind barriers. See photos 1 & 4.

North Railing
All bottom rails are missing. See photo 4.

At the bottoms of the posts, the webs have up to 100% section loss x 4" high.

The rail base is scaled at three areas, up to 3' long x 6" high x 2" deep. See photo 4.

South Railing
The bottom of the posts have rusting, section loss and debris.

APPROACHES

Approaches a - Appr. Pavement Condition
In both approaches, in the westbound travel lane, there is a large bituminous patch. See photo 1.

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
SHEFFIELD	**02H**	**S-10-024**	**S10024-02H-MUN-NBI**	**DEC 10, 2020**

REMARKS

Approaches b - Appr. Roadway Settlement
At both deck ends, there is minor settlement, up to 8' wide x 1/2" deep.

ITEM 59 - SUPERSTRUCTURE

Item 59.4 - Girders or Beams
There is moderate to severe rusting mainly at the beam ends. There is minor rusting throughout the remainder of the superstructure. The bottom flanges have heavy rusting with section loss at several bearing areas. See sketches 1 - 5 and photos 5 - 9.

A steel plate repair was done in 2003 at the west end of beam 1 to compensate for section loss in that area. The repair plate has moderate laminated rust along the bottom and surface rust throughout. See photo 6.

Beam 4 has an area of localized section loss at the east end. The flange, at 12" from the beam end, is 0.25" thick and the web has minor loss. See photo 8.

Item 59.9 - Bearing Devices
All bearings have moderate to heavy rusting and delamination and pack rust between the sliding plates, up to 1" thick. See photos 5 & 7 - 9.

Bearings, 3, 4, & 7 on the east side, have both anchor bolts rusted off.

All anchor bolts on the west side are bent toward the backwall.

Item 59.14 - Paint/Coating
The paint system is chalking and peeling throughout with heavy rusting at the ends of the beams. See photos 2 & 5 - 9.

ITEM 60 - SUBSTRUCTURE

Item 60.1 - Abutments
Item 60.1.b - Bridge Seats
Refer to Item 60.1.d - Breastwalls.

Item 60.1.c - Backwalls
Refer to Item 60.1.d - Breastwalls.

Item 60.1.d - Breastwalls
East Breastwall
Below beams 3 & 4, at the top, there is a vertical hairline crack, 12" long.

In bay 8 and below beam 7, there is a full height vertical hairline crack.

West Breastwall
Bays 2 & 3 both have a full height vertical hairline crack that extends into the seat.

Bay 5 has a vertical crack that extends into the seat, 1/16" wide x full height.

The north end has a vertical crack that extends through the seat and into the cheekwall and backwall, 1/8" wide x full height.

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
SHEFFIELD	**02H**	**S-10-024**	**S10024-02H-MUN-NBI**	**DEC 10, 2020**

REMARKS

Item 60.1.e - Wingwalls
The southeast wingwall is scaled at the end, 30" wide x full height x 2" deep, and extends north along a 1/16" wide horizontal crack for 5' at 6" from the top of the wall. See photo 10.

The southwest wingwall has a vertical crack, 1/16" wide x full height, with efflorescence.

Item 60.1.h - Footings
The footings are hidden by design.

ITEM 61 - CHANNEL AND CHANNEL PROTECTION

Item 61.6 - Rip-Rap/Slope Protection
The retaining walls adjacent to northeast and southeast wingwalls have missing and loose stones.

Item 61.7 - Aggradation
The flow is along the west abutment leaving a gravel buildup on the east side, 4' high.

TRAFFIC SAFETY

Item 36a - Bridge Railing
The bridge railings consist of two steel pipe rails mounted through steel I-posts . Refer to Item 58.8 - Railing.

Item 36b - Transitions
The northwest transition consists of one concrete post that is cracked and spalled.

The northeast and southeast transitions consist of single steel W-beam panels not tied into the bridge railing and mounted on steel posts with plastic blockouts, spacing at 6'.

The southeast section has no transition.

Item 36c - Approach Guardrail
The northwest corner has no approach guardrail in place.

The southwest and northeast approach guardrail consists of single steel W-beam panels mounted on steel posts with plastic blockouts, spaced at 6'.

The southeast corner has no approach guardrail in place.

Item 36d - Approach Guardrail Ends
The northwest and southeast approaches have no approach guardrails.

The northeast approach guardrail has a steel terminal end swept away from traffic.

The southwest approach guardrail is continuous along County Road.

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
SHEFFIELD	**02H**	**S-10-024**	**S10024-02H-MUN-NBI**	**DEC 10, 2020**

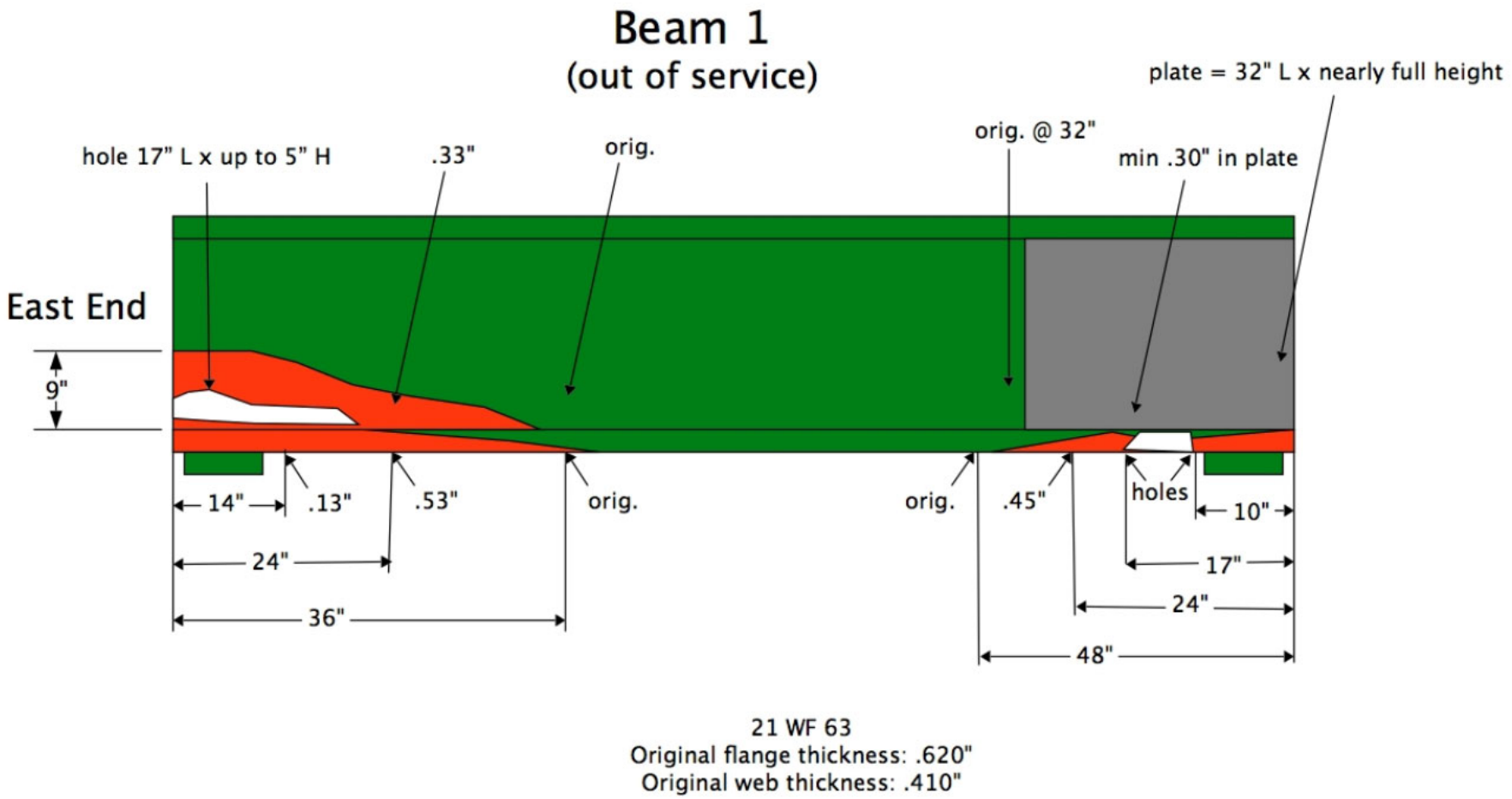
REMARKS

Sketch / Photo Log

Sketch 1 : Beam 1 section loss.
Sketch 2 : Beam 2 section loss.
Sketch 3 : Beam 3 section loss.
Sketch 4 : Beam 8 section loss.
Sketch 5 : Beam 9 section loss.
Photo 1 : General topside, looking west.
Photo 2 : General underside, looking west.
Photo 3 : East deck end lifting.
Photo 4 : North railing missing bottom rails and scaling in the rail base.
Photo 5 : Section loss at east end of beam 1.
Photo 6 : Repaired area at west end of beam 1.
Photo 7 : Section loss at west end of beam 2.
Photo 8 : Minor section loss at the east end of beam 4.
Photo 9 : Section loss at the west end of beam 8.
Photo 10 : Scaling at the end of the southeast wingwall. Also note the missing and loose stones in the southeast retaining wall.

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
SHEFFIELD	02H	S-10-024	S10024-02H-MUN-NBI	DEC 10, 2020

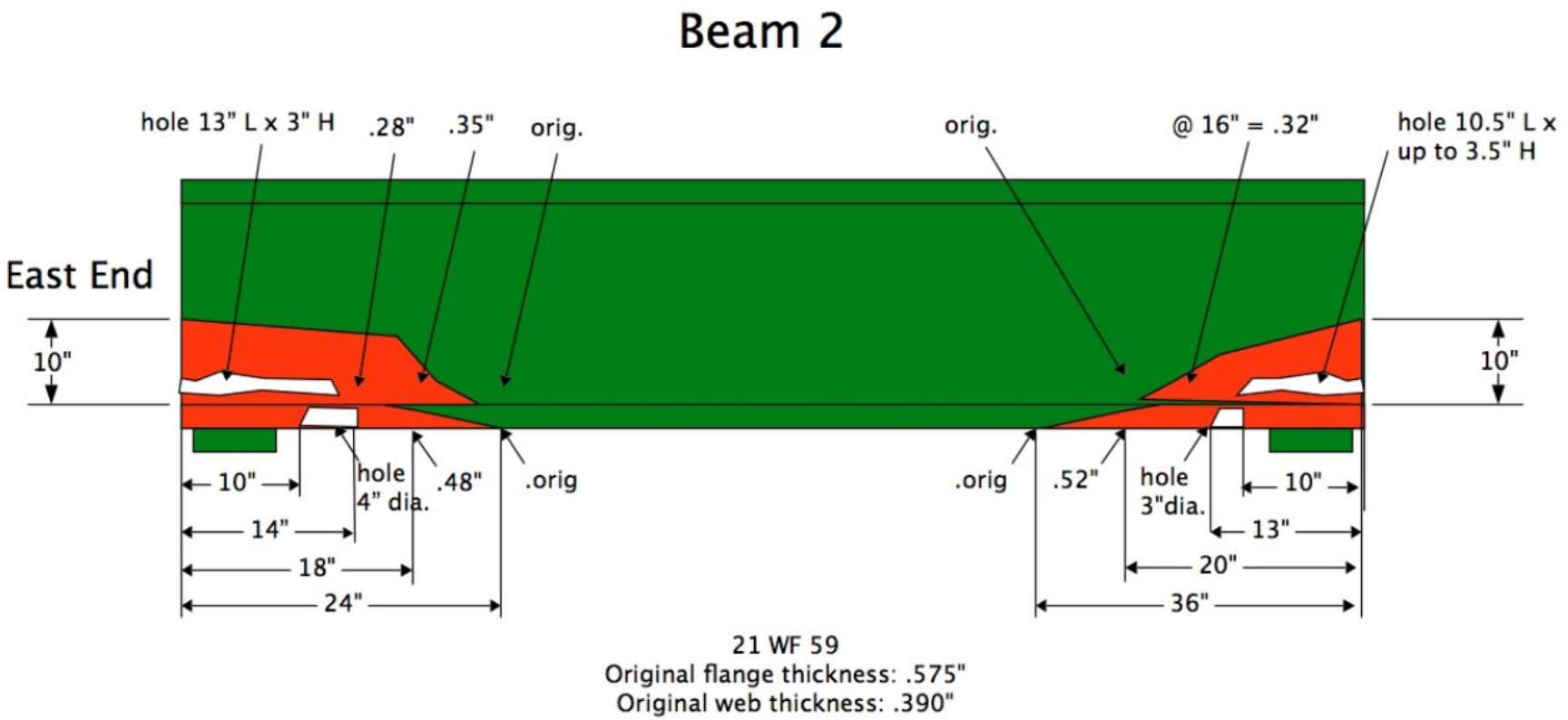
SKETCHES



Sketch 1: **Beam 1 section loss.**

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
SHEFFIELD	02H	S-10-024	S10024-02H-MUN-NBI	DEC 10, 2020

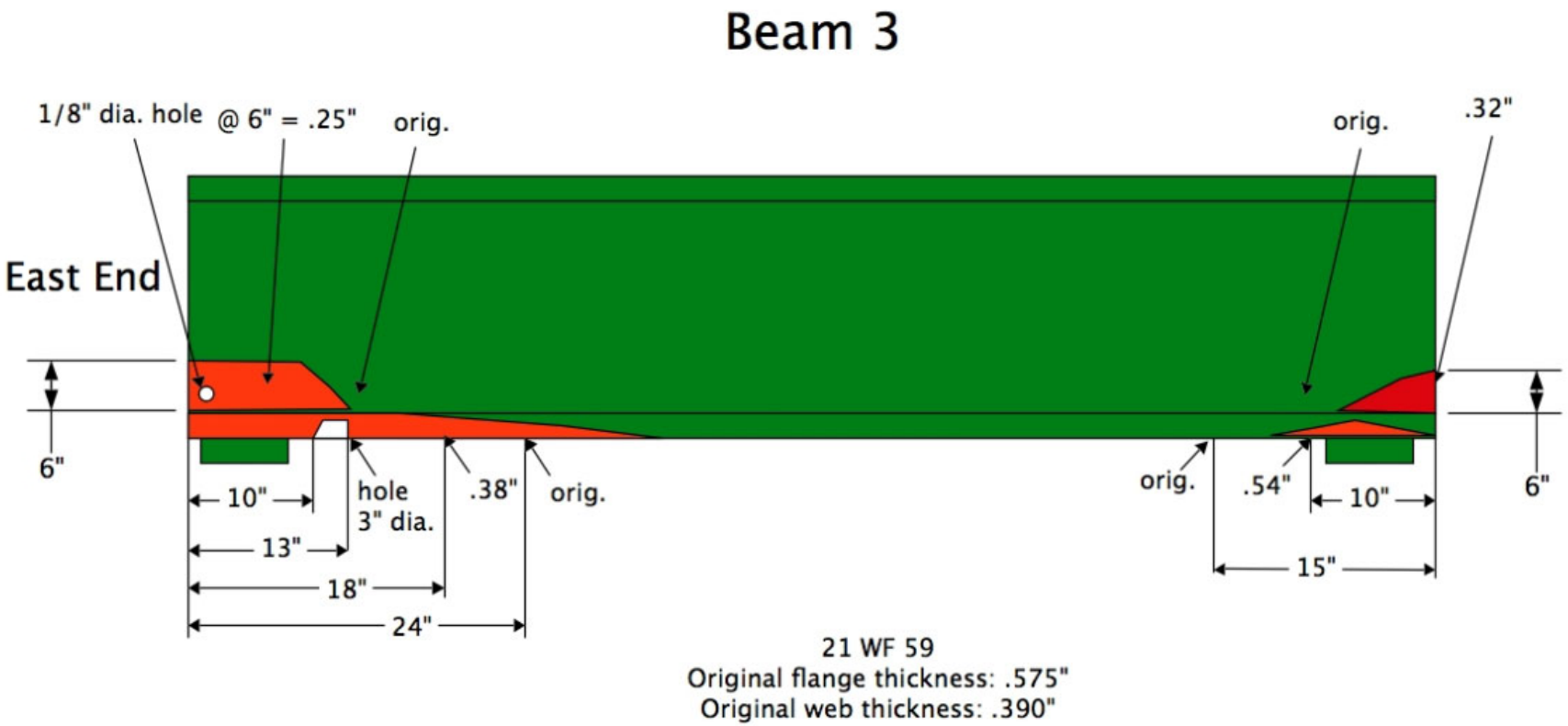
SKETCHES



Sketch 2: Beam 2 section loss.

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
SHEFFIELD	02H	S-10-024	S10024-02H-MUN-NBI	DEC 10, 2020

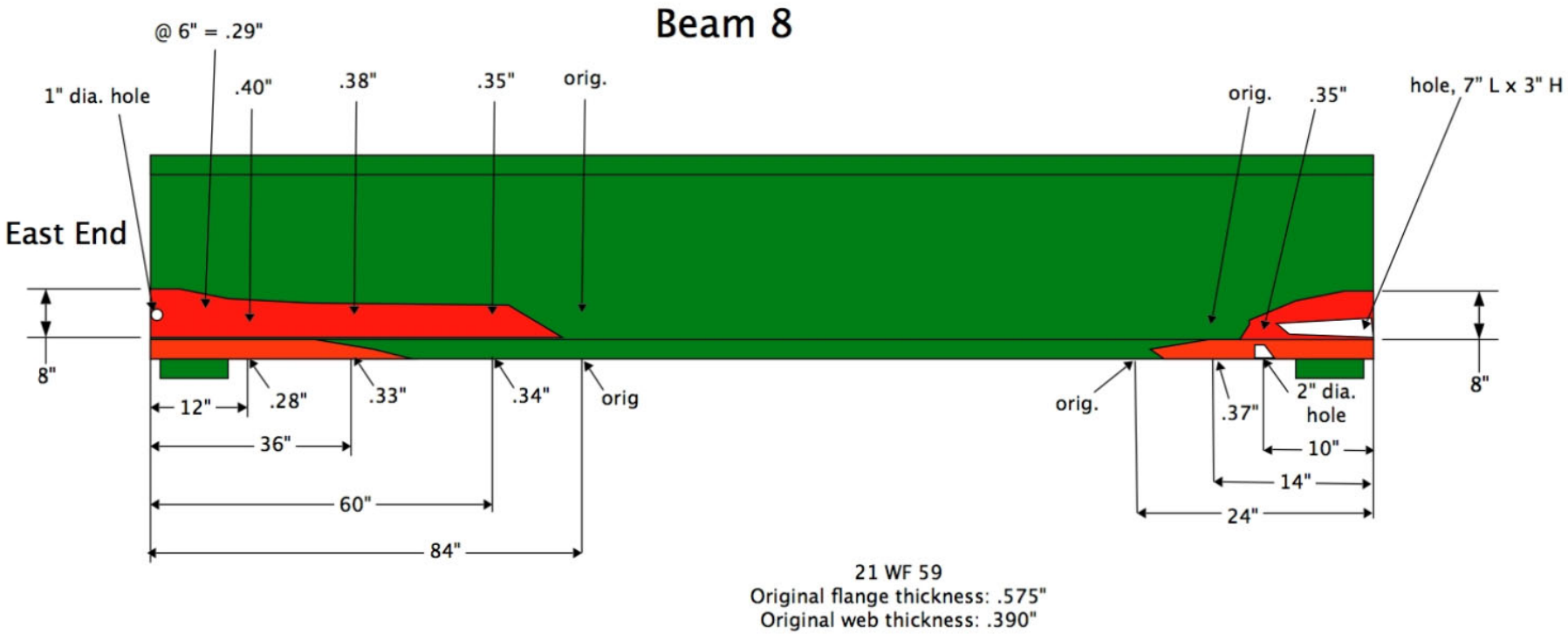
SKETCHES



Sketch 3: Beam 3 section loss.

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
SHEFFIELD	02H	S-10-024	S10024-02H-MUN-NBI	DEC 10, 2020

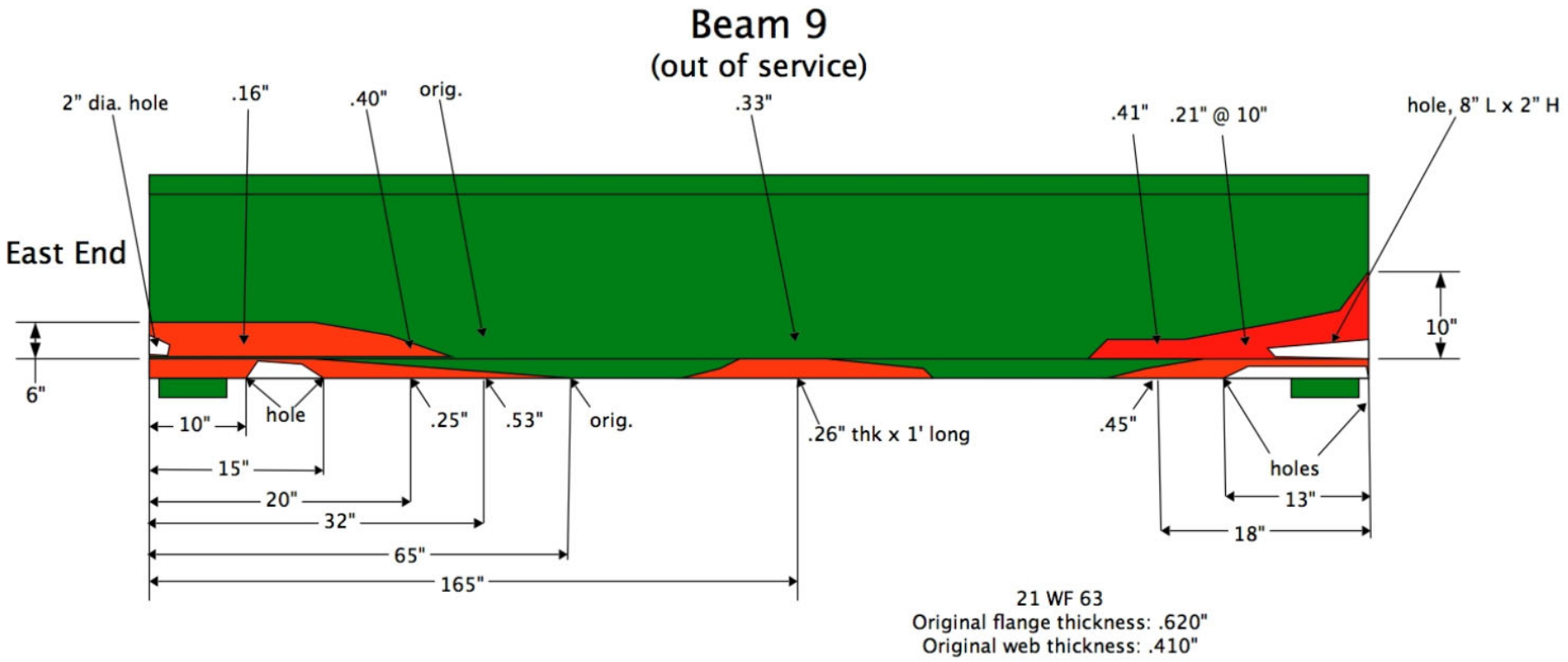
SKETCHES



Sketch 4: Beam 8 section loss.

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
SHEFFIELD	02H	S-10-024	S10024-02H-MUN-NBI	DEC 10, 2020

SKETCHES



Sketch 5: Beam 9 section loss.

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
SHEFFIELD	02H	S-10-024	S10024-02H-MUN-NBI	DEC 10, 2020

PHOTOS



Photo 1: General topside, looking west.



Photo 2: General underside, looking west.

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
SHEFFIELD	02H	S-10-024	S10024-02H-MUN-NBI	DEC 10, 2020

PHOTOS



Photo 3: East deck end lifting.



Photo 4: North railing missing bottom rails and scaling in the rail base.

REM.(2)7-96

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
SHEFFIELD	02H	S-10-024	S10024-02H-MUN-NBI	DEC 10, 2020

PHOTOS



Photo 5: **Section loss at east end of beam 1.**



Photo 6: **Repaired area at west end of beam 1.**

REM.(2)7-96

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
SHEFFIELD	02H	S-10-024	S10024-02H-MUN-NBI	DEC 10, 2020

PHOTOS



Photo 7: **Section loss at west end of beam 2.**



Photo 8: **Minor section loss at the east end of beam 4.**

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
SHEFFIELD	02H	S-10-024	S10024-02H-MUN-NBI	DEC 10, 2020

PHOTOS



Photo 9: **Section loss at the west end of beam 8.**



Photo 10: **Scaling at the end of the southeast wingwall. Also note the missing and loose stones in the southeast retaining wall.**

REM.(2)7-96

National Bridge Element Inspection

BDEPT#	**S-10-024**	Date	**12/10/2020**
B.I.N.	**02H**	District Bridge Inspection Eng'r	**Laurie A. Briggs**
Item 8	**S10024-02H-MUN-NBI**	Inspecting Agency	**Mass. Highway Dept.**
Span Group	**1**	Team Leader	**Michael P.E. McCabe**
Town	**Sheffield**	Team Member(s)	**Sarah Gale**
District	**1**		

El #	Element Name	Units	Env.	Total Q.	% or Q	State 1	State 2	State 3	State 4
12	**Re Concrete Deck**	sq feet	2	695.000	☐ %	555.000	140.000		
Notes :									
> 1080	*Delamination/Spall/Patched Area*	sq feet	2	20.000	☐ %		20.000		
Notes :									
> 1130	*Cracking (RC and Other)*	sq feet	2	120.000	☐ %		120.000		
Notes :									
> 510	Wearing Surfaces	sq feet	2	646.000	☐ %	634.000	12.000		
Notes :									
> > 3220	*Crack (Wearing Surface)*	sq feet	2	12.000	☐ %		12.000		
Notes :									
107	**Steel Opn Girder/Beam**	feet	2	207.000	☐ %	141.000		54.000	12.000
Notes :									
> 1000	*Corrosion*	feet	2	66.000	☐ %			54.000	12.000
Notes :									
> 515	Steel Protective Coating	sq feet	2	1,037.000	☐ %		837.000		200.000
Notes :									
> > 3440	*Eff (Stl Protect Coat)*	sq feet	2	1,037.000	☐ %		837.000		200.000
Notes :									
215	**Re Conc Abutment**	feet	2	137.000	☐ %	129.000	6.000	2.000	
Notes :									
> 1130	*Cracking (RC and Other)*	feet	2	8.000	☐ %		6.000	2.000	
Notes :									
311	**Moveable Bearing**	each	2	9	☐ %			9	
Notes :									

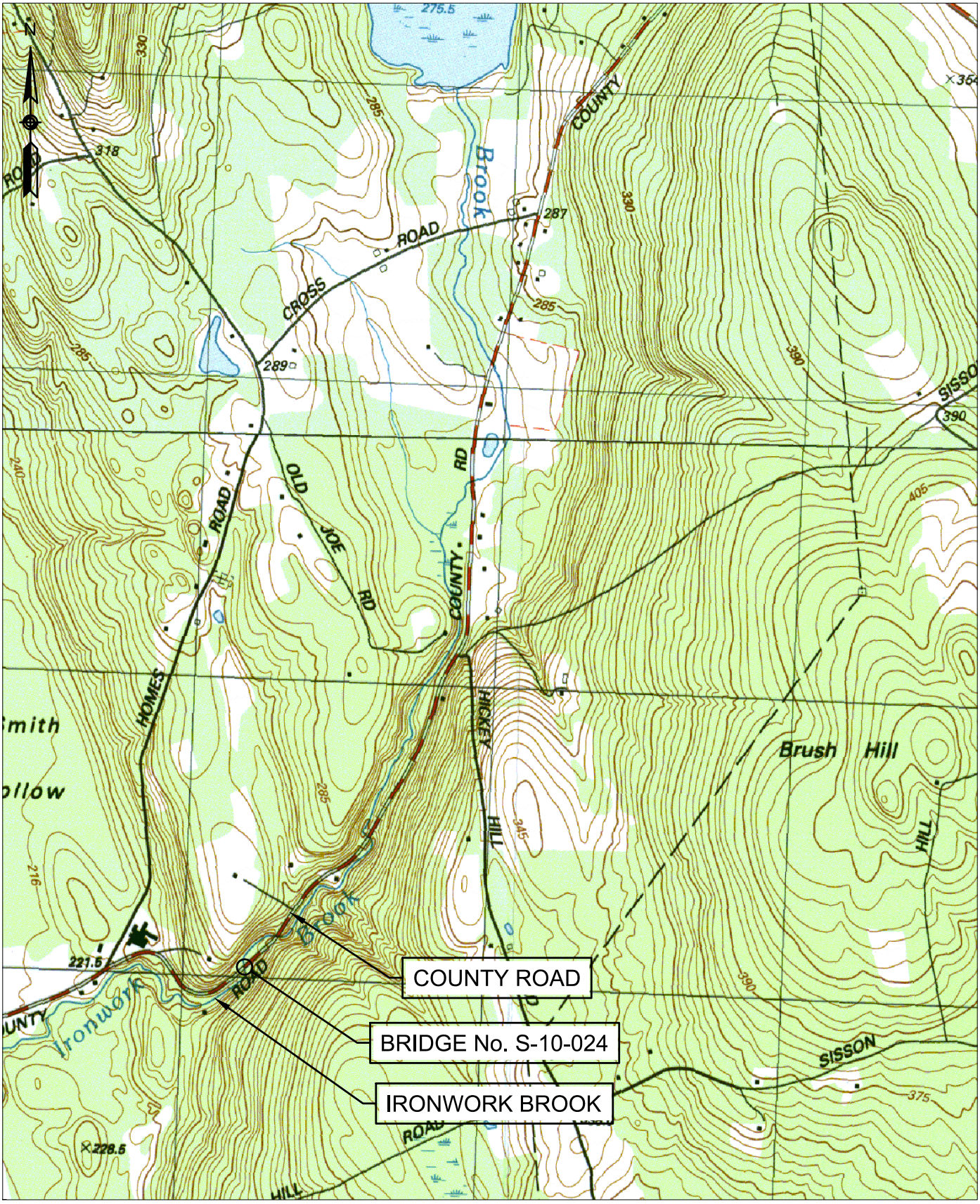
National Bridge Element Inspection

BDEPT#	**S-10-024**	Date	**12/10/2020**
B.I.N.	**02H**	District Bridge Inspection Eng'r	**Laurie A. Briggs**
Item 8	**S10024-02H-MUN-NBI**	Inspecting Agency	**Mass. Highway Dept.**
Span Group	**1**	Team Leader	**Michael P.E. McCabe**
Town	**Sheffield**	Team Member(s)	**Sarah Gale**
District	**1**		

El #	Element Name	Units	Env.	Total Q.	% or Q	State 1	State 2	State 3	State 4
> 1000	*Corrosion*	each	2	9	☐ %			9	
Notes :									
> 515	Steel Protective Coating	sq feet	2	18.000	☐ %				18.000
Notes :									
> > 3440	*Eff (Stl Protect Coat)*	sq feet	2	18.000	☐ %				18.000
Notes :									
313	**Fixed Bearing**	each	2	9	☐ %			9	
Notes :									
> 1000	*Corrosion*	each	2	9	☐ %			9	
Notes :									
> 515	Steel Protective Coating	sq feet	2	18.000	☐ %				18.000
Notes :									
> > 3440	*Eff (Stl Protect Coat)*	sq feet	2	18.000	☐ %				18.000
Notes :									
330	**Metal Bridge Railing**	feet	2	50.000	☐ %		20.000	30.000	
Notes :									
> 1000	*Corrosion*	feet	2	50.000	☐ %		20.000	30.000	
Notes :									
> 515	Steel Protective Coating	sq feet	2	88.000	☐ %			28.000	60.000
Notes :									
> > 3440	*Eff (Stl Protect Coat)*	sq feet	2	88.000	☐ %			28.000	60.000
Notes :									

Figure 8.1

SITE LOCATION MAP



Site Location Map
County Road over Ironwork Brook
Sheffield, Massachusetts

Figure 8.1
Scale: 1" = 3,000'

BSC GROUP
803 Summer Street
Boston, Massachusetts 02127
617-896-4300

Figure 8.2

STREAM CROSS SECTION LAYOUT PLAN

NOTE:
ON-THE-GROUND DETAILED SURVEY WAS PERFORMED IN THE VICINITY OF COUNTY ROAD AND THE EXISTING CROSSING OVER IRONWORK BROOK. THE REMAINDER OF THE STUDY AREA OF IRONWORK BROOK WAS SURVEYED ON-THE-GROUND WITH HYDRAULIC CROSS SECTIONS SPACED AT APPROXIMATELY 100 FEET AND SUPPLEMENTED WITH LIDAR DATA.

N

N28°31'42"W
L=266.46'
0.79'
R=337.00'

R=337.00' L=266.46'

R=267.00' L=262.55'

464.96'
S49°49'42"W

COUNTY ROAD

IRONWORK BROOK

BRIDGE NO. S-10-024

20+50
21+63
22+55
23+50
24+75
25+46
25+71
26+28
26+33
26+45
27+00
28+00
29+00
29+75
31+00

67.15'
S18°18'10"W

2,687.03'
L=275.30'

UPL 29–50
UPL 29
UPL 28–50
UPL 28

Stream Cross Section Layout Plan
County Road over Ironwork Brook
Sheffield, MA

0 60 100 200 300
SCALE: 1" = 60'

AW0840 - 14

Proposal No. 61942-13627

Figure 8.3

EXISTING CONDITIONS BRIDGE ELEVATION

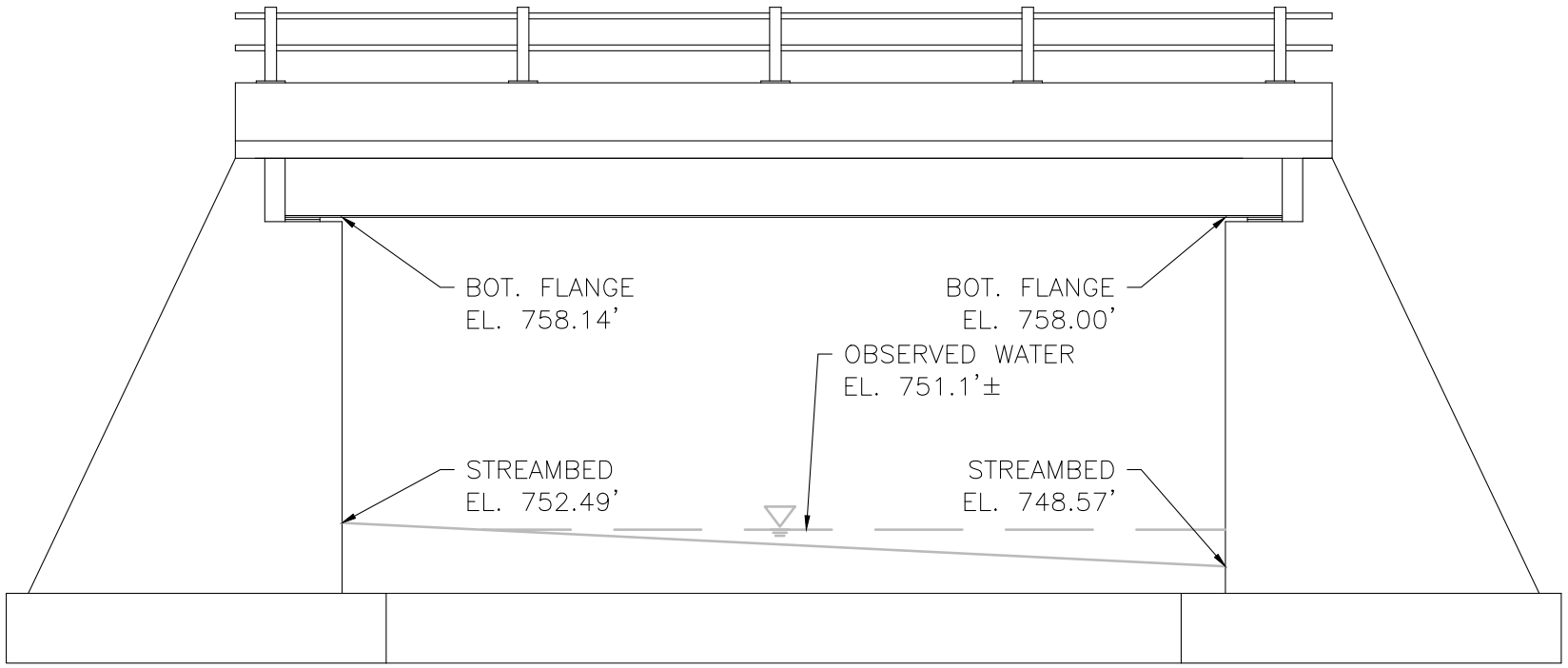


Figure 8.3
Scale: None

Existing Conditions Bridge Elevation
North Elevation (Looking Downstream)
County Road over Ironwork Brook
Sheffield, Massachusetts

BSC GROUP
803 Summer Street
Boston, Massachusetts 02127
617-896-4300

Figure 8.4

PHOTOGRAPHS



Photo 1: View of the upstream side of the existing County Road bridge over Ironwork Brook.
Facing south



Photo 2: View of the downstream side of the existing County Road bridge over Ironwork Brook.
Facing north



Photo 3: Typical condition of existing bridge abutments. Southwest abutment shown.
Facing northwest



Photo 4: View of County Road over Ironwork Brook bridge crossing.
Facing west.

*** THIS PAGE IS LEFT BLANK INTENTIONALLY ***

DOCUMENT A00841

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

WATER QUALITY CERTIFICATE – FILING NUMBER: 24-WW11-0067-APP

*** THIS PAGE IS INTENTIONALLY LEFT BLANK ***

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
100 Cambridge Street Suite 900 Boston, MA 02114 • 617-292-5500

Maura T. Healey
Governor

Kimberley Driscoll
Lieutenant Governor

Rebecca L. Tepper
Secretary

Bonnie Heiple
Commissioner

April 7, 2025

Massachusetts Department of Transportation Highway Division
10 Park Plaza, Room 7360
Boston, MA 02116
ATTN: Courtney Walker

RE: 401 WATER QUALITY CERTIFICATION
BRP WW 11, Minor Fill Project
Bridge Superstructure Replacement (S-10-024), County Road over Ironwork Brook
Sheffield, Massachusetts

401 WQC Filing Number: 24-WW11-0067-APP
USACE Application Number: NAE-2024-02809
MassDOT File Number: 611942

Dear Ms. Walker:

The Massachusetts Department of Environmental Protection (MassDEP) has reviewed your application for a Water Quality Certification (WQC), as referenced above. This application was deemed complete on March 12, 2025. 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 consists of the replacement of the existing bridge superstructure (Bridge No. S-10-024) that carries County Road over Ironwork Brook in Sheffield (the Project). The Project also includes stormwater improvements, scour protection installation, full-depth reconstruction of the approaches, and streambed restoration. The bridge superstructure is stated as needing replacement because it is structurally deficient, outdated, and undersized.

The existing bridge was constructed in 1938 and is oriented northeast/southwest with Ironwork Brook flowing north to south under the bridge. The bridge is approximately 28 feet long, 20 feet wide, and carries two restricted travel lanes (one in each direction) due to concrete barriers on either side. Two reinforced concrete abutments support the single-span superstructure. Stormwater drainage is entirely country drainage, including a ditch along the southeast side of Country Road that conveys stormwater underneath a gravel driveway through a 12-inch corrugated metal pipe (CMP) toward Ironwork Brook.

This information is available in alternate format. Please contact MassDEP at 617-292-5500.
TTY# MassRelay Service 1-800-439-2370
MassDEP Website: www.mass.gov/dep

Printed on Recycled Paper

Ironwork Brook is a tributary of the Housatonic River and is mapped as a Coldwater Fishery Critical Area. An intermittent stream flows through one of two forested Bordering Vegetated Wetlands (BVWs) adjacent to and north of the Project area. In addition, the Project is located within Massachusetts Natural Heritage and Endangered Species Program (NHESP) Priority Habitat of Rare Species (PH 859).

The Project proposes to replace the existing steel beam superstructure with one comprised of prestressed concrete beams in a similar vertical and horizontal alignment. The bridge span will increase in length by about 7 inches, while the width of the new concrete bridge deck will increase by approximately 9 feet to accommodate two 11-foot-wide travel lanes with 2-foot-wide shoulders and guard rails on either side. The roadway approaches 103 feet northeast and 100 feet southwest of the bridge, as well as an adjacent gravel driveway to the northeast, will undergo full-depth pavement reconstruction. In addition, portions of the approaches will be slightly widened and/or regraded to reduce slopes.

During construction, the roadway will be closed to traffic to demolish and replace the existing superstructure and concrete abutments above the Ordinary High Water Mark. Erosion and sedimentation controls will be installed prior to demolition/construction to prevent the migration of sediment to adjacent resource areas. Following demolition, sandbag cofferdams will be installed within Land Under Water (LUW) associated with Ironwork Brook and dewatered to create dry working conditions. Scour protection will be installed as described below, followed by installation of the new superstructure and roadway approach work. Upon completion of construction, side slopes will be stabilized with a native seed mix.

In total, 573 square feet (sf) of permanent fill in LUW is required for the installation of riprap scour protection along the existing abutments. In addition, 490 sf of temporary impact is needed for the placement of sandbag cofferdams within LUW. Once a dry working environment is established, a total of 96 cubic yards (cy) of native streambed material will be dredged and stockpiled. A layer of geo-textile fabric, followed by 12-inches of crushed stone and 3-feet of riprap will be covered with 6-inches of the stockpiled natural substrate. All LUW restoration will be conducted under the supervision of a qualified fluvial geomorphologist, as conditioned herein.

The Project will not result in permanent or temporary impact to BVWs.

An alternatives analysis was completed in accordance with 314 CMR 9.00. The existing bridge is structurally deficient and presents a risk to driver safety and downstream areas of Ironwork Brook should the bridge fail; therefore, a no-build alternative is not practicable to meet project goals. A full bridge replacement was considered but rejected due to access limitations and increased impact to LUW from the additional retaining walls needed to realign the downstream portion of Ironwork Brook. The selected alternative of a superstructure replacement minimizes the overall impact to adjacent resource areas and reduces construction costs and duration.

The Project meets the Stormwater Management Standards to the maximum extent practicable as a redevelopment project per 314 CMR 9.06(6)(6)(a). The proposed widening of County Road will minimally increase impervious surfaces in the Project area by 294 sf. Through a complete evaluation, it was determined that structural Stormwater Control Measures (SCMs) were limited due to the narrow right-of-way, site topography, and bordering resource areas. However, stormwater drainage patterns in the northeast portion of the Project area will be improved through installation of a new deep sump drop

inlet north of the bridge. From the inlet, stormwater will be conveyed underneath County Road through a 12-inch CMP and outlet at a stone protected outfall. This proposed drainage pattern will direct flows away from the existing CMP underneath the gravel driveway and into the drop inlet, thereby eliminating untreated stormwater from discharging into Ironwork Brook. The new deep sump drop inlet will provide 25% pre-treatment total suspended solids (TSS) removal and the stone splash pad will slow flow velocities and promote infiltration.

Stormwater drainage patterns in the remaining portion of the Project area will be maintained, utilizing existing country drainage to avoid creating point source discharges. Stormwater Management Standards 2, 3, and 4 will be met to the maximum extent practicable.

The Project will meet the Stream Crossing Standards, except Standard 3. The bankfull width of Ironwork Brook at the bridge crossing is approximately 26 feet, and a width of 31.2 feet is required to meet 1.2 times bankfull width. Since the bridge abutments will not be replaced, the opening of the crossing will remain at 25.4 feet or 0.98 times the bankfull width. A full bridge replacement needed to meet Standard 3, with additional impacts to LUW, was deemed impracticable given the viable condition of the existing abutments.

Regarding Stream Crossing Standards 4 through 7, natural streambed materials will be reused throughout areas of LUW restoration. Water depth and velocity of the proposed channel will be comparable to the native channel as it will closely match existing conditions upstream and downstream of the bridge crossing. Based on the site plans, the height from the bottom of the stream to the bottom of the proposed superstructure will be greater than 7 feet, creating an openness ratio of 3.92 feet. To ensure safe terrestrial wildlife passage, banks at each corner of the bridge abutments will maintain a similar horizontal profile as the existing stream banks and stone will be strategically placed to fill in voids.

The Project occurs within mapped NHESP Priority Habitat of Rare Species (PH 859). In a letter dated December 14, 2022, NHESP concluded that the Project will not result in a prohibited Take of state-listed rare species. Therefore, the Project complies with 314 CMR 9.06(2).

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. Public notice was provided in The Berkshire Eagle on December 26, 2024. 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 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:

    - Application for Water Quality Certification. County Road over Ironwork Brook (S-10-024) Bridge Superstructure Replacement Project, Sheffield, Massachusetts. Prepared by BSC Group on behalf of MassDOT, dated December 19, 2024, with cover letter and attachments. 401 WQC Filing Number: 24-WW11-0067-APP.
    - Plans entitled: "Permit Plans". Sheets 1 through 15. Prepared by BSC Group. Dated December 9, 2024.
    - MassDEP Administrative Completeness and Technical Deficiency Review. 401 Water Quality Certification, Minor Fill Project Certification. Dated January 10, 2025.
    - MassDOT Responses to MassDEP Technical Deficiency Review, with attachments. Prepared by BSC Group on behalf of MassDOT. 401 Water Quality Certification, Minor Fill Project Certification. Dated March 7, 2025.

Pre-Construction

2. A qualified **Fluvial Geomorphologist** (FGM) with a minimum of five years of relevant professional experience in stream replacement and restoration projects shall be employed to oversee all LUW replacement and restoration activities as proposed in the application. The name, contact information, and qualifications of the FGM shall be provided to MassDEP for approval with a copy to the Sheffield Conservation Commission prior to the Pre-Construction Meeting required in Condition 4. **(Submittal)**

3. Prior to the Pre-Construction Meeting required in Condition 4, 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 conditions of this WQC. **(Submittal)**

4. A minimum of 21 days prior to the start of ground disturbance, 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 construction contractor, the FGM, 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.**

5. MassDEP shall be copied on applicable submittals to the U.S. Army Corps of Engineers (USACE). These include but are not limited to: Self-Verification Notification Form (SVNF); Pre-Construction Notification (PCN); Work-Start Notification Form; Mitigation Work-Start Notification Form; and Compliance Certification Form. The Work-Start Notification Form shall be submitted at least 14 days before the anticipated start of work and the Compliance Certification Form shall be submitted within 30 days following the completion of the authorized work. **(Submittal)**

6. A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan (CP/PP) shall be developed and implemented as required by 314 CMR 9.06(6)(a)8. A minimum of 14 days prior to the start of work, MassDOT shall submit the CP/PP 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 Final CP/PP (defined herein as including the construction period SWPPP if applicable) must be approved by MassDEP. **(Submittal)**

7. Training regarding erosion and sedimentation controls is required. The RE, 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 Final CP/PP. Proof of completion of the training shall be submitted to MassDEP prior to the start of work. **(Submittal)**

8. 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 wetland resource areas, and the location of construction-period erosion and sedimentation controls. Stockpiles shall be located no less than 50 feet from BVWs, LUW, catch basins, or other drainage conveyances that discharge to BVWs or LUW.

9. A minimum of 14 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 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 requirements of the CP/PP and be specific to the Project. Dewatering and stream bypasses shall be conducted under the supervision of the RE or other project staff with knowledge of these practices and comply with the applicable conditions identified herein. **(Submittal)**

10. 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.

11. Prior to the Pre-Construction Meeting, the boundaries of the BVW adjacent to Ironwork Brook and LUW shall be re-flagged where they are within 50 feet of the limits of work. In the event BVWs and LUW boundaries overlap, the outermost boundary (i.e., closest to the proposed work) shall be flagged. 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 RE. All construction personnel shall be made aware of these markers.

Construction Period

12. **No** permanent or temporary impacts to BVWs shall occur. No more than **573 sf** of permanent and **490 sf** of temporary impacts to LUW shall occur. No more than **96 cy** of dredging in LUW shall occur. All work shall avoid unapproved impacts to BVW and LUW.

13. The Project shall identify one individual with at least three years of experience with construction period erosion and sedimentation control to be responsible for erosion and sedimentation control inspections (CP/PP Inspector). 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 Sheffield Conservation Commission if any unauthorized discharges to BVWs or LUW occur.

14. 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.

15. Copies of CP/PP Inspection and Maintenance Log Forms shall be submitted to MassDEP within 14 days upon request.

16. 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 stabilization has been initiated.

17. Work within LUW shall be conducted in low or no-flow conditions to the extent practicable. Notice shall be provided to MassDEP and the Sheffield 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.

18. 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 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.

19. 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.

20. Stockpiles shall be located no less than 50 feet from BVWs, LUW, catch basins, or other drainage conveyances that discharge to BVWs or LUW.

21. 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.

22. Refueling, washing, and cleaning of vehicles and other construction equipment shall not take place within 50 feet of BVWs 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.

23. 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 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.

24. Construction vehicles and equipment shall not enter the BVW 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 bridge/pier demolition materials.

25. If applicable, sheet piles shall be fully removed from resource areas upon stabilization of the area as required. No portion of sheet piles shall remain unless approved by MassDEP in writing prior to installation. A request to leave sheet piles shall include, but not be limited to, demonstration that full removal of the sheet piles is not feasible or practicable, and an alternatives analysis demonstrating alternative methods to isolate the work area(s) are not feasible or practicable. At no time shall sheet piles be allowed to remain in LUW of a waterway that provides aquatic organism passage.

26. A temporary shielding or containment system shall be in place beneath the bridge structure prior to removal and concrete excavation to prevent debris from falling into the water below. In

the event that any debris accidentally enters Ironwork Brook, it shall be immediately retrieved. Notice shall be provided to MassDEP if debris enters the river and that it has been removed with photo-documentation (if practicable) submitted by email.

Stream Mitigation

27. 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 9 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.

28. 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.

29. Upon completion of the LUW restoration, the FGM shall provide photographs and a summary of the completed work to MassDEP and the Sheffield Conservation Commission. **(Submittal)**

30. 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 .

31. 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

32. All temporary erosion controls shall be removed at the conclusion of work once the surrounding area has achieved final stabilization.

General Conditions

33. Any proposed alterations, minor 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.iannelli@mass.gov. **(Submittal)**

34. This WQC remains in effect for the same duration as the Section 404 permit that requires it.

35. No Special Condition set forth herein shall be construed or operate to prohibit MassDEP from taking enforcement against the MassDOT or its contractors for any failure to comply with the terms and requirements of this WQC.

36. 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.

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
Commissioner's Office
100 Cambridge Street, Suite 900
Boston, MA 02114

b.) Contents of Hearing Request

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):

3. the 401 Certification Transmittal Number;
4. the complete name of the applicant and address of the project;

5. 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;
6. 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;
7. a clear and concise statement that an adjudicatory hearing is being requested;
8. 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
9. 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

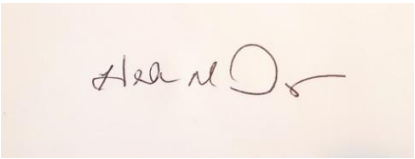
The hearing request along with a DEP Fee Transmittal Form and a valid check or money order payable to the Commonwealth of Massachusetts in the amount of one hundred dollars ($100) must be mailed to:

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 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 Iannelli at heidi.davis@mass.gov and jaime.iannelli@mass.gov.

Very truly yours,



Heidi M. Davis
Highway Unit Supervisor

Ecc: DEP WERO – Michael McHugh
USACE – Dan Vasconcelos
USACE – Kevin Newton
MassDOT – Kristine Chestna
MassDOT – Michael Joa
MassDOT – Amer Raza
BSC Group – Diana Walden
BSC Group – Kathryn Eagan, PE
BSC Group – Micah Morrison, PE
BSC Group – Sara Kreisel, PWS
Sheffield Conservation Commission – TownHall@sheffieldma.gov

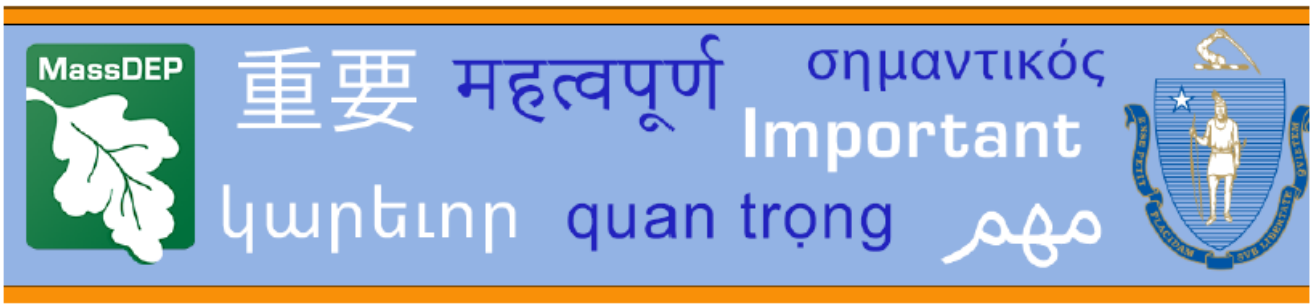
ATTACHMENT A
PRE-CONSTRUCTION SUBMITTAL CHECKLIST

Bridge Superstructure Replacement Project (S-10-024)
County Road over Ironwork Brook
Sheffield, Massachusetts

THIS CHECKLIST MUST BE COMPLETED PRIOR TO THE START OF WORK. 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.

Pre-Construction Meeting Date: _____

Condition	Required Submittal	Due Date	Date Submitted	Date Approved
PRE-CONSTRUCTION SUBMITTAL REQUIREMENTS				
2	Name, contact information, and qualifications of the FGM, including specific experience and years to meet requirement	Prior to Pre-Construction Meeting		
3	Name and contact information of the RE	Prior to Pre-Construction Meeting		
5	USACE Work-Start Notification Form	14 days prior to work start		
6	CP/PP	14 days prior to work start		
7	RE, CP/PP Inspector, and other relevant personnel Verification of SWPPP Training	Prior to work start		
9	Control of Water Plan	14 days prior to work start		



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
ហើយគប្បីត្រូវបានបកប្រែភ្លាមៗ។
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
100 Cambridge Street 9th Floor Boston, MA 02114
TTY# MassRelay Service 1-800-439-2370 • https://www.mass.gov/environmental-justice
(Version revised 8.2.2023) 310 CMR 1.03(5)(a)

Русский Russian

Это чрезвычайно важный документ, и он должен быть немедленно переведен. Если вам нужен перевод этого документа, обратитесь к директору Департамента экологического правосудия MassDEP (MassDEP's Director of Environmental Justice) по телефону, указанному ниже.

العربية Arabic

هذه الوثيقة مهمة وتجب ترجمتها على الفور.

إذا كنت بحاجة إلى ترجمة هذه الوثيقة، فيرجى الاتصال بمدير العدالة البيئية في MassDEP على رقم الهاتف المذكور أدناه.

한국어 Korean

이 문서는 중대하므로 즉시 번역되어야 합니다.
본 문서 번역이 필요하신 경우, 매사추세츠 환경보호부의 "환경정의" 담당자 분께 문의하십시오. 전화번호는 아래와 같습니다.

հայերեն Armenian

Այս փաստաթուղթը կարևոր է, և պետք է անհապաղ թարգմանել այն:
Եթե Ձեզ անհրաժեշտ է թարգմանել այս փաստաթուղթը, դիմեք Մասաչուսեթսի շրջակա միջավայրի պահպանության նախարարության (MassDEP) Բնապահպանական հարցերով արդարադատության ղեկավարին (Director of Environmental Justice)՝ ստորև նշված հեռախոսահամարով

فارسی Farsi Persian

این نوشتار بسیار مهمی است و باید فوراً ترجمه شود.
اگر نیاز به ترجمه این نوشتار دارید لطفاً با مدیر عدالت محیط زیستی MassDEP در شماره تلفن ذکر شده زیر تماس بگیرید.

Français French

Ce document est important et doit être traduit immédiatement. Si vous avez besoin d'une traduction de ce document, veuillez contacter le directeur de la justice environnementale du MassDEP au numéro de téléphone indiqué ci-dessous.

Deutsch German

Dieses Dokument ist wichtig und muss sofort übersetzt werden. Wenn Sie eine Übersetzung dieses Dokuments benötigen, wenden Sie sich bitte an MassDEP's Director of Environmental Justice *(Direktor für Umweltgerechtigkeit in Massachusetts)* unter der unten angegebenen Telefonnummer.

Ελληνική Greek

Το έγγραφο αυτό είναι πολύ σημαντικό και πρέπει να μεταφραστεί αμέσως. Αν χρειάζεστε μετάφραση του εγγράφου αυτού, παρακαλώ επικοινωνήστε με τον Διευθυντή του Τμήματος Περιβαλλοντικής Δικαιοσύνης της Μασαχουσέτης στον αριθμό τηλεφώνου που αναγράφεται παρακάτω

Italiano Italian

Questo documento è importante e deve essere tradotto immediatamente. Se hai bisogno di tradurre questo documento, contatta il Direttore della Giustizia Ambientale di MassDEP al numero di telefono sotto indicato.

Język Polski Polish

Ten dokument jest ważny i powinien zostać niezwłocznie przetłumaczony. Jeśli potrzebne jest tłumaczenie tego dokumentu, należy skontaktować się z dyrektorem ds. sprawiedliwości środowiskowej MassDEP pod numerem telefonu podanym poniżej.

हिन्दी Hindi

यह दस्तावेज महत्वपूर्ण है और इसका अनुवाद तुरंत किया जाना चाहिए। यदि आपको इस दस्तावेज का अनुवाद कराने की जरूरत है, तो कृपया नीचे दिए गए टेलीफोन नंबर पर MassDEP के पर्यावरणीय न्याय निदेशक से संपर्क करें।

Contact Deneen Simpson 857-406-0738
Massachusetts Department of Environmental Protection
100 Cambridge Street 9th Floor Boston, MA 02114
TTY# MassRelay Service 1-800-439-2370 • https://www.mass.gov/environmental-justice
(Version revised 8.2.2023) 310 CMR 1.03(5)(a)

DOCUMENT A00842

MASSACHUSETTS DIVISION OF FISHERIES & WILDLIFE

CONDITIONAL NO TAKE LETTER – NHESP FILE No. 25-19928

*** THIS PAGE IS INTENTIONALLY LEFT BLANK ***

MASSWILDLIFE

DIVISION OF
FISHERIES & WILDLIFE

1 Rabbit Hill Road, Westborough, MA 01581
p: (508) 389-6300 | f: (508) 389-7890
MASS.GOV/MASSWILDLIFE

November 06, 2025

Sara Kreisel
MA DOT- Highway Division, Environmental Services
10 Park Plaza
Boston, MA 02116

RE: Applicant: Sara Kreisel, MA DOT- Highway Division
Project Location: County Road, Sheffield MA
Project Description: MassDOT Project 611942 County Road over Ironwork Brook (S-10-024) Bridge Superstructure Replace.Proj
NHESP File No.: 25-19928

Dear Applicant:

The Natural Heritage & Endangered Species Program of the Massachusetts Division of Fisheries & Wildlife (the "Division") received the MESA Project Review Checklist and supporting documentation for review pursuant to the Massachusetts Endangered Species Act (MGL. c. 131A) and its implementing regulations (321 CMR 10.00) (MESA).

PROJECT DESCRIPTION (the "Project")
The project, as currently proposed, includes the superstructure replacement of the County Road bridge over Ironwork Brook in Sheffield, as shown on the Project Plan.

STATE-LISTED SPECIES
The Project as currently proposed will occur within Priority Habitat of the following state-listed species:

Scientific Name	Common Name	Taxonomic Group	State Status
Actaea racemosa	Black Cohosh	Plant	Endangered

State-listed species and their habitats are protected in accordance with the MESA.

MASSACHUSETTS ENDANGERED SPECIES ACT (MESA)
The MESA is administered by the Division and prohibits the Take of state-listed species, which includes actions that "in reference to animals, means to harass, harm, pursue, hunt, shoot, hound, kill, trap, capture, collect, process, disrupt the nesting, breeding, feeding or migratory activity or attempt to engage in any such conduct, or to assist such conduct, and in reference to plants, means to collect, pick, kill, transplant, cut or process or attempt to engage or to assist in any such conduct. Disruption of nesting, breeding, feeding or migratory activity may result from, but is not limited to, the modification, degradation or destruction of habitat of state-listed wildlife species"

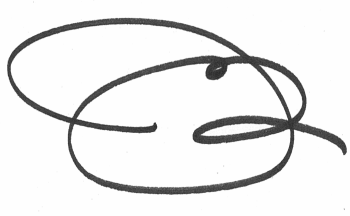
(321 CMR 10.02). The purpose of the Division's review under the MESA regulations is to determine whether a Take of state-listed species will result from the proposed project.

Based on the information provided and the information contained in our database, the Division finds that the Project **must be conditioned** to avoid a prohibited Take of state-listed species (321 CMR 10.18(2)(a)). **To avoid a prohibited Take of state-listed species, the conditions attached to this letter must be met.**

Provided the attached conditions are fully implemented and there are no changes to the project plans, this project will not result in a Take of state-listed species. We note that all work is subject to the anti-segmentation provisions (321 CMR 10.16) of the MESA. This determination is a final decision of the Division of Fisheries and Wildlife pursuant to 321 CMR 10.18. Any changes to the proposed project or any additional work beyond that shown on the site plans may require an additional filing with the Division pursuant to the MESA. This project may be subject to further review if no physical work is commenced within five years from the date of issuance of this determination, or if there is a change to the project.

If you have any questions regarding this letter please contact Tim McGuire, Endangered Species Review Biologist, at timothy.mcguire2@mass.gov, (508)389-6366.

Sincerely,



Jesse Leddick
Assistant Director

cc: Dave Paulson, MassDOT

Attachment: List of Conditions

List of Conditions

Applicant: Sara Kreisel, MA DOT- Highway Division
Project Location: County Road, Sheffield MA
Project Description: MassDOT Project 611942 County Road over Ironwork Brook (S-10-024) Bridge Superstructure Replace.Proj
NHESP File No.: 25-19928
Heritage Hub Form ID: RC-96384
Approved Plan: Bridge Superstructure Replacement Project County Road Over Ironwork Brook Sheffield, MA Berkshire County
Plan date: 12/9/24

To avoid a prohibited Take of state-listed species, the following condition(s) must be met:

1. **Rare Plant Avoidance Measures:** The Applicant shall implement the following state-listed plan avoidance measures.
   a. Prior to the initiation of work or as otherwise approved by the Division, a qualified Division-approved botanist shall submit written confirmation to the Division that temporary symbolic flagging has been installed to delineate a 3-foot buffer surrounding all identified state-listed plant(s). Flagging shall be maintained in good condition throughout construction and repaired or replaced as necessary.
   b. Prior to the completion of work or as otherwise approved by the Division, the qualified botanist shall submit written confirmation to the Division (including representative photographs) documenting compliance with the conditions outlined herein and that flagged areas have been avoided and protected during all work-related activities.
2. **Use of Native Species:** Unless otherwise approved in writing by the Division, all seed and plantings not thereafter maintained as lawn shall be native to Berkshire County, Massachusetts, as provided in The Vascular Plants of Massachusetts: A County Checklist, First Revision (Dow Cullina, Connolly, Sorrie & Somers, 2011).

*** THIS PAGE IS LEFT BLANK INTENTIONALLY ***

DOCUMENT A00844

USFWS - FHWA, FRA & FTA INDIANA BAT & NORTHERN LONG-EARED BAT PROGRAMMATIC BIOLOGICAL OPINION –

NLAA CONCURRENCE VERIFICATION LETTER

*** THIS PAGE IS INTENTIONALLY LEFT BLANK ***

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: 09/16/2025 16:02:37 UTC
Project code: 2024-0026529
Project Name: 611942 - SHEFFIELD- SUPERSTRUCTURE REPLACEMENT, S-10-024, COUNTY ROAD OVER IRONWORK BROOK

Federal Nexus: yes
Federal Action Agency (if applicable): Federal Highway Administration

Subject: Federal agency coordination under the Endangered Species Act, Section 7 for '611942 - SHEFFIELD- SUPERSTRUCTURE REPLACEMENT, S-10-024, COUNTY ROAD OVER IRONWORK BROOK'

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 September 16, 2025, for '611942 - SHEFFIELD- SUPERSTRUCTURE REPLACEMENT, S-10-024, COUNTY ROAD OVER IRONWORK BROOK' (here forward, Project). This project has been assigned Project Code 2024-0026529 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
Northern Long-eared Bat (*Myotis septentrionalis*)	Endangered	NLAA
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 2024-0026529 associated with this Project.

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

611942 - SHEFFIELD- SUPERSTRUCTURE REPLACEMENT, S-10-024, COUNTY ROAD OVER IRONWORK BROOK

2. Description

The following description was provided for the project '611942 - SHEFFIELD- SUPERSTRUCTURE REPLACEMENT, S-10-024, COUNTY ROAD OVER IRONWORK BROOK':

> 611942 - SHEFFIELD- SUPERSTRUCTURE REPLACEMENT, S-10-024, COUNTY ROAD OVER IRONWORK BROOK
>
> The current proposal is to replace the superstructure and keep the curb-to-curb width the same as the original (2-11-11-2). Bridge rails will be standard S3-TL4 with precast highway guardrail transitions. The top portion of the abutments will be demolished to below the bottom of the bridge seat and reconstructed with reinforced concrete. Approximately 100-ft of the existing roadway approaches will be reconstructed as necessary with appropriate guardrail transitions. The residential driveway near the southeast corner of the bridge will require accommodation.
> The designer will investigate and document the possible use of spread deck beams with a cast-in-place concrete deck to decrease the total superstructure depth and to minimize the new reinforced concrete cap. A galvanized steel superstructure replacement alternative will also be considered. A complete bridge replacement alternative will also be investigated to allow cost and constructability comparisons to a superstructure replacement. The bridge alignment and profile will remain approximately the same while increasing the hydraulic opening under the bridge.
>
> Monarch Butterfly: Proposed Threatened Species only. The project action will not have an intentional take on the species and therefore will not jeopardize the continued existence of the proposed species.

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.1091675,-73.31584989999999,14z



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?

   Yes

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. Will the action cause effects to a bridge?

    Note: Covered bridges should be considered as bridges in this question.

    Yes

14. Has the local Service Field Office confirmed that bridge surveys are not needed because project activities are not expected to impact bats, or because NLEBs and TCBs are not using bridges within the action area?

    No

15. Has a site-specific bridge 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

16. Was evidence of bat use found during the bridge assessment?

    No

    SUBMITTED DOCUMENTS

    - *MassDOT_611942_BatReport.pdf https://ipac.ecosphere.fws.gov/project/FBDNX2LF25HQ5NUMF45XG24NEA/projectDocuments/170078106*

17. Did you coordinate with your local Ecological Services Field Office (ESFO) and receive approval of the bridge assessment results? If NO, please contact the appropriate local ESFO before completing this determination key.

    Yes

18. Will the action result in effects to a culvert or tunnel at any time of year?

    No

19. 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

20. 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

21. 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

22. 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

23. 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

24. 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

25. 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

26. 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

27. Will the action include drilling or blasting?

    No

28. 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

29. Will the proposed action involve the use of herbicides or pesticides (e.g., fungicides, insecticides, or rodenticides)?

    No

30. 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

31. 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

32. Will the action cause an increase in the extent of suitable forested habitat exposed to artificial lighting?

    No

33. Will the action include tree cutting or other means of knocking down or bringing down trees, tree topping, or tree trimming?

    Yes

34. 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

35. Will the proposed action occur exclusively in an already established and currently maintained utility right-of-way?

    No

36. 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

37. Does the project intersect with the 0- 9.9% forest density category?

    Automatically answered
    No

38. Does the project intersect with the 10.0- 19.9% forest density category map?

    Automatically answered
    No

39. Does the project intersect with the 20.0- 29.9% forest density category map?

    Automatically answered
    No

40. Does the project intersect with the 30.0- 100% forest density category map?

    Automatically answered
    Yes

41. 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

42. 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

43. Does the action area intersect the northern long-eared bat species list area?

    Automatically answered
    Yes

44. [Semantic] Is the action area located within 0.5 miles of radius of an entrance/opening to any known NLEB 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

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. [Semantic] Is the action area located within 150 feet of a documented northern long-eared bat roost site?

    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.Have you contacted the appropriate agency to determine if your action is within 150 feet of any documented northern long-eared bat roosts?

    Note: A document with links to Natural Heritage Inventory databases and other state-specific sources of information on the locations of northern long-eared bat roosts is available here. Location information for northern long-eared bat roosts is generally kept in state natural heritage inventory databases – the availability of this data varies by state. Many states provide online access to their data, either directly by providing maps or by providing the opportunity to make a data request. In some cases, to protect those resources, access to the information may be limited.

    Automatically answered

    No

47. Is suitable summer habitat for the northern long-eared bat present within 1000 feet of project activities?
    If unsure, answer "Yes."

    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. Are any of the trees proposed for cutting or other means of knocking down, bringing down, topping, or trimming suitable for northern long-eared bat roosting (i.e., live trees and/or snags ≥3 inches dbh that have exfoliating bark, cracks, crevices, and/or cavities)?

    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

49. Will any tree cutting/trimming or other knocking or bringing down of trees occur during the **Fall Swarming season** for northern long-eared bats in the action area? **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 Development Projects.

    No

50. Will any tree cutting/trimming or other knocking or bringing down of trees occur during the **Spring Staging** season for northern long-eared bats in the action area? **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 Development Projects.

    No

51. Will any tree cutting/trimming or other knocking or bringing down of trees occur during the **Summer Occupancy season** for northern long-eared bats in the action area? **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 Development Projects.

    No

52. Does the action area intersect the tricolored bat species list area?

    Automatically answered
    Yes

53. 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

54. [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

55. 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

56. 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

57. 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

58. 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.

0.5

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: Federal Highway Administration

DOCUMENT A00875

POLICY DIRECTIVE P-22-001
AND
POLICY DIRECTIVE P-22-002

THIS PAGE INTENTIONALLY LEFT BLANK

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.).

THIS PAGE INTENTIONALLY LEFT BLANK

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

SHEFFIELD

For: **Superstructure Replacement, S-10-024, County Road Over Ironworks Brook**

COMMONWEALTH OF MASSACHUSETTS

LOCATION

The work referred to herein is in the Town of **SHEFFIELD** in Berkshire 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:

County Road

Bridge S-10-024

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 **884 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.

*** THIS PAGE IS INTENTIONALLY LEFT BLANK ***

massDOT Massachusetts Department of Transportation Highway Division

CMS Contract Management System

Project # 611942 **Contract # 133627**

Location : SHEFFIELD

Description : Superstructure Replacement, S-10-024, County Road over Ironworks Brook

ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
102.01	1	SELECTIVE CLEARING AND GRUBBING AT _____ LUMP SUM		
102.511	3	TREE PROTECTION - ARMORING AND PRUNING AT _____ EACH		
102.521	250	TREE AND PLANT PROTECTION FENCE AT _____ PER FOOT		
107.855	45	PRESSURE INJECTION OF CRACKS AT _____ PER FOOT		
114.11	1	DEMOLITION OF SUPERSTRUCTURE OF BRIDGE NO. S-10-024(02H) AT _____ LUMP SUM		
120.1	300	UNCLASSIFIED EXCAVATION AT _____ PER CUBIC YARD		
127.1	70	REINFORCED CONCRETE EXCAVATION AT _____ PER CUBIC YARD		
140.	150	BRIDGE EXCAVATION AT _____ PER CUBIC YARD		
141.	5	CLASS A TRENCH EXCAVATION AT _____ PER CUBIC YARD		

Project # 611942	Contract # 133627			
Location : SHEFFIELD				
Description : Superstructure Replacement, S-10-024, County Road over Ironworks Brook				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
141.1	20	TEST PIT FOR EXPLORATION AT _____ PER CUBIC YARD		
142.	5	CLASS B TRENCH EXCAVATION AT _____ PER CUBIC YARD		
143.	98	CHANNEL EXCAVATION AT _____ PER CUBIC YARD		
144.	15	CLASS B ROCK EXCAVATION AT _____ PER CUBIC YARD		
151.	150	GRAVEL BORROW AT _____ PER CUBIC YARD		
151.01	5	GRAVEL BORROW - TYPE C AT _____ PER CUBIC YARD		
151.2	110	GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES AT _____ PER CUBIC YARD		
156.	30	CRUSHED STONE AT _____ PER TON		
156.5	20	CRUSHED STONE FOR FILTER BLANKET AT _____ PER CUBIC YARD		

Project # 611942	Contract # 133627			
Location : SHEFFIELD				
Description : Superstructure Replacement, S-10-024, County Road over Ironworks Brook				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
160.3	15	CONTROLLED LOW-STRENGTH MATERIAL (> 300 PSI) AT _____ PER CUBIC YARD		
170.	525	FINE GRADING AND COMPACTING - SUBGRADE AREA AT _____ PER SQUARE YARD		
180.01	1	ENVIRONMENTAL HEALTH AND SAFETY PROGRAM AT _____ LUMP SUM		
180.02	40	PERSONAL PROTECTION LEVEL C UPGRADE AT _____ PER HOUR		
180.03	40	LICENSED SITE PROFESSIONAL SERVICES AT _____ PER HOUR		
181.11	550	DISPOSAL OF UNREGULATED SOIL AT _____ PER TON		
181.12	80	DISPOSAL OF REGULATED SOIL - IN-STATE FACILITY AT _____ PER TON		
181.13	80	DISPOSAL OF REGULATED SOIL - OUT-OF-STATE FACILITY AT _____ PER TON		
181.14	40	DISPOSAL OF HAZARDOUS WASTE AT _____ PER TON		

Project # 611942	Contract # 133627			
Location : SHEFFIELD				
Description : Superstructure Replacement, S-10-024, County Road over Ironworks Brook				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
206.	1	DROP INLET, TYPE A AT _____ EACH		
222.	2	FRAME AND GRATE - MASSDOT BAR TYPE AT _____ EACH		
227.4	2	MASONRY PLUG AT _____ PER SQUARE FOOT		
234.12	60	12 INCH DRAINAGE PIPE - OPTION AT _____ PER FOOT		
258.	5	STONE FOR PIPE ENDS AT _____ PER SQUARE YARD		
402.	50	DENSE GRADED CRUSHED STONE FOR SUB-BASE AT _____ PER CUBIC YARD		
402.13	130	PAVEMENT MILLING MULCH FOR SHOULDERS AT _____ PER FOOT		
415.2	150	PAVEMENT FINE MILLING AT _____ PER SQUARE YARD		
443.	2	WATER FOR ROADWAY DUST CONTROL AT _____ PER 1000 GALLONS		

Project # 611942 Contract # 133627				
Location : SHEFFIELD				
Description : Superstructure Replacement, S-10-024, County Road over Ironworks Brook				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
450.22	50	SUPERPAVE SURFACE COURSE – 9.5 (SSC – 9.5) AT _____ PER TON		
450.31	65	SUPERPAVE INTERMEDIATE COURSE - 12.5 (SIC -12.5) AT _____ PER TON		
450.42	115	SUPERPAVE BASE COURSE - 37.5 (SBC - 37.5) AT _____ PER TON		
450.601	9	SUPERPAVE BRIDGE SURFACE COURSE - 9.5 POLYMER (SSC-B - 9.5 - P) AT _____ PER TON		
450.701	12	SUPERPAVE BRIDGE PROTECTIVE COURSE - 9.5 POLYMER (SPC-B - 9.5 - P) AT _____ PER TON		
451.	5	HMA FOR PATCHING AT _____ PER TON		
452.	90	ASPHALT EMULSION FOR TACK COAT AT _____ PER GALLON		
453.	350	HMA JOINT ADHESIVE AT _____ PER FOOT		
504.	60	GRANITE CURB TYPE VA4 - STRAIGHT AT _____ PER FOOT		

Project # 611942	Contract # 133627			
Location : SHEFFIELD				
Description : Superstructure Replacement, S-10-024, County Road over Ironworks Brook				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
504.1	20	GRANITE CURB TYPE VA4 - CURVED AT _____ PER FOOT		
620.131	35	GUARDRAIL, DEEP POST (SINGLE FACED) AT _____ PER FOOT		
620.132	30	GUARDRAIL, TL-3, THRIE BEAM (SINGLE FACED) AT _____ PER FOOT		
627.1	1	TRAILING ANCHORAGE AT _____ EACH		
627.11	1	STEEL THRIE BEAM ROUNDED END UNIT (SINGLE FACED) AT _____ EACH		
627.83	1	GUARDRAIL TANGENT END TREATMENT, TL-3 AT _____ EACH		
628.211	1	TRANSITION TO NCHRP 350 GUARDRAIL (DEEP POST) AT _____ EACH		
628.24	3	TRANSITION TO BRIDGE RAIL AT _____ EACH		
628.241	1	TRANSITION TO BRIDGE RAIL-CURVED AT _____ EACH		

Project # 611942	Contract # 133627			
Location : SHEFFIELD				
Description : Superstructure Replacement, S-10-024, County Road over Ironworks Brook				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
657.	80	TEMPORARY FENCE AT _____ PER FOOT		
657.5	80	TEMPORARY FENCE REMOVED AND RESET AT _____ PER FOOT		
697.1	1	SILT SACK AT _____ EACH		
698.4	210	GEOTEXTILE FABRIC FOR PERMANENT EROSION CONTROL AT _____ PER SQUARE YARD		
702.	5	HOT MIX ASPHALT SIDEWALK OR DRIVEWAY AT _____ PER TON		
722.3	1	SCHEDULE OF OPERATIONS (TYPE C) - FIXED PRICE $11000 AT Eleven Thousand Dollars LUMP SUM	$11,000.00	$11,000.00
740.	29	ENGINEERS FIELD OFFICE AND EQUIPMENT (TYPE A) AT _____ PER MONTH		
748.	1	MOBILIZATION AT _____ LUMP SUM		
751.	10	LOAM FOR ROADSIDES AT _____ PER CUBIC YARD		

Project # 611942	Contract # 133627			
Location : SHEFFIELD				
Description : Superstructure Replacement, S-10-024, County Road over Ironworks Brook				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
751.765	5	COMPOST AND SEED OVER MODIFIED ROCK AT _____ PER CUBIC YARD		
756.1	1	CONSTRUCTION PERIOD POLLUTION PREVENTION AND EROSION AND SEDIMENTATION CONTROL PLAN AT _____ LUMP SUM		
765.21	2	ANNUAL COVER CROP FOR NATIVE SEEDING AT _____ PER POUND		
765.442	1	ROADSIDE RIVERBANK MIX AT _____ PER POUND		
765.635	275	NATIVE SEEDING AND ESTABLISHMENT AT _____ PER SQUARE YARD		
767.121	775	SEDIMENT CONTROL BARRIER AT _____ PER FOOT		
769.	275	PAVEMENT MILLING MULCH UNDER GUARD RAIL AT _____ PER FOOT		
832.	15	WARNING-REGULATORY AND ROUTE MARKER - ALUMINUM PANEL (TYPE A) AT _____ PER SQUARE FOOT		
847.1	2	SIGN SUP (N/GUIDE)+RTE MKR W/1 BRKWAY POST ASSEMBLY - STEEL AT _____ EACH		

Project # 611942	Contract # 133627			
Location : SHEFFIELD				
Description : Superstructure Replacement, S-10-024, County Road over Ironworks Brook				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
851.1	190	TRAFFIC CONES FOR TRAFFIC MANAGEMENT AT _____ PER DAY		
852.	200	SAFETY SIGNING FOR TRAFFIC MANAGEMENT AT _____ PER SQUARE FOOT		
853.1	7	PORTABLE BREAKAWAY BARRICADE TYPE III AT _____ EACH		
853.21	60	TEMPORARY BARRIER REMOVED AND RESET AT _____ PER FOOT		
853.22	300	TEMPORARY BARRIER REMOVED AND STACKED AT _____ PER FOOT		
853.23	60	TEMPORARY BARRIER (TL-3) AT _____ PER FOOT		
856.	30	ARROW BOARD AT _____ PER DAY		
856.12	275	PORTABLE CHANGEABLE MESSAGE SIGN AT _____ PER DAY		
859.	8,000	REFLECTORIZED DRUM AT _____ PER DAY		

Project # 611942	Contract # 133627			
Location : SHEFFIELD				
Description : Superstructure Replacement, S-10-024, County Road over Ironworks Brook				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
859.1	5,400	REFLECTORIZED DRUMS WITH SEQUENTIAL FLASHING WARNING LIGHTS AT _____ PER DAY		
866.106	475	6 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC) AT _____ PER FOOT		
867.106	475	6 INCH REFLECTORIZED YELLOW LINE (THERMOPLASTIC) AT _____ PER FOOT		
874.4	8	TRAFFIC SIGN REMOVED AND STACKED AT _____ EACH		
904.	2	4000 PSI, 3/4 INCH, 610 CEMENT CONCRETE AT _____ PER CUBIC YARD		
905.2	2	5000 PSI, 3/8 INCH, 710 HP CEMENT CONCRETE AT _____ PER CUBIC YARD		
909.2	50	CEMENTITIOUS MORTAR FOR PATCHING AT _____ PER SQUARE FOOT		
910.1	30	STEEL REINFORCEMENT FOR STRUCTURES - EPOXY COATED AT _____ PER POUND		
912.	250	DRILLING AND GROUTING DOWELS AT _____ EACH		

Project # 611942	Contract # 133627			
Location : SHEFFIELD				
Description : Superstructure Replacement, S-10-024, County Road over Ironworks Brook				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
983.12	126	RIPRAP WITH GRAVEL PACKED VOIDS AT _____ PER TON		
983.521	35	STREAMBED/BANK RESTORATION AT _____ PER CUBIC YARD		
986.	35	MODIFIED ROCKFILL AT _____ PER TON		
991.1	1	CONTROL OF WATER - STRUCTURE NO. S-10-024(02H) AT _____ LUMP SUM		
994.01	1	TEMPORARY PROTECTIVE SHIELDING BRIDGE NO. S-10-024(02H) AT _____ LUMP SUM		
995.	1	BRIDGE SUPERSTRUCTURE, BRIDGE NO.S-10-024(02H) AT _____ LUMP SUM		
Total Qty:	21,681			

*** THIS PAGE IS LEFT BLANK INTENTIONALLY ***