

COMMONWEALTH OF MASSACHUSETTS



**CONTRACT DOCUMENTS
AND SPECIAL PROVISIONS**

PROPOSAL NO.	609435-126585
P.V. =	\$1,964,000.00
PLANS	YES

FOR

**Federal Aid Project No. STP(BR-OFF)-003S(740)X
Bridge Replacement, P-14-001 (445),
Winnetuxet Road Over Winnetuxet River**

in the Town of

PLYMPTON

In accordance with the STANDARD SPECIFICATIONS
for HIGHWAYS and BRIDGES dated 2024

This Proposal to be opened and read:

TUESDAY, AUGUST 6, 2024 at 2:00 P.M.

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DOCUMENT 00010

TABLE OF CONTENTS

DOCUMENT 00010
TABLE OF CONTENTS 00010-1 through 4

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

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

DOCUMENT 00331
LOCUS MAP 00331-1 through 2

DOCUMENT 00439
CONTRACTOR PROJECT EVALUATION FORM 00439-1 through 2

DOCUMENT 00440
SUBCONTRACTOR PROJECT EVALUATION FORM 00440-1 through 2

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

DOCUMENT 00715
SUPPLEMENTAL SPECIFICATIONS 00715-1 through 12

DOCUMENT 00719
SPECIAL PROVISIONS FOR PARTICIPATION BY DISADVANTAGED
BUSINESS ENTERPRISES 00719-1 through 18

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

TABLE OF CONTENTS (Continued)

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

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 36

DOCUMENT A00801
SPECIAL PROVISIONS A00801-1 through 96

DOCUMENT A00802
DETAIL SHEETS A00802-1 through 4

DOCUMENT A00808
PROJECT UTILITY COORDINATION FORM A00808-1 through 4

DOCUMENT A00815
WORK ZONE SAFETY
TEMPORARY TRAFFIC CONTROL A00815-1 through 86

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

DOCUMENT A00835
ARMY CORPS OF ENGINEERS
GENERAL PERMIT VERIFICATION #NAE-2024-00568 &
GENERAL PERMITS FOR THE COMMONWEALTH OF MASSACHUSETTS A00835-1 through 122

DOCUMENT A00836
FHwy APPENDIX B
PROGRAMMATIC EFH VERIFICATION FORM A00836-1 through 34

DOCUMENT A00860
COMBINED APPLICATION 401 WATER QUALITY CERTIFICATION (WQC)
& ARMY CORPS OF ENGINEERS
404 PRE- CONSTRUCTION NOTIFICATION (PCN) A00860-1 through 338

DOCUMENT A00861
MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
WATER QUALITY CERTIFICATE & TECHNICAL DEFICIENCY
REVIEW REPORT 401 WQC APPLICATION No: 24-WW11-0029-APP A00861-1 through 20

TABLE OF CONTENTS (Continued)

DOCUMENT A00872
 FHWA, FRA & FTA INDIANA BAT & NORTHERN LONG-EARED BAT (NLEB)
 PROGRAMMATIC BIOLOGICAL OPINION –
 NLAA CONCURRENCE VERIFICATION A00872-1 through 14

DOCUMENT A00873
 NORTHERN LONG-EARED BAT (NLEB)
 SUMMER PRESENCE/ABSENCE SURVEY A00873-1 through 40

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

DOCUMENT B00420
 PROPOSAL.....B00420-1 through 12

DOCUMENT B00853
 SCHEDULE OF PARTICIPATION BY DISADVANTAGED
 BUSINESS ENTERPRISES (DBEs)B00853-1 through 2

DOCUMENT B00854
 DISADVANTAGED BUSINESS ENTERPRISES (DBE) PARTICIPATION
 LETTER OF INTENT.....B00854-1 through 2

DOCUMENT B00855
 DBE JOINT CHECK ARRANGEMENT APPROVAL FORM.....B00855-1 through 2

DOCUMENT B00856
 JOINT VENTURE AFFIDAVITB00856-1 through 4

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DOCUMENT 00104

**NOTICE TO CONTRACTORS**

Electronic proposals for the following project will be received through the internet using Bid Express 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 Bid Express.

TUESDAY, AUGUST 6, 2024 at 2:00 P.M. **

PLYMPTON

**Federal Aid Project No. STP(BR-OFF)-003S(740)X
Bridge Replacement, P-14-001 (445),
Winnetuxet Road Over Winnetuxet River**

****Date Subject to Change**

PROJECT VALUE = \$1,964,000.00

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.

Plans will be on display and information will be available at the MassDOT Boston Office and at the District Office in TAUNTON.

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 \$610.00 per ton, Portland cement \$425.53 per ton, diesel fuel \$2.865 per gallon, and gasoline \$2.764 per gallon, and Steel Base Price Index 428.4. 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: Monica G. Tibbits-Nutt, Secretary and CEO, MassDOT
Jonathan L. Gulliver, Administrator, MassDOT Highway Division
SATURDAY, JUNE 29, 2024

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DOCUMENT 00210

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

July 1, 1981, updated October 2016

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

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

- (1) "Contractor" means any person, corporation, partnership, joint venture, sole proprietorship, or other entity awarded a contract pursuant to sections thirty-eight A1/2 to thirty-eight O, inclusive, of chapter seven and any contract awarded or executed pursuant to section eleven C of chapter twenty-five A, section thirty-nine M of chapter thirty, or sections forty-four A to forty-four H, inclusive, of chapter one hundred and forty-nine, which is for an amount or estimated amount greater than one hundred thousand dollars.
- (2) "Contract" means any contract awarded or executed pursuant to sections thirty-eight A1/2 to thirty-eight O, inclusive, of chapter seven and any contract awarded or executed pursuant to section eleven C of chapter twenty-five A, section thirty-nine M of chapter thirty, or sections forty-four A through forty-four H, inclusive, of chapter one hundred and forty-nine, which is for amount or estimated amount greater than one hundred thousand dollars.
- (3) "Records" means books of original entry, accounts, checks, bank statements and all other banking documents, correspondence, memoranda, invoices, computer printouts, tapes, discs, papers and other documents or transcribed information of any type, whether expressed in ordinary or machine language.
- (4) "Independent Certified Public Accountant" means a person duly registered in good standing and entitled to practice as a certified public accountant under the laws of the place of his residence or principal office and who is in fact independent. In determining whether an accountant is independent with respect to a particular person, appropriate consideration should be given to all relationships between the accountant and that person or any affiliate thereof. Determination of an accountant's independence shall not be confined to the relationships existing in connection with the filing of reports with the awarding authority.
- (5) "Audit", when used in regard to financial statements, means an examination of records by an independent certified public accountant in accordance with generally accepted accounting principles and auditing standards for the purpose of expressing a certified opinion thereon, or, in the alternative, a qualified opinion or a declination to express an opinion for stated reasons.
- (6) "Accountant's Report", when used in regard to financial statements, means a document in which an independent certified public accountant indicates the scope of the audit which he has made and sets forth his opinion regarding the financial statements taken as a whole with a listing of noted exceptions and qualifications, or an assertion to the effect that an overall opinion cannot be expressed. When an overall opinion cannot be expressed the reason therefor shall be stated. An accountant's report shall include as a part thereof a signed statement by the responsible corporate officer attesting that management has fully disclosed all material facts to the independent certified public accountant, and that the audited financial statement is a true and complete statement of the financial condition of the contractor.
- (7) "Management", when used herein, means the chief executive officers, partners, principals or other person or persons primarily responsible for the financial and operational policies and practices of the contractor.
- (8) Accounting terms, unless otherwise defined herein, shall have a meaning in accordance with generally accepted accounting principles and auditing standards.

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

- (1) The contractor shall make, and keep for at least six years after final payment, books, records, and accounts which in reasonable detail accurately and fairly reflect the transactions and dispositions of the contractor, and
- (2) Until the expiration of six years after final payment, the office of inspector general, and the commissioner of capital asset management and maintenance shall have the right to examine any books, documents, papers or records of the contractor or of his subcontractors that directly pertain to, and involve transactions relating to, the contractor or his subcontractors, and
- (3) If the agreement is a contract as defined herein, the contractor shall describe any change in the method of maintaining records or recording transactions which materially affect any statements filed with the awarding authority, including in his description the date of the change and reasons therefor, and shall accompany said description with a letter from the contractor's independent certified public accountant approving or otherwise commenting on the changes, and
- (4) If the agreement is a contract as defined herein, the contractor has filed a statement of management on internal accounting controls as set forth in paragraph (c) below prior to the execution of the contract, and
- (5) If the agreement is a contract as defined herein, the contractor has filed prior to the execution of the contracts and will continue to file annually, an audited financial statement for the most recent completed fiscal year as set forth in paragraph (d) below.

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

- (1) transactions are executed in accordance with management's general and specific authorization;
- (2) transactions are recorded as necessary
 - i. to permit preparation of financial statements in conformity with generally accepted accounting principles, and
 - ii. to maintain accountability for assets;
- (3) access to assets is permitted only in accordance with management's general or specific authorization; and
- (4) the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action was taken with respect to any difference.

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

- (1) whether the representations of management in response to this paragraph and paragraph (b) above are consistent with the result of management's evaluation of the system of internal accounting controls; and
- (2) whether such representations of management are, in addition, reasonable with respect to transactions and assets in amounts which would be material when measured in relation to the applicant's financial statements.

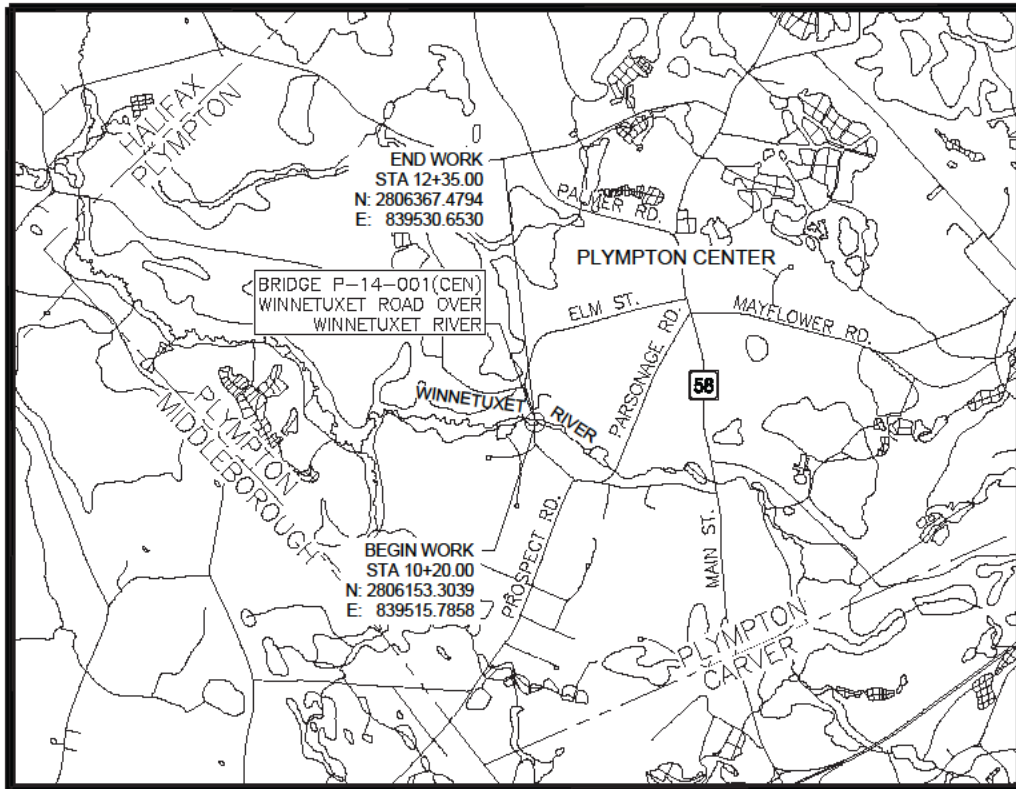
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DOCUMENT 00331

LOCUS MAP

PLYMPTON

**Federal Aid Project No. STP(BR-OFF)-003S(740)X
Bridge Replacement, P-14-001 (445),
Winnetuxet Road Over Winnetuxet River**



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DOCUMENT 00439



Final Report

Interim Report

CONTRACTOR PROJECT EVALUATION FORM

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

Date: _____

City/Town: _____ Contractor: _____

Project: _____ Address: _____

F.A. No. _____ Contract Number: _____

Bid Price: _____ Notice to Proceed: _____

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

Date Work Started: _____ Date Work Completed*: _____

Contractor's Superintendent: _____

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

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

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

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

District Construction Engineer's Signature/Date

Resident Engineer's Signature/Date

Contractor's Signature Acknowledging Report/Date

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

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



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:

DOCUMENT 00710

GENERAL CONTRACT PROVISIONS

Revised: 05/06/24

NOTICE OF AVAILABILITY

The STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES dated 2024, the SUPPLEMENTAL SPECIFICATIONS, the 1996 METRIC CONSTRUCTION AND TRAFFIC STANDARD DETAILS, the 1990 STANDARD DRAWINGS FOR SIGNS AND SUPPORTS; the 1968 STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING and the 2017 CONSTRUCTION STANDARD DETAILS are available online at <https://www.mass.gov/massdot-highway-division-manuals-and-publications>

SPECIAL PROVISIONS FOR RIGHT-TO-KNOW ACT REQUIREMENTS

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

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

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

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

ALTERNATIVE DISPUTE RESOLUTION

Forum, Choice of Law and Mediations:

Any actions arising out of a contract shall be governed by the laws of Massachusetts and shall be brought and maintained in a State or federal court in Massachusetts which shall have exclusive jurisdiction thereof. MassDOT and the Contractor may both agree to mediation of any claim and will share the costs of such mediation pro rata based on the number of parties involved.

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DOCUMENT 00715



SUPPLEMENTAL SPECIFICATIONS

MARCH 31, 2024

The 2024 *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 4: SCOPE OF WORK

Subsection 4.06: Increased or Decreased Contract Quantities

Replace the second paragraph with the following:

Where the actual quantity of a pay item varies by more than 25% above or below the estimated quantity stated in the Contract, an equitable adjustment in the Contract Price for that pay item shall be negotiated upon demand of either party regardless of the cause of the variation in quantity. A demand for an equitable adjustment must be submitted to the other party within 30 days after beginning the work of the affected item that is greater than 25% above the bid quantity or within 30 days after completing the work when the actual quantity is 25% less than the bid quantity.

DIVISION II

CONSTRUCTION DETAILS

DIVISION II: Construction Details

Replace M4.02.15 Cement Mortar with M4.04.0 Grout, Mortar, and Concrete Products where encountered, including in sections 230.40, 485.40, 501.40, 685.40, 940.40A and 983.40.

SECTION 100: EARTHWORK, GRADING, DEMOLITION, RODENT CONTROL AND BORINGS

SECTION 160: CONTROLLED LOW-STRENGTH MATERIAL

Section 160: Controlled Low-Strength Material

Add this new Section:

DESCRIPTION

160.20: General

Controlled Low-Strength Material shall be installed in accordance with the relevant provisions of Subsection 150: Embankment, Section 901: Cement Concrete and in accordance with the procedures described herein.

Controlled Low Strength Materials (CLSM) shall be a self-compacting, self-leveling, flowable, excavatable or non-excavatable, low strength, rigid setting, and unshrinkable material, used as an alternative to compacted granular fills, including backfill, structural fill, utility fill, pavement base, subgrade, subbase, base course, conduit bedding, erosion control, and void filling.

MATERIALS

160.40: General

Material for controlled low-strength material shall meet the requirement specified of M4.08.0 Controlled Low-Strength Material. The material shall be specified by the Engineer as one of the following types;

- CLSM – Manual Excavatable (≤ 100 psi)
- CLSM – Mechanical Excavatable (101-300 psi)
- CLSM – Structural Non Excavatable (> 300 psi)

Permeability testing as specified in Table M4.08.0-2 shall be required when the material is placed outside of roadway areas or footings for concrete structures, or as directed by the Engineer.

CONSTRUCTION METHODS

160.60: General

The Contractor shall submit a placement plan for Controlled Low-Strength Material (CLSM). The plan shall include the type of CLSM, detailed descriptions of methods used for placing and containing the controlled density fill and the set time to strength.

The Contractor shall remove all debris prior to placing the fill. Fill shall not be placed against any structural elements or utilities unless approved by the Engineer.

CLSM shall be poured in lifts not exceeding 4 feet to insure stability under the fluid effects of the pour. Care shall be taken to ensure the integrity of the forms or other means of supporting the material until the material sets up.

COMPENSATION

160.80: Method of Measurement

Controlled Low-Strength Material shall be measured by the cubic yard in place to the neat lines established on the plans or specified by the Engineer. When backfilling pipes the horizontal neat lines shall be not greater than 3.0 ft. greater than the rated inside diameter of the pipe and vertically from the top of the crushed stone foundation material, if any, or 6 in. below the pipe invert whichever is less to the specified top elevation. A deduction shall be made for the volume of the pipe or conduit encased.

160.81: Basis of Payment

Payment under this item shall constitute full compensation for the placement, testing, and all material, equipment and labor to complete the work.

160.82: Payment Items

- 160.1 Controlled Low-Strength Material - Cubic Yard
Manual Excavatable (\leq 100 PSI)
- 160.2 Controlled Low-Strength Material - Cubic Yard
Mechanical Excavatable (101-300 PSI)
- 160.3 Controlled Low-Strength Material (>300 PSI) Cubic Yard

SECTION 200: DRAINAGE

SECTION 201: BASINS, MANHOLES AND INLETS

Section 201.40: General

Replace "Cement Mortar M4.02.15" with "Mortar M4.04.0".

SECTION 690: HIGHWAY GUARD, FENCES AND WALLS

SECTION 690: WALLS REMOVED AND RESET

Section 690.40: General

Replace the last sentence with the following:

Mortar shall meet the requirement of M4.04.0: Grout, Mortar, and Concrete Products.

SECTION 800: TRAFFIC CONTROL DEVICES

SECTION 825: RECTANGULAR RAPID FLASHING BEACONS

Section 825: Rectangular Rapid Flashing Beacons

Add this new Section:

DESCRIPTION

825.20: General

This work shall consist of furnishing and installing a solar-powered, actuated, Rectangular Rapid Flashing Beacon (RRFB) system at the location(s) shown in the Plans.

MATERIALS

825.40: General

Rectangular Rapid-Flashing Beacons shall meet the requirements specified in the following Subsections of Division III, Materials:

Cement Concrete.....	M4.02.00
Signal Posts and Bases	M10.05.1
APS Pushbuttons.....	M10.09.1
RRFB Assemblies.....	M10.11.0

An RRFB system shall include the following items (quantities shown in the Major Items List found in the Plans):

- Cement Concrete Foundation
- Signal Post and Pedestal Base
- APS Pushbutton
- Light Bar
- Signage
- Enclosure for Controller, Activation Unit, and Battery System
- Solar Panel
- All mounting and supporting hardware and wiring necessary to complete a working system

The Contractor shall supply cement concrete foundations per the Plans.

The Contractor shall supply Schedule 80 aluminum signal posts with a brushed or spun finish and square, pedestal aluminum bases with a natural finish unless otherwise shown in the Plans or Special Provisions.

Each Light Bar shall have a pair of yellow beacons facing one or both directions of traffic, as shown in the Plans.

All sign designs shall conform to the MUTCD. Sign panel information, including dimensions, shall be per the Plans.

The warning signs (MUTCD code W11-2, W11-15, or S1-1 signs – see Plans for sign type), and the diagonal downward arrow sign (W16-7P) signs shall be on Type A substrate, conforming to 828.42: Panels. The sign sheeting shall be fluorescent yellow-green, conforming to ASTM D4956 Type IX.

An R10-25 sign, conforming to the MUTCD, shall be mounted above the APS Pushbutton on a Type A substrate or may be integral to the button assembly.

The solar panel and battery system may be integrated into a single unit or housed separately, per the manufacturer’s design. These may also be co-housed with the Light Bar and/or the Controller and Activation Unit.

The solar panel and battery system shall be sized appropriately to accommodate 300 actuations per day, 365 days a year, for the duration of the repeating flashing sequence shown in the Plans. The sizing calculations shall be based upon solar and temperature conditions for a typical December-January in Massachusetts. The system shall have a minimum autonomy of 5 days.

Each assembly shall be rated for wind speeds of up to 90 mph.

Any proprietary software required for the programming and/or operation of the system during its lifetime shall be included at no additional cost.

825.41: Shop Drawings

Within 30 days from the Notice to Proceed the Contractor shall submit shop drawings for the RRFB system, including cutsheets for all components to show conformance with M10.05, M10.09.1, and M10.11.0 and these specifications.

Shop drawings shall include all solar and battery sizing calculations. These calculations shall have Contractor- or manufacturer-supplied, site-specific shading factors applied.

825.42: Material Warranties

All RRFB components shall include a minimum 1-year manufacturer's replacement warranty for manufacturing or installation defects starting at the date of acceptance by the Engineer. A battery shall be considered defective should it not retain 80% of its original capacity within the warranty period.

CONSTRUCTION METHODS

825.60: General

RRFBs shall be installed on new foundations at the locations as shown in the Plans. Bases shall be secured to the foundation in accordance with the manufacturer's specifications.

All systems shall be installed per the manufacturer's instructions.

The location and orientation of the system shall be per the Plans.

The arrow on each APS pushbutton shall be aligned parallel to the direction of travel of the crosswalk.

The Light Bar(s) shall be oriented towards the incoming lane(s).

Solar panels shall be oriented to maximize sunlight gain.

SYSTEM OPERATION

825.70: APS Pushbuttons

APS Pushbuttons shall actuate the RRFB system. Upon actuation, an audible speech message shall be broadcast from each pushbutton in the system that says, "Warning lights are flashing," shall be stated twice. This message shall be repeated upon each actuation. No other messages shall be allowed.

While the system is in dark mode, the APS Pushbuttons shall broadcast a locator tone. The locator tone shall have a duration of 0.15 seconds or less and shall repeat at 1-second intervals at all times that the system is in dark mode. The locator tone shall be set 2 to 5 dBA above ambient sound, shall automatically adjust intensity, but cap at a maximum volume of 100 dBA.

APS Pushbuttons shall have all other vibrotactile and percussive indications disabled.

825.71: Light Bar

The Light Bar shall remain dark until actuated.

Upon actuation, all Light Bars in the system shall be activated simultaneously for a predetermined repeating flash sequence. The flashing rate shall be 75 flashing sequences per minute.

The left and right yellow beacons shall operate using the following sequence:

- A. The yellow beacon on the left-hand side shall be illuminated for approximately 50 milliseconds.
- B. Both yellow beacons shall be dark for approximately 50 milliseconds.
- C. The yellow beacon on the right-hand side shall be illuminated for approximately 50 milliseconds.
- D. Both yellow beacons shall be dark for approximately 50 milliseconds.
- E. The yellow beacon on the left-hand side shall be illuminated for approximately 50 milliseconds.
- F. Both yellow beacons shall be dark for approximately 50 milliseconds.
- G. The yellow beacon on the right-hand side shall be illuminated for approximately 50 milliseconds.
- H. Both yellow beacons shall be dark for approximately 50 milliseconds.
- I. Both yellow beacons shall be illuminated for approximately 50 milliseconds.
- J. Both yellow beacons shall be dark for approximately 50 milliseconds.

K. Both yellow beacons shall be illuminated for approximately 50 milliseconds.

L. Both yellow beacons shall be dark for approximately 250 milliseconds.

The flash rate of each individual RRFB indication, as applied over the full flashing sequence, shall not be more than 5 flashes per second, to avoid frequencies that might cause seizures.

The sequence shall then be repeated until the duration time has been met and then all yellow beacons shall return to dark mode simultaneously. The duration time shall be per the Plans.

The predetermined repeating flash sequence shall be immediately initiated every time a pushbutton detector is actuated. If the RRFBs are already flashing and an actuation is received, it shall restart the duration time. There shall be no delay time programmed between actuations.

COMPENSATION

825.80: Method of Measurement

RRFBs will be measured as a single system, 2-Post Assembly or 3-Post Assembly, furnished and installed.

825.81: Basis of Payment

The work will be paid for at the contract price each under the respective item for a 2-Post Assembly System or 3-Post Assembly System. Any additional wiring, mounting equipment, or other materials or labor required to for an operating system per the Plans and Specifications shall be considered as incidental to the construction and be included in the contract price.

825.82: Payment Item

825.2	RRFB (2-Post Assembly System)	Each
825.3	RRFB (3-Post Assembly System)	Each

SECTION 900: STRUCTURES

SECTION 970: DAMP-PROOFING

Subsection 970.30: General

Add the following material to this subsection:

Mortar.....	M4.04.0
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Subsection 970.40: General

Replace the second sentence in the second paragraph with the following;

All holes in concrete surfaces shall be satisfactorily filled with mortar before damp-proofing is applied.

SECTION 983: REVETMENT

Subsection 983.64 Special Slope Paving Under Bridges

Replace the last sentence under B. Quarry Stone or Precast Concrete Blocks. with the following:

Mortar shall then be placed in the joints to the top of the paved surface.

Subsection 983.65 Channel Paving and Grouted Channel Paving

Replace the last sentence with the following:

The grout shall conform to M4.04.0: Grout, Mortar, and Concrete Products.

DIVISION III

MATERIALS SPECIFICATIONS

SECTION M4: CEMENT AND CEMENT CONCRETE MATERIALS

Section M4.02.00 Cement Concrete

Add the following to the end of this section.

Alkali Silica Reactivity - Resistant Portland Cement Concrete

All cement concrete and precast/prestressed concrete products shall be alkali silica reactivity-resistant. Proportion Portland cement concrete mixes to include materials that meet either the aggregate requirement or Alkali-Silica Reactivity (ASR) mitigation criteria listed below. Provide cement mill test reports from certified laboratories that show the materials' source, composition and the cement alkali content expressed as sodium oxide equivalent(s) not to exceed 1.4%. Certified test reports according to test procedures as specified in Table A will be required to be submitted with the trial batch submission to RMS for approval every year or whenever the source of material is changed.

Select non-reactive aggregates that meet all the criteria of Table M4.02.00-2. Mitigate the mix as described below when nonreactive aggregates are unavailable. If non-reactive aggregates are used for portland cement concrete mix, 15% by weight of the cementitious content shall be fly ash meeting AASHTO M 295, Type F.

Select a material or a combination of materials that meet the criteria shown in Table M4.02.00-3 to mitigate ASR when concrete mixes must be proportioned with reactive aggregates. Perform verification test according to AASHTO T 303 and ASTM C295 to determine the effectiveness of the resulting mix design against ASR. Use the same proportion of cement and pozzolan for each test mixture as that proposed for the actual mix design. Provide the Department with certified documentation of the mixtures' effectiveness to control ASR.

Table M4.02.00-2: Tests and Criteria for Proposed Aggregates

Procedure	Description	Limits
AASHTO T 303: Accelerated Detection of Potentially Deleterious Expansion of Mortar Bars Due to Alkali-Silica Reaction	Mean mortar bar expansion at 14 days. Perform a polynomial fit ⁽¹⁾ of 4, 7, 11, and 14 days to determine reliability of results	0.08% maximum metamorphic aggregate; 0.10% maximum all other aggregates. Repeat AASHTO T 303 if r ² is less than 0.95.
ASTM C295: Petrographic Examination of Aggregates for Concrete	Optically strained, microfractured, or microcrystalline quartz	5.0% maximum ⁽²⁾
	Chert or chalcedony	3.0% maximum ⁽²⁾
	Tridymite or cristobolite	1.0% maximum ⁽²⁾
	Opal	0.5% maximum ⁽²⁾
	Natural volcanic glass	3.0% maximum ⁽²⁾
⁽¹⁾ Use a second order polynomial of %Exp = A ⁰ + A ¹ SQRT(t) + A ² t. See publication SD92-04-F. ⁽²⁾ Based on the total aggregate sample.		

Table M4.02.00-3: Mitigation Methods for ASR in Portland Cement Concrete

Material	Specification	Cementitious Material Percentage ⁽¹⁾
Low alkali cement ⁽²⁾	AASHTO M 85	100%
Fly ash - Class F	AASHTO M 295	15% minimum to 30% ⁽⁴⁾ maximum
Silica Fume ⁽⁵⁾	AASHTO M 307	6% ± 1% ⁽⁶⁾
Slag Grade 100 and 120	AASHTO M 302	25% minimum to 50% maximum

⁽¹⁾ Measure this minimum content of cementitious material as percent by weight of cement plus pozzolan.
⁽²⁾ This single criterion is not effective in all cases in remediating ASR. Low alkali cement (0.60% maximum ⁽³⁾) must be used in combination with other pozzolanic materials in Table B.
⁽³⁾ Na₂O equivalent = %Na₂O + 0.658 (%K₂O)
⁽⁴⁾ Fly ash, Type F, shall replace 15% by weight of the design cement content, and any additional fly ash will be considered as fine aggregate.
⁽⁵⁾ Silica fume shall only be used in silica fume cement concrete.
⁽⁶⁾ The total amount of Type F fly ash and silica fume shall constitute 20% by weight of the design cement content, and any additional fly ash shall be considered as fine aggregate.

Section M4.02.15 Cement Mortar

Delete this section.

Section M4.04.0: Grout, Mortar and Concrete Products

Replace this section with the following.

M4.04.0: Grout, Mortar, and Concrete Products

Grout, cementitious mortar, and concrete products shall be packaged, dry, and preblended with preformulated constituent materials (excluding mixing water) to produce a material with acceptable quality characteristics and material properties, including time of set, compressive strength, flexural strength, slant shear bond strength, resistance to alkali silica reaction, freezing/thawing, and de-icing cycles, shrinkage, expansion, and sulfate reaction.

Mortar products shall be defined as products containing aggregate of which less than 5% by mass of the total mixture is retained on the 3/8 in. sieve. Mortar products for concrete repairs shall be used only on repair depths of 2 in. or less. Concrete products shall be defined as products containing aggregate of which 5% or more by mass of the total mixture is retained on the 3/8 in. sieve. Concrete products for concrete repairs shall be used only on repair depths greater than 2 in.

The aggregate sources included in the prepackaged product or extended into the product shall meet Section M4.02.02: Aggregates. Grout, cementitious mortar, and concrete products shall only be applied per the requirements provided on the product's technical data sheet. Grout, cementitious mortar, and concrete products shall maintain valid listing on the MassDOT Qualified Construction Materials List (QCML). Grout, cementitious mortar, and concrete products shall meet requirements specified herein.

A. Technical Data Sheet.

The Manufacturer shall submit the product's technical data sheet to the Department for review. At a minimum, the product's technical data sheets shall include:

- (a) Product Name
- (b) Manufacturer, including address and contact information
- (c) Packaging
- (d) Yield
- (e) Product Description, including an overview of the product and its intended application(s) and use(s).
- (f) Technical Data, including quality characteristics and corresponding performance criteria with the AASHTO and/or ASTM standard test methods identified.

- (g) Recommended Equipment
- (h) Instructions, including surface preparation, mixing, forming, placing, finishing, curing, and protection from adverse conditions, such as precipitation, cold conditions, and hot conditions.
- (i) Limitations
- (j) Storage and Shelf Life
- (k) Safety

B. Mix Design Formulation.

Products that are extended with aggregate not included in the original product packaging shall be formulated per the product's technical data sheet and evaluated through Department mix design evaluation and verification testing. Producers shall report and submit proposed mix design formulations onto the Department issued mix design sheet. The Producer shall select an AASHTO accredited independent laboratory to conduct verification testing. The sampling and testing conducted by the independent laboratory shall be witnessed by the Department.

C. Product Verification Testing.

Verification test results shall be within the limits specified herein.

M4.04.1: Conventional Grout, Cementitious Mortar, and Concrete Products

Conventional grout, cementitious mortar, and concrete products shall meet the requirements of Section M4: Cement and Cement Concrete Materials, performance criteria of the product's technical data sheet, and the requirements specified herein.

M4.04.2: Rapid Hardening Cementitious Mortar and Concrete Products

Rapid hardening cementitious mortar and concrete products shall meet the requirements and performance criteria of the product's technical data sheet, ASTM C928 Standard Specification for Packaged, Dry, Rapid-Hardening Cementitious Materials for Concrete Repairs, and Table M4.04.2-2.

Table M4.04.2-1: Types of Rapid Hardening Cementitious Products for Concrete Repairs

Type	Description	Application
R1	General Rapid Hardening	Vertical and Overhead Repairs
R2	Medium Rapid Hardening	Vertical and Overhead Repairs
R3	Very Rapid Hardening	Horizontal, Vertical, and Overhead Repairs

Table M4.04.2-2: Verification Testing Requirements

Property	Method	Quality Characteristic		Limits					
				R1		R2		R3	
				Min.	Max.	Min.	Max.	Min.	Max.
Setting	T 197	Initial Set (min.)		Technical Data Sheet					
		Final Set (min.)		Technical Data Sheet					
Strength	T 97 ^[1]	Flexural Strength (psi)	24 Hours	-	-	-	-	650	-
			7 Days	-	-	-	-	-	-
Durability	T 358	Surface Chloride Ion Penetration Resistance (kΩ-cm)	28 Days	21	-	21	-	21	-
			T 161 (A)	Relative Durability Factor		90	-	90	-
		Mass Loss (%)		-	6.0	-	6.0	-	6.0

[1] Not applicable to vertical and overhead repair applications.

M4.04.3: Mortar Products for Unit Masonry

Mortar products for unit masonry shall meet the requirements and performance criteria of the product’s technical data sheet and Type M specified in ASTM C270 Standard Specification for Mortar for Unit Masonry. Field proportioned cement mortar for laying brick and block shall be composed of 1 part Portland cement and 2 parts of fine aggregate by volume with a sufficient amount of water to form a workable mixture, while still achieving the properties specified herein.

M4.04.4: Grout Products for Unit Masonry

Grout products for unit masonry shall meet the requirements and performance criteria of the product’s technical data sheet and ASTM C476 Standard Specification for Grout for Masonry.

M4.04.5: Non-Shrink Grout Products

Non-shrink grout products are intended for use under applied load, including supporting a structure, transfer medium between load-bearing members, shear keys, and other non-shrink applications, where a change in height below initial placement height is to be avoided. Non-shrink grout products shall meet the requirements and performance criteria of the product’s technical data sheet and ASTM C1107 Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).

SECTION M5: PIPE, CULVERT SECTIONS AND CONDUIT

Section M5.01.0: Joint Material for Pipe

Replace M4.02.15 Cement Mortar with M4.04.0 Grout, Mortar, and Concrete Products in paragraph B.

SECTION M8: METALS AND RELATED MATERIALS

Section M8.18.1: Traffic Signal Supports

Delete the heading Posts and the two paragraphs under it. Delete the heading Bases and the three paragraphs under it.

SECTION M10: TRAFFIC CONTROL DEVICES

Section M10.05.0: Traffic Signal Structures (General)

Add this new Section:

M10.05.0: Traffic Signal Structures (General)

The bases of all Traffic Signal Structures shall be supplied with a bonding lug.

Section M10.05.1: Signal Posts and Bases

Add this new Section:

M10.05.1: Signal Posts and Bases

All Signal Posts shall be one-piece 4-in. diameter, Schedule 40 or Schedule 80, and machine-threaded.

Signal Posts may be fabricated from aluminum with a brushed or spun finish or from steel with a galvanized finish.

The interior of Signal Posts shall be coated as specified in Underwriters Laboratories UL-6 for enameled conduit, or aluminum conduit conforming to M5.07.1: Electrical Conduit-Rigid Metallic (Type RM), Paragraph C.

Signal Posts Bases shall be fabricated to accept the threads from the Signal Post and locked into place with set screws.

Signal Post Bases shall be fabricated from aluminum with a natural or anodized finish or galvanized cast iron.

Signal Post Bases shall be square or octagonal.

Signal Posts and Bases conform to Table M10.05.1-1.

Table M10.05.1-1: Signal Post and Base Material Requirements

Component	Material	Specification
Signal Post	Aluminum	6063-T6 (ASTM B221, B429 or B241)
Signal Post	Steel	ASTM A53, Grade A or B
Signal Post Base	Aluminum	356.0-T6 (ASTM B26, B108)
Signal Post Base	Cast Iron	AASHTO M 105

Section M10.11.0: RRFB Assemblies

Add this new Section:

M10.11.0: RRFB Assemblies

Rectangular Rapid Flashing Beacon (RRFB) Assemblies shall consist of a Light Bar and an enclosure for the Controller and Activation Unit.

Light Bar

The Light Bar shall consist of two rapidly-flashed rectangular-shaped yellow indications, each with an LED-array based pulsing light source. The size of each RRFB indication shall conform to the Construction Standard Details.

The light intensity of the yellow indications during daytime conditions shall meet the minimum specifications for Class 1 yellow peak luminous intensity in the publication "Directional Flashing Optical Warning Devices for Authorized Emergency, Maintenance, and Service Vehicles J595," 2005, Society of Automotive Engineers (SAE). A photocell or equivalent device shall be included to reduce the brilliance of the LED beacons during nighttime conditions.

DOCUMENT 00719

(Revised September 14, 2023 – for all Federally Aided Projects)

**SPECIAL PROVISIONS FOR PARTICIPATION BY
DISADVANTAGED BUSINESS ENTERPRISES**
(IMPLEMENTING TITLE 49 OF THE CODE OF FEDERAL REGULATIONS, PART 26)

Section: Page 00719-

POLICY 2

1. DEFINITIONS..... 3

2. DBE PARTICIPATION 5

 a. Goal 5

 b. Bidders List..... 5

3. CONTRACTOR ASSURANCES 6

4. REQUIRED SUBCONTRACT PROVISIONS 6

5. ELIGIBILITY OF DBES 6

 a. Massachusetts DBE Directory 6

 b. DBE Certification 6

 c. Joint Venture Approval 7

6. COUNTING DBE PARTICIPATION TOWARDS DBE PARTICIPATION GOALS..... 7

 a. Commercially Useful Function 7

 b. Counting Participation Toward The Contract Participation Goal..... 7

 c. Joint Check Policy..... 9

 d. Joint Check Procedure(s) 10

7. AWARD DOCUMENTATION AND PROCEDURES 11

8. COMPLIANCE 13

9. SANCTIONS..... 16

10. FURTHER INFORMATION; ENFORCEMENT, COOPERATION AND
 CONFIDENTIALITY 16

11. LIST OF ADDITIONAL DOCUMENTS 18

POLICY

The Massachusetts Department of Transportation (MassDOT) receives Federal financial assistance from the Federal Highway Administration (FHWA), United States Department of Transportation (U.S. DOT), and as a condition of receiving this assistance, has signed an assurance that it will comply with 49 CFR Part 26 (Participation By Disadvantaged Business Enterprises In Department Of Transportation Financial Assistance Programs). The U.S. DOT Disadvantaged Business Enterprise Program is authorized by the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (“SAFETEA-LU”), as amended, at Title 23, United States Code, § 1101.

Accordingly, MassDOT has established a Disadvantaged Business Enterprise (DBE) Program in accordance with 49 CFR Part 26. It is the policy of MassDOT to ensure that DBEs have an equal opportunity to receive and participate in U.S. DOT assisted Contracts, without regard to race, color, national origin, or sex. To this end, MassDOT shall not directly, or through contractual or other arrangements, use criteria or methods of administration that have the effect of defeating or substantially impairing accomplishment of the program objectives stated below:

- ◆ To ensure nondiscrimination in the award and administration of U.S. DOT assisted Contracts;
- ◆ To create a level playing field on which DBEs can compete fairly for U.S. DOT assisted Contracts;
- ◆ To ensure that the DBE Program is narrowly tailored in accordance with applicable law;
- ◆ To ensure that only firms that fully meet 49 CFR Part 26 eligibility standards are permitted to participate as DBEs;
- ◆ To help remove barriers to the participation of DBEs in U.S. DOT assisted Contracts; and
- ◆ To assist the development of firms that can compete successfully in the market place outside the DBE Program.

The Director of Civil Rights of MassDOT has been designated as the DBE Liaison Officer. The DBE Liaison Officer is responsible for implementing all aspects of the DBE Program. Other MassDOT employees are responsible for assisting the Office of Civil Rights in carrying out this obligation. Implementation of the DBE Program is accorded the same priority as compliance with all other legal obligations incurred by MassDOT in its financial assistance agreements with each operating administration of the U.S. DOT. Information on the Federal requirements and MassDOT’s policies and information can be found at:

<i>Type of Info</i>	<i>Website</i>	<i>Description</i>
MassDOT Highway Division Policies and Info	https://www.mass.gov/disadvantaged-business-enterprise-goals-2019-2022	MassDOT– Highway Div’n Page
For copies of the Code of Federal Regulations	http://www.gpo.gov/fdsys/browse/collectionCfr.action?collectionCode=CFR	FDsys – US Gov’t Printing Office
For information about the U.S.DOT DBE Program	https://www.transportation.gov/civil-rights/disadvantaged-business-enterprise	U.S. DOT/ FHWA page

1. DEFINITIONS

As used in these provisions, the terms set out below are defined as follows:

“Broker”, for purposes of these provisions, shall mean a DBE Entity that has entered into a legally binding relationship to provide goods or services delivered or performed by a third party. A broker may be a DBE Entity that arranges or expedites transactions but performs no work or installation services.

“Contractor”, “General” or “Prime” Contractor, “Bidder,” and “DB Entity” shall mean a person, firm, or other entity that has contracted directly with MassDOT to provide contracted work or services.

“Contract” shall mean the Contract for work between the Contractor and MassDOT.

“DBB” or “Design-Bid-Build” shall mean the traditional design, bid and project delivery method consisting of separate contracts between awarding authority and a designer resulting in a fully designed project; and a separate bidding process and Contract with a construction Contractor or Bidder.

“DB” or “Design-Build” shall mean an accelerated design, bid and project delivery method consisting of a single contract between the awarding authority and a DB Entity, consisting of design and construction companies that will bring a project to full design and construction.

“Disadvantaged Business Enterprise” or “DBE” shall mean a for-profit, small business concern:

- (a) that is at least fifty-one (51%) percent owned by one or more individuals who are both socially and economically disadvantaged, or, in the case of any corporation, in which at least fifty-one (51%) percent of the stock is owned by one or more such individuals; and
- (b) where the management and daily business operations are controlled by one or more of the socially and economically disadvantaged individuals who own it.

“FHWA” shall mean the Federal Highway Administration,” an agency within U.S. DOT that supports State and local governments in the design, and maintenance of the Nation’s highway system (Federal Aid Highway Program).

“Good faith efforts” shall mean efforts to achieve a DBE participation goal or other requirement of these Special Provisions that, by their scope, intensity, and appropriateness to the objective, can reasonably be expected to fulfill the program requirement. Such efforts must be deemed acceptable by MassDOT.

“Joint Venture” shall mean an association of a DBE firm and one or more other firms to carry out a single, for-profit business enterprise, for which the parties combine their property, capital, efforts, skills and knowledge, and in which the DBE is responsible for a distinct, clearly defined portion of the work of the Contract and whose share in the capital contribution, control, management, risks, and profits of the joint venture are commensurate with its ownership interest.

“Approved Joint Venture” shall mean a joint venture, as defined above, which has been approved by MassDOT’s Prequalification Office and Office of Civil Rights for DBE participation on a particular Contract.

"Manufacturer" shall mean a firm that operates or maintains a factory or establishment that produces, on the premises, the materials, supplies, articles or equipment required under the contract and of the general character described by the specifications.

"Regular Dealer" shall mean a DBE firm that owns, operates, or maintains a store, warehouse, or other establishment in which materials, supplies, articles or equipment of the general character described by the specifications and required under the Contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business.

- (a) To be a regular dealer, the firm must be an established, regular business that engages, as its principal business, and under its own name, in the purchase and sale of the products in question.
- (b) A person may be a regular dealer in such bulk items as petroleum products, steel, cement, gravel, stone, or asphalt without owning, operating, or maintaining a place of business as provided above if the person both owns and operates distribution equipment for the products. Any supplementing of regular dealers' own distribution equipment shall be by long term lease agreement and not on an ad hoc or contract by contract basis.
- (c) Packagers, brokers, manufacturers' representatives, or other persons who arrange or expedite transactions are not regular dealers within the meaning of this definition.

"Responsive" and "Responsible" refers to the bidder's submittal meeting all of the requirements of the advertised request for proposal. The term responsible refers to the ability of the Contractor to perform the work. This ability can be determined prior to bid invitations.

"Small Business or Small Business Concern" shall mean a small business concern or company as defined in Section 3 of the Small Business Act and SBA regulations implementing it (13 CFR Part 121); and is a business that does not exceed the cap on annual average gross receipts established by the U.S. Secretary of Transportation pursuant to 49 CFR Part 26.65; see also 49 CFR Part 26.39.

"SDO" shall mean the Massachusetts Supplier Diversity Office, formerly known as the State Office of Minority and Women Business Assistance (SOMWBA). In 2010, SOMWBA was abolished and the SDO was established. *See* St. 2010, c. 56. The SDO has assumed all the functions of SOWMBA. SDO is an agency within the Commonwealth of Massachusetts Executive office of Administration and Finance (ANF) Operational Services Division (OSD). The SDO mandate is to help promote the development of business enterprises and non-profit organizations owned and operated by minorities and women.

"Socially and economically disadvantaged individuals" shall mean individuals who are citizens of the United States (or lawfully admitted permanent residents) and who are:

- (a) Individuals found by SDO to be socially and economically disadvantaged individuals on a case by case basis.
- (b) Individuals in the following groups, members of which are rebuttably presumed to be socially and economically disadvantaged:

- (1) "Black Americans" which includes persons having origin in any of the Black racial groups of Africa;
- (2) "Hispanic Americans" which include persons of Mexican, Puerto Rican, Cuban, Dominican, Central or South American, or other Spanish or Portuguese culture or origin, regardless of race;
- (3) "Native Americans" which include persons who are American Indians, Eskimos, Aleuts, or Native Hawaiians;
- (4) "Asian Pacific Americans" which includes persons whose origins are from Japan, China, Taiwan, Korea, Burma (Myanmar), Vietnam, Laos, Cambodia (Kampuchea), Thailand, Malaysia, Indonesia, the Philippines, Brunei, Samoa, Guam, the U.S. Trust Territories of the Pacific Islands (Republic of Palau), the Commonwealth of the Northern Marianas Islands, Macao, Fiji, Tonga, Kiribati, Tuvalu, Nauru, Federated States of Micronesia, or Hong Kong;
- (5) "Subcontinent Asian Americans" which includes persons whose origins are from India, Pakistan, Bangladesh, Bhutan, the Maldives Islands, Nepal or Sri Lanka;
- (6) Women; or
- (7) Any additional groups whose members are designated as socially and economically disadvantaged by the Small Business Administration (SBA), at such time as the SBA designation becomes effective.

Other terms and definitions applicable to the U.S. DOT DBE Program may be found at 49 CFR Part 26 and related appendices and guidance pages.

2. DBE PARTICIPATION

a. Goal

On this Contract, MassDOT has established the following goal(s) for participation by firms owned and controlled by socially and economically disadvantaged persons. At least half of the goal must be met in the form of DBE Subcontractor construction activity as opposed to material supplies or other services. The applicable goal remains in effect throughout the life of the contract regardless of whether pre-identified DBE Subcontractors remain on the Project or under Contract.

Design-Bid-Build Projects: DBE Participation Goal 6 %
(One half of this goal shall be met in the form of Subcontractor construction activity)

Design-Build Projects: DBE Design Participation Goal ____% and DBE Construction Participation Goal ____%
(One half of the Construction Goal shall be met in the form of Subcontractor construction activity)

b. Bidders List

Pursuant to the provisions of 49 CFR Part 26.11(c), Recipients such as MassDOT, must collect from all Bidders who seek work on Federally assisted Contracts the firm full company name(s), addresses and telephone numbers of all firms that have submitted bids or quotes to the Bidders in connection with this Project. All bidders should refer to the Special Provision Document "A00801" of the Project proposal for this requirement.

In addition, MassDOT must provide to U.S. DOT, information concerning contractors firm status as a DBE or non-DBE, the age of the firm, and the annual gross receipts of the firm within a series of brackets (e.g., less than \$500,000; \$500,000–\$1 million; \$1–2 million; \$2–5 million, etc.). The status, firm age, and annual gross receipt information will be sought by MassDOT regularly prior to setting its DBE participation goal for submission to U.S. DOT. MassDOT will survey each individual firm for this information directly.

Failure to comply with a written request for this information within fifteen (15) business days may result in the suspension of bidding privileges or other such sanctions, as provided for in Section 9 of this provision, until the information is received.

3. CONTRACTOR ASSURANCES

No Contractor or any Subcontractor shall 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 all respects and as applicable prior to, or subsequent to, award of U.S. DOT assisted Contracts. The Contractor agrees to affirmatively seek out and consider DBE firms as Contractors, Subcontractors, and/or suppliers of materials and services for this Contract. No Contract will be approved until MassDOT has reviewed Bidders'/Contractors' affirmative actions concerning DBEs. Failure to carry out these requirements is a material breach of this Contract which may result in the termination of the Contract or such other remedy as MassDOT or FHWA deem appropriate.

4. REQUIRED SUBCONTRACT PROVISIONS

The Prime Contractor shall include the provisions of Section 3 above in every subcontract, making those provisions binding on each Subcontractor; in addition, the Prime Contractor shall include a copy of this Special Provision, in its entirety, in every subcontract with a DBE firm which is, or may be, submitted for credit toward the Contract participation goal.

5. ELIGIBILITY OF DBES

Only firms that have been certified by SDO and confirmed by MassDOT as eligible in accordance with 49 CFR Part 26 to participate as DBEs on federally aided MassDOT Contracts may be used on this Contract for credit toward the DBE participation goal.

a. Massachusetts DBE Directory

MassDOT makes available to all bidders the most current Massachusetts Disadvantaged Business Enterprise Directory. This directory is made available for Contractors' convenience and is informational only. The Directory lists those firms that have been certified as eligible in accordance with the criteria of 49 CFR Part 26 to participate as DBEs on federally aided MassDOT contracts. The Directory also lists the kinds of work each firm is certified to perform but does not constitute an endorsement of the quality of performance of any business and does not represent MassDOT Subcontractor approval.

Contractors are encouraged to make use of the DBE Directory maintained by SDO on the Internet. This listing is updated daily and may be accessed at the SDO's website at:

<https://www.diversitycertification.mass.gov/BusinessDirectory/BusinessDirectorySearch.aspx>

b. DBE Certification

A firm must apply to SDO, currently acting as certification agent for MassDOT, for DBE certification to participate on federally aided MassDOT Contracts. A DBE application may be made in conjunction with a firm's application to SDO for certification to participate in state-funded minority and women business enterprise programs or may be for DBE certification only. An applicant for DBE certification must identify the area(s) of work it seeks to perform on U.S. DOT funded projects.

c. Joint Venture Approval

To obtain recognition as an approved DBE Joint Venture, the parties to the joint venture must provide to MassDOT's Office of Civil Rights and Prequalification Office, at least fourteen (14) business days before the bid opening date, an Affidavit of DBE/Non-DBE Joint Venture in the form attached hereto, and including, but not limited to the following:

1. a copy of the Joint Venture Agreement;
2. a description of the distinct, clearly defined portion of the contract work that the DBE will perform with its own forces; and,
3. all such additional information as may be requested by MassDOT for the purpose of determining whether the joint venture is eligible.

6. COUNTING DBE PARTICIPATION TOWARDS DBE PARTICIPATION GOALS

In order for DBE participation to count toward the Contract participation goal, the DBE(s) must have served a commercially useful function in the performance of the Contract and must have been paid in full for acceptable performance.

a. Commercially Useful Function

- (1) In general, a DBE performs a commercially useful function when it is responsible for execution of the work of the contract and is carrying out its responsibilities by actually performing, managing, and supervising the work involved. With respect to materials and supplies used on the Contract, the DBE must be responsible for negotiating price, determining quality and quantity, ordering the material, installing (where applicable) and paying for the material itself.
- (2) To determine whether a DBE is performing a commercially useful function, MassDOT will evaluate the amount of work subcontracted, industry practices, whether the amount the firm is to be paid under the Contract is commensurate with the work it is actually performing and the DBE credit claimed for its performance of the work, and other relevant factors.
- (3) A DBE does not perform a commercially useful function if its role is limited to that of an extra participant in a transaction, contract, or project through which funds are passed in order to obtain the appearance of DBE participation. In determining whether a DBE is such an extra participant, MassDOT will examine similar transactions, particularly those in which DBEs do not participate.

b. Counting Participation Toward The Contract Participation Goal

DBE participation which serves a commercially useful function shall be counted toward the DBE participation goal in accordance with the Provisions of 49 CFR Part 26.55(a) to (h), as follows:

- (1) When a DBE participates in a construction Contract, MassDOT will count the value of the work performed by the DBE's own forces. MassDOT will count the cost of supplies and materials obtained by the DBE for the work of its contract, including supplies purchased or equipment leased by the DBE. Supplies, labor, or equipment the DBE Subcontractor uses, purchases, or leases from the Prime Contractor or any affiliate of the Prime Contractor will not be counted.

- (2) MassDOT will count the entire amount of fees or commissions charged by a DBE firm for providing bona fide services, such as professional, technical, consultant, or managerial services, or for providing bonds or insurance specifically required for the performance of a U.S. DOT assisted Contract, toward DBE participation goals, provided it is determined that the fee is reasonable and not excessive as compared with fees customarily allowed for similar services.
- (3) When a DBE performs as a participant in a joint venture, MassDOT will count toward DBE participation goals a portion of the total dollar value of the contract that is equal to the distinct, clearly defined portion of the work of the Contract that the DBE performs with its own forces.
- (4) MassDOT will use the following factors in determining whether a DBE trucking company is performing a commercially useful function:
 - (i) the DBE must be responsible for the management and supervision of the entire trucking operation for which it is responsible on a particular contract; there cannot be a contrived arrangement for the purpose of meeting DBE participation goals.
 - (ii) the DBE must itself own and operate at least one fully licensed, insured, and operational truck used on the Contract.
 - (iii) the Contractor will receive DBE credit for the total value of the transportation services the DBE provides on the Contract using trucks owned, insured, and operated by the DBE itself and using drivers the DBE employs alone.
 - (iv) the DBE may lease trucks from another DBE firm, including an owner-operator who is certified as a DBE. The Contractor who has a contract with a DBE who leases trucks from another DBE will receive credit for the total value of the transportation services of the lease.
 - (v) the DBE may also lease trucks from a non-DBE firm, including an owner-operator. The Contractor who has a Contract with a DBE who leases trucks from a non-DBE is entitled to credit for the total value of the transportation services provided by non-DBE lessees not to exceed the value of transportation services provided by DBE-owned trucks on the Contract. Additional participation by non-DBE lessees receives credit only for the fee or commission it receives as a result of the lease arrangement, fee or commission it receives as a result of the lease arrangement. The DBE does not receive credit for the total value of the transportation services provided by the lessee, since these services are not provided by a DBE.
 - (vi) the lease must indicate that the DBE has exclusive use of, and control over, the truck. This does not preclude the leased truck from working for others during the term of the lease with the consent of the DBE, so long as the lease gives the DBE absolute priority for use of the leased truck. Leased trucks must display the name and identification number of the DBE.

- (5) MassDOT will count the Prime Contractor's expenditures with DBEs for materials or supplies toward DBE participation goals as follows:
- (i) if the materials or supplies are obtained from a DBE manufacturer, as defined in Section 1 above, MassDOT will count one hundred (100%) percent of the cost of the materials or supplies toward DBE participation goals, provided the DBE meets the other requirements of the regulations.
 - (ii) if the materials or supplies are purchased from a DBE regular dealer, as defined in Section 1 above, MassDOT will count sixty (60%) percent of the cost of the materials or supplies toward the Contract participation goal, provided the DBE meets the other requirements of the regulations.
 - (iii) for materials or supplies purchased from a DBE which is neither a manufacturer nor a regular dealer, MassDOT will count the entire amount of fees or commissions charged for assistance in the procurement of the materials and supplies, or fees or transportation charges for the delivery of materials or supplies required on a job site toward the Contract participation goal, provided that MassDOT determines the fees to be reasonable and not excessive as compared with fees customarily allowed for similar services; the cost of the materials and supplies themselves will not be counted; and provided the DBE meets the other requirements of the regulations.

c. Joint Check Policy

MassDOT recognizes that the use of joint checks may be a business practice required by material suppliers and vendors in the construction industry. A joint check is a two-party check issued by a/the Prime Contractor to a DBE third party such as a regular dealer of material or supplies. The Prime Contractor issues the check as payor to the DBE and the third party jointly as payees to guarantee payment to the third party for materials or supplies obtained or to be used by the DBE. FHWA has established criteria to ensure that DBEs are in fact performing a commercially useful function ("CUF") while using a joint check arrangement. Contractors and DBEs must meet and conform to these conditions and criteria governing the use of joint checks.

In the event that a Contractor or DBE Subcontractor desires to use a joint check, MassDOT will require prior notice and will closely monitor the arrangement for compliance with FHWA regulations and guidance. MassDOT may allow a joint check arrangement and give credit to a Contractor for use of the DBE where one or more of the following conditions exist:

- The use of a joint check is in fact required by this type of vendor or supplier as a standard industry practice that applies to all Contractors (DBEs and non-DBEs); or is required by a specific vendor or supplier;
- Payment for supplies or materials would be delayed for an unreasonably extended period without the joint check arrangement;
- The DBE (or any of its Subcontractors) has a pattern or history of not paying a vendor or supplier within a reasonable time or has not established enough of a credit history with the supplier or vendor; and/or
- The presence of severe adverse economic conditions, where credit resources may be limited and such practices may be necessary or required to effect timely payments.

Other factors MassDOT may consider:

- Whether there is a requirement by the Prime Contractor that a DBE should use a specific vendor or supplier to meet their Subcontractor specifications;
- Whether there is a requirement that a DBE use the Prime Contractor's negotiated price;
- The independence of the DBE;
- Whether approval has been sought prior to use of a joint check arrangement; and
- Whether any approved joint check arrangement has exceeded a reasonable period of use;
- The operation of the joint check arrangement; and
- Whether the DBE has made an effort to establish alternate arrangements for following periods (i.e., the DBE must show it can, or has, or why it has not, established or increased a credit line with the vendor or supplier).

Even with the use of a Joint Check, both the Contractor and DBE remain responsible for compliance with all other elements under 49 CFR § 26.55 (c) (1), and must still be able to prove that a commercially useful function is being performed for the Contractor.

d. Joint Check Procedure(s)

- The DBE advises its General or Prime Contractor that it will have to use a Joint Check and provide proof of such requirement.
- The General or the Prime Contractor submits a request for approval to MassDOT, using MassDOT's approved Joint Check Request form (Document B00855) and by notification on the DBE Letter of Intent (Document B00854), and any other relevant documents. Requests that are not initiated during the bid process should be made in writing and comply with the procedure.
- The MassDOT Office of Civil Rights will review the request and render a decision as part of the approval process for DBE Schedules and Letters of Intent.
- Review and Approval will be project specific and relevant documents will be made part of the project Contract file.
- Payments should be made in the name of both the DBE and vendor or supplier. Payments should be issued and signed by the Contractor as only the guarantor for prompt payment of purchases to the vendor or supplier. The payment to the vendor or supplier should be handled by the DBE (i.e. if possible, funds or the joint check should be processed by the DBE and sent by the DBE to the vendor or supplier).
- MassDOT may request copies of cancelled checks (front and back) and transmittal information to verify any payments made to the DBE and vendor or supplier.
- MassDOT may request other information and documents, and may ask questions of the Contractor, Subcontractor and vendor or supplier prior to, during, and after the project performance to ascertain whether the Subcontractor is performing a commercially useful function and all parties are complying with DBE Program policies and procedures as part of the Subcontractor approval process.

7. AWARD DOCUMENTATION AND PROCEDURES

- a. The two lowest bidders/the two bidders with the lowest price per quality score point, shall submit, by the close of business on the third (3rd) business day after the bid opening, a completed Schedule of Participation by DBEs (Document B00853) which shall list:
- (1) The full company name, address and telephone number of each DBE with whom the bidder intends to make a commitment.
 - (2) The contract item(s), by number(s) and quantity(ies), if applicable, or specific description of other business activity to be performed by each DBE as set forth in the Letters of Intent. The Bidder shall list only firms which have the capacity to perform, manage and supervise the work proposed in accordance with the requirements of 49 CFR Part 26 and Section **6.b** of these Special Provisions.
 - (3) The total dollar amount to be paid to each DBE. (Bidders are cautioned that at least one half of the participation goal must be met with construction activity work.)
 - (4) The total dollar amount to be paid to each DBE that is eligible for credit toward the DBE participation goal under the counting rules set out in Section **6.b**.
 - (5) The total creditable DBE participation as a percentage of the total bid price.
- b. All firms listed on the Schedule must be currently certified.
- c. The two lowest bidders/the two bidders with the lowest price per quality score point, shall each submit, with their Schedules of Participation, fully completed, signed Letters of Intent (Document B00854) from each of the DBEs listed on the Schedule. The Letters of Intent shall be in the form attached and shall identify specifically the contract activity the DBE proposes to perform, expressed as contract item number, if applicable, description of the activity, NAICS code, quantity, unit price and total price. In the event of discrepancy between the Schedule and the Letter of Intent, the Letter of Intent shall govern.
- d. Evidence of good faith efforts will be evaluated by MassDOT in the selection of the lowest responsible bidder.

All information requested by MassDOT for the purpose of evaluating the Contractor's efforts to achieve the participation goal must be provided within three (3) calendar days and must be accurate and complete in every detail. The apparent low bidder's attainment of the DBE participation goal or a satisfactory demonstration of good faith efforts is a prerequisite for award of the Contract.

- e. Failure to meet, or to demonstrate good faith efforts to meet, the requirements of these Special Provisions shall render a bid non-responsive. Therefore, in order to be eligible for award, the bidder (1) must list all DBE's it plans to employ on the Schedule of Participation; and provide the required Letters of Intent for, DBE participation which meets or exceeds the Contract goal in accordance with the terms of these Special Provisions or (2) must demonstrate, to the satisfaction of MassDOT, that good faith efforts were made to achieve the participation goal. MassDOT will adhere to the guidance provided in Appendix A to 49 CFR Part 26 on the determination of a Contractor's good faith efforts to meet the DBE participation goal(s) set forth in Section 2 herein.

- f. If MassDOT finds that the percentage of DBE participation submitted by the bidder on its Schedule does not meet the Contract participation goal, or that Schedule and Letters of Intent were not timely filed, and that the bidder has not demonstrated good faith efforts to comply with these requirements, it shall propose that the bidder be declared ineligible for award. In that case, the bidder may request administrative reconsideration. Such requests must be sent in writing within three (3) calendar days of receiving notice of proposed ineligibility to: The Office of the General Counsel, Massachusetts Department of Transportation, 10 Park Plaza, Boston, MA, 02116.
- g. If, after administrative reconsideration, MassDOT finds that the bidder has not shown that sufficient good faith efforts were made to comply with the requirements of these Special Provisions, it shall reject the bidder's proposal and may retain the proposal guaranty.
- h. Actions which constitute evidence of good faith efforts to meet a DBE participation goal include, but are not limited to, the following examples, which are set forth in 49 CFR Part 26, Appendix A:
- (1) Soliciting through all reasonable and available means (e.g., attendance at pre-bid meetings, advertising and/or written notices) the interest of all certified DBEs who have the capability to perform the work of the Contract. The bidder must solicit this interest within sufficient time to allow the DBEs to respond to the solicitation. The bidder must determine with certainty if the DBEs are interested by taking appropriate steps to follow up initial solicitations.
 - (2) Selecting portions of the work to be performed by DBEs in order to increase the likelihood that the DBE participation goal will be achieved. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate DBE participation, even when the Prime Contractor might otherwise prefer to perform these work items with its own forces.
 - (3) Providing interested DBEs with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist them in responding to a solicitation.
 - (4) Negotiating in good faith with interested DBEs. It is the bidder's responsibility to make a portion of the work available to DBE Subcontractors and suppliers and to select those portions of the work or material needs consistent with the available DBE Subcontractors and suppliers, so as to facilitate DBE participation. Evidence of such negotiation includes the names, addresses, and telephone number of DBEs that were considered; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why additional agreements could not be reached for DBEs to perform the work.

A bidder using good business judgment would consider a number of factors in negotiating with Subcontractors, including DBE Subcontractors, and would take a firm's price and capabilities as well as Contract participation goals into consideration. However, the fact that there may be some additional costs involved in finding and using DBEs is not in itself sufficient reason for a bidder's failure to meet the Contract DBE participation goal, as long as such costs are reasonable. Also, the ability or desire of a Prime Contractor to perform the work of a Contract with its own organization does not relieve the bidder of the responsibility to make good faith efforts. Prime Contractors are not, however, required to accept higher quotes from DBEs if the price difference is excessive or unreasonable.

- (5) Not rejecting DBEs as being unqualified without sound reasons based on a thorough investigation of their capabilities. Contractors should be careful of adding additional requirements of performance that would in effect limit participation by DBEs or any small business. The Contractor's standing within its industry, membership in specific groups, organizations, or associations and political or social affiliations (for example union vs. nonunion employee status) are not legitimate causes for the rejection or non-solicitation of bids in the Contractor's efforts to meet the Contract participation goal.
- (6) Making efforts to assist interested DBEs in obtaining bonding, lines of credit, or insurance as required by the recipient or contractor.
- (7) Making efforts to assist interested DBEs in obtaining necessary equipment, supplies, materials, or related assistance or services.
- (8) Effectively using the services of available minority/women community organizations; minority/women contractors' groups; local, state, and federal minority/women business assistance offices; and other organizations as allowed on a case by case basis to provide assistance in the recruitment and placement of DBEs.

8. COMPLIANCE

- a. All activity performed by a DBE for credit toward the Contract participation goal must be performed, managed and supervised by the DBE in accordance with all commercially useful function requirements of 49 CFR Part 26. The Prime Contractor shall not enter into, or condone, any other arrangement.
- b. The Prime Contractor shall not perform with its own organization, or assign to any other business, an activity designated for the DBE(s) named on the Schedule(s) submitted by the Prime Contractor under Section 7 or under paragraph 8.f of this section, without the approval of MassDOT in accordance with the requirements of paragraphs 8.f and 8.j of this section.
- c. MassDOT may suspend payment for any activity that was not performed by the DBE to whom the activity was committed on the approved Schedule of Participation, or that was not performed in accordance with the requirements of Section 6.
- d. MassDOT retains the right to approve or disapprove of any or all Subcontractors. Requests by the Prime Contractor for approval of participation by a DBE Subcontractor for credit toward the Contract participation goal must include, in addition to any other requirements for Subcontractor approval, the following:
 - (1) A copy of the proposed subcontract. The subcontract must be for at least the dollar amount, and for the work described, in the Bidder's Schedule of Participation.
 - (2) A resume stating the qualifications and experience of the DBE Superintendent and/or foreperson who will supervise the on-site work. A new resume will be required for any change in supervisory personnel during the progress of the work.
 - (3) A Schedule of Operations indicating when the DBE is expected to perform the work.
 - (4) A list of (1) equipment owned by the DBE to be used on the Project, and (2) equipment to be leased by the DBE for use on the Project.

- (5) A list of: (1) all projects (public and private) which the DBE is currently performing; (2) all projects (public and private) to which the DBE is committed; and (3) all projects (public and private) to which the DBE intends to make a commitment. For each Contract, list the contracting organization, the name and telephone number of a contact person for the contracting organization, the dollar value of the work, a description of the work, and the DBE's work schedule for each project.
- e. If, pursuant to the Subcontractor approval process, MassDOT finds that a DBE Subcontractor does not have sufficient experience or resources to perform, manage and supervise work of the kind proposed in accordance with the requirements of 49 CFR Part 26, approval of the DBE Subcontractor may be denied. In the event of such denial, the Prime Contractor shall proceed in accordance with the requirements paragraphs **8.f** and **8.j** of this section.
 - f. If, for reasons beyond its control, the Prime Contractor cannot comply with its DBE participation commitment in accordance with the Schedule of Participation submitted under Section 7, the Prime Contractor shall submit to MassDOT the reasons for its inability to comply with its obligations and shall submit, and request approval for, a revised Schedule of Participation. If approved by MassDOT, the revised Schedule shall govern the Prime Contractor's performance in meeting its obligations under these Special Provisions.
 - g. A Prime Contractor's compliance with the participation goal in Section 2 shall be determined by reference to the established percentage of the total contract price, provided, however, that no decrease in the dollar amount of a bidder's commitment to any DBE shall be allowed without the approval of MassDOT.
 - h. If the contract amount is increased, the Prime Contractor may be required to submit a revised Schedule of Participation in accordance with paragraphs **8.f** and **8.j** of this section.
 - i. In the event of the decertification of a DBE scheduled to participate on the Contract for credit toward the participation goal, but not under subcontract, the Contractor shall proceed in accordance with paragraphs **8.f** and **8.j** of this section.
 - j. The Prime Contractor shall notify MassDOT immediately of any facts that come to its attention indicating that it may or will be unable to comply with any aspect of its DBE obligation under this Contract.
 - k. Any notice required by these Special Provisions shall be given in writing to: (1) the Resident Engineer; (2) the District designated Compliance Officer; and (3) the DBE Liaison Officer, MassDOT Office of Civil Rights, 10 Park Plaza, – 3rd Floor - West, Boston, MA, 02116 and cc'd to the Deputy Chief of External Programs.
 - l. The Prime Contractor and its Subcontractors shall comply with MassDOT's Electronic Reporting System Requirements (MassDOT Document 00821) and submit all information required by MassDOT related to the DBE Special Provisions through the Equitable Business Opportunity Solution ("EBO"). MassDOT reserves the right to request reports in the format it deems necessary anytime during the performance of the Contract.
 - m. Termination of DBE by Prime Contractor
 - (1) A Prime Contractor shall not terminate a DBE Subcontractor or an approved substitute DBE firm without the prior written consent of MassDOT. This includes, but is not limited to, instances in which a Prime Contractor seeks to perform work originally designated for a DBE Subcontractor with its own forces or those of an affiliate, a non-DBE firm, or with another DBE firm.

- (2) MassDOT may provide such written consent only if MassDOT agrees, for reasons stated in its concurrence document, that the Prime Contractor has good cause to terminate the DBE firm.
- (3) For purposes of this paragraph, good cause includes the following circumstances:
 - (i) The DBE Subcontractor fails or refuses to execute a written contract;
 - (ii) The DBE Subcontractor fails or refuses to perform the work of its subcontract in a way consistent with normal industry standards. Good cause, however, does not exist if the failure or refusal of the DBE Subcontractor to perform its work on the subcontract results from the bad faith or discriminatory action of the Prime Contractor;
 - (iii) The DBE Subcontractor fails or refuses to meet the Prime Contractor's reasonable, nondiscriminatory bond requirements.
 - (iv) The DBE Subcontractor becomes bankrupt, insolvent, or exhibits credit unworthiness;
 - (v) The DBE Subcontractor is ineligible to work on public works projects because of suspension and debarment proceedings pursuant 2 CFR Parts 180, 215 and 1,200 or applicable State law;
 - (vi) (vii) MassDOT has determined that the listed DBE Subcontractor is not a responsible contractor;
 - (vii) The listed DBE Subcontractor voluntarily withdraws from the Project and provides written notice of its withdrawal;
 - (viii) The listed DBE is ineligible to receive DBE credit for the type of work required;
 - (ix) A DBE owner dies or becomes disabled with the result that the listed DBE Contractor is unable to complete its work on the Contract;
 - (x) Other documented good cause that MassDOT determines compels the termination of the DBE Subcontractor. Good cause, however, does not exist if the Prime Contractor seeks to terminate a DBE it relied upon to obtain the Contract so that the Prime Contractor can self-perform the DBE work or substitute another DBE or non-DBE Contractor after Contract Award.
- (4) Before transmitting to MassDOT a request to terminate and/or substitute a DBE Subcontractor, the Prime Contractor must give notice in writing to the DBE Subcontractor, with a copy to MassDOT, of its intent to request to terminate and/or substitute, and the reason for the request.
- (5) The Prime Contractor must give the DBE five (5) business days to respond to the Prime Contractor's notice. The DBE must advise MassDOT and the Contractor of the reasons, if any, why it objects to the proposed termination of its subcontract and why MassDOT should not approve the Prime Contractor's action. If required in a particular case as a matter of public necessity (e.g., safety), MassDOT may provide a response period shorter than five (5) business days.
- (6) In addition to post-award terminations, the provisions of this section apply to pre-award deletions of or substitutions for DBE firms.

n. Prompt Payment.

Contractors are required to promptly pay Subcontractors under this Prime Contract within ten (10) business days from the receipt of each payment the Prime Contractor receives from MassDOT. Failure to comply with this requirement may result in the withholding of payment to the Prime Contractor until such time as all payments due under this provision have been received by the Subcontractor(s) and/or referral to the Prequalification Committee for action which may affect the Contractor's prequalification status.

9. SANCTIONS

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

- a. Retain, in connection with final acceptance and final payment processing, an amount determined by multiplying the total contract amount by the percentage in Section 2, less the amount paid to approved DBE(s) for work performed under the Contract in accordance with the provisions of Section 8.
- b. Suspend, terminate or cancel this Contract, in whole or in part, and call upon the Prime Contractor's surety to perform all terms and conditions in the Contract.
- c. In accordance with 720 CMR 5.05(1)(f), modify or revoke the Prime Contractor's Prequalification status or recommend that the Prime Contractor not receive award of a pending Contract. The Prime Contractor may appeal the determination of the Prequalification Committee in accordance with the provisions of 720 CMR 5.06.
- d. Initiate debarment proceedings pursuant to M.G.L. c. 29 §29F and, as applicable, 2 CFR Parts 180, 215 and 1,200.
- e. Refer the matter to the Massachusetts Attorney General for review and prosecution, if appropriate, of any false claim or pursuant to M.G.L. c. 12, §§ 5A to 5O (the Massachusetts False Claim Act).
- f. Refer the matter to the U.S. DOT's Office of the Inspector General or other agencies for prosecution under Title 18, U.S.C. § 1001, 49 CFR Parts 29 and 31, and other applicable laws and regulations.

10. FURTHER INFORMATION; ENFORCEMENT, COOPERATION AND CONFIDENTIALITY.

- a. Any proposed DBE, bidder, or Contractor shall provide such information as is necessary in the judgment of MassDOT to ascertain its compliance with the terms of this Special Provision. Further, pursuant to 49 CFR, Part 26.107:

- (1) If you are a firm that does not meet the eligibility criteria of 49 CFR, Parts 26.61 to 26.73 (“subpart D”), that attempts to participate in a DOT- assisted program as a DBE on the basis of false, fraudulent, or deceitful statements or representations or under circumstances indicating a serious lack of business integrity or honesty, MassDOT or FHWA may initiate suspension or debarment proceedings against you under 49 CFR Part 29.
 - (2) If you are a firm that, in order to meet DBE Contract participation goals or other DBE Program requirements, uses or attempts to use, on the basis of false, fraudulent or deceitful statements or representations or under circumstances indicating a serious lack of business integrity or honesty, another firm that does not meet the eligibility criteria of subpart D, FHWA may initiate suspension or debarment proceedings against you under 49 CFR Part 29.
 - (3) In a suspension or debarment proceeding brought either under subparagraph a.(1) or b.(2) of this section, the concerned operating administration may consider the fact that a purported DBE has been certified by a recipient. Such certification does not preclude FHWA from determining that the purported DBE, or another firm that has used or attempted to use it to meet DBE participation goals, should be suspended or debarred.
 - (4) FHWA may take enforcement action under 49 CFR Part 31, Program Fraud and Civil Remedies, against any participant in the DBE Program whose conduct is subject to such action under 49 CFR Part 31.
 - (5) FHWA may refer to the Department of Justice, for prosecution under 18 U.S.C. 1001 or other applicable provisions of law, any person who makes a false or fraudulent statement in connection with participation of a DBE in any DOT-assisted program or otherwise violates applicable Federal statutes.
- b. Pursuant to 49 CFR Part 26.109, the rules governing information, confidentiality, cooperation, and intimidation or retaliation are as follows:
 - (1) Availability of records.
 - (i) In responding to requests for information concerning any aspect of the DBE Program, FHWA complies with provisions of the Federal Freedom of Information and Privacy Acts (5 U.S.C. 552 and 552a). FHWA may make available to the public any information concerning the DBE Program release of which is not prohibited by Federal law.
 - (ii) MassDOT shall safeguard from disclosure to unauthorized persons information that may reasonably be considered as confidential business information, consistent with Federal and Massachusetts General Law (M.G.L. c. 66, § 10, M.G.L. c. 4, §7 (26), 950 CMR 32.00).
 - (2) Confidentiality of information on complainants. Notwithstanding the provisions of subparagraph b.(1) of this section, the identity of complainants shall be kept confidential, at their election. If such confidentiality will hinder the investigation, proceeding or hearing, or result in a denial of appropriate administrative due process to other parties, the complainant must be advised for the purpose of waiving the privilege. Complainants are advised that, in some circumstances, failure to waive the privilege may result in the closure of the investigation or dismissal of the proceeding or hearing.

- (3) Cooperation. All participants in FHWA's DBE Program (including, but not limited to, recipients, DBE firms and applicants for DBE certification, complainants and appellants, and Contractors using DBE firms to meet Contract participation goals) are required to cooperate fully and promptly with U.S. DOT and recipient compliance reviews, certification reviews, investigations, and other requests for information. Failure to do so shall be a ground for appropriate action against the party involved (e.g., with respect to recipients, a finding of noncompliance; with respect to DBE firms, denial of certification or removal of eligibility and/or suspension and debarment; with respect to a complainant or appellant, dismissal of the complaint or appeal; with respect to a Contractor which uses DBE firms to meet participation goals, findings of non-responsibility for future Contracts and/or suspension and debarment).
- (4) Intimidation and retaliation. No recipient, Contractor, or any other participant in the program, may intimidate, threaten, coerce, or discriminate against any individual or firm for the purpose of interfering with any right or privilege secured by this part or because the individual or firm has made a complaint, testified, assisted, or participated in any manner in an investigation, proceeding, or hearing under this part. If any recipient or contractor violates this prohibition, that entity is in noncompliance with this 49 CFR Part 26.

11. LIST OF ADDITIONAL DOCUMENTS.

- a. The following documents shall be completed and signed by the bidder and designated DBEs in accordance with Section 7 - Award Documentation and Procedures. These documents must be returned by the bidder to MassDOT's Bid Document Distribution Center:
- Schedule of DBE Participation (Document B00853)
 - Letter of Intent (Document B00854)
 - DBE Joint Check Arrangement Approval Form (Document B00855), if Contractor and DBE plan, or if DBE is required to use a Joint Check
- b. The following document shall be signed and returned by Contractor and Subcontractors/DBEs to the MassDOT District Office overseeing the Project, as applicable:
- Contractor/Subcontractor Certification Form (Document No. 00859) (a checklist of other documents to be included with every subcontract (DBEs and non-DBEs alike)).
- c. The following document shall be provided to MassDOT's Office of Civil Rights and Prequalification Office at least fourteen (14) business days before the bid opening date, if applicable:
- Affidavit of DBE/Non-DBE Joint Venture (Document B00856)
- d. The following document shall be provided to MassDOT's District Office of Civil Rights within 30 calendar days after the work of the DBE is completed, or no later than 30 calendar days after the work of the DBE is on a completed and processed CQE. This document shall be completed and submitted by the Prime Contractor:
- Certificate of Completion by a Minority/Women or Disadvantaged Business Enterprise (M/W/DBE) (Form No. CSD-100)

**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 procurement 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 procurement 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.

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DOCUMENT 00812

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

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

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

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

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

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

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

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

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

ITEMS COVERED	FUEL FACTORS	
	Diesel	Gasoline
Excavation: and Borrow Work: 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

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DOCUMENT 00813

SPECIAL PROVISIONS
PRICE ADJUSTMENTS FOR STRUCTURAL STEEL AND REINFORCING STEEL

June 13, 2024

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	\$0.66
2	ASTM A27 (AASHTO M103) Steel Castings, H-Pile Points & Pipe Pile Shoes (See Note below.)	\$0.91
3	ASTM A668 / A668M (AASHTO M102) Steel Forgings	\$0.91
4	ASTM A108 (AASHTO M169) Steel Forgings for Shear Studs	\$0.94
5	ASTM A709/A709M Grade 36 / AASHTO M270M/M270 Grade 36 or 250 Structural Steel Plate	\$1.01
6	ASTM A709/A709M Grade 36 / AASHTO M270M/M270 Grade 36 or 250 Structural Steel Shapes	\$0.93
7	ASTM A709/A709M Grade 50 / AASHTO M270M/M270 Grade 50 or 345 Structural Steel Plate	\$1.01
8	ASTM A709/A709M Grade 50 / AASHTO M270M/M270 Grade 50 or 345 Structural Steel Shapes	\$0.93
9	ASTM A709/A709M Grade 50WT / AASHTO M270M/M270 Grade 50WT or 345WT Structural Steel Plate	\$1.05
10	ASTM A709/A709M Grade 50WT / AASHTO M270M/M270 Grade 50WT or 345WT Structural Steel Shapes	\$0.94
11	ASTM A709/A709M Grade 50W / AASHTO M270M/M270 Grade 50W 345W Structural Steel Plate	\$1.05
12	ASTM A709/A709M Grade 50W / AASHTO M270M/M270 Grade 50W or 345W Structural Steel Shapes	\$0.94
13	ASTM A709/A709M Grade HPS 50W / AASHTO M270M/M270 Grade HPS 50W or 345W Structural Steel Plate	\$1.10
14	ASTM A709/A709M Grade HPS 70W / AASHTO M270M/M270 Grade HPS 70W or 485W Structural Steel Plate	\$1.17
15	ASTM A514/A514M-05 Grade HPS 100W / AASHTO M270M/M270 Grade HPS 100W or 690W Structural Steel Plate	\$1.79
16	ASTM A992/A992M Grade 50S / AASHTO M270M/M270 Grade 50S or 345S Structural Steel Plate	\$1.05
17	ASTM A992/A992M Grade 50S / AASHTO M270M/M270 Grade 50S or 345S Structural Steel Shapes	\$0.94
18	ASTM A276 Type 316 Stainless Steel	\$5.33
19	ASTM A240 Type 316 Stainless Steel	\$5.33
20	ASTM A148 Grade 80/50 Steel Castings (See Note below.)	\$1.84
21	ASTM A53 Grade B Structural Steel Pipe	\$1.17
22	ASTM A500 Grades A, B, 36 & 50 Structural Steel Pipe	\$1.17
23	ASTM A252, Grades 240 (36 KSI) & 414 (60 KSI) Pipe Pile	\$0.92
24	ASTM 252, Grade 2 Permanent Steel Casing	\$0.92
25	ASTM A36 (AASHTO M183) for H-piles, steel supports and sign supports	\$0.99
26	ASTM A328 / A328M, Grade 50 (AASHTO M202) Steel Sheetpiling	\$1.76
27	ASTM A572 / A572M, Grade 50 Sheetpiling	\$1.76
28	ASTM A36/36M, Grade 50	\$1.01
29	ASTM A570, Grade 50	\$0.99
30	ASTM A572 (AASHTO M223), Grade 50 H-Piles	\$1.01
31	ASTM A1085 Grade A (50 KSI) Steel Hollow Structural Sections (HSS), heat-treated per ASTM A1085 Supplement S1	\$1.17
32	AREA 140 LB Rail and Track Accessories	\$0.60

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

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DOCUMENT 00814

SPECIAL PROVISIONS
PRICE ADJUSTMENT FOR PORTLAND CEMENT CONCRETE MIXES

January 12, 2009

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

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

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

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

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

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

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

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

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

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DOCUMENT 00820

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

I. Definitions

For purposes of this contract,

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

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

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

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

II. Equal Opportunity, Non-Discrimination and Affirmative Action

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

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

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

The Contractor shall post hereafter in conspicuous places, available for employees and applicants for employment, notices to be provided by the Massachusetts Commission Against Discrimination setting forth the provisions of the Fair Employment Practices Law of the Commonwealth (Massachusetts General Laws Chapter 151 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 preceding paragraph by executing Document 00859 Contractor/Subcontractor Certification Form.

Rev'd 03/07/14

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DOCUMENT 00821

**ELECTRONIC REPORTING REQUIREMENTS
CIVIL RIGHTS PROGRAMS AND CERTIFIED PAYROLL**

Implemented on March 2, 2009

Revised June 04, 2019

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

Contractor and Sub-Contractor EBO User Certification

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

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

Vetting of Firms and Designated Firm Individuals

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

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

Interim Reporting Requirements

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

*** END OF DOCUMENT ***

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- 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. You may also find guidance at: <http://www.dol.gov/ofccp/TAGuides/consttag.pdf> or <http://www.wdol.gov/dba.aspx#0>.
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: _____

(Print Name and Title)

Telephone Number: _____

Federal I.D. Number: _____

(Authorized Signature)

Estimated Start Date: _____

Estimated Completion Date: _____

Estimated Dollar Amount: _____

(Date)

DOCUMENT 00860

COMMONWEALTH OF MASSACHUSETTS PUBLIC EMPLOYMENT LAWS

Revised February 20, 2019

The Contractor's attention is directed to Massachusetts General Laws, Chapter 149, Sections 26 through 27H, and 150A. This contract is considered to fall within the ambit of that law, which provides that in general, the Prevailing Rate or Total Rate must be paid to employees working on projects funded by the Commonwealth of Massachusetts or any political subdivision including Massachusetts Department of Transportation (MassDOT).

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

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

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

The Prevailing Wage Rate generally includes the following:

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

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

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

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

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

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

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

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

STATEMENT OF COMPLIANCE

Date: _____

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

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

(Contractor or Subcontractor)

on the _____
(MassDOT Project Location and Contract Number)

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

Signature _____

Title _____

The above-mentioned copies of payroll records and statements of compliance shall be available for inspection by any interested party filing a written request to the MassDOT's Resident Engineer for such inspection and copying.

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

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

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

*** END OF DOCUMENT ***

DOCUMENT 00861

STATE PREVAILING WAGE RATES

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MAURA HEALEY
Governor

KIM DRISCOLL
Lt. Governor

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

Prevailing Wage Rates

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

LAUREN JONES
Secretary

MICHAEL FLANAGAN
Director

Awarding Authority: MassDOT Highway Division
Contract Number: 126585 **City/Town:** PLYMPTON
Description of Work: PLYMPTON – FAP No. STP(BR-OFF)-003S(740)X Bridge Replacement,
P-14-001 (445), Winnetuxet Road over Winnetuxet River (609435)
Job Location: PLYMPTON - Winnetuxet Road over Winnetuxet River

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 annual update requirement is not applicable to 27F “rental of equipment” contracts. **The updated wage schedule must be provided to all contractors, including general and sub-contractors, working on the construction project.**
- This wage schedule applies only to the specific project referenced at the top of this page and uniquely identified by the “Wage Request Number” on all pages of this schedule.
- An Awarding Authority must request an updated wage schedule if it has not opened bids or selected a contractor within 90 days of the date of issuance of the wage schedule. For CM AT RISK projects (bid pursuant to G.L. c.149A), the earlier of: (a) the execution date of the GMP Amendment, or (b) the bid for the first construction scope of work must be within 90-days of the wage schedule issuance date.
- The wage schedule shall be incorporated in any advertisement or call for bids for the project as required by M.G.L. c. 149, § 27. The wage schedule shall be made a part of the contract awarded for the project. The wage schedule must be posted in a conspicuous place at the work site for the life of the project in accordance with M.G.L. c. 149 § 27. The wages listed on the wage schedule must be paid to employees performing construction work on the project whether they are employed by the prime contractor, a filed sub-bidder, or a sub-contractor.
- Apprentices working on the project are required to be registered with the Massachusetts Division of Apprentice Standards (DAS). Apprentices must keep their apprentice identification card on their persons during all work hours on the project. An apprentice registered with DAS may be paid the lower apprentice wage rate at the applicable step as provided on the prevailing wage schedule. **Any apprentice not registered with DAS regardless of whether they are registered with another federal, state, local, or private agency must be paid the journeyworker's rate.**
- Every contractor or subcontractor working on the construction project must submit weekly payroll reports and a Statement of Compliance directly to the awarding authority by mail or email and keep them on file for three years. Each weekly payroll report must contain: the employee’s name, address, occupational classification, hours worked, and wages paid. Do not submit weekly payroll reports to DLS. For a sample payroll reporting form go to <http://www.mass.gov/dols/pw>.
- Contractors with questions about the wage rates or classifications included on the wage schedule have an affirmative obligation to inquire with DLS at (617) 626-6953.
- Contractors must obtain the wage schedules from awarding authorities. Failure of a contractor or subcontractor to pay the prevailing wage rates listed on the wage schedule to all employees who perform construction work on the project is a violation of the law and subjects the contractor or subcontractor to civil and criminal penalties.
- Employees not receiving the prevailing wage rate set forth on the wage schedule may file a complaint with the Fair Labor Division of the office of the Attorney General at (617) 727-3465.

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

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

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - BOILERMAKER - Local 29

Effective Date - 01/01/2024

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

Notes:

Apprentice to Journeyworker Ratio:1:4

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)	02/01/2024	\$62.40	\$11.49	\$23.59	\$0.00	\$97.48
BRICKLAYERS LOCAL 3 (QUINCY)	08/01/2024	\$64.50	\$11.49	\$23.59	\$0.00	\$99.58
	02/01/2025	\$65.80	\$11.49	\$23.59	\$0.00	\$100.88
	08/01/2025	\$67.95	\$11.49	\$23.59	\$0.00	\$103.03
	02/01/2026	\$69.30	\$11.49	\$23.59	\$0.00	\$104.38
	08/01/2026	\$71.50	\$11.49	\$23.59	\$0.00	\$106.58
	02/01/2027	\$72.90	\$11.49	\$23.59	\$0.00	\$107.98

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

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

Effective Date - 02/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$31.20	\$11.49	\$23.59	\$0.00	\$66.28
2	60	\$37.44	\$11.49	\$23.59	\$0.00	\$72.52
3	70	\$43.68	\$11.49	\$23.59	\$0.00	\$78.76
4	80	\$49.92	\$11.49	\$23.59	\$0.00	\$85.00
5	90	\$56.16	\$11.49	\$23.59	\$0.00	\$91.24

Effective Date - 08/01/2024

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

Notes:

Apprentice to Journeyworker Ratio:1:5

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

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

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

For apprentice rates see "Apprentice- LABORER"

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

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CAISSON & UNDERPINNING TOP MAN <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2024	\$45.81	\$9.65	\$18.22	\$0.00	\$73.68
	12/01/2024	\$47.28	\$9.65	\$18.22	\$0.00	\$75.15
	06/01/2025	\$48.78	\$9.65	\$18.22	\$0.00	\$76.65
	12/01/2025	\$50.28	\$9.65	\$18.22	\$0.00	\$78.15
	06/01/2026	\$51.83	\$9.65	\$18.22	\$0.00	\$79.70
	12/01/2026	\$53.33	\$9.65	\$18.22	\$0.00	\$81.20

For apprentice rates see "Apprentice- LABORER"

CARBIDE CORE DRILL OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
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For apprentice rates see "Apprentice- LABORER"

CARPENTER <i>CARPENTERS -ZONE 2 (Eastern Massachusetts)</i>	03/01/2024	\$47.12	\$9.83	\$19.97	\$0.00	\$76.92
	09/01/2024	\$48.37	\$9.83	\$19.97	\$0.00	\$78.17
	03/01/2025	\$49.62	\$9.83	\$19.97	\$0.00	\$79.42
	09/01/2025	\$50.87	\$9.83	\$19.97	\$0.00	\$80.67
	03/01/2026	\$52.12	\$9.83	\$19.97	\$0.00	\$81.92
	09/01/2026	\$53.37	\$9.83	\$19.97	\$0.00	\$83.17
	03/01/2027	\$54.62	\$9.83	\$19.97	\$0.00	\$84.42

Apprentice - CARPENTER - Zone 2 Eastern MA

Effective Date - 03/01/2024

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

Effective Date - 09/01/2024

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

Notes:

Apprentice to Journeyworker Ratio:1:5

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CARPENTER WOOD FRAME	10/01/2023	\$25.55	\$7.02	\$4.80	\$0.00	\$37.37
CARPENTERS-ZONE 3 (Wood Frame)	10/01/2024	\$26.65	\$7.02	\$4.80	\$0.00	\$38.47
	10/01/2025	\$27.75	\$7.02	\$4.80	\$0.00	\$39.57
	10/01/2026	\$28.85	\$7.02	\$4.80	\$0.00	\$40.67

All Aspects of New Wood Frame Work

Apprentice - CARPENTER (Wood Frame) - Zone 3

Effective Date - 10/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$15.33	\$7.02	\$0.00	\$0.00	\$22.35
2	60	\$15.33	\$7.02	\$0.00	\$0.00	\$22.35
3	65	\$16.61	\$7.02	\$1.00	\$0.00	\$24.63
4	70	\$17.89	\$7.02	\$1.00	\$0.00	\$25.91
5	75	\$19.16	\$7.02	\$4.80	\$0.00	\$30.98
6	80	\$20.44	\$7.02	\$4.80	\$0.00	\$32.26
7	85	\$21.72	\$7.02	\$4.80	\$0.00	\$33.54
8	90	\$23.00	\$7.02	\$4.80	\$0.00	\$34.82

Effective Date - 10/01/2024

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

Notes:

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

Apprentice to Journeyworker Ratio:1:5

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
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Apprentice - CEMENT MASONRY/PLASTERING - Eastern Mass (Quincy)

Effective Date - 01/01/2024

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

Notes:

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

Apprentice to Journeyworker Ratio:1:3

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

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 07/01/2024

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

Effective Date - 01/01/2025

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

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

DEMO: ADZEMAN LABORERS - ZONE 2	12/01/2023	\$44.48	\$9.65	\$18.07	\$0.00	\$72.20
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For apprentice rates see "Apprentice- LABORER"

DEMO: BACKHOE/LOADER/HAMMER OPERATOR LABORERS - ZONE 2	12/01/2023	\$45.48	\$9.65	\$18.07	\$0.00	\$73.20
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For apprentice rates see "Apprentice- LABORER"

DEMO: BURNERS LABORERS - ZONE 2	12/01/2023	\$45.23	\$9.65	\$18.07	\$0.00	\$72.95
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For apprentice rates see "Apprentice- LABORER"

DEMO: CONCRETE CUTTER/SAWYER LABORERS - ZONE 2	12/01/2023	\$45.48	\$9.65	\$18.07	\$0.00	\$73.20
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For apprentice rates see "Apprentice- LABORER"

DEMO: JACKHAMMER OPERATOR LABORERS - ZONE 2	12/01/2023	\$45.23	\$9.65	\$18.07	\$0.00	\$72.95
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For apprentice rates see "Apprentice- LABORER"

DEMO: WRECKING LABORER LABORERS - ZONE 2	12/01/2023	\$44.48	\$9.65	\$18.07	\$0.00	\$72.20
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For apprentice rates see "Apprentice- LABORER"

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

Apprentice - ELECTRICIAN - Local 223

Effective Date - 09/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$19.15	\$11.75	\$0.57	\$0.00	\$31.47
2	45	\$21.54	\$11.75	\$0.65	\$0.00	\$33.94
3	50	\$23.94	\$11.75	\$0.72	\$0.00	\$36.41
4	55	\$26.33	\$11.75	\$7.79	\$0.00	\$45.87
5	60	\$28.72	\$11.75	\$8.31	\$0.00	\$48.78
6	65	\$31.12	\$11.75	\$8.65	\$0.00	\$51.52
7	70	\$33.51	\$11.75	\$9.38	\$0.00	\$54.64
8	75	\$35.90	\$11.75	\$9.90	\$0.00	\$57.55

Notes:

Apprentice to Journeyworker Ratio:2:3***

ELEVATOR CONSTRUCTOR <i>ELEVATOR CONSTRUCTORS LOCAL 4</i>	01/01/2022	\$65.62	\$16.03	\$20.21	\$0.00	\$101.86
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Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Apprentice - ELEVATOR CONSTRUCTOR - Local 4						
Effective Date - 01/01/2022						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$32.81	\$16.03	\$0.00	\$0.00	\$48.84
2	55	\$36.09	\$16.03	\$20.21	\$0.00	\$72.33
3	65	\$42.65	\$16.03	\$20.21	\$0.00	\$78.89
4	70	\$45.93	\$16.03	\$20.21	\$0.00	\$82.17
5	80	\$52.50	\$16.03	\$20.21	\$0.00	\$88.74

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

Apprentice to Journeyworker Ratio:1:1

ELEVATOR CONSTRUCTOR HELPER <i>ELEVATOR CONSTRUCTORS LOCAL 4</i>	01/01/2022	\$45.93	\$16.03	\$20.21	\$0.00	\$82.17
For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"						
FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i>	06/01/2024	\$38.78	\$9.65	\$17.80	\$0.00	\$66.23
	12/01/2024	\$40.11	\$9.65	\$17.80	\$0.00	\$67.56
	06/01/2025	\$41.50	\$9.65	\$17.80	\$0.00	\$68.95
	12/01/2025	\$42.88	\$9.65	\$17.80	\$0.00	\$70.33
	06/01/2026	\$44.32	\$9.65	\$17.80	\$0.00	\$71.77
	12/01/2026	\$45.76	\$9.65	\$17.80	\$0.00	\$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2024	\$50.79	\$15.00	\$16.40	\$0.00	\$82.19
	11/01/2024	\$52.08	\$15.00	\$16.40	\$0.00	\$83.48
	05/01/2025	\$53.52	\$15.00	\$16.40	\$0.00	\$84.92
	11/01/2025	\$54.81	\$15.00	\$16.40	\$0.00	\$86.21
	05/01/2026	\$56.25	\$15.00	\$16.40	\$0.00	\$87.65
	11/01/2026	\$57.54	\$15.00	\$16.40	\$0.00	\$88.94
	05/01/2027	\$58.97	\$15.00	\$16.40	\$0.00	\$90.37
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2024	\$52.37	\$15.00	\$16.40	\$0.00	\$83.77
	11/01/2024	\$53.67	\$15.00	\$16.40	\$0.00	\$85.07
	05/01/2025	\$55.12	\$15.00	\$16.40	\$0.00	\$86.52
	11/01/2025	\$56.42	\$15.00	\$16.40	\$0.00	\$87.82
	05/01/2026	\$57.87	\$15.00	\$16.40	\$0.00	\$89.27
	11/01/2026	\$59.17	\$15.00	\$16.40	\$0.00	\$90.57
	05/01/2027	\$60.62	\$15.00	\$16.40	\$0.00	\$92.02
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

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

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - FLOORCOVERER - Local 2168 Zone I

Effective Date - 03/01/2024

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

Effective Date - 09/01/2024

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

Notes: Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

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

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

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

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

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

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - GLAZIER - Local 35 Zone 2

Effective Date - 07/01/2024

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

Effective Date - 01/01/2025

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

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

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

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - OPERATING ENGINEERS - Local 4

Effective Date - 06/01/2024

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

Effective Date - 12/01/2024

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

Notes:

Apprentice to Journeyworker Ratio:1:6

HVAC (DUCTWORK) <i>SHEETMETAL WORKERS LOCAL 17 - A</i>	02/01/2024	\$57.22	\$14.59	\$27.50	\$2.98	\$102.29
	08/01/2024	\$58.97	\$14.59	\$27.50	\$2.98	\$104.04
	02/01/2025	\$60.72	\$14.59	\$27.50	\$2.98	\$105.79
	08/01/2025	\$62.57	\$14.59	\$27.50	\$2.98	\$107.64
	02/01/2026	\$64.52	\$14.59	\$27.50	\$2.98	\$109.59
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (ELECTRICAL CONTROLS) <i>ELECTRICIANS LOCAL 223</i>	09/01/2020	\$43.66	\$10.90	\$14.66	\$0.00	\$69.22
For apprentice rates see "Apprentice- ELECTRICIAN"						
HVAC (TESTING AND BALANCING - AIR) <i>SHEETMETAL WORKERS LOCAL 17 - A</i>	02/01/2024	\$57.22	\$14.59	\$27.50	\$2.98	\$102.29
	08/01/2024	\$58.97	\$14.59	\$27.50	\$2.98	\$104.04
	02/01/2025	\$60.72	\$14.59	\$27.50	\$2.98	\$105.79
	08/01/2025	\$62.57	\$14.59	\$27.50	\$2.98	\$107.64
	02/01/2026	\$64.52	\$14.59	\$27.50	\$2.98	\$109.59
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (TESTING AND BALANCING -WATER) <i>PLUMBERS & PIPEFITTERS LOCAL 51</i>	08/28/2023	\$51.99	\$10.15	\$19.95	\$0.00	\$82.09
	08/26/2024	\$54.74	\$10.15	\$19.95	\$0.00	\$84.84
	08/25/2025	\$57.49	\$10.15	\$19.95	\$0.00	\$87.59
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						

Proposal No. 609435-126585

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
HVAC MECHANIC <i>PLUMBERS & PIPEFITTERS LOCAL 51</i>	08/28/2023	\$51.99	\$10.15	\$19.95	\$0.00	\$82.09
	08/26/2024	\$54.74	\$10.15	\$19.95	\$0.00	\$84.84
	08/25/2025	\$57.49	\$10.15	\$19.95	\$0.00	\$87.59
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HYDRAULIC DRILLS <i>LABORERS - ZONE 2</i>	12/01/2023	\$38.61	\$9.65	\$17.14	\$0.00	\$65.40
For apprentice rates see "Apprentice- LABORER"						
HYDRAULIC DRILLS (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i>	06/01/2024	\$39.28	\$9.65	\$17.80	\$0.00	\$66.73
	12/01/2024	\$40.61	\$9.65	\$17.80	\$0.00	\$68.06
	06/01/2025	\$42.00	\$9.65	\$17.80	\$0.00	\$69.45
	12/01/2025	\$43.38	\$9.65	\$17.80	\$0.00	\$70.83
	06/01/2026	\$44.82	\$9.65	\$17.80	\$0.00	\$72.27
	12/01/2026	\$46.26	\$9.65	\$17.80	\$0.00	\$73.71
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
INSULATOR (PIPES & TANKS) <i>HEAT & FROST INSULATORS LOCAL 6 (BOSTON)</i>	09/01/2023	\$53.50	\$14.75	\$19.61	\$0.00	\$87.86
	09/01/2024	\$56.92	\$14.75	\$19.61	\$0.00	\$91.28
	09/01/2025	\$60.34	\$14.75	\$19.61	\$0.00	\$94.70
	09/01/2026	\$63.76	\$14.75	\$19.61	\$0.00	\$98.12

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

Effective Date - 09/01/2023

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

Effective Date - 09/01/2024

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

Notes:

Steps are 1 year

Apprentice to Journeyworker Ratio:1:4

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

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - IRONWORKER - Local 7 Boston

Effective Date - 03/16/2024

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

Notes:

Apprentice to Journeyworker Ratio:1:4

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

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

Effective Date - 12/01/2023

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

Notes:

Apprentice to Journeyworker Ratio:1:5

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

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - LABORER (Heavy & Highway) - Zone 2

Effective Date - 06/01/2024

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

Effective Date - 12/01/2024

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

Notes:

Apprentice to Journeyworker Ratio:1:5

LABORER: CARPENTER TENDER <i>LABORERS - ZONE 2</i>	12/01/2023	\$37.86	\$9.65	\$17.14	\$0.00	\$64.65
For apprentice rates see "Apprentice- LABORER"						
LABORER: CEMENT FINISHER TENDER <i>LABORERS - ZONE 2</i>	12/01/2023	\$38.36	\$9.40	\$16.89	\$0.00	\$64.65
For apprentice rates see "Apprentice- LABORER"						
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER <i>LABORERS - ZONE 2</i>	12/01/2023	\$37.95	\$9.65	\$17.20	\$0.00	\$64.80
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER <i>LABORERS - ZONE 2</i>	12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i>	06/01/2024	\$38.78	\$9.65	\$17.80	\$0.00	\$66.23
	12/01/2024	\$40.11	\$9.65	\$17.80	\$0.00	\$67.56
	06/01/2025	\$41.50	\$9.65	\$17.80	\$0.00	\$68.95
	12/01/2025	\$42.88	\$9.65	\$17.80	\$0.00	\$70.33
	06/01/2026	\$44.32	\$9.65	\$17.80	\$0.00	\$71.77
	12/01/2026	\$45.76	\$9.65	\$17.80	\$0.00	\$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
LABORER: MULTI-TRADE TENDER <i>LABORERS - ZONE 2</i>	12/01/2023	\$37.86	\$9.65	\$17.14	\$0.00	\$64.65
For apprentice rates see "Apprentice- LABORER"						
LABORER: TREE REMOVER <i>LABORERS - ZONE 2</i>	12/01/2023	\$37.86	\$9.65	\$17.14	\$0.00	\$64.65
This classification applies to the removal of standing trees, and the trimming and removal of branches and limbs when related to public works construction or site clearance incidental to construction . For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
For apprentice rates see "Apprentice- LABORER"						

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

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

MARBLE & TILE FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE & TILE</i>	02/01/2024	\$47.89	\$11.49	\$21.37	\$0.00	\$80.75
	08/01/2024	\$49.57	\$11.49	\$21.37	\$0.00	\$82.43
	02/01/2025	\$50.61	\$11.49	\$21.37	\$0.00	\$83.47
	08/01/2025	\$52.33	\$11.49	\$21.37	\$0.00	\$85.19
	02/01/2026	\$53.41	\$11.49	\$21.37	\$0.00	\$86.27
	08/01/2026	\$55.17	\$11.49	\$21.37	\$0.00	\$88.03
	02/01/2027	\$56.29	\$11.49	\$21.37	\$0.00	\$89.15

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

Effective Date - 02/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.95	\$11.49	\$21.37	\$0.00	\$56.81
2	60	\$28.73	\$11.49	\$21.37	\$0.00	\$61.59
3	70	\$33.52	\$11.49	\$21.37	\$0.00	\$66.38
4	80	\$38.31	\$11.49	\$21.37	\$0.00	\$71.17
5	90	\$43.10	\$11.49	\$21.37	\$0.00	\$75.96

Effective Date - 08/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.79	\$11.49	\$21.37	\$0.00	\$57.65
2	60	\$29.74	\$11.49	\$21.37	\$0.00	\$62.60
3	70	\$34.70	\$11.49	\$21.37	\$0.00	\$67.56
4	80	\$39.66	\$11.49	\$21.37	\$0.00	\$72.52
5	90	\$44.61	\$11.49	\$21.37	\$0.00	\$77.47

Notes:

Apprentice to Journeyworker Ratio:1:3

MARBLE MASONS, TILELAYERS & TERRAZZO MECH <i>BRICKLAYERS LOCAL 3 - MARBLE & TILE</i>	02/01/2024	\$62.42	\$11.49	\$23.56	\$0.00	\$97.47
	08/01/2024	\$64.52	\$11.49	\$23.56	\$0.00	\$99.57
	02/01/2025	\$65.82	\$11.49	\$23.56	\$0.00	\$100.87
	08/01/2025	\$67.97	\$11.49	\$23.56	\$0.00	\$103.02
	02/01/2026	\$69.32	\$11.49	\$23.56	\$0.00	\$104.37
	08/01/2026	\$71.52	\$11.49	\$23.56	\$0.00	\$106.57
	02/01/2027	\$72.92	\$11.49	\$23.56	\$0.00	\$107.97

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

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

Effective Date - 02/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$31.21	\$11.49	\$23.56	\$0.00	\$66.26
2	60	\$37.45	\$11.49	\$23.56	\$0.00	\$72.50
3	70	\$43.69	\$11.49	\$23.56	\$0.00	\$78.74
4	80	\$49.94	\$11.49	\$23.56	\$0.00	\$84.99
5	90	\$56.18	\$11.49	\$23.56	\$0.00	\$91.23

Effective Date - 08/01/2024

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

Notes:

Apprentice to Journeyworker Ratio:1:5

MECH. SWEEPER OPERATOR (ON CONST. SITES) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MECHANICS MAINTENANCE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MILLWRIGHT (Zone 2) <i>MILLWRIGHTS LOCAL 1121 - Zone 2</i>	01/01/2024	\$42.76	\$10.08	\$21.47	\$0.00	\$74.31
	01/06/2025	\$45.09	\$10.08	\$21.47	\$0.00	\$76.64
	01/05/2026	\$47.42	\$10.08	\$21.47	\$0.00	\$78.97

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Apprentice - MILLWRIGHT - Local 1121 Zone 2						
Effective Date - 01/01/2024						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$23.52	\$10.08	\$5.50	\$0.00	\$39.10
2	65	\$27.79	\$10.08	\$6.50	\$0.00	\$44.37
3	75	\$32.07	\$10.08	\$18.97	\$0.00	\$61.12
4	85	\$36.35	\$10.08	\$19.97	\$0.00	\$66.40
Effective Date - 01/06/2025						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$24.80	\$10.08	\$5.50	\$0.00	\$40.38
2	65	\$29.31	\$10.08	\$6.50	\$0.00	\$45.89
3	75	\$33.82	\$10.08	\$18.97	\$0.00	\$62.87
4	85	\$38.33	\$10.08	\$19.97	\$0.00	\$68.38
Notes: Step 1&2 Appr. indentured after 1/6/2020 receive no pension, but do receive annuity. (Step 1 \$5.72, Step 2 \$6.66) Steps are 2,000 hours						
Apprentice to Journeyworker Ratio:1:4						
MORTAR MIXER LABORERS - ZONE 2	12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
For apprentice rates see "Apprentice- LABORER"						
OILER (OTHER THAN TRUCK CRANES,GRADALLS) OPERATING ENGINEERS LOCAL 4	06/01/2024	\$24.71	\$15.30	\$16.40	\$0.00	\$56.41
	12/01/2024	\$25.37	\$15.30	\$16.40	\$0.00	\$57.07
	06/01/2025	\$25.97	\$15.30	\$16.40	\$0.00	\$57.67
	12/01/2025	\$26.63	\$15.30	\$16.40	\$0.00	\$58.33
	06/01/2026	\$27.22	\$15.30	\$16.40	\$0.00	\$58.92
	12/01/2026	\$27.89	\$15.30	\$16.40	\$0.00	\$59.59
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OILER (TRUCK CRANES, GRADALLS) OPERATING ENGINEERS LOCAL 4	06/01/2024	\$30.28	\$15.30	\$16.40	\$0.00	\$61.98
	12/01/2024	\$31.08	\$15.30	\$16.40	\$0.00	\$62.78
	06/01/2025	\$31.80	\$15.30	\$16.40	\$0.00	\$63.50
	12/01/2025	\$32.60	\$15.30	\$16.40	\$0.00	\$64.30
	06/01/2026	\$33.32	\$15.30	\$16.40	\$0.00	\$65.02
	12/01/2026	\$34.12	\$15.30	\$16.40	\$0.00	\$65.82
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OTHER POWER DRIVEN EQUIPMENT - CLASS II OPERATING ENGINEERS LOCAL 4	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PAINTER (BRIDGES/TANKS) PAINTERS LOCAL 35 - ZONE 2	07/01/2024	\$57.26	\$9.95	\$23.95	\$0.00	\$91.16
	01/01/2025	\$58.46	\$9.95	\$23.95	\$0.00	\$92.36

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 07/01/2024

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

Effective Date - 01/01/2025

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

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

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

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

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

Effective Date - 07/01/2024

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

Effective Date - 01/01/2025

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

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

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

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

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

Effective Date - 07/01/2024

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

Effective Date - 01/01/2025

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

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

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

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER - Local 35 Zone 2 - BRUSH NEW

Effective Date - 07/01/2024

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

Effective Date - 01/01/2025

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

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

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

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER Local 35 Zone 2 - BRUSH REPAINT

Effective Date - 07/01/2024

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

Effective Date - 01/01/2025

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

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

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

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

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

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

Apprentice - PILE DRIVER - Local 56 Zone 1

Effective Date - 08/01/2020

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

Notes:

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

Apprentice to Journeyworker Ratio:1:5

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

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PLUMBER/PIPEFITTER - Local 51

Effective Date - 08/28/2023

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

Effective Date - 08/26/2024

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

Notes:

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

Apprentice to Journeyworker Ratio:1:3

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
POWER SHOVEL/DERRICK/TRENCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$56.03	\$15.30	\$16.40	\$0.00	\$87.73
	12/01/2024	\$57.48	\$15.30	\$16.40	\$0.00	\$89.18
	06/01/2025	\$58.78	\$15.30	\$16.40	\$0.00	\$90.48
	12/01/2025	\$60.23	\$15.30	\$16.40	\$0.00	\$91.93
	06/01/2026	\$61.53	\$15.30	\$16.40	\$0.00	\$93.23
	12/01/2026	\$62.98	\$15.30	\$16.40	\$0.00	\$94.68
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (CONCRETE) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$36.17	\$15.30	\$16.40	\$0.00	\$67.87
	12/01/2024	\$37.12	\$15.30	\$16.40	\$0.00	\$68.82
	06/01/2025	\$37.97	\$15.30	\$16.40	\$0.00	\$69.67
	12/01/2025	\$38.92	\$15.30	\$16.40	\$0.00	\$70.62
	06/01/2026	\$39.78	\$15.30	\$16.40	\$0.00	\$71.48
	12/01/2026	\$40.73	\$15.30	\$16.40	\$0.00	\$72.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
READY-MIX CONCRETE DRIVER <i>TEAMSTERS 653 - Southeastern Concrete (Weymouth)</i>	08/01/2023	\$25.00	\$13.91	\$6.90	\$0.00	\$45.81
RECLAIMERS <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
RIDE-ON MOTORIZED BUGGY OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
For apprentice rates see "Apprentice- LABORER"						
ROLLER/SPREADER/MULCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg) <i>ROOFERS LOCAL 33</i>	02/01/2024	\$50.03	\$12.78	\$21.45	\$0.00	\$84.26
	08/01/2024	\$51.53	\$12.78	\$21.45	\$0.00	\$85.76
	02/01/2025	\$52.78	\$12.78	\$21.45	\$0.00	\$87.01
	08/01/2025	\$54.28	\$12.78	\$21.45	\$0.00	\$88.51
	02/01/2026	\$55.53	\$12.78	\$21.45	\$0.00	\$89.76

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - ROOFER - Local 33

Effective Date - 02/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.02	\$12.78	\$6.21	\$0.00	\$44.01
2	60	\$30.02	\$12.78	\$21.45	\$0.00	\$64.25
3	65	\$32.52	\$12.78	\$21.45	\$0.00	\$66.75
4	75	\$37.52	\$12.78	\$21.45	\$0.00	\$71.75
5	85	\$42.53	\$12.78	\$21.45	\$0.00	\$76.76

Effective Date - 08/01/2024

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

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

Apprentice to Journeyworker Ratio:**

ROOFER SLATE / TILE / PRECAST CONCRETE	02/01/2024	\$50.28	\$12.78	\$21.45	\$0.00	\$84.51
ROOFERS LOCAL 33	08/01/2024	\$51.78	\$12.78	\$21.45	\$0.00	\$86.01
	02/01/2025	\$53.03	\$12.78	\$21.45	\$0.00	\$87.26
	08/01/2025	\$54.53	\$12.78	\$21.45	\$0.00	\$88.76
	02/01/2026	\$55.78	\$12.78	\$21.45	\$0.00	\$90.01

For apprentice rates see "Apprentice- ROOFER"

SHEETMETAL WORKER	02/01/2024	\$57.22	\$14.59	\$27.50	\$2.98	\$102.29
SHEETMETAL WORKERS LOCAL 17 - A	08/01/2024	\$58.97	\$14.59	\$27.50	\$2.98	\$104.04
	02/01/2025	\$60.72	\$14.59	\$27.50	\$2.98	\$105.79
	08/01/2025	\$62.57	\$14.59	\$27.50	\$2.98	\$107.64
	02/01/2026	\$64.52	\$14.59	\$27.50	\$2.98	\$109.59

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - SHEET METAL WORKER - Local 17-A

Effective Date - 02/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	42	\$24.03	\$14.59	\$6.13	\$0.00	\$44.75
2	42	\$24.03	\$14.59	\$6.13	\$0.00	\$44.75
3	47	\$26.89	\$14.59	\$12.11	\$1.61	\$55.20
4	47	\$26.89	\$14.59	\$12.11	\$1.61	\$55.20
5	52	\$29.75	\$14.59	\$13.09	\$1.72	\$59.15
6	52	\$29.75	\$14.59	\$13.34	\$1.73	\$59.41
7	60	\$34.33	\$14.59	\$14.75	\$1.91	\$65.58
8	65	\$37.19	\$14.59	\$15.73	\$2.03	\$69.54
9	75	\$42.92	\$14.59	\$17.69	\$2.26	\$77.46
10	85	\$48.64	\$14.59	\$19.15	\$2.47	\$84.85

Effective Date - 08/01/2024

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

Notes:

Steps are 6 mos.

Apprentice to Journeyworker Ratio:1:4

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

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

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

Effective Date - 03/01/2024

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

Effective Date - 10/01/2024

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

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

Apprentice to Journeyworker Ratio:1:3

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
STEAM BOILER OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TELECOMMUNICATION TECHNICIAN <i>ELECTRICIANS LOCAL 223</i>	09/01/2023	\$39.40	\$11.50	\$13.91	\$0.00	\$64.81
	09/01/2024	\$40.69	\$11.75	\$14.53	\$0.00	\$66.97

Apprentice - TELECOMMUNICATION TECHNICIAN - Local 223

Effective Date - 09/01/2023

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

Notes: See Electrician Apprentice Wages

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

Apprentice to Journeyworker Ratio:2:3***

TERRAZZO FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE & TILE</i>	02/01/2024	\$61.34	\$11.49	\$23.59	\$0.00	\$96.42
	08/01/2024	\$63.44	\$11.49	\$23.59	\$0.00	\$98.52
	02/01/2025	\$64.74	\$11.49	\$23.59	\$0.00	\$99.82
	08/01/2025	\$66.89	\$11.49	\$23.59	\$0.00	\$101.97
	02/01/2026	\$68.24	\$11.49	\$23.59	\$0.00	\$103.32
	08/01/2026	\$70.44	\$11.49	\$23.59	\$0.00	\$105.52
	02/01/2027	\$71.84	\$11.49	\$23.59	\$0.00	\$106.92

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - TERRAZZO FINISHER - Local 3 Marble & Tile

Effective Date - 02/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$30.67	\$11.49	\$23.59	\$0.00	\$65.75
2	60	\$36.80	\$11.49	\$23.59	\$0.00	\$71.88
3	70	\$42.94	\$11.49	\$23.59	\$0.00	\$78.02
4	80	\$49.07	\$11.49	\$23.59	\$0.00	\$84.15
5	90	\$55.21	\$11.49	\$23.59	\$0.00	\$90.29

Effective Date - 08/01/2024

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

Notes:

Apprentice to Journeyworker Ratio:1:3

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

For apprentice rates see "Apprentice- LABORER"

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

For apprentice rates see "Apprentice- LABORER"

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

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TRACTORS/PORTABLE STEAM GENERATORS <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$55.41	\$15.30	\$16.40	\$0.00	\$87.11
	12/01/2024	\$56.85	\$15.30	\$16.40	\$0.00	\$88.55
	06/01/2025	\$58.13	\$15.30	\$16.40	\$0.00	\$89.83
	12/01/2025	\$59.57	\$15.30	\$16.40	\$0.00	\$91.27
	06/01/2026	\$60.85	\$15.30	\$16.40	\$0.00	\$92.55
	12/01/2026	\$62.29	\$15.30	\$16.40	\$0.00	\$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TRAILERS FOR EARTH MOVING EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	06/01/2024	\$40.82	\$15.07	\$18.67	\$0.00	\$74.56
	12/01/2024	\$40.82	\$15.07	\$20.17	\$0.00	\$76.06
	01/01/2025	\$40.82	\$15.57	\$20.17	\$0.00	\$76.56
	06/01/2025	\$41.82	\$15.57	\$20.17	\$0.00	\$77.56
	12/01/2025	\$41.82	\$15.57	\$21.78	\$0.00	\$79.17
	01/01/2026	\$41.82	\$16.17	\$21.78	\$0.00	\$79.77
	06/01/2026	\$42.82	\$16.17	\$21.78	\$0.00	\$80.77
	12/01/2026	\$42.82	\$16.17	\$23.52	\$0.00	\$82.51
01/01/2027	\$42.82	\$16.77	\$23.52	\$0.00	\$83.11	
TUNNEL WORK - COMPRESSED AIR <i>LABORERS (COMPRESSED AIR)</i>	06/01/2024	\$57.71	\$9.65	\$19.00	\$0.00	\$86.36
	12/01/2024	\$59.18	\$9.65	\$19.00	\$0.00	\$87.83
	06/01/2025	\$60.68	\$9.65	\$19.00	\$0.00	\$89.33
	12/01/2025	\$62.18	\$9.65	\$19.00	\$0.00	\$90.83
	06/01/2026	\$63.73	\$9.65	\$19.00	\$0.00	\$92.38
	12/01/2026	\$65.23	\$9.65	\$19.00	\$0.00	\$93.88
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) <i>LABORERS (COMPRESSED AIR)</i>	06/01/2024	\$59.71	\$9.65	\$19.00	\$0.00	\$88.36
	12/01/2024	\$61.18	\$9.65	\$19.00	\$0.00	\$89.83
	06/01/2025	\$62.68	\$9.65	\$19.00	\$0.00	\$91.33
	12/01/2025	\$64.18	\$9.65	\$19.00	\$0.00	\$92.83
	06/01/2026	\$65.73	\$9.65	\$19.00	\$0.00	\$94.38
	12/01/2026	\$67.23	\$9.65	\$19.00	\$0.00	\$95.88
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR <i>LABORERS (FREE AIR TUNNEL)</i>	06/01/2024	\$49.78	\$9.65	\$19.00	\$0.00	\$78.43
	12/01/2024	\$51.25	\$9.65	\$19.00	\$0.00	\$79.90
	06/01/2025	\$52.75	\$9.65	\$19.00	\$0.00	\$81.40
	12/01/2025	\$54.25	\$9.65	\$19.00	\$0.00	\$82.90
	06/01/2026	\$55.80	\$9.65	\$19.00	\$0.00	\$84.45
	12/01/2026	\$57.30	\$9.65	\$19.00	\$0.00	\$85.95
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR (HAZ. WASTE) <i>LABORERS (FREE AIR TUNNEL)</i>	06/01/2024	\$51.78	\$9.65	\$19.00	\$0.00	\$80.43
	12/01/2024	\$53.25	\$9.65	\$19.00	\$0.00	\$81.90
	06/01/2025	\$54.75	\$9.65	\$19.00	\$0.00	\$83.40
	12/01/2025	\$56.25	\$9.65	\$19.00	\$0.00	\$84.90
	06/01/2026	\$57.80	\$9.65	\$19.00	\$0.00	\$86.45
	12/01/2026	\$59.30	\$9.65	\$19.00	\$0.00	\$87.95
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
VAC-HAUL <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	06/01/2024	\$40.24	\$15.07	\$18.67	\$0.00	\$73.98
	12/01/2024	\$40.24	\$15.07	\$20.17	\$0.00	\$75.48
	01/01/2025	\$40.24	\$15.57	\$20.17	\$0.00	\$75.98
	06/01/2025	\$41.24	\$15.57	\$20.17	\$0.00	\$76.98
	12/01/2025	\$41.24	\$15.57	\$21.78	\$0.00	\$78.59
	01/01/2026	\$41.24	\$16.17	\$21.78	\$0.00	\$79.19
	06/01/2026	\$42.24	\$16.17	\$21.78	\$0.00	\$80.19
	12/01/2026	\$42.24	\$16.17	\$23.52	\$0.00	\$81.93
	01/01/2027	\$42.24	\$16.77	\$23.52	\$0.00	\$82.53
WAGON DRILL OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2023	\$38.11	\$9.65	\$17.14	\$0.00	\$64.90
For apprentice rates see "Apprentice- LABORER"						
WAGON DRILL OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY & HIGHWAY)</i>	06/01/2024	\$38.78	\$9.65	\$17.80	\$0.00	\$66.23
	12/01/2024	\$40.11	\$9.65	\$17.80	\$0.00	\$67.56
	06/01/2025	\$41.50	\$9.65	\$17.80	\$0.00	\$68.95
	12/01/2025	\$42.88	\$9.65	\$17.80	\$0.00	\$70.33
	06/01/2026	\$44.32	\$9.65	\$17.80	\$0.00	\$71.77
	12/01/2026	\$45.76	\$9.65	\$17.80	\$0.00	\$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
WASTE WATER PUMP OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2024	\$56.03	\$15.30	\$16.40	\$0.00	\$87.73
	12/01/2024	\$57.48	\$15.30	\$16.40	\$0.00	\$89.18
	06/01/2025	\$58.78	\$15.30	\$16.40	\$0.00	\$90.48
	12/01/2025	\$60.23	\$15.30	\$16.40	\$0.00	\$91.93
	06/01/2026	\$61.53	\$15.30	\$16.40	\$0.00	\$93.23
	12/01/2026	\$62.98	\$15.30	\$16.40	\$0.00	\$94.68
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
WATER METER INSTALLER <i>PLUMBERS & PIPEFITTERS LOCAL 51</i>	08/28/2023	\$51.99	\$10.15	\$19.95	\$0.00	\$82.09
	08/26/2024	\$54.74	\$10.15	\$19.95	\$0.00	\$84.84
	08/25/2025	\$57.49	\$10.15	\$19.95	\$0.00	\$87.59
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						
Marine Drilling						
BLASTER <i>MARINE DRILLING</i>	01/01/2018	\$41.82	\$7.63	\$3.60	\$0.00	\$53.05
BOAT CAPTAIN <i>MARINE DRILLING</i>	01/01/2018	\$33.87	\$7.63	\$3.30	\$0.00	\$44.80
BOAT CAPTAIN / Over 1,000 hp <i>MARINE DRILLING</i>	01/01/2018	\$38.06	\$7.63	\$3.60	\$0.00	\$49.29
CORE DRILLER <i>MARINE DRILLING</i>	01/01/2018	\$31.43	\$7.63	\$2.90	\$0.00	\$41.96
CORE DRILLER HELPER <i>MARINE DRILLING</i>	01/01/2018	\$28.47	\$7.63	\$3.00	\$0.00	\$39.10
DRILLER <i>MARINE DRILLING</i>	01/01/2018	\$39.70	\$7.63	\$3.60	\$0.00	\$50.93
ENGINEER <i>MARINE DRILLING</i>	01/01/2018	\$39.69	\$7.63	\$3.50	\$0.00	\$50.82
HELPER <i>MARINE DRILLING</i>	01/01/2018	\$34.24	\$7.63	\$3.00	\$0.00	\$44.87

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
MACHINIST <i>MARINE DRILLING</i>	01/01/2018	\$38.88	\$7.63	\$3.30	\$0.00	\$49.81
OILER - MARINE DRILLING <i>MARINE DRILLING</i>	01/01/2018	\$34.24	\$7.63	\$3.00	\$0.00	\$44.87
TUG DECKHAND <i>MARINE DRILLING</i>	01/01/2018	\$27.61	\$7.63	\$3.00	\$0.00	\$38.24
WELDER <i>MARINE DRILLING</i>	01/01/2018	\$38.88	\$7.63	\$3.30	\$0.00	\$49.81
Op Eng Marine (Dredging Work)						
BOAT OPERATOR <i>OPERATING ENGINEERS - MARINE DIVISION</i>	10/01/2017	\$29.26	\$7.63	\$3.30	\$0.00	\$40.19
CERTIFIED WELDER <i>OPERATING ENGINEERS - MARINE DIVISION</i>	10/01/2017	\$31.09	\$7.63	\$3.60	\$0.00	\$42.32
CHIEF WELDER/ CHIEF MATE <i>OPERATING ENGINEERS - MARINE DIVISION</i>	10/01/2017	\$33.02	\$7.63	\$3.60	\$0.00	\$44.25
DERRICK / SPIDER / SPILLBARGE OPERATOR <i>OPERATING ENGINEERS - MARINE DIVISION</i>	10/01/2017	\$33.02	\$7.63	\$3.60	\$0.00	\$44.25
DRAG BARGE OPERATOR / WELDER / MATE <i>OPERATING ENGINEERS - MARINE DIVISION</i>	10/01/2017	\$30.24	\$7.63	\$3.30	\$0.00	\$41.17
ENGINEER / ELECTRICIAN <i>OPERATING ENGINEERS - MARINE DIVISION</i>	10/01/2017	\$33.02	\$7.63	\$3.60	\$0.00	\$44.25
LICENSED BOAT OPERATOR <i>OPERATING ENGINEERS - MARINE DIVISION</i>	10/01/2017	\$33.02	\$7.63	\$3.60	\$0.00	\$44.25
LICENSED TUG OPERATOR OVER 1000HP <i>OPERATING ENGINEERS - MARINE DIVISION</i>	10/01/2017	\$38.18	\$7.63	\$3.60	\$0.00	\$49.41
MAINTENANCE ENGINEER <i>OPERATING ENGINEERS - MARINE DIVISION</i>	10/01/2017	\$33.03	\$7.63	\$3.60	\$0.00	\$44.26
OILER - MARINE DIVISION <i>OPERATING ENGINEERS - MARINE DIVISION</i>	10/01/2017	\$24.30	\$7.63	\$3.00	\$0.00	\$34.93
OPERATOR / LEVERMAN <i>OPERATING ENGINEERS - MARINE DIVISION</i>	10/01/2017	\$38.18	\$7.63	\$3.60	\$0.00	\$49.41
RODMAN / SCOWMAN <i>OPERATING ENGINEERS - MARINE DIVISION</i>	10/01/2017	\$24.30	\$7.63	\$3.00	\$0.00	\$34.93
SHOREMAN / DECKHAND <i>OPERATING ENGINEERS - MARINE DIVISION</i>	10/01/2017	\$24.30	\$7.63	\$3.00	\$0.00	\$34.93
Outside Electrical - East						
CABLE TECHNICIAN (Power Zone) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$29.67	\$9.25	\$1.89	\$0.00	\$40.81
For apprentice rates see "Apprentice- LINEMAN"						
CABLEMAN (Underground Ducts & Cables) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$42.03	\$9.25	\$10.27	\$0.00	\$61.55
For apprentice rates see "Apprentice- LINEMAN"						
DRIVER / GROUNDMAN CDL <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$34.62	\$9.25	\$10.07	\$0.00	\$53.94
For apprentice rates see "Apprentice- LINEMAN"						
DRIVER / GROUNDMAN -Inexperienced (<2000 Hrs) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$27.20	\$9.25	\$1.82	\$0.00	\$38.27
For apprentice rates see "Apprentice- LINEMAN"						
EQUIPMENT OPERATOR (Class A CDL) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$42.03	\$9.25	\$14.35	\$0.00	\$65.63
For apprentice rates see "Apprentice- LINEMAN"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
EQUIPMENT OPERATOR (Class B CDL) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i> For apprentice rates see "Apprentice- LINEMAN"	08/30/2020	\$37.09	\$9.25	\$10.87	\$0.00	\$57.21
GROUNDMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i> For apprentice rates see "Apprentice- LINEMAN"	08/30/2020	\$27.20	\$9.25	\$1.82	\$0.00	\$38.27
GROUNDMAN -Inexperienced (<2000 Hrs.) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i> For apprentice rates see "Apprentice- LINEMAN"	08/30/2020	\$22.25	\$9.25	\$1.82	\$0.00	\$33.32
JOURNEYMAN LINEMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$49.45	\$9.25	\$17.48	\$0.00	\$76.18

Apprentice - LINEMAN (Outside Electrical) - East Local 104

Effective Date - 08/30/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$29.67	\$9.25	\$3.39	\$0.00	\$42.31
2	65	\$32.14	\$9.25	\$3.46	\$0.00	\$44.85
3	70	\$34.62	\$9.25	\$3.54	\$0.00	\$47.41
4	75	\$37.09	\$9.25	\$5.11	\$0.00	\$51.45
5	80	\$39.56	\$9.25	\$5.19	\$0.00	\$54.00
6	85	\$42.03	\$9.25	\$5.26	\$0.00	\$56.54
7	90	\$44.51	\$9.25	\$7.34	\$0.00	\$61.10

Notes:

Apprentice to Journeyworker Ratio:1:2

TELEDATA CABLE SPLICER <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	02/04/2019	\$30.73	\$4.70	\$3.17	\$0.00	\$38.60
TELEDATA LINEMAN/EQUIPMENT OPERATOR <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	02/04/2019	\$28.93	\$4.70	\$3.14	\$0.00	\$36.77
TELEDATA WIREMAN/INSTALLER/TECHNICIAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	02/04/2019	\$28.93	\$4.70	\$3.14	\$0.00	\$36.77

Additional Apprentice Information:

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

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

All steps are six months (1000 hours.)

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

** Multiple ratios are listed in the comment field.

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

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

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

<u>STATE:</u>	<u>Goals (percent)</u>
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 contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the “contractor,” which includes consultants) agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

PERTINENT NON-DISCRIMINATION AUTHORITIES:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et seq.*, 78 stat. 252) (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (42 U.S.C. § 4601) (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-Aid programs and projects)
- Federal-Aid Highway Act of 1973 (23 U.S.C. § 324 *et seq.*) (prohibits discrimination on the basis of sex)
- Section 504 of the Rehabilitation Act of 1973 (29 U.S.C. § 794 *et seq.*), as amended (prohibits discrimination on the basis of disability) and 49 CFR Part 27
- The Age Discrimination Act of 1975, as amended (42 U.S.C. § 6101 *et seq.*) (prohibits discrimination on the basis of age)
- Airport and Airway Improvement Act of 1982 (49 U.S.C. § 471, Section 47123), as amended (prohibits discrimination based on race, creed, color, national origin, or sex)
- The Civil Rights Restoration Act of 1987 (PL 100-209) (broadened the scope, coverage, and applicability of Title VI of the Civil Rights Act of 1964, the Age Discrimination Act of 1975, and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms “programs or activities” to include all of the programs or activities of Federal-Aid recipients, sub-recipients, and contractors, whether such programs or activities are Federally funded or not)
- Titles II and III of the Americans with Disabilities Act (42 U.S.C. §§ 12131-12189), as implemented by Department of Transportation regulations at 49 CFR parts 37 and 38 (prohibits discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities)
- The Federal Aviation Administration’s Non-Discrimination Statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex)
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (ensures discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations)
- Executive Order 13166, Improving Access to Services for People with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100)
- Title IX of the Education Amendments Act of 1972, as amended (20 U.S.C. 1681 *et seq.*) (prohibits discrimination on the basis of sex in education programs or activities)

*** END OF DOCUMENT ***

DOCUMENT 00880

Revised January 12, 2022



DEPARTMENT OF LABOR

Employment Standards Administration

MINIMUM WAGES FOR FEDERAL AND FEDERALLY ASSISTED CONTRACTS

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General Decision Number: MA20240023 06/21/2024

Superseded General Decision Number: MA20230023

State: Massachusetts

Construction Type: Highway

County: Plymouth County in Massachusetts.

HIGHWAY CONSTRUCTION PROJECTS

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

<p> If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:</p>	<p> . Executive Order 14026 generally applies to the contract. . The contractor must pay all covered workers at least \$17.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2024.</p>
<p> If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:</p>	<p> . Executive Order 13658 generally applies to the contract. . The contractor must pay all covered workers at least \$12.90 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2024.</p>

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

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

Modification Number	Publication Date
0	01/05/2024
1	01/19/2024
2	03/22/2024
3	05/31/2024
4	06/21/2024

CARP0330-003 03/01/2024

	Rates	Fringes
CARPENTER (Includes Form Work)...	\$ 46.86	30.94

* ENGI0004-027 06/01/2024

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
Group 1.....	\$ 56.03	32.75
Group 2.....	\$ 55.41	32.75

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: Backhoe/Excavator/Trackhoe; Bobcat/Skid Steer/Skid Loader; Broom/Sweeper; Crane; Gradall; Loader; Post Driver (Guardrail/Fences)
- Group 2: Bulldozer; Grader/Blade; Milling Machine; Roller

IRON0007-026 03/16/2024

	Rates	Fringes
IRONWORKER (ORNAMENTAL AND STRUCTURAL).....	\$ 54.68	36.48

LABO0133-001 06/01/2022

	Rates	Fringes
LABORER (Concrete Surfacers).....	\$ 36.31	26.64

LABO0385-002 06/01/2018

	Rates	Fringes
LABORER (Landscape).....	\$ 33.25	22.92

LABO0385-003 06/01/2018

	Rates	Fringes
LABORER (Fence Erection).....	\$ 33.50	22.92

LABO0721-002 06/01/2018

	Rates	Fringes
LABORER (Guardrail Installation).....	\$ 33.50	22.92

LABO0876-001 06/01/2018

	Rates	Fringes
LABORER (Common or General).....	\$ 33.25	22.92

PAIN0035-023 01/01/2024

	Rates	Fringes
PAINTER (Steel).....	\$ 56.06	35.60

UMA2014-013 01/11/2017

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER...	\$ 56.70	21.08
ELECTRICIAN, Includes Traffic Signalization.....	\$ 45.13	13.86
IRONWORKER, REINFORCING.....	\$ 44.52	19.36
LABORER: Asphalt, Includes Raker, Shoveler, Spreader and Distributor.....	\$ 34.32	17.35
LABORER: Concrete Saw (Hand Held/Walk Behind).....	\$ 44.43	14.18
LABORER: Jack Hammer.....	\$ 38.69	17.33
OPERATOR: Forklift.....	\$ 64.67	0.00
OPERATOR: Mechanic.....	\$ 48.74	11.79
OPERATOR: Paver (Asphalt, Aggregate, and Concrete).....	\$ 41.63	23.04
OPERATOR: Piledriver.....	\$ 42.56	17.34



PAINTER: Spray (Linestriping)....	\$ 47.30	6.42
TRAFFIC CONTROL: Flagger.....	\$ 23.00	20.44
TRAFFIC CONTROL: Laborer-Cones/ Barricades/Barrels - Setter/Mover/Sweeper.....	\$ 53.35	12.78
TRUCK DRIVER: Concrete Truck....	\$ 33.69	15.79
TRUCK DRIVER: Dump Truck.....	\$ 37.35	11.00
TRUCK DRIVER: Flatbed Truck.....	\$ 48.53	0.00

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

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

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

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

Union Rate Identifiers

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

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

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

Survey Rate Identifiers

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

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

Union Average Rate Identifiers

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

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

State Adopted Rate Identifiers

Classifications listed under the "SA" identifier indicate that the prevailing wage rate set by a state (or local) government was 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. 01/03/2024 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:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

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

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

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

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

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

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

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

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

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

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END OF GENERAL DECISION

General Decision Number: MA20240006 01/05/2024

Superseded General Decision Number: MA20230006

State: Massachusetts

Construction Type: Heavy Dredging

Counties: Massachusetts Statewide.
STATEWIDE

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

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

<p> If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:</p>	<p> . Executive Order 14026 generally applies to the contract. . The contractor must pay all covered workers at least \$17.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2024.</p>
<p> If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:</p>	<p> . Executive Order 13658 generally applies to the contract. . The contractor must pay all covered workers at least \$12.90 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2024.</p>

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

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

Modification Number Publication Date
 0 01/05/2024

ENGI0025-001 10/01/2023

STATEWIDE

	Rates	Fringes
Dredging:		
CLASS A1.....	\$ 45.26	15.17+a+b
CLASS A2.....	\$ 40.33	14.82+a+b
CLASS B1.....	\$ 39.14	14.74+a+b
CLASS B2.....	\$ 36.84	14.58+a+b
CLASS C1.....	\$ 35.83	14.26+a+b
CLASS C2.....	\$ 34.68	14.18+a+b
CLASS D.....	\$ 28.81	13.77+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.

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

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

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

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

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

Survey Rate Identifiers

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

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

Union Average Rate Identifiers

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

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

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

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

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

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

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

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

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

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

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

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

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END OF GENERAL DECISION

General Decision Number: MA20240008 06/21/2024

Superseded General Decision Number: MA20230008

State: Massachusetts

Construction Types: Heavy (Heavy and Marine)

Counties: Barnstable, Bristol, Dukes, Essex, Middlesex, Nantucket, Norfolk, Plymouth and Suffolk Counties in Massachusetts.

HEAVY AND MARINE CONTRUCTION PROJECTS

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

<p> If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:</p>	<p> . Executive Order 14026 generally applies to the contract. . The contractor must pay all covered workers at least \$17.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2024.</p>
<p> If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:</p>	<p> . Executive Order 13658 generally applies to the contract. . The contractor must pay all covered workers at least \$12.90 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2024.</p>

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

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

Modification Number	Publication Date
0	01/05/2024
1	01/19/2024
2	02/09/2024
3	03/01/2024
4	03/22/2024
5	05/31/2024
6	06/21/2024

BOIL0029-001 01/01/2021

	Rates	Fringes
BOILERMAKER.....	\$ 45.87	29.02

BRMA0001-011 02/01/2023

FOXBORO CHAPTER

BRISTOL (Attleboro, Berkley, Dighton, Mansfield, North Attleboro, Norton, Raynham, Rehoboth, Seekonk, Taunton); NORFOLK, (Bellingham, Canton, Dedham, Foxboro, Franklin, Norfolk, Norwood, Plainville, Sharon, Walpole, Westwood, Wrentham); and PLYMOUTH (Lakeville)

	Rates	Fringes
Bricklayer/Cement Mason.....	\$ 60.35	34.40

BRMA0001-012 02/01/2023

LOWELL CHAPTER

MIDDLESEX (Acton, Ashby, Ayer, Bedford, Billerica, Boxboro, Carlisle, Chemsford, Dracut, Dunstabale, Ft Devens, Groton, Littleton, Lowell, North Acton, Pepperell, Shirley, South Acton, Tewksbury, Townsend, Tyngsboro, West Acton, Westford, Wilmington)

	Rates	Fringes
BRICKLAYER.....	\$ 58.21	33.71

BRMA0001-013 08/01/2023

LOWELL CHAPTER

MIDDLESEX (Ashland, Framingham, Holliston, Hopkinton, Hudson, Maynard, Natick, Sherbourn, Stow); and NORFOLK (Medfield, Medway, Millis)

	Rates	Fringes
BRICKLAYER.....	\$ 62.40	34.40

BRMA0003-001 08/01/2023

	Rates	Fringes
Marble & Tile Finisher.....	\$ 47.89	32.43
Marble, Tile & Terrazzo		
Workers.....	\$ 62.42	34.37
TERRAZZO FINISHER.....	\$ 61.34	34.21

BRMA0003-003 08/01/2023

BOSTON CHAPTER

MIDDLESEX (Arlington, Cambridge, Everett, Malden, Medford, Melrose, Somerville); NORFOLK (Brookline, Milton); and SUFFOLK

	Rates	Fringes
BRICKLAYER.....	\$ 62.40	34.40

BRMA0003-011 08/01/2023

LYNN CHAPTER

ESSEX (Amesbury, Andover, Beverly, Boxford, Danvers, Essex, Georgetown, Gloucester, Groveland, Hamilton, Haverhill, Ipswich, Lawrence, Lynn, Lynnfield, Manchester, Marblehead, Merrimac, Methuen, Middleton, Nahant, Newbury, Newburyport, North Andover, Peabody, Rockport, Rowley, Salisbury, Salem, Saugus, Swampscott, Topsfield, Wakefield, Wenham, West Newbury); and MIDDLESEX (North Reading, Reading, Wakefield)

	Rates	Fringes
Bricklayer/Cement Mason.....	\$ 62.40	34.40

BRMA0003-012 08/01/2023

	Rates	Fringes
BRICKLAYER		
WALTHAM CHAPTER -		
MIDDLESEX (Belmont,		
Burlington, Concord,		
Lexington, Lincoln,		
Stoneham, Sudbury,		
Waltham, Watertown,		
Wayland, Weston,		
Winchester, Woburn).....		
	\$ 62.40	34.40

BRMA0003-014 08/01/2023

QUINCY CHAPTER

PLYMOUTH COUNTY (Abington, Bridgewater, Brockton, Carver, Duxbury, East Bridgewater, Halifax, Hanover, Hanson, Hingham, Hull, Kingston, Marshfield, Middleboro, Norwell, Pembroke, Plymouth, Rockland, Scituate, West Bridgewater, Whitman)

	Rates	Fringes
Bricklayer/Cement Mason.....	\$ 62.40	34.40

BRMA0003-025 08/01/2023

NEW BEDFORD CHAPTER

BARNSTABLE; BRISTOL (Acushnet, Darmouth, Fairhaven, Fall River, Freetown, New Bedford, Somerset, Swansea, Westport); DUKES; NANTUCKET; PLYMOUTH (Marion, Mattapoisett, Rochester, Wareham)

	Rates	Fringes
Bricklayer/Cement Mason.....	\$ 62.40	34.40

BRMA0003-033 08/01/2023

NEWTON CHAPTER

MIDDLESEX (Newton); NORFOLK (Dover, Needham, Wellesley)

	Rates	Fringes
Bricklayer, Plasterer.....	\$ 62.40	34.40

CARP0056-001 08/01/2023

All of SUFFOLK COUNTY; and those areas of BARNSTABLE, BRISTOL, ESSEX, MIDDLESEX, NORFOLK, and PLYMOUTH COUNTIES situated INSIDE Boston Beltway (I-495) and North of Cape Cod Canal. ALL of DUKES and NANTUCKET COUNTIES

	Rates	Fringes
PILEDRIVERMAN.....	\$ 53.11	35.10

CARP0056-002 08/01/2022

The areas of BARNSTABLE, BRISTOL, PLYMOUTH, and NORFOLK COUNTIES situated OUTSIDE Boston Beltway (I-495) and South of Cape Cod Canal

	Rates	Fringes
PILEDRIVERMAN.....	\$ 48.34	34.10

CARP0056-003 08/01/2022

Those areas of ESSEX and MIDDLESEX COUNTIES situated OUTSIDE Boston Beltway (I-495)

	Rates	Fringes
PILEDRIVERMAN.....	\$ 45.74	34.10

CARP0056-004 08/01/2022

	Rates	Fringes
DIVER TENDER.....	\$ 52.15	34.10
DIVER.....	\$ 68.70	35.57

CARP0327-002 03/01/2024

MIDDLESEX (Belmont, Cambridge, Everett, Malden, Medford, Somerville); NORFOLK (Brookline, Dedham, Milton); AND SUFFOLK COUNTIES

	Rates	Fringes
CARPENTER.....	\$ 57.20	31.04

CARP0339-002 03/01/2024

BRISTOL (Attleborough, North Attleborough); ESSEX; MIDDLESEX (Except Belmont, Cambridge, Everett, Malden, Medford, Somerville); AND NORFOLK (Bellingham, Braintree, Canton, Cohasset, Foxboro, Franklin, Medfield, Medway, Millis, Needham, Norfolk, Norwood, Plainville, Quincy, Sharon, Walpole, Wellesley, Westwood, Weymouth, Wrentham) COUNTIES

	Rates	Fringes
CARPENTER.....	\$ 46.86	30.94

CARP0346-001 03/01/2024

NORFOLK (Braintree, Quincy, Cohasset, Weymouth, etc.) PLYMOUTH (Duxbury, Hanover, Hull, Hingham, Marshfield, Norwell, Pembroke Rockland, Scituate)

	Rates	Fringes
CARPENTER.....	\$ 46.86	30.94

CARP0624-002 09/01/2017

DUKES; NANTUCKET

	Rates	Fringes
CARPENTER.....	\$ 46.43	28.35

CARP0624-006 09/01/2017

BARNSTABLE; BRISTOL (Except Attleboro & North Attleboro); NORFOLK (Avon, Holbrook, Randolph, Stoughton); PLYMOUTH (Bridgewater, Kingston, Lakeville, Middleboro, Plymouth, S. Hanover, Whitman)

	Rates	Fringes
CARPENTER.....	\$ 39.28	27.90

CARP1121-001 01/01/2024

SUFFOLK COUNTY

	Rates	Fringes
MILLWRIGHT.....	\$ 48.03	33.49

CARP1121-005 01/01/2024

BARNSTABLE, BRISTOL, DUKES, ESSEX, MIDDLESEX, NANTUCKET,
NORFOLK and PLYMOUTH COUNTIES

	Rates	Fringes
MILLWRIGHT.....	\$ 42.76	33.24

ELEC0096-001 09/03/2023

MIDDLESEX (Ashby, Ashland, Ayer, Ft. Devens, Groton, Hopkinton,
Hudson, Marlboro, Pepperell, Shirley, Stow, Townsend)

	Rates	Fringes
ELECTRICIAN.....	\$ 45.99	33.06
Teledata System Installer.....	\$ 34.49	31.44

ELEC0099-001 06/01/2021

BRISTOL (Attleboro, North Attleboro, Seekonk)

	Rates	Fringes
ELECTRICIAN.....	\$ 43.61	54.71%
Teledata System Installer.....	\$ 31.21	13.1%+14.93

ELEC0103-002 03/01/2024

ESSEX (Amesbury, Andover, Boxford, Georgetown, Groveland,
Haverhill, Lawrence, Merrimac, Methuen, Newbury, Newburyport,
North Andover, Rowley, Salisbury, West Newbury); MIDDLESEX
(Bedford, Billerica, Boxboro, Burlington, Carlisle, Chelmsford,
Dracut, Dunstable littleton, Lowell, North Reading, Tewksbury,
Tynngsboro, Westford, Wilmington)

	Rates	Fringes
ELECTRICIAN.....	\$ 61.86	36.14

ELEC0103-004 03/01/2024

ESSEX (Beverly, Danvers, Essex, Gloucester, Hamilton, Ipswich,
Manchester, Marblehead, Middleton, Peabody, Rockport, Salem,
Topsfield, Wenham)

	Rates	Fringes
ELECTRICIAN.....	\$ 61.86	36.14

ELEC0103-005 03/01/2024

ESSEX (Lynn, Lynnfield, Nahant, Saugus, Swampscott); MIDDLESEX (Acton, Arlington, Belmont, Cambridge, Concord, Everett, Framingham, Holliston, Lexington, Lincoln, Malden, Maynard, Medford, Melrose, Natick, Newton, Reading, Sherborn, Somerville, Stoneham, Sudbury, Wakefield, Waltham, Watertown, Wayland, Weston, Winchester, Woburn); NORFOLK (Bellingham, Braintree, Brookline, Canton, Cohasset, Dedham, Dover, Foxboro, Franklino, Medfield, Medway, Millis, Milton, Needham, Norfolk, Norwood, Quincy, Sharon, Walpole, Wellesley, Westwood, Weymouth, Wrentham); PLYMOUTH (Hingham and Hull); SUFFOLK

	Rates	Fringes
ELECTRICIAN.....	\$ 61.86	36.14

ELEC0104-001 08/29/2022

	Rates	Fringes
Line Construction:		
Cableman.....	\$ 53.06	28.49+A
Equipment Operator.....	\$ 45.10	25.20+A
Groundman.....	\$ 29.18	12.10+A
Lineman.....	\$ 53.06	28.49+A

A. PAID HOLIDAYS: New Year's Day; Memorial Day; Independence Day; Labor Day; Thanksgiving Day; Christmas Day and Columbus Day, provided the employee has been employed 5 working days prior to any one of the listed holidays.

ELEC0223-002 09/01/2023

BARNSTABLE, BRISTOL (Except Attleboro, North Attleboro, Seekonk); DUKES; NANTUCKET; PLYMOUTH (Except Hingham and Hull Twps); NORFOLK (Avon, Halbrook, Randolph, Sloughton)

	Rates	Fringes
ELECTRICIAN.....	\$ 47.87	29.92

* ENGI0004-009 06/01/2024

	Rates	Fringes
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Power equipment operators:

Group 1.....	\$ 56.03	32.75
Group 2.....	\$ 55.41	32.75
Group 3.....	\$ 36.17	32.75
Group 4.....	\$ 45.23	32.75
Group 5.....	\$ 24.71	32.75
Group 6.....	\$ 30.28	32.75

HOURLY PREMIUM FOR BOOM LENGTHS (Including Jib):

Over 150 ft.	+2.18
Over 185 ft.	+3.84
Over 210 ft.	+5.39
Over 250 ft.	+8.16
Over 295 ft.	+11.29
Over 350 ft.	+13.14

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 [HEAVY CONSTRUCTION]

GROUP 1: Power shovel; crane; truck crane; derrick; pile driver; trenching machine; mechanical hoist pavement breaker; cement concrete paver; dragline; hoisting engine; three drum machine; pumpcrete machine; loaders; shovel dozer; front end loader; mucking machine; shaft hoist; steam engine; backhoe; gradall; cable way; fork lift; cherry picker; boring machine; rotary drill; post hole hammer; post hole digger; asphalt plant on job site; concrete batching and/or mixing plant on job site; crusher plant on job site; paving concrete mixer; timber jack

GROUP 2: Sonic or vibratory hammer; grader; scraper; tandem scraper; bulldozer; tractor; mechanic - maintenance; York rake; mulching machine; paving screed machine;stationary steam boiler; paving concrete finishing machine; grout pump; portable steam boiler; portable steam generator; roller; spreader; asphalt paver; locomotives or machines used in place thereof; tamper (self propelled or tractor-draw); cal tracks; ballast regulator;rail anchor machine; switch tamper; tire truck

GROUP 3: Pumps (1-3 grouped); compressor; welding machines (1-3 grouped); generator; sighting plant; heaters (power driven, 1- 5); syphon-pulsometer; concrete mixer; valves controlling permanent plant air steam, conveyor, wellpoint system (operating)

GROUP 4: Assitant engineer (fireman)

GROUP 5: Oiler (other than truck cranes and gradalls)

GROUP 6: Oiler (on truck cranes and gradalls)

IRON0007-001 03/16/2024

AREA 1: BRISTOL (Easton); ESSEX (Beverly, Gloucester, Lynn, Lynnfield, Manchester, Marblehead, Nahant, Rockport, Salem, Saugus, Swampscott); MIDDLESEX (Arlington, Bedford, Belmont, Burlington, Cambridge, Carlisle, Concord, Dunstable, Everett, Framingham, Lexington, Lincoln, Malden, Maynard, Medford, Melrose, Natick, Newton, Reading, Sherborn, Somerville, Stoneham, Sudbury, Wakefield, Waltham, Watertown, Wayland, Weston, Winchester, Woburn); NORFOLK (Except Medway); PLYMOUTH (Abington, Bridgewater, Brocton, Duxbury, East Bridgewater, Halifax, Hanover, Hanson, Hingham, Hull, Kingston, Marshfield, Norwell, Pembroke, Plymouth, Plympton, Rockland, Scituate, West Bridgewater, Whitman); SUFFOLK

AREA 2: ESSEX (Amesbury, Andover, Boxford, Danvers, Essex, Georgetown, Hamilton, Haverhill, Ipswich, Lawrence, Merrimac, Methuen, Newbury, Newburyport, North Andover, Rowley, Salisbury, Topsfield, Wenham, West Newbury); MIDDLESEX (Action, Billerica, Chelmsford, Dracut, Groton, Groveland, Littleton, Lowell, Middleton, North Reading, Pepperell, Tewksbury, Tyngsboro, Westford, Wilmington)

	Rates	Fringes
IRONWORKER		
AREA 1.....	\$ 54.68	36.48
AREA 2.....	\$ 50.27	36.48

IRON0007-010 03/16/2024

MIDDLESEX (Ashby, Ashland, Ayer, Boxboro, Holliston, Hopkinton, Hudson, Marlboro, Shirley, Stow, Townsend); NORFOLK (Medway)

	Rates	Fringes
IRONWORKER.....	\$ 54.38	36.48

IRON0037-002 09/16/2023

BARNSTABLE; BRISTOL (Acushnet, Attleboro, Berkley, Dartmouth, Dighton, Fairhaven, Fall River, Freetown, Mansfield, New Bedford, North Attleboro, Norton, Raynham, Rehoboth, Seekonk, Somerset, Swansea, Taunton, Westport); DUKES; NANTUCKET; NORFOLK (Billingham, Franklin, Plainville, Wrentham); PLYMOUTH (Lakeville, Marion, Mattapoisett, Middleboro, Rochester, Wareham)

	Rates	Fringes
IRONWORKER.....	\$ 40.00	32.58

LABO0022-006 12/01/2021

SUFFOLK COUNTY (Boston, Chelsea, Revere, Winthrop, Deer & Nut Islands); MIDDLESEX COUNTY (Arlington, Belmont, Burlington, Cambridge, Everett, Malden, Medford, Melrose, Reading, Somerville, Stoneham, Wakefield, Winchester, Winthrop and Woburn only); NORFOLK COUNTY (Brookline, Dedham, and Milton only)

	Rates	Fringes
Laborers:		
GROUP 1.....	\$ 41.18	27.52
GROUP 2.....	\$ 41.43	27.52
GROUP 3.....	\$ 41.93	27.52
GROUP 4.....	\$ 42.18	27.52
GROUP 5.....	\$ 24.50	27.52
GROUP 6.....	\$ 43.18	27.52

LABORERS CLASSIFICATIONS

GROUP 1: Laborers; carpenter tenders; cement finisher tenders

GROUP 2: Asphalt raker; fence and guard rail erector; laser beam operator; mason tender; pipelayer; pneumatic drill operator; pneumatic tool operator; wagon drill operator

GROUP 3: Air track operator; block paver; rammer; curb setter

GROUP 4: Blaster; powderman

GROUP 5: Flagger

GROUP 6: Asbestos Abatement; Toxic and Hazardous Waste Laborers

LABO0022-012 12/01/2021

Counties of BARNSTABLE; BRISTOL; DUKES; ESSEX; NANTUCKET; PLYMOUTH; MIDDLESEX (With the exception of Arlington, Belmont, Burlington, Cambridge, Everett, Malden, Melrose, Reading, Somerville, Stoneham, Wakefield, Winchester, Winthrop and Woburn); NORFOLK (With the exception of Brookline, Dedham, and Milton)

	Rates	Fringes
Laborers:		
GROUP 1.....	\$ 35.41	26.59
GROUP 2.....	\$ 35.66	26.59
GROUP 3.....	\$ 36.16	26.59
GROUP 4.....	\$ 36.41	26.59
GROUP 5.....	\$ 24.50	26.59
GROUP 6.....	\$ 37.41	26.59

LABORERS CLASSIFICATIONS

GROUP 1: Laborers; carpenter tenders; cement finisher tenders

GROUP 2: Asphalt raker; fence and guard rail erector; laser beam operator; mason tender; pipelayer; pneumatic drill operator; pneumatic tool operator; wagon drilloperator

GROUP 3: Air track operator; block paver; rammer; curb setter; hydraulic & similar self powere drills

GROUP 4: Blaster; powderman

GROUP 5: Flagger

GROUP 6: Asbestos Abatement; Toxic and Hazardous Waste Laborers

LABO0022-013 12/01/2021

	Rates	Fringes
Laborers:		
(FREE AIR OPERATION):		
SHIELD DRIVEN AND LINER		
PLATE IN FREE AIR)		
GROUP 1.....	\$ 45.48	28.02
GROUP 2.....	\$ 45.48	28.02
(OPEN AIR CASSONS,		
UNDERPINNING AND TEST		
BORING INDUSTRIES):		
TEST BORING & WELL DRILLING		
Driller.....	\$ 42.58	27.67
Laborer.....	\$ 41.18	27.67
(OPEN AIR CASSONS,		
UNDERPINNING AND TEST		
BORING INDUSTRIES):		
OPEN AIR CASSON,		
UNDERPINNING WORK & BORING		
CREW		
Bottom man.....	\$ 42.33	27.67
Laborers; Top man.....	\$ 41.18	27.67
(TUNNELS, CAISSON &		
CYLINDER WORK IN		
COMPRESSED AIR)		
GROUP 1.....	\$ 42.93	28.02
GROUP 2.....	\$ 53.41	28.02
GROUP 3.....	\$ 53.41	28.02
GROUP 4.....	\$ 53.41	28.02
GROUP 5.....	\$ 53.41	28.02
GROUP 6.....	\$ 55.41	28.02

CLEANING CONCRETE AND		
CAULKING TUNNEL (Both New		
& Existing)		
GROUP 1.....	\$ 45.48	28.02
GROUP 2.....	\$ 45.48	28.02
ROCK SHAFT, CONCRETE		
LINING OF SAME AND TUNNEL		
IN FREE AIR		
GROUP 1.....	\$ 42.93	28.02
GROUP 2.....	\$ 45.48	28.02
GROUP 3.....	\$ 45.48	28.02
GROUP 4.....	\$ 45.48	28.02
GROUP 5.....	\$ 47.48	28.02

LABORERS CLASSIFICATIONS for TUNNELS, CAISSON & CYLINDER WORK IN COMPRESSED AIR

GROUP 1: Powder watchman; Top man on iron bolt; change house attendant

GROUP 2: Brakeman; trackman; groutman; tunnel laborer; outside lock tender; lock tender; guage tender

GROUP 3: Motorman, miner

GROUP 4: Blaster

GROUP 5: Mucking machine operator

GROUP 6: Hazardous Waste work within the ""HOT"" zone. (A premium of two dollars \$2.00 per hour over the basic wage rate.

LABORERS CLASSIFICATIONS for (FREE AIR OPERATION): SHIELD DRIVEN AND LINER PLATE IN FREE AIR

GROUP 1: Miner; miner welder; conveyor operator; motorman; mucking machine operator; nozzle man; grout man-; pumps, shaft and tunnel steel and rodman; shield and erector arm operators, mole nipper, outside motorman, burner, TBM operator, safety miner; laborer topside; heading motormen; erecting operators; top signal men

GROUP 2: Brakeman; trackman

LABORERS CLASSIFICATIONS FOR CLEANING CONCRETE AND CAULKING TUNNEL (Both New & Existing)

GROUP 1: Concrete workers; strippers and form movers (wood & steel), cement finisher

GROUP 2: Form erector (wood & steel and all accessories)

LABORERS CLASSIFICATIONS for ROCK SHAFT, CONCRETE LINING OF SAME AND TUNNEL IN FREE AIR

GROUP 1: Change house attendants

GROUP 2: Laborers, topside, bottom men (when heading is 50 ft. from shaft) and all other laborers

GROUP 3: Brakeman; trackman; tunnel laborers; shaft laborers

GROUP 4: Miner; cage tender; bellman

GROUP 5: Hazardous Waste work within the "HOT" zone. (A premium of two dollars \$2.00 per hour over the basic wage rate)

FOOTNOTE FOR LABORERS:

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

LABO1421-001 12/01/2023

WRECKING LABORERS:

	Rates	Fringes
Laborers: (Wrecking)		
Group 1.....	\$ 44.48	28.52
Group 2.....	\$ 45.23	28.52
Group 3.....	\$ 45.48	28.52
Group 4.....	\$ 40.48	28.52
Group 5.....	\$ 43.58	28.52
Group 6.....	\$ 44.48	28.52

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.

PAIN0035-001 01/01/2024

BARNSTABLE BRISTOL; DUKES; ESSEX; NANTUCKET; PLYMOUTH
(Remainder of NORFOLK; MIDDLESEX AND SUFFOLK COUNTIES)

	Rates	Fringes
PAINTER		
NEW CONSTRUCTION:		
Bridge.....	\$ 50.36	30.25
Brush, Taper.....	\$ 39.86	30.25
Spray, Sandblast.....	\$ 41.26	30.25
REPAINT:		
Bridge.....	\$ 56.06	35.60
Brush, Taper.....	\$ 37.92	30.25
Spray, Sandblast.....	\$ 39.32	30.25

PAIN0035-015 01/01/2024

MIDDLESEX (Cambridge, Everett, Malden, Medford, Somerville)
SUFFOLK COUNTY (Boston, Chelsea) NORFOLK COUNTY (Brookline)

	Rates	Fringes
PAINTER		
NEW CONSTRUCTION:		
Brush, Taper.....	\$ 45.56	35.60
Spay, Sandblast.....	\$ 46.96	35.60
Spray, Sandblast.....	\$ 47.05	30.25
REPAINT:		
Bridge.....	\$ 56.06	35.60
Brush, Taper.....	\$ 43.62	35.60
Spray, Sandblast.....	\$ 45.02	35.60

PLAS0534-001 07/01/2023

ESSEX; MIDDLESEX; NORFOLK AND SUFFOLK COUNTY

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER....	\$ 48.19	39.37

PLUM0004-001 03/01/2024

MIDDLESEX (Ashby, Ayer-West of Greenville branch of Boston and
Maine Railroad, Ft. Devens, Groton, Shirley, Townsend)

	Rates	Fringes
Plumbers and Pipefitters.....	\$ 53.95	28.42

PLUM0012-001 03/03/2024

ESSEX (Ames, Andover, Beverly, Boxford, Byfield, Danvers, Essex, Georgetown, Gloucester, Groveland, Hamilton, Haverhill, Ipswich, Lawrence, Manchester, Marblehead, Merrimac, Methuen, Middleton, Newbury, Newburyport, North Andover, Peabody, Rockport, Rowley, Salem, Salisbury, Topsfield, Wenham, West Newbury)

	Rates	Fringes
PLUMBER.....	\$ 67.74	35.03

PLUM0012-003 03/03/2024

ESSEX (Ames, Andover, Beverly, Boxford, Byfield, Danvers, Essex, Georgetown, Gloucester, Groveland, Hamilton, Haverhill, Ipswich, Lawrence, Manchester, Marblehead, Merrimac, Methuen, Middleton, Newbury, Newburyport, North Andover, Peabody, Rockport, Rowley, Salem, Salisbury, Topsfield, Wenham, West Newbury)

	Rates	Fringes
Plumber, Pipefitter, Steamfitter.....	\$ 67.74	35.03

PLUM0012-006 03/03/2024

ESSEX (Lynn, Lynnfield, Nahant, Saugus, and Swampscott); MIDDLESEX (Acton, Arlington, Ashland, Ayer - except W. of Greenville Branch of Boston & Maine RR, Bedford, Belmont, Billerica, Boxboro, Burlington, Cambridge, Carlisle, Chelmsford, Concord, Dracut, Dunstable, Everett, Framingham, Hudson, Holliston, Hopkinton, Lexington, Lincoln, Littleton, Lowell, Malden, Marlboro, Maynard, Medford, Melrose, Natick, Newton, North Reading, Pepperell, Reading, Sherborn, Somerville, Stoneham, Stow, Sudbury, Tewksbury, Tyngsboro, Wakefield, Waltham, Watertown, Wayland, Westford, Wilmington, Winchester, Woburn); NORFOLK (Bellingham, Braintree, Brookline, Canton, Cohasset, Dedham, Dover, Foxboro, Franklin, Medfield, Medway, Millis, Milton, Needham, Norfolk, Norwood, Plainville, Quincy, Sharon, Walpole, Wellesley, Westwood, Weymouth, Wrentham); PLYMOUTH (Hingham, Hull, Scituate); SUFFOLK

	Rates	Fringes
PLUMBER.....	\$ 67.74	35.03



PLUM0051-005 09/01/2018

BARNSTABLE; BRISTOL; DUKES; NANTUCKET; NORFOLK (Avon, Holbrook, Randolph, Stoughton) PLYMOUTH (Remainder of County)

	Rates	Fringes
Plumbers and Pipefitters.....	\$ 42.04	29.91

PLUM0537-001 09/01/2023

MIDDLESEX (Arlington, Cambridge, Everett, Malden, Medford, Melrose, Reading, Wakefield, Winchester and Woburn); NORFOLK (Bellingham, Braintree, Brookline, Canton Cashasset, Dedham, Foxboro, Franklin, Millis, Milton, Sharon, Walpole, Westwood, and Wrentham); PLYMOUTH (Hingham, Hull, Scituate); ESSEX (Ames, Andover, Beverly, Boxford, Byfield, Danvers, Essex, Georgetown, Gloucester, Groveland, Hamilton, Haverhill, Ipswich, Lawrence, Lynn, Lynnfield, Manchester, Marblehead, Merrimac, Methuen, Middleton, Nahant, Newbury, Newburyport, North Andover, Peabody, Rockport, Rowley, Salem, Salisbury, Saugus, Swampscott, Topsfield, Wenham, West Newbury)

	Rates	Fringes
PIPEFITTER.....	\$ 63.48	36.67

TEAM0379-001 06/01/2023

	Rates	Fringes
Truck drivers:		
Group 1.....	\$ 38.78	31.86+a+b
Group 2.....	\$ 38.95	31.86+a+b
Group 3.....	\$ 39.02	31.86+a+b
Group 4.....	\$ 39.14	31.86+a+b
Group 5.....	\$ 39.24	31.86+a+b
Group 6.....	\$ 39.53	31.86+a+b
Group 7.....	\$ 39.82	31.86+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.

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

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

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

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

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

Survey Rate Identifiers

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

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

Union Average Rate Identifiers

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

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

State Adopted Rate Identifiers

Classifications listed under the "SA" identifier indicate that the prevailing wage rate set by a state (or local) government was 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. 01/03/2024 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:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

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

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

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

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

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

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

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

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

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

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END OF GENERAL DECISION

DOCUMENT A00801

SPECIAL PROVISIONS**PLYMPTON****Federal Aid Project No. STP(BR-OFF)-003S(740)X
Bridge Replacement, P-14-001 (445),
Winnetuxet Road over Winnetuxet River**

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 *2024 Standard Specifications for Highways and Bridges*, the *Supplemental Specifications* contained in this book, the *2017 Construction Standard Details*, the *Traffic Management Plans and Detail Drawings*, *MassDOT Work Zone Safety Temporary Traffic Control*, 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 American Standard for Nursery Stock*; the Plans and these Special Provisions.

The work under this Contract includes the replacement of the existing bridge (Bridge No. P-14-001 (445)) over the Winnetuxet River. The existing timber superstructure and pier shall be demolished and removed. The existing stone abutments shall be retained, with new concrete abutments constructed behind them, using drilled shafts. A new concrete beam bridge with paved deck shall be constructed. Bridge rail and guardrail shall be timber.

Permanent utility relocation including one new utility pole and guy and one relocated utility pole and guy will be performed by others. The existing aerial utilities that cross diagonally over the bridge will be relocated to the west, parallel to the bridge, to allow sufficient space for drilling equipment and crane construction. Permanent public utilities easements are included for this work.

Supplementary work includes new drainage structures (3) and ductile iron drain pipe, full depth pavement at approaches and fine milling and overlay at transitions, asphalt berm, removal of one large tree, tree trimming, grading, and erosion control. No wetland impacts are proposed.

A full road closure and detour are proposed to be implemented during construction. Typical work hours will be 7 a.m. to 3:30 p.m. Some work may vary depending on construction operations between 7 a.m. to 7 p.m. Work is restricted to a normal 8-hour day, 5-day week Monday to Friday, with the Contractor and all Subcontractors working the same shift. No work shall be done on Saturdays, Sundays, holidays, or the day before or after a holiday without prior approval of the Engineer. Night work will not be allowed.

SUBSECTION 7.05 INSURANCE REQUIREMENTS

B. Public Liability Insurance

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

Paragraphs 1 and 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 project file number and municipality is to be placed in the subject line.

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.

NORTHERN LONG-EARED BAT PROTECTION

The U.S. Fish and Wildlife Service (USFWS) has listed the northern long-eared bat (NLEB) as endangered under the Endangered Species Act (ESA) and the following requirements exist to protect the bat and its habitat. This project has been consulted with the USFWS through the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), and Federal Transit Administration (FTA) Programmatic Biological Opinion for Transportation Projects in the Range of the Indiana Bat and Northern Long-Eared Bat revised February 5, 2018.

On June 15-19, 2022, BSC Group, on behalf of MassDOT Highway Division Environmental Services, conducted a northern long-eared bat summer presence/absence survey using acoustic detection methods, in accordance with the 2022 survey guidelines. The survey did not detect northern long-eared bat, and as stated within the survey guidelines, the survey is valid for five years. Due to the 5-year validity of the negative presence/absence survey, it is recommended that the contractor conduct all activities that could result in stressors to the bats such as tree removal/trimming, bridge and/or structure removal/maintenance, lighting, or use of percussive, by June 15, 2027. If additional stressor producing work is proposed by the Contractor past this date, additional review is required by the MassDOT Highway Division's Environmental Services Section, and additional review and restrictions may be required by the USFWS.

Due to the negative survey results, the project is eligible for a May Affect, Not Likely to Adversely Affect (NLAA) determination, without Avoidance and Minimizations Measures (AMMs), in accordance with the FHWA, FRA and FTA Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat. On behalf of FHWA, the lead federal agency for Section 7 consultation, MassDOT submitted a Programmatic Consultation for Transportation Projects affecting NLEB or Indiana Bat to the USFWS through the Information for Planning and Consultation (IPaC) webpage and generated a NLAA documentation letter (see Document USFWS NLAA). Therefore, the project has completed Section 7 consultation through the Endangered Species Act, and no AMMs apply to the project.

General AMM

- The Contractor shall ensure all personnel working in on the project site are aware of all environmental commitments related to NLEB, including all applicable AMMs. NLEB Bat information (<https://www.fws.gov/midwest/endangered/mammals/nleb/>) shall be made available to all personnel.

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.

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 5 Highway Director and Resident Engineer in writing at least 60 days prior to desire commencement of the proposed activity. All environmental submittals, including any Contract with Local, State, or Federal environmental agencies, must be coordinated with the District 5 Environmental Engineer. The Contractor is expected to fully cooperate with requests for information and provide same in a timely manner. The Contractor is further advised that the Department will not entertain a delay claim due to the time required to obtain the environmental permits.

CONTAMINATED SOIL

Soil to be removed from the project area shall not be assumed to be uncontaminated and must be evaluated prior to off-site management for potential contamination with hazardous materials. No soil may be disposed of off-site without proper assessment by the Contractor and approval from the Resident Engineer (RE), District Environmental Engineer (DEE), or the project designee.

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.

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.

HOLIDAY WORK RESTRICTIONS

(Supplementing Subsection 7.09)

The District Highway Director (DHD) may authorize work to continue during these specified time periods if it is determined by the District that the work will not negatively impact the traveling public. DHD may allow work in those areas on a case by case basis and where work is behind barrier and will not impact traffic

Below are the holiday work restrictions:

New Years Day (Federal Holiday)

No work on major arterial roadways from 5:00 AM on the day before until the normal start of business on the next subsequent business day. No work on local roadways on the holiday without permission by the DHD and the local police chief.

Martin Luther King's Birthday (Federal Holiday)

No work restrictions due to traffic concerns, however work on local roadways requires permission by the DHD and local police chief.

President's Day (Federal Holiday)

No work restrictions due to traffic concerns, however work on local roadways requires permission by the DHD and local police chief.

Evacuation Day (Suffolk County State Holiday)

No work restrictions due to traffic concerns.

Patriot's Day (State Holiday)

Work restrictions will be in place for Districts 3 and 6 along the entire Boston Marathon route and any other locations that the DHD in those districts determine are warranted so as 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.

HOLIDAY WORK RESTRICTIONS (Continued)

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.

EVERSOURCE EMERGENCY TELEPHONE NUMBERS

GAS:

Outage/ Emergency: 800-592-2000

New Service: 866-678-2744

Customer Support: 800-592-2000

ELECTRIC:

Outage/ Emergency: 800-592-2000 or 844-726-7562

New Service: 1-888-633-3797 (1-888-need pwr)

Customer Support: 1-800-340-9822

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 in the project vicinity of the Contractor's intention to commence operations affecting such utilities at least two weeks in advance of the commencement of such operations, and the Contractor shall at that time file a copy of such notice with the Engineer.

The Contractor shall also be responsible for notifying the Town of Plympton, in writing, at least two weeks in advance of commencement of work. The Contractor shall also coordinate with the Town, as required, throughout the duration of the project.

The Contract Plans indicate the approximate location of known utilities in the vicinity of the work. The accuracy and completeness of the information is not guaranteed. The Contractor shall make his own investigation to assure that no damage to existing structures, drainage lines, traffic signal conduits, and other utilities will occur as a result of construction operations.

Any damage to these utilities caused by negligence of the Contractor shall be repaired by the Contractor at their own expense and as accepted by the Engineer.

It is the intent of these Special Provisions that the Contractor having been given due notice hereof will safeguard the utilities during construction and shall assume liability for damage, relieving the Town of Plympton and MassDOT from any liability.

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 5

Select the Town of PLYMPTON 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.

The Contractor shall inform the following officials in each area that he is assigned to work in:

Superintendent, Department of Public Works, or Town Engineer. Superintendent, Water Department, Superintendent, Sewer Departments. Police Department, Fire Department, Electric Company, Railroads.

NOTICE TO OWNERS OF UTILITIES (Continued)

The following website lists the names and addresses of the utilities presumed to be affected, but the completeness of the list is not guaranteed:

<https://hwy.massdot.state.ma.us/webapps/utilities/select.asp?t=PLYMPTON&d=5&c=241>

PLYMPTON - Pole Data

<u>Municipality</u>	<u>Pole Set Responsibility</u>	<u>Updated</u>
PLYMPTON	Eversource	1/11/2018

District Utility/Constructability Engineer

<u>County</u>	<u>District</u>	<u>Contact</u>	<u>Phone</u>	<u>Email</u>
Plymouth	5	Christopher Lockett	857-368-5073	Christopher.lockett@state.ma.us

Utility Data
Electric

<u>Company</u>	<u>Address</u>	<u>City</u>	<u>State</u>	<u>Zip</u>	<u>Updated</u>
Eversource Electric "B"	50 Duchaine Blvd.	New Bedford	MA	01745	

<u>Contact</u>	<u>Office</u>	<u>Email</u>
Ned Sadowski		ned.sadowski@eversource.com

Gas

<u>Company</u>	<u>Address</u>	<u>City</u>	<u>State</u>	<u>Zip</u>	<u>Updated</u>
Eversource Gas	995 Belmont St.	Brockton	MA	02301	1/8/2021

<u>Contact</u>	<u>Office</u>	<u>Extension</u>	<u>Email</u>
Brendan Pitts	508-895-4818		brendan.pitts@Eversource.com

Telephone

<u>Company</u>	<u>Address</u>	<u>City</u>	<u>State</u>	<u>Zip</u>	<u>Updated</u>
Verizon	385 Myles Standish Blvd.	Taunton	MA	02780	11/8/2013

<u>Contact</u>	<u>Office</u>	<u>Extension</u>	<u>Email</u>
Karen Mealey	774-409-3160		karen.m.mealey@verizon.com

NOTICE TO OWNERS OF UTILITIES (Continued)**Cable**

<u>Company</u>	<u>Address</u>	<u>City</u>	<u>State</u>	<u>Zip</u>	<u>Updated</u>
Comcast Cable Corporation	PO Box 6505, 5 Omni Way	Chelmsford	MA	01824	8/8/2018

<u>Contact</u>	<u>Office</u>	<u>Extension</u>	<u>Email</u>
Wendy Brown	978-848-5163		Wendy_Brown@comcast.com

<u>Company</u>	<u>Address</u>	<u>City</u>	<u>State</u>	<u>Zip</u>	<u>Updated</u>
Eversource Fiber	247 Station Drive, Mail Stop: SUM SE 320	Westwood	MA	02090	8/1/2018

<u>Contact</u>	<u>Office</u>	<u>Extension</u>	<u>Email</u>
Bechir Khoury	781-441-3864		bechir.khoury@eversource.com

DPW

<u>Company</u>	<u>Address</u>	<u>City</u>	<u>State</u>	<u>Zip</u>	<u>Updated</u>
Plympton Hwy. Dept.	P.O. Box 181	Plympton	MA	02367	

<u>Contact</u>	<u>Office</u>	<u>Extension</u>	<u>Email</u>
Jim Mulcahy	781-585-3703		

Other

<u>Company</u>	<u>Address</u>	<u>City</u>	<u>State</u>	<u>Zip</u>	<u>Updated</u>
Open Cape	PO Box 1148	Barnstable	MA	02630-2148	

<u>Contact</u>	<u>Office</u>	<u>Extension</u>	<u>Email</u>
Gary Farrenkopf			info@opencape.org

<u>Company</u>	<u>Address</u>	<u>City</u>	<u>State</u>	<u>Zip</u>	<u>Updated</u>
Verizon Wireless Small Cell	20 Alexander Drive	Wallingford	CT	06492	10/27/2022

<u>Contact</u>	<u>Office</u>	<u>Extension</u>	<u>Email</u>
Liz Glidden			elizabeth.glidden@verizonwireless.com

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 (Pub. L. No. 117-58, §§ 70901-52). 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 the cost of the components of the manufactured product that are mined, produced, or manufactured in the United States is greater than 55 percent of the total cost of all components of the manufactured product, unless another standard for determining the minimum amount of domestic content of the manufactured product has been established under applicable law or regulation; and
- (3) all construction materials are manufactured in the United States—this means that all manufacturing processes for the construction material occurred in the United States. “Construction materials” includes an article, material, or supply—other than an Item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives—that is or consists primarily of:
 - non-ferrous metals,
 - plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables),
 - glass (including optic glass),
 - lumber; or
 - drywall.

The Buy America preference only applies to articles, materials, and supplies that are consumed in, incorporated into, or affixed to an infrastructure project. As such, it does not apply to tools, equipment, and supplies, such as temporary scaffolding, brought to the construction site and removed at or before the completion of the infrastructure project. Nor does a Buy America preference apply to equipment and furnishings, such as movable chairs, desks, and portable computer equipment, that are used at or within the finished infrastructure project but are not an integral part of the structure or permanently affixed to the infrastructure project.

NOTE: The requirements for manufactured products indicated in paragraph (2) above are not in effect for this contract.

SUBSECTION 8.14 UTILITY COORDINATION, DOCUMENTATION, AND MONITORING RESPONSIBILITIES

A. GENERAL

In accordance with the provisions of Section 8.00 Prosecution and Progress, utility coordination is a critical aspect to this Contract. This section defines the responsibility of the Contractor and MassDOT, with regard to the initial utility relocation plan and changes that occur as the prosecution of the Work progresses. The Engineer, with assistance from the Contractor shall coordinate with Utility companies that are impacted by the Contractor's operations. To support this effort, the Contractor shall provide routine and accurate schedule updates, provide notification of delays, and provide documentation of the steps taken to resolve any conflicts for the temporary and/or permanent relocations of the impacted utilities. The Contractor shall provide copies to the Engineer of the Contractor communication with the Utility companies, including but not limited to:

- Providing advanced notice, for all utility-related meetings initiated by the Contractor.
- Providing meeting minutes for all utility-related meetings that the Contractor attends.
- Providing all test pit records.
- Request for Early Utility work requirements of this section (see below).
- Notification letters for any proposed changes to Utility start dates and/or sequencing.
- Written notification to the Engineer of all apparent utility delays within seven (7) Calendar Days after a recognized delay to actual work in the field – either caused by a Utility or the Contractor.
- Any communication, initiated by the Contractor, associated with additional Right-of-Way needs in support of utility work.
- Submission of completed Utility Completion Forms.

B. PROJECT UTILITY COORDINATION (PUC) FORM

The utility schedule and sequence information provided in the Project Utility Coordination Form (if applicable) is the best available information at the time of the bid and has been considered in setting the contract duration. The Contractor shall use all of this information in developing the bid price and the Baseline Schedule Submission, inclusive of the individual utility durations sequencing requirements, and any work that has been noted as potentially concurrent utility installations.

C. INITIATION OF UTILITY WORK

The Engineer will issue all initial notice-to-proceed dates to each Utility company based on either the:

- 1) Contractor's accepted Baseline Schedule
- 2) An approved Early Utility Request in the form of an Early Utility sub-net schedule (in accordance with the requirements of this Subsection)
- 3) An approved Proposal Schedule

C.1 - BASELINE SCHEDULE – UTILITY BASIS

The Contractor shall provide a Baseline Schedule submission in accordance with the requirements of Subsection 8.02 and inclusive of all of the information provided in the PUC Form that has been issued in the Contract documents. This is to include the utility durations, sequencing of work, allowable concurrent work, and all applicable considerations that have been depicted on the PUC Form.

SUBSECTION 8.14 (Continued)**C.2 – EARLY UTILITY REQUEST – (aka SUBNET SCHEDULE) PRIOR TO THE BASELINE**

All early utility work is defined as any anticipated/required utility relocations that need to occur prior to the Baseline Schedule acceptance. In all cases of proposed early utility relocation, the Contractor shall present all known information at the pre-construction conference in the form of a ‘sub-net’ schedule showing when each early utility activity needs to be issued a notice-to-proceed. The Contractor shall provide advance notification of this intent to request early utility work in writing at or prior to the Pre-Construction meeting. Prior to officially requesting approval for early utility work, the Contractor shall also coordinate with MassDOT and all utility companies (private, state or municipal) which may be impacted by the Contract. If this request is acceptable to the Utilities and to MassDOT, the Engineer will issue a notice-to-proceed to the affected Utilities, based on these accepted dates.

C.3 – PROPOSAL SCHEDULE - CHANGES TO THE PUC FORM

If the Contractor intends to submit a schedule (in accordance with MassDOT Standard Specifications, Division I, Subsection 8.02) that contains durations or sequencing that vary from those provided in the Project Utility Coordination (PUC) Form, the Contractor must submit this as an intended change, in the form of a Proposal Schedule and in accordance with MassDOT Standard Specifications, Division I, Subsection 8.02. These proposed changes are subject to the approval of the Engineer and the impacted utilities, in the form of this Proposal Schedule and a proposed revision to the PUC form. The Contractor shall not proceed with any changes of this type without written authorization from the Engineer, that references the approved Proposal Schedule and PUC form changes. The submission of the Baseline Schedule should not include any of these types of proposed utility changes and should not delay the submission of the Baseline Schedule. As a prerequisite to the Proposal Schedule submission, and in advance of the utility notification(s) period, the Contractor shall coordinate the proposed utility changes with the Engineer and the utility companies, to develop a mutually agreed upon schedule, prior to the start of construction.

D. UTILITY DELAYS

The Contractor shall notify the Engineer upon becoming aware that a Utility owner is not advancing the work in accordance with the approved utility schedule. Such notice shall be provided to the Engineer no later than seven (7) calendar days after the occurrence of the event that the Contractor believes to be a utility delay. After such notice, the Engineer and the Contractor shall continue to diligently seek the Utility Owner’s cooperation in performing their scope of Work.

In order to demonstrate that a critical path delay has been caused by a third-party Utility, the Contractor must demonstrate, through the requirements of the monthly Progress Schedule submissions and the supporting contract records associated with Subsection 8.02, 8.10 and 8.14, that the delays were beyond the control of the Contractor.

SUBSECTION 8.14 (Continued)

All documentation provided in this section is subject to the review and verification of the Engineer and, if required, the Utility Owner. In accordance with MassDOT Specifications, Division I, Subsection 8.10, a Time Extension will be granted for a delay caused by a Utility, only if the actual duration of the utility work is in excess of that shown on the Project Utility Coordination Form, and only if;

- 1) proper Notification of Delay was provided to MassDOT in accordance with the time requirements that are specified in this Section
- 2) the utility delay is a critical path impact to the Baseline Schedule (or most recently approved Progress Schedule)

E. LOCATION OF UTILITIES

The locations of existing utilities are shown on the Contract drawings as an approximation only. The Contractor shall perform a pre-construction utility survey, including any required test pits, to determine the location of all known utilities no later than thirty (30) calendar days before commencing physical site work in the affected area.

F. POST UTILITY SURVEY – NOTIFICATION

Following completion of a utility survey of existing locations, the Contractor will be responsible to notify the Engineer of any known conflicts associated with the actual location of utilities prior to the start of the work. The Engineer and the Contractor will coordinate with any utility whose assets are to be affected by the Work of this Contract. A partial list of utility contact information is provided in the Project Utility Coordination Form.

G. MEETINGS AND COOPERATION WITH UTILITY OWNERS

The Contractor shall notify the Engineer in advance of any meeting they initiate with a Utility Owner's representative to allow MassDOT to participate in the meeting if needed.

Prior to the Pre-Construction Meeting, the Contractor should meet with all Utility Owners who will be required to perform utility relocations within the first 6 months of the project, to update the affected utilities of the Project Utility Coordination Form and all other applicable Contract requirements that impact the Utilities. The Contractor shall copy the Engineer on any correspondence between the Utility Owner and the Contractor.

H. FORCE ACCOUNT / UTILITY MONITORING REQUIREMENTS

The Engineer will be responsible for recording daily Utility work force reports. The start, suspension, re-start, and completion dates of each of the Utilities, within each phase of the utility relocation work, will be monitored and agreed to by the Engineer and the Contractor as the work progresses.

I. ACCESS AND INSPECTION

The Contractor shall be responsible for allowing Utility owners access to their own utilities to perform the relocations and/or inspections. The Contractor shall schedule their work accordingly so as not to delay or prevent each utility from maintaining their relocation schedule.

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.

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 when required in this Subsection. These requirements are in addition to, and not in limitation of, requirements imposed in other sections.

The requirements for scheduling submissions are established based on the Project Value at the time of the bid and are designated as Type A, B, C or D. The definitions of these Schedule Requirement Types are summarized below. Complete descriptions of all detailed requirements are established elsewhere in this specification.

Type A – for all Site-Specific Contracts with a Project Value over \$20 Million

- Schedule Planning Session
- Baseline CPM Schedule
- Monthly Update CPM Schedule
- Short-term Construction Schedule
- Contract Schedule Update Meeting
- Resource-Loading
- Resources Graphic Reporting
- Cash Flow Projections from the CPM
- Cash Flow Charts
- Cost-loaded CPM
- Contractor-furnished CPM software, computer and training

SECTION 722 (Continued)

Type B – for all Site-Specific Contracts with a Project Value between \$10 Million and \$20 Million

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

Type C – for all Site-Specific Contracts with a Project Value between \$3 Million and \$10 Million

- 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, computer and training

Type D - for all contracts with a Project Value less than \$3 Million; various locations contracts of any dollar amount; contracts with durations less than one-hundred and eighty (180) Calendar Days; and other contracts as determined by the Engineer.

- Bar chart schedule updated monthly or at the request of the Engineer (See Section 722.62.B - Bar Charts.)
- Monthly Projected Spending Report (PSR) (See Section 722.62.F - Projected Spending Reports.)

MATERIALS, EQUIPMENT, PERSONNEL**722.40 General****A. Software Requirements** (Types A, B and C)

The Contractor shall use Primavera P6 computer scheduling software.

In addition to the requirements of Subsection 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 within twenty-eight (28) Calendar Days after Notice to Proceed. The computer and software shall be maintained and serviced as recommended by the computer manufacturer and/or as required by the Engineer during the duration of the Contract at no additional cost to the Department. The Contractor shall provide professional training in the basic use of the software for up to eight (8) Department employees. The trainer shall be approved by the Engineer. This training shall be provided within twenty-eight (28) Calendar Days after Notice to Proceed.

SECTION 722 (Continued)**B. Scheduler Requirements**

For all schedule types, if the Contractor plans to use outside scheduling services, the scheduler shall be approved as a Sub-Contractor 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.

CONSTRUCTION METHODS**722.60 General****A. Schedule Planning Session**

(Types A, B and C)

The Contractor shall conduct a schedule planning session within seven (7) Calendar Days after the Contractor receives the NTP and 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;
- 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 minimum of five (5) copies of 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.

SECTION 722 (Continued)**B. Schedule Reviews by the Department (All Types)**

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. Baseline Schedules shall be resubmitted within fifteen (15) Calendar Days after receipt of the Engineer's comments.

2. Contract Progress Schedule / Monthly Update Reviews

The Engineer will respond to each submittal within twenty-one (21) Calendar Days. Schedules shall be resubmitted by the Contractor within five (5) Calendar Days after receipt of the Engineer's comments.

Failure to submit schedules as and when required could result in the withholding of full or partial pay estimate payments by the Engineer.

722.61 Schedule Content and Preparation Requirements
(Types A, B and C unless otherwise noted)

Each Contract Progress Schedule shall fully conform to these requirements.

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.

B. ACTIVITIES

The schedules shall clearly define the progression of the Work from NTP to Contractor Field Completion (CFC) by using separate activities for each of the following Items:

1. NTP
2. Each component of the Work defined by specific activities
3. Detailed activities to satisfy permit requirements
4. Procurement of fabricated materials and equipment with long lead times, including time for review and approval of submittals required before purchasing
5. 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
6. 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
7. Interfaces with adjacent work, utility companies, other public agencies, sensitive abutters, and/or any other third-party work affecting the Contract

SECTION 722 (Continued)

8. The Critical Path, clearly defined and organized
9. Float shall be clearly identified
10. 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
11. Milestones listed in Subsection 8.03 - Prosecution of Work or elsewhere in the Contract Documents
12. Sub-Contractor approvals at fifteen (15) Calendar Days from submittal to response
13. Full Beneficial Use (FBU) Contract Milestone per the requirements of Subsection 8.03 - Prosecution of Work
14. Contractor's request for validation of FBU (ready to open to traffic)
15. The Department's confirmation of completed work to allow for FBU
16. Substantial Completion Contract Milestone per the requirements of Subsections 7.15 - Claims Against Contractors for Payment of Labor, Materials and Other Purposes and 8.03 - Prosecution of Work
17. Contractor's request for validation of Substantial Completion
18. Punchlist 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 and 8.03 - Prosecution of Work
19. Contractor confirmation that all punch list work and documentation has been completed
20. Physical Completion of the Work Contract Milestone per the requirements of Subsections 5.11 - Final Acceptance and 8.03 - Prosecution of Work
21. Documentation Completion per the requirements of Subsections 5.11 - Final Acceptance and 8.03 - Prosecution of Work
22. Contractor Field Completion Contract Milestone per the requirements of Subsections 5.11 - Final Acceptance and 8.03 - Prosecution of Work
23. Utility work to be performed in accordance with the Project Utility Coordination (PUC) Form as provided in Subsection 8.14 - Utilities Coordination, Documentation and Monitoring Responsibilities
24. Traffic work zone set-up and removal, night work and phasing
25. Early Utility Relocation (by others) that has been identified in the Contract
26. Right-of-Way (ROW) takings that have been identified in the Contract
27. Material Certifications
28. Work Breakdown Structure in accordance with the MassDOT-Highway Division Contractor Construction Schedule Toolkit located on the MassDOT-Highway Division website at:
<https://www.mass.gov/info-details/massdot-highway-Contractors-schedule-toolkit>
29. For Type A and B Contracts only: All Items to be paid, 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)**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 to 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.

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 (for Types A and B only)

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 as specified in the MassDOT-Highway Division Contractor Construction Schedule Toolkit located on the MassDOT-Highway Division website at:

<https://www.mass.gov/info-details/massdot-highway-Contractors-schedule-toolkit>

G. ACTIVITY IDENTIFICATION NUMBERS

The Contractor shall use the activity identification numbering system specified in the MassDOT-Highway Division Contractor Construction Schedule Toolkit located online at the address above.

H. ACTIVITY CODES

The Contractor shall use the activity codes specified in the MassDOT-Highway Division Contractor Construction Schedule Toolkit located online at the address above.

SECTION 722 (Continued)**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.

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.
- 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. Refer to the Project Special Provisions for specific restrictions.
- 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. Refer to the Project Special Provisions for specific restrictions.
- 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: Refer to the Project Special Provisions for specific restrictions.
- Night-time paving and striping operations, traffic and temperature restrictions: Refer to the Project Special Provisions for specific 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.

SECTION 722 (Continued)

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.
8. For Type A Schedules, each month, the Contractor will be paid using the Cost-loaded CPM activities for LUMP SUM payment Items. This requirement supersedes any requirements elsewhere in this Contract regarding partial payments of schedule-of- values for all LUMP SUM Items.

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

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.

SECTION 722 (Continued)

Except as stated elsewhere in this subsection, schedule submittals shall include each of the documents listed below, prepared in two formats, for distribution as follows:

- a. four (4) compact discs (CD); one (1) each for the Office of Project Controls and Performance Oversight (O-PC&PO), the Boston Construction Section Office, the District Construction Office and the Resident Engineer's Office. Additional copies shall be required if the work is performed in more than one district.
- b. two (2) hard copies plotted in color on 24" X 36" paper; one (1) copy each for the District Construction Office and the Resident Engineer's Office. No copies for the O-PC&PO and the Boston Construction Section Office. Additional copies shall be required if the work is performed in more than one district.

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;
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;

SECTION 722 (Continued)

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.

B. Bar Charts (Types A, B, C and D)

One (1) time-scaled 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 high-lighted and Total Float shall be shown for all activities.

A second time-scaled 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.

Bar Charts shall be printed in color and submitted on 11" X 17" paper or, if approved by the Engineer, as a .pdf file.

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. The DASC 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>

The reports described in Subsections D, E and F below shall be submitted with all of the schedules listed in Subsection 722.20 - General:

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.

For Unit Price pay Items, in addition to the above, estimates to complete and any variance to the estimated Contract quantity shall be shown.

SECTION 722 (Continued)**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.

F. Projected Spending Reports (Types B, C and D)

A Projected Spending Report (PSR) shall be prepared and submitted in accordance with the instructions listed at the end of this section. 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. If the difference between the Contractor's monthly projections vs. the actual spending is greater than 10%, the Contractor's monthly spending projection shall be revised and resubmitted within fifteen (15) Calendar Days.

The Projected Spending Report (PSR) shall be depicted in a tabular format and printed in color on 11 x 17-sized paper or larger as approved by the Engineer. For additional instructions and a template for preparing the Projected Spending Report (PSR), refer to the Contractor's Construction Schedule Toolkit located on the MassDOT-Highway Division website at:

<https://www.mass.gov/info-details/massdot-highway-Contractors-schedule-toolkit>

or consult with the District Construction Scheduler.

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.

SECTION 722 (Continued)**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.

C. Contract Progress Schedules / Monthly Updates (Types A, B, C and D)

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 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 as-built sequencing and as-built dates for completed and in-progress activities. As-built 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.

Except as otherwise designated by a Contract Modification, no Contract Progress Schedule that extends performance beyond the Contract Time and/or beyond any Contract Milestone shall be approved by the Engineer. The Contractor shall submit a Recovery Schedule 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 bar chart 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.

Failure to submit Short-Term Construction Schedules every two (2) weeks may result in withholding of full or partial payments by the Engineer.

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 three (3) Calendar Days 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 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 Sub-sections 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 fourteen (14) 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 most efficiently demonstrate the schedule impacts 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 resource 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/Contract Progress Schedule.

C. Recovery Schedules

The Contractor shall promptly report to the Engineer all schedule delays during the prosecution of the Work. Except as otherwise designated by a Contract Modification, no Contract Progress Schedule that extends performance beyond the Contract Time and/or beyond any Contract Milestone shall be approved by the Engineer. The Contractor shall submit a Recovery Schedule within fourteen (14) Calendar Days of a Contract Progress Schedule submission that shows failure to meet the Contract Dates. This requirement is critical to the Department's ability to make informed decisions regarding Contract Time and costs.

SECTION 722 (Continued)

During the prosecution of the Work, should the Contractor's progress on a critical operation clearly not meet anticipated production, without cause by fault of the Department, or should a critical activity or series of activities not be staffed in accordance with the Contractor's approved Baseline Schedule resource planning, the Contractor shall be obligated to recover such delay. Recovery Schedules shall be prepared and submitted in accordance with Subsections 722.61 - Schedule Content and Preparation Requirements and 722.62 - Submittal Requirements within fourteen (14) Calendar Days of any of the cases listed above.

Recovery Schedules shall clearly indicate any proposed overtime hours, additional shifts, and the resources that are proposed to be incorporated in to the schedule. The Engineer shall have final discretion over the use of overtime hours and additional shifts and shall have the right to require that overtime hours and/or additional shifts be used to minimize the duration of Time Extensions, without additional compensation for any Contractor delays, if it is determined to be in the best interest of the Department to do so.

During the review of any Recovery Schedule, all Contract Progress Schedules shall continue to be required every month.

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

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

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/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 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.

Changes represented in 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.

SECTION 722 (Continued)**E. Disputes (Types A, B, C and D)**

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.

Any dispute concerning the acceptance of a schedule or any other question of fact arising under this subsection shall be determined by the Engineer. Pending resolution of any dispute, the last schedule accepted by the Engineer will remain the Contract Schedule of Record.

COMPENSATION**722.80 Method of Measurement and Basis of Payment** (Types A, B, C and D)

The Special Provisions will specify the fixed-price amount to be paid to the Contractor for the Project Schedule requirements contained herein. Each bidder shall include this lump-sum, fixed-price bid Item amount in his/her bid. Failure to do so may be grounds for the rejection of the bid.

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.

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.

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:

$$\text{Monthly Payment} = \frac{\text{Remaining Fixed Price amount (80\% of Item 100.)}}{\text{Contract Duration in whole months} - 2 \text{ months}}$$

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.

SECTION 722 (Continued)

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. Late submittal of missed Contract Progress Monthly Updates 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 withholding of full or partial payments by the Engineer.

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. Item 100. will be the basis for this Equitable Adjustment.

722.82 Payment Items

100. SCHEDULE OF OPERATIONS - FIXED PRICE \$ _____ LUMP SUM

ITEM 102.2**TREE TRIMMING****LUMP SUM**

Tree trimming shall conform to the relevant provisions of Subsections 8.08 and 101 of the Standard Specifications and the following:

Work shall consist of removing all living, dead, dying, broken and certain other limbs and branches in areas adjacent to proposed overhead wire relocations, highway lighting, traffic signals, traffic signage, and other areas as described on the plans, as required by the Engineer.

Tree trimming shall be done as directed by the Engineer. Any tree trimming for overhead wire relocations shall meet the current requirements of each Utility. Prior to commencing work the Contractor shall verify each location with the Utility Companies.

All pruning and tree work shall be in conformance with the most current version of the American National Standards Institute (ANSI) Standard Z-133.1 and A300 Standard Practices for Tree, Shrub, and Other Woody Plant Maintenance.

All tree trimming work within 5 feet of energized power lines and equipment shall be in conformance with the most current version of the United States Department of Labor (DOL) OSHA Standard 1910.269(r) along with subsections (1) through (8).

All work under this Item will be performed or supervised by a Massachusetts Certified Arborist.

Contractor shall be required to provide a crew, consisting of a bucket truck with operator and groundsman for pruning and removal. The minimum crew shall consist of the following: a supervisor and three tree-trimmers/laborers. The crew shall be equipped with all necessary equipment needed to complete the work including, but not limited to, pickup trucks, chippers, gas powered chain saws, hand saws, loppers, shears, pruners, branch trimmers, ladders, tree-climbing equipment, etc. Fuel for equipment shall also be considered incidental to this Item. The crew shall be OSHA certified as line-clearance tree trimmers to work within 5 feet of energized power lines and equipment.

SUBMITTALS

Prior to start of work, the Contractor shall submit to the Engineer the name, certification number and resume of the Massachusetts Certified Arborist referenced herein. Cost for Certified Arborist for all activities pertaining to this Item shall be incidental to this Item.

Also incidental to this Item, the Contractor shall provide the Engineer with one (1) copy of the most current version of the American National Standards Institute (ANSI) Standard Z-133.1 and A300 Standard Practices for Tree, Shrub, and Other Woody Plant Maintenance, Part 1: Pruning. These references shall be kept by the Engineer at his/her office for the length of the Contract.

Prior to start of work, the Contractor shall coordinate with the MassDOT Landscape Design Section, the Electric Utility Company, and the Utility Company with pole set in the field to confirm number, location, and extent of selective tree trimming.

ITEM 102.2 (Continued)**DESCRIPTION OF WORK**

Line-clearance Tree Trimming: Shall be defined as the pruning, trimming, repairing, maintaining, removing, or clearing of trees or the cutting of brush that is near (within 5 feet of) energized power lines.

TREE: Shall be defined as having a diameter of 4 inches or over, measured at a point 3 feet above the average ground.

LIMBS AND BRANCHES: Shall be defined as wood having a diameter of ½ inch or over and wood that has a diameter of less than ½ inch shall be considered a TWIG.

A DYING LIMB OR BRANCH: May have live growth at some point but shall be removed if found to be in an unhealthy condition.

While it is not the intent that every dead, dying and/or broken twig be removed from trees requiring trimming, the tree worker will be required to remove all such twigs accessible in the areas of the tree in which he/she is working.

If required by the Engineer, specific trees or parts thereof which are so located that damage may result from dropping shall be reduced by rope or cable lowering.

Tree shaping may be required on trees, where up-branching done under this contract has distorted the natural symmetry of the tree. Tree shaping shall consist of the removal of limbs and branches from other locations of the tree where removal is desirable to restore natural symmetry.

All sucker growth on all tree trunks within the limits of the contract shall be removed from the ground level to the beginning of the main branch system.

Any and all trees, branches, or brush conflicting with utility poles, equipment, overhead wires, and service connections, shall be removed and/or cut back using best practices to satisfy the requirements of all Utilities with an attachment to the pole line.

By cutting NEARLY, but not quite, flush with the trunk, limb or branch, the "collar" is left at the top of the wound (in the crotch of the union). This will permit the callus growth to cover the wound in a shorter period of time.

BASIS OF PAYMENT

Item 102.2, Tree Trimming will be paid at the contract LUMP SUM price, which price shall be considered full compensation for all labor, certifications, materials, equipment, apparatus, tools and incidentals necessary for the satisfactory completion of the work.

ITEM 127.1**REINFORCED CONCRETE EXCAVATION****CUBIC YARD**

The work to be done under this Item shall conform to the relevant provisions of Subsection 120 of the Standard Specifications and the following:

The Work consists of furnishing all labor, materials and equipment necessary for the reinforced concrete excavation to the existing substructure for Bridge No. P-14-001 (445) over the Winnetuxet River. This includes removing of the existing cap under the existing timber beams and the demolition of the existing abutments down to the elevations specified on the Drawings.

The Contractor is advised to conduct a field investigation prior to bidding. Contractor shall verify all conditions, dimensions, and materials in the field and shall base his/her bid on his/her own findings without any additional compensation for variances from the Plans or in these Special Provisions regarding actual conditions for the materials to be removed.

The work to be done under this Section shall consist of furnishing all labor, materials, and equipment necessary for the removal and satisfactory disposal of the existing beam seat cap and portion of the existing abutments. No blasting or use of explosives is permitted. The Contractor shall avoid demolition of the existing abutments beyond the limits shown on the Drawings. If the limits shown on the Drawings are exceeded, the Contractor shall rebuild the existing abutment to the original condition at no additional cost.

SUBMITTALS

The Contractor shall submit a demolition plan and schedule to the Engineer for review describing the proposed sequence, method of demolition, and equipment for the demolition and disposal of all materials including checked calculations sufficient to substantiate the adequacy of the proposed method. Requirements shall be similar to those shown for structural steel erection shown in Standard Specifications, Subsection 960.61 D. The procedure and all submissions shall be prepared by a Professional Engineer registered in Massachusetts. This Engineer must be familiar with these specifications, those of the American Association of State Highway and Transportation Officials (AASHTO), the Work, and be experienced in this technical field. All submitted plans and calculations shall be stamped with the seal of a Registered Professional Engineer in the Commonwealth of Massachusetts. Note: Any acceptance or approvals of the above submissions by the Engineer shall not relieve the Contractor from responsibility for all demolition procedures and operations.

Any change to this demolition procedure will require prior review by the Engineer.

The Contractor shall not proceed with demolition until the Engineer has given written acceptance of the demolition plan.

DEMOLITION OF BRIDGE SUBSTRUCTURE

Demolition of the portion of the existing substructure shall be in accordance with the accepted demolition plan.

The Contractor shall furnish all labor, materials, and equipment necessary to remove and legally dispose of the portion of the existing substructure for Bridge No. P-14-001 (445) including the reinforced concrete beam seat caps and the portion of the stone masonry bridge abutments down to the elevation specified on the Drawings, and other incidental Items associated with the existing substructure.

ITEM 127.1 (Continued)

The Massachusetts Department of Transportation does not guarantee or represent that the bridge materials will actually coincide with any descriptions contained herein or represented on the Drawings. The Contractor must visit the bridge site prior to submitting bids to get familiar with the scope of work and bridge condition. No additional compensation, other than the price bid for this Item, shall be made if the materials or work provided is different than that inferred or described herein or shown on the Drawings.

Shop drawings shall be submitted for approval and all shielding shall be approved by the Engineer and installed prior to the start of the demolition of the portion of the substructure specified by these Specifications and on the Drawings.

If the Contractor proposes an alternate method, the Contractor shall submit shop drawings showing complete details of this method along with a detailed plan for traffic control. These drawings and details shall be designed and stamped by a Professional Engineer registered in conformance with the laws of the Commonwealth of Massachusetts. Any material that falls into the channel below shall be immediately removed at the Contractor's expense.

METHOD OF MEASUREMENT

Item 127.1, Reinforced Concrete Excavation will be measured for payment per CUBIC YARD of reinforced concrete excavated, removed and disposed of.

BASIS OF PAYMENT

Item 127.1, Reinforced Concrete Excavation will be paid at the contract unit price per CUBIC YARD, which price constitutes full payment for all labor, materials, transportation, equipment, tools, sawcutting, disposal fees necessary or incidental, and all incidental costs required to complete the work.

The Contractor shall maintain the integrity of the existing structure during all construction stages proposed on the project. All additional work required to maintain the integrity of the structure during construction shall be incidental to the appropriate demolition Item. All work required to rebuild the abutments to the elevations specified in the Drawings shall be incidental to the appropriate demolition Item.

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 Sub-Contractors 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.

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.

ITEM 180.01 (Continued)

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 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 bid price shall include preparation and implementation of the EHASP as well as the cost for its enforcement by the Site Safety and Health Officer along with any necessary revisions and updates. The work of implementing the Environmental Health and Safety Program includes work involving, but not limited to, the monitoring, protection, and storage of all contaminated materials.

ITEM 180.02 **PERSONAL PROTECTION LEVEL C UPGRADE** **HOUR**

The work shall consist of providing appropriate personal protective equipment (PPE) for all personnel in an area either containing or suspected of containing a hazardous environment.

Contingencies for upgrading the level of protection for on-site workers will be identified in the EHASP and the Contractor shall have the capability to implement the personal protection upgrade in a timely manner. The protective equipment and its use shall be in compliance with the EHASP and all appropriate regulations and/or standards for employee working conditions.

METHOD OF MEASUREMENT 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, soils, sediments and/or groundwater may be contaminated. A Licensed Site Professional (LSP) shall be required to provide the services necessary to comply with the requirements of the MCP. These services may include sampling, analysis and characterization of potentially contaminated media, preparation of Immediate Response Action (IRA) Plans, Utility-Related Abatement Measure (URAM) and Release Abatement Measure (RAM) Plans, Imminent Hazard Evaluations, status reports, transmittal forms, release notification forms, risk assessments, completion statements, and related documents required pursuant to the Massachusetts Contingency Plan (MCP). LSP hours related to the characterization and disposal of contaminated soil and/or sediment are incidental to the disposal Items. An estimate of LSP services to be provided shall be submitted to the Engineer for approval before any LSP activity begins.

The name and qualifications of the LSP and all environmental technicians to be assigned to the project shall be submitted to the Engineer for approval at least four weeks prior to initial site activities. The LSP shall have a current, valid license issued by the Massachusetts Board of Registration of Hazardous Waste Site Cleanup Professionals. The LSP shall have significant experience in the oversight of MCP activities at active construction sites. Qualification packages for the LSP and each technician shall include a resume, all recent work assignments with responsibilities identified (previous 5 years), and applicable training and certifications. A list of all Notices of Noncompliance, Notice of Audit Findings and Enforcement Orders issued by the DEP shall be submitted for all work assignments listed for the LSP and environmental technicians.

The LSP shall evaluate soil and/or sediment with discoloration, odor, and presence of petroleum liquid or sheening on the groundwater surface, or any abnormal gas or materials in the ground which are known or suspected to be oil or hazardous materials. Excavated soil and sediment which is suspected of petroleum contamination shall be field screened using the jar headspace procedures according to established DEP Guidance. All field screening equipment must be pre-approved by the Engineer. The LSP shall ensure proper on-site calibration of all field screening instrumentation.

The Engineer shall be contacted immediately when observations or any field screening results verify contamination requiring further analysis, and/or enhanced management of suspect soil and/or sediment. Any enhanced management of contaminated soil to ensure proper stockpiling and storage is incidental to the LSP Services Item. The LSP shall adequately characterize subsurface conditions prior to backfill in areas where contaminated material has been excavated. The Engineer shall approve the locations of the testing sites prior to the sampling.

ITEM 180.03 (Continued)

Contaminated soil, sediment and/or groundwater shall be handled in accordance with all applicable state and federal statutes, regulations and policies. The LSP shall adequately characterize contaminated media for comparison to the requirements of the MCP. The Contractor and the LSP shall be aware of the reporting requirements for releases of oil and/or other hazardous material (OHM) as set forth in federal and state laws and regulations and shall both be held responsible for performing the work in accordance with all applicable Federal and State laws and regulations. The LSP shall maintain written records in a clear and concise format which tracks the excavation, stockpiling, analysis and reuse/disposal of all suspect contaminated soils, sediments and groundwater. These records shall be up-to-date and available to the Engineer on a bi-weekly basis. The LSP shall review and summarize the laboratory data from any analyses performed on contaminated media. A report shall be delivered to the Engineer outlining the material sampling methods, laboratory analysis results and proposed course of action. The laboratory report together with Chain of Custody forms for all analytical results shall be submitted to the Engineer within 14 days after completion of such analyses.

The LSP and Contractor shall be held responsible for the submission of all MCP-related documents to the Engineer at least 14 days in advance of any timeframe specified in the MCP and for the timely submission of data and tracking information as noted within this Item. All documents prepared under this Item must be reviewed and signed by the approved LSP. The Contractor and LSP shall be responsible for all fines, penalties and enforcement requirements imposed by applicable regulatory agencies for failure to meet regulatory and contract timeframes. No compensation will be provided for such fines, penalties and enforcement actions.

The Contractor and the LSP shall be aware of the reporting requirements for releases of oil and/or other hazardous material (OHM) as set forth in federal and state laws and regulations and shall both be held responsible for performing the work in accordance with all applicable Federal and State laws and regulations.

If the Contractor causes a release of OHM, the Contractor shall be responsible for assessing and remediating the release in accordance with all pertinent State and Federal regulations, including securing the services of a LSP, at his own expense.

The LSP shall coordinate all activities involving both MassDOT and the DEP through the Engineer. Any notification of release shall be approved by the Department before submittal to the DEP, except if an imminent hazard condition exists as defined in 309 CMR 4.03(4)(b).

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.

In order to maintain compliance with the MCP or other regulatory requirements, the LSP shall request approval from the Engineer to obtain samples from various locations and depths within the project area and to perform laboratory analyses on those samples. The samples shall be delivered to a DEP-certified laboratory using proper chain-of-custody documentation for analyses which, depending upon site conditions and suspected and/or identified contaminants of concern, may include, but are not limited to, metals, polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs), 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. LSP hours related to soil/sediment disposal (disposal characterization, landfill acceptance, disposal package preparation, etc.) shall be incidental to disposal Items.

The quantity and type of laboratory tests must be approved by the Engineer beforehand. The Contractor will be reimbursed upon satisfactory written evidence of payment. The Contractor may be required to obtain cost estimates from three DEP certified laboratories for the Engineer to choose the service provider. Laboratory testing related to soil/sediment disposal (disposal characterization, landfill acceptance, disposal package preparation, etc.) shall be incidental to disposal Items.

LSP Services will be paid at the Contractor bid price for each hour, or fraction thereof, spent to perform the work as described above. The bid price shall be a blended rate that includes the cost of the LSP, environmental technicians and other personnel, the performance of all work tasks and field screening, including required equipment, materials and instrumentation, and production of all documentation described above. All requests for payment must be accompanied by the following information: the names of the personnel associated with the work charged under LSP Services, dates and hours worked, work conducted, including, where appropriate, locations as identified on the construction plans, and a copy of the field diary for the dates submitted.

Laboratory Testing will be reimbursed upon receipt of paid invoices for testing approved by the Engineer.

<u>ITEM 181.11</u>	<u>DISPOSAL OF UNREGULATED SOIL</u>	<u>TON</u>
<u>ITEM 181.12</u>	<u>DISPOSAL OF REGULATED SOIL - IN-STATE FACILITY</u>	<u>TON</u>
<u>ITEM 181.13</u>	<u>DISPOSAL OF REGULATED SOIL - OUT-OF-STATE FACILITY</u>	<u>TON</u>
<u>ITEM 181.14</u>	<u>DISPOSAL OF HAZARDOUS WASTE</u>	<u>TON</u>

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 penalties and/or for fines, as a result of the Contractor's failure to adhere to the regulations, specifications, recognized standard practices, etc., that relate to contaminated material handling, transportation and disposal.

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 184.1**DISPOSAL OF TREATED WOOD PRODUCTS****TON**

The work under this Item shall apply to the disposal of all treated wood. The timber components of the existing roadway guardrail, bridge deck, center pier, and bridge rail are suspected to be treated with either creosote, pentachlorophenol and/or CCA.

Work shall include all costs for sampling, laboratory testing, loading, transportation and disposal of the treated wood to a waste-to-energy facility that is licensed to burn treated wood. The Contractor is encouraged to: 1) field verify the dimensions of the bridge and timber rail for the purpose of computing an estimate for the weight of timber involved; 2) if necessary, solicit competitive bids from certified analytical laboratories to meet the sampling requirements/frequency of the waste-to-energy facility; 3) solicit competitive recycling bids from a licensed waste-to-energy facility.

The Contractor is required to arrange for the loading and transportation of the treated timber to the waste-to-energy facility at the time of the demolition. The Contractor is required to submit manifests and certificates of destruction to the Engineer prior to the completion of the project. All aspects of this Item are to be completed in accordance with state and federal regulations. Suggested waste-to-energy facilities that accept treated timber include:

Sovereign Environmental Company, Inc.
101 Federal Street, 27th Floor
Boston, MA 02210
(617) 439-0936

FTI Limited Partnership
310 Cottage Road
Lewiston, ME 04240
(207) 783-2941

Maine Energy Recovery Company
P.O. Box 401
Biddeford, ME 04005
(207) 282-4127

Penobscot Energy Recovery Company
Route 15, River Road
P.O. Box 96
Orrington, ME 04474
(207) 825-4566.

METHOD OF MEASUREMENT

Item 184.1, Disposal Of Treated Wood Products will be measured for payment by the TON of treated timber removed and subsequently accepted at a licensed facility.

BASIS OF PAYMENT

Item 184.1, Disposal Of Treated Wood Products will be paid for at the contract unit price per TON of treated timber removed from the project and subsequently accepted at a licensed facility, which price shall include all labor, tools, equipment, materials, testing, loading, transportation, approvals, and permits necessary for the completion of the work.

ITEM 194.01

BACKFILL BORINGS

FOOT

The work to be done under this Item shall conform to the relevant provisions of Subsection 190 of the Standard Specifications and the following:

CONSTRUCTION METHODS

At the completion of the boring and with permission of the Engineer backfill the boring with a Bentonite/Portland Cement Grout.

1. Mix grout using not more than 6 gallons [23 liters] of water per 94 lb. [42.6 kg] bag of Portland Type I/II Cement. Use 3 to 5 lbs. [1.5 to 2.5 kilograms] of bentonite powder per bag of cement. Mix water with bentonite prior to adding cement. Mix grout well until free of lumps.
2. Pump cement through a tremie pipe discharging at the bottom of the hole while the casing is still in the ground.
3. When the grout has displaced all fluid inside of the casing and appears at the surface, discontinue pumping and remove tremie pipe.
4. Remove casing in increments. If level of grout falls below the bottom of the casing discontinue removal, and continue grouting operations, until grout is again at ground surface.

Revisit borehole 24 hours after grouting operation and backfill top portion again if settling has occurred.

Backfill the top 3-inches [7.6 cm] of the borehole with a black-top patch, tamped into place. Patch should be flush with the existing paved surface and the cost is incidental to this Item.

METHOD OF MEASUREMENT

Item 194.01, Backfill Borings will be measured for payment per FOOT of boring backfilled in place.

Item 194.01, Backfill Borings paid for at the Contract unit price per FOOT, which price shall be full compensation for all labor, equipment, materials, and incidental costs required to complete the work.

ITEM 620.121**GUARDRAIL STEEL-BACKED TIMBER,
TL-2 (SINGLE FACED)****FOOT**

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

The work shall consist of placing and installing Steel-Backed Timber Guardrail as called for, shown and detailed on the Contract Drawing and in accordance with these specifications.

Any references to "Standard Specification" shall mean the Commonwealth of Massachusetts "Standard Specifications for Highways and Bridges" latest edition including any interim and supplemental specifications.

MATERIALS

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

- Gravel Borrow M1.03.0 – Type b
- Wooden Rails and Posts M9.05.3
- Timber Preservatives M9.05.5

Galvanized connections, bolts, washers and nuts shall conform to ASTM A 123-78

CONSTRUCTION

- A. All posts shall be machine driven provided that posts are not damaged in the process. If a post cannot be machine driven, it shall be set plumb in mechanically excavated or cored holes and secured in gravel borrow footings according to the plans. Posts shall be spaced as shown on the plans. In setting the posts, precautions shall be taken to ensure proper offset, alignment and leveling to prevent bending or twisting of the rail.
- B. All connections, screws, bolts, nuts, and washers shall be galvanized.
- C. All posts and rails shall be ACQ treated. Posts shall have a preservative retention level of 0.60 and rails shall have a minimum preservative retention level of 0.40.

METHOD OF MEASUREMENT

Item 620.121, Guardrail Steel-Backed Timber, TL-2 (Single Faced) will be measured for payment per FOOT of guardrail installed and accepted in place.

Item 620.121, Guardrail Steel-Backed Timber, TL-2 (Single Faced) will be paid for at the contract unit price per FOOT which price shall include all labor, materials, equipment and incidental costs required to complete the work.

ITEM 657.**TEMPORARY FENCE****FOOT**

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

CONSTRUCTION METHODS

The work shall include furnishing, installing, maintaining, removing, resetting and final removal of 6' high chain-link fence in the location(s) indicated on the plans and/or as required by the Engineer. The fence shall be used to close off the construction area from the general public.

The temporary fence shall be a minimum of 6' high, and of the type acceptable to the Engineer. All posts shall be firmly supported. Materials need not be new, but shall be in good condition, shall not be deteriorated, nor in a condition that in any way may jeopardize the safety and security purposes intended. The Contractor shall be responsible for the maintenance of the fence and shall be responsible and cognizant that the work area remains secure and is inaccessible to the general public at all times. Fence fabric shall be placed on the top face of the post away from the work area. A top tension wire, rather than a pipe top rail, shall be used. The top edge of the fabric shall be finished with a "knuckled" salvage. The Temporary Fence shall not be removed until construction is complete, or until directed by the Engineer.

The Contractor shall replace and/or restore sections of fence damaged due to the construction, and/or accidents, vandalism or in any manner for the duration of the project. The Contractor will not be compensated if the damage was caused by his/her operations or negligence as determined by the Engineer.

The cost for the removal and proper disposal of the Temporary Fence shall be considered incidental to this Item.

METHOD OF MEASUREMENT

ITEM 657., Temporary Fence will be measured for payment per FOOT of temporary fence installed, maintained, removed and reset.

BASIS OF PAYMENT

ITEM 657., Temporary Fence will be paid for at the contract unit price per FOOT, which price will be considered full compensation for all labor, materials, equipment and incidentals required to complete the work and shall also include all posts, fence fabric, gates, bracing, and footings.

20% of the contract price for this Item will be withheld until final removal of the fence from the project.

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

Silt sacks shall be installed in retained existing and proposed catch basins and drop inlets 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** **SQUARE YARD**
EROSION CONTROL

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

The work shall include furnishing and installing geotextile fabrics and impermeable liners to the limits shown on the Plans or as directed by the Engineer.

SUBMITTALS

The Contractor shall provide the Engineer a certificate stating the name of the geotextile manufacturer, product name, style, chemical compositions of filaments or yarns and other pertinent information to fully describe the geotextile.

MATERIALS

Geotextile Fabric for Permanent Erosion Control shall be placed under Riprap as detailed on the Contract Drawing. The proposed geotextile fabric shall conform to the requirements of AASHTO-M-288, Table 6, Class 1 from Table 1, 15 to 50 percent in situ soil passing 0.075mm and to Section M9.50 of the Standard Specifications.

CONSTRUCTION

At locations of fabric installation, the subgrade shall first be graded and compacted. All rocks, vegetation, and other obstructions shall be removed before placement of fabric. The fabric shall be installed and fastened in place in conformance with the manufacturer's recommendations.

Geotextile fabric shall be rolled out flat and tight with no folds and not dragged into place. Adjacent strips of geotextile should overlap at least 2 feet. The geotextile should be secured in place at the overlaps with steel pins at least 18 inches long and spaced at 2 feet on center. The pins should be fitted with washers at least 1.5 inches in diameter.

No backfill material shall be dropped onto the geotextile from a height exceeding 3 feet.

METHOD OF MEASUREMENT

Item 698.4, Geotextile Fabric For Permanent Erosion Control will be measured for payment by the SQUARE YARD installed complete in place. The area of geotextile used for overlapping shall not be included for measurement.

BASIS OF PAYMENT

Item 698.4, Geotextile Fabric For Permanent Erosion Control will be paid 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.

ITEM 740. ENGINEERS 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 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
- 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 (RADF) (not including the bypass tray)
- Automatic duplexing
- Finisher with staple functions
- Standard Ethernet. Print Controller
- Scan documents to PDF, PC and USB
- ability to print with authenticated access protection

The Contractor shall supply a maintenance contract for next day service, and all supplies (toner, staples, paper) necessary to meet estimated monthly usage.

The Engineer's Field Office and the equipment included herein including the computer system, and printer shall remain the property of the Contractor at the completion of the project. Disks, flash drives, and card readers with cards shall become the property of the Department.

BASIS OF PAYMENT

Compensation for this work will be made at the contract unit price per MONTH, which price includes full compensation for all services and equipment, and incidentals necessary to provide equipment, maintenance, insurance as specified and as directed by the Engineer.

ITEM 756. NPDES STORMWATER POLLUTION PREVENTION PLAN LUMP SUM

This Item addresses the preparation and implementation of a Storm Water Pollution Prevention Plan required by the National Pollutant Discharge Elimination System (NPDES) and applicable Construction General Permit (CGP) issued by the U.S. Environmental Protection Agency (EPA).

Pursuant to the Federal Clean Water Act, construction activities which disturb one acre or more are required to apply to the EPA for coverage under the NPDES General Permit for Storm Water Discharges from Construction Activities. The Contractor shall be fully responsible for compliance with the most recently issued CGP and any subsequent revisions. Should a fine or penalty be assessed against it, or MassDOT, as a result of a local, state, or federal enforcement action due to non-compliance with the CGP, the Contractor shall take full responsibility.

The NPDES CGP requires the submission of a Notice of Intent (NOI) to the EPA prior to the start of construction (defined as any activity which disturbs land, including clearing and grubbing). There is a fourteen (14) day review period commencing from the date on which EPA enters the Notice into their database. Based on the review of the NOI, EPA may require additional information, including but not limited to, the submission of the Storm Water Pollution Prevention Plan (SWPPP) for review. Work may not commence on the project until final authorization has been granted by EPA. Any additional time required by EPA for review of submittals will not constitute a basis for claim of delay.

In addition, if the project discharges to an Outstanding Resource Water, vernal pool, or is within a coastal ACEC as identified by the Massachusetts Department of Environmental Protection (DEP), a separate notification to DEP is required. DEP may also require submission of the Storm Water Pollution Prevention Plan for review and approval. Filing fees associated with the notification to DEP and, if required, the SWPPP filing to DEP shall be paid by the Contractor.

The CGP also requires the preparation and implementation of a SWPPP in accordance with the afore-mentioned statutes and regulations. The Plan will include the CGP conditions and detailed descriptions of controls of erosion and sedimentation to be implemented during construction. The Contractor shall prepare the SWPPP and update it as necessary. The Contractor shall submit the Plan to the Engineer for approval at least four (4) weeks prior to any site activities. It is the responsibility of the Contractor to comply with the CGP conditions and the conditions of any state Wetlands Protection Act Order, Water Quality Certification, Corps of Engineers Section 404 Permit and other environmental permits applicable to the project and to include in the SWPPP the methods and means necessary to comply with applicable conditions of said permits.

ITEM 756. (Continued)

It is the responsibility of the Contractor to complete the SWPPP in accordance with the EPA CGP, provide all information required, and obtain any and all certifications as required by the CGP. Any amendments to the SWPPP required by site conditions, schedule changes, revised work, regulations, construction methodologies, and the like are the responsibility of the Contractor. Amendments will require the approval of the Engineer prior to implementation.

Included in the CGP conditions is the requirement for inspection of all erosion controls and site conditions on a weekly basis as well as after each incidence of rainfall exceeding 0.25 inches in twenty-four hours. For multi-day storms, EPA requires that an inspection must be performed during or after the first day of the event and after the end of the event. The CGP requires that inspections be performed by a qualified individual as outlined in the CGP. MassDOT requires proof of completion of a 4 hour minimum sedimentation and erosion control training class current to the latest CGP. This individual can be, but not limited to, someone that is either a certified inspector, certified professional, or certified storm water inspector. The documentation shall be included as an appendix in the SWPPP. The inspector's qualifications shall be submitted to the Engineer for approval prior to beginning any work. This individual shall be on-site during construction to perform these inspections. In addition, if the Engineer determines at any time that the inspector's performance is inadequate, the Contractor shall provide an alternate inspector. Written weekly inspection forms, storm event inspection forms, and Monthly Summary Reports must be completed and provided to the Engineer. Monthly Summary Reports must include a summary of construction activities undertaken during the reporting period, general site conditions, erosion control maintenance and corrective actions taken, the anticipated schedule of construction activities for the next reporting period, any SWPPP amendments, and representative photographs.

The Contractor is responsible for preparation of the Plan, all SWPPP certifications, inspections, reports and any and all corrective actions necessary to comply with the provisions of the CGP. The Standard Specifications require adequate erosion control for the duration of the Contract. All control measures must be properly selected, installed, and maintained in accordance with manufacturer specifications and good Engineering practices. If periodic inspections or other information indicates a control has been used inappropriately or is no longer adequate, it is the responsibility of the Contractor to replace or modify the control for site conditions at no additional cost to the Department. Contractor must maintain all control measures and other protective measures in effective operating condition and shall consider replacement of erosion controls for each construction season.

This Item addresses acceptable completion of the SWPPP, any revisions/amendments required during construction, and preparation of monthly reports. In addition, any erosion controls beyond those specified in bid Items which are selected by the Contractor to facilitate and/or address the Contractor's schedule, methods and prosecution of the work shall be considered incidental to this Item.

ITEM 756. (Continued)

The CGP provides specific requirements for temporary and final stabilization. This shall be incorporated into the project schedule. The permit defines specific deadline requirements for Initial Stabilization (“immediately”, i.e., no later than the end of the next work day following the day when earth-disturbing activities have temporarily or permanently ceased) and for Complete Stabilization Activities (no later than 14 calendar days after the initiation of stabilization). Stabilization criteria for vegetative and non-vegetative measures are provided in the CGP.

The CGP requires the submission of a Notice of Termination (NOT) from all operators when final stabilization has been achieved, as well as removal and proper disposal of all construction materials, waste and waste handling devices, removal of all equipment and construction vehicles, removal of all temporary stormwater controls, etc. Approval of final stabilization by the Engineer and confirmation of submission of the NOT will be required prior to submission of the Resident Engineer’s Final Estimate. The permittee shall use EPA’s website to prepare and submit the NOT.

COMPENSATION

Payment for all work under this Item shall be made at the contract unit price, LUMP SUM, which shall include all work detailed above, including Plan preparation, required revisions, revisions/addenda during construction, monthly reports and filing fees.

Payment of fifty (50) % of the contract price shall be made upon acceptance of the NPDES Stormwater Pollution Prevention plan. Payment of forty (40) % of the contract price shall be made in equal installments over the expected duration of stormwater pollution prevention measures. Payment of the final ten (10) % of the contract price shall be paid upon satisfactory submissions of a Notice of termination (NOT) when final stabilization has been achieved.

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 damaged by construction activities shall be repaired or replaced as required by the Engineer at the Contractor's expense.

ITEM 994.01**TEMPORARY PROTECTIVE SHIELDING**
BRIDGE NO. P-14-001 (445)**LUMP SUM**

The Contractor shall design, furnish, install, maintain, remove and dispose of a protective shielding system under the existing bridge deck to prevent debris from demolition operations from falling into the channel below. The Contractor shall submit calculations and detailed drawings of the proposed shielding to the Engineer for approval. These calculations and drawings shall be stamped by a Professional Engineer registered in the Commonwealth of Massachusetts.

Shielding shall be designed to safely withstand all loads that it will be subjected to in accordance with AASHTO LRFD Bridge Design Specifications. The Design shall also include a complete description of the equipment and construction methods proposed for the deck removal and also the maximum size of deck area being removed. The shielding shall also be designed to withstand the maximum size of removed area should it fall during the removal. The shielding shall extend a minimum of 3 feet beyond the fascia.

The Contractor shall not be permitted to reduce the existing bridge clearances at any time without written approval from the Engineer.

Shielding shall have all spaces along the perimeter and seams sealed by installing polyethylene sheeting, or equivalent, on top of the shielding to prevent dust and debris from escaping and falling below.

Shielding shall be installed or removed only upon approval of the Engineer.

Remove all large pieces of debris as soon as practical and/or at the request of the Engineer.

All materials used in the shielding system shall become the property of the Contractor and shall be removed from the site upon completion of the project.

PIGEON WASTE/DEBRIS REMOVAL

The Contractor shall remove all accumulation of sediment, debris, and pigeon waste from the tops of abutment bridge seats, including drainage troughs, pier caps, steel members and other areas where work is being performed. Pigeon waste and debris material contaminants will require special containment, handling and disposal in accordance with all Federal, State, and local requirements.

The Contractor shall clean all exposed surfaces of abutment seats by washing with high pressure water to the satisfaction of the Engineer. No separate payment will be made for removal, cleaning and disposal of pigeon waste and other debris. The cost to remove, handle, and dispose of pigeon waste and other debris shall be incidental to this Contract pay Item and shall be paid under the installation portion of this LUMP SUM.

Also incidental to this Item are all costs associated with the design, installation, maintenance, and removal and proper disposal of the required containment system and work platform.

ITEM 994.01 (Continued)

BASIS OF PAYMENT

Item 994.01, Temporary Protective Shielding, Bridge No. P-14-001 (445) will be paid at the contract LUMP SUM price, which price shall be considered as full compensation for all work prescribed herein, which includes all labor, material, equipment and incidentals necessary to perform the work including all costs for removal of protective shielding, pigeon waste and other debris and properly disposing of all materials off the job site.

Partial payments for this LUMP SUM pay Item shall be as follows:

10 percent of the LUMP SUM price will be paid upon completion of an approved design including all calculations and drawings signed and sealed by an Engineer registered in the Commonwealth of Massachusetts.

50 percent of the LUMP SUM price will be paid upon successful installation and completion of the temporary protective shielding system.

40 percent of the LUMP SUM price will be paid upon the successful and complete removal and disposal of the Temporary Protective Shielding System.

ITEM 995.01 BRIDGE STRUCTURE, BRIDGE NO. P-14-001 (445) 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 under this Item includes all material, equipment and labor needed to construct the Cast-in-place abutment cap and backwall, precast prestressed concrete deck beams, cast-in-place concrete deck slab, cast in place curtainwall, timber bridge railings, elastomeric bearings, steel-backed timber highway guardrail transitions and all other Items not specifically provided for in the contract. 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.

SAWING & SEALING JOINTS IN ASPHALT PAVEMENT AT BRIDGES

The work to be done 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 the bridge deck 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.

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 bituminous crack sealer meeting the requirements of M3.05.4 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.

ITEM 995.01 (Continued)**5000 PSI, 3/4 IN., 685 HP CEMENT CONCRETE**

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

5000 PSI, 3/4 In., 685 HP Cement Concrete shall be used for the bridge deck, backwalls, curtainwalls, curbs, existing abutment topper slab, and the abutment cap.

This concrete shall conform to all material requirements contained in Subsection M4.06.1 of the Supplemental Specifications.

STEEL REINFORCEMENT FOR STRUCTURES - EPOXY COATED

Steel reinforcement for structures and steel reinforcement for structures – epoxy coated shall conform to the applicable provisions of Subsection 901 and Subsections M8.01.0 and M8.01.7 of the Standard Specifications.

LAMINATED ELASTOMERIC BEARING WITH ANCHOR BOLTS (0-50)

The work to be performed under this heading shall conform to the relevant provisions of Subsection M9.14.5 and the following:

SUBMITTALS

The Contractor shall submit to the Engineer for approval the following documents:

1. Prior to fabrication:
 - a. Written notification in accordance with M9.14.5
 - b. Shop drawings for approval in accordance with Section 5.02 of MassDOT's Supplemental Specifications to the Standard Specifications for Highways and Bridges.
 - i. Fabrication shall not begin until the Contractor receives written approval from the Department that the submitted shop drawings have been received.
2. Upon delivery of the bearing pads:
 - a. A Certificate of Compliance certifying that the elastomeric bearing pads meet the requirements of the contract specifications.
 - i. A Mill certificate and certificate of compliance for the steel laminates shall accompany the bearing pads.
 - b. Independent testing results as required below.
 - c. Additional elastomeric bearing pads for MassDOT Acceptance testing as required below.

ITEM 995.01 (Continued)**MATERIALS**

- Elastomer: The elastomeric compound shall be composed of 100% low temperature Grade 3 virgin crystallization resistant polychloroprene (neoprene).
- Steel Laminates: The steel laminates shall meet the requirements of AASHTO M 251.
- Internal Load Plates: The internal load plates shall conform to AASHTO M 270 Grade 36 or Grade 50.
- Retainer Plates: Retainer plates shall conform to AASHTO M 270 Grade 36. Anchor bolts shall conform to ASTM A307.

FABRICATORS

The National Transportation Product Evaluation Program (NTPEP) shall find the bearing pad fabrication plant to be in compliance with the Elastomeric Bridge Bearing Pad Technical Committee Work Plan. Approved fabricators are listed on the MassDOT QCML.

FABRICATION

Bearing pads shall be fabricated in conformance with the “Method B” design method outlined in the AASHTO LRFD Bridge Design Specifications.

The bearing dimensions, including elastomer thickness and edge cover, number and thickness of steel reinforcing laminates, dimensions of load plates (if any), and the design shear modulus of the elastomer shall be as shown on the Plans.

The tolerances on the overall dimensions for the bearings shall be according to Table 2 of AASHTO M 251, except that the tolerance on the overall vertical dimension shall be limited to -0, +1/8” regardless of the design thickness.

SAMPLING

Sampling of bearing pads for testing shall be random and performed on a lot basis. Lots shall be divided into sublots of 10 bearings. Acceptance samples shall be independently tested as outlined below. For Verification samples taken by the Engineer at the project, the sampling rate shall be one randomly selected full size bearing pad of each size and type in accordance with Subsection M9.14.5. A lot shall be defined as the smallest number of bearings determined by the following criteria:

1. A lot shall not exceed a single contract quantity.
2. A lot shall consist of bearings of the same size and configuration.
3. A lot shall consist of bearings produced in a continuous manner from the same batch of elastomer and cured under the same conditions.

ITEM 995.01 (Continued)

All pads required for testing purposes in accordance with Subsection M9.14.5 of the Standard Specifications shall be considered as incidental to this Item. The quantities listed in the Schedule of Basis for Partial Payment only include the number of bearings required for construction and do not include the additional bearings required for conformance and destructive testing as outlined herein.

INDEPENDENT TESTING

Independent testing shall be performed by a nationally recognized testing laboratory approved by the Engineer which shall provide certified test results. Each Lot of bearings as defined above shall be randomly sampled and tested at the frequency specified under Section 8.5 of AASHTO M 251. The minimum testing shall be in conformance with Sections 8 and 9 of M 251 as specified below:

1. Materials shall meet Section 4 of M 251.
2. Dimensions per Section 8.4 of M 251.
3. Elastomer per Section 8.6 of M 251.
4. Compressive Strain at maximum dead and live load (service) per Section 8.8.1 of M 251.
 - a. The compressive deflection of each bearing shall not exceed 10% of the design effective rubber thickness at a compressive load equal to the maximum design load.
5. Short Duration Compression Test per Section 8.8.2 of M 251.
6. Shear Modulus of the Elastomer per Section 8.9.1 of M 251.
 - a. The shear modulus shall be between 0.136 and 0.184 ksi.
7. Tensile Strength, Ultimate Elongation per ASTM D412.
8. Shear Bond Strength per ASTM D429.
9. Heat Resistance per ASTM D573.
10. Compression Set per ASTM D395.
11. Low Temperature Brittleness per ASTM D746 for Elastomer Grades 3.

PACKAGING, HANDLING, AND STORAGE

The bearing pads shall be packaged, handled and stored in accordance with Section 18.1.3 of the AASHTO LRFD Bridge Construction Specifications. On the top of each completed bearing it shall be clearly identified and marked in accordance with M 251 Section 7. In addition, a 1/32" deep direction arrow shall be inscribed into the bearing which will allow the bearing to be aligned with the up-station direction. All marks shall be permanent and be visible after the bearing is installed.

INSTALLATION

The bearing pads and bridge seat bearing areas shall conform to Section 901.65A(3). Installation of the retainer plates shall be considered incidental to this Item.

ITEM 995.01 (Continued)

ACCEPTANCE

Requirements for providing notification to the Department prior to the start of bearing pad production as well as the provisions for random sampling of the bearings by the Department at the job site for additional destructive testing shall be in accordance with M9.14.5 and this specification. The Department shall use the results of the Independent testing as well as their own testing in the Acceptance of the bearing pads.

PRESTRESSED CONCRETE DECK BEAMS (S48-12)**GENERAL**

The following specification is for precast, prestressed concrete deck beams. The work under this Sub-Item consists of fabricating, transporting and installing prestressed concrete beams, and includes all necessary labor, materials, lighting, and equipment to complete the work as shown on the Plans. The work shall conform to the MassDOT Standard Specifications and the requirements of the current AASHTO LRFD Bridge Construction Specifications, supplemented by the current relevant provisions of the latest edition of PCI MNL-116 (The Manual for Quality Control for Plants and Production of Precast and Prestressed Concrete Products), except as noted herein. MassDOT contract documents shall take precedence over the AASHTO LRFD Bridge Construction Specifications and PCI MNL-116. Section M4.02.14 of the MassDOT Standard Specifications requirements are superseded in their entirety by the requirements specified below.

QUALITY ASSURANCE

A. General.

Quality Assurance includes all the planned and systematic actions necessary to provide confidence that a product or facility will perform satisfactorily in service. It is an all-encompassing term that includes Quality Control (performed by the Fabricator) and Acceptance (performed by MassDOT). Quality Control is the system used by the Contractor and Fabricator to monitor and assess their production processes at the plant facility and installation activities at the project site to ensure that the final product will meet the specified level of quality. Acceptance includes all factors used by MassDOT to determine the corresponding value for the product. MassDOT Acceptance inspection at the plant facility is intended as a means of evaluation of compliance with contract requirements. Contractor and Fabricator Quality Control activities and MassDOT Acceptance activities shall remain independent from one another. MassDOT Acceptance activities shall not replace Fabricator Quality Control activities.

B. Fabricator Quality Control.

Quality Control shall be performed by the Fabricator to ensure that the product is fabricated in conformance with the specifications herein. The Fabricator shall maintain a Quality Control system to monitor, assess, and adjust placement and fabrication processes to ensure the Prestressed Concrete Beam(s) meet the specified level of quality, through sufficient Quality Control sampling, testing, inspection, and corrective action (where required). The Fabricator's Quality Control system shall address all key activities during the placement and fabrication and shall be performed in conformance with the Fabricator's PCI Certification. Quality Control documentation shall meet the requirements of the *Fabricator Quality Control – Documentation* section below. Upon request, Fabricator Quality Control documentation shall be provided to the MassDOT Plant Inspector.

ITEM 995.01 (Continued)

1. Plant.

Prior to the fabrication of Prestressed Concrete Beams, the Fabricator's precast concrete plant shall obtain the following:

- (a) Certification by the Precast/Prestressed Concrete Institute (PCI) Plant Certification Program, for Prestressed Concrete Beam fabrication, Category B3 level or higher
- (b) MassDOT Prequalification
- (c) MassDOT Mix Design Approval

All concrete for a given Prestressed Concrete Beam shall be produced by a single company and plant, unless otherwise approved by the Engineer.

2. Personnel.

The Fabricator shall provide adequate training for all QC personnel in accordance with PCI certification. There shall be sufficient personnel trained and certified to perform the tests listed under Subsection M4.02.13, Part D. At a minimum, the Fabricator's Quality Control Personnel shall maintain the following qualifications and certifications:

- (a) QC Manager with an active Precast/Prestressed Concrete Institute (PCI) Technician/Inspector Level II or higher, and a minimum of 5 years continuous experience in the manufacture of Prestressed Concrete Beams for state transportation departments. The QC Manager shall be on site while the batch plant is producing and placing concrete for MassDOT projects.
- (b) A Technician/Inspector having the Precast/Prestressed Concrete Institute (PCI) Technician/Inspector Level II or higher

The Contractor shall submit to the Engineer a copy of the Fabricator's Quality Control Personnel required qualifications, as specified above.

3. Laboratory.

The Fabricator shall provide a room of sufficient size to house all equipment and to adequately perform all testing. The room shall have either a separate moisture storage room or curing box for concrete cylinders, and it shall be thermostatically controlled to maintain temperatures consistent with AASHTO T 23. It shall include a desk and file cabinet for proper record keeping, and have good lighting and ventilation. This room shall be kept for testing and quality control and not used for any other purpose. An additional desk and file cabinet shall be provided for exclusive use of the Engineer. No exception from these requirements will be allowed without the express written permission of the Engineer.

4. Testing Equipment.

At a minimum, the Fabricator's plant facility shall have the following testing equipment:

- (a) Air Content Meter Type A or B: AASHTO T 152
- (b) Air Content Meter Volumetric Method: AASHTO T 196 (Required for Lightweight Concrete)
- (c) Slump Cone: AASHTO T 119

ITEM 995.01 (Continued)

- (d) Cylinder Molds AASHTO M 205
- (e) Concrete Testing Machine: AASHTO T 22
- (f) Screening Sieve: AASHTO T 27, AASHTO T 11
- (g) Curing Box: AASHTO T 23
- (h) Spread Test Base Plate for Self-Consolidating Concrete (SCC): ASTM C1611
- (i) All other equipment prescribed by AASHTO and ASTM standards for the tests to be performed by the Fabricator as specified

5. Inspection.

Quality Control personnel shall monitor and inspect the fabrication of each Prestressed Concrete Beam. Quality Control personnel shall report all inspection activities on Quality Control Inspection Reports and non-conformances on Non-Conformance Reports (NCRs) throughout the entire fabrication process, as specified herein.

6. Temperature Monitoring.

At a minimum, the Fabricator shall monitor, record, and report the temperatures of the form, ambient temperatures surrounding the concrete, and temperatures of the concrete continuously, without interruption as specified below:

- Prior to placement of concrete to verify that $T_i \geq 50^\circ\text{F}$.
- Immediately after placement to verify that $T_i \geq 50^\circ\text{F}$ is maintained.
- Throughout the entire duration of the curing cycle, at regular intervals not to exceed one hour until 100% Design Strength (f'_c) is attained and concrete has cooled to within 40°F of the ambient temperature surrounding the Prestressed Concrete Beam.

At a minimum, the temperature measuring devices shall record and report the temperature of the concrete to the nearest 2°F . At least two temperature sensors (thermocouples) shall be positioned to record the maximum and minimum anticipated concrete temperatures. The anticipated minimum temperature shall be measured with one or more thermocouples at a distance no greater than 2 inches from the surface of the thinnest section. The anticipated maximum temperature shall be measured with one or more thermocouples at the center of the thickest section. Proposed temperature measurement locations shall be submitted to the Engineer for approval. Temperature recording devices shall be located within the curing enclosure and calibrated as required by PCI MNL-116 Section 4.18.4. Maximum heat increase and cool down rates shall comply with PCI MNL-116, Section 4.19. The Contractor shall furnish temperature logs recorded at a minimum frequency of once per hour to the Inspector as required, with each post-pour QC inspection report.

7. Sampling and Testing.

At a minimum, the Fabricator shall perform random Quality Control sampling and testing as specified in *Table 1: Quality Control Sampling and Testing*. The Fabricator shall perform additional Quality Control sampling and testing on concrete that has been retempered with admixtures or hold-back water during fabrication. Test Specimens shall conform to the requirements of Section M4.02.13 of the MassDOT Standard and Supplemental Specifications and AASHTO R 60, with the exception of the Stripping ($80\% f'_c$) set of cylinders. Stripping ($80\% f'_c$) cylinders shall be cured in the same location and environment as the Prestressed Concrete Beam they represent. If approved by the Engineer, compressive strength cylinder match curing equipment, that maintains the same concrete conditions that the corresponding Prestressed Concrete Beam is exposed to, may be utilized in lieu of Stripping ($80\% f'_c$) field cured cylinders, with the use of thermocouples, controllers, and heaters.

ITEM 995.01 (Continued)**Table 1: Quality Control Sampling and Testing**

Quality Characteristic	Test Method	Sample Size	Specification Limit	Lot Size ^(c)	Sublot Size ^(d)	Frequency	Point of Sampling
Slump (in.) ^(a)	AASHTO T 119	Per AASHTO	≤ 8 in. or as approved by the Engineer	Total Quantity of Beams fabricated on a Contract, per Bid Item, per Mix Design	One (1) Beam	One (1) per Sublot or fraction thereof	Point of Discharge
Air Content (%)	AASHTO T 152	Per AASHTO	5% ≤ % ≤ 8%				
Temperature (°F)	AASHTO T 309	Per AASHTO	50°F ≤ °F ≤ 90°F				
Compressive Strength (psi)	AASHTO T 22	Stripping Cylinders: One (1) set of Three (3) 4 x 8 in.	≥ 80% f _c at Stripping				
		7-day Cylinders: One (1) set of Three (3) 4 x 8 in.	For Information at 7 days				
		28-day Cylinders: One (1) set of Three (3) 4 x 8 in.	≥ 100% f _c at 28 days				
		56-day Cylinders: One (1) set of Three (3) 4 x 8 in.	≥ 100% f _c at 56 days ^(b)				

Notes:

- (a) Self-consolidating concrete (SCC) shall meet the requirements of M4.02.17.
- (b) 56-day Compressive Strength test specimens shall require testing only when 28-day Compressive Strength test specimens have failed to meet Design Strength (f_c).
- (c) Lot shall be defined as a specific quantity of material from a single source, produced or placed by the same controlled process.
- (d) Sublot shall be defined as an equal division or part of a Lot from which a sample of material is obtained in order to assess the Quality Characteristics of the Lot.

8. Certificate of Compliance.

The Fabricator shall provide a Certificate of Compliance in accordance with Standard Specifications, Division I, Section 6.01, stating that QC test cylinders have achieved the design strength, f_c. A Certificate of Compliance shall accompany each shipment and shall be presented to the MassDOT Resident Engineer or designee upon delivery to the site.

ITEM 995.01 (Continued)

Documentation.

At a minimum, the Fabricator shall maintain a filing system for the following QC records and documentation. All QC records and documentation shall be made available to MassDOT upon the request of the Department.

- (a) Current MassDOT Approved Mix Design Sheet(s) and Approval Letter(s)
- (b) PCI Certification
- (c) Current Qualifications and Certifications for QC Manager(s) and QC Technician(s)
- (d) Most current set of Approved Shop Drawings
- (e) Approved Placement, Finishing and Curing Plan
- (f) Approved Dunnage Plan
- (g) Fabricator Certificate of Compliance for each fabricated Prestressed Concrete Beam
- (h) Admixture Manufacturer's Certification of Compliance for each approved Admixture
- (i) Completed QC Inspection Report for each fabricated Prestressed Concrete Beam
- (j) Identification Number for each fabricated Prestressed Concrete Beam
- (k) Time and date of casting of each fabricated Prestressed Concrete Beam
- (l) Date of stripping of each fabricated Prestressed Concrete Beam
- (m) Batch Ticket Printout reporting the quantity of concrete produced for each batch of concrete produced
- (n) Concrete temperature records for each fabricated Prestressed Concrete Beam
- (o) QC Test Report Forms for each subplot of concrete produced
- (p) Non-Conformance Reports (NCRs)
- (q) Documentation of Repairs (if applicable)

C. Acceptance.

MassDOT will perform Acceptance inspection, sampling, and testing during fabrication and installation, to evaluate the quality and degree of compliance of the fabricated Prestressed Concrete Beam to MassDOT specifications. Additionally, MassDOT Inspectors will monitor the Fabricator's Quality Control activities to ensure the Fabricator is properly administering Quality Control in conformance with the Fabricator's NPCA or PCI Certification. Acceptance inspection and test results not meeting MassDOT specifications will result in Non-conformance Reports (NCR) being issued by MassDOT to the Fabricator or Contractor for corrective action. Final Acceptance for the fabricated Prestressed Concrete Beams shall be determined by MassDOT.

1. Inspection.

A MassDOT MassDOT Inspector will be assigned to perform Acceptance activities during fabrication, which includes the inspection of the materials, work procedures, and Prestressed Concrete Beams. At least seven (7) days prior to the scheduled start of fabrication, the Fabricator shall contact the MassDOT Research and Materials Section (RMS) to provide notice of the scheduled fabrication start date:

- (a) Receive approval for all submitted Fabricator cement concrete mix designs from the MassDOT Research and Materials Section for the current year, as specified under the *Mix Design* section and *Table 3: Trial Batch Sampling Testing for New Mix Designs*. Self-consolidating concrete shall meet the requirements of M4.02.17.
- (b) Receive approval for the submitted Fabricator Placement, Finishing, and Curing Plan from the MassDOT Research and Materials Section, as specified under the *Placement, Finishing, and Curing Plan* section.

ITEM 995.01 (Continued)

- (c) Receive Engineer of Record approved shop drawings from the MassDOT Research and Materials Section as specified under the *Shop Drawings* section.
- (d) Participate in the pre-production meeting, as described under the *Pre-Production Meeting* section (if required).

Prior to the start of fabrication, the Fabricator shall review the fabrication schedule with the MassDOT Inspector. Fabrication shall only proceed when:

- (a) The QC Inspector and MassDOT Inspector are present to inspect the Precast Concrete Bridge Element(s) being fabricated.
- (b) The QC Manager is present at the Fabricator's plant.

The Fabricator shall grant access to all required areas of the Fabricator's plant to the MassDOT Inspector, during the hours of fabrication. Fabrication without MassDOT Inspector access to required areas is prohibited, and will result in the rejection of the fabricated Precast Concrete Bridge Element(s).

Additionally, the MassDOT Inspector will monitor the adequacy of the Fabricator's Quality Control activities. MassDOT Inspector Acceptance activities performed at the Fabricator's plant shall remain independent from the Fabricator, and does not replace the Fabricator's required Quality Control activities.

2. Sampling and Testing.

At a minimum, the MassDOT Inspector will perform random Acceptance sampling and testing for each Sublot of concrete produced as specified in *Table 2: Acceptance Sampling and Testing*. The MassDOT Inspector will also perform Acceptance sampling and testing on concrete that has been retempered with admixtures or hold-back water during production. Test Specimens will conform to the requirements of Section M4.02.13 of the MassDOT Standard and Supplemental Specifications and AASHTO R 60.

ITEM 995.01 (Continued)

Table 2: Acceptance Sampling and Testing

Quality Characteristic	Test Method	Sample Size	Specification Limit	Lot Size ^(c)	Sublot Size ^(d)	Frequency	Point of Sampling
Slump (in.) ^(a)	AASHTO T 119	Per AASHTO	≤ 8 in. or as approved by the Engineer	Total Quantity of Beams fabricated on a Contract, per Bid Item, per Mix Design	One (1) Beam	One (1) per Sublot or fraction thereof	Point of Discharge
Air Content (%)	AASHTO T 152	Per AASHTO	5% ≤ % ≤ 8%				
Temperature (°F)	AASHTO T 309	Per AASHTO	50°F ≤ °F ≤ 90°F				
Compressive Strength (psi)	AASHTO T 22 AASHTO T 23	7-day Cylinders: One (1) set of Three (3) 4 x 8 in.	For Information at 7 days				
		28-day Cylinders: One (1) set of Three (3) 4 x 8 in.	≥ 100% f _c at 28 days				
		56-day Cylinders: One (1) set of Three (3) 4 x 8 in.	≥ 100% f _c at 56 days ^(b)				

Notes:

- (a) Self-consolidating concrete (SCC) shall meet the requirements of M4.02.17.
- (b) 56-day Compressive Strength test specimens shall require testing only when 28-day Compressive Strength test specimens have failed to meet Design Strength (f_c).
- (c) Lot shall be defined as a specific quantity of material from a single source, produced or placed by the same controlled process.
- (d) Sublot shall be defined as an equal division or part of a Lot from which a sample of material is obtained in order to assess the Quality Characteristics of the Lot.

ITEM 995.01 (Continued)**MATERIALS****A. Materials.**

Materials shall meet the following specifications (if applicable):

General	M4.00.00
Portland Cement	M4.01.0
Blended Hydraulic Cements	M4.01.1
Fly Ash	M4.01.2
Cement Concrete	M4.02.00
Cement	M4.02.01
Cement Mortar	M4.02.15
Aggregates	M4.02.02
Lightweight Aggregates	M4.02.03
Water	M4.02.04
Cement Concrete Additives	M4.02.05
Proportioning	M4.02.06
Mixing and Delivery	M4.02.10
Test Specimens	M4.02.13
Mortar for Filling Keyways	M4.04.0
Slag	AASHTO M 302
High Performance Cement Concrete	M4.06.1
Self-Consolidating Concrete (SCC)	M4.02.17
Prestressing Strands	AASHTO M 203
Reinforcing Bars	M8.01.0
Epoxy Coated Reinforcing Bars	M8.01.7
Welded Wire Reinforcement	M8.01.2
Mechanical Reinforcing Bar Splicer	M8.01.9
Strand Chuck	M8.15.0
Lifting Devices	PCI MNL-116

1. Cement Concrete Mix Design.

The cement concrete shall be comprised of specified proportions of water and MassDOT approved aggregates, cement, supplementary cementitious materials (SCMs), and admixtures to form a homogenous composition. When used, self-consolidating concrete (SCC) shall meet the requirements of M4.02.17.

The Fabricator is responsible for developing the concrete mix to be used for fabricating prestressed beams and having it prequalified by the MassDOT Research and Materials Section. The mix design compressive strength shall be as shown on the plans and as prequalified by the MassDOT Research and Materials Section. Prequalification shall include the trial batch testing shown in Table 3. For previously prequalified mixes, the Fabricator shall perform any tests specified in Table 3 that were not previously performed.

ITEM 995.01 (Continued)

If the concrete mix has not been prequalified by the MassDOT Research and Materials Section, the Fabricator shall design and submit for approval, the proportions and test results for a concrete mix that shall attain the requirements specified in Table 3. The proposed mix design and all required test results shall be submitted to the MassDOT Research and Materials Section for approval. Requirements for additional testing and receipt of additional documentation from the Fabricator will be determined by RMS. Unsatisfactory results or other conditions identified during this additional testing and additional documentation review, will require re-submission of a new mix design for review and approval.

The mix shall be formulated with calcium nitrite corrosion inhibitors, which shall be added at a rate of 3 gallons per cubic yard of concrete in order to increase the active corrosion threshold to 9.9 pounds of chloride per cubic yard of concrete at the reinforcing bar level. Prior to production of cement concrete, the Fabricator shall report and submit all proposed mix design formulations and its constituent materials onto the MassDOT Cement Concrete Mix Design Sheet to the MassDOT Research and Materials Section for review and approval. All mix design yields shall be designed for 1.0 cubic yards of concrete, with an allowable tolerance of +/- 1.0 %. All liquids incorporated into the proposed mix design(s) shall include both water and admixtures in the liquid mass calculation.

During production of cement concrete, the Fabricator shall not alter the previously approved mix design formulation or its constituent materials. Proposed alterations in source, type, batch quantity, or gradation to any of the constituent materials of the previously approved mix design formulation shall require a new MassDOT Mix Design Sheet submission to the MassDOT Research and materials Section for review and approval. Fabrication shall not occur without prior MassDOT mix design approval. All concrete used for prestressed concrete beams shall be batched by the Fabricator producing the prestressed concrete beams. The use of ready-mix concrete batched by others shall not be permitted.

The Fabricator shall notify MassDOT RMS to schedule trial batch testing for the new mix design(s). Trial batch testing shall meet the following requirements:

- (a) Performed by a qualified laboratory and/or AASHTO accredited laboratory.
- (b) Performed and/or sampled in the presence of a MassDOT Inspector.
- (c) Meet the requirements as specified in *Table 3: Trial Batch Sampling Testing for New Mix Designs*. Self-consolidating concrete (SCC) shall meet M4.02.17.

Failure to perform all of the required trial batch testing or provide MassDOT RMS trial batch test results within the Specification Limits (as specified in Table 3) will result in the disqualification of the Fabricator's proposed mix design(s).

ITEM 995.01 (Continued)**Table 3: Trial Batch Sampling and Testing for New Mix Designs**

Quality Characteristic	Test Method	Sample Size	Specification Limit	Performed By
Slump ^(a)	AASHTO T 119	Per AASHTO	Max. 8 inches or as approved by the Engineer	Quality Control
Air Content (AC)	AASHTO T 152	Per AASHTO	$5\% \leq AC \leq 8\%$	Quality Control
Temperature (°F)	AASHTO T 309	Per AASHTO	$50^{\circ}\text{F} \leq ^{\circ}\text{F} \leq 90^{\circ}\text{F}$	Quality Control
Compressive Strength ^(b)	AASHTO T 22 AASHTO T 23	28-day Cylinders: One (1) set of Three (3) 4 x 8 in.	Lab Mixed $f'_{cr} = 1.3 f'_c$ at 28 days Batch Mixed $f'_{cr} = 1.2 f'_c$ at 28 days	MassDOT
Alkali-Silica Reaction (ASR) ^(d)	ASTM C 1567	Per ASTM	M4.02.00	Quality Control
Resistance to Chloride Ion Penetration Chloride Ion Penetration ^(e)	AASHTO T 358 ^(f)	28-day Cylinders: One (1) set of Three (3) 4 x 8 in.	Resistivity $\geq 21 \text{ k}\Omega\text{-cm}$ at 28 days	MassDOT
Freeze/Thaw Durability ^(e)	AASHTO T 161 (Procedure A)	Per AASHTO	Relative Dynamic Modulus of Elasticity after 300 cycles $\geq 80\%$	Quality Control

Notes:

- (a) Self-consolidating concrete (SCC) shall meet the requirements of M4.02.17.
- (b) Trial batch compressive strength testing shall be performed by MassDOT. Acceptance will be based on compressive strength testing performed by MassDOT. For mixes requiring $f'_c > 8,000$ psi, three consecutive trial batches shall be performed, all achieving $f'_{cr} \geq 1.1 f'_c$, for MassDOT approval.
- (c) If an AASHTO accredited laboratory is preparing the trial batch test specimens, MassDOT Acceptance presence is not required. If the Fabricator is preparing the trial batch test specimens, MassDOT Acceptance presence is required during trial batch test specimen preparation.
- (d) Alkali Silica Reaction (ASR) testing shall meet the requirements of M4.02.00. Independent laboratories performing ASR testing shall be listed on the MassDOT Quality Construction Materials List (QCML).
- (e) Calcium nitrite shall be removed from mix designs containing the admixture and replaced by an equivalent quantity of water when preparing Chloride Ion Penetration resistance trial batch test specimens.
- (f) The Wenner probe tip spacing “a” shall be 1.5.

2. 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.

3. Transverse Ties.

The transverse ties shall be low-relaxation strands meeting the requirements of AASHTO M 203. The size and grade shall be as indicated on the plans. The ties shall be supplied with a seamless polypropylene sheath which has corrosion inhibitor grease between the strand and sheath. The location of all transverse ties, shall be as shown on the plans.

ITEM 995.01 (Continued)**4. 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.

CONSTRUCTION METHODS – PLANT FABRICATION**A. Shop Drawings**

Prior to performing any work under this Section, the Contractor shall receive approval for all shop drawings for the Prestressed Concrete Beam being worked on and any special Contract requirements, provided that a complete shop drawing package is provided. The Contractor shall not order materials or begin work before receiving approved shop drawings. MassDOT will reject any Prestressed Concrete Beams that deviate from the approved drawings or are fabricated prior to receiving written approval of the shop drawings. The Contractor shall bear full responsibility and costs for all materials ordered or work performed prior to the approval of the shop drawings or written authorization from MassDOT.

The Contractor shall submit scaled shop drawings to the Engineer of Record for review and approval. Upon approval, the Engineer of Record will forward two (2) sets of scaled, full size (minimum 24x36") paper copies of the Approved (or Approved As Noted) shop drawings to the MassDOT Director of Research and Materials. Calculations are not to be included in any submittal to the Research and Materials Section. An approval stamp shall appear on every shop drawing sheet. Wet-stamping or wet-signing is not required, provided that the stamp and reviewer name are legible. The Fabricator's name and address shall appear on each sheet.

Resubmittal of "Approved as Noted" shop drawings is not necessary for minor revisions, provided that the correction can be clearly understood and is unambiguous without possibility of misinterpretation. Shop drawings with questions or comments that require a response and/or additional information from the Fabricator must be resubmitted.

Detailed shop drawings shall be prepared in accordance with the relevant provisions of Subsection 5.02 and shall, at a minimum, contain the following:

- (a) Number and type of Prestressed Concrete Beams including overall length, width and height.
- (b) Skew angle.
- (c) Location and spacing of strands, draped strands and their geometry, and/or location and spacing of strands to be debonded including the length of each strand's debondment.
- (d) Location, size and geometry of all steel reinforcement, and mechanical reinforcing bar splicers if called for on the plans.
- (e) Location and details of all inserts, anchors, and any other Items required to be cast into the Prestressed Concrete Beams (whether detailed on the plans by the Engineer of Record or provided for the Contractor's convenience). Prestressed Concrete Beams shall not be fired or drilled into for attachment purposes. All hardware shall be galvanized except as noted.
- (f) Locations and details of the lifting devices, including supporting calculations, type and amount of any additional reinforcing required for lifting. The Fabricator shall design all lifting devices based on the no cracking criteria in Chapter 8 of the PCI Design Handbook (7th edition).
- (g) The minimum compressive strength required prior to release of prestressing and prior to handling the Prestressed Concrete Beam.

ITEM 995.01 (Continued)

The shop drawings shall not include procedures for placement, finishing, and curing of concrete. These details shall be included in the Placement, Finishing and Curing Plan that is to be submitted to MassDOT Research and Materials Section as described under Placement, Finishing, and Curing Plan.

B. Fabrication.

All Prestressed Concrete Beams shall be fabricated in accordance with the latest edition of PCI MNL-116 as modified herein.

C. Placement, Finishing and Curing Plan.

At least 30 days prior to start of fabrication, the Contractor shall submit the Fabricator's proposed Placement, Finishing and Curing Plan to the Engineer for approval by MassDOT Research and Materials Section. This shall be an independent submittal, separate from the fabrication shop drawings. The Placement, Finishing and Curing Plan shall include the following:

- (a) Method of Mixing
- (b) Method of Placement
- (c) Method of Consolidation
- (d) Method of Finishing
- (e) Method of Initial Curing
- (f) Method of Intermediate Curing
- (g) Method of Final Curing
- (h) Moisture Retention Materials and Equipment (water spray equipment, saturated covers, sheet materials, liquid membrane-forming compounds, accelerated curing equipment, etc.)
- (i) Cylinder Curing Methods, Location, and Environmental Control (temperature, humidity, etc.)
- (j) Temperature Monitoring, Recording, and Reporting

D. Dunnage Plan Shop Drawings.

At least 30 days prior to the start of fabrication, the Contractor shall submit proposed Dunnage Plan Shop Drawings to the Engineer of Record for review and approval. This shall be an independent submittal, separate from the fabrication shop drawings. Upon approval, the Engineer of Record will forward two (2) sets of scaled, full size (minimum 24"x36") paper copies of the Approved (or Approved As Noted) Dunnage Plan Shop Drawings to the MassDOT Director of Research and Materials. Calculations are not to be included in any submittal to the Research and Materials Section. The Dunnage Plan Shop Drawings shall include the following:

- (a) Proposed layout of the Prestressed Concrete Beams for storage in yard and during shipping
- (b) Support and blocking point locations
- (c) Support and blocking materials

E. 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 Section Quality Assurance – Precast Concrete, C. Acceptance, A. Inspection), 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.

ITEM 995.01 (Continued)

F. Reinforcement.

The reinforcing bars shall be installed in accordance with Section 901.62 of the Supplemental 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.

G. 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.

H. Tolerances.

Fabrication shall comply with tolerances specified on the plans. Tolerances for steel reinforcement placement shall be in accordance with 901.62. In the absence of specifications on the plans, tolerances shall comply with the latest version of the PCI MNL 135, Precast Tolerance Manual.

I. 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. Any defects or damage of more than “Category 2, Minor Defects” made to the concrete, due to form work, stripping or handling, shall be subject to repair or rejection, as defined in the Repairs and Replacement section. 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.

J. Mixing of Concrete.

The concrete shall be proportioned and mixed in conformance with the Fabricator’s MassDOT approved mix design and M4.02.10 Mixing and Delivery. Fabrication shall not occur without prior MassDOT mix design approval. The Fabricator shall provide copies of batch tickets to the MassDOT Plant Inspector. The MassDOT Plant Inspector will verify if the batch ticket quantities are within the tolerances of the Fabricator’s MassDOT approved mix design.

ITEM 995.01 (Continued)

K. Placement of Concrete.

Prior to the placement of concrete, the temperature of the forms shall be greater than or equal to 50°F. Quality Control inspection shall be performed by the Fabricator as specified in the Fabricator Quality Control section. Placement of the concrete shall not proceed until the MassDOT Plant Inspector is present to perform inspection and begin monitoring Fabricator Quality Control inspection activities and is in compliance with specifications. The MassDOT Plant Inspector shall inspect and accept the placement of the reinforcing steel and prestressing strands prior to the placement of concrete into the forms. The Fabricator shall verify all materials and equipment required for protecting and curing the concrete are readily available and meet the requirements of the Final Curing Methods section below. All Items encased in the concrete shall be accurately placed in the position shown on the Plans and firmly held during the placing and setting of the concrete. Clearance from the forms shall be maintained by supports, spacers, or hangers and shall be of approved shape and dimension.

During placement, the concrete shall maintain a concrete temperature range between 50°F and 90°F. The Fabricator shall minimize the time to concrete placement (measured from start of mixing to completion of placement). In no event shall time to placement exceed 90 minutes. The Fabricator shall perform additional Quality Control sampling and testing on concrete that has been retempered with admixtures or hold-back water during the placement of the concrete as specified in the Fabricator Quality Control section above. Delays or shutdowns of over 30 minutes shall not be allowed during the continuous filling of individual forms.

L. Consolidation of Concrete.

Suitable means shall be used for placing concrete to prevent segregation or displacement of reinforcing steel or forms. The concrete shall be thoroughly consolidated by external or internal vibrators or a combination of both. Vibrators shall not be used to move concrete within the forms. Vibrators shall be used as specified in 901.63C and as directed by the Engineer. Concrete shall be placed and consolidated in a way that minimizes the presence of surface voids or bug holes on the formed surfaces. When used, self-consolidating concrete (SCC) shall meet the requirements of M4.02.17.

M. Finishing of Concrete.

The top of the prestressed concrete beams shall be given a rake finish with a ¼" amplitude applied transversely across the beam to the limits shown on the plans.

N. Exposed Surfaces of Prestressed Concrete Beams.

As soon as conditions permit, before the concrete has fully hardened, all dirt, laitance, and loose aggregate shall be removed from the exposed concrete surfaces. Contractor shall not allow foot traffic on the uncured concrete until it has reached sufficient strength to prevent damage.

O. Exposed Surfaces of Shear Keys and Closure Pour Shear Keys.

If the beams have shear keys cast in the sides of the beams, the surfaces of the shear keys shall be abrasive blasted prior to shipment. Fabricator may utilize a surface retarder with water blast, abrasive blast, or a combination of both to achieve the desired shear key finish. The abrasive blast shall use oil free compressed air. The profile of the shear key surfaces shall be similar to that of 60 grit sand paper.

ITEM 995.01 (Continued)

P. Initial Curing Methods.

After the placement of concrete and prior to concrete finishing, the Fabricator shall initiate initial curing methods when the concrete surface begins to dry, to reduce moisture loss from the surface. Application of one or more of the following initial curing methods shall occur immediately after the bleed water sheen has disappeared.

1. Fogging.

Fogging nozzles shall atomize water into a fog-like mist. The fog spray shall be directed and remain visibly suspended above the concrete surface, to increase the humidity of the air and reduce the rate of evaporation. Water from fogging shall not be worked into the surface during finishing operations and shall be removed or allowed to evaporate prior to finishing.

2. Liquid-applied Evaporation Reducers

Evaporation reducers shall be sprayed onto the freshly placed concrete surface to produce an effective monomolecular film that reduces the risk of plastic-shrinkage cracking and rate of evaporation of the bleed water from the concrete surface. Evaporation reducers shall be applied in accordance with manufacturer's recommendations.

Q. Intermediate Curing Methods.

The Fabricator shall initiate intermediate curing methods if concrete finishing has taken place prior to the concrete reaching final set. The freshly finished concrete surface shall be protected from moisture loss, by the continuation of initial curing methods (fogging and evaporation reducers) until final curing methods are applied or by the use of liquid membrane-forming curing compounds (see *Liquid Membrane-Forming Compounds for Curing* section).

R. Final Curing Methods.

The Fabricator shall initiate and apply final curing methods to the concrete immediately after the following conditions are met:

- (a) Completion of concrete finishing
- (b) Final set of concrete
- (c) Concrete has hardened sufficiently enough to prevent surface damage

During fabrication of Prestressed Concrete Beams, the Fabricator shall maintain the required concrete temperature ranges throughout the entire duration of the final curing method cycle as specified herein. Controlled and gradual termination of the final curing method shall occur after all specified conditions are met. The concrete temperature shall be reduced at a rate not to exceed 36°F per hour until the concrete temperature is within 20°F of the ambient temperature outside of the final curing method enclosure. The Fabricator shall maintain a minimum concrete temperature of 40°F until 100% f'c is attained (see *Handling and Storage* section below).

ITEM 995.01 (Continued)**1. Water Spray Curing.**

All exposed concrete surfaces shall remain moist with a continuous fine spray of water throughout the entire duration of the final curing method cycle (see *Table 4: Final Curing Method Cycle for Water Spray*).

Table 4: Final Curing Method Cycle for Water Spray

Sustained Concrete Temperature	Final Curing Method Cycle Duration	Compressive Strength
50°F ≤ °F ≤ 90°F	≥ Five (5) days	≥ 80% f _c

2. Saturated Covers for Curing.

All exposed concrete surfaces shall remain moist with a continuous application of saturated covers throughout the entire duration of the final curing method cycle (see *Table 5: Final Curing Method Cycle for Saturated Covers*). Saturated covers shall be allowed to dry thoroughly before removal to provide uniform, slow drying of the concrete surface.

Table 5: Final Curing Method Cycle for Saturated Covers

Sustained Concrete Temperature	Final Curing Method Cycle Duration	Compressive Strength
50°F ≤ °F ≤ 90°F	≥ Three (3) days	≥ 80% f _c

Saturated covers, such as burlap, cotton mats, and other coverings of absorbent materials shall meet the requirements of AASHTO M 182, Class 3. Saturated covers shall be in good condition, free from holes, tears, or other defects that would render it unsuitable for curing concrete. Saturated covers shall be dried to prevent mildew when storing. Prior to application, saturated covers shall be thoroughly rinsed in water and free of harmful substances that are deleterious or cause discoloration to the concrete. Saturated covers shall have sufficient thickness and proper positioning onto the concrete surface to maximize moisture retention.

Saturated covers shall contain a sufficient amount of moisture to prevent moisture loss from the surface of the concrete. Saturated covers shall be kept continuously moist so that a film of water remains on the concrete surface throughout the entire duration of the final curing method cycle. The Fabricator shall not permit the saturated covers to dry and absorb water from the concrete. Use of polyethylene film (see *Polyethylene Film* section) may be applied over the saturated cover to potentially decrease the need for continuous watering.

3. Sheet Materials for Curing.

All exposed concrete surfaces shall remain moist with a continuous application of curing sheet materials throughout the entire duration of the final curing method cycle (see *Table 6: Final Curing Method Cycle for Curing Sheet Materials*).

Table 6: Final Curing Method Cycle for Sheet Materials

Sustained Concrete Temperature	Final Curing Method Cycle Duration	Compressive Strength
50°F ≤ °F ≤ 90°F	≥ Three (3) days	≥ 80% f _c

ITEM 995.01 (Continued)

Sheet Materials used for curing, such as polyethylene film, white burlap-polyethylene sheeting, and reinforced paper shall meet the requirements of ASTM C171 and the specifications herein. Sheet materials shall inhibit moisture loss and reduce temperature rise in concrete exposed to radiation from the sun during the final curing method cycle. Adjoining covers shall overlap not less than 12 inches. All edges of the covers shall be secured to maintain a moist environment.

(a) Polyethylene Film.

Polyethylene film shall meet the requirements of ASTM C171, consist of a single sheet manufactured from polyethylene resins, be free of visible defects, and have a uniform appearance. Careful considerations shall be taken by the Fabricator to prevent the film from tearing during storage and application, so as to not disrupt the continuity of the film (polyethylene film reinforced with glass or other fibers is more durable and less likely to be torn). The Fabricator shall monitor the application of the film to prevent uneven spots from appearing (mottling) on the concrete surface, due to variations in temperature, moisture content, or both. The Fabricator shall prevent mottling from occurring on the concrete surface by applying additional water under the film or applying a combination of polyethylene film bonded to absorbent fabric to the concrete surface to retain and evenly distribute the moisture. Immediately following final finishing, polyethylene film shall be placed over the surface of the fresh concrete surface, so as to not damage the surface of the concrete and shall be placed and weighted so that it remains in contact with the concrete throughout the entire duration of the final curing method cycle. The film shall extend beyond the edges of the concrete surface. The film shall be placed flat on the concrete surface, avoiding wrinkles, to minimize mottling. Edges of adjacent polyethylene film shall overlap a minimum of 6 inches and be tightly sealed with the use of sand, wood planks, pressure-sensitive tape, mastic, or glue to maintain close contact with the concrete surface, retain moisture, and prevent the formation of air pockets throughout the entire duration of the final curing method cycle.

(b) White Burlap-Polyethylene Sheeting

White burlap-polyethylene sheeting shall meet the requirements of ASTM C171, be securely bonded to the burlap so to avoid separation of the materials during handling and curing of the concrete, and be applied in the same manner as the polyethylene film.

(c) Reinforced Impervious Paper.

Reinforced impervious paper shall meet the requirements of ASTM C171, consist of two sheets of kraft paper cemented together with a bituminous adhesive and reinforced with embedded cords or strands of fiber running in both directions, and be white in color. Reinforced impervious paper shall be treated to prevent tearing when wetted and dried.

Reinforced impervious paper can be reused so long as it is effective in retaining moisture on the concrete surface. The Fabricator shall visually inspect the reinforced impervious paper for all holes, tears, and pin holes from deterioration of the paper through repeated use by holding the paper up to the light. The paper shall be discarded and prohibited from use when the moisture is no longer retained.

After the concrete has hardened sufficiently to prevent surface damage, the concrete surface shall be thoroughly wetted prior to the application of the reinforced impervious paper, and be applied in the same manner as the polyethylene film.

4. Liquid Membrane-Forming Compounds for Curing.

All exposed concrete surfaces shall remain moist with a continuous application of liquid membrane-forming compounds throughout the entire duration of the final curing method cycle (see *Table 7: Final Curing Method Cycle for Liquid Membrane-Forming Compounds*).

ITEM 995.01 (Continued)**Table 7: Final Curing Method Cycle for Liquid Membrane-Forming Compounds**

Sustained Concrete Temperature	Final Curing Method Cycle Duration	Compressive Strength
50°F ≤ °F ≤ 90°F	≥ Seven (7) days	≥ 80% f _c

Liquid membrane-forming compounds shall meet the requirements of ASTM C 1315, Type I, Class A and shall exhibit specific properties, such as alkali resistance, acid resistance, adhesion-promoting quality, and resistance to degradation by ultraviolet light, in addition to moisture-retention capabilities. Liquid membrane-forming compounds shall consist of waxes, resins, chlorinated rubber, or other materials to reduce evaporation of moisture from concrete. Liquid membrane-forming compounds shall be applied in accordance with the manufacturer's recommendations.

Liquid membrane-forming compounds shall be applied immediately after the disappearance of the surface water sheen following final finishing. All exposed surfaces shall be wetted immediately after form removal and kept moist to prevent absorption of the compound, allowing the curing membrane to remain on the concrete surface for proper membrane moisture retention. The concrete shall reach a uniformly damp appearance with no free water on the surface prior to the application of the compound.

If patching or finishing repairs are to be performed prior to the application of the compound, the Precast Concrete Bridge Element shall be covered temporarily with saturated covers until the repairs are completed and the compound is applied. Only areas being repaired shall be uncovered during this period. While the saturated covers are removed to facilitate the patching process, the work shall continue uninterrupted. If for any reason the work is interrupted, saturated covers shall be placed onto the uncovered concrete surface, until the work continues and is completed, at which time the curing compound shall be applied to the repaired area.

Careful considerations shall be made by the Fabricator to determine if the evaporation rate is exceeding the rate of bleeding, thus causing the surface to appear dry even though bleeding is still occurring. Under such conditions, the application of liquid membrane-forming compounds to the concrete surface shall be delayed, in order to prevent bleed water from being sealed below the concrete surface and avert map cracking of the membrane films, reduction in moisture-retention capability, and reapplication of the compound. To diagnose and prevent this condition, the Fabricator shall place a transparent plastic sheet over a test area of the uncured and unfinished concrete surface and shall determine if any bleed water accumulates under the plastic.

The compound shall be applied in two applications at right angles to each other to ensure uniform and more complete coverage. On very deeply textured surfaces, the surface area to be treated shall be at least twice the surface area of a troweled or floated surface. In such cases, two separate applications may be needed, each at 200 ft²/gal., with the first being allowed to become tacky before the second is applied.

The curing compound shall be applied by power sprayer, using appropriate wands and nozzles with pressures between 25 and 100 psi. For very small areas such as repairs, the compound shall be applied with a wide, soft-bristled brush or paint roller. The compound shall be stirred or agitated before use and applied uniformly in accordance with the manufacturer's recommended rate. The Fabricator shall verify the application rates are in accordance with the manufacturer's recommended rate.

ITEM 995.01 (Continued)

When the concrete surface is to receive paint, finishes, or toppings that require positive bond to the concrete, it is critical that the curing procedures and subsequent coatings, finishes, or toppings be compatible to achieve the necessary bond.

After the termination of the final curing method cycle has occurred, liquid membrane-forming compounds shall be removed by blast-cleaning from any concrete surface that is to receive paint, finishes, plastic concrete from secondary pour, grout, or any other toppings that require bonding to the concrete surface. These surfaces shall be further blast-cleaned to remove the cement matrix down to exposed aggregate to ensure proper bonding to the material. The method used to remove the curing compound shall not damage the reinforcement and coating. Compounds are prohibited on any concrete surface that will have a penetrating or coating type treatment such as a sealer, stain, or waterproofing membrane applied to it.

5. Accelerated Curing.

Accelerated curing shall use live steam or radiant heat with moisture in accordance with PCI MNL-116 as modified herein. The concrete temperature shall meet the maximum heat increase and cool down rates as specified herein. Concrete temperature monitoring shall meet the requirements of the *Temperature Monitoring* section. Excessive and fluctuating rates of heating and cooling shall be prohibited. The concrete temperature shall not exceed 158°F at any time. The Fabricator shall meet the following accelerated curing sequencing and requirements.

(a) Initial Delay Period.

The initial delay period shall be defined as the duration immediately following the placement of the concrete and the attainment of initial set of the concrete. The Fabricator shall determine the time of initial set in accordance with AASHTO T 197 specifications. Throughout the entire duration of the initial delay period, initial curing shall be implemented. The temperature increase period (see *Temperature Increase Period* section) shall not occur until initial set of the concrete is attained. During the initial delay period, the concrete temperature shall meet the following requirements:

- i. Concrete temperature rate of increase shall not exceed 10°F per hour.
- ii. Total concrete temperature increase shall not exceed 40°F higher than the placement concrete temperature or 100°F, whichever is less

(b) Temperature Increase Period.

The temperature increase period shall be defined as the duration immediately following the completion of the initial delay period (after initial set) and immediately prior to the start of the constant maximum temperature period. Application of steam to the enclosure shall not occur until the initial delay period is complete. After the initial delay period is complete, all exposed concrete surfaces shall be cured in a moist environment where the concrete temperature increases at a rate not to exceed 36°F per hour.

(c) Constant Maximum Temperature Period.

The constant maximum temperature period shall be defined as the duration immediately following the completion of the temperature increase period and immediately prior to the start of the temperature decrease period. After the temperature increase period is complete, all exposed concrete surfaces shall be cured in a moist environment at a controlled and constant elevated temperature throughout the entire duration of the constant maximum temperature period. Termination of the constant maximum temperature period and the start of the termination decrease period shall occur after all specified conditions are met (see *Table 8: Constant Maximum Temperature Period*).

ITEM 995.01 (Continued)**Table 8: Constant Maximum Temperature Period**

Sustained Concrete Temperature	Constant Maximum Temperature Period	Compressive Strength
$120^{\circ}\text{F} \leq \text{F} \leq 158^{\circ}\text{F}$	$6 \text{ hrs} \leq \text{Time} \leq 48 \text{ hrs}$	$\geq 80\% f'_c$

(d) Temperature Decrease Period.

After the constant maximum temperature period is complete, the concrete temperature shall be cured in a moist environment at a controlled and reduced rate not to exceed 36°F per hour until the concrete temperature is within 20°F of the ambient temperature outside of the curing enclosure.

S. Release.

The Fabricator shall not release strands or handle the Prestressed Concrete Beam until Quality Control compressive strength cylinders attain a minimum compressive strength of 80% Design Strength (f'_c) or the specified detensioning compression strength as indicated on the approved shop drawings has been achieved. All exposed concrete surfaces shall continue to be cured in conformance with the *Final Curing Methods* sections until completion.

T. Handling and Storage of Prestressed Concrete Beams.

Prestressed Concrete Beams may be exposed to temperatures below freezing (32°F) when the chosen curing cycle has been completed, provided that the following conditions are met:

- (a) Prestressed Concrete Beams are protected from precipitation with polyethylene curing covers until $100\% f'_c$ is attained
- (b) Prestressed Concrete Beams maintain a minimum concrete temperature of 40°F until $100\% f'_c$ is attained

Prestressed Concrete Beams damaged during handling and storage will be repaired or replaced at MassDOT's direction at no cost to MassDOT. Prestressed Concrete Beams shall be lifted at the designated points by approved lifting devices embedded in the concrete and in accordance with proper lifting and handling procedures. Storage areas shall be smooth and well compacted to prevent damage due to differential settlement. Prestressed Concrete Beams shall be supported on the ground by means of continuous blocking, in accordance with the approved dunnage plan.

Prestressed Concrete Beams shall be loaded on a trailer with blocking as described above, in accordance with the approved dunnage plan. Shock-absorbing cushioning material shall be used at all bearing points during transportation of the Prestressed Concrete Beams. Blocking shall be provided at all locations of tie-down straps. Prestressed Concrete Beams stored prior to shipment shall be inspected by the Contractor prior to being delivered to the site to identify damage that would be cause for repair or rejection.

U. Repairs and Replacement.

In the event defects are identified, they shall be classified in the following categories and a non-conformance report (NCR) shall be filed if required. The NCR shall be submitted to MassDOT for review. Defects in all categories shall be documented by plant Quality Control personnel and made available to MassDOT upon request. Any required repairs shall utilize materials listed on the MassDOT QCML.

ITEM 995.01 (Continued)

Where noted, defects shall be repaired according to the PCI Northeast Region Guidelines for Resolution of Non-Conformances in Prestressed Concrete Beams, Report Number PCINE-18-RNPCBE. Please note that reference to PCINE-18-RNPCBE is made for repair details only. In the case of conflicts with this Special Provision, this Special Provision shall govern.

1. Category 1, Surface Defects.

Category 1 defects do not need to be repaired, and an NCR does not need to be filed. Surface defects are defined as the following:

- (a) Surface voids or bug holes that are less than 5/8-inch in diameter and less than 1/4-inch deep, except when classified as Category 4
- (b) Cracks less than or equal to 0.006 inches wide
- (c) Cracks less than or equal to 0.125 inches wide on surfaces that will receive a concrete overlay or spray-applied membrane waterproofing

2. Category 2, Minor Defects.

Category 2 defects shall be repaired, but an NCR does not need to be filed. Minor defects are defined as the following:

- (a) Spalls, honeycombing, surface voids that are less than 2 inches deep and have no dimension greater than 12 inches
- (b) Cracks less than or equal to 0.016 inches that will not receive a concrete overlay or spray-applied membrane waterproofing
- (c) Broken or spalled corners that will be covered by field-cast concrete

Minor defects shall be repaired according to PCINE-18-RNPCBE. Cracks shall be sealed according to the PCI Repair Procedure #14 in PCINE-18-RNPCBE.

3. Category 3, Major Defects.

For Category 3 defects, the Fabricator shall prepare an NCR that documents the defect and describes the proposed repair procedure. The NCR shall be submitted to MassDOT for approval prior to performing the repair. Major defects are defined as the following:

- (a) Spalls, honeycombing and surface voids that are deeper than 2 inches or have any dimension greater than 12 inches, when measured along a straight line
- (b) Concentrated area of defects consisting of four or more Category 2 Defects within a 4-square foot area
- (c) Exposed reinforcing steel
- (d) Cracks greater than 0.016 inches and less than or equal to 0.060 inches in width that will not receive a concrete overlay or spray-applied membrane waterproofing
- (e) Bearing area spalls with dimensions not exceeding 3 inches
- (f) Cracks, spalls and honeycombing that will be encased in cast in place concrete need not be repaired, but the limits and location of the defects shall be documented with an NCR

Upon MassDOT approval, defects and cracks shall be repaired according to PCINE-18-RNPCBE and this specification. All repairs shall be completed at the expense of the Contractor.

ITEM 995.01 (Continued)**4. Category 4, Rejectable Defects.**

Rejectable defects as determined by the MassDOT Inspector, RMS, and Engineer may be cause for rejection. Fabricator may submit an NCR with a proposed repair procedure, requesting approval. Some rejectable defects are defined as the following:

- (a) Surface defects on more than 5% of the surface area which will be exposed to view after installation
- (b) Minor defects that in total make up more than 5% of the surface area of the unit
- (c) Cracks greater than 0.060 inches in width except as noted in Category 1
- (d) Elements fabricated outside of the specified tolerances
- (e) MassDOT compressive strength testing that does not meet the specified Design Strength, f'_c

V. Loading.

Prior to the Fabricator loading the Precast Bridge Element on to the truck for shipping, the Fabricator shall provide the MassDOT Plant Inspector and RMS a minimum seven (7) days' notice of the Fabricator's intent to load the Precast Bridge Element. Inspection by the MassDOT Plant Inspector shall take place while the element is still on dunnage in the yard. The element shall not be loaded onto the truck until the MassDOT Plant Inspector has performed the inspection.

W. Shipping.

Prior to shipment, the Fabricator shall perform the following actions and provide the required documentation to the MassDOT Plant Inspector:

- (a) Prestressed Concrete Beams shall remain at the Fabricator's plant for a minimum of 7 days after cast date.
- (b) QC Inspection Reports shall be signed by the Quality Control Manager and provided to the MassDOT Plant Inspector.
- (c) QC Compressive Strength Test Report Forms attaining Design Strength, f'_c for the Prestressed Concrete Beam's representative subplot shall be generated by the Fabricator and provided to the MassDOT Plant Inspector.
- (d) Certificate of Compliance shall be generated by the Fabricator as described under the Fabricator Quality Control section and provided to the MassDOT Plant Inspector.
- (e) All MassDOT RMS approved Corrective Actions submitted on the Non-Conformance Reports (NCR), shall be verified to have been completed by the MassDOT Plant Inspector and Quality Control Manager.
- (f) All NCRs shall be signed off by the Quality Control Manager, MassDOT Inspector and MassDOT RMS.

X. Delivery.

Upon Delivery, the following documentation shall be provided to 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 subplot.
- (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.

ITEM 995.01 (Continued)

The Contractor shall inspect the Prestressed Concrete Beams upon receipt at the site. Prestressed Concrete Beams damaged during delivery shall be repaired or replaced at MassDOT's direction at no cost to MassDOT.

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 subplot.
- (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, Erection and the applicable sections in Chapter 8 of the PCI Design Handbook (seventh 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 995.01 (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 on full size 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) For NEDBT and NEXT D beams, 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. Adjacent Prestressed Concrete 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. The location of the beams on the abutments and piers shall be laid out according to the nominal width of the beams as shown on the plans. Each beam shall be erected such that after erection, the beam shall lie entirely within the horizontal lines defined by its nominal width for its entire length and shall not infringe on the space allocated for any adjacent beam. The Contractor may adjust the width of the shear key between beams.

Immediately prior to erecting the beams, the keyway surfaces shall be cleaned at the job site of all dust, dirt, and carbonation using a high-pressure water blast.

After all beams are erected, the actual overall width of the beams as laid out shall not deviate from the nominal dimension shown on the framing plan beyond a tolerance of +0 inches and -1 inches.

After the beam layout has been accepted by the Engineer, the Contractor shall cut the lifting devices off below the top of the beam.

ITEM 995.01 (Continued)**2. Transverse Tie Tensioning.**

Unless shown otherwise on the plans, the transverse ties shall be tensioned to 5,000 pounds before the keyways are filled. After the keyways are filled with mortar (M4.04.0) and the mortar has cured, the ties shall be tensioned as specified on the plans. No traffic or heavy equipment shall be allowed on the bridge until all transverse ties have been properly tensioned and the deck has been cast and cured.

3. Mortaring of Keyways.

The precast concrete keyways that will receive mortar shall be free of materials such as paint, oil, curing compound, bond breaker, dirt etc. that will inhibit bonding. The precast concrete keyways shall be hydro-blasted with equipment that can remove asphaltic material, oils, dirt, rubber, curing compounds, paint carbonation, laitance, and other potentially detrimental materials, which may interfere with the bonding of the mortar and precast concrete.

Exposed reinforcing steel in the precast beam 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.

Mortar (M4.04.0) shall be placed in strict accordance with the manufacturer's recommendations and instructions.

The keyways shall be filled flush to the top of the beams and any vertical misalignment between beams shall be feathered out on a slope of 1 to 12. Curing shall be performed in strict accordance with the manufacturer's recommendations. The keyways shall not be filled in cold weather when either the ambient temperature or the prestressed concrete beam's temperature is below the mortar manufacturer's recommendation. No localized heating of either the prestressed concrete beams or of the air surrounding the keyway will be permitted in an attempt to reach application temperatures.

If the keyways are not filled within five days after the beams are erected, the Contractor shall cover and protect the keyways from weather and debris until they are filled.

4. Concrete Deck Slab Placement.

Prior to casting the concrete deck slab, the top of the beam shall be clean and free of all laitance or bond inhibiting agents. The concrete deck slab shall be placed after the transverse ties have been fully tensioned. 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 after use with a grout of the same color as that of the precast cement concrete.

5. Backwalls and Curtain Walls

The backwalls and the curtain walls at the abutment cap bridge seats shall be cast only after the beam layout has been accepted. Closed cell foam shall be attached to the bridge beams to the limits and thickness as shown on the plans and the backwall / curtain wall concrete shall be placed directly against it.

ITEM 995.01 (Continued)**DAMP-PROOFING**

Damp-proofing shall be applied to the rear face of the abutment cap within the limits shown on the plans in accordance with Subsection 970.

TIMBER BRIDGE RAIL**MATERIALS:**

Sawn Lumber and glulam shall comply with the requirements of AASHTO M168 and shall be treated with wood preservative in accordance with AASHTO M133. Bridge rail shall be horizontal laminated glulam, visually graded western species Combination No. 2, or visually graded Southern Pine combination No. 48. Posts, curbs, scuppers and spacer blocks may be sawn lumber or glulam. When sawn lumber is used, material shall be visually graded No. 1 Southern Pine or visually graded No. 1 Douglas Fir-Larch

Steel plates and shapes shall comply with the requirements of ASTM A36. Bolts shall comply with ASTM A307 requirements, Grade 2 and should preferably be dome-head timber bolts. Bolts on the rail traffic face shall be dome head. Split rings shall be manufactured from SAE 1010 hot rolled carbon steel (SAE J412). Shear plates shall be malleable iron manufactured according to ASTM A47, Grade 32510. All steel components and fasteners shall be galvanized in accordance with AASHTO M111 or M232 or shall otherwise be provided with adequate corrosion protection.

Rail post, baseplate, clamp bar, and rail splice shall conform to the requirements of ASTM B221 Alloy 6061-T6. Stainless steel fasteners shall conform to the requirements of ASTM A 193 grade BB (type 403). Anchor bolts shall conform to the requirements of AASTHO M164 and be galvanized. A rotation capacity test is not required. Aluminum washers shall conform to the requirements of ASTM B 209 alloy Alclad 23024-T4.

ITEM 995.01 (Continued)**FABRICATION AND CONSTRUCTION**

All wood shall be cut, drilled and completely fabricated prior to pressure treatment with preservatives. When field fabrication of wood is required or if wood is damaged, all cuts, bore holes, and damage shall be immediately treated with wood preservative in accordance with AASHTO M133.

Unless noted, malleable iron washers shall be provided under bolt heads and under nuts that are in contact with wood. When the size and strength of the head are sufficient to develop connection strength without wood crushing, washers may be omitted under heads of dome-head timber bolts.

Tops of rail posts and top of the rail splice plate kerf shall be sealed with roofing cement or otherwise protected from direct exposure to weather.

Handrails shall be continuous over a minimum of four posts. Rails shall have a handrail splice with minimum ½" gap in the panel over the bridge joints.

Handrail posts, rails, base plates shall receive a dark bronze anodized finish.

BASIS OF PAYMENT

Upon receipt of the Notice To Proceed, the Contractor shall submit on his/her proposal form a Schedule of Unit Prices for the major component Sub-Items that make up Item 995. as well as their total bridge structure LUMP SUM cost for Bridge Superstructure No. P-14-001 (445). The bridge superstructure Lump Sum breakdown quantities provided in the proposal form are estimated and not guaranteed. The total of all partial payments to the Contractor shall equal the LUMP SUM contract price regardless of the accuracy of the quantities furnished by the Engineer for the individual bridge components. The cost of labor and materials of any Item not listed but required to complete the work shall be considered incidental to Item 995. and no further compensation will be allowed.

The schedule on the proposal form applies only to Bridge Superstructure No. P-14-001 (445). Payment for similar materials and construction at locations other than at this bridge superstructure shall not be included under this Item.

Sub-Item numbering is presented for information only in coordination with MassDOT Standard Nomenclature.

ITEM 995.01 (Continued)

The following is a schedule of Items that are included in but not limited to ITEM 995.

SCHEDULE OF ITEMS

<u>Sub-Item</u>	<u>Description</u>	<u>Quantity</u>	<u>Unit/Unit</u>	<u>Unit Price</u>
482.31	Sawing & Sealing Joints in Asphalt Pavement at Bridges	40	FT	
904.3	5000 psi, 3/4 in., 685 HP Cement Concrete	70	CY	
910.1	Steel Reinforcement for Structures – Epoxy Coated	11000	LB	
921.1	Laminated Elastomeric Bearing W/ Anchor Bolts (0-50)	20	EA	
930.305	Prestressed Concrete Deck Beams (S48-12)	151	FT	
965.	Membrane Waterproofing for Bridge Decks	760	SF	
970.	Damp Proofing	440	SF	
975.8	Timber Bridge Railing	110	FT	
			TOTAL PRICE	_____

*** END OF SECTION ***

DOCUMENT A00802

DETAIL SHEETS

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ITEM 102.

SELECTIVE CLEARING AND THINNING

Wood/Brush Area Only. To establish surface and grade to limits of grading shown on plans and as directed by the Engineer. Limited to within ROW.

ITEM 104.

TREE REMOVED - DIAMETER 24 INCHES AND OVER

For removal of large tree at STA 11+64 Offset Left. Tree to be removed to facilitate relocation of Utility Poles and aerial utilities.

ITEM 144.

CLASS B ROCK EXCAVATION

20% of Bridge Excavation is assumed to require Class B Rock Excavation

ITEM 151.2

GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES

For abutments.

ITEM 156.

CRUSHED STONE

To be used under riprap slopes.

ITEM 453.

HMA JOINT SEALANT

For longitudinal joints on surface course, and limits of work at sawcuts and as required by the Engineer.

ITEM 620.121

GUARDRAIL, STEEL-BACKED TIMBER, TL-2 (SINGLE FACED)

Type A, with offset block

ITEM 769.

PAVEMENT MILLING MULCH UNDER GUARD RAIL

To be used in conjunction with guard rail item 620.121

ITEM 833.7

DELINEATION FOR GUARDRAIL TERMINI

To be placed at the ends of the guardrail.

DOCUMENT A00808

PROJECT UTILITY COORDINATION FORM

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Project Utilities Coordination (PUC) Form
CONTACTS AND GENERAL UTILITY INFORMATION

6/7/2024
Revision Date:

City/Town: Plympton
 Project File #: 609435
 Utility Pole Set: Eversource
 Resident Engineer: Harry Adolphe
 Mass DOT PM: Harry Adolphe
 Scheduled Ad Date: 6/29/2024
 Total Poles Relocated: 2
 6/7/2024 PRINTED

Utility Company	Contact	Office #	Cell #	Email	Office # (978) 905-2100		Cell #	Email	Reimbursement		Notes	Potential for District Initiated Early Relocation *		Utilities On Bridge/Structure		Utilities Underground (UG)/Aerial (OH)	
					Yes	No			Agreement	Non-Refillable		Yes	No	Yes	No	UG	OH
Eversource Electric	Ned Sadowski		(413) 537-6594	ned.sadowski@eversource.com	X		X					X				X	
Verizon	Karen Mealey	(774) 409-3160		karen.m.mealey@verizon.com		X					Verizon is not seeking reimbursement for this work. See 32/47/23 email.		X				X
Comcast	Wendy Brown	(978) 848-5163		Wendy_Brown@cable.comcast.com	X		X						X				X

Utility Relocation Notes for MassDOT Contractor
 Unless otherwise noted by Contract, the MassDOT Contractor is to provide the District Construction Office with 7 Calendar Days advance notification in order to validate the current progress and provide the required 30 Days advance notice-to-proceed for the first Utility - and each subsequent Utility. These advance notifications are to be identified in the Contractor's Schedules (Pre-Con preparation, Baseline, Subnets, and Updated/Monthly Schedules) as specified in Subsection 8.02 (for DBB Contracts) and/or Section 9 (for DBB 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 Plympton. 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	

6/7/2024
PRINTED



RESPONSIBLE PARTY	DESCRIPTION - Utility Relocation Phases, Tasks and Activities	Estimated Duration (Work Days) by Utilities (Lead time not included)	Concurrent / Exclusive Utility Work				Access Restraint & Limitations of Operations Notes	
			Exclusive Utility on site	Utility working with other Utilities on site	Contractor Off-Site	Contractor Concurrent	Potential Access Restraint (Yes/No)	Reason/Note (optional)
C = Contractor	>Contractor to notify the Utilities 30 days prior to the start of any work. >Contractor to perform clearing & grubbing, tree trimming, and required slope work. >Contractor to maintain utility access over structure until removal and/or transfer of OHW's. >Contractor to provide and implement TTCP for removal and/or transfer of OHW's.							
U = Utility Co.	Overhead Eversource Electric							
Task: 1	u Vegetation work required.	0	X					
	u Eversource to relocate & install new 40' pole 9/34 1 to 2' away. Then transfer 25kva transformer, primary / secondary service, reroute to new pole via new jo poles 9/34 9/34-5 9/35.	2	X					
	u Eversource to install 40' pole 9/34-5 and anchor / guy.	2	X					
	Sub-Total	4	X					
Task: 2	Comcast							
	u Strand/Lash	1	X					
	u De/Re Fiber/swing Fiber	3	X					
	u Overlash Trunk	2	X					
	u Cold splice/cut-over coax/wreck-out	1	X					
	Sub-Total	7	X					
Task: 3	Verizon							
	u **Transfer OHW's	2	X					
	Eversource Electric							
Task: 4	u Remove old 40' pole.	1	X					
	Sub-Total	1	X					

IMPORTANT BASIS NOTES - FOR CONTRACTOR

- 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).
- "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.
- "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).
- Utility non-work periods - For planning purposes, the durations above contain some non work days (contingency) for New England conditions (precipitation, high temperatures, low temperatures, snow, ice). Gas line work however, typically has a seasonal restriction and can NOT be installed from 15-November to 15-March. Municipally Owned Electric and Gas Utilities are also restricted from proceeding from 15-November to 15-March. The Contractor shall (and the CTD plan) reflect this calendar restriction within the schedule (unless otherwise note).
- 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.
- 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 #).
- Prior to starting any and all enabling work for Utilities, the Contractor is to plan in advance with submittals and approved durations.
- * 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.
- ** Assumed durations NOT provided by Utility.



**WORK
ZONE
SAFETY**

Temporary Traffic Control

*Typical Details and
Massachusetts Guidelines
for MassDOT, Municipalities,
Utilities, and Contractors*

SHEET INDEX (1 OF 3)

<u>GENERAL</u>	<u>PAGE</u>
NOTES AND GUIDELINES.....	1-9
FIG. 1: TYPICAL TRAFFIC CONTROL DEVICES.....	10
FIG. 2: PAVEMENT EDGE DROP-OFF GUIDANCE.....	11
FIG. 3: TYPICAL DEVICE SPACING; (AT 30 MPH).....	12-13
FLAGGING GUIDANCE.....	14-15
FIG. 4-5: TYPICAL PEDESTRIAN DEVICES.....	16-17
 <u>STATIONARY OPERATIONS</u>	
FIG. 6: TWO LANE UNDIVIDED ROADWAY; HALF OF ROADWAY CLOSED; WORK NEAR CURVE.....	18-19
FIG. 7: TWO LANE UNDIVIDED ROADWAY; HALF OF ROADWAY CLOSED.....	20-21
FIG. 8: TWO LANE UNDIVIDED ROADWAY; SHOULDER CLOSED.....	22-23
FIG. 9: TWO LANE UNDIVIDED ROADWAY WITH TRAVERSABLE SHOULDER; HALF OF ROADWAY CLOSED; MAINTAIN TWO-WAY TRAFFIC.....	24-25
FIG. 10: FOUR LANE UNDIVIDED ROADWAY; RIGHT LANE CLOSED.....	26-27
FIG. 11: FOUR LANE UNDIVIDED ROADWAY; LEFT LANE CLOSED.....	28-29
FIG. 12: FOUR LANE UNDIVIDED ROADWAY; HALF OF ROADWAY CLOSED.....	30-31
FIG. 13: MULTILANE DIVIDED ROADWAY; RIGHT LANE CLOSED.....	32-33
FIG. 14: MULTILANE DIVIDED ROADWAY; LEFT LANE CLOSED.....	34-35
FIG. 15: MULTILANE DIVIDED ROADWAY; CENTER LANE OR RIGHT/CENTER LANES CLOSED.....	36-37
FIG. 16: MULTILANE DIVIDED ROADWAY; CENTER LANE OR LEFT/CENTER LANES CLOSED.....	38-39

SHEET INDEX (2 OF 3)

<u>STATIONARY OPERATIONS (CONT.)</u>	<u>PAGE</u>
FIG. 17: MULTILANE DIVIDED ROADWAY; RIGHT SIDE OF OFF RAMP CLOSED.....	40-41
FIG. 18: MULTILANE DIVIDED ROADWAY; LEFT SIDE OF OFF RAMP CLOSED.....	42-43
FIG. 19: MULTILANE DIVIDED ROADWAY; ROADWORK BEYOND ON RAMP.....	44-45
FIG. 20: MULTILANE DIVIDED ROADWAY; ROADWORK BEYOND OFF RAMP.....	46-47
FIG. 21: MULTILANE DIVIDED ROADWAY; TYPICAL RAMP CLOSURE.....	48-49
FIG. 22: MULTILANE DIVIDED ROADWAY; TYPICAL CLOVERLEAF RAMP CLOSURE.....	50-51
FIG. 23: MULTILANE DIVIDED ROADWAY; TYPICAL RAMP CLOSURE; ADVANCE SIGNING.....	52-53
FIG. 24: FOR MULTILANE DIVIDED ROADWAY; PLACEMENT OF TEMPORARY PORTABLE RUMBLE STRIPS.....	54-55
 <u>MOBILE OPERATIONS</u>	
NOTES FOR MOBILE OPERATIONS.....	56
FIG. 25: ANY ROADWAY; BEYOND RIGHT SHOULDER.....	57
FIG. 26: ANY ROADWAY; SHOULDER.....	58
FIG. 27: DIVIDED ROADWAY; MEDIAN WORK.....	59
FIG. 28: UNDIVIDED TWO LANE ROADWAY; HALF OF ROADWAY CLOSED.....	60
FIG. 29: MULTILANE DIVIDED ROADWAY; LEFT LANE.....	61
FIG. 30: MULTILANE DIVIDED ROADWAY; RIGHT LANE.....	62
FIG. 31: MULTILANE DIVIDED ROADWAY; CENTER LANE.....	63
FIG. 32: POST-STORM CLEANUP OPERATION.....	64

SHEET INDEX (3 OF 3)

<u>EMERGENCY RESPONSE</u>	<u>PAGE</u>
NOTES FOR TRAFFIC EMERGENCY/INCIDENT OPERATIONS...	65
FIG. 33: ANY ROADWAY; SHOULDER ENCROACHMENT.....	66
FIG. 34: TWO LANE ROADWAY; NO SHOULDER; TRAVEL LANE ENCROACHMENT.....	67
FIG. 35: TWO LANE ROADWAY; TRAVERSABLE SHOULDER; SINGLE LANE ENCROACHMENT.....	68
FIG. 36: TWO LANE ROADWAY; TRAVERSABLE SHOULDER; CENTER OF ROADWAY.....	69
FIG. 37: MULTILANE DIVIDED ROADWAY; RIGHT LANE.....	70
FIG. 38: MULTILANE DIVIDED ROADWAY; LEFT LANE.....	71
FIG. 39: MULTILANE UNDIVIDED ROADWAY; LEFT LANE.....	72
FIG. 40: MULTILANE DIVIDED ROADWAY; MIDDLE LANE; APPROACH FROM LEFT.....	73
FIG. 41: MULTILANE DIVIDED ROADWAY; MIDDLE LANE; APPROACH FROM RIGHT.....	74
 <u>TRAFFIC SIGNAL REPAIR WORK AT INTERSECTION</u>	
FIG. 42: MULTILANE UNDIVIDED ROADWAY; LEFTMOST OR LEFT TURN LANE.....	75
FIG. 43: TWO LANE UNDIVIDED ROADWAY; ONE LEG OF INTERSECTION.....	76
FIG. 44: MULTILANE UNDIVIDED ROADWAY; CENTER OF INTERSECTION.....	77
 <u>PEDESTRIAN DETAILS</u>	
FIG. 45: PEDESTRIAN BYPASS.....	78
FIG. 46: TEMPORARY SIDEWALK CLOSURE.....	79
 <u>BIKE LANE DETAILS</u>	
FIG. 47: BIKE LANE CLOSURE.....	80-81

INTRODUCTION

This guide has been prepared to assist in the planning and installing of temporary traffic controls in maintenance, utility, or short-term construction work areas (work lasting 10 hours or less). This guide serves to assist with the many decisions that must be made for each work site. Special planning for traffic control is necessary on a case by case basis because conditions can vary widely among work locations. **Since this guide cannot cover every situation, representative illustrations covering typical short-term construction, maintenance, and utility operations are presented.**

All typical traffic control device setups illustrated should be considered as guides. The traffic control devices that are shown, the arrangement or position of the devices, and the distances prescribed in the tables are based on the Federal Highway Administration's (FHWA) Manual on Uniform Traffic Control Devices (MUTCD) and the Massachusetts Amendments to the MUTCD (MA Amendments), but these illustrations only present minimum standards. The provision of safe work zones for all roadway users and roadway workers affected by these activities is paramount. Traffic controls may be expanded or improved upon whenever deemed necessary. Traffic movement through the work site all traffic control devices shall be periodically observed and inspected at all locations.

If necessary, Part 6 of the MUTCD and the MA Amendments, Chapter 17 (Work Zone Management) of MassDOT's Project Development & Design Guide, and the "Traffic Engineering and Safety Section" of the MassDOT web site: (<https://www.massdot.state.ma.us/highway/Departments/TrafficandSafetyEngineering.aspx>), as well as MassDOT District offices can provide additional guidance, information, and suggestions for work zone setups.

RESPONSIBILITIES FOR TRAFFIC CONTROL

Short-term construction, maintenance, and utility work on or near the roadway creates a potentially hazardous situation, typically requiring the use of temporary traffic controls. These controls are important to protect both work crews and the road users. It is the responsibility of each maintenance foreman to establish and maintain safe and effective controls.

Usually the supervisor, working with the crew, plans the traffic control procedures for proposed work sites. The foreman is responsible for re-requesting, storing, and maintaining all traffic control devices necessary for their crews.

The foreman is responsible for placing the devices according to these guidelines. They must inspect each installation and observe traffic flow through the area. The foreman is generally authorized to make adjustments to the original installations that, in their judgment, are necessary to improve the control of traffic and establish greater safety.

All necessary traffic control devices must be installed before work begins and properly maintained during the work period. They must also be removed as soon as they are no longer relevant to the roadway conditions.

PAGE 2

In situations such as night time road or lane closures, detours, or other unusual conditions on state highways, the District Traffic Maintenance Engineer (DTME) should be advised. If the DTME is absent, the section foreman shall follow the instructions of the District Maintenance Engineer.

TRAFFIC CONTROL DEVICES

Traffic control devices regulate the movement of road users, warn of unexpected or unusual roadway conditions, and inform them how to maneuver safely through or around the work area. All signs, channelizing devices, barricades, and other miscellaneous traffic control devices should work together to guide traffic safely and efficiently. Common temporary traffic control devices are outlined and described below.

Signs

Temporary traffic control zone (TTCZ) signs are the primary means of providing information and directions to roadway users. All signs must be retroreflective per MassDOT's latest standard.

Warning signs call attention to unexpected conditions and to situations that might not be readily apparent to road users on or adjacent to a roadway. Warning signs alert road users to conditions that might call for a reduction of speed or an action in the interest of safety and efficient traffic operations. Nearly all warning signs for construction and work areas have black legends and borders on a fluorescent orange background.

Regulatory signs shall be used to inform road users of selected traffic laws or regulations and indicate the applicability of the legal requirements. Regulatory signs typically have black legends and borders on a white background.

Channelizing Devices

When used properly, traffic cones, reflectorized plastic drums, and barricades guide traffic through the work area along an appropriate travel path. It takes roadway users a certain distance along the roadway to safely move away from the upcoming active work site. These transition distances are based on the following taper length (L) formulas:

$L = WS^2/60$ for speeds of 40 mph or less; or

$L = WS$ for speeds of 45 mph or more; where

- L = minimum length of taper in feet,
- S = posted speed limit or typical travel speed in miles per hour prior to the work, and
- W = width of lane closure in feet.

The spacing of channelizing devices (in feet) is approximately equal to the existing speed of traffic (in mph).

Warning Lights

Rotating beacons and other flashing lights mounted on work vehicles, signs, or channelizing devices help alert roadway users to the work area. They may also be used to warn roadway users of hazards within the work area. The first 10 drums in any taper shall be equipped with sequential flashing lights.

Arrow Boards

Arrow boards are a special type of sign that are highly visible work zone warning devices. They are particularly effective on highways, where both speed and volume are high. Arrow boards in the non-directional, CAUTION, mode (four corner flashing) may be used to indicate that a shoulder is closed. Arrow boards in the arrow mode shall only be used when a travel lane is dropped on a multi-lane road and one lane of traffic must merge with another. All arrow boards should be located at the beginning of each lane or shoulder closure taper without extending outside of it. Arrow boards shall flash at a rate of 25 to 40 flashes per minute. Arrow boards shall not be used to indicate a lane shift.

BASIC REQUIREMENTS

In every work situation, the temporary traffic control setup must: Give roadway users sufficient advance warning of the work area; advise roadway users of the proper actions to take and travel paths to follow; and provide protection to roadway users, workers, and the work area. These three general requirements can be met as outlined below.

Provide Advance Warning

Warning devices along the approaches to a work area alert roadway Users to changes to road and operating conditions. Roadway users are usually alerted to these dangers via a sign or series of signs installed in the same order as the roadway user generally would expect to see them on long-term construction projects.

The initial project limit sign is usually a general warning such as "ROAD WORK 1500 FT". Other operational warning signs then provide the roadway user with more specific information about the situation. A minimum of three advance warning signs (the initial project limit sign and two operational warning signs) is recommended when work is located on the traveled way. Warning lights and flags can be used to attract attention to the signs. A highly visible work area helps reinforce the advance warnings.

Advise and Direct Travelers

Operational warning signs provide information to the road-way user such as the type of work being performed, special conditions to watch for, or actions to take. These include signs such as, SHOULDER WORK, RIGHT LANE CLOSED, DETOUR 500 FT, ROAD CLOSED to THRU TRAFFIC, POLICE OFFICER AHEAD, etc. All of these signs must be located far enough in advance of the work area that the roadway user has sufficient time to react to them appropriately. For projects in Urban Areas, see detail: Typical Device Spacing for minimum sign spacing.

Protect Travelers, Workers, and the Work Area

The primary protection of any work area is its own visibility. Traffic cones, reflectorized plastic drums, portable breakaway barricades, etc. are used to make the work area visible and separate workers from traffic.

PAGE 4

Other devices, such as flashing lights, flags, delineators, temporary lighting, and portable changeable message signs (PCMS) can be used to provide additional emphasis and visibility.

Workers must protect themselves by being alert to their work situation, wearing safety vests and hard hats, and by facing traffic whenever possible.

Work vehicles can also add protection when they are equipped with truck mounted attenuators, rotating beacons, flashing lights, flashing arrow boards, etc. and are parked between workers and oncoming traffic. However, workers should not position themselves between two closely parked vehicles. No private personal vehicles are allowed within the work site.

PLANNING GUIDELINES

Decisions regarding selection of work area traffic control devices require a knowledge and understanding of the specifics of each work zone. As there may be vast differences between situations, three main variables need to be considered prior to determining the need for, or the selection of, traffic control devices: 1) location of work, 2) type of roadway, and 3) speed of traffic.

Compiling information about these variables will help with planning a safe work area control. Each of these variables is explained below.

Location of Work

The choice of traffic controls needed for a short-term construction, maintenance, or utility operation depends upon the work zone's location. As a general rule, the closer the active work site is to the roadway, the more control devices are needed. Work can take place:

- Away from the shoulder or edge of pavement. No special devices are needed if work is confined to an area 15 or more feet from the edge of the shoulder. A general warning sign, such as ROAD WORK AHEAD, should be used if workers and equipment must occasionally move closer to the roadway.
- On or near the shoulder/ edge of pavement. This area should be signed as if work were on the road itself, since it is part of the roadway users' recovery area. Advance warning and operational signs are needed, as well as channelization devices to direct traffic and keep the work area visible to roadway users.
- On the median of a divided highway. Work in this location may require traffic control in both directions of traffic. Advance warning and channelization devices should be used if the median is narrow.
- On the roadway. This condition requires detailed protection for workers and sufficient warning to roadway users. Advance warning must provide a general message that work is taking place as well as information about specific hazards and specific actions the roadway user must take.

TYPE OF ROADWAY

The characteristics of the roadway also have an important influence on the selection of work area traffic control. The roadway, itself, may present special hazards. You should plan for maximum protection, using the worst hazard present as your guide to signing the work area. Some general considerations are described below for road conditions.

One-way roads: A one-way road requires signage on both sides of the road if it carries two or more lanes in one direction, ensuring roadway users in all lanes are alerted and informed.

Two-way roads:

- **Undivided:** Two-way, undivided roads will usually require controls for both directions of traffic. When the active work site is well off the roadway, controls for the opposite lane may be eliminated.
- **Divided:** Work on divided multi-lane roadways can often be handled as work along a one-way road (i.e. signs are provided along both sides of the roadway along the direction affected). If the work is in the median, both directions of traffic must be controlled, and both approaches should be double signed (i.e. have all 3 advance warning signs on both sides of each direction).

EFFECTS OF SPEED ON WORK ZONES

Speed is an important consideration in the use of work area traffic control devices. As a general rule, the greater the speed of traffic approaching a work area, the greater the size, number, and spacing of control devices.

Size. The standard size for most warning signs is 36 x 36 inches on conventional roadways and 48 x 48 inches on freeways and expressways. Signs larger than the standard 36 x 36 inches may be desirable on high-speed conventional roads.

Position. Install signs far enough in advance of the work area so the roadway users have time to react to them (see charts associated with diagrams for spacing).

OTHER FACTORS

Sight Obstructions. To ensure safety, work areas must be visible. Assess the placement of the temporary traffic control devices by driving through the area, and determine if the devices can be easily seen and provide sufficient time for roadway users to react in a safe manner. Extra precaution should be enacted in areas where horizontal or vertical curves may obstruct a roadway user's clear view of road activities ahead.

Police/Flaggers. It should be noted that the MUTCD does not require police/flaggers for stationary setups. If police/flaggers are used, a police/flagger ahead sign should be used in advance of any point where the police/flagger is stationed to control road users.

PROCEDURES FOR WORK AREA TRAFFIC CONTROL

1. PLAN YOUR WORK

Inspect location of work area and its surroundings.

Analyze:

- Location of work in relation to the traveled way, intersecting road-ways, driveways, and sight distances;
- Type of roadway and traffic involved; and
- Volume and speed of traffic.

Meet and discuss the work and necessary traffic control with the crew.

Study representative illustrations in this guide to develop a temporary traffic control plan (TTCP).

Other Considerations:

- Base your traffic control plan on the premise that all roadway users are unfamiliar with the area.
- The closer the work area location is to traffic, the more controls are needed.
- Plan for maximum protection.
- Select and inspect the temporary control devices needed (including all warning signs), if they are not in good condition, REPLACE THEM!
- Then collect and transport them to the work site.
- Determine their proper placement.
- Install signs and other traffic control devices prior to allowing personnel or equipment onto the roadway.
- Make sure signs are reflective, accurate, clean, and meet specifications. Completely cover any existing permanent signs that will conflict with the messages of the new work area control signs.

2. INSTALLING/REMOVING TEMP. TRAFFIC CONTROL DEVICES

Care must be exercised when installing and removing temporary traffic control (TTC) devices. The traffic control needed to perform the operation safely is dictated by the location on the roadway the operation will occur: in a shoulder or a lane, in the left lane or right, etc. In all cases, installing TTC begins and ends as a mobile operation.

A shadow vehicle with a truck mounted attenuator (TMA) shall be used to protect workers installing and removing TTC devices on all roadways with a posted speed limit of 45 MPH or greater as directed by the engineer. TTC devices shall not be installed or removed from a shadow vehicle with a TMA. TTC devices shall be installed or removed from a work operation vehicle only and a shadow vehicle with a TMA shall be used to protect the workers installing or removing the devices.

PROCEDURES FOR WORK AREA TRAFFIC CONTROL (CONT.)

3. INSTALL TRAFFIC CONTROL DEVICES AT WORK SITE

FOR LOWER SPEED (≤ 40 MPH) ROADWAYS:

- 1) All devices shall be installed in order with the flow of traffic.
- 2) Where one direction of traffic is being affected, the first sign installed should be the sign farthest from the work site, and on the same side as the work.
- 3) Where two directions of traffic are affected, install signs for opposing traffic first, starting with the sign farthest from the work area. When signs for opposing traffic have been installed, install signs on the same side as the work area, again beginning with the sign farthest from the active work site.
- 4) Once signs are in place, other traffic control devices shall be installed in the same manner as the signs.

FOR HIGHER SPEED (≥ 45 MPH) ROADWAYS:

- 1) All devices shall be installed in order with the flow of traffic.
- 2) Install all advance warning signs, beginning with the ROAD WORK XXX (W20-1) sign and ending with the END ROAD WORK/DOUBLE FINES END (MA-R2-10E) sign.
- 3) Install all signs beginning with the opposite side which will be closed (for a right lane closure; first, install all signs on the left side (shoulder) and then install all signs on the right side (shoulder). No signs shall be erected on the roadway unless delineated by traffic control devices.
- 4) If required, install shoulder taper as the mobile operation advances.
- 5) Install arrow board on the shoulder prior to the merging taper or as close to the beginning of the merging taper as possible.
- 6) Install channelizing devices to form a merging taper. Use of a shadow vehicle with a TMA during installation is required on roads with speed limits of 45 MPH or greater or as directed by the Engineer.
- 7) Install traffic control devices along the buffer space at the appropriate spacing.
- 8) Continue placing devices along the work space at the appropriate spacing.
- 9) Install devices for the termination area as necessary.
- 10) Place the shadow vehicle with a TMA in advance of the first work crew or hazard approached by motorists. Multiple shadow vehicles may be required based on the number of lane and shoulder closures implemented.

4. INSPECT WORK AREA SIGNING AND CONTROL DEVICES

- 1) Assess the placement of the temporary traffic control devices by driving through the work area. All approaches to the work zone should be checked.
- 2) Ensure roadway users will have sufficient time to read signs and react in a safe manner.

PROCEDURES FOR WORK AREA TRAFFIC CONTROL (CONT.)

- 3) Check visibility of entire work area. If approaching roadway users can't see the work area well, or if they can't see ahead to traffic that may already be queued on the approach because of the work, additional traffic control devices should be deployed.
- 4) Check to ensure the proper temporary traffic control devices are positioned to protect workers from traffic (where possible).
- 5) Ensure all workers wear safety vests, hard hats, and all other necessary safety equipment. All worker safety gear should be in good condition. All reflective gear should be clean and highly visible in the dark.
- 6) Record in the log book the number and location of all signs and devices.

Considerations:

- Work area signs should never be blocked from view or obscured by vegetation, existing signs, or other obstructions.
- Flags, flashing lights, and edge line traffic cones can be used to improve visibility.

5. REMOVE TRAFFIC CONTROL DEVICES AT WORK SITE

All workers and equipment should be clear from work site BEFORE removing signs and other devices.

FOR LOWER SPEED (≤ 40 MPH) ROADWAYS:

- 1) Remove signs and other devices within the delineated area when work is complete.
- 2) Remove other traffic control devices in the reverse order in which they were installed
- 3) Remove signs in the reverse order in which they were installed (i.e. sign closest to the work area to be removed first).
- 4) When the operation is complete, uncover any existing permanent signs covered in Step 2.
- 5) Record in the log book the time at which the signs were removed.

FOR HIGHER SPEED (≥ 45 MPH) ROADWAYS:

All TTC devices for a stationary lane closure on a multi-lane roadway, except advance warning signs, should be removed against the flow of traffic in the following sequence:

- 1) Remove the channelizing devices starting from the end of the activity area working back to the widest part of the merging taper.
- 2) A shadow vehicle with TMA shall be positioned to protect workers removing devices and work backwards as the setup is removed from the roadway.

PROCEDURES FOR WORK AREA TRAFFIC CONTROL (CONT.)

- 3) Place the removal vehicle on the shoulder, and remove the channelizing devices from the merging taper by hand onto the work vehicle.
- 4) Remove the arrow board once traffic is clear and it is safe to do so.
- 5) Circle back and moving with the flow of traffic, remove the advance warning signs starting with the opposite side from previous lane closure first.
- 6) At no time shall workers run across the multilane roadway to remove signs on both sides of the road simultaneously.
- 7) Record in the log book the time at which the signs were removed

RAMP FACILITIES

At all times it is necessary to control the on and off-ramp traffic during the installation and breakdown of traffic control devices. Use of temporary traffic slow-downs or rolling roadblocks is recommended to allow for the safety of workers handing temporary traffic control devices on ramp facilities. A shadow vehicle with a TMA shall be used to protect the workers installing or removing the devices. At no time shall the work operation vehicle be used as the shadow vehicle with the TMA.

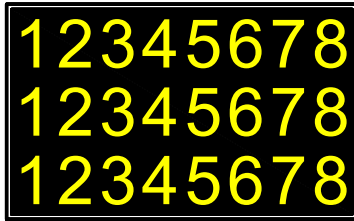
USE OF THIS GUIDE

Illustrations showing minimum standards for short-term construction, maintenance, and utility operations are arranged in this guide by type of operation. The users of this guide should compare all illustrated examples and examine their differences. After gathering information about the work zones using the general guidelines as outlined, proceed as follows:

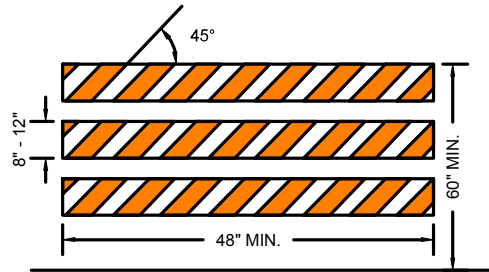
- 1) Turn to the Index. Consider the type of operations and the type of roadway upon which work will occur.
- 2) Select the figure that most closely matches the conditions where you plan to work. Remember that all diagrams represent minimum standards.
- 3) Read the title of the illustration to ensure that it is appropriate to your location. Study the layout of traffic control devices and read all notes.
- 4) Consult the appropriate tables, as directed on each illustration to determine taper length and proper spacing of signs. Notice that distances change when speeds change. Also note that these are guidelines, only, and they must be adapted to your specific work area.
- 5) Use the **“PROCEDURES FOR WORK AREA TRAFFIC CONTROL”** for assistance in completing all necessary steps to provide effective and safe work area traffic control.



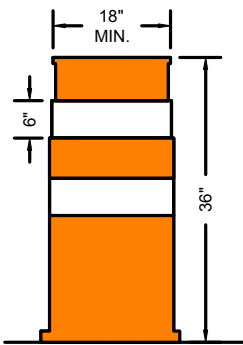
SIGN



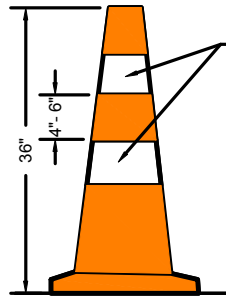
PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)



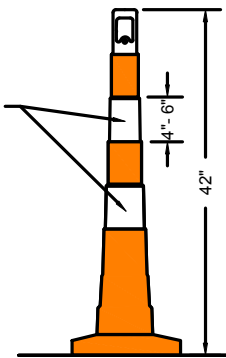
TYPE III BARRICADE



DRUM

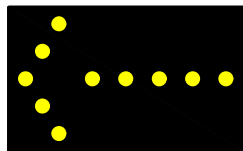


RETROFLECTIVE BANDS

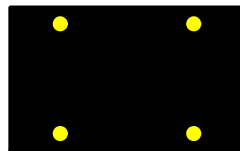


CONES

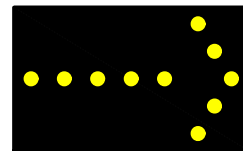
Cones may be used for all daytime operations. For night work, drums should be used to form the taper(s) and cones can be used along the tangent section of the work setup.



LEFT

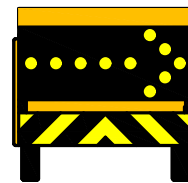


CAUTION



RIGHT

ARROW BOARD (WITH MODE)



TRUCK MOUNTED ATTENUATORS

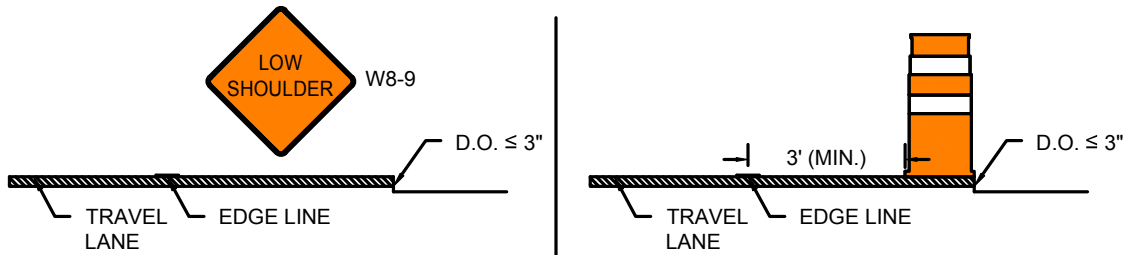
Truck Mounted Attenuators (TMA) shall be positioned between the start of the work area and the end of the designated buffer zone. The TMAs are to be positioned in each temporarily closed lane. This includes shoulders (≥ 8 feet) whether combined with a travel lane closure or being closed alone. These TMA conditions are required on roadways with speeds of 45 MPH or greater. TMAs can be used on other roadways at the discretion of the engineer. TMAs shall be used for the deployment and removal of all traffic control devices, including all advance warning signs.

SHORT-TERM PAVEMENT EDGE DROP-OFFS

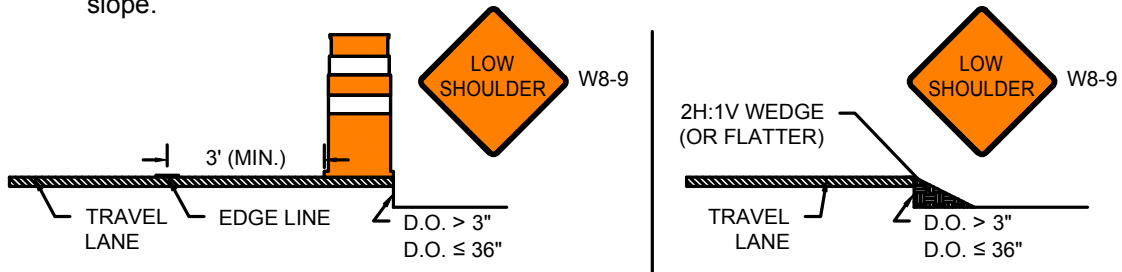
Note that this guidance is adopted from the Roadside Design Guide, 4th Edition.

Pavement drop-offs may occur during paving, excavation, and other construction activities. Drop-offs create hazards for vehicles if not properly mitigated. The following applies for all roads with speed limits greater than 30 mph; for roads with speed limits of 30 mph or less, treatments for pavement edge drop-offs are at the discretion of the Engineer. Drop-offs between adjacent, open travel lanes should not exceed 2", and any drop-off in excess of 3" should not be left unattended without one of these mitigation measures applied.

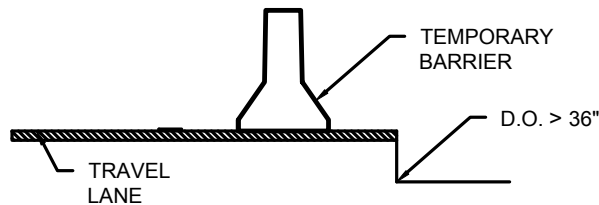
- Shoulder drop-offs 3" or less adjacent to a shoulder or active travel lane should be mitigated by:
 - ✓ A W8-9 (LOW SHOULDER) sign in advance of and at regular intervals throughout the treatment; or
 - ✓ The placement of drums on the traffic side of the drop-off.



- Shoulder drop-offs greater than 3" but less than or equal to 36" should be mitigated by:
 - ✓ A W8-9 (LOW SHOULDER) sign in advance of and at regular intervals throughout the treatment and the placement of drums on the traffic side off the drop-off, offset at least 3' from the travel lane; or
 - ✓ A W8-9 (LOW SHOULDER) sign in advance of and at regular intervals throughout the treatment and the placement of a temporary wedge of material along the face of the drop-off. The wedge should consist of stable material placed on a 2H:1V or flatter slope.



- Shoulder drop-offs greater than 36" must be protected by temporary barrier.





PAGE 12

Work Zone Safety
Standard Details
and Drawings

TYPICAL DEVICE SPACING

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)	CHANNELIZATION DEVICES (DRUMS OR CONES)			
		TRAVEL LANE CLOSURE LENGTH (L) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	500 / 500 / 500	320	305	20	55
45-55	500 / 1000 / 1000	660	495	40	40
60-65	1000 / 1600 / 2600	780	645	40	50










* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

MINIMUM SPACING OF ADVANCE WARNING SIGNS FOR URBAN ROADWAYS	
ROAD TYPE	DISTANCE BETWEEN SIGNS
URBAN (LOW SPEED)	100 FT
URBAN (HIGH SPEED)	350 FT

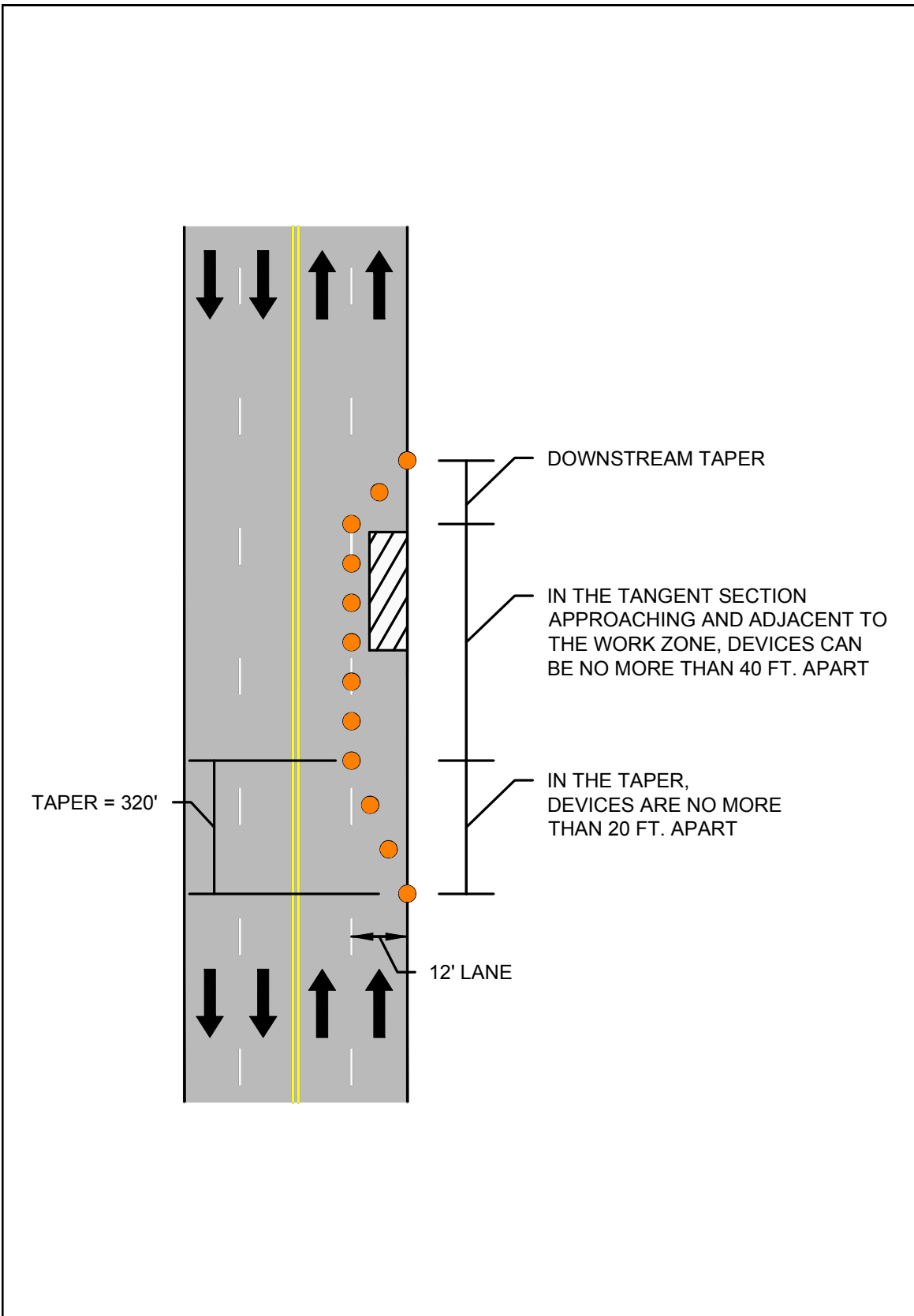
NOTES


1. 40 FT = 10 FT PAVEMENT MARKING + 30 FT SKIP

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>PAGE 14</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FLAGGING GUIDANCE</p>
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Guidance for Flagging Operations

NOTE:

A flagger shall always be aware of their surroundings and have a good escape route. A flagger shall never be positioned directly beside or against construction equipment. When a flagger is required to direct traffic in an area where the escape route is partially blocked by a traversable obstruction such as a guardrail, the flagger shall be physically capable of traversing that obstruction. Prior to commencing a project, the supervisor in charge shall review the project, including guardrail areas, for safe flagging stations. The supervisor in charge shall clearly communicate with the flagger(s), indicating any locations where they cannot safely perform their duties.

Each flagger shall be equipped with the following high visibility clothing, signaling, and safety devices:

- 1) A white protective hard hat with a minimum level of reflectivity per the requirements of ANSI, Type I, Class E&G;
- 2) A clean, unfaded, untorn lime/yellow reflective safety vest and pants meeting the requirements of ANSI 107 Class 3 with the words "Traffic Control" on the front and rear panels in minimum two (2) inch (50 millimeter) high letters;
- 3) A 24 inch "STOP/SLOW" traffic paddle conforming to the requirements of Part 6E.03 of the Manual on Uniform Traffic Control Devices (MUTCD), a weighted, reflectorized red flag, flagger station advance warning signage, and two-way radios capable of providing clear communication within the work zone between flaggers, the Contractor, and the Engineer. The traffic paddle shall be mounted on a pole of sufficient length to be seven feet above the ground as measured from the bottom of the paddle;
- 4) A working flashlight with a minimum of 15,000 candlepower and a six inch red attachable wand, a whistle with a working lanyard, and a First Aid kit that complies with the requirements of ANSI Z308.1; and
- 5) An industrial/safety type portable air horn that complies with the requirements of the U.S. Coast Guard.

A "STOP/SLOW" paddle should be the primary hand-signaling device. It shall have an octagonal shape on a rigid handle. Flag use should be limited to emergency situations.

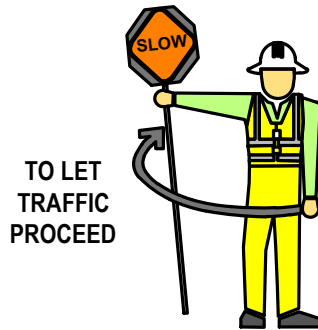


Properly Trained Flaggers

- Give clear messages to drivers.
- Allow distance for drivers to react.
- Coordinate with other flaggers.
- Use standard signaling methods.

Properly Equipped Flaggers

- Use approved stop/slow paddles.
- Use approved safety apparel.
- Use retroreflective equipment.
- Use hand held radios, as needed.
- All flaggers shall wear safety apparel that meets ANSI Class 3 requirements. The combination of vest and pants is required.



Proper Flagging Stations

- Good approach sight distance.
- Highly visible to traffic.
- Stand alone away from other machinery and people.
- Stand on right edge of pavement or shoulder- proceed to centerline only when first vehicle has come to stop.
- Have a good escape route.

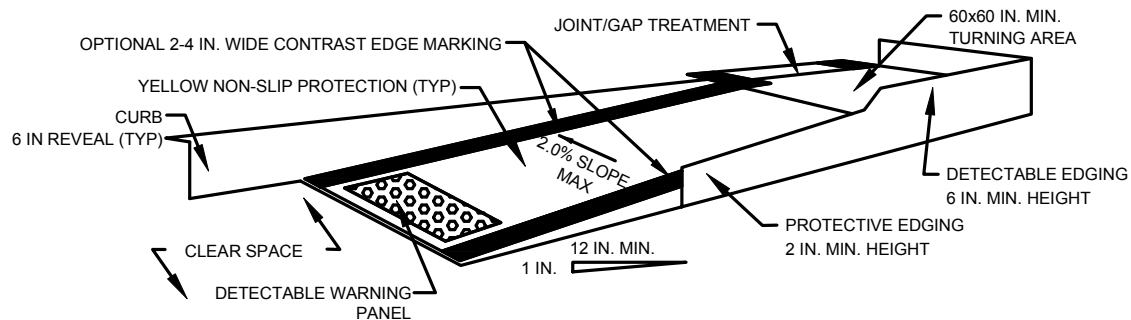


Proper Advance Warning Signs

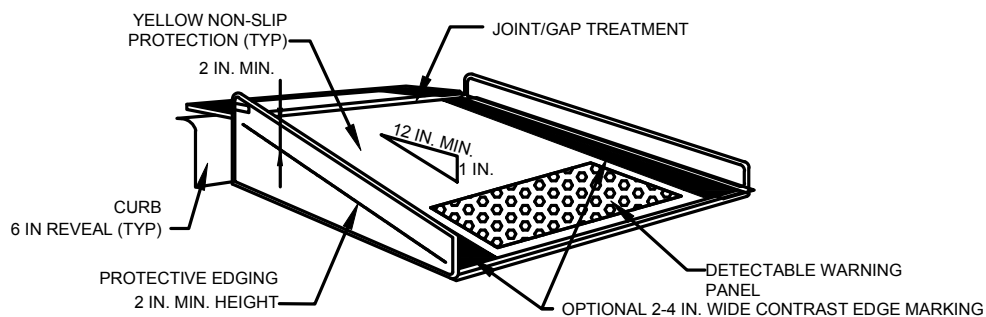
- Always use warning signs.
- Allow for reaction distance from signs.
- Remove signs if no longer necessary or not flagging.
- Use free hand in up-and-down motion to help slow traffic.



FIGURE 4
TYPICAL PEDESTRIAN DEVICES
(1 OF 2)
NOT TO SCALE



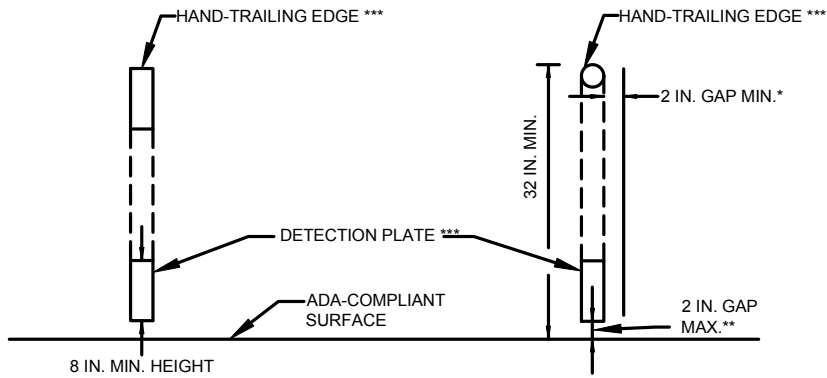
TEMPORARY CURB RAMP-PARALLEL TO CURB



TEMPORARY CURB RAMP-PERPENDICULAR TO CURB

NOTES:

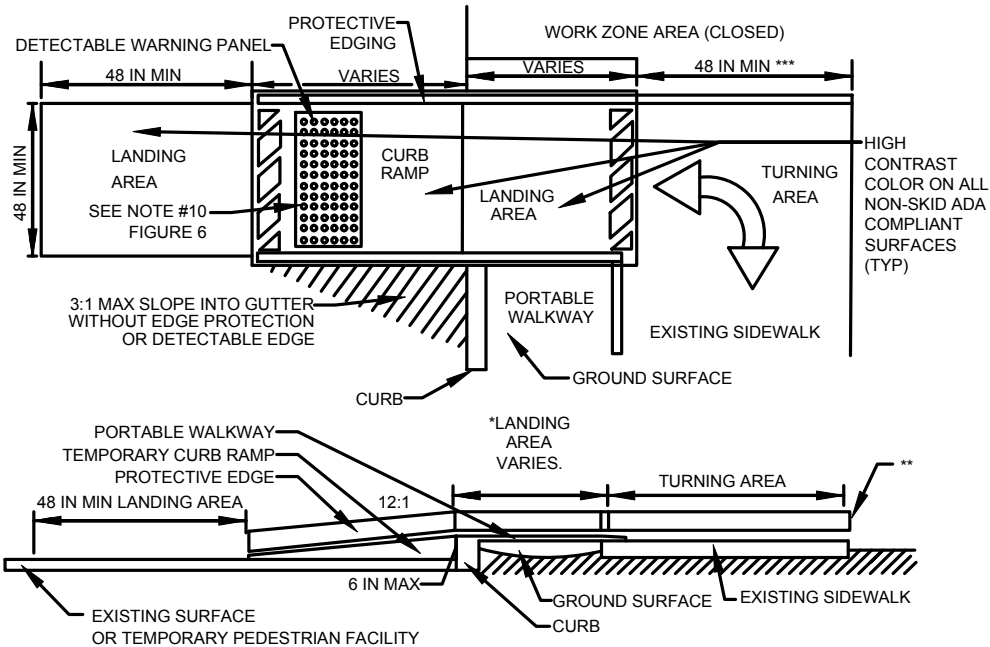
1. CURB RAMPS SHALL BE 60 IN. MINIMUM WIDTH WITH A FIRM, STABLE, AND NON-SLIP SURFACE.
2. PROTECTIVE EDGING WITH A 2 IN. MINIMUM HEIGHT SHALL BE INSTALLED WHEN THE CURB RAMP OR LANDING PLATFORM HAS A VERTICAL DROP OF 6 IN. OR GREATER OR HAS A SIDE APRON SLOPE STEEPER THAN 1:3 (33%). PROTECTIVE EDGING SHOULD BE CONSIDERED WHEN THE CURB RAMPS OR LANDING PLATFORMS HAVE A VERTICAL DROP OF 3 IN. OR MORE.
3. PROTECTABLE EDGING WITH 6 IN. MINIMUM HEIGHT AND CONTRASTING COLOR SHALL BE INSTALLED ON ALL CURB RAMP LANDINGS WHERE THE WALKWAY CHANGES DIRECTION (TURNS).
4. THE CURB RAMP WALKWAY AND LANDING AREA SURFACE SHALL BE OF A SOLID CONTINUOUS CONTRASTING COLOR ABUTTING UP TO THE EXISTING SIDEWALK.
5. CURB RAMPS AND LANDINGS SHOULD HAVE A 1:50 (2%) MAX CROSS-SLOPE.
6. CLEAR SPACE OF 48x48 IN. MINIMUM SHALL BE PROVIDED ABOVE AND BELOW THE CURB RAMP.
7. WATER FLOW IN THE GUTTER SYSTEM SHALL HAVE MINIMAL RESTRICTION.
8. LATERAL JOINTS OR GAPS BETWEEN SURFACES SHALL BE LESS THAN 0.5 IN. WIDTH.
9. CHANGES BETWEEN SURFACE HEIGHTS SHOULD NOT EXCEED 0.5 IN. LATERAL EDGES SHOULD BE VERTICAL UP TO 0.25 IN. HIGH, AND BEVELED AT 1:2 BETWEEN 0.25 IN. AND 0.5 IN. HEIGHT.
10. IF A TEMPORARY PEDESTRIAN RAMP LEADS TO A CROSSWALK, THEN A DETECTABLE WARNING PAD MUST BE ADHERED TO THE BASE OF THE RAMP. IF IT LEADS TO A PROTECTED PEDESTRIAN BYPASS THAT DOES NOT CONFLICT WITH VEHICULAR TRAFFIC, THEN A PAD SHALL NOT BE INSTALLED ON THE RAMP.



CROSS SECTION VIEW


PEDESTRIAN CHANNELIZING DEVICE

- * THERE SHALL BE A 2 INCH GAP BETWEEN THE HAND-TRAILING EDGE AND ITS SUPPORT.
- ** A MAXIMUM 2 INCH GAP BETWEEN THE BOTTOM OF THE BOTTOM RAIL AND THE SURFACE MAY BE USED TO PROVIDE DRAINAGE.
- *** THE HAND-TRAILING EDGE AND DETECTION PLATE SHALL BE CONTINUOUS THROUGHOUT THE LENGTH OF THE PATH SUCH THAT A PEDESTRIAN USER WITH A LONG CANE CAN FOLLOW IT.



TEMPORARY CURB RAMP

- * LANDING AREA USED TO OVERLAP NON-ADA COMPLIANT SURFACES.
- ** DETECTABLE EDGE REMOVED IF A CONTINUOUS SIDEWALK.
- *** 60 IN. IF AN OBSTRUCTION IS AT BACK OF SIDEWALK.

 Massachusetts Department of Transportation Highway Division	Work Zone Safety Standard Details and Drawings	FIGURE 5 TYPICAL PEDESTRIAN DEVICES (2 OF 2) NOT TO SCALE
PAGE 17		



PAGE 18

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
TWO LANE UNDIVIDED ROADWAY
HALF OF ROADWAY CLOSED
WORK NEAR CURVE










POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)	CHANNELIZATION DEVICES (DRUMS OR CONES)			
		TRAVEL LANE CLOSURE LENGTH (L) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	500 / 500 / 500	50	100	20	30
45-55	500 / 1000 / 1000	100	150	40	20

* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

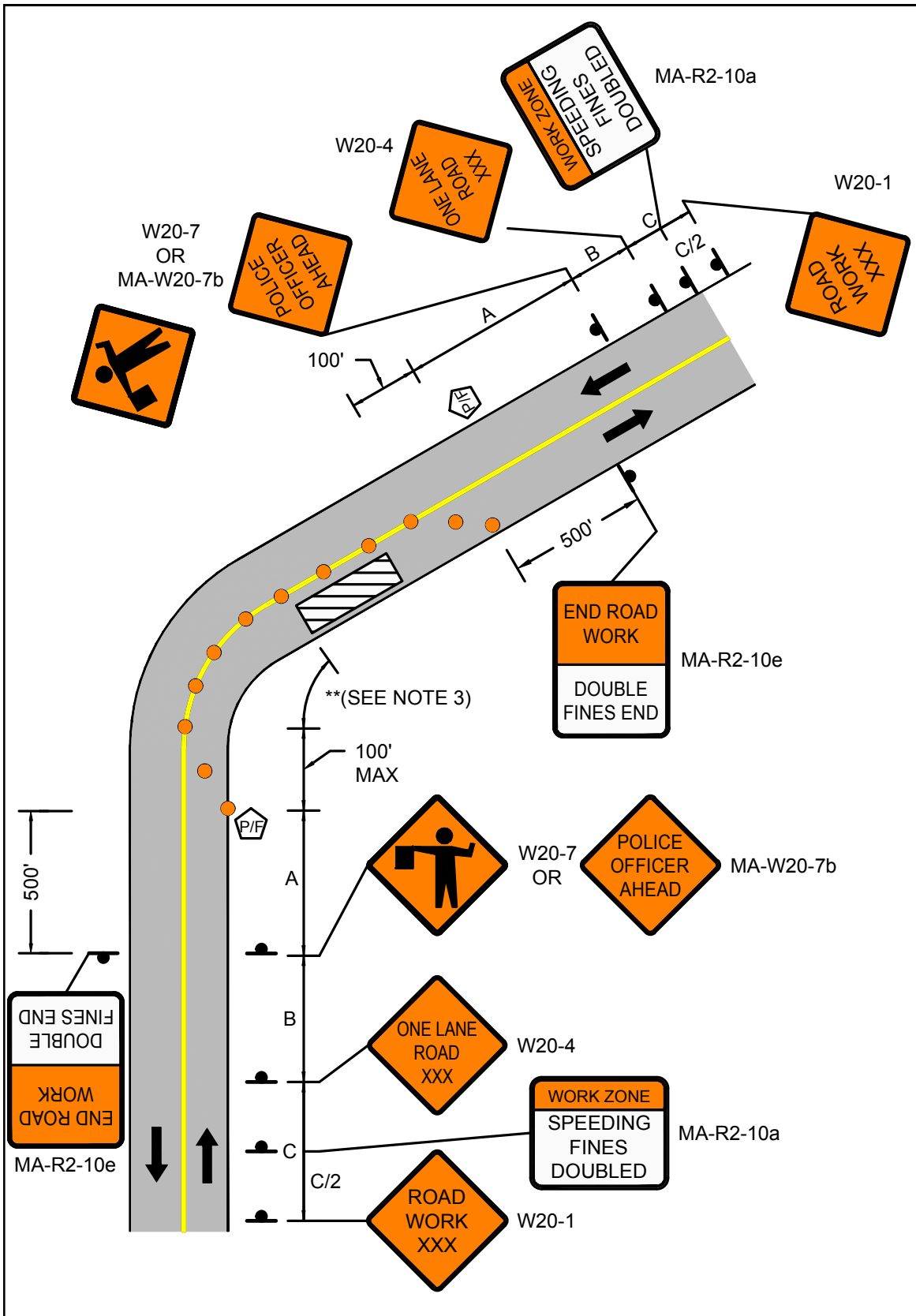
NOTES


1. IF POLICE DETAIL/UNIFORMED FLAGGER SUPPORT IS REQUIRED, PROVIDE TWO UNITS.
2. MA-R2-10a LOCATED AT C/2.
3. ** = EXTEND ENOUGH SO TAPER IS BEFORE CURVE

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>PAGE 19</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 6 STATIONARY OPERATIONS TWO LANE UNDIVIDED ROADWAY HALF OF ROADWAY CLOSED WORK NEAR CURVE</p>
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PAGE 20

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
TWO LANE UNDIVIDED ROADWAY
HALF OF ROADWAY CLOSED

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)	CHANNELIZATION DEVICES (DRUMS OR CONES)			
		TRAVEL LANE CLOSURE LENGTH (L) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	500 / 500 / 500	50	100	20	30
45-55	500 / 1000 / 1000	100	150	40	20










* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

POSTED REGULATORY OR WORK ZONE SPEED	SEPARATION BETWEEN RUMBLE STRIPS
36-mph to 55-mph	15-feet
35-mph and under	10-feet

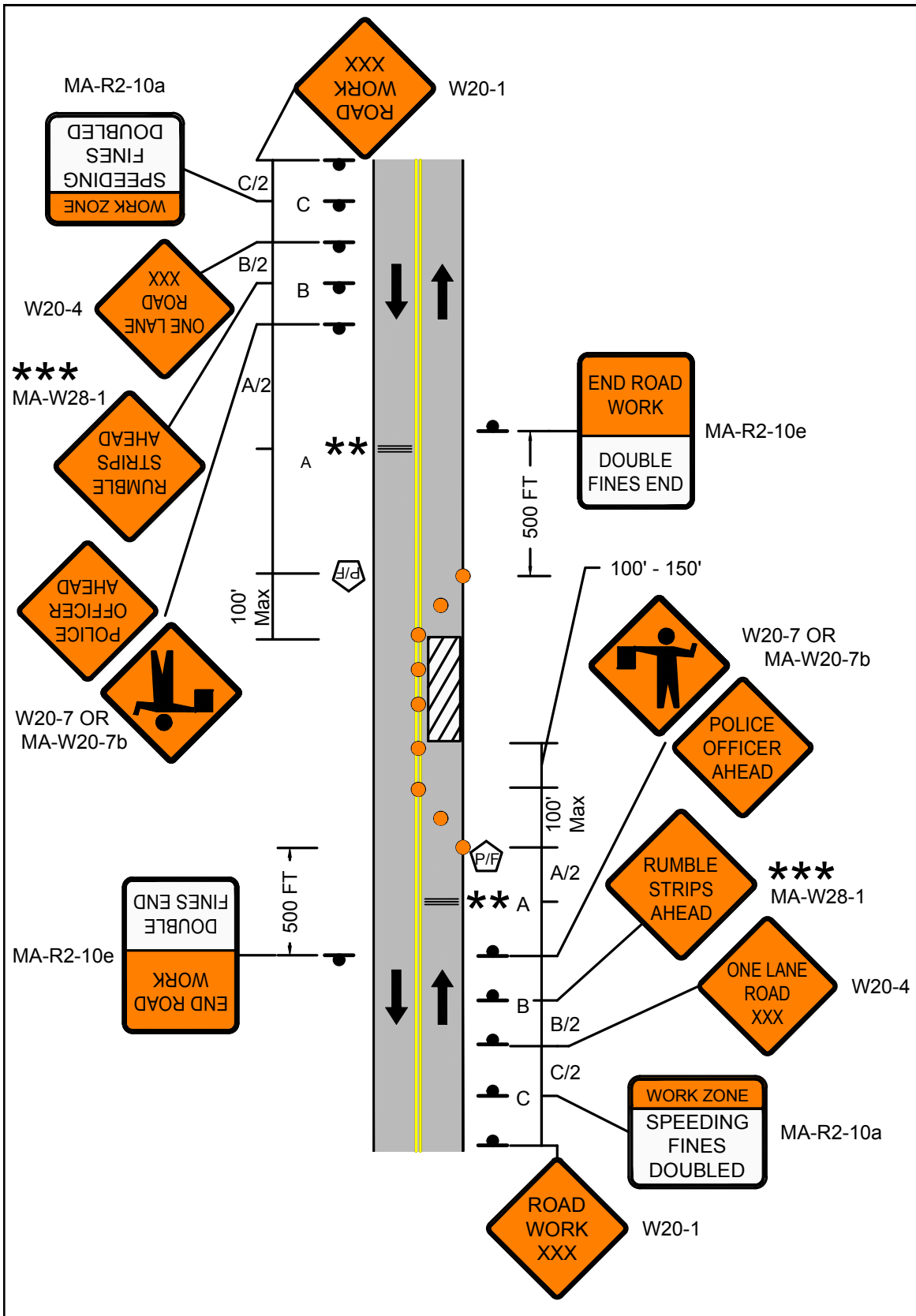
NOTES


1. IF POLICE DETAIL/UNIFORMED FLAGGER SUPPORT IS REQUIRED, PROVIDE TWO UNITS.
2. MA-R2-10a LOCATED AT C/2.
3. ** OPTIONAL AT THE ENGINEER'S DISCRETION.
4. *** SHALL BE DEPLOYED IF RUMBLE STRIPS ARE PRESENT.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>PAGE 21</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 7 STATIONARY OPERATIONS TWO LANE UNDIVIDED ROADWAY HALF OF ROADWAY CLOSED</p>
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PAGE 22

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
TWO LANE UNDIVIDED ROADWAY
SHOULDER CLOSED










POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)	CHANNELIZATION DEVICES (DRUMS OR CONES)			
		SHOULDER TAPER LENGTH (L/3) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	500 / 500 / 500	110	305	20	45
45-55	500 / 1000 / 1000	220	495	40	30
60-65	1000 / 1600 / 2600	260	645	40	35

* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

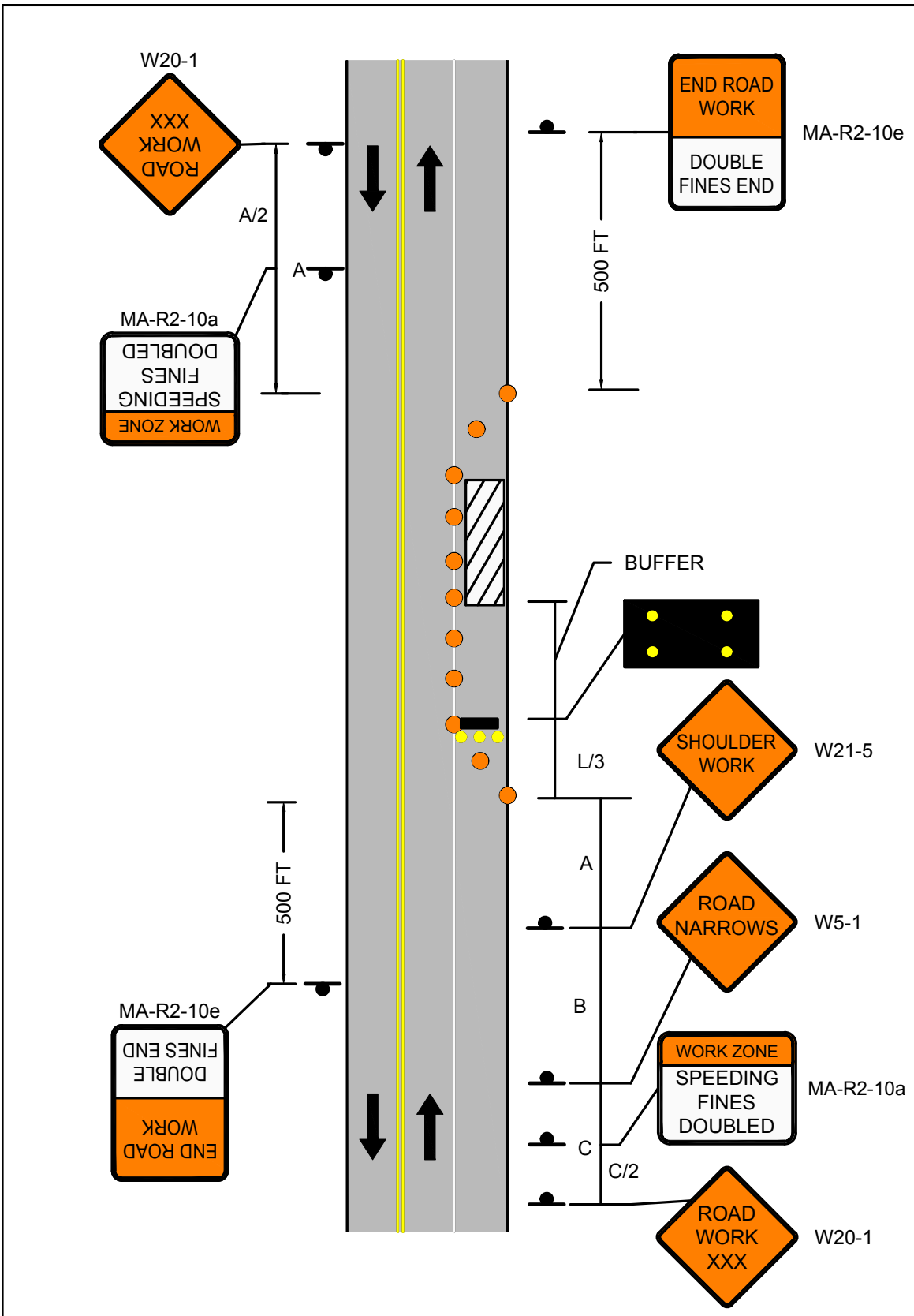
NOTES


1. MA-R2-10a at C/2 and A/2.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>PAGE 23</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 8 STATIONARY OPERATIONS TWO LANE UNDIVIDED ROADWAY SHOULDER CLOSED</p>
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PAGE 24

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
TWO LANE UNDIVIDED ROADWAY
WITH TRAVERSABLE SHOULDER
HALF OF ROADWAY CLOSED
MAINTAIN TWO-WAY TRAFFIC

POSTED SPEED LIMIT (MPH)	CHANNELIZATION DEVICES (DRUMS OR CONES)				
	SHOULDER TAPER LENGTH (L/3) (FT)	TRAVEL LANE SHIFT LENGTH (L/2) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	110	160	305	20	125
45-55	220	330	495	40	100
60-65	260	390	645	40	115










* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)
25-40	500 / 500 / 500
45-55	500 / 1000 / 1000
60-65	1000 / 1600 / 2600

NOTES

1. MA-R2-10a LOCATED AT C/2.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE

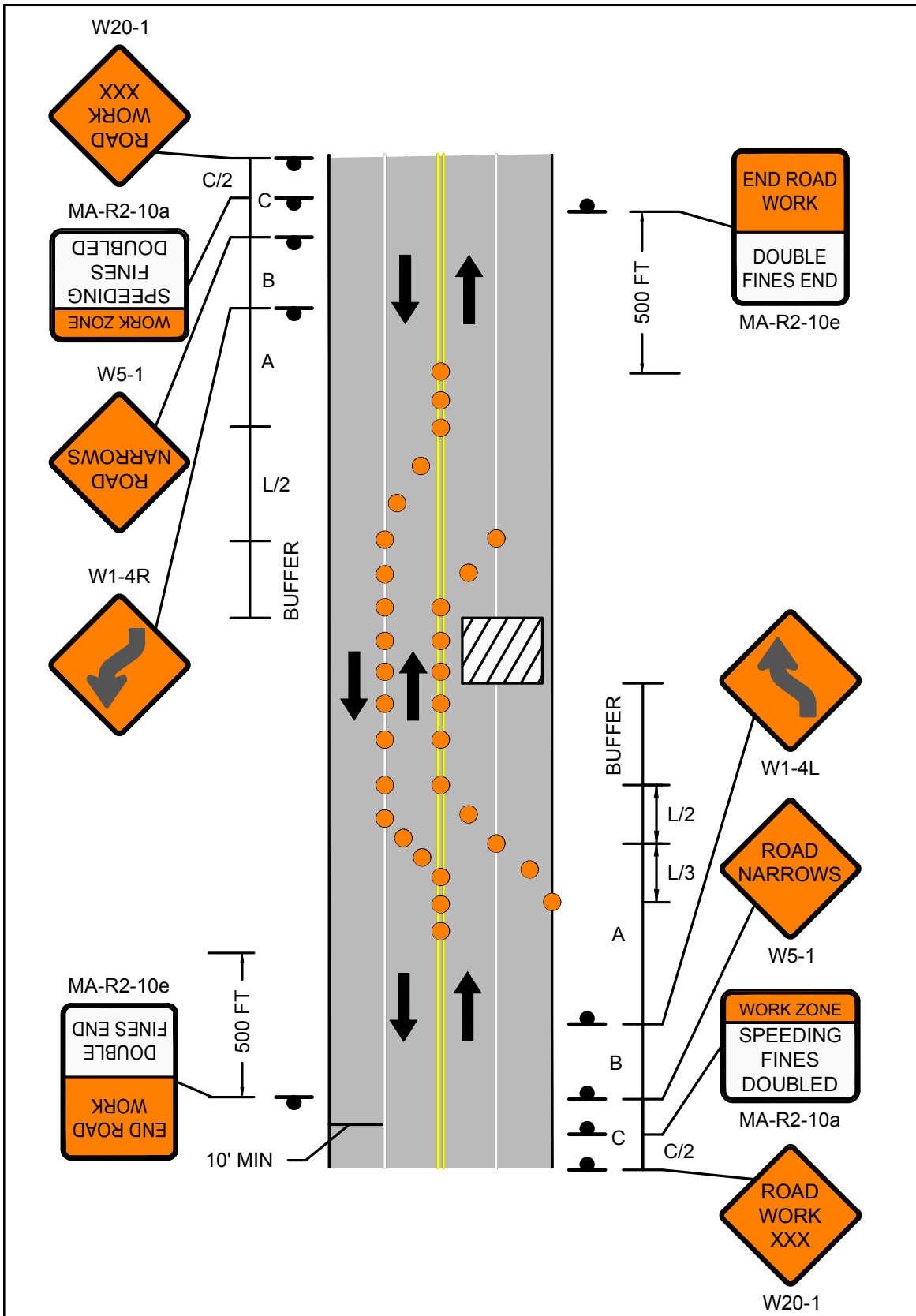


FIGURE 9
 STATIONARY OPERATIONS
 TWO LANE UNDIVIDED ROADWAY
 WITH TRAVERSABLE SHOULDER
 HALF OF ROADWAY CLOSED
 MAINTAIN TWO-WAY TRAFFIC





PAGE 26

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
FOUR LANE UNDIVIDED ROADWAY
RIGHT LANE CLOSED

POSTED SPEED LIMIT (MPH)	CHANNELATION DEVICES (DRUMS OR CONES)				
	SHOULDER TAPER LENGTH (L/3) (FT)	TRAVEL LANE CLOSURE LENGTH (L) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	110	320	305	20	60
45-55	220	660	495	40	50
60-65	260	780	645	40	55










* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)
25-40	500 / 500 / 500
45-55	500 / 1000 / 1000
60-65	1000 / 1600 / 2600

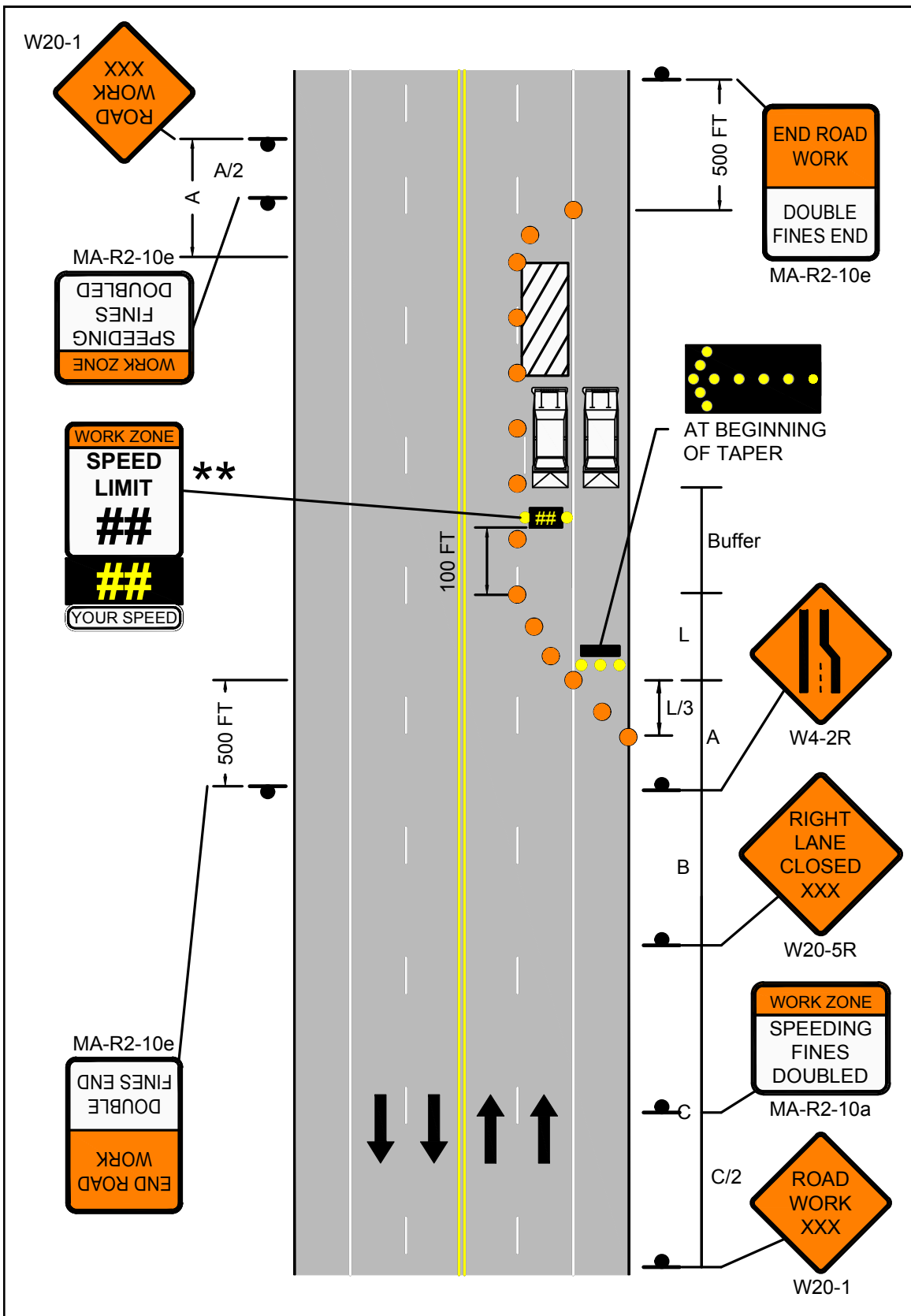
NOTES


1. MA-R2-10a LOCATED AT A/2 AND C/2.
2. **OPTIONAL AT THE ENGINEER'S DISCRETION.


LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>PAGE 27</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 10 STATIONARY OPERATIONS FOUR LANE UNDIVIDED ROADWAY RIGHT LANE CLOSED</p>
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 PAGE 28	Work Zone Safety Standard Details and Drawings	STATIONARY OPERATIONS FOUR LANE UNDIVIDED ROADWAY LEFT LANE CLOSED
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POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)	CHANNELIZATION DEVICES (DRUMS OR CONES)			
		TRAVEL LANE CLOSURE LENGTH (L) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	500 / 500 / 500	320	305	20	105
45-55	500 / 1000 / 1000	660	495	40	80
60-65	1000 / 1600 / 2600	780	645	40	100

* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

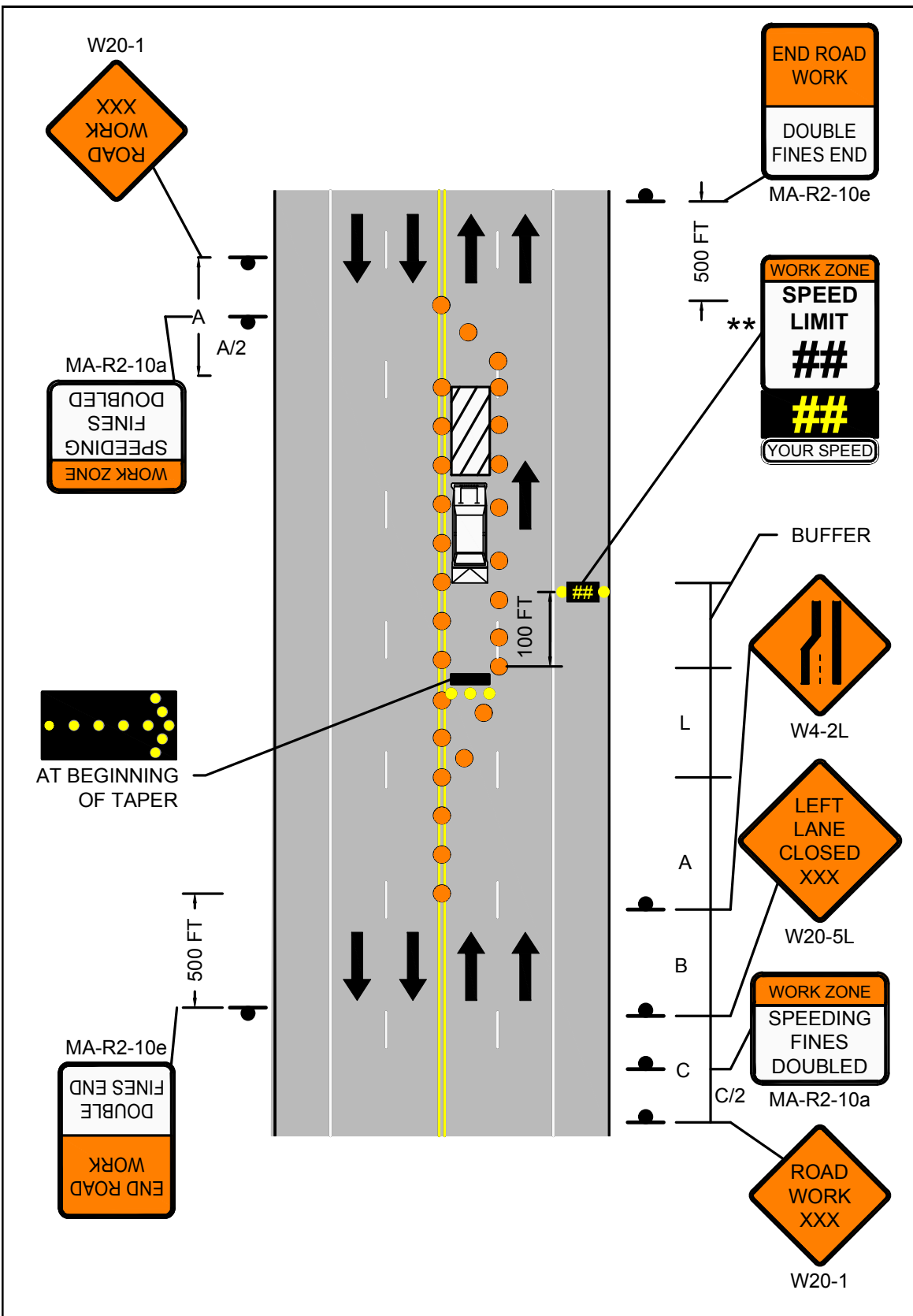
NOTES

1. MA-R2-10a LOCATED AT A/2 AND C/2.
2. **OPTIONAL AT THE ENGINEER'S DISCRETION. 2' OFFSET FROM EDGE OF TRAVEL LANE TO RADAR SPEED FEEDBACK BOARD IS REQUIRED. BOARD MAY BE MOVED FULLY OR PARTIALLY OFF PAVED SHOULDER, IF REQUIRED.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE






Work Zone Safety Standard Details and Drawings

FIGURE 11
STATIONARY OPERATIONS
FOUR LANE UNDIVIDED ROADWAY
LEFT LANE CLOSED

PAGE 29

 PAGE 30	Work Zone Safety Standard Details and Drawings	STATIONARY OPERATIONS FOUR LANE UNDIVIDED ROADWAY HALF OF ROADWAY CLOSED
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POSTED SPEED LIMIT (MPH)	CHANNELIZATION DEVICES (DRUMS OR CONES)					
	SHOULDER TAPER LENGTH (L/3) (FT)	TRAVEL LANE CLOSURE LENGTH (L) (FT)	TRAVEL LANE SHIFT LENGTH (L/2) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	110	320	160	305	20	140
45-55	220	660	330	495	40	120
60-65	260	780	390	645	40	140










* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)
25-40	500 / 500 / 500
45-55	500 / 1000 / 1000
60-65	1000 / 1600 / 2600

NOTES

1. MA-R2-10a LOCATED AT C/2.
2. **OPTIONAL AT THE ENGINEER'S DISCRETION.
3. W1-4L SHALL BE PLACED AT THE MIDDLE OF THE TANGENT.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE

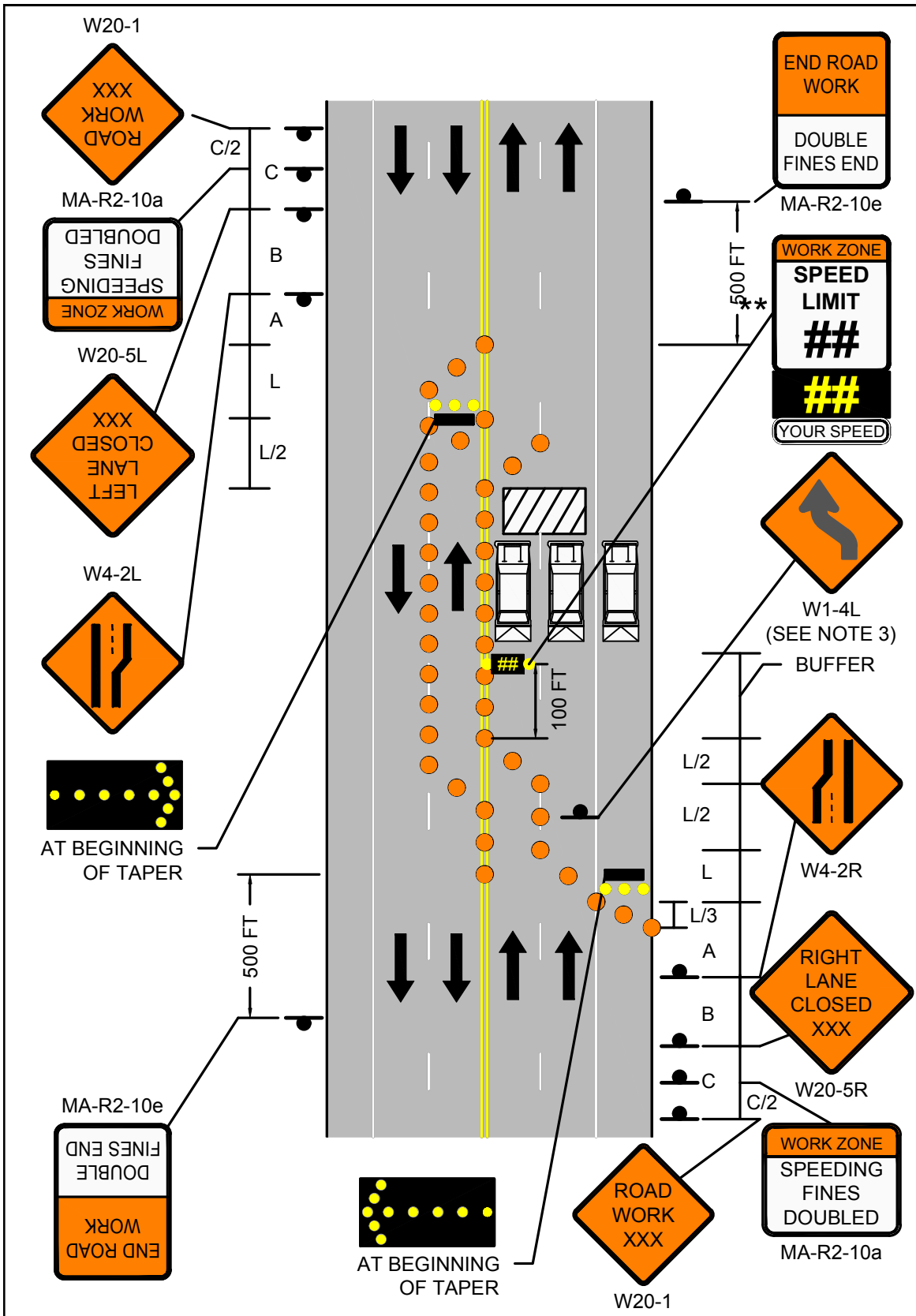


FIGURE 12
STATIONARY OPERATIONS
FOUR LANE UNDIVIDED ROADWAY
HALF OF ROADWAY CLOSED





PAGE 32

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
MULTILANE DIVIDED ROADWAY
RIGHT LANE CLOSED

POSTED SPEED LIMIT (MPH)	CHANNELIZATION DEVICES (DRUMS OR CONES)				
	SHOULDER TAPER LENGTH (L/3) (FT)	TRAVEL LANE CLOSURE LENGTH (L) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	110	320	305	20	60
45-55	220	660	495	40	50
60-65	260	780	645	40	55










* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)
25-40	500 / 500 / 500
45-55	500 / 1000 / 1000
60-65	1000 / 1600 / 2600

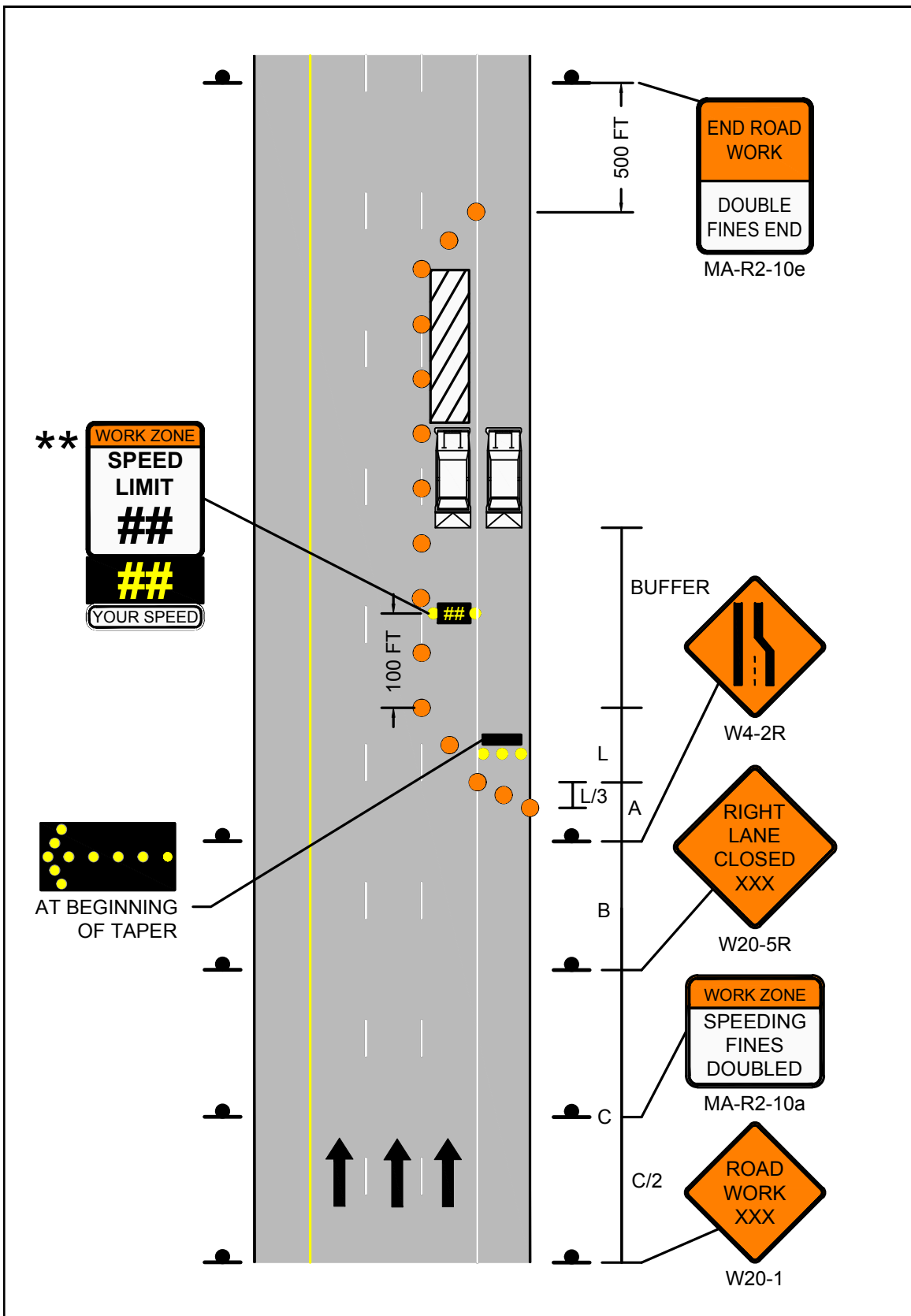
NOTES

1. MA-R2-10a LOCATED AT C/2.
2. **OPTIONAL AT THE ENGINEER'S DISCRETION.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE





PAGE 34

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
MULTILANE DIVIDED ROADWAY
LEFT LANE CLOSED

POSTED SPEED LIMIT (MPH)	CHANNELIZATION DEVICES (DRUMS OR CONES)				
	SHOULDER TAPER LENGTH (L/3) (FT)	TRAVEL LANE CLOSURE LENGTH (L) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	110	320	305	20	60
45-55	220	660	495	40	50
60-65	260	780	645	40	55










* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)
25-40	500 / 500 / 500
45-55	500 / 1000 / 1000
60-65	1000 / 1600 / 2600

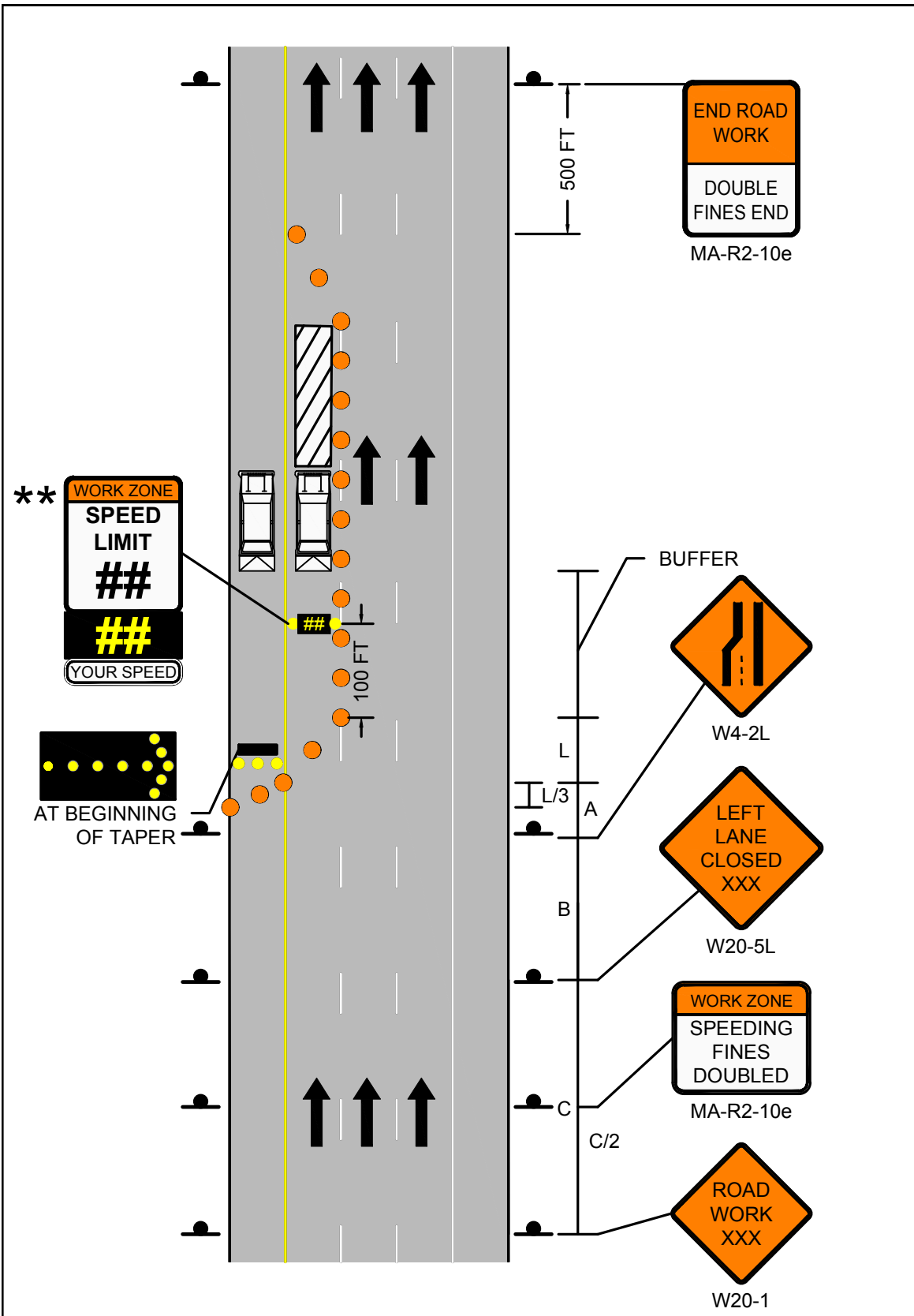
NOTES


1. MA-R2-10a LOCATED AT C/2.
2. **OPTIONAL AT THE ENGINEER'S DISCRETION.


LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>PAGE 35</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 14 STATIONARY OPERATIONS MULTILANE DIVIDED ROADWAY LEFT LANE CLOSED</p>
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 <p>Massachusetts Department of Transportation Highway Division</p> <p>PAGE 36</p>	Work Zone Safety Standard Details and Drawings	STATIONARY OPERATIONS MULTILANE DIVIDED ROADWAY CENTER LANE OR RIGHT/CENTER LANES CLOSED
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POSTED SPEED LIMIT (MPH)	CHANNELIZATION DEVICES (DRUMS OR CONES)					
	SHOULDER TAPER LENGTH (L/3) (FT)	TRAVEL LANE CLOSURE LENGTH (L) (FT)	TANGENT LENGTH BETWEEN TAPERS T (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	110	320	640	305	20	110
45-55	220	660	1320	495	40	100
60-65	260	780	1560	645	40	115










* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)
25-40	500 / 500 / 500
45-55	500 / 1000 / 1000
60-65	1000 / 1600 / 2600

NOTES

1. MA-R2-10a LOCATED AT C/2.
2. ***OPTIONAL AT THE ENGINEER'S DISCRETION.
3. ***THIS SET OF SIGNS SHALL BE LOCATED AT T/2.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE

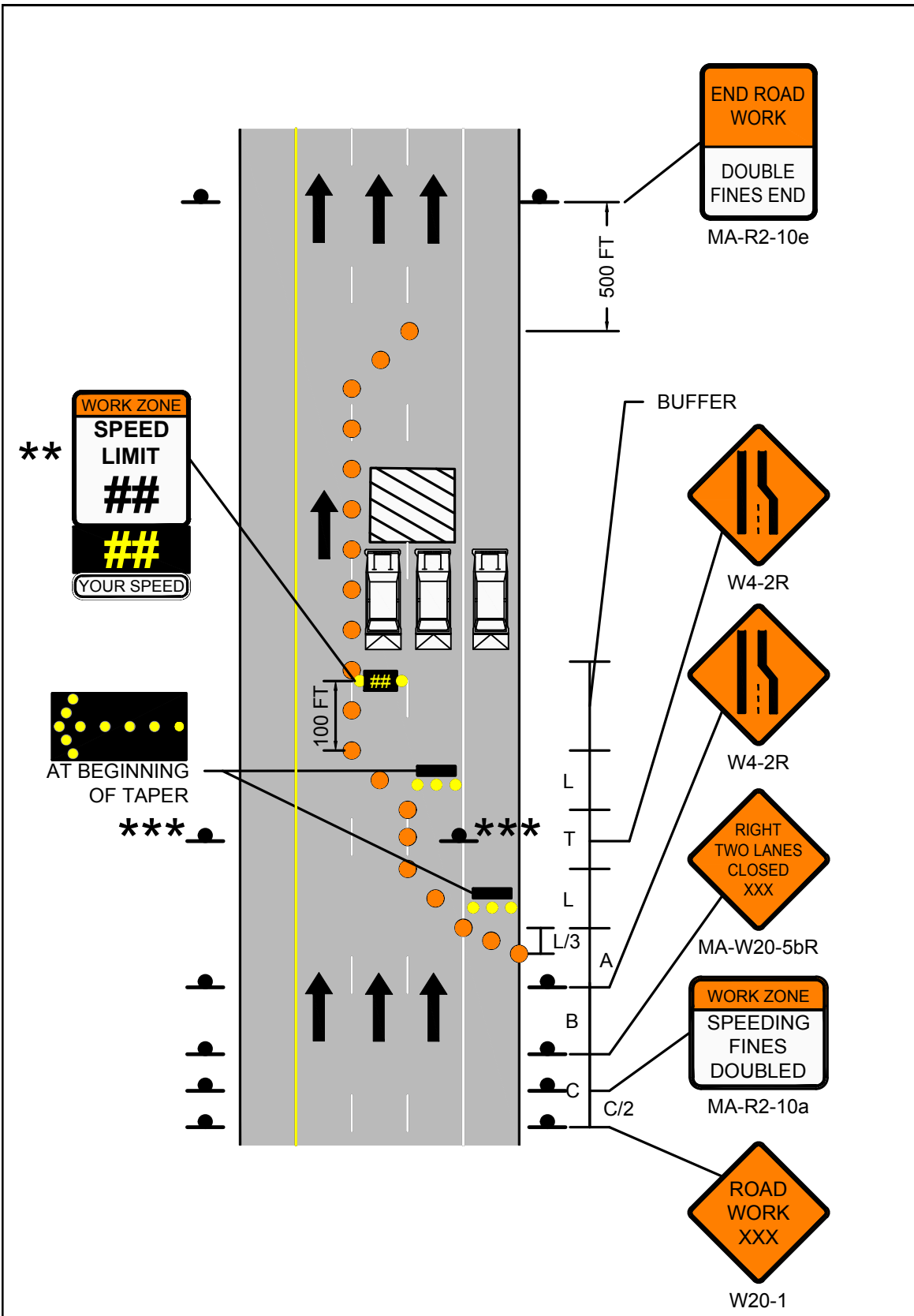



FIGURE 15
STATIONARY OPERATIONS
MULTILANE DIVIDED ROADWAY
CENTER LANE OR RIGHT/CENTER
LANES CLOSED

 <p>Massachusetts Department of Transportation Highway Division</p> <p>PAGE 38</p>	Work Zone Safety Standard Details and Drawings	STATIONARY OPERATIONS MULTILANE DIVIDED ROADWAY CENTER LANE OR LEFT/CENTER LANES CLOSED
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POSTED SPEED LIMIT (MPH)	CHANNELIZATION DEVICES (DRUMS OR CONES)					
	SHOULDER TAPER LENGTH (L/3) (FT)	TRAVEL LANE CLOSURE LENGTH (L) (FT)	TANGENT LENGTH BETWEEN TAPERS T (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	110	320	640	305	20	110
45-55	220	660	1320	495	40	100
60-65	260	780	1560	645	40	115










* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)
25-40	500 / 500 / 500
45-55	500 / 1000 / 1000
60-65	1000 / 1600 / 2600

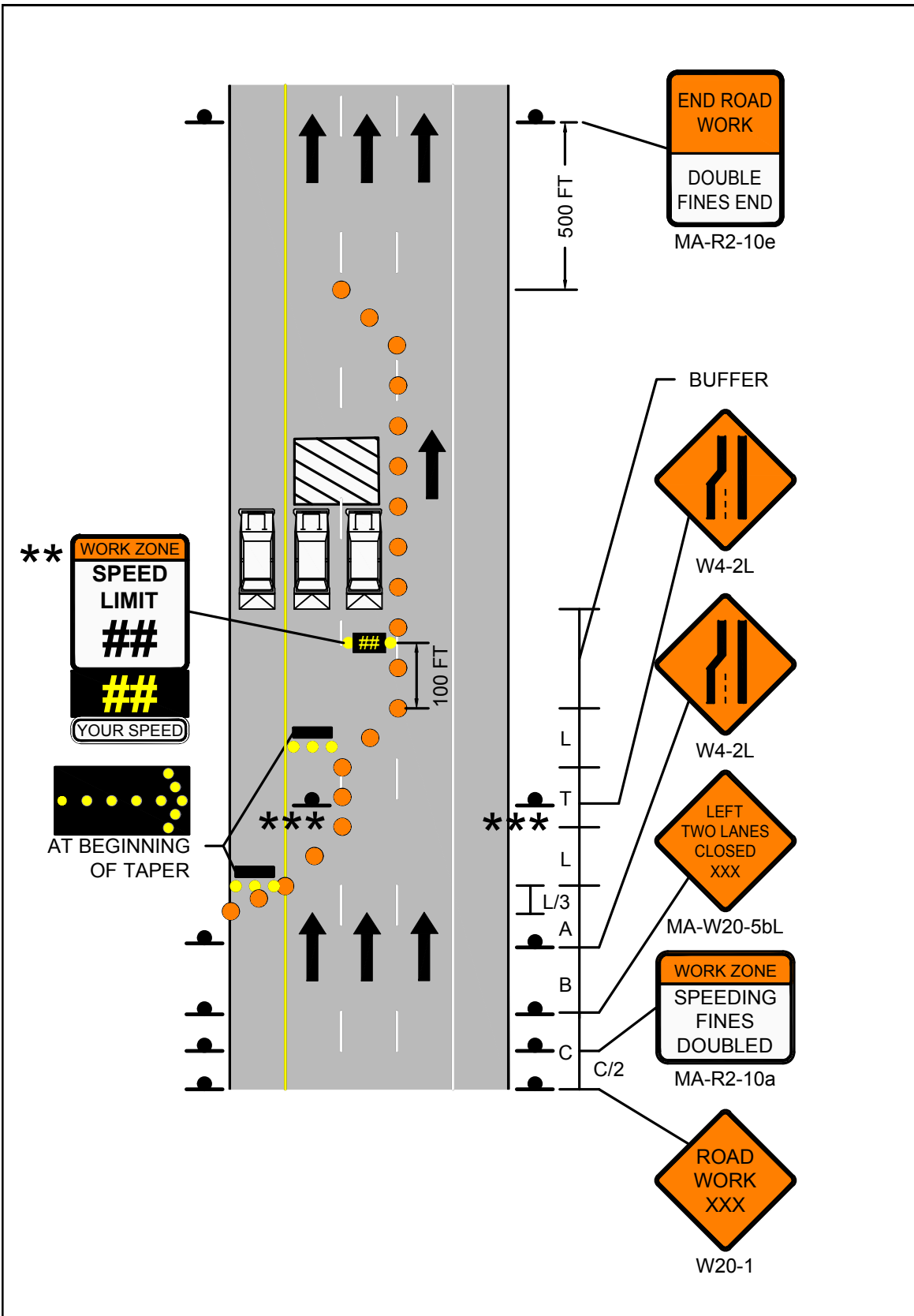
NOTES


1. MA-R2-10a LOCATED AT C/2.
2. ***OPTIONAL AT THE ENGINEER'S DISCRETION.
3. ***THIS SET OF SIGNS SHALL BE LOCATED AT T/2.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>PAGE 39</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 16 STATIONARY OPERATIONS MULTILANE DIVIDED ROADWAY CENTER LANE OR LEFT/CENTER LANES CLOSED</p>
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PAGE 40

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
MULTILANE DIVIDED ROADWAY
RIGHT SIDE OF OFF RAMP CLOSED










POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)	CHANNELIZATION DEVICES (DRUMS OR CONES)			
		TRAVEL LANE SHIFT LENGTH (L/2) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	500 / 500 / 500	160	305	20	45
45-55	500 / 1000 / 1000	330	495	40	35

* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

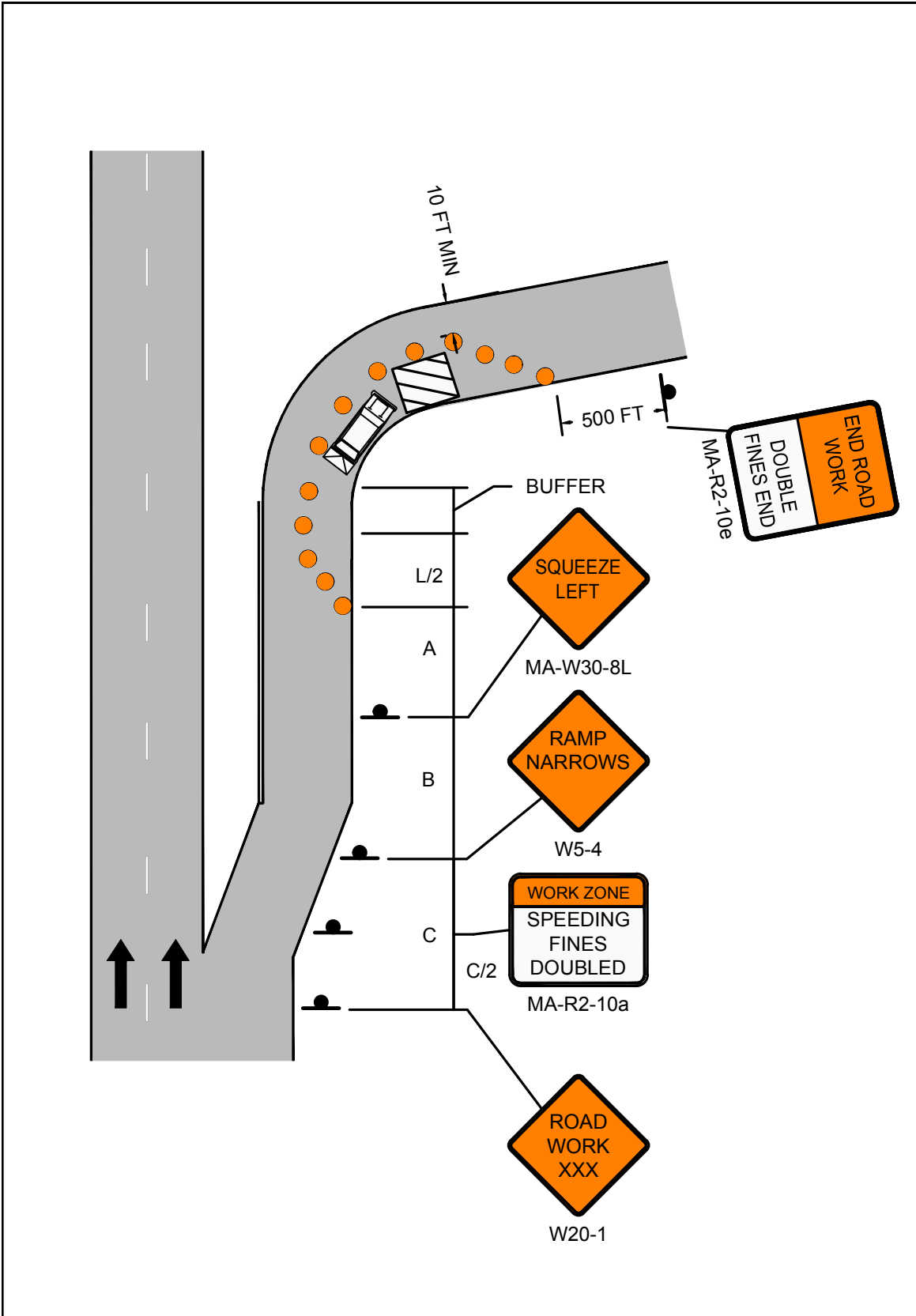
NOTES


1. MA-R2-10a LOCATED AT C/2.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>Massachusetts Department of Transportation Highway Division</p> <p>PAGE 41</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 17 STATIONARY OPERATIONS MULTILANE DIVIDED ROADWAY RIGHT SIDE OF OFF RAMP CLOSED</p>
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PAGE 42

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
MULTILANE DIVIDED ROADWAY
LEFT SIDE OF OFF RAMP CLOSED










POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)	CHANNELIZATION DEVICES (DRUMS OR CONES)			
		TRAVEL LANE SHIFT LENGTH (L/2) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	500 / 500 / 500	160	305	20	45
45-55	500 / 1000 / 1000	330	495	40	35

* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

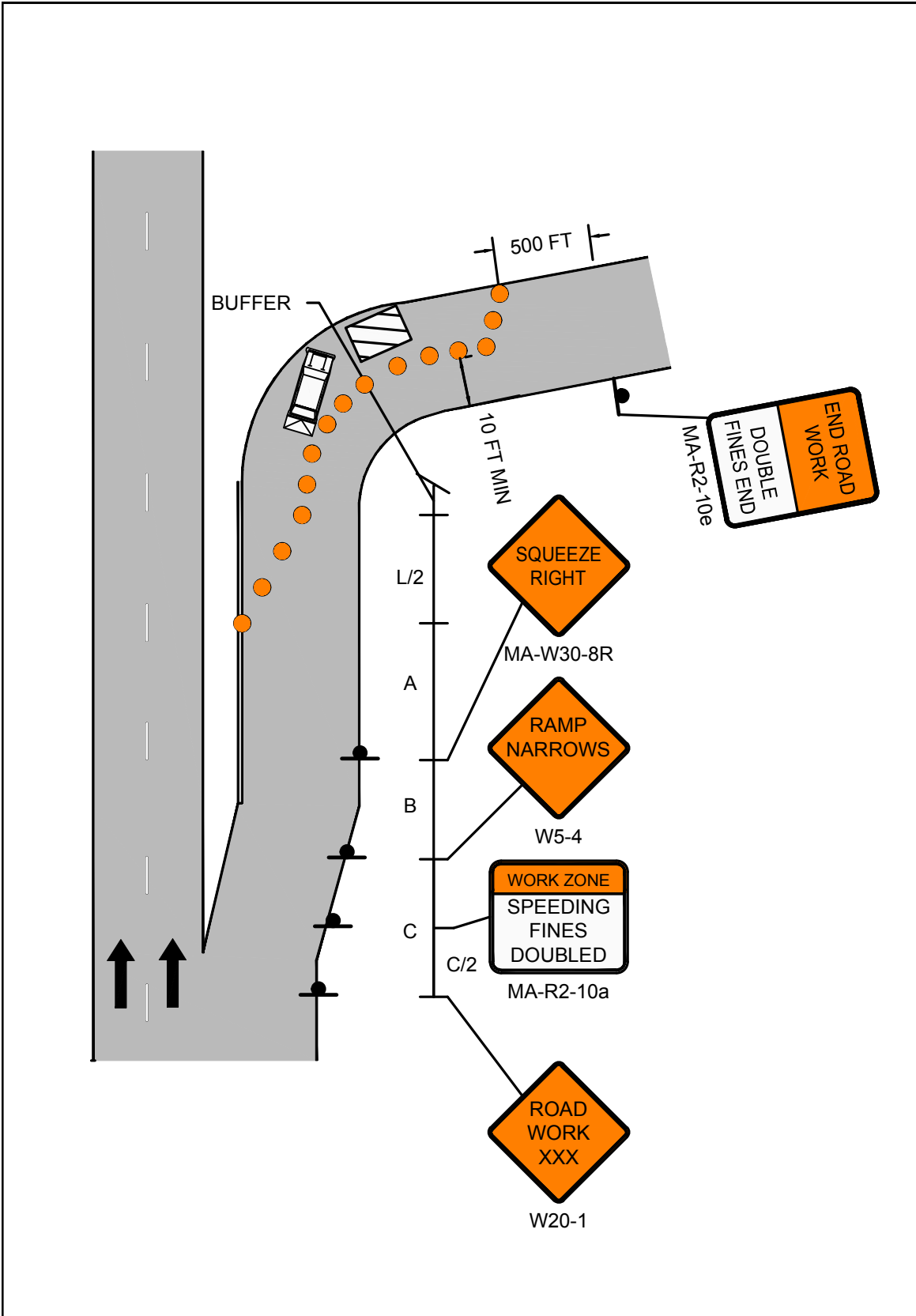
NOTES

1. MA-R2-10a LOCATED AT C/2.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



	Work Zone Safety Standard Details and Drawings	FIGURE 18 STATIONARY OPERATIONS MULTILANE DIVIDED ROADWAY LEFT SIDE OF OFF RAMP CLOSED PAGE 43
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PAGE 44

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
MULTILANE DIVIDED ROADWAY
ROADWORK BEYOND ON RAMP

POSTED SPEED LIMIT (MPH)	CHANNELIZATION DEVICES (DRUMS OR CONES)				
	SHOULDER TAPER LENGTH (L/3) (FT)	TRAVEL LANE CLOSURE LENGTH (L) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	110	320	305	20	175
45-55	220	660	495	40	135
60-65	260	780	645	40	155










* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)
25-40	500 / 500 / 500
45-55	500 / 1000 / 1000
60-65	1000 / 1600 / 2600

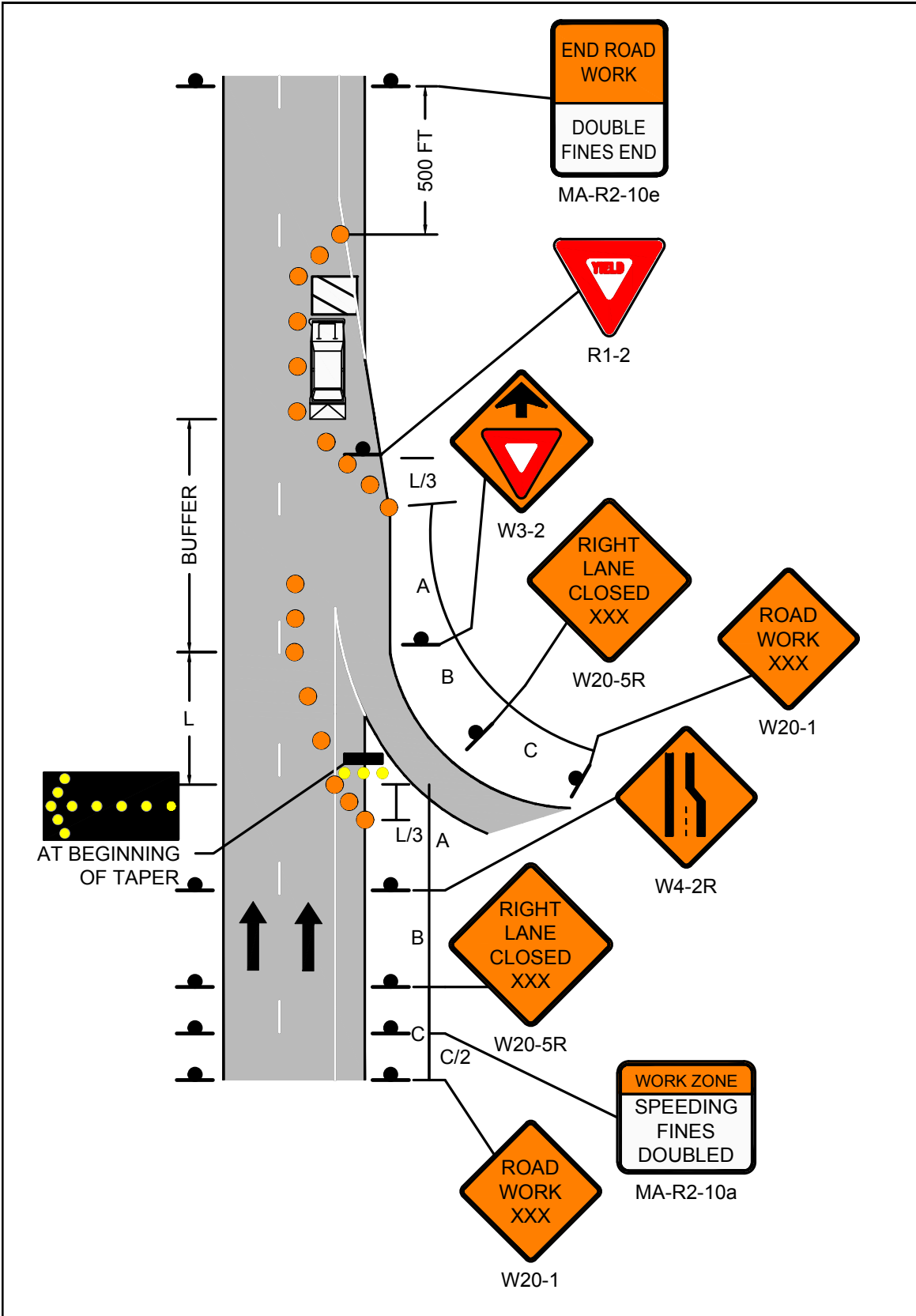
NOTES


1. MA-R2-10a LOCATED AT C/2.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>PAGE 45</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 19 STATIONARY OPERATIONS MULTILANE DIVIDED ROADWAY ROADWORK BEYOND ON RAMP</p>
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PAGE 46

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
MULTILANE DIVIDED ROADWAY
ROADWORK BEYOND OFF RAMP

POSTED SPEED LIMIT (MPH)	CHANNELIZATION DEVICES (DRUMS OR CONES)					
	SHOULDER TAPER LENGTH (L/3) (FT)	TRAVEL LANE CLOSURE LENGTH (L) (FT)	TRAVEL LANE SHIFT LENGTH (L/2) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	110	320	160	305	20	70
45-55	220	660	330	495	40	55
60-65	260	780	390	645	40	65










* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)
25-40	500 / 500 / 500
45-55	500 / 1000 / 1000
60-65	1000 / 1600 / 2600

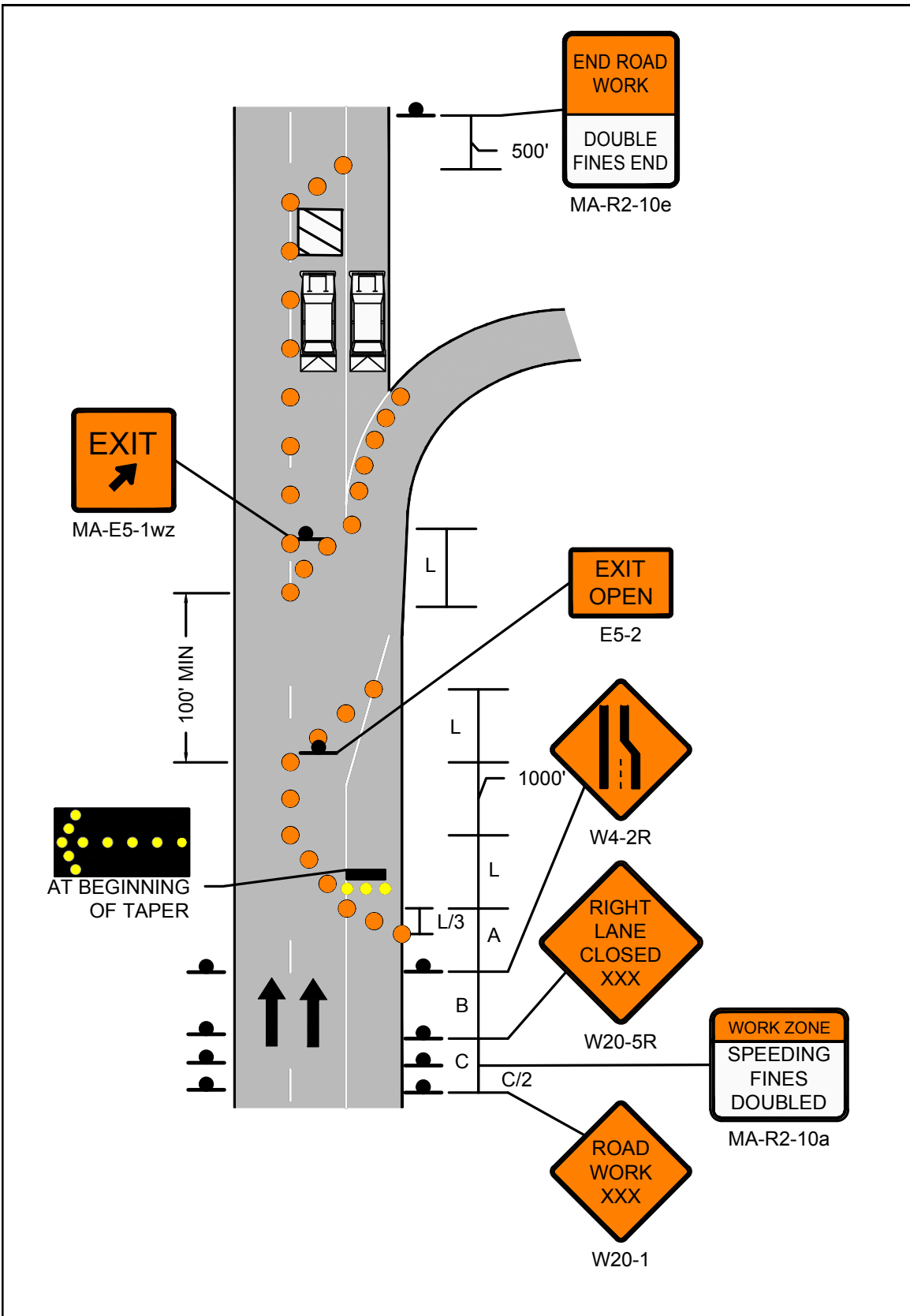
NOTES


1. MA-R2-10a LOCATED AT C/2.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>PAGE 47</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 20 STATIONARY OPERATIONS MULTILANE DIVIDED ROADWAY ROADWORK BEYOND OFF RAMP</p>
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PAGE 48

Work Zone Safety
Standard Details
and Drawings










MULTILANE DIVIDED ROADWAY
TYPICAL RAMP CLOSURE

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)	CHANNELIZATION DEVICES (DRUMS OR CONES)			
		SHOULDER TAPER LENGTH (L/3) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES
25-40	500 / 500 / 500	110	305	20	45
45-55	500 / 1000 / 1000	220	495	40	30
60-65	1000 / 1600 / 2600	260	645	40	35

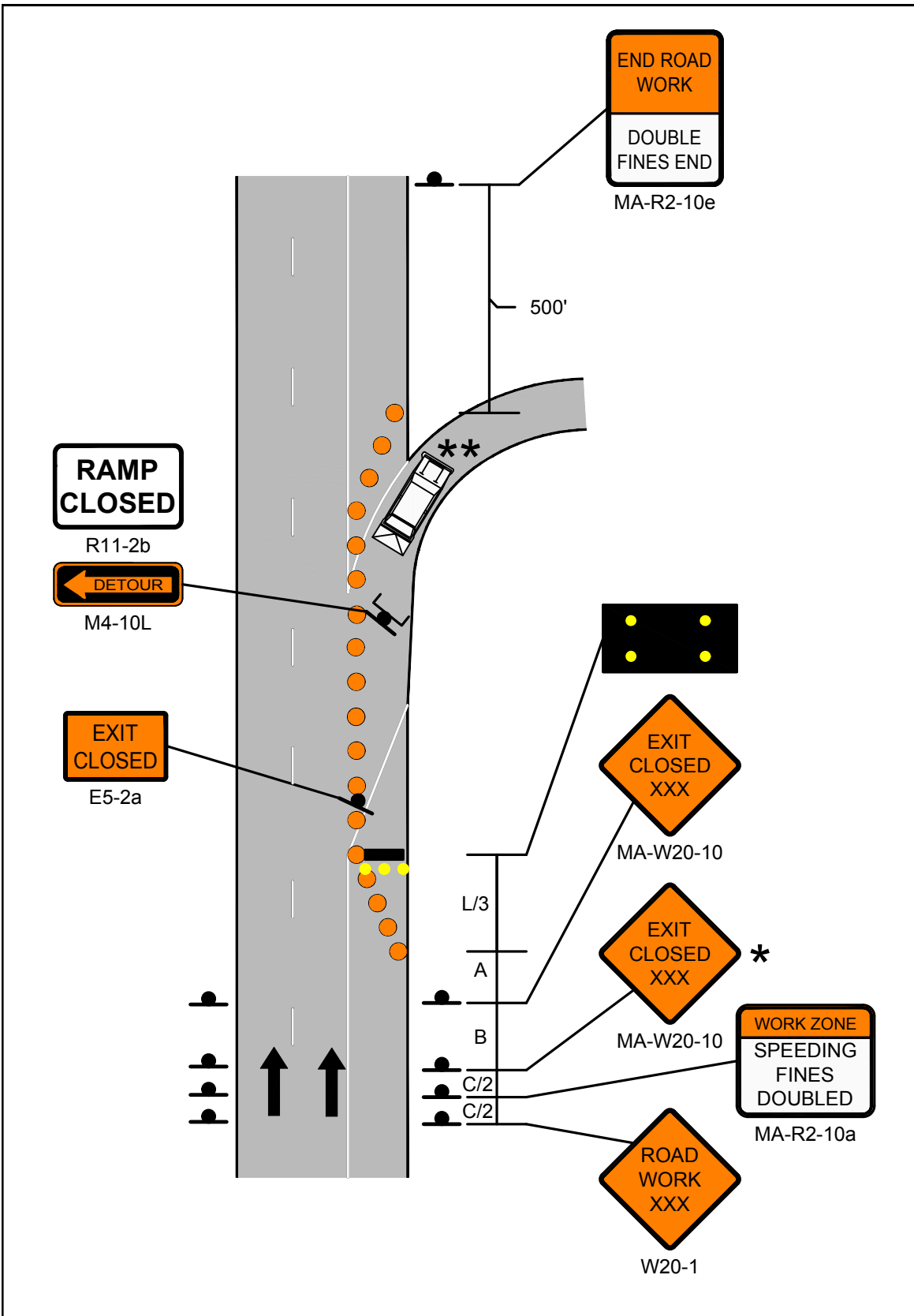
NOTES

1. MA-R2-10a LOCATED AT C/2.
2. * NOT REQUIRED IF RIGHT LANE IS CLOSED IN ADVANCE OF EXIT.
3. ** OPTIONAL AT ENGINEER'S DISCRETION.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE





PAGE 50

Work Zone Safety
Standard Details
and Drawings










MULTILANE DIVIDED ROADWAY
TYPICAL CLOVERLEAF RAMP CLOSURE

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)	CHANNELIZATION DEVICES (DRUMS OR CONES)			
		SHOULDER TAPER LENGTH (L/3) (FT)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES
25-40	500 / 500 / 500	110	305	20	45
45-55	500 / 1000 / 1000	220	495	40	30
60-65	1000 / 1600 / 2600	260	645	40	35

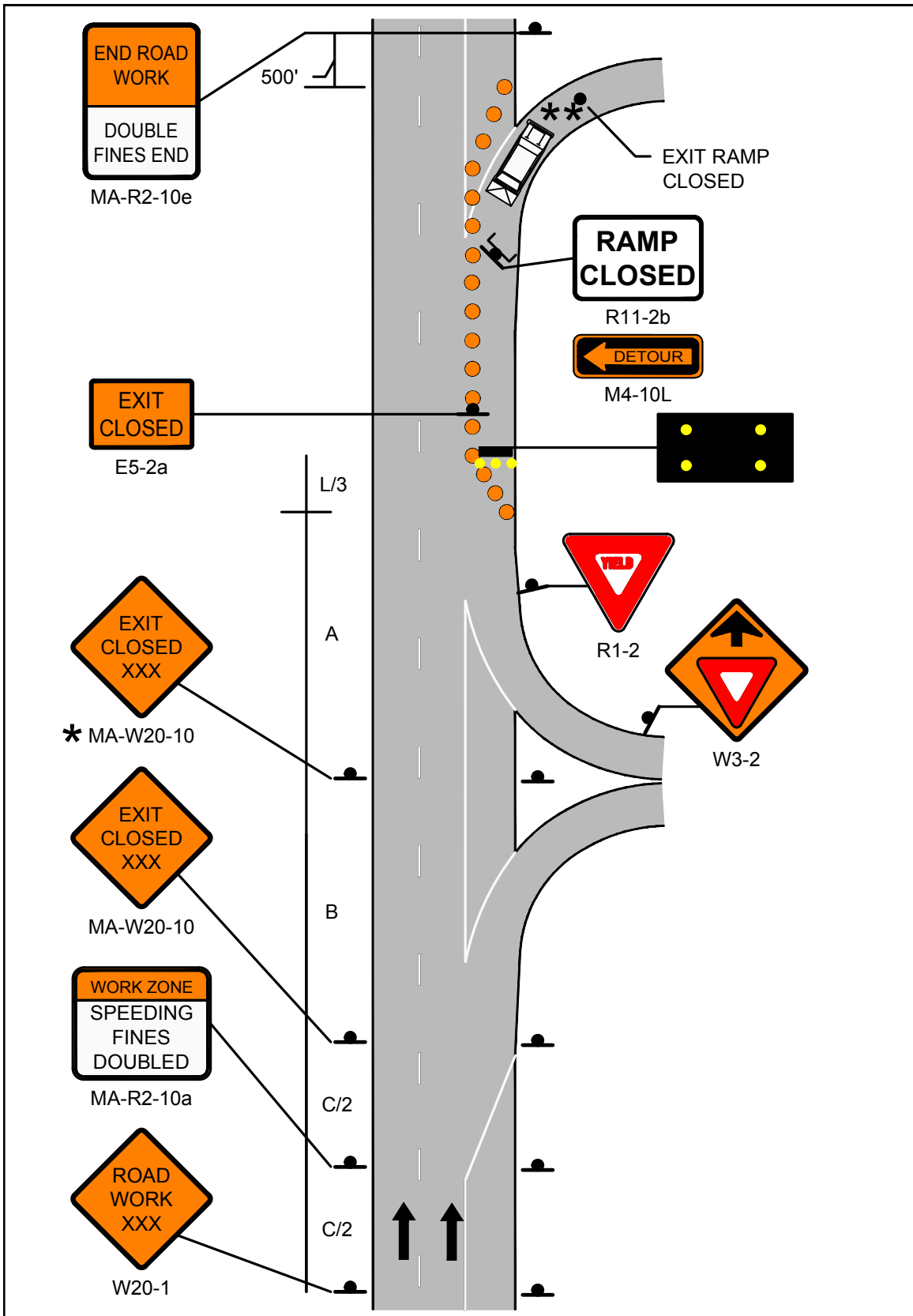
NOTES


1. MA-R2-10a LOCATED AT C/2.
2. * NOT REQUIRED IF RIGHT LANE IS CLOSED IN ADVANCE OF EXIT.
3. ** OPTIONAL AT ENGINEER'S DISCRETION.


LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>Massachusetts Department of Transportation Highway Division</p> <p>PAGE 51</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 22 MULTILANE DIVIDED ROADWAY TYPICAL CLOVERLEAF RAMP CLOSURE</p>
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 <p>PAGE 52</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>MULTILANE DIVIDED ROADWAY TYPICAL RAMP CLOSURE ADVANCE SIGNING</p>
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
NOTES

1. IF THE CLOSED RAMP IS LOCATED DOWNSTREAM FROM THE PROPOSED DETOUR ROUTE/RAMP, A PCMS SHALL BE POSITIONED AT A SUFFICIENT DISTANCE IN ADVANCE OF THE DETOUR ROUTE/RAMP AND SHOULD STATE WHICH RAMP IS CLOSED AND WHICH SHALL BE USED FOR THE DETOUR.

2. IF THE CLOSED RAMP IS LOCATED UPSTREAM FROM THE PROPOSED DETOUR ROUTE/RAMP, A PCMS SHALL BE POSITIONED PRIOR TO THE CLOSED RAMP AND SHOULD STATE WHICH RAMP IS CLOSED AND WHICH SHALL BE USED FOR THE DETOUR.

3. A SUFFICIENT NUMBER OF DETOUR SIGNS (M4-9 SERIES) SHOULD BE DEPLOYED TO PROPERLY DIRECT DETOURED TRAFFIC. SIGN SPACING SHALL BE AT THE DIRECTION OF THE ENGINEER.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE

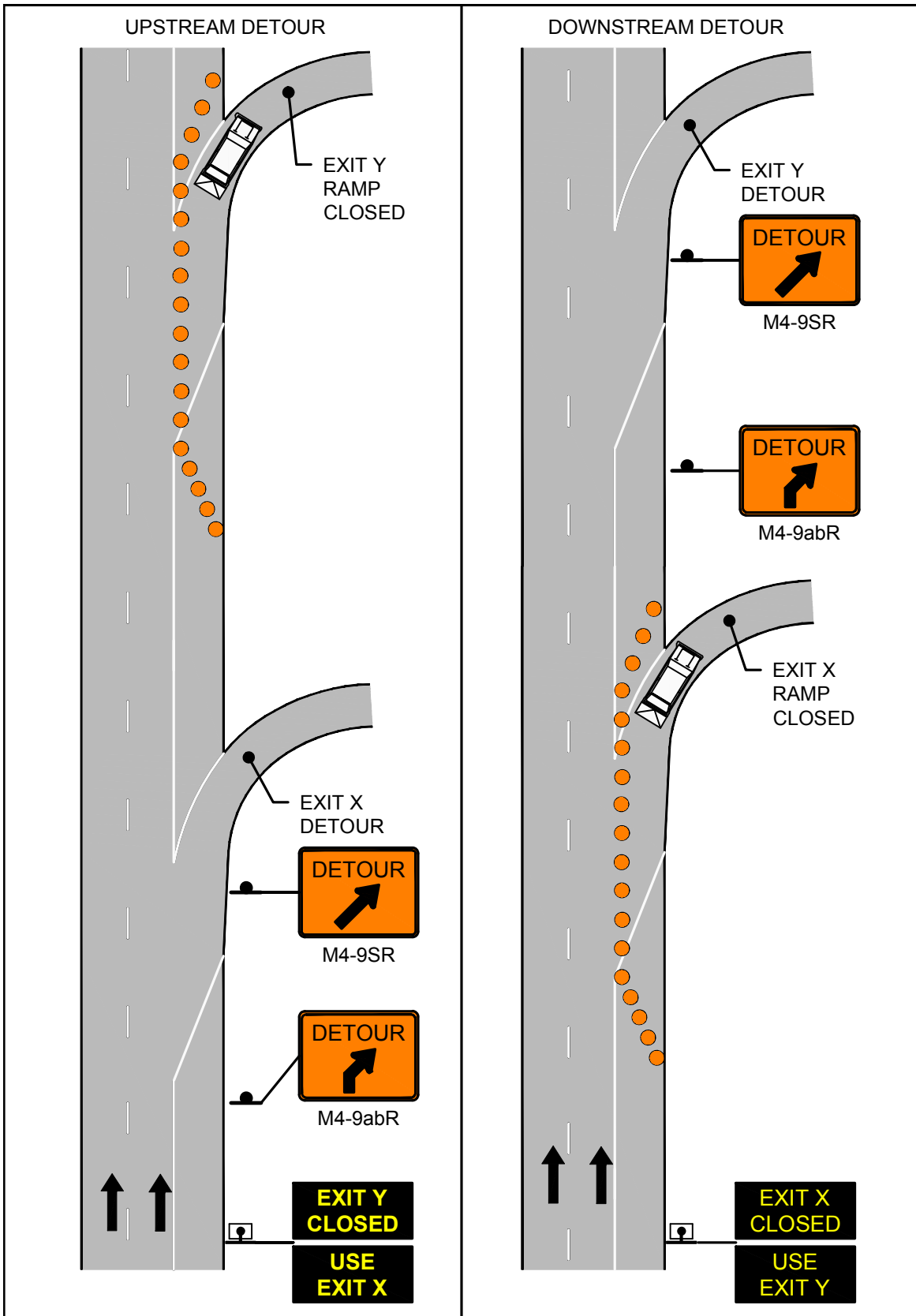


FIGURE 23
MULTILANE DIVIDED ROADWAY
TYPICAL RAMP CLOSURE
ADVANCE SIGNING



FIGURE 24-1
MULTILANE DIVIDED ROADWAY
PLACEMENT OF TEMPORARY
PORTABLE RUMBLE STRIPS
SHEET 1 OF 2




POSTED REGULATORY OR WORK ZONE SPEED	SEPARATION BETWEEN RUMBLE STRIPS
Above 55-mph	20-feet
36-mph to 55-mph	15-feet
35-mph and under	10-feet

POSTED SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (FT) (A,B,C)	TANGENT LENGTH BETWEEN TAPERS (T) (FT)
25-40	500 / 500 / 500	640
45-55	500 / 1000 / 1000	1320
60-65	1000 / 1600 / 2600	1560

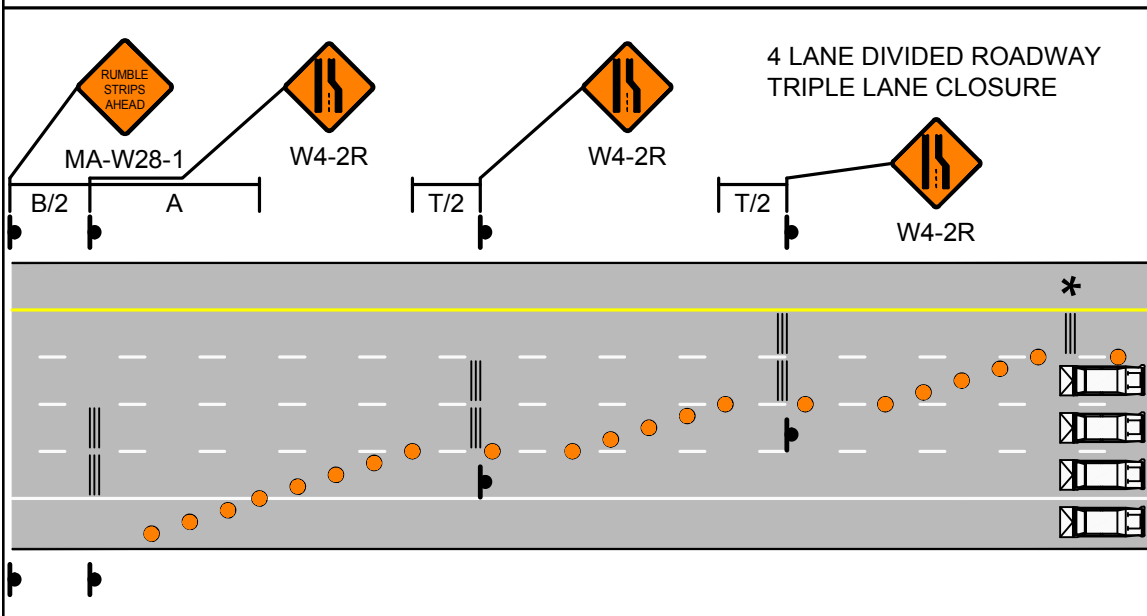
NOTES

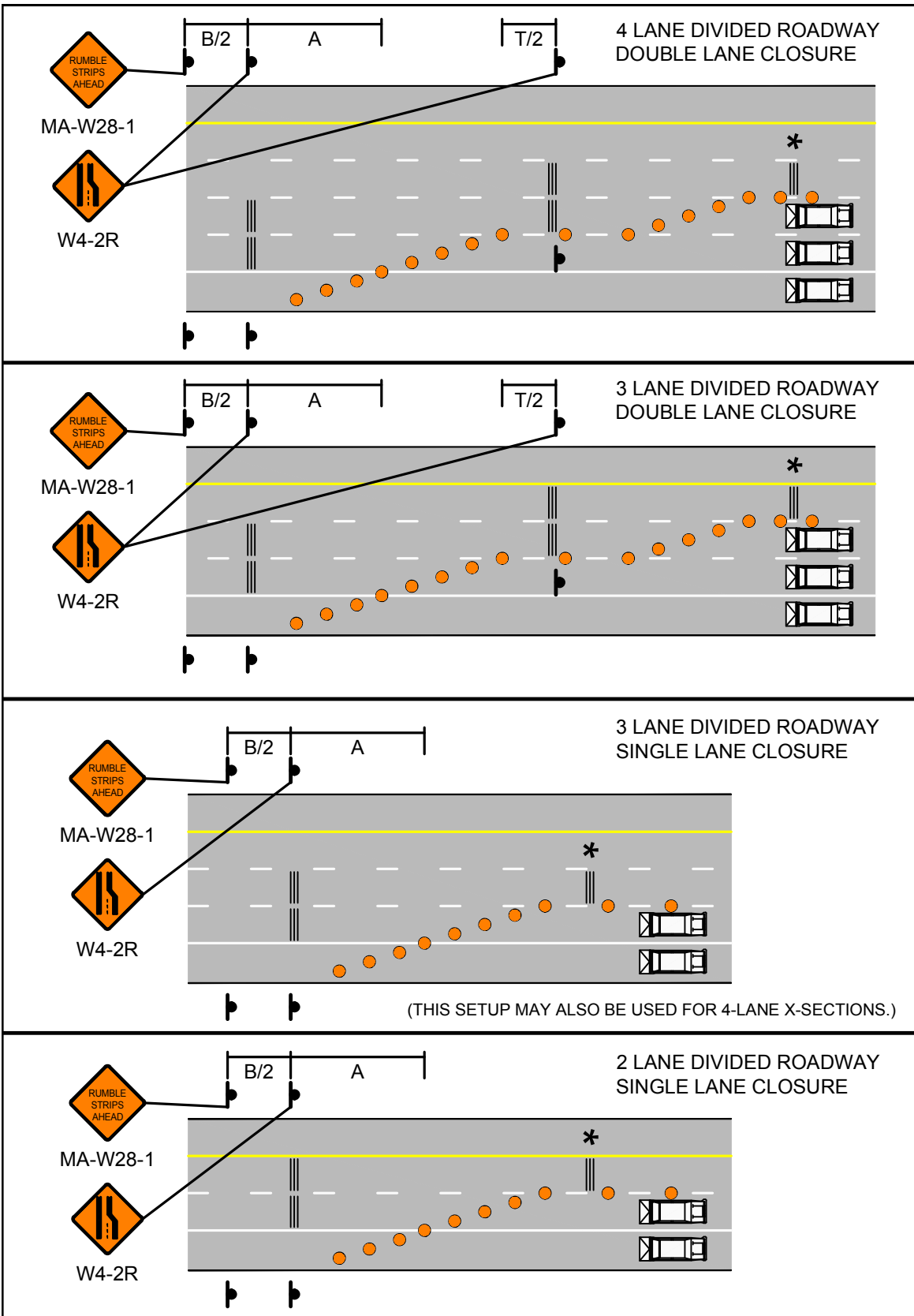
1. THE INTENTION OF THESE DETAILS IS ONLY TO DEPICT THE PLACEMENT OF TEMPORARY PORTABLE RUMBLE STRIPS (TPRS) IN RELATIONSHIP TO THE TAPER AND THE BUFFER OF A SINGLE- OR MULTI-LANE CLOSURE. THE DEPICTION OF THE NUMBER AND SPACING OF ALL OTHER TRAFFIC CONTROL DEVICES IS NOT TO SCALE. REFER TO OTHER DETAILS FOR LANE CLOSURES FOR THE PLACEMENT AND NUMBER OF ALL OTHER TRAFFIC CONTROL DEVICES.
2. THESE DETAILS ONLY DEPICT RIGHT LANE CLOSURES. LEFT LANE CLOSURES SHOULD UTILIZE A MIRROR IMAGE OF THESE SETUPS, STARTING WITH CLOSURE OF THE LEFTMOST LANE.
3. ★ THIS TPRS ARRAY IS OPTIONAL AT THE ENGINEER'S DISCRETION. IF USED, IT SHOULD BE PLACED ADJACENT TO THE BUFFER.
4. DETAILS SHOW THE MINIMUM NUMBER OF TPRS REQUIRED. ADDITIONAL MAY BE USED IF CONDITIONS WARRANT.

LEGEND


-  CHANNELIZATION DEVICE
-  TRUCK MOUNTED ATTENUATOR
-  TEMPORARY PORTABLE RUMBLE STRIP

NOT TO SCALE



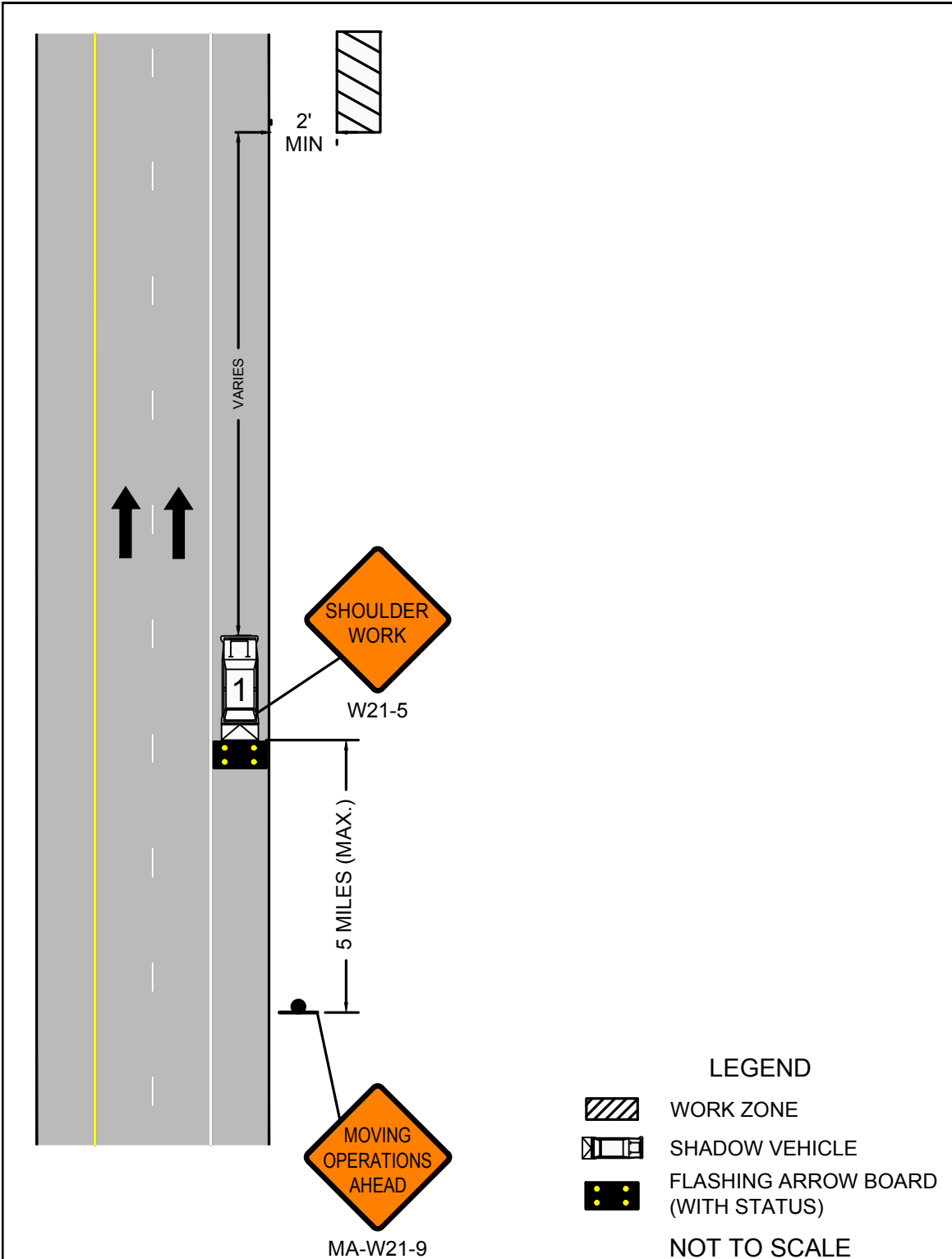


(THIS SETUP MAY ALSO BE USED FOR 4-LANE X-SECTIONS.)

 <p>PAGE 56</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>NOTES FOR MOBILE OPERATIONS</p>
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Notes for Mobile Operations

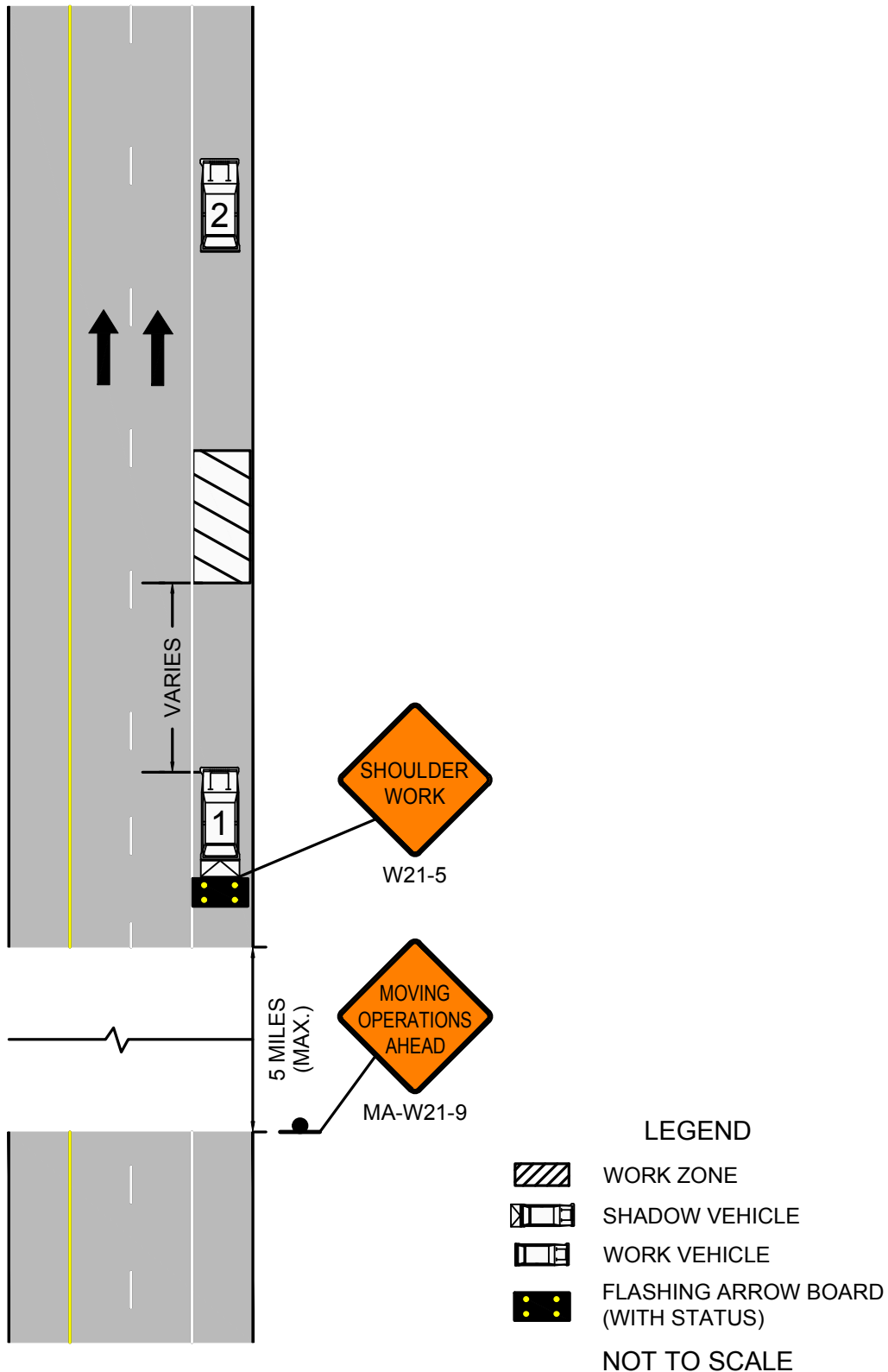
- Unless otherwise stated, these notes shall apply to all Mobile Operation setups.
 - Additional, setup-specific notes may be found on individual sheets.
1. The Supervisor shall travel the designated roadway prior to scheduling the work to ensure that sufficient and appropriate traffic control devices will be available. Special consideration shall be exercised to ensure that appropriate traffic controls be placed in areas that will have limited visibility of the work areas or any associated traffic queues.
 2. Vehicles used for these operations shall be made highly visible with appropriate equipment such as flashing lights, rotating beacons, flags, signs, flashing arrow boards, and/or portable changeable message signs. Any signs mounted to these vehicles shall not obscure the visibility of other devices.
 3. All vehicles shown may not be required based upon roadway conditions. However, when needed and practical, additional shadow vehicles and equipment to warn and protect motorists and workers should be used. Based upon roadway conditions, the addition of a police detail with cruiser may be used for additional protection or warning for the traveling public.
 4. The distance between the work and shadow vehicle(s) may vary according to the terrain and other factors. Shadow vehicles are used to warn traffic of the operations ahead. Whenever adequate sight distance exists, the shadow vehicle(s) should maintain the minimum appropriate distance and maintain the same speed to prevent non-work related vehicles from entering the work convoy. If this formation cannot be maintained then additional traffic control devices should be deployed in advance of any vertical or horizontal curves that may restrict the sight distance of an oncoming vehicle to either the work vehicle or associated traffic queue.
 5. All shadow vehicles shall be equipped with a truck or trailer mounted attenuator (TMA) and a flashing arrow board.
 6. Signs should be covered or turned from view when work is not in progress.
 7. Portable changeable message signs may be used in lieu of MA-W21-9 signs and any signs mounted directly to a shadow vehicle.

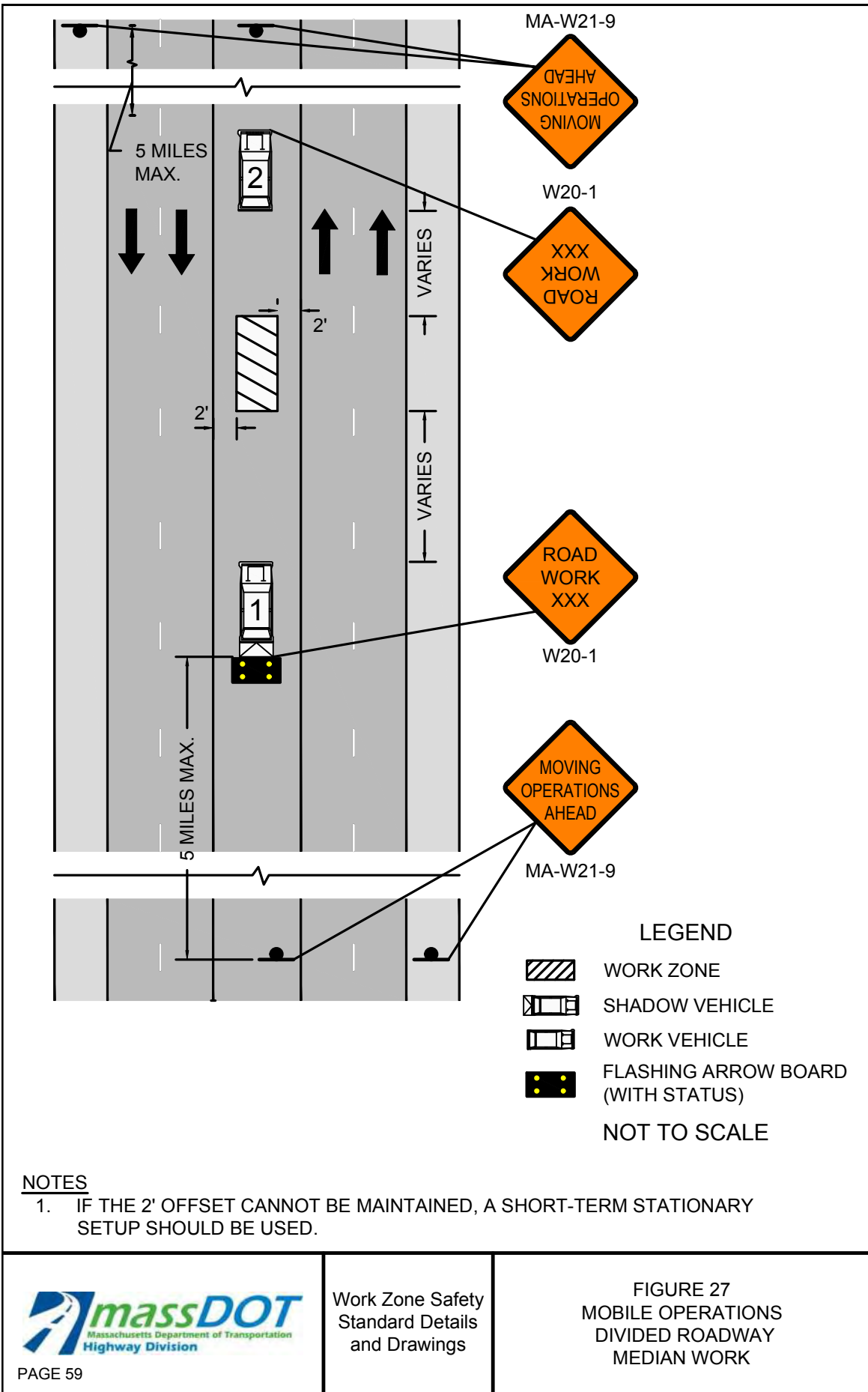


NOTES

1. IF THE WORK AREA IS SUFFICIENTLY AWAY FROM THE EDGE OF ROADWAY (20' MINIMUM) THEN SIGNS AND VEHICLES MAY NOT BE REQUIRED.

 <p>PAGE 57</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 25 MOBILE OPERATIONS ANY ROADWAY BEYOND RIGHT SHOULDER</p>
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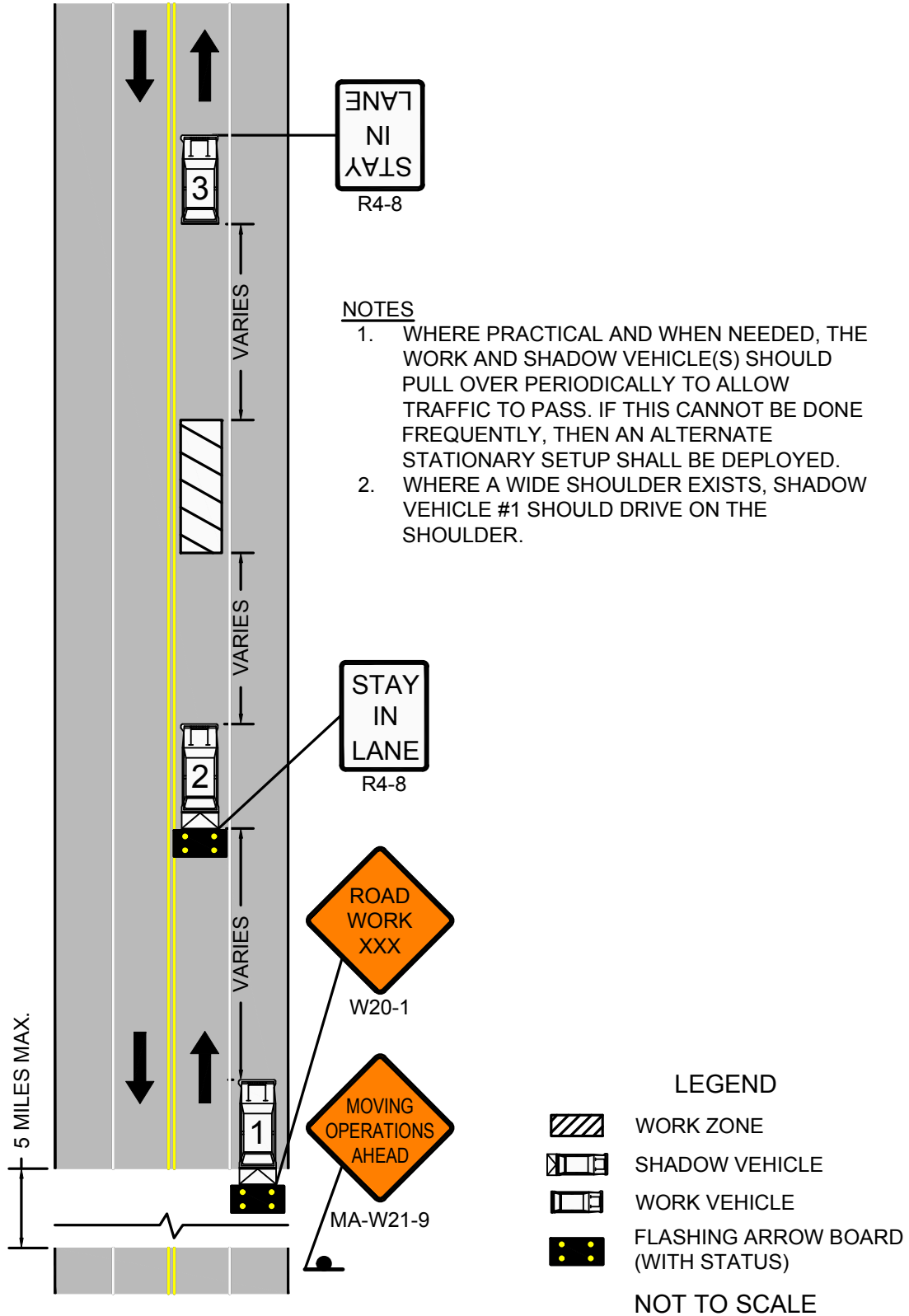
NOTES

1. IF THE 2' OFFSET CANNOT BE MAINTAINED, A SHORT-TERM STATIONARY SETUP SHOULD BE USED.





FIGURE 28
MOBILE OPERATIONS
UNDIVIDED TWO LANE ROADWAY
HALF OF ROADWAY CLOSED



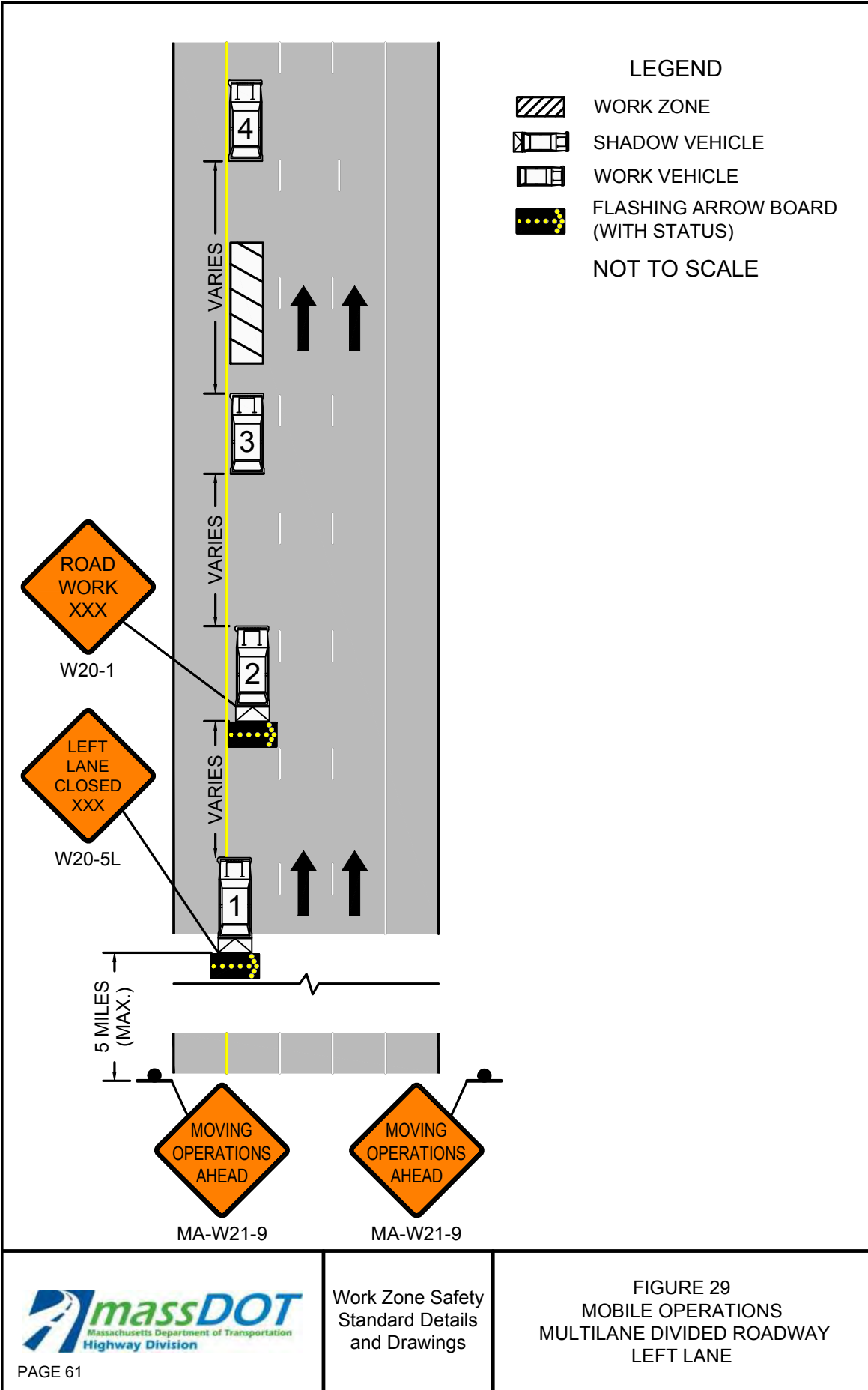
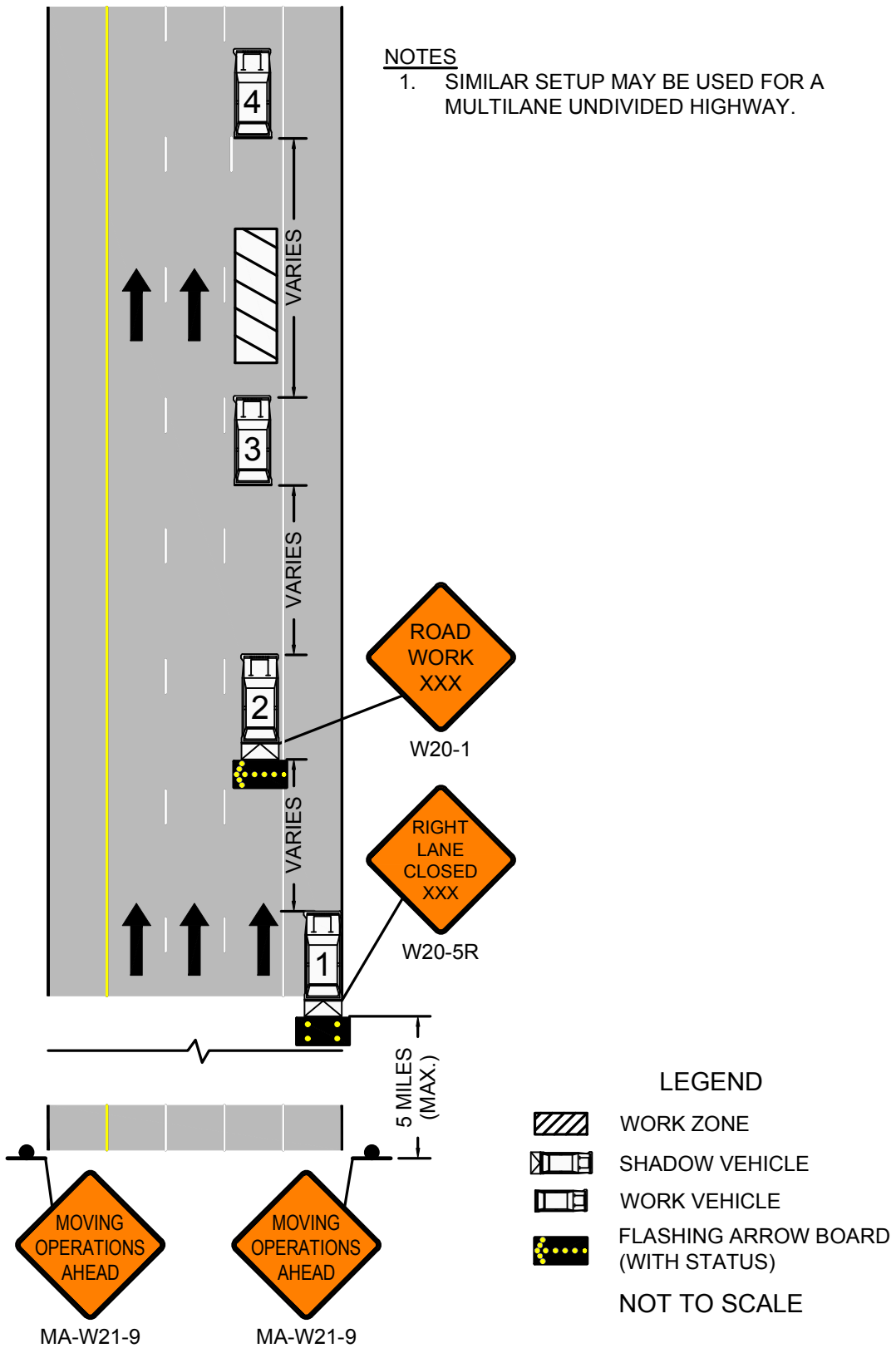
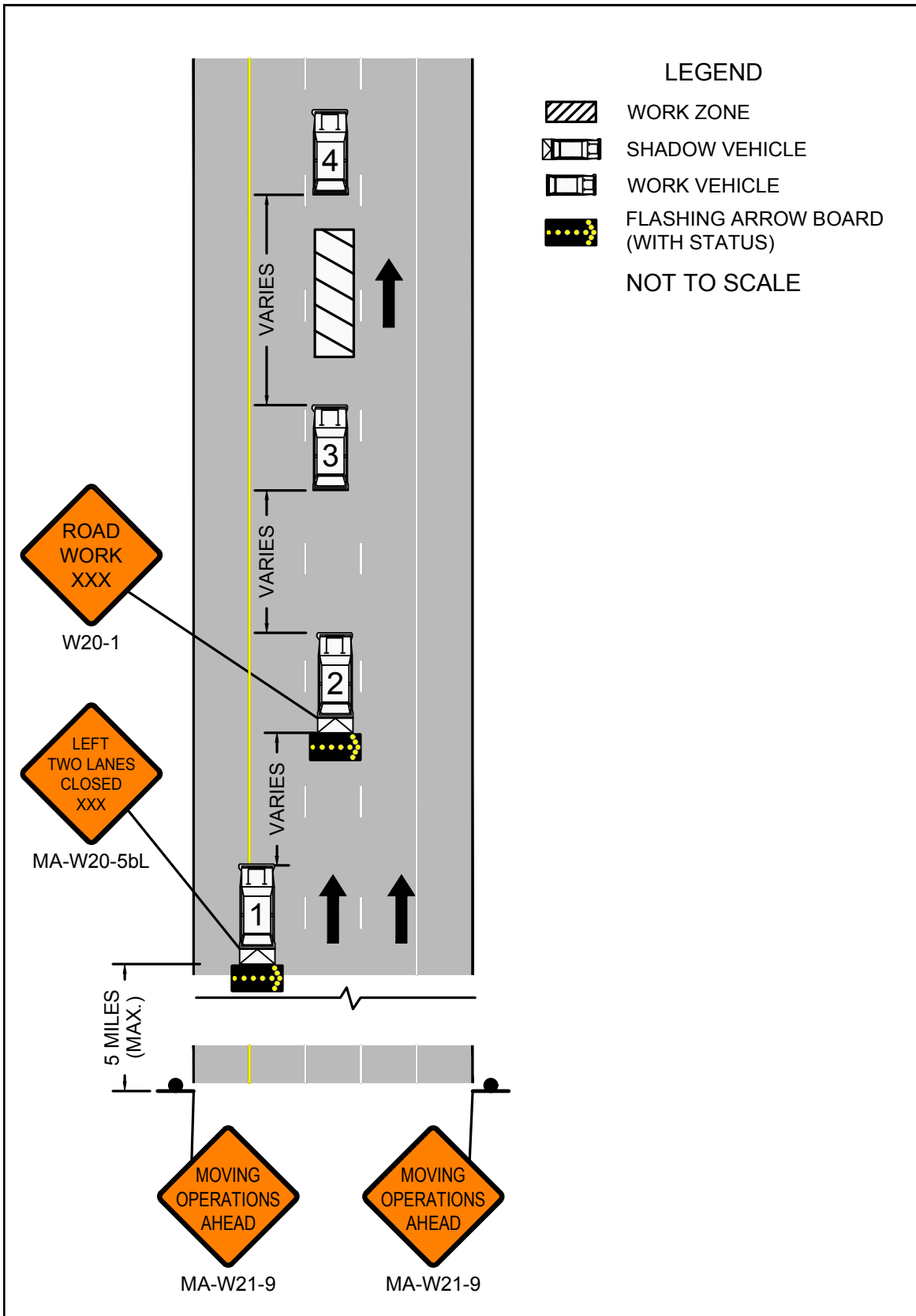








FIGURE 30
MOBILE OPERATIONS
MULTILANE DIVIDED ROADWAY
RIGHT LANE





LEGEND

-  WORK ZONE
-  SHADOW VEHICLE
-  WORK VEHICLE
-  FLASHING ARROW BOARD (WITH STATUS)
- NOT TO SCALE



W20-1



MA-W20-5bL

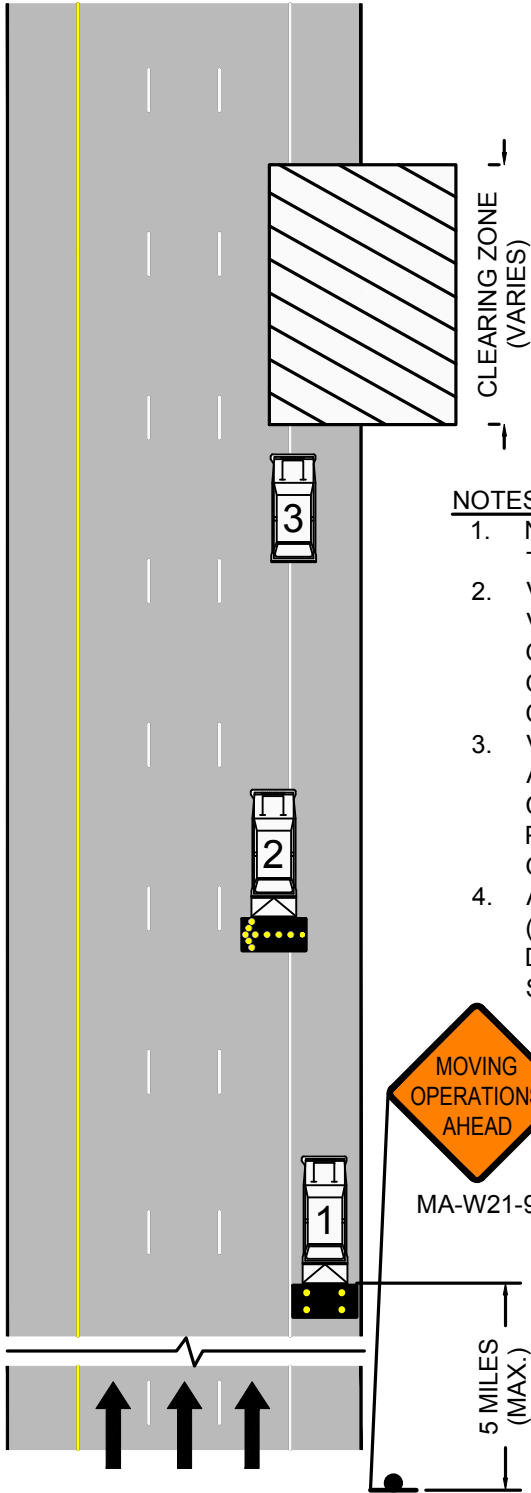


MA-W21-9



MA-W21-9









NOTES

1. NO OTHER NOTES ARE APPLICABLE TO THIS DETAIL.
2. VEHICLE #3 IS A SNOW/DEBRIS REMOVAL VEHICLE AND SHALL ALWAYS BE AWARE OF THE SURROUNDINGS. MORE THAN ONE VEHICLE MAY BE USED IN THE CLEARING ZONE.
3. VEHICLE #1 SHOULD BE EQUIPPED WITH A PCMS, A TMA, AND STAY IN VISUAL CONTACT WITH VEHICLE #3 WHILE PROVIDING AMPLE WARNING TO ONCOMING TRAFFIC.
4. A POLICE DETAIL WITH BLUE LIGHTS (OPTIONAL) SHALL REMAIN DOWNSTREAM OF VEHICLE #1 IN THE SHOULDER.

LEGEND

-  WORK ZONE
-  SHADOW VEHICLE
-  WORK VEHICLE
-  FLASHING ARROW BOARD (WITH STATUS)

NOT TO SCALE

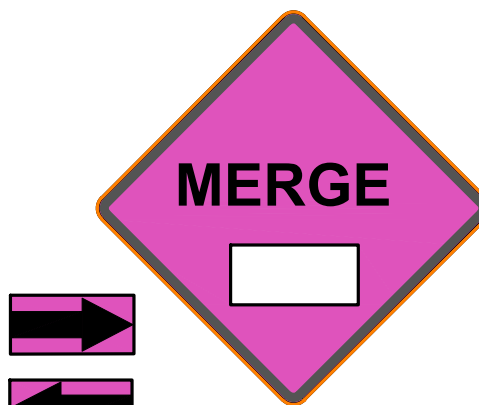
Notes for Traffic Emergency or Incident Operations

- The goal is to increase awareness of during traffic emergencies or incidents.
- These signs are to be used to differentiate from the traditional construction work zone and an emergency or incident.
- Upon arrival MassDOT First Responders shall assess the magnitude of the scene to determine if the incident is likely to last an hour or more in duration which would trigger the requirement to use these signs.
- Place the “Emergency Ahead” sign on the same side of the road as the incident, if possible, for up to an hour. Emergency response signs should be put up for all incidents and emergencies as soon as possible.
- Place the emergency sign 500 to 1000 feet before the first channelization devices.
- As an incident evolves this sign would be used as a secondary sign with all other emergency controls put in place.
- Only use “MERGE” signs where applicable (Not on 2 lane roads).
- Use MERGE signs on Multi-lane Roads to move traffic away from the incident and keep them in a safe lane.
- Place the MERGE sign about 500 feet before the closure.
- If additional signs are available, they should be placed accordingly as a sign informing people coming in the other direction or on the opposite side of the roadway.
- Use 12 emergency cones spaced 40 to 80 feet apart to form a taper and protect the scene.
- Sequential flashing lights/flares may be used in lieu of or to supplement cones.
- During a major incident that will last for a long duration, the EMERGENCY AHEAD sign should be moved back before an intersecting road or ramp to alert travelers and give them an option of using an alternate route. (Be sure all other devices are in place before moving this sign).

Standard Emergency Signs (36"x36" or 48"x48")



MA-W20-9






MA-W4-2aR/L



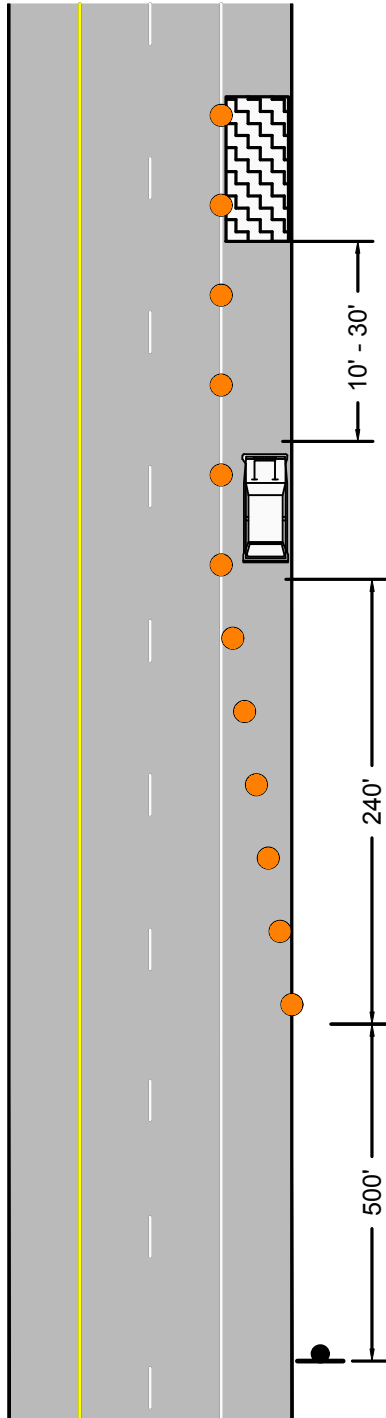


FIGURE 33
EMERGENCY RESPONSE
ANY ROADWAY
SHOULDER ENCROACHMENT

LEGEND

-  EMERGENCY AREA
-  CHANNELIZATION DEVICE
-  EMERGENCY RESPONSE VEHICLE

NOT TO SCALE



ORDER OF RESPONSE ACTIVITIES

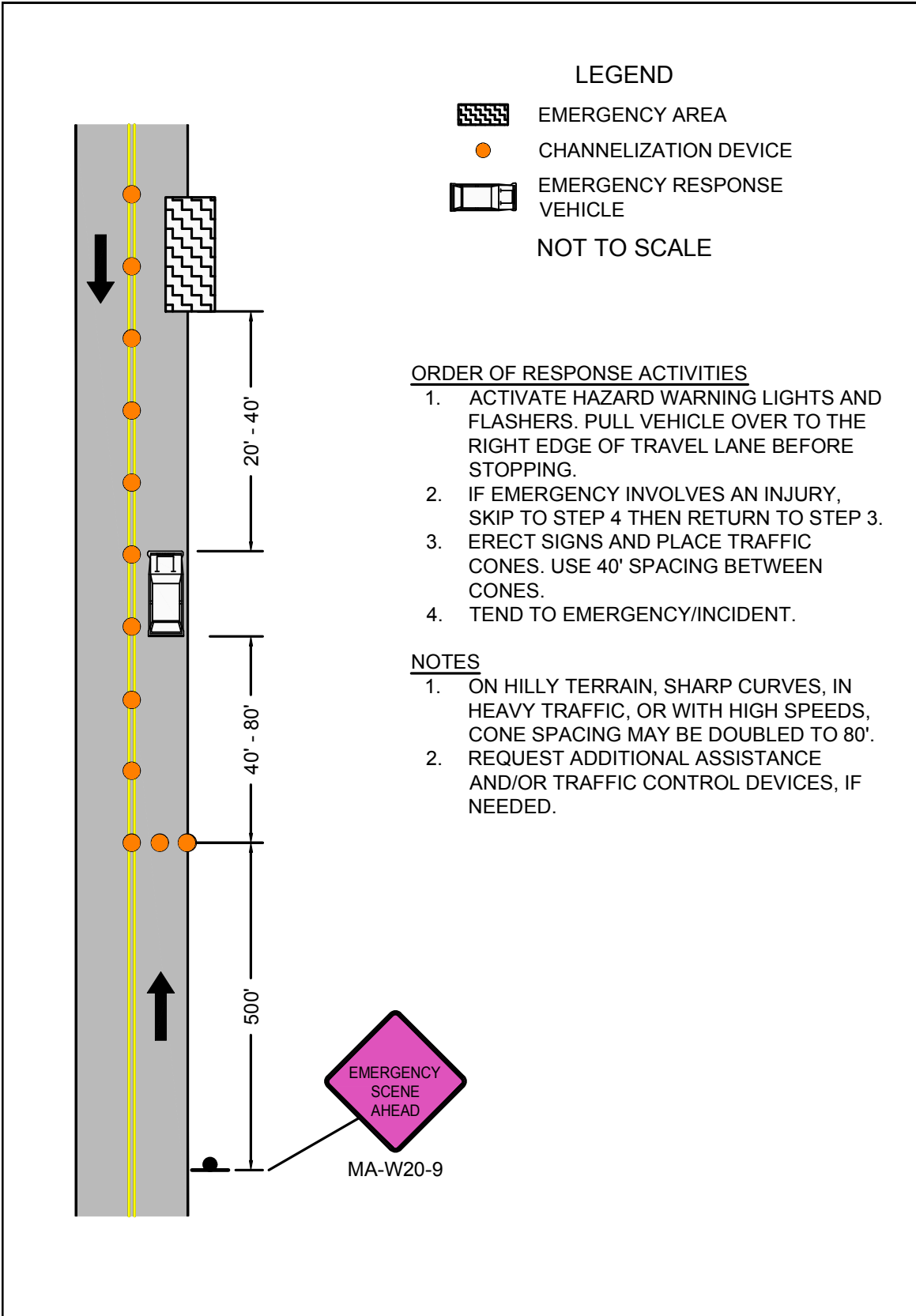
1. ACTIVATE HAZARD WARNING LIGHTS AND FLASHERS. PULL VEHICLE OVER TO THE RIGHT EDGE OF TRAVEL LANE BEFORE STOPPING.
2. IF EMERGENCY INVOLVES AN INJURY, SKIP TO STEP 4 THEN RETURN TO STEP 3.
3. ERECT SIGNS AND PLACE TRAFFIC CONES. USE 40' SPACING BETWEEN CONES.
4. TEND TO EMERGENCY/INCIDENT.

NOTES

1. ON HILLY TERRAIN, SHARP CURVES, IN HEAVY TRAFFIC, OR WITH HIGH SPEEDS, CONE SPACING MAY BE DOUBLED TO 80'.
2. REQUEST ADDITIONAL ASSISTANCE AND/OR TRAFFIC CONTROL DEVICES, IF NEEDED.



MA-W20-9







 MASSACHUSETTS DEPARTMENT OF TRANSPORTATION Highway Division PAGE 67	Work Zone Safety Standard Details and Drawings	FIGURE 34 EMERGENCY RESPONSE TWO LANE ROADWAY NO SHOULDER TRAVEL LANE ENCROACHMENT
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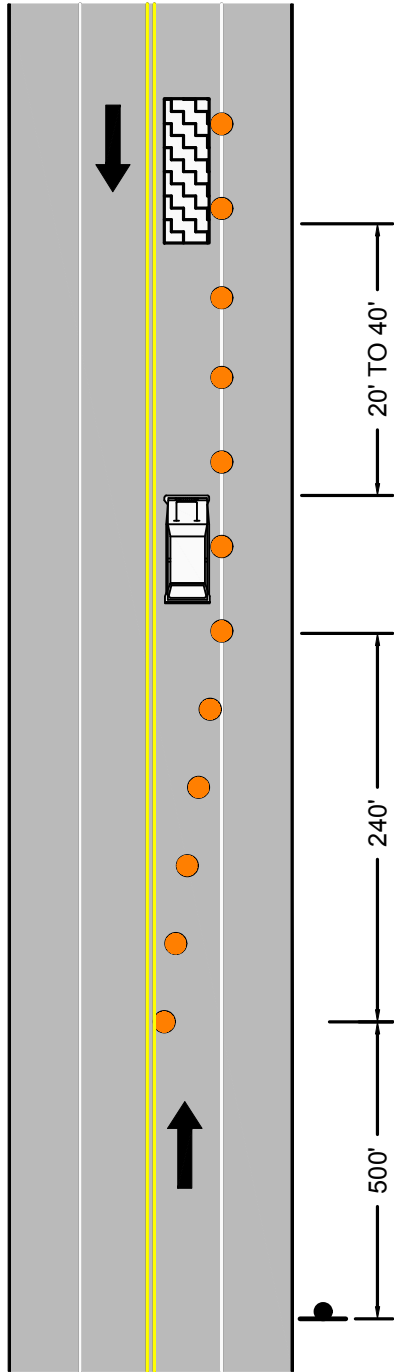


FIGURE 35
EMERGENCY RESPONSE
TWO LANE ROADWAY
TRAVERSABLE SHOULDER
SINGLE LANE ENCROACHMENT

LEGEND

-  EMERGENCY AREA
-  CHANNELIZATION DEVICE
-  EMERGENCY RESPONSE VEHICLE

NOT TO SCALE

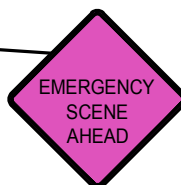


ORDER OF RESPONSE ACTIVITIES

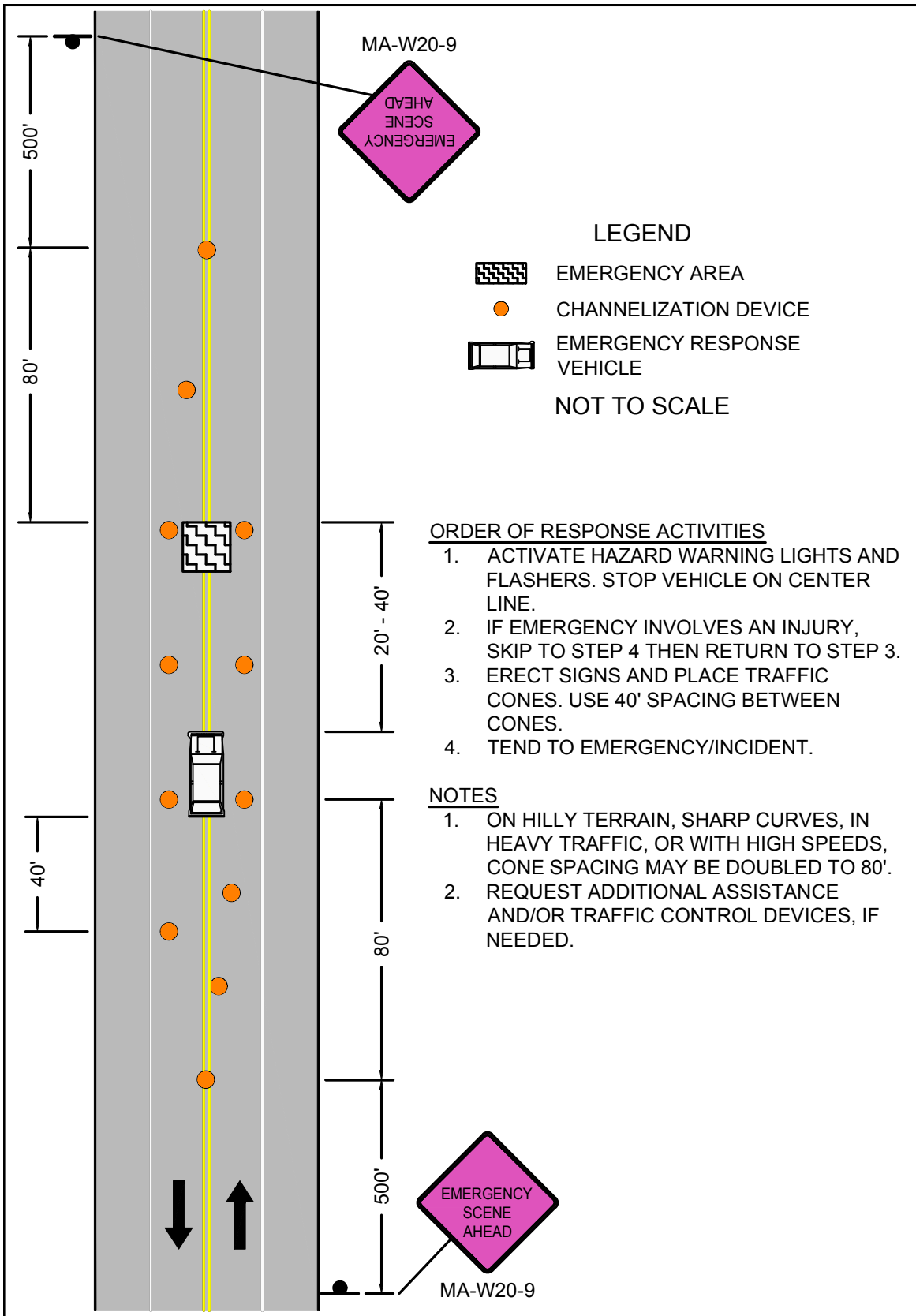
1. ACTIVATE HAZARD WARNING LIGHTS AND FLASHERS. PULL VEHICLE OVER TO THE LEFT EDGE OF TRAVEL LANE BEFORE STOPPING.
2. IF EMERGENCY INVOLVES AN INJURY, SKIP TO STEP 4 THEN RETURN TO STEP 3.
3. ERECT SIGNS AND PLACE TRAFFIC CONES. USE 40' SPACING BETWEEN CONES.
4. TEND TO EMERGENCY/INCIDENT.

NOTES

1. ON HILLY TERRAIN, SHARP CURVES, IN HEAVY TRAFFIC, OR WITH HIGH SPEEDS, CONE SPACING MAY BE DOUBLED TO 80'.
2. REQUEST ADDITIONAL ASSISTANCE AND/OR TRAFFIC CONTROL DEVICES, IF NEEDED.



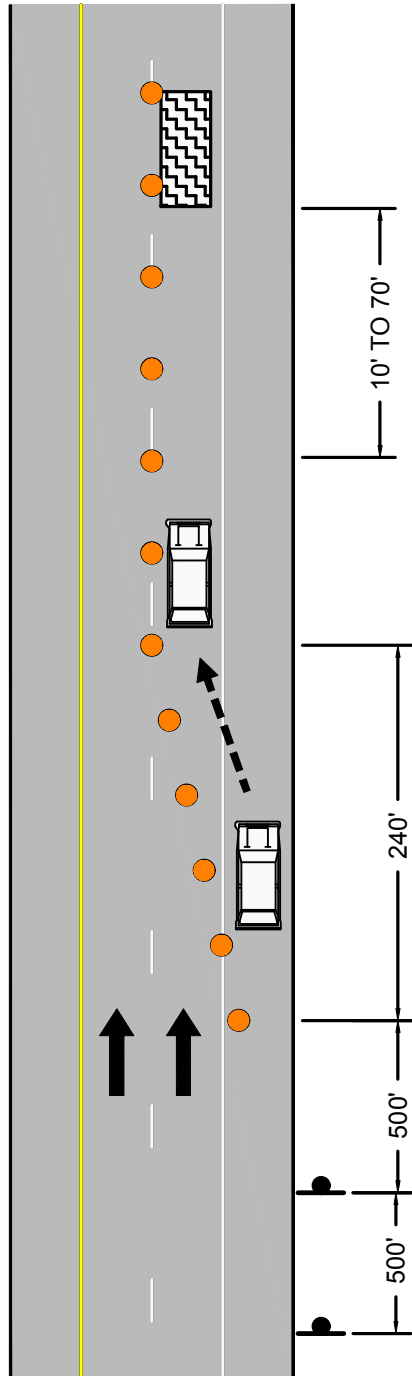
MA-W20-9







<p>Massachusetts Department of Transportation Highway Division</p> <p>PAGE 69</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 36 EMERGENCY RESPONSE TWO LANE ROADWAY TRAVERSABLE SHOULDER CENTER OF ROADWAY</p>
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FIGURE 37
EMERGENCY RESPONSE
MULTILANE DIVIDED ROADWAY
RIGHT LANE



LEGEND

-  EMERGENCY AREA
-  CHANNELIZATION DEVICE
-  EMERGENCY RESPONSE VEHICLE
-  RESPONSE VEHICLE MOVEMENT

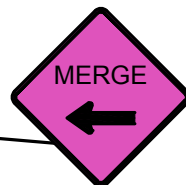
NOT TO SCALE

ORDER OF RESPONSE ACTIVITIES

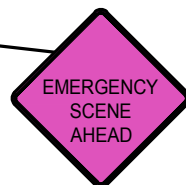
1. ACTIVATE HAZARD WARNING LIGHTS AND FLASHERS. STOP VEHICLE IN BREAKDOWN LANE.
2. IF EMERGENCY INVOLVES AN INJURY, SKIP TO STEP 6 THEN RETURN TO STEP 3.
3. ERECT SIGNS AND PLACE TRAFFIC CONES. USE 40' SPACING BETWEEN CONES.
4. MOVE RESPONSE VEHICLE BEHIND EMERGENCY.
5. PLACE ADDITIONAL CONES.
6. TEND TO EMERGENCY.

NOTES

1. ON HILLY TERRAIN, SHARP CURVES, IN HEAVY TRAFFIC, OR WITH HIGH SPEEDS, CONE SPACING MAY BE DOUBLED TO 80'.
2. REQUEST ADDITIONAL ASSISTANCE AND/OR TRAFFIC CONTROL DEVICES, IF NEEDED.



MA-W4-2aL



MA-W20-9

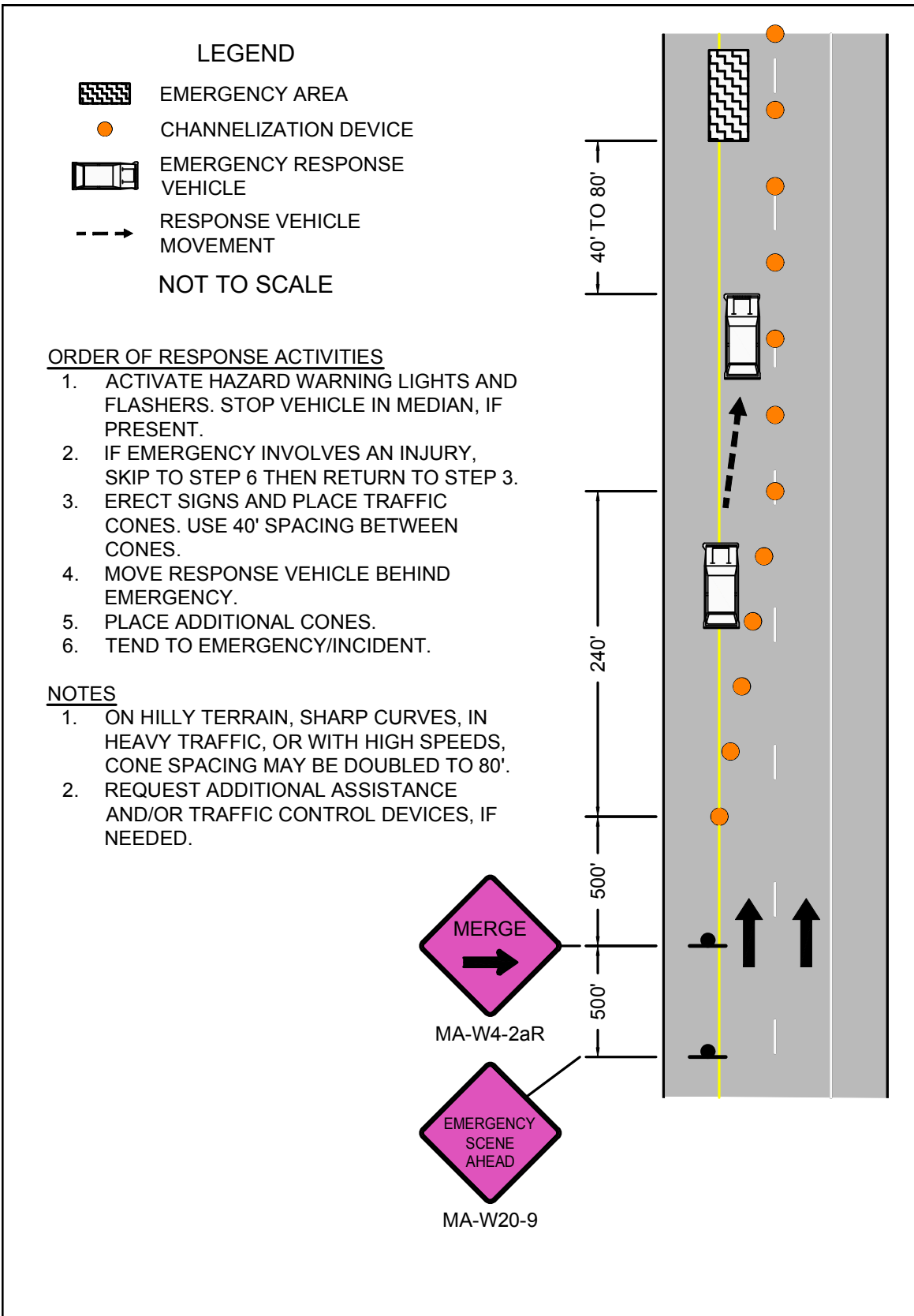
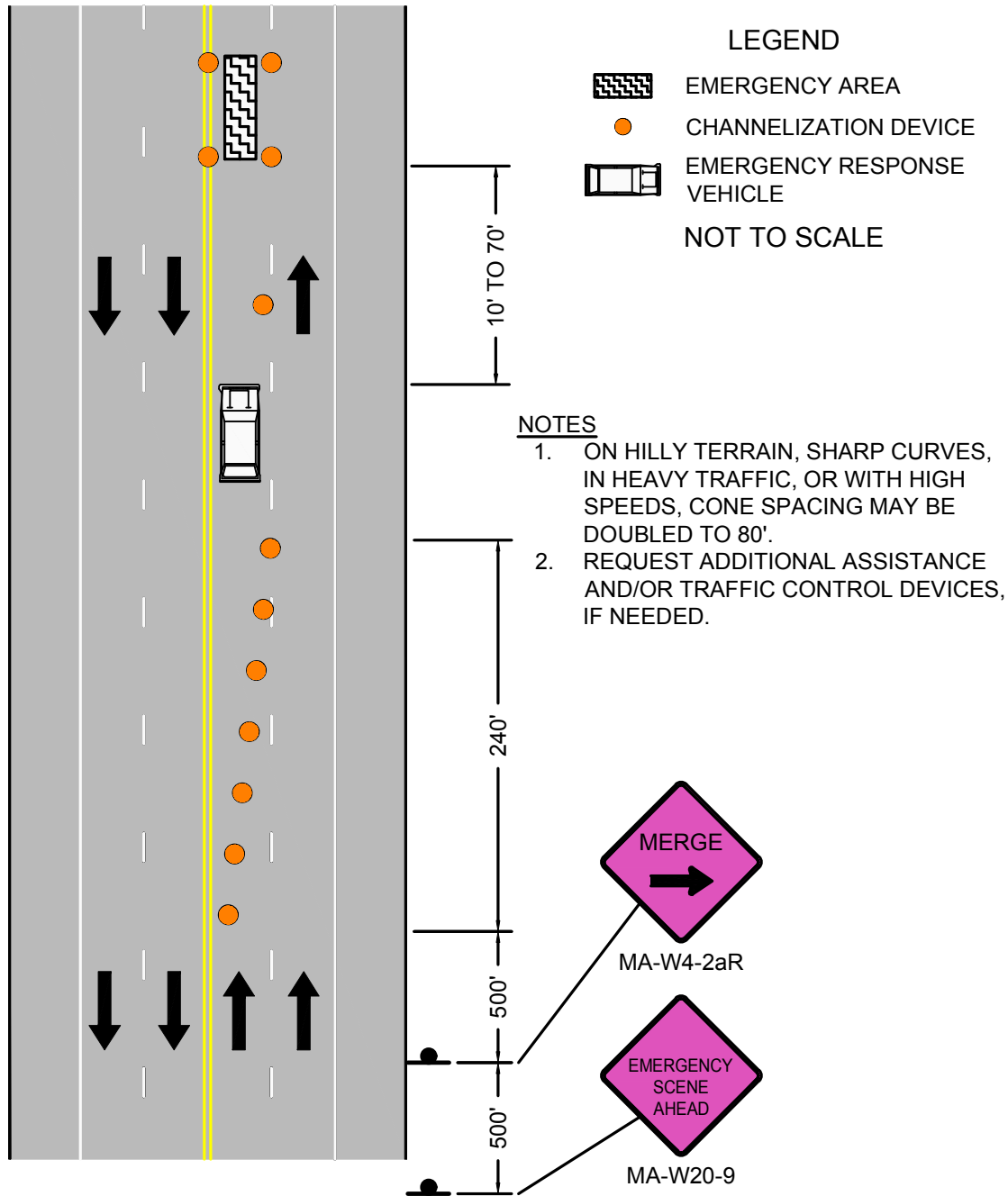




FIGURE 39
EMERGENCY RESPONSE
MULTILANE UNDIVIDED
ROADWAY
LEFT LANE



ORDER OF RESPONSE ACTIVITIES

1. ACTIVATE HAZARD WARNING LIGHTS AND FLASHERS. PULL VEHICLE OVER TO THE RIGHT EDGE OF BREAKDOWN LANE OR SHOULDER OR, IF NOT PRESENT, RIGHT EDGE OF TRAVEL LANE BEFORE STOPPING.
2. IF EMERGENCY INVOLVES AN INJURY, SKIP TO STEP 4 THEN RETURN TO STEP 3.
3. ERECT SIGNS AND PLACE TRAFFIC CONES. USE 40' SPACING BETWEEN CONES.
4. TEND TO EMERGENCY/INCIDENT.

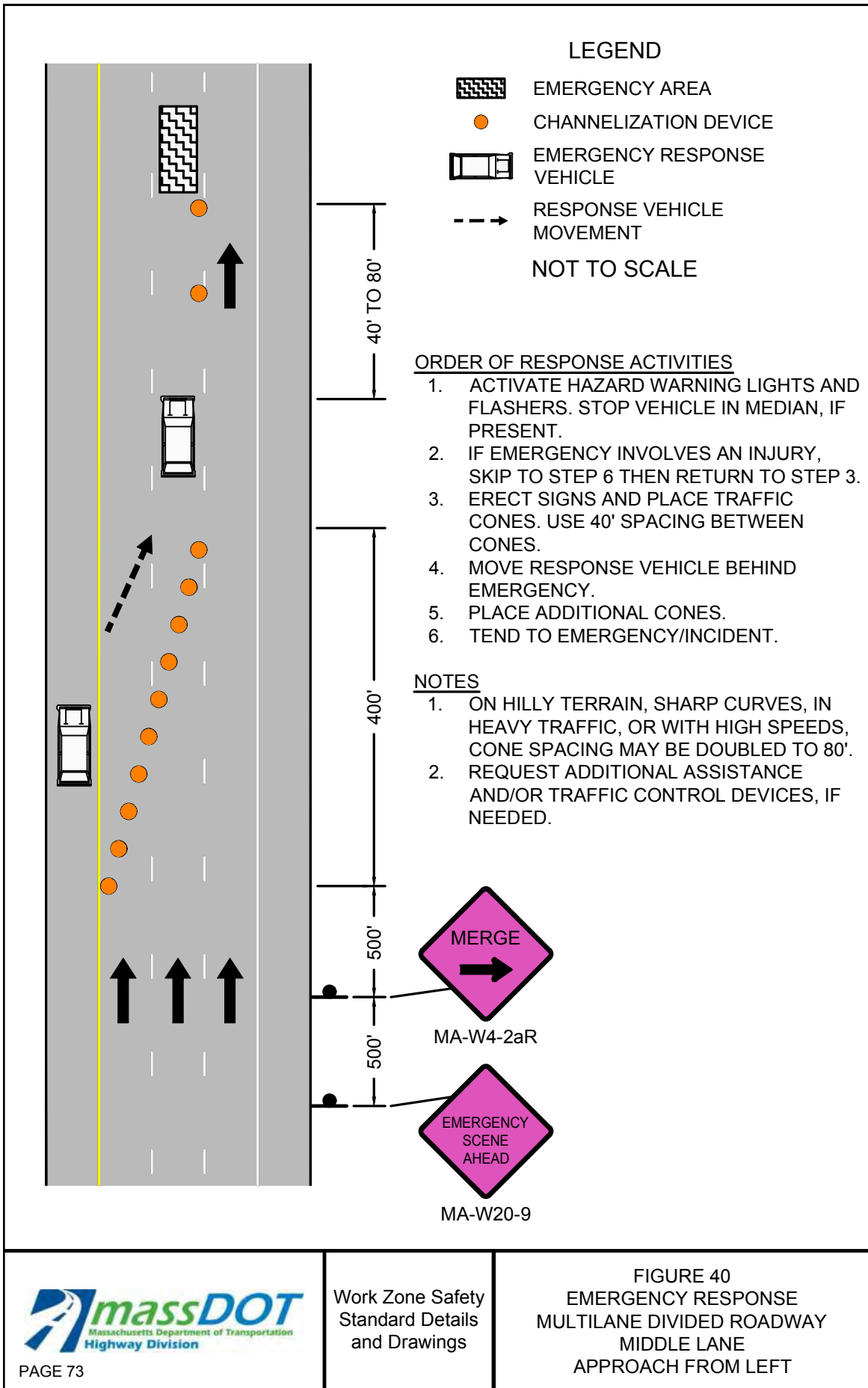
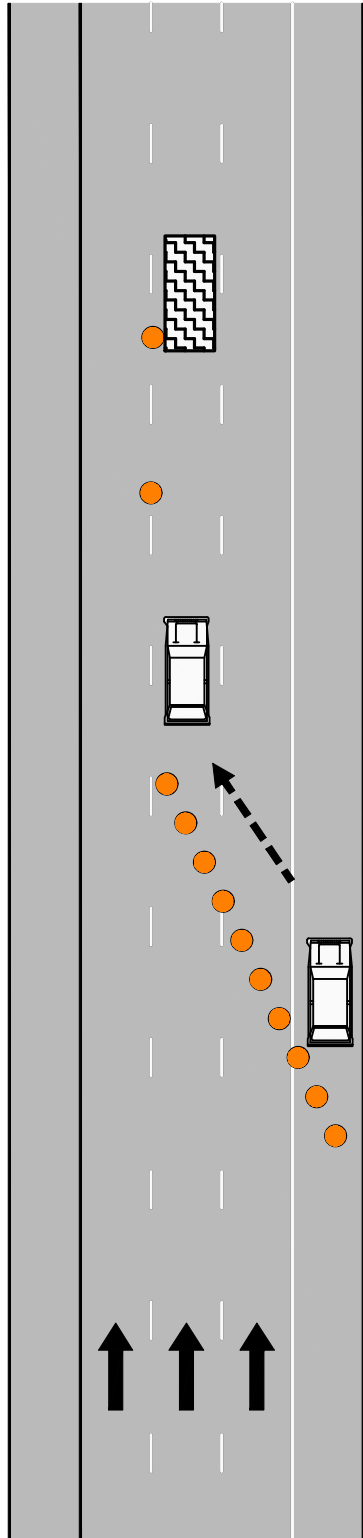








FIGURE 41
EMERGENCY RESPONSE
MULTILANE DIVIDED ROADWAY
MIDDLE LANE
APPROACH FROM RIGHT



LEGEND

-  EMERGENCY AREA
-  CHANNELIZATION DEVICE
-  EMERGENCY RESPONSE VEHICLE
-  RESPONSE VEHICLE MOVEMENT

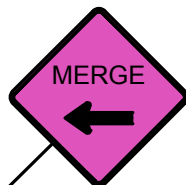
NOT TO SCALE

ORDER OF RESPONSE ACTIVITIES

1. ACTIVATE HAZARD WARNING LIGHTS AND FLASHERS. STOP VEHICLE IN BREAKDOWN LANE.
2. IF EMERGENCY INVOLVES AN INJURY, SKIP TO STEP 6 THEN RETURN TO STEP 3.
3. ERECT SIGNS AND PLACE TRAFFIC CONES. USE 40' SPACING BETWEEN CONES.
4. MOVE RESPONSE VEHICLE BEHIND EMERGENCY.
5. PLACE ADDITIONAL CONES.
6. TEND TO EMERGENCY.

NOTES

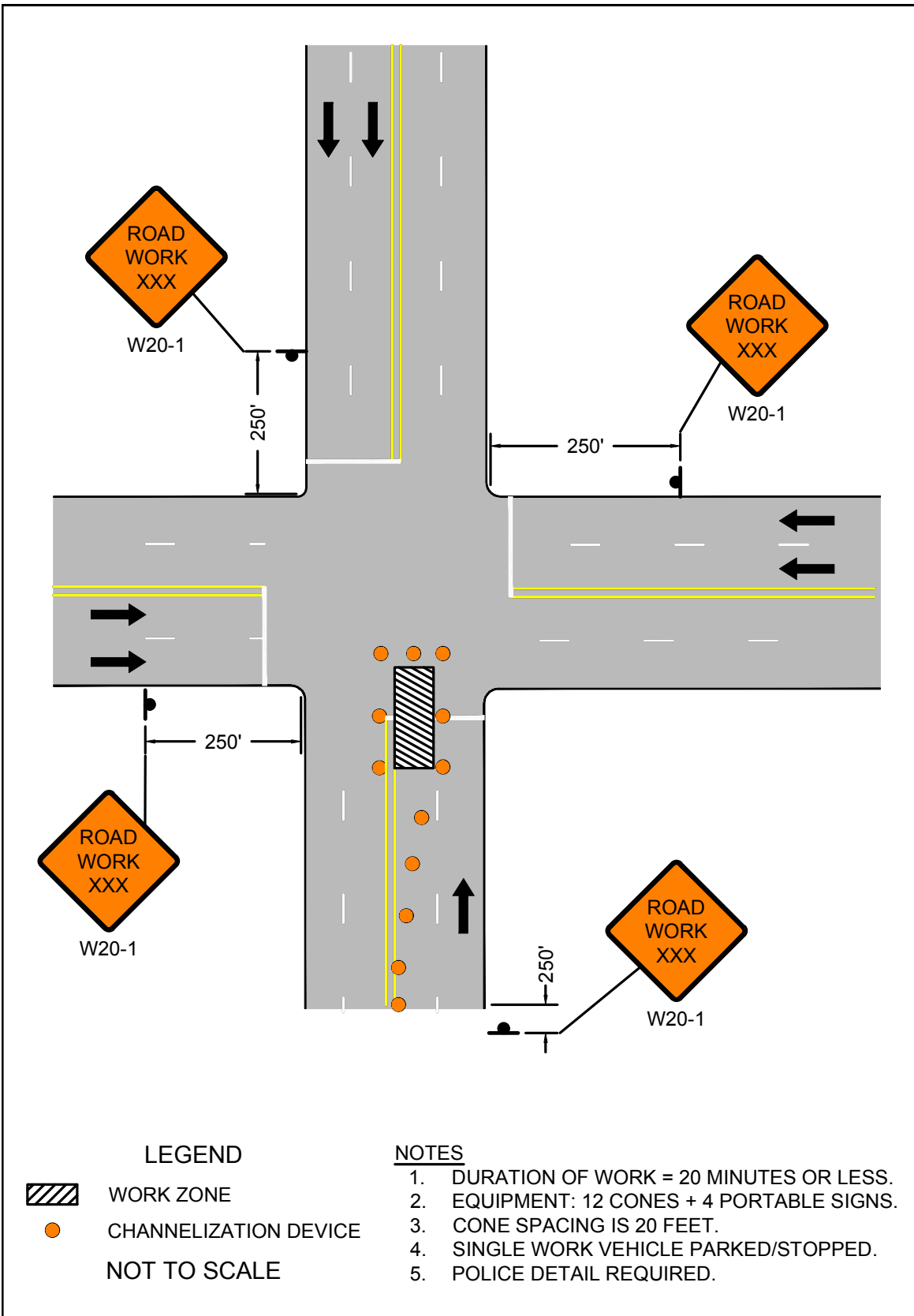
1. ON HILLY TERRAIN, SHARP CURVES, IN HEAVY TRAFFIC, OR WITH HIGH SPEEDS, CONE SPACING MAY BE DOUBLED TO 80'.
2. REQUEST ADDITIONAL ASSISTANCE AND/OR TRAFFIC CONTROL DEVICES, IF NEEDED.



MA-W4-2aL



MA-W20-9

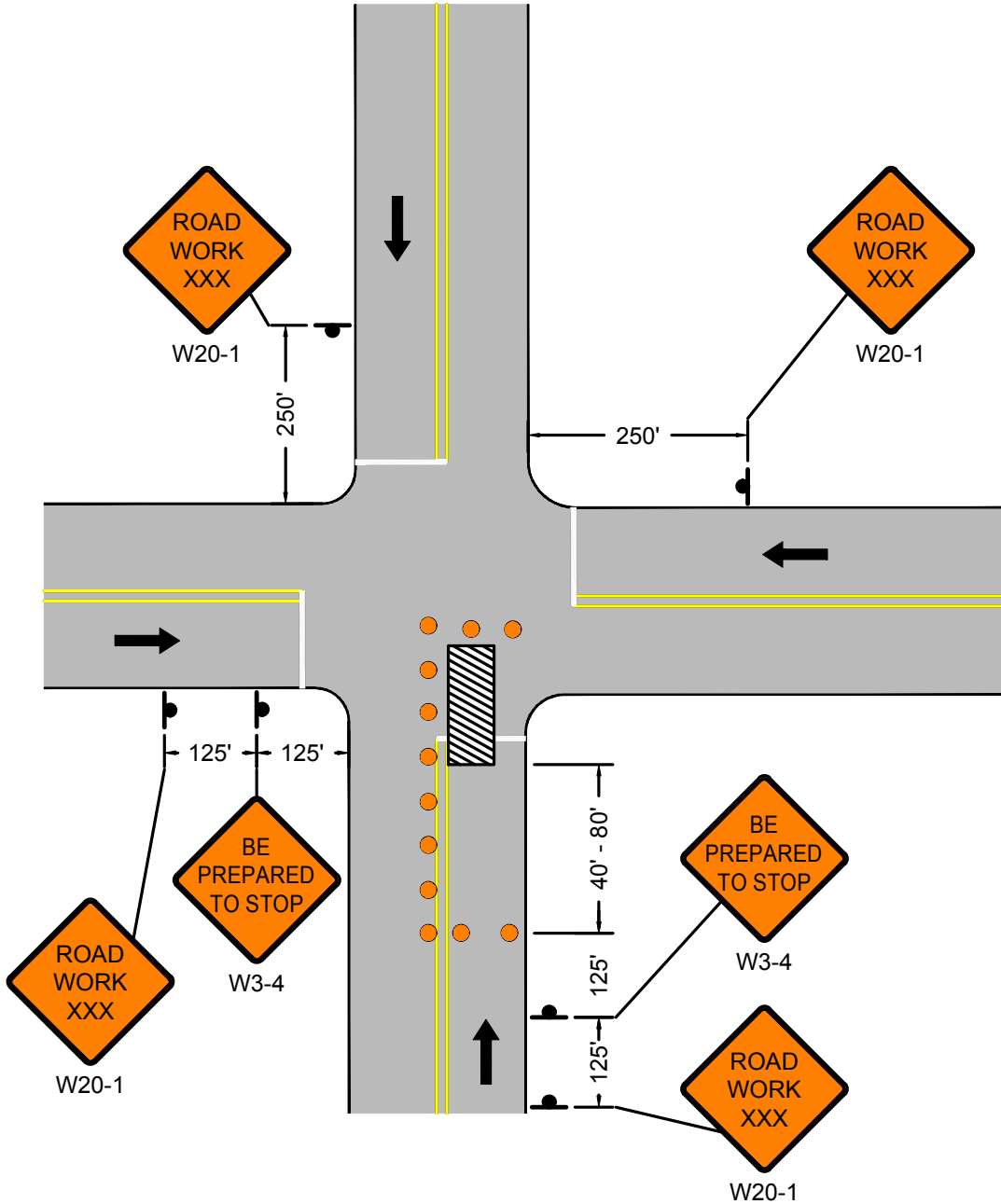






PAGE 76

Work Zone Safety
Standard Details
and Drawings

FIGURE 43
TRAFFIC SIGNAL REPAIR WORK
TWO LANE UNDIVIDED ROADWAY
ONE LEG OF INTERSECTION



LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
- NOT TO SCALE

NOTES

1. DURATION OF WORK = 20 MINUTES OR LESS.
2. EQUIPMENT: 12 CONES + 6 PORTABLE SIGNS.
3. CONE SPACING IS 20 FEET.
4. SINGLE WORK VEHICLE PARKED/STOPPED.
5. POLICE DETAIL REQUIRED.

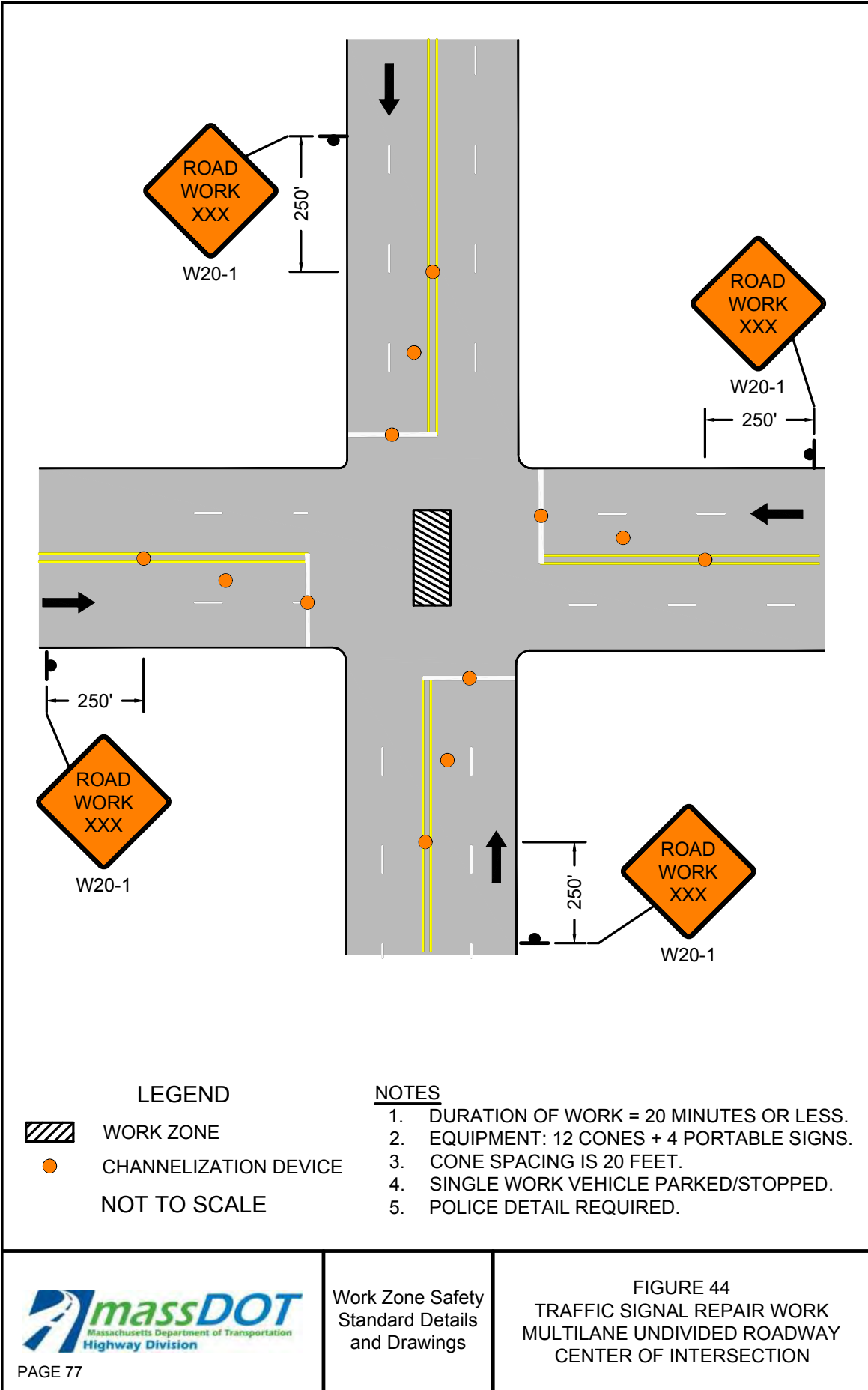
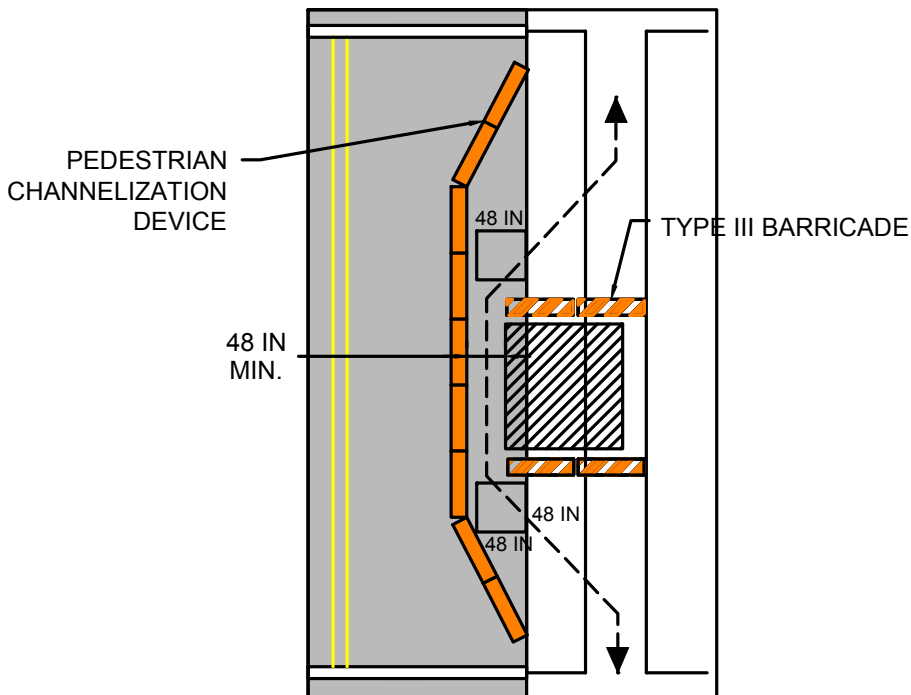


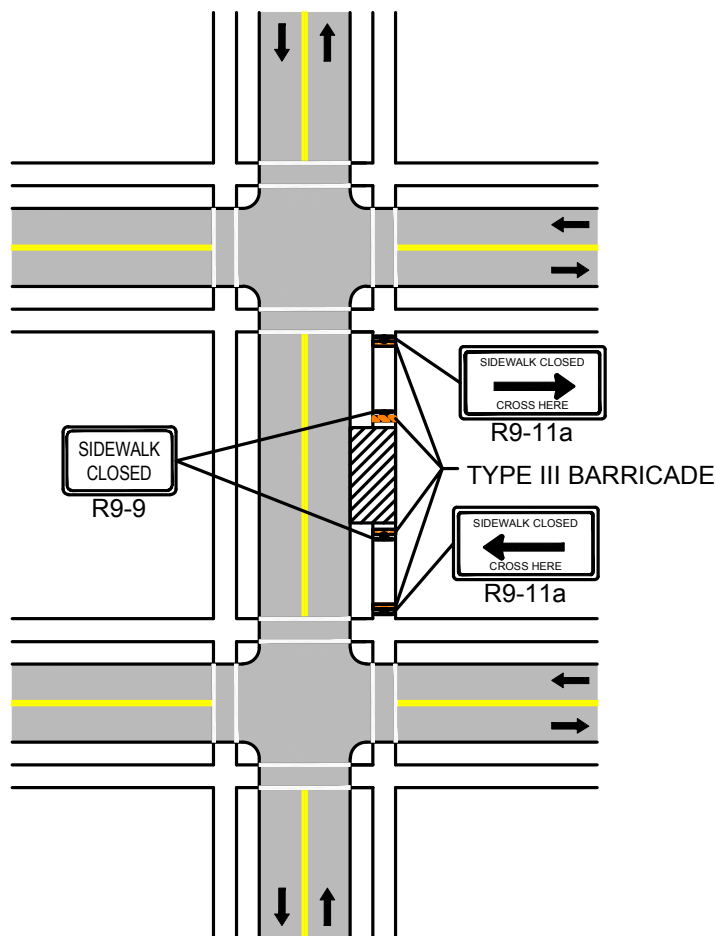


FIGURE 45
PEDESTRIAN BYPASS



NOTES:

1. WHEN EXISTING PEDESTRIAN FACILITIES ARE DISRUPTED, CLOSED, OR RELOCATED IN A TTC ZONE, TEMPORARY FACILITIES SHALL BE PROVIDED AND THEY SHALL BE DETECTABLE AND INCLUDE ACCESSIBILITY FEATURES CONSISTENT WITH THE FEATURES PRESENT IN THE EXISTING PEDESTRIAN FACILITY.
2. A PEDESTRIAN CHANNELIZATION DEVICE THAT IS DETECTABLE BY A PERSON WITH A VISUAL DISABILITY TRAVELING WITH THE AID OF A LONG CANE SHALL BE PLACED ALONG THE FULL LENGTH OF THE TEMPORARY PEDESTRIAN ROUTE.
3. WHEN USED, TEMPORARY RAMPS SHALL COMPLY WITH AMERICANS WITH DISABILITIES ACT.
4. THE ALTERNATE PATHWAY SHOULD HAVE A SMOOTH CONTINUOUS HARD SURFACE FOR THE ENTIRE LENGTH OF THE TEMPORARY PEDESTRIAN FACILITY.
5. THE TEMPORARY SIDEWALK SHOULD BE A MINIMUM OF 4 FEET WIDE. IF THE SIDEWALK EXCEEDS 200 FEET THEN A 5 FOOT BY 5 FOOT PASSING ZONE SHALL BE PROVIDED NEAR THE MID-POINT OF THE CLOSURE.
6. THE PROTECTIVE REQUIREMENTS OF A TTC WORK ZONE MAY HAVE AN IMPACT IN DETERMINING THE NEED FOR TEMPORARY TRAFFIC BARRIERS AND THEIR USE IN PROVIDING PEDESTRIAN DELINEATION SHOULD BE BASED ON ENGINEERING JUDGMENT.
7. ON-DEMAND PEDESTRIAN ASSISTANCE PERSONNEL TO ASSIST WITH NAVIGATION AROUND THE CLOSURE/WORK AREA MAY BE CONSIDERED AS AN OPTION IN PLACE OF PROVIDING ADA/AAB DEVICES FOR WORK FOR CLOSURES LASTING 4 HOURS OR LESS.
8. CONTROLS ONLY FOR PEDESTRIAN TRAFFIC ARE SHOWN; VEHICULAR TRAFFIC SHOULD BE HANDLED AS SHOWN ELSEWHERE. THESE DETAILS ARE USED IN CONJUNCTION WITH THE PROPOSED LANE CLOSURE DETAILS AND DURING CONSTRUCTION STAGING, AS DETERMINED BY THE ENGINEER.



NOTES:

1. CLOSURE OF A SIDEWALK FACILITY SHALL CONSTITUTE THE PROVISION FOR MANAGING PEDESTRIAN TRAFFIC AND ACCOMMODATING ALL USERS. IF THE EXISTING PEDESTRIAN ACCESS ROUTE(S) CAN BE TEMPORARILY RELOCATED ALONG THE EXISTING SIDEWALK , AND SAID FACILITY PROVIDES A MINIMUM WIDTH OF 48-INCHES OF SOLID, SMOOTH UNOBSTRUCTED SURFACE, THEN NO DETOURING OF THE ROUTE SHALL BE REQUIRED. DELINEATION OF THE WORK AREA IS STILL REQUIRED.
2. IF IT IS NECESSARY TO DIVERT PEDESTRIAN TRAFFIC TO AN ALTERNATE ROUTE ACROSS THE ROADWAY FROM THE EXISTING FACILITY, THE FIGURE ABOVE SHALL BE FOLLOWED TO PROVIDE ADEQUATE DIRECTION TO PEDESTRIANS. ALTERNATE ROUTE SHALL PROVIDE THE SAME LEVEL OF ACCOMMODATION AS THE FACILITY THAT IS BEING DETOURED AND RETAIN ADA COMPLIANCE IN ITS ENTIRETY.
3. FOR EMERGENCY OR SHORT-DURATION SIDEWALK CLOSURES OF 4-HOURS OR LESS, IT IS OPTIONAL TO HAVE ON-DEMAND PEDESTRIAN ASSISTANCE PERSONNEL AVAILABLE AT ALL TIMES DURING THE CLOSURE TO ASSIST THOSE MOBILITY CHALLENGED PERSONS WHO REQUIRE ADDITIONAL ASSISTANCE TO SAFELY NAVIGATE AROUND THE WORK AREA IN LIEU OF A FULL DETOUR.





PAGE 80

Work Zone Safety
Standard Details
and Drawings

STATIONARY OPERATIONS
BIKE LANE CLOSURE










POSTED SPEED LIMIT (MPH)	SPACING FOR BIKE ADVANCE WARNING SIGNS (FT) (A,B))	CHANNELIZATION DEVICES (DRUMS OR CONES)			
		TRANSITION LENGTH (L/3)	BUFFER ZONE LENGTH (FT)	DEVICE SPACING (FT)	MIN # OF DEVICES*
25-40	150 / 150	100	305	20	45
45-55	150 / 150	220	495	40	35
60-65	150 / 150	260	645	40	40

* NUMBER OF DEVICES BASED ON 400 FT WORK ZONE.

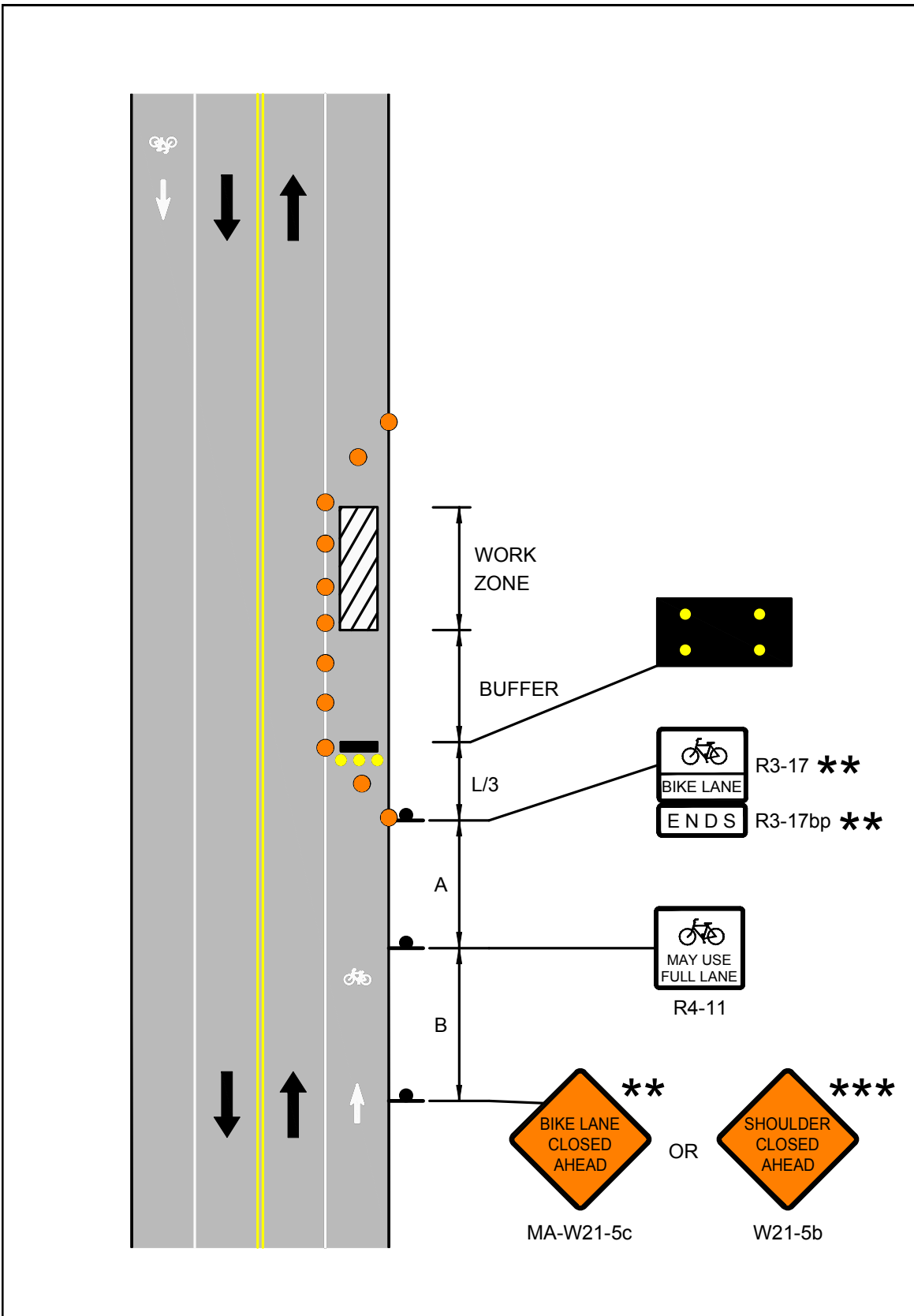
NOTES


1. DETAIL SHALL BE USED IN CONJUNCTION WITH THE PROPOSED LANE CLOSURE DETAILS. SIGNING SHOWN ONLY FOR BIKE TRAFFIC. FOLLOW ALL OTHER RELEVANT DETAILS FOR TTC DEVICES FOR VEHICULAR TRAFFIC.
2. ****** SIGN SHALL BE USED ONLY IF THERE IS A MARKED BIKE LANE.
3. ******* SIGN SHALL BE USED ONLY IF THERE IS NO MARKED BIKE LANE.

LEGEND

-  WORK ZONE
-  CHANNELIZATION DEVICE
-  FLASHING ARROW BOARD
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK MOUNTED ATTENUATOR
-  RADAR SPEED FEEDBACK BOARD
-  POLICE DETAIL OR UNIFORMED FLAGGER
-  TEMPORARY PORTABLE RUMBLE STRIP
-  TYPE III BARRICADE

NOT TO SCALE



 <p>PAGE 81</p>	<p>Work Zone Safety Standard Details and Drawings</p>	<p>FIGURE 48 STATIONARY OPERATIONS BIKE LANE CLOSURE</p>
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Safety is everyone's business

Rev. June, 2017

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: PLYMPTON Project File Number: 609435

Contract Number: 126585

Project Description: Bridge Replacement, P-14-001 (445), Winnetuxet Road over Winnetuxet River

All AutoCAD files are provided solely as a courtesy to facilitate public access to information. MassDOT attempts to provide current and accurate information but cannot guarantee so. MassDOT provides such documents, files or other data "as is" without any warranty of any kind, either expressed or implied, including but not limited to, accuracy, reliability, omissions, completeness and currentness. The Commonwealth of Massachusetts and its Consultants shall not be liable for any claim for damages, including lost profits or other consequential, exemplary, incidental, indirect or special damages, relating in any way to the documents, files or other data accessible from this file, including, but not limited to, claims arising out of or related to electronic access or transmission of data or viruses. Because data stored on electronic media can deteriorate undetected or be modified without our knowledge, MassDOT cannot be held liable for its completeness or correctness. MassDOT makes no representation as to the compatibility of these files beyond the version of the stated CAD software.

By signing this form, I agree that it shall be my responsibility to reconcile this electronic data with the conformed contract documents, and that only the conformed contract documents shall be regarded as legal documents for this Project. I understand that this authorization does not give me the right to distribute the files. I agree to the terms above and wish to receive the AutoCAD files.

This signed form shall be emailed to the Highway Design Engineer at the MassDOT -Highway Division at the following email address:

DOTHighwayDesign@dot.state.ma.us

Attn: AutoCAD Files

Name of person requesting AutoCAD files: _____

Affiliation/Company: _____

Address: _____

Telephone number: _____

Email address: _____

Signature/Date: _____

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DOCUMENT A00835

ARMY CORPS OF ENGINEERS

GENERAL PERMIT VERIFICATION
#NAE-2024-00568 &

GENERAL PERMITS FOR THE
COMMONWEALTH OF MASSACHUSETTS

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Regulatory Division
Transportation & Utility Section
File Number: NAE-2024-00568

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 New England District on March 1, 2024, for a Department of the Army general permit verification. This project has been assigned the file number NAE-2024-00568. This file number should be referenced in all correspondence with this office. This letter follows a provisional notification letter from this office, dated April 25, 2024.

A review of the information provided indicates the proposed work involves the permanent discharge of fill material within 400 square feet below the Ordinary High Water (OHW) mark of the Winnetuxet River associated with the replacement of the bridge conveying Winnetuxet Road over the Winnetuxet River in Plympton, Massachusetts. The existing two-span bridge will be replaced with a new single-span bridge in the same location. The existing in-river pier will be removed to 2' below mudline. The existing abutments will be retained. A portion of the streambed below the bridge will be excavated to allow for the installation of rip-rap scour protection overtopped with 1' of natural streambed material. The work is shown on the enclosed plans titled "MASSACHUSETTS DEPARTMENT OF TRANSPORTATION HIGHWAY DIVISION PLAN AND PROFILE OF WINNETUXET ROAD OVER WINNETUXET RIVER (BRIDGE NO. P-14-001 (CEN)) IN THE TOWN OF PLYMPTON PLYMOUTH COUNTY," on 10 sheets, and dated "29-Feb-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. A copy of these permits can be found 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 also in compliance with 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. Within 180 days of project completion, the permittee shall forward an as-built plan of the completed crossing to the Federal Emergency Management Agency (FEMA), Region 1 (kerry.bogdan@fema.dhs.gov and christopher.markesich@fema.dhs.gov) to assist with future mapping efforts in this region. This submission shall be made in a digital format, and provide a level of content detail acceptable to FEMA Region 1 personnel. A copy shall also be provided to the Corps Project Manager (daniel.b.vasconcelos@usace.army.mil).
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 general permit 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. In order to better serve you, please complete the Customer Service Survey located at:
<https://regulatory.ops.usace.army.mil/customer-service-survey/>.

Sincerely,

A handwritten signature in black ink, appearing to read 'Stephen Rochette', with a stylized flourish at the end.

Stephen Rochette
Chief, Technical Support Branch
Regulatory Division

cc:

Jonathan Rickwood, AECOM, Chelmsford, MA, Jonny.Rickwood@aecom.com
Ed Reiner, U.S. EPA, Region 1, Boston, MA, reiner.ed@epa.gov
Rachel Croy, U.S. EPA, Region 1, Boston, MA, croy.rachel@epa.gov
Heidi Davis, MassDEP, Boston, MA, heidi.davis@mass.gov
Tyler Lewis, MassDEP, Boston, MA, tyler.lewis@mass.gov
Ryan Hale, MassDEP, Boston, MA, ryan.hale@mass.gov
Kerry Bogdan, FEMA, Region 1, kerry.bogdan@fema.dhs.gov
Christopher Markesich, FEMA, Region 1, christopher.markesich@fema.dhs.gov
Conservation Commission, Plympton, MA, plymptonconcom@gmail.com
Michael Joa, MassDOT – Highway Division, Boston, MA,
michael.a.joa@dot.state.ma.us

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION HIGHWAY DIVISION

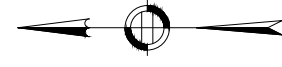
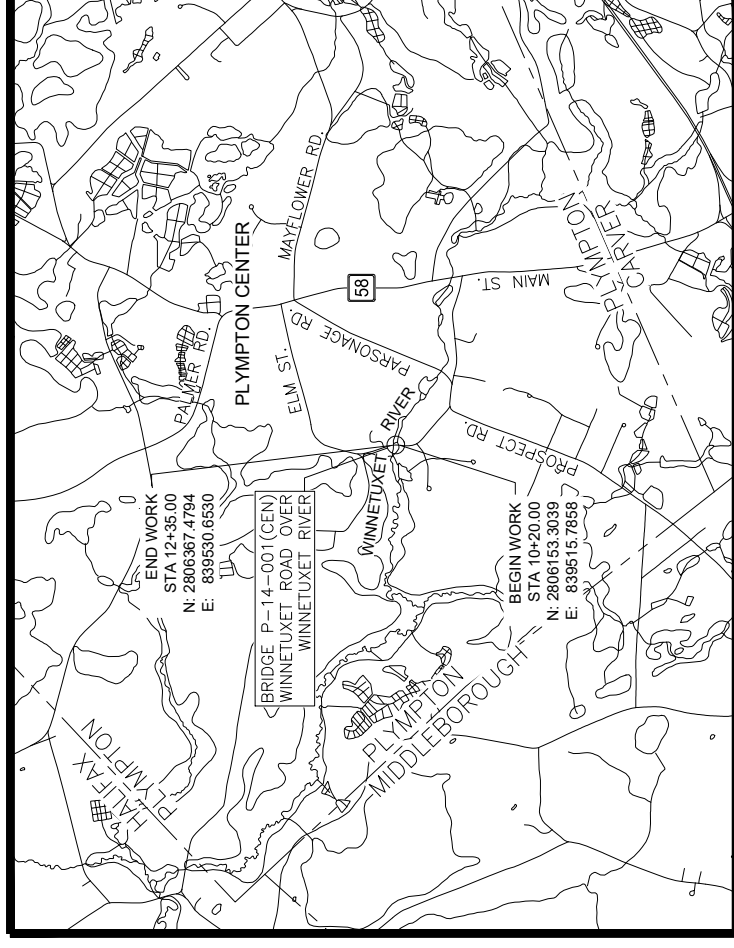
PLAN AND PROFILE OF
WINNETUXET ROAD
(BRIDGE NO. P-14-001(CEN))

IN THE TOWN OF
PLYMPTON
PLYMOUTH COUNTY

FEDERAL AID PROJECT NO.

INDEX	
SHEET NO.	DESCRIPTION
1	TITLE SHEET & INDEX
2	LEGEND, ABBREVIATIONS, & GENERAL NOTES
3	TYPICAL SECTIONS
4	EXISTING CONDITIONS PLAN
5	CONSTRUCTION PLAN
6	EXISTING PROFILE
7	PROPOSED PROFILE
8	TEMPORARY TRAFFIC CONTROL PLAN
9	EXISTING LONGITUDINAL SECTION
10	PROPOSED LONGITUDINAL SECTION

PERMITTING SUBMITTAL



LOCUS
SCALE: 1" = 4000'

LENGTH OF PROJECT = 215.00 FEET = 0.041 MILES

THESE PLANS ARE SUPPLEMENTED BY THE OCTOBER 2017 CONSTRUCTION STANDARD DETAILS, THE 2015 OVERHEAD SIGNAL STRUCTURE AND FOUNDATION STANDARD DRAWINGS, MASSDOT TRAFFIC MANAGEMENT PLANS AND DETAIL DRAWINGS, THE 1990 STANDARD DRAWINGS FOR SIGNS AND SUPPORTS, THE 1968 STANDARD DRAWINGS FOR TRAFFIC SIGNALS, AND HIGHWAY LIGHTING, AND THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK.

DESIGN DESIGNATION - WINNETUXET ROAD

DESIGN SPEED	15 MPH
ADT (2022)	357
ADT (2029)	383
K	10.0%
D	51%
T (PEAK HOUR)	21%
T (AVERAGE DAY)	14%
DHV	38
DDHV	20
FUNCTIONAL CLASSIFICATION	RURAL LOCAL ROAD

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Printed on 29-Feb-2024 10:06 AM

PLYMPTON WINNETUXET ROAD	
STATE	FED. AID PROJ. NO.
MA	-
PROJECT FILE NO. 609435	
TITLE SHEET & INDEX	
SHEET NO.	TOTAL SHEETS
1	10

DATE	DESCRIPTION	REV #
12/29/2023	PERMITTING	0



TRANSPORTATION	AECOM	APPROVED
AECOM TECHNICAL SERVICES, Inc. 250 Apollo Drive Chelmsford, Massachusetts 01824 T: 978.906.2100 F: 978.906.2101 www.aecom.com		CHIEF ENGINEER _____ DATE _____

GENERAL NOTES:

1. LOCATION OF ALL EXISTING UTILITIES AND SUBSURFACE STRUCTURES ARE FROM SURVEY AND RECORDS OF THE TOWN OR PRIVATE UTILITY COMPANIES AND ARE CONSIDERED APPROXIMATE BOTH AS TO SIZE AND LOCATION, AND ARE INDICATED ON THESE DRAWINGS TO GIVE BIDDERS A GENERAL IDEA OF EXISTING CONDITIONS TO BE INVESTIGATED BY THE BIDDER. IT IS UNDERSTOOD AND AGREED THAT EACH BIDDER WILL NOT RELY UPON THESE DRAWINGS FOR SUCH INFORMATION, BUT THAT EACH BIDDER SHALL MAKE EXAMINATIONS IN THE FIELD, AND BY VARIOUS AVAILABLE RECORDS, CONTRACTOR SHALL CONSULT UTILITY CORPORATIONS AND INDIVIDUALS AS TO THE LOCATION OF ALL SUBSURFACE STRUCTURES.
2. AREAS OUTSIDE THE LIMITS OF WORK DISTURBED BY THE CONTRACTOR DURING CONSTRUCTION SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AT THE EXPENSE OF THE CONTRACTOR.
3. APPROXIMATE LIMITS OF WORK HAVE BEEN SET ON THE PLANS. HOWEVER, THESE MAY BE EXTENDED OR REDUCED AT THE DISCRETION OF THE ENGINEER TO MEET WITH FIELD CONDITIONS.
4. THE CONTRACTOR SHALL FIELD CHECK ALL DIMENSIONS, AND ELEVATIONS BEFORE PROCEEDING WITH NEW WORK. TEST PITS TO VERIFY POTENTIAL CONFLICTS SHALL BE PAID FOR UNDER ITEM 141.1. ANY DISCREPANCIES OR CONFLICTS SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
5. THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE NECESSITY OF MAKING HIS OWN INVESTIGATION IN ORDER TO ASSURE THAT NO DAMAGE TO EXISTING DAM, SPILLWAY, UTILITIES, DRAINAGE STRUCTURES, PIPE LINES, ETC. WILL OCCUR. THE CONTRACTOR SHALL NOTIFY MASSACHUSETTS DIG SAFE AND PROCURE A DIG SAFE NUMBER FOR EACH LOCATION PRIOR TO DISTURBING EXISTING GROUND IN ANY WAY. TELEPHONE NUMBER OF THE DIG SAFE CENTER IS 811.
6. BEFORE CONSTRUCTION, ALL UTILITIES, PUBLIC AND PRIVATE, MUST BE NOTIFIED. SEE MASSACHUSETTS GENERAL LAWS, CHAPTER 82 SECTION 40), CALL "DIG SAFE" 811.
7. "DIG SAFE" SHALL BE NOTIFIED AT 811 AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION FOR THE PROPOSED PROJECT WORK. ALSO CONTACT ANY TOWNSHIP / COUNTY AND MASSDOT WITHIN WHOSE JURISDICTION THE WORK IS TO BE PERFORMED.
8. CONTRACTOR SHALL PROVIDE EROSION CONTROL PROTECTION, COMPOST FILTER TUBES AND/OR SEDIMENTATION FENCE TO CONTAIN ANY SEDIMENT RUNOFF FROM THE WORK DONE. EROSION CONTROL BARRIERS ARE TO BE PLACED AS SHOWN ON THESE PLANS AND AS DIRECTED BY THE ENGINEER.
9. THE PROPOSED INVERTS SHOWN ARE SHOWN FOR BIDDING PURPOSES ONLY. ACTUAL INVERT ELEVATIONS WILL BE CONFIRMED IN THE FIELD. ONLY AFTER THE CONTRACTOR VERIFIES ELEVATIONS FOR THE CONSTRUCTABILITY OF THE DRAINAGE SYSTEM SHALL ANY STRUCTURES BE ORDERED.

SURVEY NOTES:

1. THE EXISTING CONDITIONS SHOWN ON THIS BASE MAP ARE THE RESULT OF AN ON-THE-GROUND INSTRUMENT SURVEY PERFORMED BETWEEN APRIL 1, 2021 AND JUNE 4, 2021 BY GREEN INTERNATIONAL AFFILIATES, INC. (GREEN). SEE FIELD NOTES IN MASSDOT DISTRICT 5 FIELD BOOK 43887.
 2. HORIZONTAL AND VERTICAL CONTROL WAS ESTABLISHED BY MASSDOT SURVEY, IN FIELD BOOK 41673, PAGE 62, ON FEBRUARY 25, 2021. HORIZONTAL DATUM IS BASED ON THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM NAD83 (2011), 2010.00 EPOCH. VERTICAL DATUM IS NAVD88 (COMPUTED USING GEOD188) USING THE FOLLOWING CONTROL POINTS:
- | POINT | GRID NORTHING | GRID EASTING | ELEVATION | GRID SCALE FACTOR |
|--------|---------------|--------------|-----------|--------------------|
| 4385 | 2769770.639 | 832717.389 | 96.726 | 0.999983426160024 |
| COTTON | 2779543.072 | 787087.155 | 33.145 | 0.999983654102246 |
| MAMI | 2924486.123 | 778315.405 | 34.409 | 0.9999868069603679 |
| MAPL | 2803825.101 | 888046.597 | 131.281 | 0.999973103882542 |
| MAWR | 2840282.863 | 709358.522 | 214.967 | 0.999962622779741 |
- MASSDOT ESTABLISHED THE FOLLOWING POINTS FOR THIS PROJECT:
- | POINT | GRID NORTHING | GRID EASTING | ELEVATION | COMBINED GROUND TO GRID SCALE FACTOR |
|-------|---------------|--------------|-----------|--------------------------------------|
| 2702 | 2806398.155 | 839547.760 | 46.968 | 0.999976534637756 |
| 2703 | 2806747.130 | 839465.983 | 41.565 | 0.999976719662219 |
- THE UNIT OF MEASUREMENTS IS US FEET. THE PROJECT COMBINED SCALE FACTOR IS 0.999976627249987. BEARINGS ARE ROTATED 15°33'10" CCW FROM COUNTY DECREE NO. 1029.

3. THE RIGHT OF WAY LINES SHOWN ON THIS BASE MAP ARE THE DIRECT RESULT OF AN INSTRUMENT SURVEY PERFORMED ON THE GROUND BY GREEN AND FROM PLANS AND DEEDS OF RECORD. PRIVATE PROPERTY LINES HAVE NOT BEEN SURVEYED, THEY ARE COMPILED FROM RECORD DEED AND PLAN INFORMATION AND SHOULD BE CONSIDERED APPROXIMATE.
4. WETLANDS WERE DELINEATED BY AECOM ON 04/19/2021 IN ACCORDANCE WITH THE MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION AND FIELD LOCATED BY GREEN ON 04/21/2021.

ABBREVIATIONS

GENERAL	DESCRIPTION
AAAT	ANNUAL AVERAGE DAILY TRAFFIC
ABANDON	ABANDON
ADJ	ADJUST
APPROX.	APPROXIMATE
A.C.	ASPHALT CONCRETE
ACCM PIPE	ASPHALT COATED CORRUGATED METAL PIPE
BIT.	BITUMINOUS
BC	BOTTOM OF CURB
BD	BOUND
BL	BASILINE
BLDG	BUILDING
BM	BENCHMARK
BO	BY OTHERS
BOS	BOTTOM OF SLOPE
BR.	BRIDGE
CB	CATCH BASIN
CBCI	CATCH BASIN WITH CURB INLET
CC	CEMENT CONCRETE
CCM	CEMENT CONCRETE MASONRY
CEM	CEMENT
CI	CURB INLET
CIP	CAST IRON PIPE
CLF	CHAIN LINK FENCE
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CSP	CORRUGATED STEEL PIPE
CO	COUNTY
CONC	CONCRETE
CONT	CONTINUOUS
CONST	CONSTRUCTION
CR GR	CROWN GRADE
DHV	DESIGN HOURLY VOLUME
DI	DROP INLET
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DW	STEADY DON'T WALK - PORTLAND ORANGE
DWY	DRIVEWAY
ELEV (or EL)	ELEVATION
EMB	EMBANKMENT
EOP	EDGE OF PAVEMENT
EXIST (or EX)	EXISTING
EXC	EXCAVATION
F&G	FRAME AND COVER
FDN.	FOUNDATION
FLDSTN	FIELDSTONE
GAR	GARAGE
GD	GROUND
GG	GAS GATE
GI	GUTTER INLET
GIP	GALVANIZED IRON PIPE
GRAN	GRANITE
GRAV	GRAVEL
GRD	GRAD
HDW	HEADWALL
HMA	HOT MIX ASPHALT
HOR	HORIZONTAL
HYD	HYDRANT
INV	INVERT
JCT	JUNCTION
L	LENGTH OF CURVE
LB	LEACH BASIN
LP	LIGHT POLE
LT	LEFT
MAX	MAXIMUM
MB	MAILBOX
MH	MANHOLE
MHB	MASSACHUSETTS HIGHWAY BOUND
MIN	MINIMUM
NO.	NOT IN CONTRACT
NO.	NUMBER
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
P.G.L	PROFILE GRADE LINE
PI	POINT OF INTERSECTION
POC	POINT ON CURVE
POT	POINT ON TANGENT

PLYMPTON WINNETUXET ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	2	10
PROJECT FILE NO.		609435	

LEGEND, ABBREVIATIONS, & GENERAL NOTES

ABBREVIATIONS (cont.)

GENERAL	DESCRIPTION
PRC	POINT OF REVERSE CURVATURE
PROJ	PROJECT
PROP	PROPOSED
P-SB	PLANTABLE SOIL BORROW
PT	POINT OF TANGENCY
PVC	POINT OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY
PVMT	PAVEMENT
PWW	PAVED WATER WAY
R	RADIUS OF CURVATURE
R&D	REMOVE AND DISPOSE
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RDWY	ROADWAY
REM	REMOVE
RET	RETAIN
RET WALL	RETAINING WALL
ROW	RIGHT OF WAY
RR	RAILROAD
R&S	REMOVE AND RESET
RIGHT	RIGHT
SB	STONE BOUND
SHLD	SHOULDER
SMH	SEWER MANHOLE
ST	STREET
STA	STATION
SSD	STOPPING SIGHT DISTANCE
SHLO	STATE HIGHWAY LAYOUT LINE
SW	SIDEWALK
T	TANGENT DISTANCE OF CURVE/TRUCK %
TAN	TANGENT
TEMP	TEMPORARY
TC	TOP OF CURB
TOS	TOP OF SLOPE
TYP	TYPICAL
UP	UTILITY POLE
VAR	VARIABLE
VERT	VERTICAL
VC	VERTICAL CURVE
WCR	WHEEL CHAIR RAMP
WG	WATER GATE
WIP	WROUGHT IRON PIPE
WM	WATER METER/WATER MAIN
X-SECT	CROSS SECTION

609435_HD_TYPICAL.DWG Ploited on 29-Feb-2024 10:08 AM

**PLYMPTON
WINNETUXET ROAD**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	3	10
PROJECT FILE NO. 609435			

TYPICAL SECTIONS

PAVEMENT NOTES

FULL DEPTH PAVEMENT AT BRIDGE APPROACHES:

- SURFACE COURSE:** 2" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER
- INTERMEDIATE COURSE:** 2" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5) OVER
- BASE COURSE:** 3" SUPERPAVE BASE COURSE 37.5 (SBC-37.5) OVER
- SUBBASE:** 4" DENSE GRADED CRUSHED STONE
- 8" GRAVEL BORROW, TYPE b

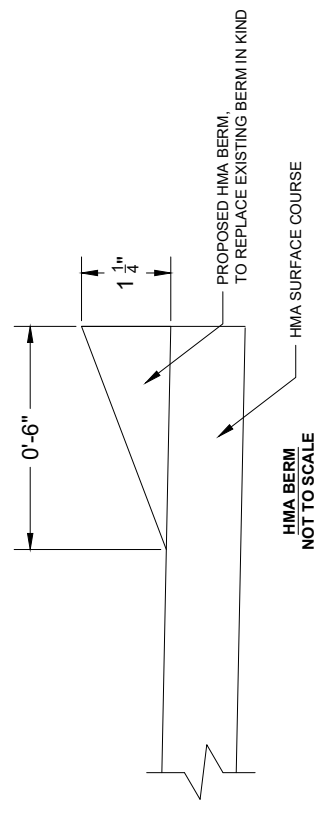
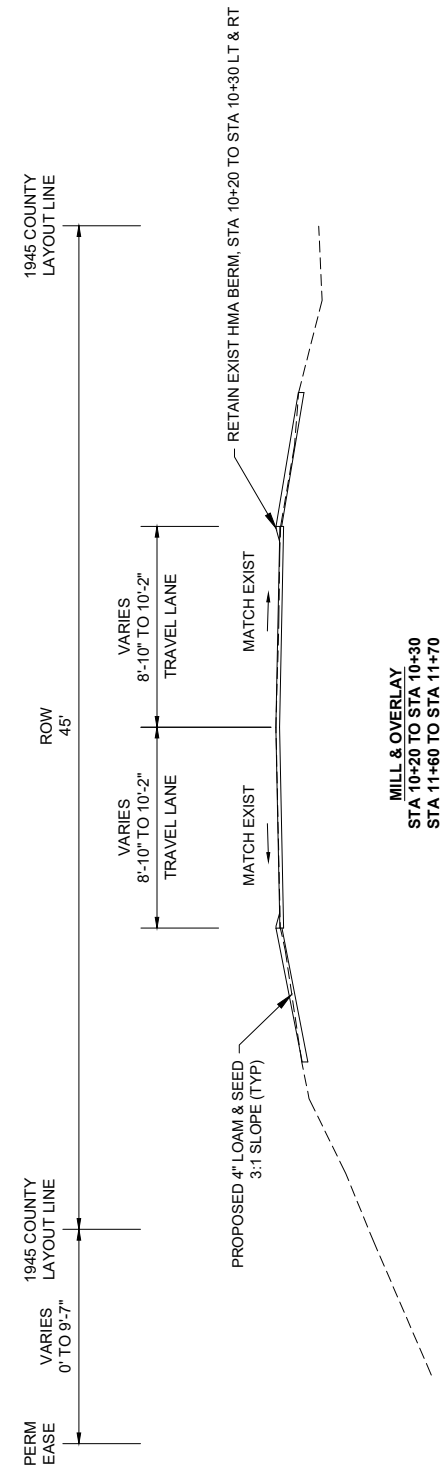
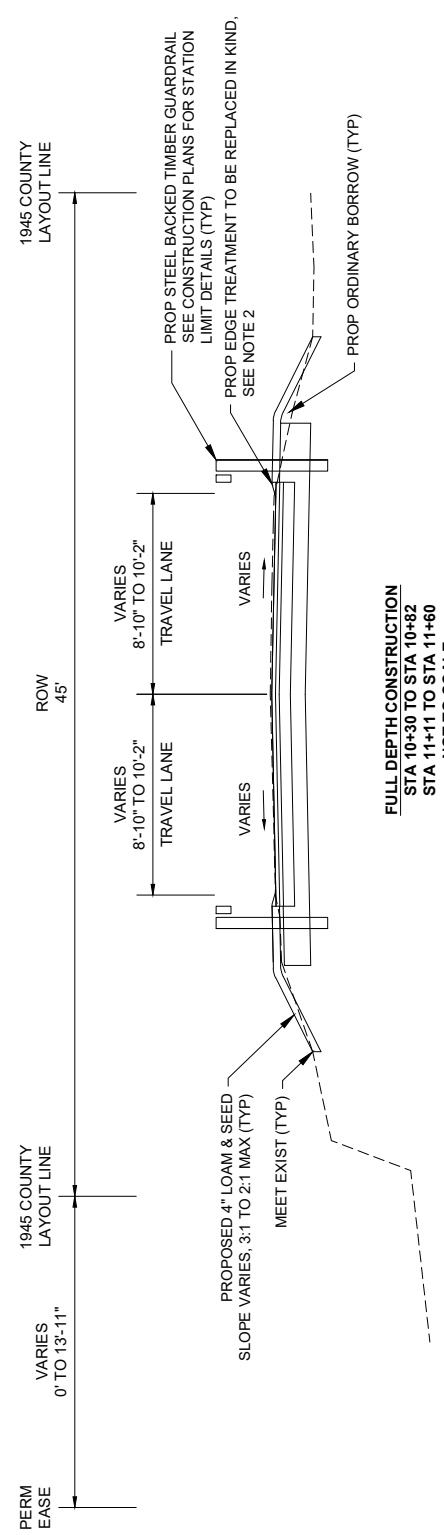
MILL & OVERLAY:

- SURFACE:** 2"± MILLING,
- 2" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5)

DRIVEWAY TRANSITION:

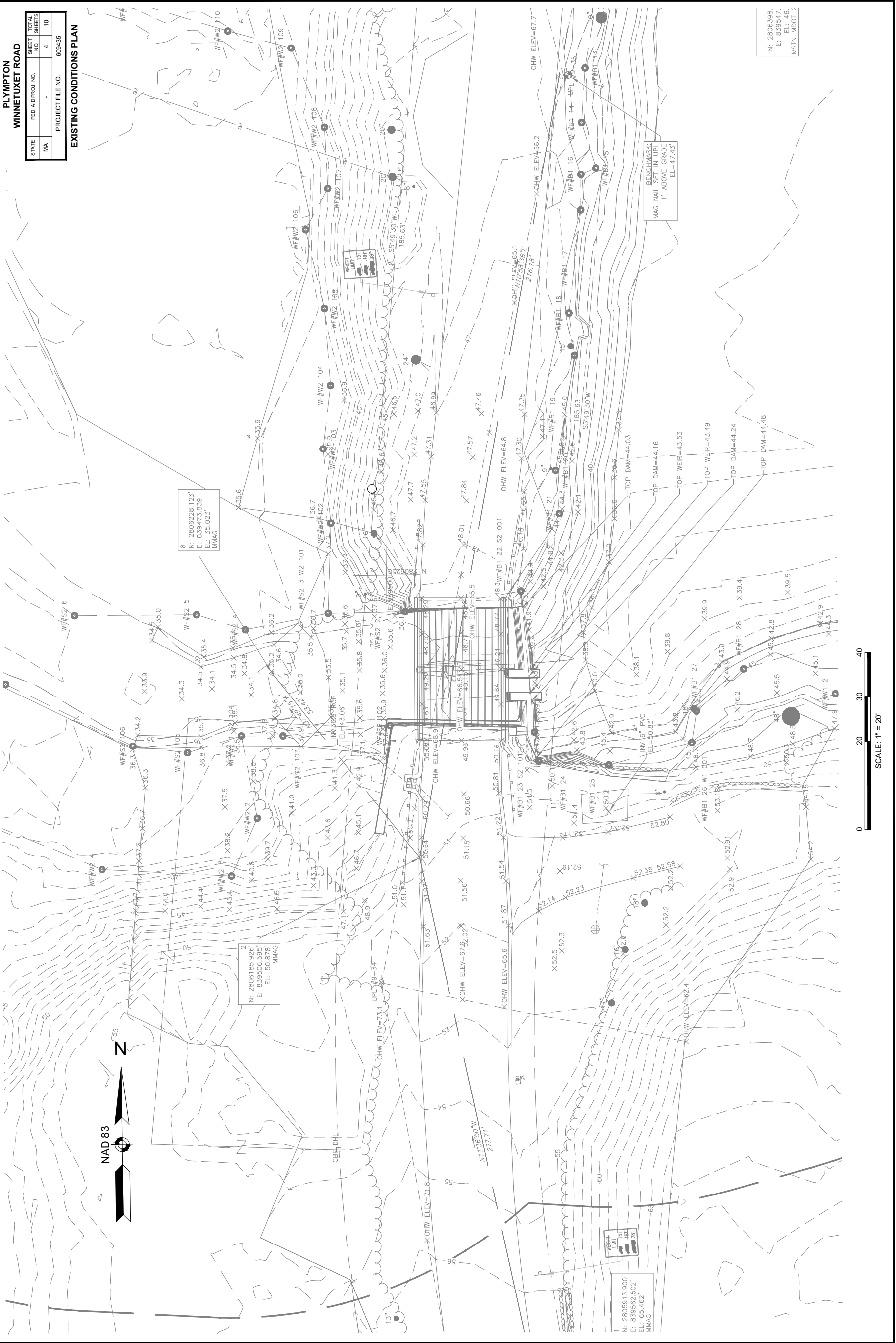
- SURFACE:** 2"± MILLING,
- 2" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5)

- NOTES:**
- 1) TACK COAT SHALL BE APPLIED AT A RATE OF 0.07 GAL/SY ON MILLED SURFACES AND 0.05 GAL/SY ON SMOOTH (UNMILLED) SURFACES.
 - 2) PROPOSED HMA BERM TO REPLACE EXISTING BERM IN KIND SHALL BE PLACED FROM STA 10+30 LT TO STA 10+82 LT AND RT. NO BERM SHALL BE PLACED FROM STA 10+20 TO STA 10+30 OR FROM STA 11+11 TO 11+60.
 - 3) EXISTING CROSS SLOPE AT APPROACHES VARIES APPROXIMATELY 0% TO 2%. THE INTENT OF THE DESIGN IS TO MATCH EXISTING CONDITIONS.



- TYPICAL SECTION NOTES:**
- 1) STEEL BACKED TIMBER GUARDRAIL SHALL BE SET TANGENT WITH TIMBER BRIDGE RAIL AT THE NORTHWEST AND SOUTHWEST APPROACHES.
 - 2) STEEL BACKED TIMBER GUARDRAIL SHALL BE SET TO FOLLOW ROADWAY CURVATURE AT THE NORTHEAST AND SOUTHEAST APPROACHES.
 - 3) AT LIMITS, STEEL BACKED TIMBER GUARDRAIL SHALL BE OFFSET 7'-0" FROM EDGE OF PAVEMENT TO FACE.
 - 4) SEE CONSTRUCTION PLANS FOR GUARDRAIL STATION LIMITS.
 - 5) SEE STRUCTURAL PLANS FOR BRIDGE RAIL TO STEEL BACKED TIMBER RAIL TRANSITION DETAIL.

609435_HD_EXIST CONDITIONS.DWG Plotted on 29-Feb-2024 10:07 AM



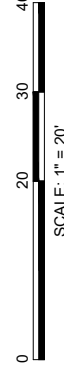
PLYMPTON WINNETUXET ROAD	
STATE	FED. AID PROJ. NO.
MA	
PROJECT FILE NO. 609435	
SHEET NO.	TOTAL SHEETS
4	10
EXISTING CONDITIONS PLAN	

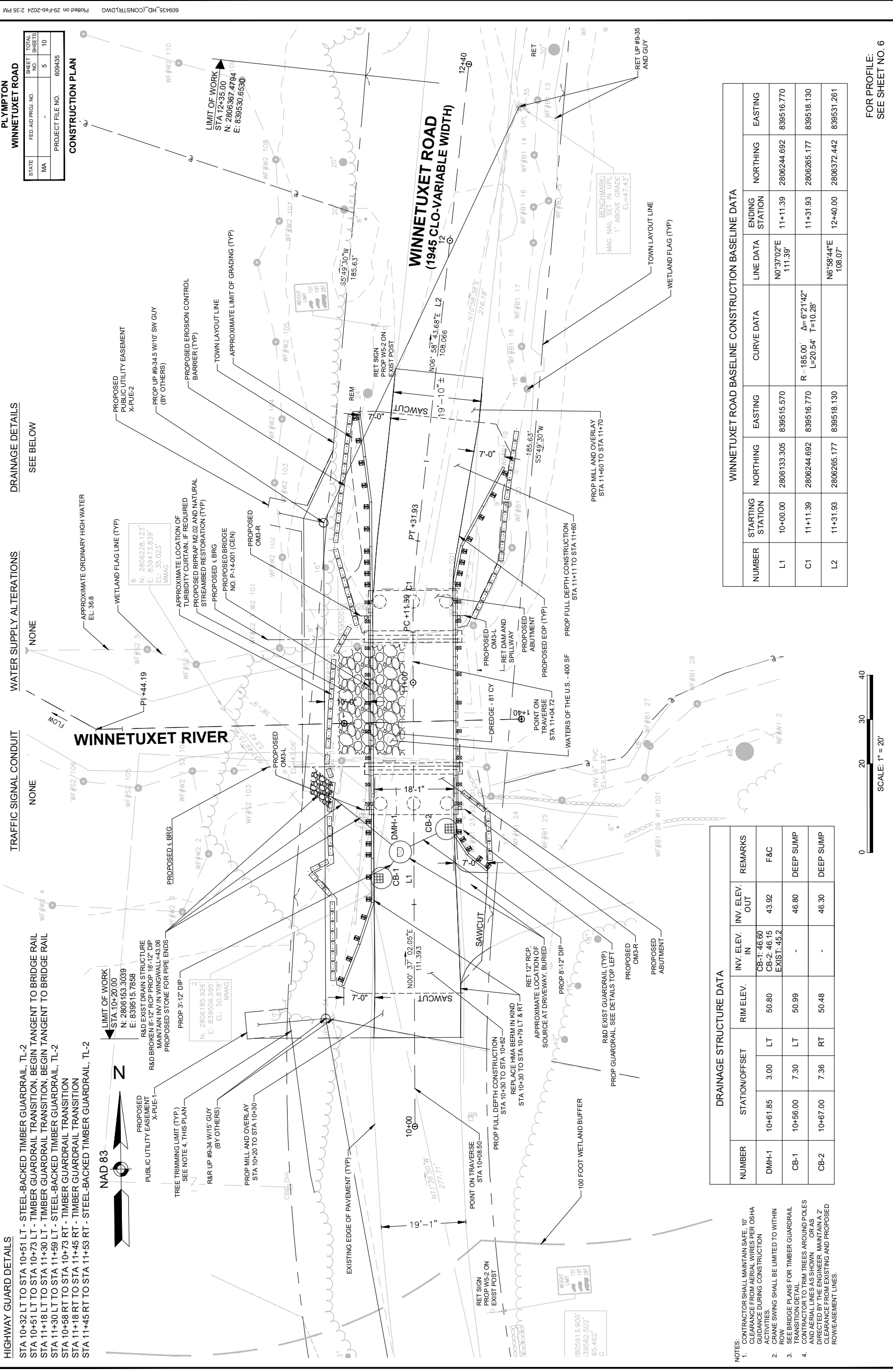
8
 N: 2806228.123'
 E: 839473.839'
 EL: 35.023'
 MMAG

2
 N: 2806185.926'
 E: 839506.595'
 EL: 50.878'
 MMAG

1
 N: 2805913.900'
 E: 839562.502'
 EL: 65.462'
 MMAG

BENCHMARKS:
 MAG NAIL SET IN UPL
 1' ABOVE GRADE
 EL=47.43'





PLYMPTON WINNETUXET ROAD

STATE	FED.AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		5	10

PROJECT FILE NO. 609435
CONSTRUCTION PLAN

TRAFFIC SIGNAL CONDUIT NONE
 WATER SUPPLY ALTERATIONS NONE
 DRAINAGE DETAILS SEE BELOW

HIGHWAY GUARD DETAILS
 STA 10+32 LT TO STA 10+51 LT - STEEL-BACKED TIMBER GUARDRAIL, TL-2
 STA 10+51 LT TO STA 10+73 LT - TIMBER GUARDRAIL TRANSITION, BEGIN TANGENT TO BRIDGE RAIL
 STA 11+18 LT TO STA 11+30 LT - TIMBER GUARDRAIL TRANSITION, BEGIN TANGENT TO BRIDGE RAIL
 STA 11+30 LT TO STA 11+59 LT - STEEL-BACKED TIMBER GUARDRAIL, TL-2
 STA 10+58 RT TO STA 10+73 RT - STEEL-BACKED TIMBER GUARDRAIL TRANSITION
 STA 11+18 RT TO STA 11+45 RT - TIMBER GUARDRAIL TRANSITION
 STA 11+45 RT TO STA 11+53 RT - STEEL-BACKED TIMBER GUARDRAIL, TL-2

LIMIT OF WORK
 STA 10+20.00
 N: 2806153.3039
 E: 839515.7858
 R&D EXIST DRAIN STRUCTURE
 R&D BROKEN 8-12" RCP PROP 18-12" DIP
 MAINTAIN INV IN WINGWALL=43.06
 PROPOSED STONE FOR PIPE ENDS
 PROP 8-12" DIP
 SEE NOTE 4, THIS PLAN

LIMIT OF WORK
 STA 12+35.00
 N: 2806367.4794
 E: 839530.6530

WETLAND FLAG LINE (TYP)
 APPROXIMATE ORDINARY HIGH WATER
 EL. 36.8

WETLAND FLAG LINE (TYP)
 APPROXIMATE ORDINARY HIGH WATER
 EL. 36.8

WETLAND FLAG LINE (TYP)
 APPROXIMATE ORDINARY HIGH WATER
 EL. 36.8

WETLAND FLAG LINE (TYP)
 APPROXIMATE ORDINARY HIGH WATER
 EL. 36.8

WETLAND FLAG LINE (TYP)
 APPROXIMATE ORDINARY HIGH WATER
 EL. 36.8

WETLAND FLAG LINE (TYP)
 APPROXIMATE ORDINARY HIGH WATER
 EL. 36.8

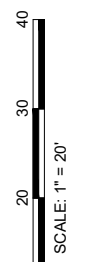
DRAINAGE STRUCTURE DATA

NUMBER	STATION/OFFSET	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT	REMARKS
DMH-1	10+61.85	50.80	CB-1: 46.60 CB-2: 46.15 EXIST: 45.2	43.92	F&C
CB-1	10+56.00	50.99	-	46.80	DEEP SUMP
CB-2	10+67.00	50.48	-	46.30	DEEP SUMP

WINNETUXET ROAD BASELINE CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L1	10+00.00	2806133.305	839515.570		N0°37'02"E 111.39'	11+11.39	2806244.692	839516.770
C1	11+11.39	2806244.692	839516.770	R - 185.00' L = 20.54' T = 10.28'		11+31.93	2806265.177	839518.130
L2	11+31.93	2806265.177	839518.130		N6°58'44"E 108.07'	12+40.00	2806372.442	839531.261

NOTES:
 1. CONTRACTOR SHALL MAINTAIN SAFE, 10' CLEARANCE FROM AERIAL WIRES PER OSHA ACTIVITIES DURING CONSTRUCTION.
 2. CRANE SWING SHALL BE LIMITED TO WITHIN ROW.
 3. TREE PRUNING PLANS FOR TIMBER GUARDRAIL TRANSITION DETAIL TO TRIM TREES AROUND POLES AND AERIAL LINES AS SHOWN OR AS DIRECTED BY THE ENGINEER. MAINTAIN A 2' CLEARANCE FROM EXISTING AND PROPOSED ROW/EASEMENT LINES.



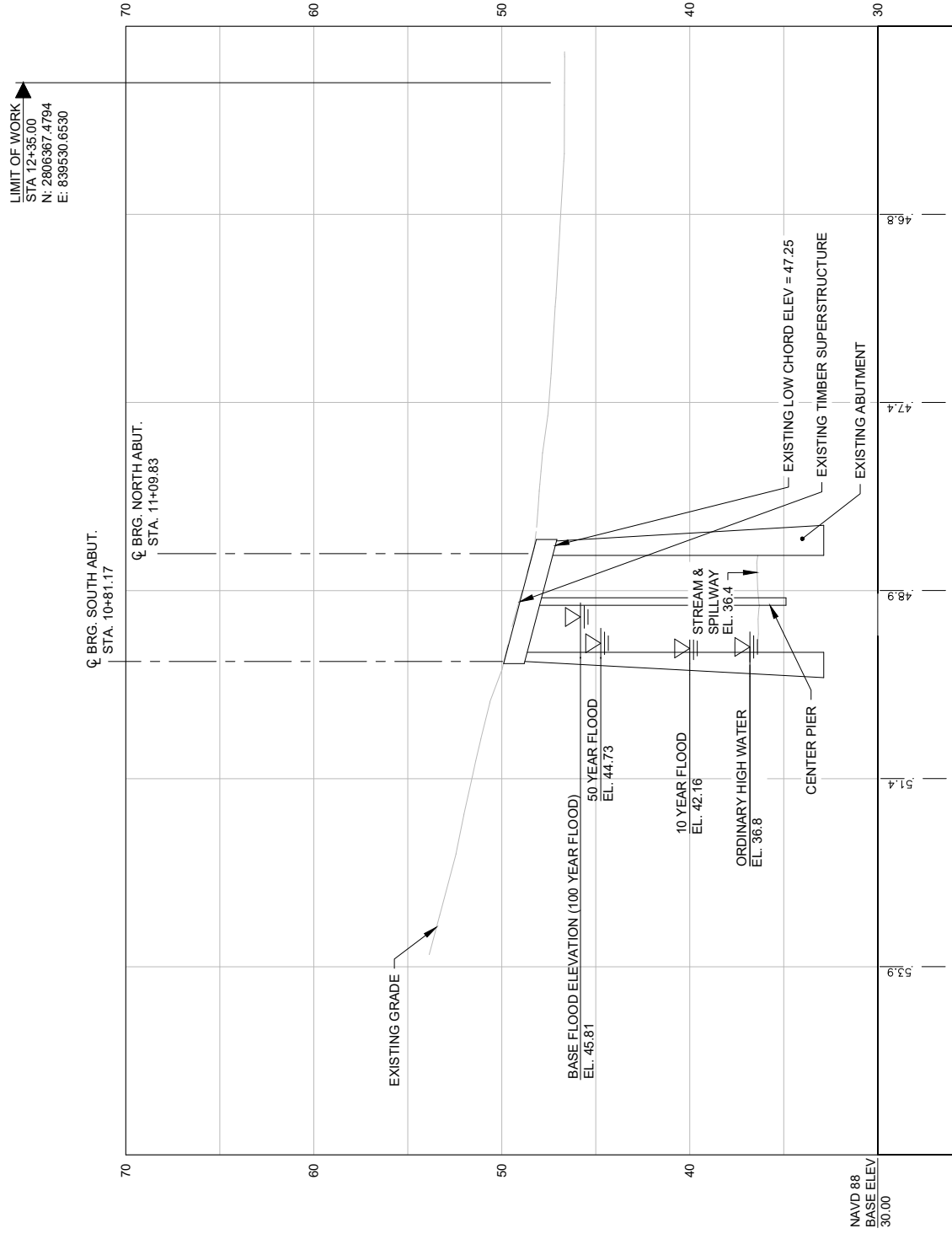
FOR PROFILE:
 SEE SHEET NO. 6

609435_HD_(PROFILE) - EXISTING (DSV).DWG
 Plotted on 29-Feb-2024 10:07 AM

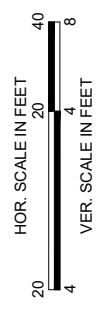
**PLYMPTON
 WINNETUXET ROAD**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	6	10
PROJECT FILE NO.		609435	

**EXISTING PROFILE
 WINNETUXET ROAD**



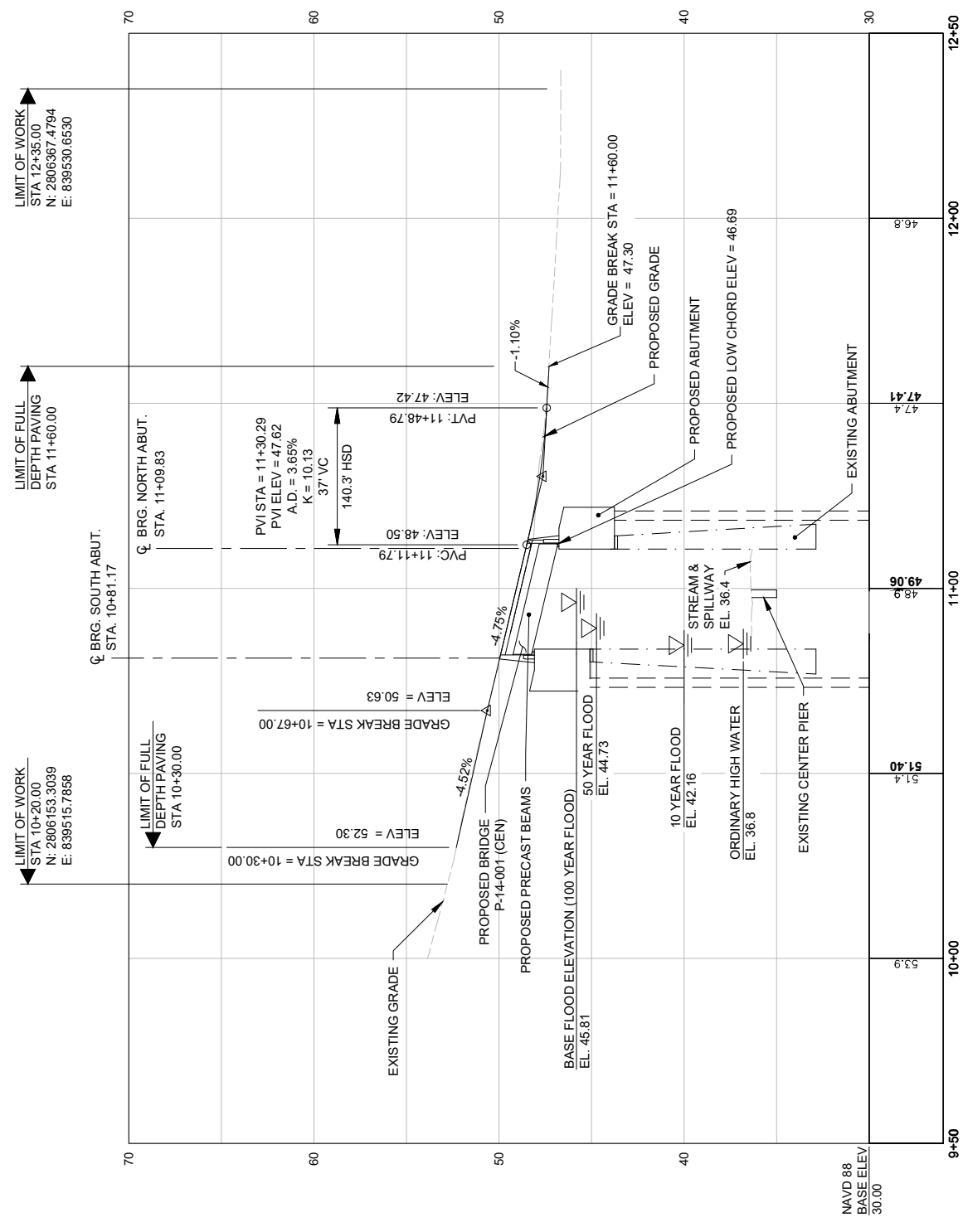
PROFILE - EXISTING CONDITIONS



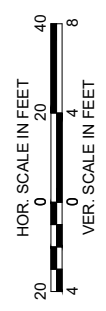
FOR CONSTRUCTION PLAN:
 SEE SHEET NO. 5

609435_HD_PROFILE - PROPOSED (OSV).DWG Plotted on 29-Feb-2024 10:07 AM

PLYMPTON WINNETUXET ROAD		SHEET NO.	TOTAL SHEETS
STATE	FED. AID PROJ. NO.	7	10
MA	-		
PROJECT FILE NO. 609435			
PROPOSED PROFILE WINNETUXET ROAD			



PROFILE -- PROPOSED CONDITIONS



FOR CONSTRUCTION PLAN:
SEE SHEET NO. 5

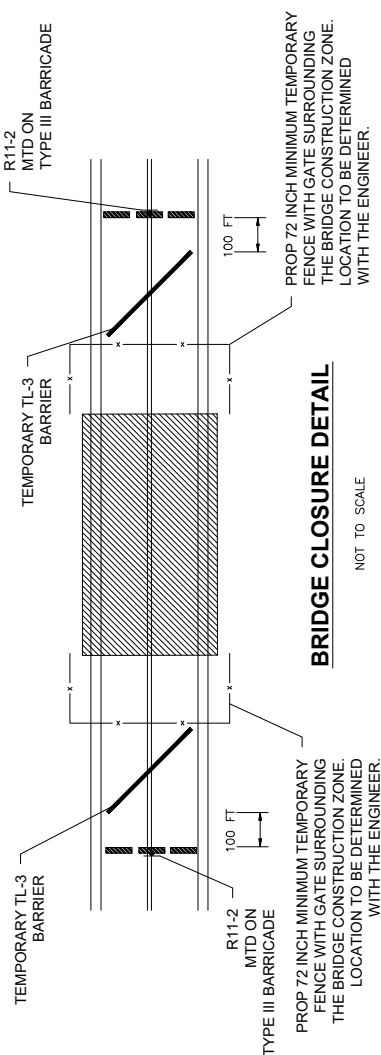
DETOUR SIGN SUMMARY

IDENTIFICATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)		NUMBER OF SIGNS REQUIRED	COLOR	
	WIDTH	HEIGHT		LETTER HEIGHT	ARROW SPACING		BACK-GROUND	BORDER
M4-8a	24"	18"	END DETOUR	SEE STANDARDS (2)	2	F.O.*	BLACK	BLACK
M4-9aL	30"	24"	DETOUR		1	F.O.	BLACK	BLACK
M4-9aR	30"	24"	DETOUR		2	F.O.	BLACK	BLACK
M4-9L	30"	24"	DETOUR		5	F.O.	BLACK	BLACK
M4-9R	30"	24"	DETOUR		6	F.O.	BLACK	BLACK
M4-9V	30"	24"	DETOUR		5	F.O.	BLACK	BLACK
M4-10L	48"	18"	DETOUR		1	F.O.	BLACK	BLACK
M4-10R	48"	18"	DETOUR		1	F.O.	BLACK	BLACK
R11-2	48"	30"	ROAD CLOSED		2	WHITE	BLACK	BLACK
R11-3ab	60"	30"	ROAD CLOSED AHEAD LOCAL TRAFFIC ONLY		2	F.O.	BLACK	BLACK
W16-8	48"	12"	WINNETUXET RD		19	F.O.	BLACK	BLACK
W20-2	36"	36"	DETOUR AHEAD		3	F.O.	BLACK	BLACK

* F.O. = FLUORESCENT ORANGE (SEE NOTE 4)

DETOUR NOTES

- ALL SIGNS SHALL BE MOUNTED ON THEIR OWN MASSDOT STANDARD TEMPORARY SIGN SUPPORTS. NO SIGNS SHALL BE MOUNTED ON DRUMS.
- PER THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE 2012 MASSDOT AMENDMENTS TO THE MUTCD, AND THE LATEST VERSION OF THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION STANDARD DRAWINGS FOR SIGNS AND SUPPORTS.
- THE MINIMUM MOUNTING HEIGHT OF POST MOUNTED SIGNS, MEASURED VERTICALLY FROM THE BOTTOM OF THE SIGN TO THE TOP OF THE GROUND, SHALL BE 7 FEET UNLESS OTHERWISE SPECIFIED ON THE PLANS.
- ALL TEMPORARY WARNING SIGNS SHALL HAVE FLUORESCENT ORANGE BACKGROUNDS WITH BLACK LEGENDS AND BORDERS UNLESS OTHERWISE SPECIFIED ON THE PLANS.
- ALL TRAFFIC CONTROL DEVICES INCLUDING SIGNS, DRUMS, BARRICADES, BARRIER AND OTHER DEVICES SHALL BE INSTALLED PER MUTCD/MASSDOT STANDARD SPECIFICATIONS.
- ALL TRAFFIC CONTROL DEVICES INCLUDING SIGNS, DRUMS, BARRICADES, BARRIER AND OTHER DEVICES SHALL BE INSTALLED INSIDE PUBLIC RIGHT OF WAY.
- ACCESS TO PRIVATE DRIVEWAYS TO BE MAINTAINED AT ALL TIMES.
- WORK AREA SHALL BE PROTECTED ADEQUATELY DURING WORKING AND NON-WORKING HOURS.
- ALL ROADS SHOWN ARE PUBLIC ROADS. ALL PROPOSED SIGNS SHALL BE PLACED WITHIN PUBLIC RIGHT OF WAY.



NOTES

- ACCESS TO PRIVATE DRIVEWAYS ARE TO BE MAINTAINED AT ALL TIMES.

TWO WEEKS PRIOR TO CLOSURE	PHASE 1		PHASE 2	
	WINTUX BRDG OUT	STARTING	WINTUX BRDG OUT	MM-DD

PCMS 1, 2

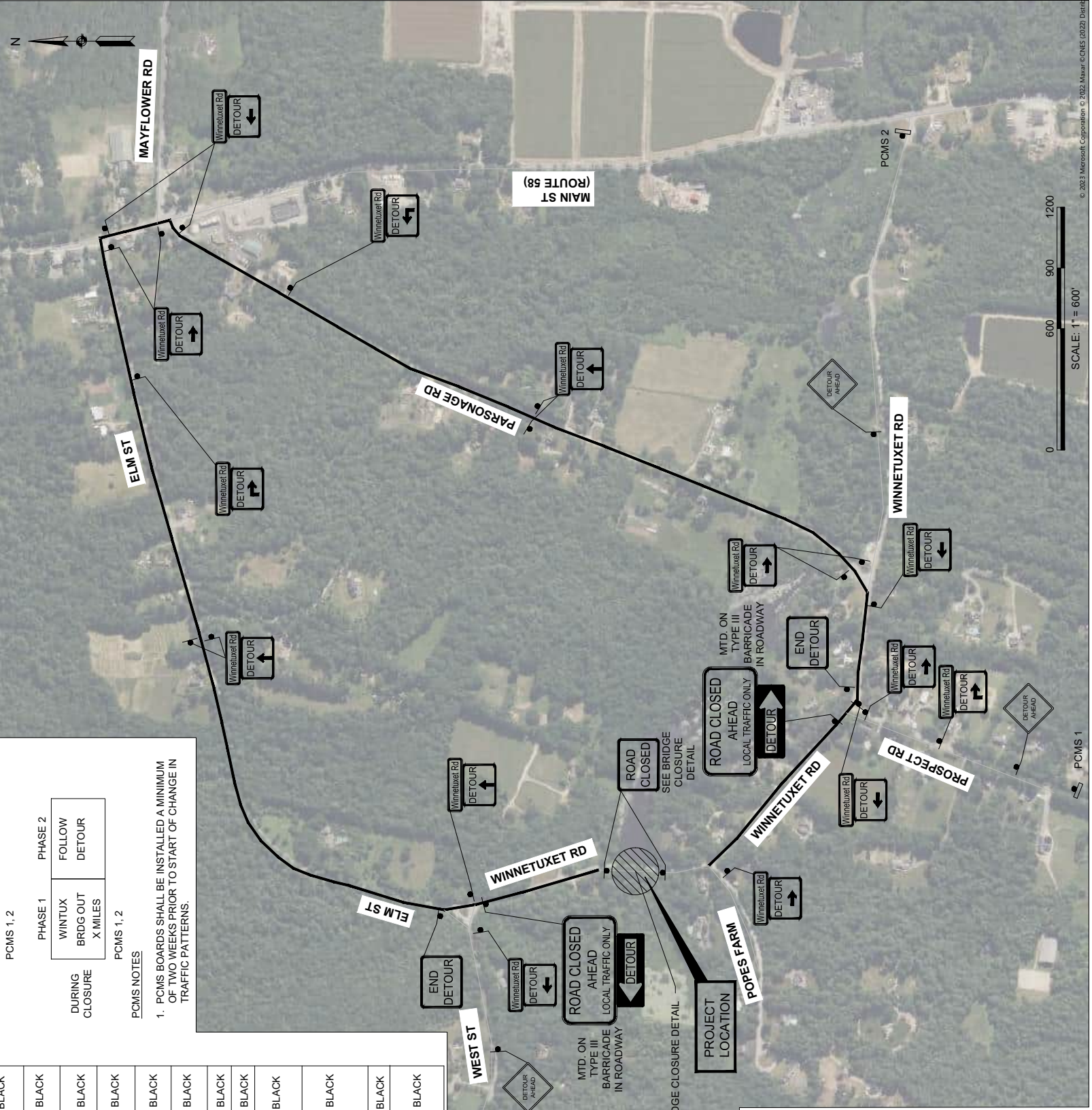
DURING CLOSURE	PHASE 1		PHASE 2	
	WINTUX BRDG OUT X MILES	FOLLOW	WINTUX BRDG OUT	DETOUR

PCMS 1, 2

PCMS NOTES
1. PCMS BOARDS SHALL BE INSTALLED A MINIMUM OF TWO WEEKS PRIOR TO START OF CHANGE IN TRAFFIC PATTERNS.

PLYMPTON WINNETUXET ROAD			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		8	10
PROJECT FILE NO. 609435			

TEMPORARY TRAFFIC CONTROL PLAN DETOUR PLAN

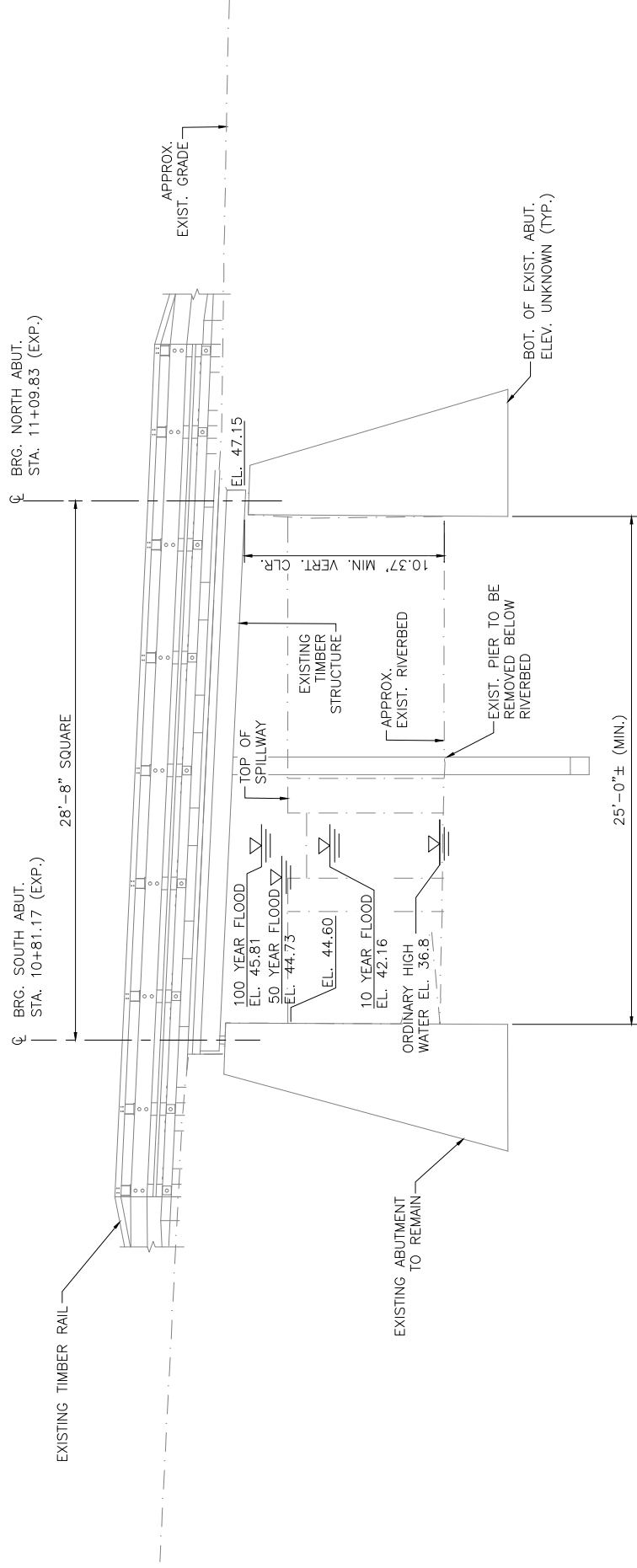


SCALE: 1" = 600'

609435_BRI010(P14001) - EXISTING LONGITUDINAL SECTION.DWG Plotted on 29-Feb-2024 2:28 PM

PLYMPTON WINNETUXET ROAD			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	9	10
PROJECT FILE NO.		609435	

EXISTING LONGITUDINAL SECTION



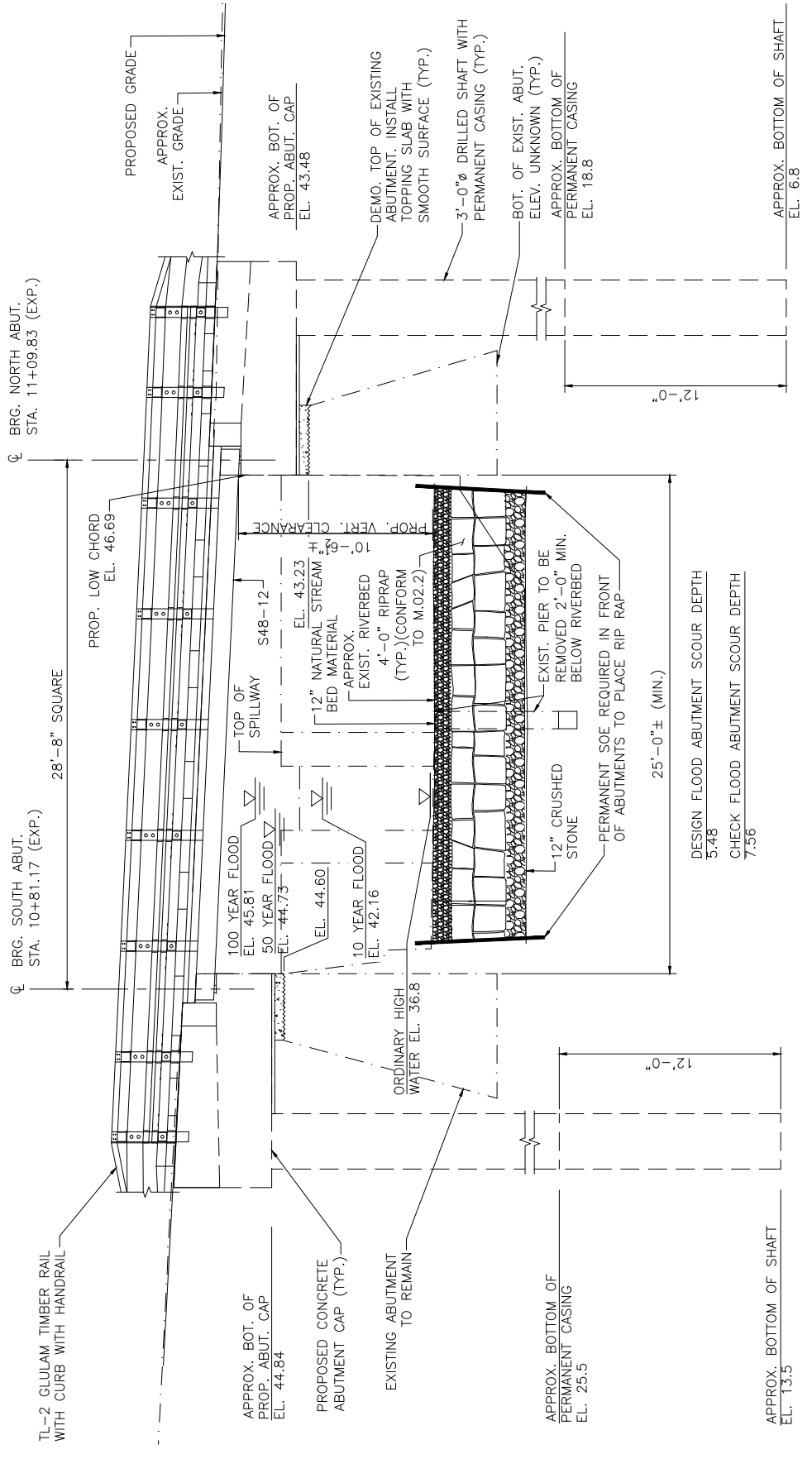
DESIGN FLOOD ABUTMENT SCOUR DEPTH
5.48
CHECK FLOOD ABUTMENT SCOUR DEPTH
7.56

EXISTING LONGITUDINAL SECTION
SCALE: 1/2" = 1'-0"

609435_BRI(10P14001)-LONGITUDINAL SECTION.DWG Plotted on 29-Feb-2024 10:07 AM

PLYMPTON WINNETUXET ROAD			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	10	10
PROJECT FILE NO. 609435			

PROPOSED LONGITUDINAL SECTION



PROPOSED LONGITUDINAL SECTION
SCALE: 1/2" = 1'-0"

NOTES:

1. RIP RAP SHALL BE INSTALLED ALONG THE EXISTING CONCRETE SLAB. PLACE TO ELIMINATE SCOUR. RIP RAP SHALL HAVE 4'-0" THICKNESS, D50=24", AND D100=48".

Work-Start Notification Form

File Number: NAE-2024-00568 State: Massachusetts County: Plymouth

Permittee: MassDOT - Highway Division, Courtney Walker

Date Verification Issued: 5/17/2024

Project Manager: Daniel Vasconcelos

At least two weeks prior to commencing the activity authorized by this permit, sign this certification and return it to the following address:

**US ARMY CORPS OF ENGINEERS
New England District
Attn: Daniel Vasconcelos
696 Virginia Road
Concord, MA 01742
or
daniel.b.vasconcelos@usace.army.mil
978-318-8653**

Please note that your permitted activity is subject to a compliance inspection by a U. S. Army Corps of Engineers (USACE) representative. Failure to comply with any terms or conditions of this authorization may result in the USACE suspending, modifying or revoking the authorization and/or issuing a Class I administrative penalty, or initiating other appropriate legal action.

The people (e.g. contractor) listed below will do the work, and they understand the permit's conditions and limitations.

Contractor Name/Contractor Firm: _____

Business Address: _____

Contractor Phone and Email: _____

Proposed Construction Dates: Start: _____ **Finish:** _____

Signature of Permittee

Date

Compliance Certification Form

File Number: NAE-2024-00568 State: Massachusetts County: Plymouth

**Permittee: MassDOT - Highway Division, Courtney Walker
Date Verification Issued: 5/17/2024
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**

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



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

May 13, 2024

Massachusetts Department of Transportation
Highway Division
10 Park Plaza
Boston, MA 02116
ATTN: Courtney Walker

RE: Section 401 Water Quality Certification
BRP WW 11, Minor Fill Project
Bridge Replacement over Winnetuxet River (P-14-001(445))
Plympton, Massachusetts

401 WQC Application Number: 24-WW11-0029-APP
USACE Application No. NAE-2024-00568

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 April 17, 2024. 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. P-14-001(445)) that carries Winnetuxet Road over the Winnetuxet River in Plympton, central timber pier removal, reconstructed roadway approach work, stormwater drainage improvements, and streambed restoration. The bridge superstructure is stated as needing replacement due to its poor condition and various structural deficiencies.

Existing Conditions

The existing bridge is a two-span, timber-deck structure that spans the primary spillway of a dam owned by the Town of Plympton. The bridge and dam have been in place since 1923. The waterbody, supported by the dam, is an impounded section of the Winnetuxet River known as Winnetuxet Pond. This spillway is one of two outlets that discharge and join back together further down gradient of the dam. The second spillway is a culvert to the north of the bridge, which is outside of the project limits.

This information is available in alternate format. Please contact Melixza Esenyie at 617-626-1282.
TTY# MassRelay Service 1-800-439-2370
MassDEP Website: www.mass.gov/dep

Printed on Recycled Paper

The bridge carries one lane in each direction with a total span of approximately 28 feet 8 inches and a deck width of approximately 20 feet. The bankfull width of the Winnetuxet River is 26 feet. The bridge substructure consists of two stone abutments, a timber pier (consisting of four timber piles), and wingwalls. An existing catch basin just south of the bridge collects stormwater and discharges to the riverbank from a degraded outfall in the southwest quadrant.

The Project is not located within any Critical Areas, Natural Heritage and Endangered Species Program Priority but is classified as an essential fish habitat for diadromous fish species (herring and eels) by NOAA. The project is located within the Federal Emergency Management Agency 1% annual chance of flooding zones.

Project Description

The Project will demolish the existing wood span which will be replaced with a new concrete deck span of the same length, width, and alignment. The center wood pile pier will be removed below the riverbed and the abutments and wingwalls will remain in place. These existing abutments will be partially demolished to a level just below the top of the existing spillway to allow for the construction of new abutment caps on the upslope side of the existing abutments. Approximately 120 linear feet of the roadway will be repaved including the bridge. Guard rails will be replaced, and one existing catch basin will be replaced with two deep sump catch basins.

L UW Impacts & Restoration

In total, 400 square feet (sf) of temporary L UW impacts are required for the Project. A total of 81 cubic yards (cy) of dredging in the Winnetuxet River is required for the installation of riprap scour protection and streambed restoration. A temporary cofferdam will be installed upstream of the bridge and water flow will be diverted to the northern culvert to create dry working conditions. The Project will not result in any impacts to BVW.

The streambed will be dredged down 6 feet from existing grade to add a 1-foot layer of crushed stone, 4-foot layer of riprap and topped with 1-foot of natural streambed material. This armoring of the streambed is to prevent future scour. The streambed will be restored under the supervision of an FGM.

Alternatives Analysis

Based on the location of the bridge over a spillway of a dam, total reconstruction was not considered. Total replacement would require dewatering of the entire Winnetuxet Pond and risk destabilizing the dam. Several alternative bridge types were considered, each of which would result in the same impacts to L UW for demolition and construction.

Stormwater Management Standards

The Project will not result in any increase in impervious surface. As such, peak discharge rates and groundwater recharge conditions will remain approximately the same. Through a complete evaluation, it was determined that structural Stormwater Control Measures (SCMs) to provide total suspended solids removal to the maximum extent practicable as a redevelopment project are not practicable within or adjacent to the Project limits. Installing SCMs on or adjacent to the dam could potentially compromise the structure. In addition, the steep slopes on each side of the roadway provide no feasible

area to install SCMs. Existing conditions will be improved by installing two deep sump catch basins to replace the existing single catch basin. The outfall from this existing system will also be repaired.

Stream Crossing Standards

The 28-foot 8-inch span between the abutments will be 1.1 times the 26-foot bankfull width of the Winnetuxet River. The location of the bridge on top of the dam makes widening the span impracticable. The stream crossing dimensions will not change due to the existing abutments being utilized for the new superstructure. However, the removal of the existing center pier a minimum of two feet below the riverbed will improve upon existing conditions and will increase the openness ratio to 6.57 feet, exceeding the Stream Crossing Standards optimum ratio.

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 Plympton-Halifax-Kingston Express on March 8, 2024. MassDEP received one comment letter during the public comment period pertaining to the regulations at 314 CMR 9.00 and construction methodology. This comment letter was addressed.

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:
 - Combined Application 401 Water Quality Certification (WQC) and 404 Pre-Construction Notification (PCN) MassDOT Winnetuxet Road Over Winnetuxet River Bridge Plan.

Prepared by AECOM on behalf of MassDOT, dated February 23, 2024, with cover letter and attachments. 401 WQC Application Number: 24-WW11-0029-APP.

- MassDOT Responses to MassDEP Administrative Completeness Technical Review. Prepared by AECOM on behalf of MassDOT. Winnetuxet Road Over Winnetuxet River Bridge. Dated April 2, 2024.

Pre-Construction

2. As specified in the application and Specification Item 755.55, 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. The name, contact information, and qualifications of the FGM shall be provided to MassDEP for approval with a copy to the Plympton Conservation Commission prior to the Pre-Construction Meeting. In the event of a conflict between the application and Specification 755.55, the commitment in the application shall apply. **(Submittal)**
3. Prior to the Pre-Construction Meeting, 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 work, 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.
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 erosion, sedimentation, and pollution prevention 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 approved CP/PP (defined herein as including the construction period SWPPP) 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 approved CP/PP. Verification of proof of completion training of the 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 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.
9. A minimum of 21 days prior to the start of work, MassDOT shall submit a Water Management Plan for review and approval. The Plan shall include proposed methods to manage construction-period water including but not limited to dewatering methods and locations, specifications for any water bypass systems, and dredge and debris material dewatering prior to shipment off site, as applicable. The plan shall meet requirements of the CP/PP and be specific to the Project. Dewatering and water bypasses shall be conducted under the supervision of the RE 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 BVWs 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.
12. A Flood Contingency Plan shall be submitted to MassDEP for review and approval that addresses areas that fall within the 1% annual chance of flooding zone within project limits. The Plan shall address the potential need for temporary relocation of construction and auxiliary equipment during flood events to designated upland locations above the Base Flood Elevation. The Plan shall be approved by MassDEP prior to any work within the 1% annual chance of flooding zone, including mobilization or storage of equipment and materials. **(Submittal)**
13. Final Construction Plans (the plans provided to the contractor) shall be submitted for review at least 30 days prior to the Pre-Construction Meeting. Once MassDEP provides written approval, the updated set of plans shall become the "Final Plan of Record." The Plan shall be prepared and signed by a Professional Engineer in the Commonwealth of Massachusetts and shall incorporate all revisions and additions to the original plans that have been approved as discussed herein, as well as any other changes from the permit plans in wetland jurisdictional areas. **(Submittal)**

14. A minimum of 21 days prior to the start of work, a Demolition Plan shall be submitted for review and approval describing how the existing bridge will be demolished and what measures will be taken to assure that demo material is properly contained and does not enter the Winnetuxet River. **(Submittal)**

Construction Period

15. No more than **400 sf** of permanent impacts to LUW shall occur. All work shall avoid unapproved impacts to BVW and LUW.
16. 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.
17. Copies of CP/PP Inspection and Maintenance Log Forms shall be submitted to MassDEP within 14 days upon request.
18. Inspection and maintenance of erosion and sediment controls in active work areas shall be the responsibility of both the Contractor and RE. The project team shall include an individual with at least three-years' experience with construction period erosion and sedimentation control. The RE shall be ultimately responsible for inspection and maintenance of site controls. The RE, and/or contractor shall immediately notify MassDEP and the Plympton Conservation Commission if any unauthorized discharges to BVWs or LUW occur.
19. 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.
20. Work within LUW shall be conducted in low or no-flow conditions to the extent practicable. Notice shall be provided to MassDEP and the Plympton Conservation Commission within 24 hours prior to the commencement of dewatering. Dewatering methods and location(s) shall be approved by the RE prior to use, 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.
21. 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 RE 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.
22. The RE shall monitor the National Weather Service forecast for updates, and upon issuance of a flood watch for the 1% annual chance of flooding zone, shall implement the flood contingency plan referenced in Condition 12.

23. 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. Stockpiles shall be located no less than 50 feet from BVWs, LUW, catch basins, or other drainage conveyances that discharge to BVWs or LUW. The CP/PP shall specify measures to implement this. Filter fabric stretched under storm drain inlet grates are not acceptable for this purpose.
24. 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.
25. Refueling, washing, and cleaning of vehicles and other construction equipment shall not take place within 50 feet of BVWs or LUW and any wash water shall be contained such that it does not drain toward BVWs or LUW. MassDEP shall explicitly approve in writing any deviation to this condition for oversized stationary vehicles.
26. The contractor shall have spill containment kits on site. In the event of a release of fuels and/or oils, the local fire department and MassDEP shall be notified.
27. A temporary shielding system shall be in place beneath the bridge structure prior to removal and concrete excavation to prevent debris from falling into the water below. If any debris accidentally enters Winnetuxet River, 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

28. The FGM shall oversee all LUW replication and restoration in accordance with the Water Quality Certificate application and MassDOT Specification Item 755.55 as applicable. Placement of streambed materials shall take place in no- or low-flow conditions. The Water Management 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. In the event of a conflict between the application and Specification 755.55, the commitment in the application shall apply.
29. A monitoring report shall be submitted by the FGM no later than 30 days following stream restoration. The report shall include an assessment of the stream restoration success, representative photos, and recommended corrective actions as needed. **(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 replication and 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 tyler.lewis@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; 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):

1. the 401 Certification Transmittal Number;
2. the complete name of the applicant and address of the project;
3. the complete name, address, and fax and telephone numbers of the party filing the request, and, if represented by counsel or other representative, the name, fax and telephone numbers, and address of the attorney;
4. if claiming to be a party aggrieved, the specific facts that demonstrate that the party satisfies the definition of "aggrieved person" found at 314 CMR 9.02;
5. a clear and concise statement that an adjudicatory hearing is being requested;
6. a clear and concise statement of (1) the facts which are grounds for the proceedings, (2) the objections to this Certificate, including specifically the manner in which it is alleged to be inconsistent with the MassDEP's Water Quality Regulations, 314 CMR 9.00, and (3) the relief sought through the adjudicatory hearing, including specifically the changes desired in the final written Certification; and
7. a statement that a copy of the request has been sent by certified mail or hand delivery to the applicant, the owner (if different from the applicant), the conservation commission of the city or town where the activity will occur, the Department of Conservation and Recreation (when the certificate concerns projects in Areas of Critical Environmental Concern), the public or private water supplier where the project is located (when the certificate concerns projects in Outstanding Resource Waters), and any other entity with responsibility for the resource where the project is located.

c.) Filing Fee and Address

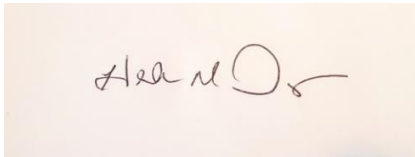
The hearing request along with a DEP Fee Transmittal Form and a valid check or money order payable to the Commonwealth of Massachusetts in the amount of one hundred dollars (\$100) must be mailed to:

Commonwealth of Massachusetts
Department of Environmental Protection
Commonwealth Master Lockbox
PO Box 4062
Boston, MA 02211

The request will be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver. The filing fee is not required if the appellant is a city or town (or municipal 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 Tyler Lewis at Heidi.davis@mass.gov and tyler.lewis@mass.gov.

Very truly yours,

A rectangular box containing a handwritten signature in dark ink. The signature appears to be "Heidi M. Davis" with a stylized flourish at the end.

Heidi M. Davis
Highway Unit Supervisor

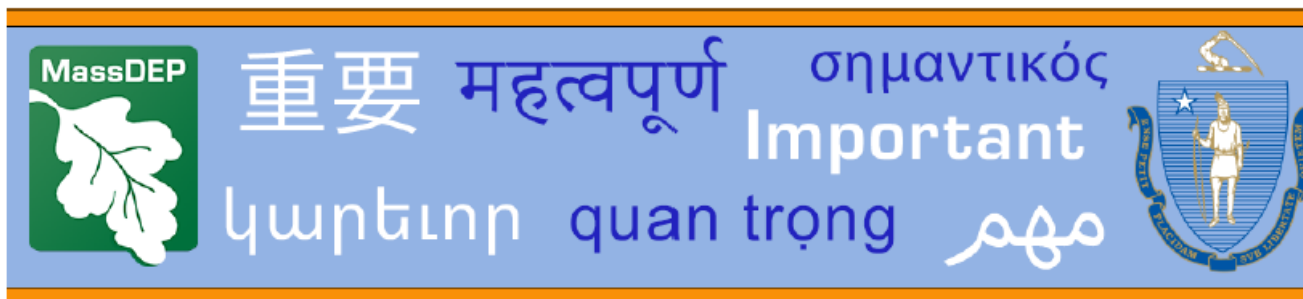
Ecc: DEP SERO – Maissoun Reda
MassDOT – Melissa Lenker
MassDOT – Kylie Abouzeid
MassDOT – Andrea Coates
USACE – Dan Vasconcelos
Mark Rothfuss – mark.rothfuss@assaabloy.com
Kevin Rafferty – shedtalk@hotmail.com
Plympton Conservation Commission – Brian Vasa - plymptonconcom@gmail.com
AECOM - Jonny Rickwood – jonny-rickwood@aecom.com

**ATTACHMENT A
 Bridge Replacement over Winnetuxet River (P-14-001 (445))
 Plympton, MA**

PRE-CONSTRUCTION SUBMITTAL CHECKLIST

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.

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 requirements	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	Verification of Erosion and Sedimentation Controls Training	Prior to work start		
9	Water Management Plan	21 days prior to work start		
12	Flood Contingency Plan	Prior to in water work		
13	Final Construction Plans	30 days prior to Pre-Construction Meeting		
14	Demolition Plan	21 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 Anviwònmanal MassDEP a nan nimewo telefòn ki endike anba a.

Việt Vietnamese

Tài liệu này và quan trọng và phải được dịch ngay. Nếu quý vị cần bản dịch của tài liệu này, vui lòng liên hệ với Giám Đốc Phòng Công Lý Môi Trường của MassDEP theo số điện thoại được liệt kê bên dưới.

ប្រទេសកម្ពុជា Khmer/Cambodian

ឯកសារនេះមានសារៈសំខាន់ ហើយកម្មវិធីត្រូវបានបកប្រែភ្លាមៗ។
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 telefoni menxionadu di baixo.

Contact Deneen Simpson 857-406-0738
Massachusetts Department of Environmental Protection
100 Cambridge Street 9th Floor Boston, MA 02114
TTY# MassRelay Service 1-800-439-2370 • <https://www.mass.gov/environmental-justice>
(Version revised 8.2.2023) 310 CMR 1.03(5)(a)

Русский Russian

Это чрезвычайно важный документ, и он должен быть немедленно переведен. Если вам нужен перевод этого документа, обратитесь к директору Департамента экологического правосудия MassDEP (MassDEP's Director of Environmental Justice) по телефону, указанному ниже.

العربية Arabic

هذه الوثيقة مهمة وتجب ترجمتها على الفور.

إذا كنت بحاجة إلى ترجمة هذه الوثيقة، فيرجى الاتصال بمدير العدالة البيئية في MassDEP على رقم الهاتف المذكور أدناه.

한국어 Korean

이 문서는 중대하므로 즉시 번역되어야 합니다. 본 문서 번역이 필요하신 경우, 매사추세츠 환경보호부의 "환경정의" 담당자 분께 문의하십시오. 전화번호는 아래와 같습니다.

հայերեն Armenian

Այս փաստաթուղթը կարևոր է, և պետք է անհապաղ թարգմանել այն:

Եթե Ձեզ անհրաժեշտ է թարգմանել այս փաստաթուղթը, դիմեք Մասաչուսեթսի շրջակա միջավայրի պահպանության նախարարության (MassDEP) Բնապահպանական հարցերով արդարադատության ղեկավարին (Director of Environmental Justice)՝ ստորև նշված հեռախոսահամարով

فارسی Farsi Persian

این نوشتار بسیار مهمی است و باید فوراً ترجمه شود. اگر نیاز به ترجمه این نوشتار دارید لطفاً با مدیر عدالت محیط زیستی MassDEP در شماره تلفن ذکر شده زیر تماس بگیرید.

Français French

Ce document est important et doit être traduit immédiatement. Si vous avez besoin d'une traduction de ce document, veuillez contacter le directeur de la justice environnementale du MassDEP au numéro de téléphone indiqué ci-dessous.

Deutsch German

Dieses Dokument ist wichtig und muss sofort übersetzt werden. Wenn Sie eine Übersetzung dieses Dokuments benötigen, wenden Sie sich bitte an MassDEP's Director of Environmental Justice (*Direktor für Umweltgerechtigkeit in Massachusetts*) unter der unten angegebenen Telefonnummer.

Ελληνική Greek

Το έγγραφο αυτό είναι πολύ σημαντικό και πρέπει να μεταφραστεί αμέσως. Αν χρειάζεστε μετάφραση του εγγράφου αυτού, παρακαλώ επικοινωνήστε με τον Διευθυντή του Τμήματος Περιβαλλοντικής Δικαιοσύνης της Μασαχουσέτης στον αριθμό τηλεφώνου που αναγράφεται παρακάτω

Italiano Italian

Questo documento è importante e deve essere tradotto immediatamente. Se hai bisogno di tradurre questo documento, contatta il Direttore della Giustizia Ambientale di MassDEP al numero di telefono sotto indicato.

Język Polski Polish

Ten dokument jest ważny i powinien zostać niezwłocznie przetłumaczony. Jeśli potrzebne jest tłumaczenie tego dokumentu, należy skontaktować się z dyrektorem ds. sprawiedliwości środowiskowej MassDEP pod numerem telefonu podanym poniżej.

हिन्दी Hindi

यह दस्तावेज महत्वपूर्ण है और इसका अनुवाद तुरंत किया जाना चाहिए। यदि आपको इस दस्तावेज का अनुवाद कराने की जरूरत है, तो कृपया नीचे दिए गए टेलीफोन नंबर पर MassDEP के पर्यावरणीय न्याय निदेशक से संपर्क करें।

Contact Deneen Simpson 857-406-0738

Massachusetts Department of Environmental Protection
100 Cambridge Street 9th Floor Boston, MA 02114

TTY# MassRelay Service 1-800-439-2370 • <https://www.mass.gov/environmental-justice>
(Version revised 8.2.2023) 310 CMR 1.03(5)(a)

General Permit No.: NAE-2022-02649
 Applicant: General Public, Commonwealth of Massachusetts


Final Effective Date: June 2, 2023
 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.

<u>This document contains the following sections:</u>		<u>Pages</u>
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 Date
 Chief, Regulatory Division

SECTION I. STATUTORY AUTHORITIES & 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-Construction 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:

- Meet the terms and conditions of the GP as proposed;
- Require additional information;
- Require avoidance, minimization, compensatory mitigation, construction sequencing, project modification, or other special conditions to avoid or minimize adverse impacts to the aquatic environment;
- 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

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.

Pre-Construction Notification Required

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 authorized¹, 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 SF² 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.

<p>GP 3. MOORINGS (Authority: §10)</p> <p>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.</p> <p>Not authorized under GP 3 (IP required): (a) Moorings or mooring fields converted to or associated with a new boating facility¹; or (b) Moorings in a USACE Federal Navigation Anchorage or USACE Federal Navigation Channel, except municipal-operated mooring fields.</p>	
<p>Self-Verification Eligible</p> <ol style="list-style-type: none"> 1. New or relocated moorings that meet all the following terms: <ol style="list-style-type: none"> 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. 	<p>Pre-Construction Notification Required</p> <ol style="list-style-type: none"> 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.
<p>Notes:</p> <ol style="list-style-type: none"> 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 shallows¹; or (c) dredging in navigable waters of the U.S. (see GP 7).

Self-Verification Eligible

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.

Pre-Construction Notification Required

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. 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 pipelines¹, outfall or intake structures², 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

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.

Pre-Construction Notification Required

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-47¹ 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

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.

Pre-Construction Notification Required

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

1. In tidal and non-tidal waters excluding tidal vegetated shallows, the combined permanent and temporary impacts are ≤5,000 SF.
2. Eelgrass (vegetated shallows) planting and transplanting ≤100 SF in tidal waters.

Pre-Construction Notification Required

1. In tidal and non-tidal waters excluding tidal vegetated shallows, the combined permanent and temporary impacts are >5,000 SF.
2. Eelgrass (vegetated shallows) planting and transplanting >100 SF in tidal waters.
3. Permanent water impoundments, dam removal, fish ladders, or tide gates.
4. Stream relocation, impoundment, or loss of streambed occurs.
5. Runneling projects with the purpose of restoring saltmarsh by removing excess water that ponds on the saltmarsh surface.
6. The conversion of: (a) a stream or natural wetlands to another aquatic habitat type (e.g., stream to wetland or vice versa, wetland to pond, etc.) or uplands, (b) one wetland type to another (e.g., forested wetland to an emergent wetland).
7. Activities in the Connecticut River from the Turners Falls Dam to the MA/CT border, or Merrimack River from the Essex Dam to the mouth, involving permanent or temporary impacts unless they are performed <5 feet waterward from OHW or HTL and in the dry. This is to protect endangered species.
8. Activities on USACE properties & USACE-controlled easements.
9. Activities that are not eligible for SV and do not require an IP.

Notes:

1. Changes in wetland plant communities that occur when wetland hydrology is more fully restored during wetland rehabilitation activities are not considered a conversion to another aquatic habitat type.
2. See RGL 18-01 for guidance on removal of obsolete dams and other structures from rivers and streams. <https://www.usace.army.mil/missions/civil-works/regulatory-program-and-permits/guidance-letters/>
3. An ecological reference site may be used for a design basis of the restoration activity. The reference site should possess characteristics of an intact aquatic habitat or riparian area that exists in the region. The reference site shall represent the target habitat type of the proposed activity. A reference site may be required at the discretion of USACE.

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

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.

Pre-Construction Notification Required

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

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.

Pre-Construction Notification Required

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

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.

Pre-Construction Notification Required

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

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.

Pre-Construction Notification Required

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

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.

Pre-Construction Notification Required

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

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.

Pre-Construction Notification Required

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

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.

Pre-Construction Notification Required

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 SHORELINES¹ (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

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.

Pre-Construction Notification Required

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

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.

Pre-Construction Notification Required

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

≤500 linear feet of drainage ditch will be reshaped provided excavated material is deposited in an upland area.

Pre-Construction Notification Required

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)

Activities¹ 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

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.
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.
3. Structures in navigable waters of the U.S. provided impacts do not require a PCN and they are left in place ≤30 days.

Pre-Construction Notification Required

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, or (c) located in saltmarsh and tidal vegetated shallows.
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 situation¹, 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

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.

Pre-Construction Notification Required

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 applicable to the activity. NMFS has granted General Concurrence [50 CFR 600.920(g)] for all SV eligible activities. These activities do not require project specific EFH consultation.

b. For PCN required activities, the applicant is required to describe and identify potential adverse effects to EFH and should refer to NOAA Fisheries' EFH Mapper (<http://www.fisheries.noaa.gov/resource/map/essential-fish-habitat-mapper>) and Omnibus Essential Fish Habitat Amendment 2 Volume 2: EFH and HAPC Designation Alternatives and Environmental Impacts (https://www.habitat.noaa.gov/application/efhmapper/oa2_efh_hapc.pdf). If an activity is located within EFH, the PCN application must contain:

1. A description of the action located in EFH.
2. An analysis of the potential adverse effects of the action on EFH and the managed Species.
3. Conclusions regarding the effects of the action on EFH.
4. Proposed mitigation, if applicable (refer to the mitigation thresholds located in Section V).

c. Federal agencies shall follow their own procedures for complying with the EFH requirements of the Magnuson-Stevens Fishery Conservation and Management Act. For activities requiring a PCN, the applicant is responsible for furnishing documentation that demonstrates consultation for EFH has been completed.

d. For PCN activities, no work may commence until EFH consultation as required by the Magnuson-Stevens Act has been completed.

12. National Lands. Activities that impinge upon the value of any National Wildlife Refuge, National Forest, National Marine Sanctuary, National Historic Landmarks or any other area administered by the National Park Service, U. S. Fish and Wildlife Service (USFWS) or U.S. Forest Service (USFS) require a PCN or Individual Permit. Federal land managers seeking authorization for activities located in the above listed National Lands may proceed under SV, unless a PCN is required elsewhere in this document.

13. Wild and Scenic Rivers. The following activities in designated river or study river segments in the National Wild and Scenic River (WSR) System require a PCN unless the Federal agency with direct management responsibility for such river, in Massachusetts this is generally the National Park Service, has determined in writing to the proponent that the proposed work will not adversely affect the WSR designation or study status:

- a. Activities that occur in WSR segments, in and 0.25 miles up or downstream of WSR segments, or in tributaries within 0.25 miles of WSR segments;
- b. Activities that occur in wetlands within 0.25 miles of WSR segments;
- c. Activities that have the potential to alter free-flowing characteristics in WSR segments.

No GP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.

As of May 10, 2023, affected rivers in Massachusetts include: the Taunton River (40 miles), Sudbury River (16.6 miles), Assabet River (4.4 miles), Concord River (8 miles), Nashua River (27 miles), Squannacook River (16.3 miles), Nissitissit River (4.7 miles), and the Westfield River, including West Branch, Middle Branch, Gendale Brook, East Branch, Drowned Land Brook, Center Brook, Windsor Jambs Brook, Shaker Mill Brook, Depot Brook, Savery Brook, Watson Brook, Center Pond Brook (78.1 miles). The most up to date list of designated and study rivers and their descriptions may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service). Information on these rivers is also available at: <http://www.rivers.gov/>.

14. Historic Properties

- a. For all SV and PCN applications, permittees shall follow the guidance set forth in Appendix A, Guidance for NHPA Section 106 Compliance in Massachusetts.
- b. No undertaking authorized by these GPs shall cause effects¹ (defined in 36 CFR Part 800 and 33 CFR Part 325, Appendix C, and its Interim Guidance) on properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places (NRHP)², including previously unknown historic properties within the permit area, unless the USACE or another Federal action agency has satisfied the consultation requirements of Section 106 of the National Historic Preservation Act (Section 106). If another Federal agency is determined the lead federal agency for compliance with Section 106, applicant must obtain the appropriate documentation and provide this information to the USACE to demonstrate compliance with Section 106. The applicant shall not begin the activity until the USACE notifies them in writing that the documentation provided satisfies Section 106 requirements.

¹ Effect means the alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register of Historic Properties.

² See the NAE Regulatory website, National Register of Historic Places link here: <https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/>.

c. Many historic properties are not listed on the NRHP and may require identification and evaluation by qualified historic preservation and/or archaeological consultants. The State Historic Preservation Officer (SHPO), Massachusetts Board of Underwater Archaeological Resources (BUAR), local historical societies, certified local governments, general public, and NRHP may also be able to assist with locating information on:

- i. Previously identified historic properties; and
- ii. Areas with potential for the presence of historic properties.

d. **Discovery of Previously Unknown Remains and Artifacts:** If any previously unidentified human remains, cultural deposits, or artifacts are discovered while accomplishing the activity authorized by this permit, you must immediately notify the USACE of what you have found, and to the maximum extent practicable, cease work and avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The USACE will initiate the Federal, State and tribal coordination required to determine if the items or remains warrant a recovery effort and/or if the site is eligible for listing in the National Register of Historic Places.

e. **Section 110k:** Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C. § 306113) prevents the USACE from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106, has intentionally significantly adversely effected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the USACE, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the USACE is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties effected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or effects historic properties on tribal lands or effects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

f. **Underwater Archaeological Resources:** Under Massachusetts General Law Ch. 6, s.'s 179-180, and Ch. 91, s. 63, the BUAR has statutory jurisdiction within state waters and is the sole trustee of the Commonwealth's underwater heritage, charged with the responsibility of encouraging the discovery and reporting, as well as the preservation and protection, of underwater archaeological resources. Underwater archaeological resources located within the waters of the Commonwealth of Massachusetts are property of the Commonwealth, which holds title to these resources and retains regulatory authority over their use. Under Massachusetts General Law, no person, organization or corporation may "remove, displace, damage, or destroy" any underwater archaeological resources located within the Commonwealth's submerged lands except through consultation with the BUAR and in conformity with the permits it issues. <https://www.mass.gov/orgs/board-of-underwater-archaeological-resources>.

15. USACE Property and Federal Projects. (33 USC §408)

a. USACE projects and property can be found at: <https://www.nae.usace.army.mil/Missions/Civil-Works/>.

b. In addition to any authorization under these GPs, prospective permittee shall contact the USACE Real Estate Division (<https://www.nae.usace.army.mil/Missions/Real-Estate-Division/>) at (978) 318-8585 for work occurring on or potentially affecting USACE properties and/or USACE-controlled easements. Work may not commence on USACE properties and/or USACE-controlled easements until they have received any required USACE real estate documents evidencing site-specific permission to work.

c. Any proposed temporary or permanent occupation or alteration of a Federal project (including, but not limited to, a levee, dike, floodwall, channel, anchorage, breakwater, seawall, bulkhead, jetty, wharf, pier, or other work built or maintained but not necessarily owned by the United States),

is not eligible for SV and requires a PCN. This includes all proposed structures and work in, over, or under a USACE federal navigation project (FNP) or in the FNP's buffer zone. The buffer zone is an area that extends from the horizontal limits of the FNP to a distance of three times the FNP's authorized depth. The activity also requires review and approval by the USACE pursuant to 33 USC 408 (Section 408 Permission). The prospective permittee may reach out to the POCs located here: <https://www.nae.usace.army.mil/Missions/Section-408/>.

- d. Any structure or work constructed in a FNP or its buffer zone shall be subject to removal at the owner's expense prior to any future USACE dredging or the performance of periodic hydrographic surveys.
- e. Where a Section 408 permission is required, written verification for the PCN will not be issued prior to the decision on the Section 408 permission request.

16. Navigation

- a. No activity may cause more than a minimal adverse effect on navigation.
- b. Any safety lights and signals prescribed by the U.S. Coast Guard, must be installed, and maintained at the permittee's expense on authorized facilities in navigable waters of the U.S.
- c. There shall be no unreasonable interference with navigation by the existence or use of the activity authorized herein, and no attempt shall be made by the permittee to prevent the full and free use by the public of all navigable waters at or adjacent to the activity authorized herein.
- d. The permittee understands and agrees that if future U.S. operations require the removal, relocation, or other alteration of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from USACE, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the U.S. No claim shall be made against the U.S. on account of any such removal or alteration.

17. Permit/Authorization Letter On-Site. For PCNs, the permittee shall ensure that a copy of these GPs and the accompanying authorization letter are at the work site (and the project office) whenever work is being performed, and that all personnel with operational control of the site ensure that all appropriate personnel performing work are fully aware of its terms and conditions. The entire permit authorization shall be made a part of any and all contracts and sub-contracts for work that affects areas of USACE jurisdiction at the site of the work authorized by these GPs. This shall be achieved by including the entire permit authorization in the specifications for work. The term "entire permit authorization" means these GPs, including GCs and the authorization letter (including its drawings, plans, appendices, special conditions, and other attachments), and any permit modifications. If the authorization letter is issued after the construction specifications, but before receipt of bids or quotes, the entire permit authorization shall be included as an addendum to the specifications. If the authorization letter is issued after receipt of bids or quotes, the entire permit authorization shall be included in the contract or sub-contract as a change order. Although the permittee may assign various aspects of the work to different contractors or sub-contractors, all contractors and sub-contractors shall be obligated by contract to comply with all environmental protection provisions contained within the entire authorization letter, and no contract or sub-contract shall require or allow unauthorized work in areas of USACE jurisdiction. For SVs, the permittee shall ensure that a complete and signed copy of the SVN is present on site during construction and is made available for review at any time by USACE and other Federal, State, & Local regulatory agencies. A complete and signed copy of the SVN must be submitted to USACE Regulatory within 30 days of initiating construction of the authorized activity, unless stated otherwise in the applicable GP.

18. Storage of Seasonal Structures. Coastal structures such as pier sections, floats, etc., that

are removed from the waterway for a portion of the year (often referred to as seasonal structures) shall be stored in an upland location, located above MHW and not in tidal wetlands. These seasonal structures may be stored on the fixed, pile-supported portion of the structure that is seaward of MHW. This is intended to prevent structures from being stored on the marsh substrate and the substrate seaward of MHW.

19. Pile Driving and Pile Removal in Navigable Waters.

- a. Derelict, degraded or abandoned piles and sheet piles in navigable waters of the U.S., except for those inside existing work footprints for piers, must be completely removed, cut and/or driven to 3 feet below the substrate to prevent interference with navigation, and existing creosote piles that are affected by project activities shall be completely removed if practicable. In areas of fine-grained substrates, piles must be removed by the direct, vibratory or clamshell pull method¹ to minimize sedimentation and turbidity impacts and prevent interference with navigation from cut piles. Removed piles shall be disposed of in an upland location landward of MHW or OHW and not in wetlands, tidal wetlands or mudflats.
- b. A PCN is required for the installation or removal of structures with jetting techniques.
- c. A PCN is required for the installation of >12 inch-diameter piles of any material type or steel piles of any size in tidal waters, unless they are installed in the dry. If piles are not installed in the dry:
 - i. Impact pile driving shall commence with an initial set of three strikes by the hammer at 40% energy, followed by a one-minute wait period, then two subsequent 3-strike sets at 40% energy, with one minute waiting periods, before initiating continuous impact driving.
 - ii. Vibratory pile driving shall be initiated for 15 seconds at reduced energy followed by a one-minute waiting period. This sequence of 15 seconds of reduced energy driving, one-minute waiting period shall be repeated two more times, followed immediately by pile-driving at full rate and energy.
 - iii. In addition to using a soft start at the beginning of the workday for pile driving as described in 19c(i-ii), a soft start must also be used at any time following a cessation of pile driving for a period of 30 minutes or longer.
- d. Bubble curtains may be used to reduce sound pressure levels during vibratory or impact hammer pile driving.

20. Time-of-Year (TOY) Restrictions. Activities that include in-water work must comply with the TOY Restrictions below to be SV eligible, otherwise a PCN is required. PCN submittals shall contain written justification for deviation from the TOY Restrictions. The term “in-water work” does not include conditions where the work site is “in-the-dry” (e.g., intertidal areas exposed at low tide). The term “in-the-dry” includes work contained within a cofferdam so long as the cofferdam is installed and subsequently removed outside the TOY Restriction. The TOY restrictions stated in Appendix B of the MA DMF Technical Report TR-47² can apply instead for activities in tidal waters if (1) TOYs are provided for a specific waterbody where the activity is proposed and (2) the TOYs are less restrictive than below. The activity must also not require a PCN elsewhere in this document to be SV eligible.

¹ Direct Pull: Each piling is wrapped with a choker cable or chain that is attached at the top to a crane. The crane then pulls the piling directly upward, removing the piling from the sediment. Vibratory Pull: The vibratory hammer is a large mechanical device (5-16 tons) that is suspended from a crane by a cable. The vibrating hammer loosens the piling while the crane pulls up. Clamshell Pull: This can remove intact, broken or damaged pilings. The clamshell bucket is a hinged steel apparatus that operates like a set of steel jaws. The bucket is lowered from a crane and the jaws grasp the piling stub as the crane pulls up. The size of the clamshell bucket is minimized to reduce turbidity during piling removal.

² The MA DMF Technical Report TR-47: <https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/>

TOY Restriction (No work)**Non-tidal Waters**

Defer to TR-47

Tidal Waters

January 15 – November 15

Alternate work windows proposed under a PCN will generally be coordinated with the USFWS and NMFS. Resulting written verifications may include species-specific work allowed windows.

21. Heavy Equipment in Wetlands. Operating heavy equipment (drill rigs, fixed cranes, etc.) within wetlands shall be minimized, and such equipment shall not be stored, maintained, or repaired in wetlands, to the maximum extent practicable. Where construction requires heavy equipment operation in wetlands, the equipment shall:

- i. Have low ground pressure (typically ≤ 3 psi);
- ii. Be placed on swamp/construction/timber mats (herein referred to as “construction mats” or “mats”) that are adequate to support the equipment in such a way as to minimize disturbance of wetland soil and vegetation. See GC 22 for information on the placement of construction mats; or
- iii. Be operated on adequately dry or frozen wetlands such that shear pressure does not cause subsidence of the wetlands immediately beneath the equipment and upheaval of adjacent wetlands. Construction mats are to be placed in the wetland from the upland or from equipment positioned on mats if working within a wetland. Dragging construction mats into position is prohibited. Other support structures that are capable of safely supporting equipment may be used with written USACE authorization.

22. Temporary Fill, Work & Construction Mats.

a. Construction mats in non-tidal waters: Temporary construction mats shall be in place ≤ 1 year and for one growing season or less to be SV eligible. A PCN is required if construction mats are in place > 1 year or for more than one growing season. Construction mats can be placed in an area of any size in non-tidal waters. The activity may occur in segments to ensure the requirements for SV above are met, otherwise a PCN is required.

b. Construction mats in tidal waters: Temporary construction mats placed in an area $< 5,000$ SF in tidal waters are SV eligible, provided those mats are in place ≤ 6 months. Temporary construction mats placed in an area $\geq 5,000$ SF or in place > 6 months in tidal waters require a PCN.

c. Management of construction mats: At a minimum, construction mats shall be managed in accordance with the following construction mat best management practices (BMPs):

1. Mats shall be in good condition to ensure proper installation, use, and removal.
2. As feasible, mats shall be placed in a location that will minimize the amount of mats needed for the wetland crossing(s).
3. Inspect mats prior to their re-use and remove any plant debris. Mats are to be thoroughly cleaned before re-use to prevent the spread of invasive plant species.
4. Impacts to wetland areas shall be minimized during installation, use, and removal of the mats.
5. Adequate erosion & sediment controls shall be installed at approaches to mats to promote a smooth transition to, and minimize sediment tracking onto, the mats.
6. In most cases, mats should be placed along the travel area so that the individual boards are resting perpendicular to the direction of traffic. No gaps should exist between mats. Place mats far enough on either side of the resource area to rest on firm ground.

d. A PCN is required for temporary fills in place > 2 years. All temporary fills and disturbed soils shall be stabilized to prevent the material from eroding into waters of the U.S. where it is not authorized. Work shall include phased or staged development to ensure only areas under active development are exposed and to allow for stabilization practices as soon as practicable. Temporary fill must be placed in a manner that will prevent it from being eroded by expected high flows.

- e. Activities that require unconfined temporary fill and are authorized for discharge into waters of the U.S. shall consist of material that minimizes effects to water quality.
- f. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable when temporary structures, work, and discharges of dredged or fill material, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Materials shall be placed in a location and manner that does not adversely impact surface or subsurface water flow into or out of the wetland. Temporary fill authorized for discharge into wetlands shall be placed on geotextile fabric or other appropriate material laid on the pre-construction wetland grade where practicable to minimize impacts and to facilitate restoration to the original grade. Construction mats are excluded from this requirement.
- g. Construction debris and deteriorated materials shall not be located in waters of the U.S.
- h. Temporary fills, construction mats, and corduroy roads shall be entirely removed as soon as they are no longer needed to construct the authorized activity and the disturbed areas be restored to pre-construction contours and conditions.
- i. Construction equipment, such as temporary barges in tidal waters, shall provide clearance above the substrate to avoid grounding onto the substrate during all tides.

23. Restoration of Wetland Areas.

- a. Upon completion of construction, all disturbed wetland areas shall be stabilized with a wetland seed mix or plant plugs containing only plant species native to New England, and be appropriate for site conditions, including salinity and frequency of inundation, and shall not contain any species listed in the "Invasive and Other Unacceptable Plant Species" Appendix K of the New England District "Compensatory Mitigation Standard Operating Procedures" found at <https://www.nae.usace.army.mil/Missions/Regulatory/Mitigation.aspx>.
- b. The introduction or spread of invasive plant species in disturbed areas shall be prevented and controlled. Equipment shall be thoroughly cleaned before and after project construction to prevent the spread of invasive species. This includes, but is not limited to, tire treads and construction mats.
- c. In areas of authorized temporary disturbance, if trees are cut in USACE jurisdiction, they shall be cut at or above ground level and not uprooted in order to prevent disruption of any kind to the wetland soil structure and to allow stump sprouts to revegetate the work area, unless otherwise authorized.
- d. Wetland areas where permanent disturbance is not authorized shall be restored to their original condition and elevation, which under no circumstances shall be higher than the pre-construction elevation. Original condition means careful protection and/or removal of existing soil and vegetation, and replacement back to the original location such that the original soil layering and vegetation schemes are approximately the same, unless otherwise authorized.

24. Bank Stabilization.

- a. Projects involving construction or reconstruction/maintenance of bank stabilization within USACE jurisdiction shall be designed to minimize environmental effects, effects to neighboring properties, scour, conversion of natural shoreline to hard armoring, etc. to the maximum extent practicable.
- b. Projects involving the construction of new bank stabilization within USACE jurisdiction shall use bioengineering techniques and natural materials in the project design to the maximum extent practicable. Use of hard structures shall be eliminated or minimized unless the prospective permittee can demonstrate that use of bioengineering techniques is not practicable due to site conditions.
- c. Where possible, bank stabilization projects shall optimize the natural function of the shoreline, including self-sustaining stability to attenuate flood flows, fishery, wildlife habitat and water quality protection, while protecting upland infrastructure from storm events that can cause erosion as well as impacts to public and private property.
- d. No material shall be placed in excess of the minimum needed for erosion protection.
- e. No material shall be placed in a manner that will be eroded by normal or expected high flows (properly anchored native trees and treetops may be used in low energy areas).

- f. Native plants appropriate for current site conditions, including salinity, must be used for bioengineering or vegetative bank stabilization.
- g. The activity must be properly maintained, which may require repairing it after severe storms or erosion events.

25. Soil Erosion and Sediment Controls.

- a. Appropriate soil erosion and sediment controls¹ (hereinafter referred to as “controls”) must be installed prior to earth disturbance and maintained in effective operating condition during construction. Biodegradable wildlife friendly erosion controls should be used whenever practicable to minimize effects to water quality.
- b. Activities in streams (rivers, streams, brooks, etc.) and tidal waters that are capable of producing sedimentation or turbidity should be done during periods of low-flow or no-flow, when the stream or tide is waterward of the work area. Controls may also be used to obtain dry work conditions (e.g., coffer dam, turbidity curtain). The prospective permittee must demonstrate in the project plans where the controls are proposed and how these controls would avoid and/or minimize turbidity or sedimentation.
- c. A PCN is required for controls that encroach: i) >25% of the stream width measured from OHW in non-tidal diadromous streams from March 15 to June 30; or ii) >25% of the waterway width measured from MHW in tidal waters from Feb. 1 to June 30, or >50% of the waterway width measured from MHW in tidal waters from July 1 to Jan. 14. This is to protect upstream fish passage. Proponents must also maintain downstream fish passage throughout the project.
- d. No dewatering shall occur with direct discharge to waters or wetlands. Excess water in isolated work areas shall be pumped or directed to a sedimentation basin, tank or other dewatering structures in an upland area adequately separated from waters or wetlands. Suspended solids shall be removed prior to discharge back into waters or wetlands from these dewatering structures. All discharge points back into waters and wetlands shall use appropriate energy dissipaters and erosion and sedimentation control BMPs.
- e. Temporary controls shall be removed upon completion of work, but not until all exposed soil and other fills, as well as any work waterward of OHW or the HTL, are permanently stabilized at the earliest practicable date. Sediment and debris collected by these devices shall be removed and placed at an upland location in a manner that will prevent its later erosion into a waterway or wetland. Controls may be left in place if they are biodegradable and flows and aquatic life movements are not disrupted.

26. Aquatic Life Movements and Management of Water Flows.

- a. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity’s primary purpose is to impound water. All permanent and temporary crossings of waterbodies and wetlands shall be:
 - i. Suitably spanned, bridged, culverted, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species; and
 - ii. Properly aligned and constructed to prevent bank erosion or streambed scour both adjacent to and inside the crossing.

¹ Appropriate soil erosion, sediment and turbidity controls include cofferdams, bypass pumping around barriers immediately up and downstream of the work footprint (i.e., dam and pump), installation of sediment control barriers (i.e., silt fence, vegetated filter strips, geotextile silt fences, filter tubes, erosion control mixes, hay bales or other devices) downhill of all exposed areas, stream fords, retention of existing vegetated buffers, application of temporary mulching during construction, phased construction, and permanent seeding and stabilization, etc.

- b. To avoid adverse impacts on aquatic organisms, the low flow channel/thalweg shall remain unobstructed during periods of low flow, except when necessary to perform the authorized work.
- c. For work in tidal waters, in-stream controls (e.g., cofferdams) should be installed in such a way as to not obstruct fish passage.
- d. Riprap and other stream bed materials shall be installed in a manner that avoids organism entrapment in rock voids or water displaced to subterranean flow with crushed stone and riprap.
- e. To the maximum extent practicable, the preconstruction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings, except as provided below. The activity must be constructed to withstand expected high flows. The activity shall not restrict or impede the passage of normal or high flows unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

27. Spawning, Breeding, and Migratory Areas.

- a. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized under these GPs.
- b. Activities in waters of the U.S. that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.
- c. The applicant is responsible for obtaining any “take” permits required under the USFWS’s regulations governing compliance with the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act. The applicant should contact the appropriate local office of the USFWS to determine if such “take” permits are required for a particular activity.
- d. Information on spawning habitat for species managed under the Magnuson-Stevens Fishery Conservation and Management Act (i.e., EFH for spawning adults) can be obtained from NAE Regulatory website, Essential Fish Habitat section, at: <https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/>.
- e. Information regarding diadromous fish habitat can be obtained from the following DMF website at: <https://www.mass.gov/info-details/massgis-data-diadromous-fish>.

28. Vernal Pools.

- a. A PCN is required if a discharge of dredged or fill material is proposed within a vernal pool depression that is also a water of the U.S.
- b. Vernal pools must be identified on the plans that show aquatic resource delineations.
- c. Adverse impacts to vernal pools shall be avoided & minimized to the maximum extent practicable.

29. Invasive Species.

- a. The introduction, spread or the increased risk of invasion of invasive plant or animal species on the project site, into new or disturbed areas, or areas adjacent to the project site caused by the site work shall be avoided. Construction mats shall be thoroughly cleaned before reuse to avoid spread of invasive species.
- b. Unless otherwise directed by USACE, all applications for PCN non-tidal projects proposing fill in USACE jurisdiction shall include an Invasive Species Control Plan. Additional information can be found at: <https://www.nae.usace.army.mil/Missions/Regulatory/Invasive-Species/>, <https://www.nae.usace.army.mil/Missions/Regulatory/Mitigation/>.

30. Fills Within 100-Year Floodplains. The activity shall comply with applicable Federal Emergency Management Agency (FEMA) approved, Massachusetts Emergency Management

Agency (MEMA) approved and/or local floodplain management requirements. Applicants should contact FEMA and/or MEMA regarding floodplain management requirements.

31. Stream Work and Crossings & Wetland Crossings.

- a. When feasible, all temporary and permanent crossings of waterbodies and wetlands (hereinafter referred to as “crossings”) shall conform to the “Massachusetts River and Stream Crossing Standards” located at: <https://www.mass.gov/doc/massachusetts-river-and-stream-crossing-standards/download> or <https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/>. Projects that do not conform to these guidelines shall be reviewed under PCN or IP procedures.
- b. Crossings shall be suitably culverted, bridged, or otherwise designed to withstand and to prevent the restriction of high flows, to maintain existing low flows, maintain water quality, and not obstruct the movement of aquatic life indigenous to the waterbody beyond the duration of construction.
- c. Crossings shall be installed in such a manner as to preserve hydraulic capacity and flow, sediment transport, and organism passage at its present level, between the wetlands on either side of the road. The applicant shall take necessary measures to correct any wetland damage resulting from deficiencies in hydraulic capacity, sediment transport and organism passage.
- d. Stream crossings shall utilize a natural mixed grain-size streambed material composition that matches upstream and downstream substrates to create a stable streambed. Substrate should function appropriately during normal and high flows without washing out. If natural streambed material is not utilized, a PCN is required.
- e. Activities involving open trench excavation in flowing waters require a PCN. Work should not occur in flowing waters (requires using management techniques such as temporary flume pipes, culverts, cofferdams, etc.). Normal flows should be maintained within the stream boundary’s confines when practicable. Projects utilizing these management techniques must meet all applicable terms and conditions of the GP, including the GCs in Section IV.

32. Utility Line Installation and Removal

- a. Subsurface utility lines must be installed at a sufficient depth to avoid damage from anchors, dredging, etc., and to prevent exposure from erosion and stream adjustment.
- b. When utility lines are installed via horizontal directional drilling, a frac-out contingency plan shall be present on site for the duration of construction. As necessary, the applicant shall immediately contain, control, recover, and remove drilling fluids released into the environment.
- c. Abandoned or inactive utility lines must be removed and faulty lines (e.g., leaking hazardous substances, petroleum products, etc.) must be removed or repaired. A written verification from the USACE is required if they are to remain in place, e.g., to protect sensitive areas or ensure safety.
- d. Utility lines shall not adversely alter existing hydrology, and trenches cannot be constructed or backfilled in such a manner as to drain waters of the U.S. (e.g., backfilling with extensive gravel layers, creating a French drain effect). In wetland areas, structures such as ditch plugs, cut-off walls, clay blocks, bentonite, or other suitable material shall be used within utility trenches to ensure that the trench through which the utility line is installed does not drain waters of the U.S. including wetlands.
- e. Stockpiling of tree debris, to the extent where it has the effect of fill material, shall not occur in waters of the U.S. Tree debris shall be removed from waters of the U.S. and placed in uplands without causing additional disturbance to aquatic resources. Failure to meet this condition could change the bottom elevation of the wetland and be considered a discharge of fill material, and depending on the area of alteration, may require a PCN or IP.

33. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

34. Coral Reefs. Impacts to coral reefs are not authorized under these GPs. Coral reefs consist of the skeletal deposit, usually of calcareous or siliceous materials, produced by the vital activities of anthozoan polyps or other invertebrate organisms present in growing portions of the reef.

35. Blasting. Blasting in waters of the U.S. associated with work such as dredging, trenching, pile installation, etc. is not authorized under these GPs.

36. Inspections. The permittee shall allow USACE to make periodic inspections at any time deemed necessary to ensure that the work is being or has been performed in accordance with the terms and conditions of this permit. To facilitate these inspections, for activities requiring a PCN, the permittee shall complete and return the Certificate of Compliance when it is provided with a PCN verification letter. For SV-eligible activities, the permittee shall complete and submit the SVN to USACE within 30 days of initiating project construction, at which point, USACE may opt to inspect the activity to verify compliance with the terms and conditions of the GP. Post-construction engineering drawings may be required by USACE for completed work. This includes post-dredging survey drawings for any dredging work.

37. Maintenance. The permittee shall maintain the activity authorized by these GPs in good condition and in conformance with the terms and conditions of this permit. Some maintenance activities may not be subject to federal regulation under Section 404 in accordance with 33 CFR 323.4(a)(2). This condition is not applicable to maintenance of dredging projects. Prospective permittees should contact USACE to inquire about maintenance of dredging projects, and its eligibility under these GPs. Maintenance dredging is subject to the review thresholds in GP #7 as well as any conditions included in a written USACE authorization. Maintenance dredging includes only those areas and depths previously authorized and dredged.

38. Property Rights. Per 33 CFR 320.4(g)(6), these GPs do not convey any property rights, either in real estate or material, or any exclusive privileges, nor do they authorize any injury to property or invasion of rights or any infringement of Federal, State, or local laws or regulations.

39. Transfer of GP Verifications. When the work authorized by these GPs is still in existence at the time the property is transferred, the terms and conditions of these GPs, including any special conditions, will continue to be binding on the entity or individual who received the GP authorizations, as well as the new owner(s) of the property. If the permittee sells the property associated with a GP authorization, the applicant may transfer the GP authorization to the new owner by submitting a letter to USACE to validate the transfer. A copy of the GP authorization letter must be attached to the letter, and the letter must include the following statement: "The terms and conditions of these general permits, including any special conditions, will continue to be binding on the new owner(s) of the property." This letter shall be signed by both the seller and new property owner(s).

40. Modification, Suspension, and Revocation. These GPs and any individual authorization issued thereof may be either modified, suspended, or revoked in whole or in part pursuant to the policies and procedures of 33 CFR 325.7; and any such action shall not be the basis for any claim for damages against the U.S.

41. Special Conditions. The USACE may impose other special conditions on a project authorized pursuant to these GPs that are determined necessary to minimize adverse navigational and/or environmental effects or based on any other factor of the public interest. Failure to comply with all conditions of the authorization, including special conditions, constitutes a permit violation and may subject the applicant to criminal, civil, or administrative penalties or restoration.

42. False or Incomplete Information. If USACE makes a determination regarding the eligibility of a project under these GPs, and subsequently discovers that it has relied on false, incomplete, or inaccurate information provided by the applicant, the authorization will not be valid, and the U.S. Government may institute appropriate legal proceedings.

43. Abandonment. If the permittee decides to abandon the activity authorized under these GPs, unless such abandonment is merely the transfer of property to a third party, he/she/they may be required to restore the area to the satisfaction of USACE.

44. Enforcement cases. These GPs do not apply to any existing or proposed activity in USACE jurisdiction associated with an on-going USACE or EPA enforcement action, until such time as the enforcement action is resolved or USACE or EPA determines that the activity may proceed independently without compromising the enforcement action.

45. Previously Authorized Activities.

- a. Completed projects that received prior authorization from USACE (SV or PCN), shall remain authorized in accordance with the original terms and conditions of those authorizations, including their terms, GCs, and any special conditions provided in a written verification.
- b. Activities authorized pursuant to 33 CFR 330.3 (activities occurring before certain dates) are not affected by these GPs.

46. Duration of Authorization.

These GPs expire on June 1, 2028. Activities authorized under these GPs will remain authorized until the GPs expire, unless discretionary authority has been exercised on a case-by-case basis to modify, suspend, or revoke the authorization in accordance with 33 CFR 325.2(e)(2). Activities authorized under GPs 1-25 that have either commenced (i.e., are under construction) or are under contract to commence in reliance upon this authorization will have until June 1, 2029 to complete the work. If requested by USACE, the permittee shall furnish documentation that demonstrates the project was under construction or under contract to commence by June 1, 2028. If work is not completed before June 1, 2029, the permittee must contact USACE. The USACE may issue a new authorization provided the project meets the terms and conditions of the MA GPs in effect at the time. Activities completed under the SV or PCN authorizations of these GPs will continue to be authorized after their expiration date.

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 loss¹ of the resource area types listed below. Activities² 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

<u>Massachusetts Department of Environmental Protection (MassDEP)</u>	
<u>DEP Division of Wetlands & Waterways</u>	100 Cambridge Street, Suite 900 Boston, Massachusetts 02114 (617) 292-5695
<u>Northeast Region</u>	150 Presidential Way, Suite 300 Woburn, Massachusetts 01801 (978) 694-3200
<u>Southeast Region</u>	20 Riverside Drive, Route 105 Lakeville, Massachusetts 02347 (508) 946-2800
<u>Central Region</u>	8 New Bond Street Worcester, Massachusetts 01606 (508) 792-7650
<u>Western Region</u>	436 Dwight Street Springfield, Massachusetts 01103 (413) 784-1100

<u>Massachusetts Office of Coastal Zone Management (CZM)</u>	
Emails may be sent to: czm@mass.gov	
<u>MA Office of Coastal Zone Management</u>	100 Cambridge Street, Suite 900 Boston, Massachusetts 02114 (617) 626-1200
<u>North Shore Region</u>	2 State Fish Pier Gloucester, Massachusetts 01930 (978) 281-3972
<u>South Shore Region</u>	175 Edward Foster Road Scituate, Massachusetts 02066
<u>Cape Cod and Islands Region</u>	3195 Main Street, P.O. Box 220 Barnstable, MA 02630
<u>South Coastal Region</u>	81-B County Road, Suite E Mattapoisett, MA 02739

<u>Massachusetts Historical Commission (MHC)</u>	
Office Location:	220 Morrissey Boulevard Boston, Massachusetts 02125 (617) 727-8470

<u>Massachusetts Board of Underwater Archaeological Resources (BUAR)</u>	
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, dockminiums, 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	Cross Rip Shoals, Nantucket	Gloucester Harbor and
Aunt Lydia's Cove	Sound	Annisquam River
Beverly Harbor	Cuttyhunk Harbor	Green Harbor
Boston Harbor	Dorchester Bay and Neponset	Hingham Harbor
Buttermilk Bay Channel	River	Hyannis Harbor
Canapitsit Channel	Duxbury Harbor	Ipswich River
Cape Cod Canal	Edgartown Harbor	Island End River (Chelsea, MA)
Chatham Harbor	Essex River	Kingston Harbor
Cohasset Harbor	Fall River Harbor	Lagoon Pond
	Falmouth Harbor	Little Harbor Woods Hole

Lynn Harbor	Plymouth Harbor	Taunton River
Malden River	Pollock Rip Shoals, Nantucket	Vineyard Haven Harbor
Menemsha Creek	Sound	Wareham Harbor
Merrimack River	Provincetown Harbor	Wellfleet Harbor
Mystic River	Red Brook Harbor	Westport River and Harbor
Nantucket Harbor of Refuge	Rockport Harbor	Weymouth Back River
New Bedford and Fairhaven Harbor	Salem Harbor	Weymouth Fore and Town Rivers
Newburyport Harbor	Sandy Bay Harbor of Refuge	Winthrop Harbor
Oak Bluffs Harbor	Saugus River	Woods Hole Channel
Pigeon Cove Harbor	Scituate Harbor	
	Sesuit Harbor	

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 coarse 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 (*Ruppia 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 <u>excluding</u> 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 <u>excluding</u> 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 Form¹⁸, 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, it is 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 Disclosure This information may be shared with other federal, state, and local government agencies during the application review process. Submission 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
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(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME First - Middle - Last - Company - E-mail Address -	8. AUTHORIZED AGENT'S NAME AND TITLE (<i>agent is not required</i>) First - Middle - Last - Company - E-mail Address -
6. APPLICANT'S ADDRESS: Address- City - State - Zip - Country -	9. AGENT'S ADDRESS: Address- City - State - Zip - Country -
7. APPLICANT'S PHONE NOs. with AREA CODE a. Residence b. Business c. Fax d. Mobile	10. AGENT'S PHONE NOs. with AREA CODE 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 (<i>see instructions</i>)	
13. NAME OF WATERBODY, IF KNOWN (<i>if applicable</i>)	14. PROPOSED ACTIVITY STREET ADDRESS (<i>if applicable</i>) City: State: Zip:
15. LOCATION OF PROPOSED ACTIVITY (<i>see instructions</i>) 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? <input type="checkbox"/> Yes <input type="checkbox"/> 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. <i>(see instructions)</i>			
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. <i>(see instructions)</i>			
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? <input type="checkbox"/> Yes <input type="checkbox"/> 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. <i>(see instructions)</i>			
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 its 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
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APPLICANT AND AGENT INFORMATION

4. APPLICANT'S NAME First - Middle - Last - Company - E-mail Address -	7. AGENT'S ADDRESS: First - Middle - Last - Company - E-mail Address -
5. APPLICANT'S ADDRESS: Address- City - State - Zip - Country -	8. AGENT'S ADDRESS: Address- City - State - Zip - Country -
6. APPLICANT'S PHONE NOS. w/AREA CODE a. Residence b. Business c. Fax	9. AGENTS PHONE NOS. w/AREA CODE 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) Latitude: °N Longitude: °W	14. PROJECT STREET ADDRESS (if applicable) 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) <table border="1" style="width:100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="width:25%;">Area (square feet)</th> <th style="width:25%;">Length (linear feet)</th> <th style="width:25%;">Volume (cubic yards)</th> <th style="width:25%;">Duration</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	Area (square feet)	Length (linear feet)	Volume (cubic yards)	Duration																				
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
- b. Massachusetts BUAR
- c. Tribal Historic Preservation Officers
- d. Endangered Species Act - NOAA
- e. Endangered Species Act - USFWS
- f. Northern Long Eared Bat (ESA)
- g. Essential Fish Habitat
- h. Wild & Scenic Rivers
- i. 401 Water Quality Certification 401

401 WQC/OOC File Number: _____ OOC issued: _____ 401 issued: _____

- j. Section 408 Permission
- k. Coastal Zone
- l. Construction Mats
- m. Time of Year Restrictions
- n. Vernal Pools
- o. Sediment & Erosion Controls
- p. Stream/Wetland Crossings

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.
- 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 _____ 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
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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
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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 Rangelwide 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 impacts²⁰ 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 $\geq 1-2$ feet for box culverts and pipe arches or $\geq 1-2$ 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 Mitigation²¹ for impacts to Waters of the U.S.? (See Section V in the 2023 Massachusetts General Permit)
42. If the project requires mitigation, does the selected compensatory mitigation option (i.e., In-Lieu Fee, permittee-responsible mitigation) deviate from the order of the options presented in §332.3(b)(2)-(6)? If so, please explain why. <https://www.ecfr.gov/current/title-33/chapter-II/part-332/section-332.3>
43. For any compensatory mitigation that involves preservation, the applicant must use a site protection instrument to preserve the parcel in perpetuity. (Conservation Easement, Deed Restriction, etc.) <https://www.mass.gov/service-details/conservation-restriction-review-program>.

SECTION 10: HISTORIC PROPERTIES & NOTIFICATIONS TO SHPO, THPOs, BUAR

44. Notify the SHPO, Massachusetts Historical Commission, of the Project via Certified Mail and include proof of delivery or receipt in the application package (See Appendix A).
45. As applicable, notify the THPOs, Narragansett Indian Tribe, Wampanoag Tribe of Gay Head (Aquinnah), and Mashpee Wampanoag Tribe, of the Project via email OR mail and include proof of delivery or receipt in the application package (See Appendix A).
46. As applicable, notify the BUAR via email (*strongly preferred*) OR mail and include proof of delivery or receipt in the application package (See Appendix A).
47. Include responses to this notification in the permit application.
48. As applicable, information on historic properties (Tribal and Archaeological) within the project area should be provided in the permit application.

SECTION 11: ENDANGERED SPECIES & ESSENTIAL FISH HABITAT

49. Provide a USFWS Information for Planning and Consultation (IPaC) Official Species List from <https://ecos.fws.gov/ipac> and the email of the individual who generated the list (see GC 10 of the 2023 Massachusetts General Permit for more information).
50. Provide a species list from the NMFS Section 7 Endangered Species Act mapper at <https://noaa.maps.arcgis.com/apps/webappviewer/index.html>.
51. Provide a species list from the NMFS Essential Fish Habitat Mapper at https://www.habitat.noaa.gov/apps/efhmapper/?page=page_3.

²¹ Your mitigation proposal must be consistent with the December 29, 2020 Compensatory Mitigation Standard Operating Procedures at <https://www.nae.usace.army.mil/Portals/74/docs/regulatory/Mitigation/Compensatory-Mitigation-SOP-2020.pdf> and 2008 Mitigation Rule.

52. If the project will generate turbidity, describe the extent of turbidity and if erosion controls will be used to contain turbidity. If turbidity controls are not operationally feasible, explain the basis for your conclusion and identify any other measures that you will implement to minimize resuspension of sediment.
53. Identify the substrate type and any aquatic resources that will be affected by the proposed action. (SAV, salt marsh, sand, silt/clay, rocky/hard bottom)
54. For projects which will include the installation of pilings/sheet-piles, identify the substrate at the project site (sand, cobble, silt/mud/clay), the installation method (vibratory hammer, impact hammer, combination) and indicate whether the following “soft start” procedures at beginning of the workday and after a 30-minute period of rest will be deployed:
- a. Vibratory Pile Installation: pile driving will be initiated for 15 seconds at reduced energy followed by a one-minute waiting period. This sequence of 15 seconds of reduced energy driving, one-minute waiting period will be repeated two additional times, followed immediately by pile-driving at full rate and energy.
 - b. Impact Pile Installation: pile driving will commence with an initial set of three strikes by the hammer at 40% energy, followed by a one-minute wait period, then two subsequent 3-strike sets at 40% energy, with one-minute waiting periods, before initiating continuous impact driving.
55. If the project involves dredging, describe any dredge history, number of dredge events to be covered by the permit, erosion/sediment controls, dredge type, intake structures (mesh screen size), dredged material disposal site.
56. For project activities associated with structures, identify the number, type (drill barge, work boat, tugboat, etc.), and size of any temporary vessels that will be used. Specify measures that will be implemented to ensure vessels are not berthed in shallow water or will “ground out” at low tide.
57. For aquaculture projects identify whether any component of the gear is seasonal (will be removed annually) or will be in place year-round. If gear will be present year-round and will be variably managed (e.g., floating in summer, bottom in winter) identify month/date for such configurations.
58. For aquaculture projects identify whether the project will involve use of an existing vessel or new vessel. Identify the length for all work vessels and identify the distance round trip from vessel berthing location and aquaculture area.
59. For project activities associated with docking structures (either commercial, industrial, or recreational) identify the number, type (motorized/non-motorized, jet-ski, sailboat, kayak, canoe, other that will be berthed there and the sizes of each.
60. Information required for Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act:
- a. Results of an eelgrass survey completed per the INSERT.
 - b. Essential Fish Habitat Assessment to determine project-related impacts to essential fish habitat, using guidance developed by the National Marine Fisheries Service.
61. A document containing the following information (requirements of 50 CFR §600.920(e)(3)):
- a. Description of proposed action.
 - b. Analysis of potential adverse effects on essential fish habitat.
 - c. Conclusions regarding the effects of the action on essential fish habitat.
 - d. If applicable, proposed mitigation.
 - e. Analysis of alternatives to the proposed action.
 - f. Other:

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DOCUMENT A00836

FHWY APPENDIX B

PROGRAMMATIC EFH

VERIFICATION FORM

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Appendix B. Verification Form

Federal Highway Administration (FHWA) or the applicable state Department of Transportation (state DOT) will email a signed version of this completed form, together with any project plans, maps, supporting analyses, etc., to NOAA’s National Marine Fisheries Service (NMFS), Greater Atlantic Regional Fisheries Office, Habitat Conservation Division (GARFO HCD) at NMFS.GAR.EFH.Consultation@noaa.gov, upon obtaining sufficient information. FHWA/state DOT must receive a response from GARFO HCD or wait at least 30 calendar days to proceed under the programmatic EFH consultation. FHWA will compile the information from the completed Verification Forms for the purposes of tracking and annual monitoring. FHWA/state DOT must include the completed Verification Form as part of a permit application with any other federal agency, such as U.S. Army Corps of Engineers or U.S. Coast Guard, to confirm that EFH consultation is complete.

Project Activity Type

1. Bridge repair, demolition, and replacement
2. Culvert repair and replacement
3. Docks, piers, and waterway access projects
4. Slope stabilization

Transportation Project Information

Project Name:		Project Number:	
Project Sponsor:		Contact Person:	
Email:		Phone:	
Latitude (e.g., 42.625884):			
Longitude (e.g., -70.646114):			
City/Town, State:		Waterway:	
Project Description and Purpose:			
Anticipated Project Start Date:		Anticipated Project End Date:	
Total area of impact to EFH (in acres): Include locus map with area of impact.			
Area of impacts to sensitive habitats (in square feet):	No impacts to submerged aquatic vegetation (SAV) or oyster reefs allowed.		
Natural rocky habitat (e.g., bedrock, boulders, cobble, and/or gravel):			
Salt marsh:			
Areas containing shellfish (excluding oyster reefs):			
Intertidal mudflats:			
Area of impact to diadromous fish habitat:			

Potential Stressors Caused by the Activity (Check all that apply based on activity type)

- Underwater Noise
- Impingement/Entrainment and Entanglement
- Water Quality/Turbidity
- Habitat Alteration
- Vessel Traffic

EFH Conservation Recommendation Checklist

FHWA/state DOT will indicate how the project addresses each of the programmatic EFH conservation recommendations, by selecting the appropriate check box and providing a brief explanation where necessary. If the project is not in compliance with a particular programmatic EFH conservation recommendation and FHWA/state DOT has still determined that the effects of a project on EFH are not substantial and the project is otherwise consistent with the FHWA programmatic EFH consultation, provide justification below under the conservation recommendations that is not included.

Underwater Noise

- Check here if the EFH conservation recommendations in this section are not applicable because the project will not create underwater noise as a stressor. Proceed to the next stressor.

- 1. Use a soft start each day of pile driving, after a break of 30 minutes or more, and if any increase in pile installation or removal intensity is required. Build up power slowly from a low energy start-up over a 20-minute period to warn fish to leave the vicinity. This buildup shall occur in uniform stages to provide a constant increase in output.
 - Not met:
 - Not applicable, provide reasoning:
 - Project is unable to accommodate, provide justification:

 - Met:
 - Shown on project plans
 - Included in description, other terms and conditions

- 2. Noise-generating work conducted in diadromous streams within the spring diadromous fish TOY restriction listed in Appendix D must be isolated behind sealed, dewatered cofferdams, to avoid impeding fish migration.
 - Not met:
 - Not applicable, provide reasoning:
 - Project is unable to accommodate, provide justification:

 - Met:
 - Shown on project plans
 - Included in description, other terms and conditions

Impingement/Entrainment and Entanglement

Check here if the EFH conservation recommendations in this section are not applicable because the project will not lead to impingement/entrainment and entanglement as a stressor. Proceed to the next stressor.

3. Turbidity control measures must be properly secured and monitored to ensure aquatic species are not entangled or trapped in the project area.

Not met:

Not applicable, provide reasoning:

Project is unable to accommodate, provide justification:

Met:

Shown on project plans

Included in description, other terms and conditions

4. Temporary intakes related to construction must be equipped with mesh size screening and approach velocity appropriate for the species and life stage anticipated. Per the NMFS Anadromous Salmonid Passage Facility Design manual, screen openings must not exceed 3/32 inch and screen approach velocity must be less than .25 feet per second (ft/sec).

- In New York, New Jersey, Delaware, Maryland, and Pennsylvania, 2 millimeter (mm) wedge wire screens must be used with a maximum intake velocity of 0.5 feet per second (ft/sec).

- In Virginia, a 1 mm wedge wire with a maximum intake velocity of 0.25 ft/sec).

Not met:

Not applicable, provide reasoning:

Project is unable to accommodate, provide justification:

Met:

Shown on project plans

Included in description, other terms and conditions

5. No new permanent surface water withdrawal, water intakes, or water diversions.

Not met:

Not applicable, provide reasoning:

Project is unable to accommodate, provide justification:

Met:

Shown on project plans

Included in description, other terms and conditions

Water Quality/Turbidity

Check here if the EFH conservation recommendations in this section are not applicable because the project will not negatively affect water quality or create turbidity. Proceed to the next stressor.

6. Install soil erosion, sediment, and turbidity controls and maintain them in effective operating condition during construction. Remove controls upon completion of work, after all exposed soil and other fills, as well as any work waterward of ordinary high water or the high tide line, are permanently stabilized.

Not met:

Not applicable, provide reasoning:

Project is unable to accommodate, provide justification:

Met:

Shown on project plans

Included in description, other terms and conditions

7. Install and remove any in-water soil erosion, sediment, and turbidity controls outside the TOY restrictions in Appendix D.

Not met:

Not applicable, provide reasoning:

Project is unable to accommodate, provide justification:

Met:

Shown on project plans

Included in description, other terms and conditions

8. Work that produces greater than minimal turbidity or sedimentation in diadromous streams or EFH must not be done during the TOY restriction(s) in Appendix D.

Not met:

Not applicable, provide reasoning:

Project is unable to accommodate, provide justification:

Met:

Shown on project plans

Included in description, other terms and conditions

9. Prevent construction debris and sediment from entering aquatic areas and remove all construction debris and excess/deteriorated materials and dispose of in an upland area.

Not met:

Not applicable, provide reasoning:

Project is unable to accommodate, provide justification:

Met:

Shown on project plans

Included in description, other terms and conditions

10. Dredged and/or excavated materials, including any fine-grained materials removed from inside culverts, shall either be moved to an upland location and stabilized to prevent reentry into the waterway or disposed of at a previously approved disposal site.

Not met:

Not applicable, provide reasoning:

Project is unable to accommodate, provide justification:

Met:

Shown on project plans

Included in description, other terms and conditions

11. Completely remove and do not reuse existing creosote piles that are affected by project activities and do not install new creosote piles.

Not met:

Not applicable, provide reasoning:

Project is unable to accommodate, provide justification:

Met:

Shown on project plans

Included in description, other terms and conditions

12. Coat any chemically or pressure treated piles (CCA, ACQ, etc.) with an impact-resistant, biologically inert substance. Coat the piles at the point of manufacture, not on site.

Not met:

Not applicable, provide reasoning:

Project is unable to accommodate, provide justification:

Met:

Shown on project plans

Included in description, other terms and conditions

13. Derelict, degraded, or abandoned piles, except for those inside of existing work footprints for piers, must be completely removed or cut and driven three feet below the surface.

Not met:

Not applicable, provide reasoning:

Project is unable to accommodate, provide justification:

Met:

Shown on project plans

Included in description, other terms and conditions

14. Ensure that raw concrete does not contact the water; wet pours of concrete must be confined within sealed forms until the concrete is set or pre-cast members installed.

Not met:

- Not applicable, provide reasoning:
- Project is unable to accommodate, provide justification:

- Met:
 - Shown on project plans
 - Included in description, other terms and conditions

Habitat Alteration

- Check here if the EFH conservation recommendations in this section are not applicable because the project will not cause habitat alteration. Proceed to the next stressor.

15. Remove temporary and/or obsolete structures and fills in their entirety. Use geotextile barriers prior to placement of temporary fill material to ensure complete removal.

- Not met:
 - Not applicable, provide reasoning:
 - Project is unable to accommodate, provide justification:

- Met:
 - Shown on project plans
 - Included in description, other terms and conditions

16. Install a riprap bedding layer (such as a gravel filter blanket or geotextile) prior to riprap placement to prevent underlying soils from washing through the riprap during high water.

- Not met:
 - Not applicable, provide reasoning:
 - Project is unable to accommodate, provide justification:

- Met:
 - Shown on project plans
 - Included in description, other terms and conditions

17. Return areas impacted by temporary activities, fills, or structures to pre-construction or better condition, including elevations and substrate, and replant with native species.

- Not met:
 - Not applicable, provide reasoning:
 - Project is unable to accommodate, provide justification:

- Met:
 - Shown on project plans
 - Included in description, other terms and conditions

18. Temporary monitoring devices shall be removed and the substrate restored to preconstruction elevations no later than 24 months from initial installation, or upon completion of data acquisition.

- Not met:
 - Not applicable, provide reasoning:
 - Project is unable to accommodate, provide justification:
 - Met:
 - Shown on project plans
 - Included in description, other terms and conditions
19. Pipelines and cables that cross a waterway must not rest on the substrate. They may be attached to an overwater structure or be buried to allow an area to return to preexisting conditions.
- Not met:
 - Not applicable, provide reasoning:
 - Project is unable to accommodate, provide justification:
 - Met:
 - Shown on project plans
 - Included in description, other terms and conditions
20. Any fill, including planting media and placement of any seed shellfish, spatted-shell, or cultch must be free of all non-native or invasive species and/or contaminants. An invasive species control plan must be part of the project if the transportation agency cannot guarantee this.
- Not met:
 - Not applicable, provide reasoning:
 - Project is unable to accommodate, provide justification:
 - Met:
 - Shown on project plans
 - Included in description, other terms and conditions
21. Prevent dislodging of coir logs, mats, or native oyster shell.
- Not met:
 - Not applicable, provide reasoning:
 - Project is unable to accommodate, provide justification:
 - Met:
 - Shown on project plans
 - Included in description, other terms and conditions
22. Incorporate measures to increase the ambient light transmission under overwater structures.
- Not met:
 - Not applicable, provide reasoning:

- Project is unable to accommodate, provide justification:
- Met:
 - Shown on project plans
 - Included in description, other terms and conditions
- 23. The lowermost part of floating docks must be ≥ 18 inches above the substrate at all times, to avoid grounding and propeller scour and to provide adequate circulation and flushing.
- Not met:
 - Not applicable, provide reasoning:
 - Project is unable to accommodate, provide justification:
- Met:
 - Shown on project plans
 - Included in description, other terms and conditions
- 24. Conduct and submit pre-dredge benthic biological surveys to determine benthic communities present and conduct post-dredge surveys to ensure targeted depths have been reached and to determine benthic recovery.
- Not met:
 - Not applicable, provide reasoning:
 - Project is unable to accommodate, provide justification:
- Met:
 - Shown on project plans
 - Included in description, other terms and conditions
- 25. Grain size of any sediment used as part of habitat restoration must be the same size or larger than the native material at the site.
- Not met:
 - Not applicable, provide reasoning:
 - Project is unable to accommodate, provide justification:
- Met:
 - Shown on project plans
 - Included in description, other terms and conditions
- 26. If rock relocation is necessary, move them to an area of equivalent depth and substrate.
- Not met:
 - Not applicable, provide reasoning:
 - Project is unable to accommodate, provide justification:
- Met:
 - Shown on project plans

Included in description, other terms and conditions

27. Incorporate natural habitats (e.g., living shorelines) and soft approaches (e.g., vegetative plantings and large woody debris) into the stabilization design in addition to or instead of hardened structures. See NOAA's Guidance for Considering the Use of Living Shorelines for more information.

Not met:

Not applicable, provide reasoning:

Project is unable to accommodate, provide justification:

Met:

Shown on project plans

Included in description, other terms and conditions

Sensitive Habitats (SAS, natural rocky habitats, intertidal areas, and areas containing shellfish)

28. Locate all temporary structures, construction, access, and dewatering activities outside of sensitive habitats.

Not met:

Not applicable, provide reasoning:

Project is unable to accommodate, provide justification:

Met:

Shown on project plans

Included in description, other terms and conditions

29. Prior to construction, identify and mark in the field any SAV at the project site. An SAV survey is required for activities adjacent to mapped or known SAV if a survey has not been conducted in three years.

Not met:

Not applicable, provide reasoning:

Project is unable to accommodate, provide justification:

Met:

Shown on project plans

Included in description, other terms and conditions

30. Provide compensatory mitigation for all permanent and temporary impacts to sensitive habitats. This could include a contribution to an existing in-lieu fee program. When impacts are unavoidable:

- conduct a biological survey to map the coverage of the sensitive habitats;
- develop a compensatory mitigation plan for biological resource losses, including success criteria, monitoring plan, and long-term maintenance plan;

- submit the results of the biological survey and the mitigation plan to GARFO HCD for review; and
- undertake compensatory mitigation prior to or concurrent with any impacts to sensitive habitat.

Not met:

- Not applicable, provide reasoning:
- Project is unable to accommodate, provide justification:

Met:

- Shown on project plans
- Included in description, other terms and conditions

31. Where construction requires heavy equipment operation in or across wetlands or mudflats, the equipment shall have low ground pressure (typically ≤ 3 pounds per square inch); be placed on construction timber mats that are adequate to support the equipment; or be operated on dry or frozen wetlands such that shear pressure does not cause subsidence of the wetlands immediately beneath equipment and upheaval of adjacent wetlands. Construction mats must not be dragged into position.

Not met:

- Not applicable, provide reasoning:
- Project is unable to accommodate, provide justification:

Met:

- Shown on project plans
- Included in description, other terms and conditions

32. Habitat restoration or mitigation projects must not result in a permanent conversion or loss of sensitive habitats.

Not met:

- Not applicable, provide reasoning:
- Project is unable to accommodate, provide justification:

Met:

- Shown on project plans
- Included in description, other terms and conditions

33. No dredging shall occur within:

- intertidal areas;
- 100 feet of SAV; or
- 25 feet of SAS, natural rocky habitats, or areas containing shellfish.

Not met:

- Not applicable, provide reasoning:
- Project is unable to accommodate, provide justification:

- Met:
 - Shown on project plans
 - Included in description, other terms and conditions

34. The height of docks and piers must be at least four feet above salt marsh substrate and must be greater than or equal to the width of the deck, to minimize shading impacts. The height must be measured from the marsh substrate to the bottom of the longitudinal support beam.

- Not met:
 - Not applicable, provide reasoning:
 - Project is unable to accommodate, provide justification:

- Met:
 - Shown on project plans
 - Included in description, other terms and conditions

35. Outlets must not discharge directly into sensitive habitats.

- Not met:
 - Not applicable, provide reasoning:
 - Project is unable to accommodate, provide justification:

- Met:
 - Shown on project plans
 - Included in description, other terms and conditions

Fish Passage/Migration Habitat

36. Design replacement crossings to provide diadromous and resident fish and aquatic organism passage. Structures must:

- provide sufficient water depth and maintain suitable water velocities during migration periods; and
- maintain or replicate natural stream channel and flow conditions.

- Not met:
 - Not applicable, provide reasoning:
 - Project is unable to accommodate, provide justification:

- Met:
 - Shown on project plans
 - Included in description, other terms and conditions

37. Incorporate climate change projections into the project design. Use the Intergovernmental Panel on Climate Change (IPCC) Representative Concentration Pathways (RCP) 8.5/high greenhouse gas emission scenario and RCP 4.5/intermediate greenhouse gas emission scenario (IPCC 2014) and the global mean and regional sea level rise projections for

intermediate-high and extreme scenarios referenced in Sweet *et al.* (2017) in design calculations for replacement structures.

Not met:

Not applicable, provide reasoning:

Project is unable to accommodate, provide justification:

Met:

Shown on project plans

Included in description, other terms and conditions

38. Replaced or upgraded crossings must be “in kind” or go up in order of preference set out in NMFS’ Anadromous Salmonid Passage Facility Design:

- Road abandonment and reclamation or road realignment to avoid crossing the stream.
- Bridge or stream simulation spanning the stream flood plain, providing long-term dynamic channel stability, retention of existing spawning areas, maintenance of benthic invertebrate production, and minimized risk of failure. If a stream crossing is proposed in a segment of stream channel that includes a salmonid spawning area, only full-span stream simulation designs are acceptable.
- Embedded pipe culvert, bottomless arch designs or non-floodplain spanning stream simulation.
- Hydraulic design method, associated with more traditional culvert design approaches- limited to low stream gradients (0 to 1%) or for retrofits.
- Culvert designed with an external fishway (including roughened channels) for steeper slopes.
- Baffled culvert or internal weirs- to be used only for when other alternatives are infeasible.

Not met:

Not applicable, provide reasoning:

Project is unable to accommodate, provide justification:

Met:

Shown on project plans

Included in description, other terms and conditions

39. For activities that require soil erosion, sediment, and turbidity controls

- in non-tidal streams containing diadromous fish:
 - i. They must not encroach >25% of the stream width measured from ordinary high water during the diadromous TOY restriction; and
 - ii. They must maintain safe, timely, and effective downstream fish passage throughout the project.
- in tidal waters:
 - i. They must not encroach >50% of a tidal stream’s width as measured from mean high water.

- Not met:
 - Not applicable, provide reasoning:
 - Project is unable to accommodate, provide justification:
- Met:
 - Shown on project plans
 - Included in description, other terms and conditions

Vessel Traffic

- Check here if the EFH conservation recommendations in this section are not applicable because the project will not use vessels.

40. Project vessels shall be operated in adequate water depths to avoid propeller scour and grounding at all tides. Shallow draft vessels will be used in shallow areas to maximize the navigational clearance between the vessel and the bottom substrate. Spuds may be used to elevate the vessel.

- Not met:
 - Not applicable, provide reasoning:
 - Project is unable to accommodate, provide justification:
- Met:
 - Shown on project plans
 - Included in description, other terms and conditions

41. Project vessels shall not be moored in or use spuds in SAV or be located in such a way that the vessel could shade SAV.

- Not met:
 - Not applicable, provide reasoning:
 - Project is unable to accommodate, provide justification:
- Met:
 - Shown on project plans
 - Included in description, other terms and conditions

NEW CLAUSE

Other Justification for Use of the Programmatic EFH Consultation

If the project is outside of the covered activities in the programmatic EFH consultation (i.e., is one of the actions described in the Excluded Activities list noted below) and FHWA/state DOT believes the effects are not any more significant and that the project should be eligible for programmatic EFH consultation, provide additional justification in the space below. FHWA/state DOT must provide appropriate rationale and GARFO HCD must review and approve it. The automatic concurrence period does not apply for transportation activities in this section that fall outside of the programmatic EFH consultation as described.

- The project is not listed as an excluded activity.

The project is listed as an excluded activity.

Indicate the activity number from the list below (1 through 21):

Provide additional justification on why the activity should be eligible:

Activities that Require Individual Consultation

1. Any work (including anchoring) that results in impacts to:
 - existing or historically mapped submerged aquatic vegetation (SAV) beds or areas within 100 feet of existing or historically mapped SAV beds;
 - $\geq 1,000$ square feet of salt marsh, areas containing shellfish, and intertidal areas;
 - ≥ 100 square feet of natural rocky habitat (e.g., bedrock, boulders, cobble, and/or gravel);
2. Stream channelization.
3. Any temporary structures, construction access, and dewatering activities proposed to be in place for \geq two years.
4. Slip-lining or invert lining existing culverts.
5. Any permanent structures longer than 150 linear feet over salt marsh.
6. Construction of new or expansion of existing boating facilities¹⁷ or ferry terminals.
7. Independent pedestrian trails or bridges located directly adjacent to an existing crossing.
8. New or improvement dredging.
9. Any nearshore disposal or beach nourishment activities.
10. New fill/stabilization placed below mean low water in excess of 200 linear feet (lf).
11. Replacement or maintenance of:
 - sloped stabilization structures > 200 lf and waterward of the existing toe, or
 - vertical structures > 18 inches waterward of the existing face and > 200 lf.
12. In-water utility lines ≥ 100 lf installed by trench excavation, or ≥ 200 lf installed by jetplow, fluidization or other direct burial methods.
13. Thin layer deposition as a part of wetland restoration.
14. Placement of any seed shellfish, spatting-shell, or cultch in SAS.
15. Any exploratory trenching or other similar survey activities.
16. Airgun seismic activities.
17. Any new permanent surface water withdrawal, water intakes, or water diversions.
18. Any blasting or use of explosives that affects EFH or diadromous species habitats.
19. Construction of new bridges or culverts, where no crossing existed previously.
20. Any new or replacement causeways (raised roadways across waters or wetlands).
21. Any in-water work on dams, tide gates, or breakwaters.

FHWA’s Determination of Effects to Essential Fish Habitat and Signature

After reviewing the programmatic EFH conservation recommendations in Appendix A, FHWA/state DOT will select the appropriate determination:

- The activity is in compliance with all programmatic EFH conservation recommendations in the FHWA programmatic EFH consultation and adverse effects to EFH will not be substantial.
- The activity is not in compliance with all of the programmatic EFH conservation recommendations in the FHWA programmatic EFH consultation, however, the justification below demonstrates that the adverse effects to EFH are not substantial. This does not apply to EFH conservation recommendations that are not applicable to the project.

Use the electronic fillable fields to include the name and signature of the FHWA/state DOT preparing this Verification Form, along with the date.

FHWA/state DOT Name

Signature

Date

By providing your determination and signature, you are certifying that to the best of your knowledge the information provided in this form is accurate and based upon the best available scientific information. This form must be filled out and signed by FHWA or state DOT staff, as an officially designated non-federal representative. Do not lock the form when saving, as HCD will be unable to sign and finalize. Email this Verification Form as a fillable PDF to NMFS.GAR.EFH.Consultation@noaa.gov.

GARFO HCD Determination and Signature (To be filled out by NMFS)

After receiving the Verification Form, GARFO HCD will contact FHWA/state DOT with any concerns. HCD will email the completed form back to the FHWA/state DOT for record keeping.

- GARFO HCD concurs with FHWA’s determination that the proposed project is consistent with the programmatic EFH consultation (without the need for justification).
- GARFO HCD concurs with FHWA’s determination that the proposed project is consistent with the programmatic EFH consultation, with justification described above.
- GARFO HCD does not concur with FHWA’s determination that the project is consistent with the programmatic EFH consultation. FHWA/state DOT must conduct additional coordination with GARFO HCD and a separate individual EFH consultation may be required.

GARFO HCD Name

Kaitlyn Shaw
Signature

02/15/2024
Date



M:\work\MassDOT_PlymptonBridge\Constraints Dec2023.mxd 12/20/2023 3:57:30 PM

Base map data supplied by MassGIS.
Date of photo: 2021



- Approximate Area of Work
- Parcel Line
- Delineated Wetlands
- Top of Inland Bank to Pond
- Top of Inland Bank to Stream
- Bordering Vegetated Wetland (BWV)

Environmental Constraints

Winnetuxet Road
Bridge Over Winnetuxet River
(Bridge No. P-14-001(Cen))
Plympton, MA





Base map data supplied by MassGIS.
Date of photo: 2021


- Approximate Area of Work
- Parcel Line

Approximate Area of Work

Winnetuxet Road
Bridge Over Winnetuxet River
(Bridge No. P-14-001(Cen))
Plympton, MA




AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 1	Date: 4/20/21		
Description: Southern approach to the Winnetuxet Road bridge			
AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 2	Date: 4/20/21		
Description: View from the Northern approach to the Winnetuxet Road bridge. The Winnetuxet Pond is on the right side of the bridge. The Winnetuxet River is split by water that flows over the spillway and under the bridge and a culvert just north of the project site.			


AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 3	Date: 4/20/21		
Description: Close up view of the Winnetuxet Road bridge. Deteriorated, non-standard side rail guards leading up to the bridge.			


AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 4	Date: 4/20/21		
Description: Side view of the Winnetuxet Bridge from the Northern entrance point. Winnetuxet River runs underneath from a controlled spillway on the east side of the bridge.			


AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 5	Date: 4/20/21		
Description: Side view of the two-span timber bridge superstructure that will be replaced.			
AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 6	Date: 4/20/21		
Description: Underside view of the bridge from the western portion of the Winnetuxet river. The river spillway is visible at the back as well as the substructures that support the bridge.			

AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 7	Date: 4/20/21		
Description: Piers and stream bed under bridge			

AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 8	Date: 4/20/21		
Description: Secondary underside view of the river spillway and substructures supporting the bridge above.			

AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 9	Date: 4/20/21		
Description: Underside view of the substructure wooden beams.			

AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 10	Date: 4/20/21		
Description: Underside view of the abutment that will remain to support the new bridge superstructure			

AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 11	Date: 4/20/21		
Description: Underside view of the bridge from the eastern portion of the Winnetuxet river spillway.			

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION HIGHWAY DIVISION

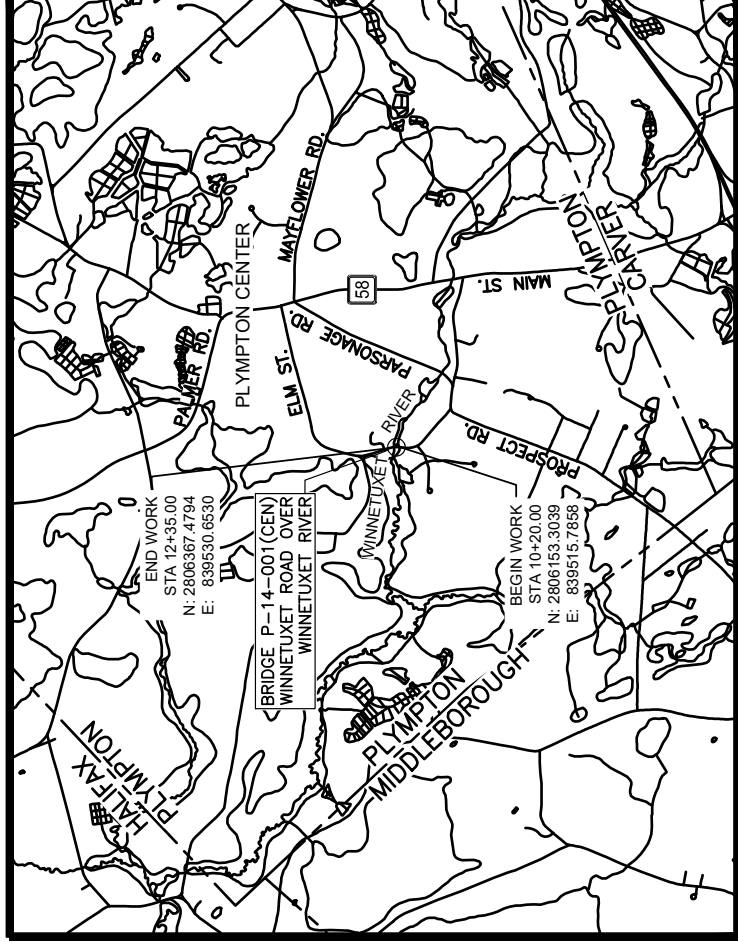
PLAN AND PROFILE OF
WINNETUXET ROAD
(BRIDGE NO. P-14-001(CEN))

IN THE TOWN OF
PLYMPTON
PLYMOUTH COUNTY

FEDERAL AID PROJECT NO.

PERMITTING SUBMITTAL

SHEET NO.	DESCRIPTION
1	TITLE SHEET & INDEX
2	LEGEND, ABBREVIATIONS, & GENERAL NOTES
3	TYPICAL SECTIONS
4	EXISTING CONDITIONS PLAN
5	CONSTRUCTION PLAN
6	PROFILE
7	CURB TIE & GRADING PLAN
8	TEMPORARY TRAFFIC CONTROL PLAN
9	LONGITUDINAL SECTION



LOCUS
SCALE: 1" = 4000'

LENGTH OF PROJECT = 215.00 FEET = 0.041 MILES

PLYMPTON WINNETUXET ROAD	
STATE	SHEET NO.
MA	1
FED. AID PROJ. NO.	TOTAL SHEETS
-	9
PROJECT FILE NO.	
609435	

TITLE SHEET & INDEX

THESE PLANS ARE SUPPLEMENTED BY THE OCTOBER 2017 CONSTRUCTION STANDARD DETAILS, THE 2015 OVERHEAD SIGNAL STRUCTURE AND FOUNDATION STANDARD DRAWINGS, MASSDOT TRAFFIC MANAGEMENT PLANS AND DETAIL DRAWINGS, THE 1990 STANDARD DRAWINGS FOR SIGNS AND SUPPORTS, THE 1988 STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING, AND THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK.

DESIGN DESIGNATION - WINNETUXET ROAD

DESIGN SPEED	15 MPH
ADT (2022)	357
ADT (2029)	383
K	10.6%
D	51%
T (PEAK HOUR)	21%
T (AVERAGE DAY)	14%
DHV	38
DDHV	20
FUNCTIONAL CLASSIFICATION	RURAL LOCAL ROAD

DATE	DESCRIPTION	REV #
12/29/2023	PERMITTING	0



TRANSPORTATION
AECOM
AECOM TECHNICAL SERVICES, Inc.
250 Apollo Drive
Chelmsford, Massachusetts 01824
T 978.905.2100 F 978.905.2101
www.aecom.com

APPROVED
CHIEF ENGINEER
DATE

GENERAL NOTES:

- LOCATION OF ALL EXISTING UTILITIES AND SUBSURFACE STRUCTURES ARE FROM SURVEY AND RECORDS OF THE TOWN OR PRIVATE UTILITY COMPANIES AND ARE CONSIDERED APPROXIMATE BOTH AS TO SIZE AND LOCATION, AND ARE INDICATED ON THESE DRAWINGS TO GIVE BIDDERS A GENERAL IDEA OF EXISTING CONDITIONS TO BE INVESTIGATED BY THE BIDDER. IT IS UNDERSTOOD AND AGREED THAT EACH BIDDER WILL NOT RELY UPON THESE DRAWINGS FOR SUCH INFORMATION, BUT THAT EACH BIDDER SHALL MAKE EXAMINATIONS IN THE FIELD AND BY VARIOUS AVAILABLE RECORDS. CONTRACTOR SHALL CONSULT UTILITY CORPORATIONS AND INDIVIDUALS AS TO THE LOCATION OF ALL SUBSURFACE STRUCTURES.
- AREAS OUTSIDE THE LIMITS OF WORK DISTURBED BY THE CONTRACTOR DURING CONSTRUCTION SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AT THE EXPENSE OF THE CONTRACTOR.
- APPROXIMATE LIMITS OF WORK HAVE BEEN SET ON THE PLANS, HOWEVER, THESE MAY BE EXTENDED OR REDUCED AT THE DISCRETION OF THE ENGINEER TO MEET WITH FIELD CONDITIONS.
- THE CONTRACTOR SHALL FIELD CHECK ALL DIMENSIONS, AND ELEVATIONS BEFORE PROCEEDING WITH NEW WORK. TEST PITS TO VERIFY POTENTIAL CONFLICTS SHALL BE PAID FOR UNDER ITEM 141.1. ANY DISCREPANCIES OR CONFLICTS SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
- THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE NECESSITY OF MAKING HIS OWN INVESTIGATION IN ORDER TO ASSURE THAT NO DAMAGE TO EXISTING DAM, SPILLWAY, UTILITIES, DRAINAGE STRUCTURES, PIPE LINES, ETC. WILL OCCUR. THE CONTRACTOR SHALL NOTIFY MASSACHUSETTS DIG SAFE AND PROCURE A DIG SAFE NUMBER FOR EACH LOCATION PRIOR TO DISTURBING EXISTING GROUND IN ANY WAY. TELEPHONE NUMBER OF THE DIG SAFE CENTER IS 811.
- BEFORE CONSTRUCTION, ALL UTILITIES, PUBLIC AND PRIVATE, MUST BE NOTIFIED. SEE MASSACHUSETTS GENERAL LAWS, CHAPTER 82 SECTION 40, CALL "DIG SAFE" 811.
- DIG SAFE SHALL BE NOTIFIED AT 811 AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION FOR THE PROPOSED PROJECT WORK. ALSO CONTACT ANY TOWNSHIP / COUNTY AND MASSDOT WITHIN WHOSE JURISDICTION THE WORK IS TO BE PERFORMED.
- CONTRACTOR SHALL PROVIDE EROSION CONTROL PROTECTION, COMPOST FILTER TUBES AND/OR SEDIMENTATION FENCE TO CONTAIN ANY SEDIMENT RUNOFF FROM THE WORK DONE. EROSION CONTROL BARRIERS ARE TO BE PLACED AS SHOWN ON THESE PLANS AND AS DIRECTED BY THE ENGINEER.
- THE PROPOSED INVERTS SHOWN ARE SHOWN FOR BIDDING PURPOSES ONLY. ACTUAL INVERT ELEVATIONS WILL BE CONFIRMED IN THE FIELD. ONLY AFTER THE CONTRACTOR VERIFIES ELEVATIONS FOR THE CONSTRUCTIBILITY OF THE DRAINAGE SYSTEM SHALL ANY STRUCTURES BE ORDERED.

SURVEY NOTES:

- THE EXISTING CONDITIONS SHOWN ON THIS BASE MAP ARE THE RESULT OF AN ON-THE-GROUND INSTRUMENT SURVEY PERFORMED BETWEEN APRIL 3, 2021 AND JUNE 4, 2021 BY GREEN INTERNATIONAL AFFILIATES, INC. (GREEN). SEE FIELD NOTES IN MASSDOT DISTRICT 5 FIELD BOOK 43867.
- HORIZONTAL AND VERTICAL CONTROL WAS ESTABLISHED BY MASSDOT SURVEY, IN FIELD BOOK 41673, PAGE 62, ON FEBRUARY 25, 2021. HORIZONTAL DATUM IS BASED ON THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM NAD83 (2011). 2010.00 EPOCH VERTICAL DATUM IS NAVD88 (COMPUTED USING GEOID18B) USING THE FOLLOWING CONTROL POINTS:

POINT	GRID NORTHING	GRID EASTING	ELEVATION	GRID SCALE FACTOR
4385	2769770.639	832717.389	96.726	0.999983426160024
COTTON	2779543.072	787087.455	33.145	0.999983654102246
MAMI	2924486.123	778315.405	34.409	0.99998609503679
MAPL	2803825.101	886046.597	131.281	0.999973103682542
MAVR	2840282.863	709358.522	214.967	0.99996262279741
- MASSDOT ESTABLISHED THE FOLLOWING POINTS FOR THIS PROJECT:

POINT	GRID NORTHING	GRID EASTING	ELEVATION	COMBINED GROUND TO GRID SCALE FACTOR
2702	2806398.155	839547.760	46.968	0.99997653493756
2703	2806747.130	839465.983	41.565	0.999976719562219

THE UNIT OF MEASUREMENTS IS US FEET. THE PROJECT COMBINED SCALE FACTOR IS 0.999976627249887. BEARINGS ARE ROTATED 15°33'10" CCW FROM COUNTY DECREE NO. 1029.
- THE RIGHT OF WAY LINES SHOWN ON THIS BASE MAP ARE THE DIRECT RESULT OF AN INSTRUMENT SURVEY PERFORMED ON THE GROUND BY GREEN AND FROM PLANS AND DEEDS OF RECORD. PRIVATE PROPERTY LINES HAVE NOT BEEN SURVEYED. THEY ARE COMPILED FROM RECORD DEED AND PLAN INFORMATION AND SHOULD BE CONSIDERED APPROXIMATE.
- WETLANDS WERE DELINEATED BY AECOM ON 04/19/2021 IN ACCORDANCE WITH THE MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION AND FIELD LOCATED BY GREEN ON 04/21/2021.

GENERAL SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
JB	JB	JERSEY BARRIER
CB	CB	CATCH BASIN
FP	FP	CATCH BASIN CURB INLET
GP	GP	FLAG POLE
MB	MB	GAS PUMP
	MB	MAIL BOX
	□	POST SQUARE
	□	POST CIRCULAR
	⊙	WELL
	⊙	WELL
	EHH	ELECTRIC HANDHOLE
	○	FENCE GATE POST
	GG	GAS GATE
	BHL #	BORING HOLE
	MW #	MONITORING WELL
	TP #	TEST PIT
	⊕	HYDRANT
	*	LIGHT POLE
	CO.BD.	COUNTY BOUND
	⊙	GPS POINT
	⊙	CABLE MANHOLE
	⊙	DRAINAGE MANHOLE
	⊙	ELECTRIC MANHOLE
	⊙	GAS MANHOLE
	⊙	MISC MANHOLE
	⊙	SEWER MANHOLE
	⊙	TELEPHONE MANHOLE
	⊙	WATER MANHOLE
	MHB	MASSACHUSETTS HIGHWAY BOUND
	MON	MONUMENT
	SB	STONE BOUND
	TB	TOWN OR CITY BOUND
	→ TPL or GUY	TRAVERSE OR TRIANGULATION STATION
	→ TPL or GUY	TROLLEY POLE OR GUY POLE
	HTP	TRANSMISSION POLE
	UFB	UTILITY POLE W/ FIREBOX
	UPDL	UTILITY POLE WITH DOUBLE LIGHT
	ULT	UTILITY POLE W/ 1 LIGHT
	UPL	UTILITY POLE
	○	BUSH
	○	TREE
	○	STUMP
	WG	SWAMP / MARSH
	PM	WATER GATE
	PM	PARKING METER
		OVERHEAD CABLEWIRE
		CURBING
		CONTOURS (ON-THE-GROUND SURVEY DATA)
		CONTOURS (PHOTOGRAMMETRIC DATA)
		UNDERGROUND DRAIN PIPE (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND ELECTRIC DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND GAS MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND SEWER MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND TELEPHONE DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND WATER MAIN (DOUBLE LINE 24 INCH AND OVER)
		BALANCED STONE WALL
		GUARD RAIL - STEEL POSTS
		GUARD RAIL - WOOD POSTS
		GUARD RAIL - DOUBLE FACE - STEEL POSTS
		GUARD RAIL - DOUBLE FACE - WOOD POSTS
		CHAIN LINK OR METAL FENCE
		WOOD FENCE
		SEDIMENT CONTROL BARRIER
		TREE LINE
		SAWCUT LINE
		TOP OR BOTTOM OF SLOPE
		LIMIT OF EDGE OF PAVEMENT OR COLD PLANE AND OVERLAY
		BANK OF RIVER OR STREAM
		BORDER OF WETLAND
		100 FT WETLAND BUFFER
		200 FT RIVERFRONT BUFFER
		STATE HIGHWAY LAYOUT
		TOWN OR CITY LAYOUT
		COUNTY LAYOUT
		RAILROAD SIDELINE
		TOWN OR CITY BOUNDARY LINE
		PROPERTY LINE OR APPROXIMATE PROPERTY LINE
		EASEMENT

ABBREVIATIONS

GENERAL	
AADT	ANNUAL AVERAGE DAILY TRAFFIC
ABAN	ABANDON
ADJ	ADJUST
APPROX.	APPROXIMATE
A.C.	ASPHALT CONCRETE
ACOM PIPE	ASPHALT COATED CORRUGATED METAL PIPE
BIT.	BITUMINOUS
BC	BOTTOM OF CURB
BD.	BOUND
BL	BASELINE
BLDG	BUILDING
BM	BENCHMARK
BO	BY OTHERS
BOS	BOTTOM OF SLOPE
BR.	BRIDGE
CB	CATCH BASIN
CBCI	CATCH BASIN WITH CURB INLET
CC	CEMENT CONCRETE
CCM	CEMENT CONCRETE MASONRY
CEM	CEMENT
CI	CURB INLET
CIP	CAST IRON PIPE
CLF	CHAIN LINK FENCE
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CSP	CORRUGATED STEEL PIPE
CO.	COUNTY
CONC	CONCRETE
CONJ	CONTINUOUS
CONST	CONSTRUCTION
CR GR	CROWN GRADE
DH	DESIGN HOURLY VOLUME
DI	DROP INLET
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DW	STEADY DON'T WALK - PORTLAND ORANGE
DWY	DRIVEWAY
ELEV (or EL.)	ELEVATION
EMB	EMBANKMENT
EOP	EDGE OF PAVEMENT
EXIST (or EX)	EXISTING
EXC	EXCAVATION
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
FDN.	FOUNDATION
FLDSTN	FIELDSTONE
GAR	GARAGE
GD	GROUND
GG	GAS GATE
GI	GUTTER INLET
GIP	GALVANIZED IRON PIPE
GRAN	GRANITE
GRAV	GRAVEL
GRD	GRADE
HDW	HEADWALL
HMA	HOT MIX ASPHALT
HOR	HORIZONTAL
HYD	HYDRANT
INV	INVERT
JCT	JUNCTION
L	LENGTH OF CURVE
LB	LEACH BASIN
LP	LIGHT POLE
LT	LEFT
MAX	MAXIMUM
MB	MAILBOX
MH	MANHOLE
MHB	MASSACHUSETTS HIGHWAY BOUND
MIN	MINIMUM
NIC	NOT IN CONTRACT
NO.	NUMBER
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
P.G.L.	PROFILE GRADE LINE
PI	POINT OF INTERSECTION
POC	POINT ON CURVE
POT	POINT ON TANGENT

PLYMPTON WINNETUXET ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	2	9
PROJECT FILE NO.		609435	

LEGEND, ABBREVIATIONS, & GENERAL NOTES

ABBREVIATIONS (cont.)

GENERAL	
PRC	POINT OF REVERSE CURVATURE
PROJ	PROJECT
PROPOSED	PROPOSED
PSB	PLANTABLE SOIL BORROW
PT	POINT OF TANGENCY
PVC	POINT OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY
PVMT	PAVEMENT
PWW	PAVED WATER WAY
R	RADIUS OF CURVATURE
R&D	REMOVE AND DISPOSE
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RDWY	ROADWAY
REM	REMOVE
RET	RETAIN
RET WALL	RETAINING WALL
RHT	RIGHT OF WAY
RR	RAILROAD
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
RT	RIGHT
SB	STONE BOUND
SHLD	SHOULDER
SMH	SEWER MANHOLE
ST	STREET
STA	STATION
SSD	STOPPING SIGHT DISTANCE
SHLO	STATE HIGHWAY LAYOUT LINE
SW	SIDEWALK
T	TANGENT DISTANCE OF CURVE/TRUCK %
TAN	TANGENT
TEMP	TEMPORARY
TC	TOP OF CURB
TOS	TOP OF SLOPE
TYP	TYPICAL
UP	UTILITY POLE
VAR	VARIABLES
VERT	VERTICAL
VC	VERTICAL CURVE
WCR	WHEEL CHAIR RAMP
WG	WATER GATE
WIP	WROUGHT IRON PIPE
WM	WATER METER/WATER MAIN
X-SECT	CROSS SECTION

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**PLYMPTON
WINNETUXET ROAD**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	3	9
PROJECT FILE NO.		609435	

TYPICAL SECTIONS

PAVEMENT NOTES

FULL DEPTH PAVEMENT AT BRIDGE APPROACHES:

SURFACE COURSE: 2" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER

INTERMEDIATE COURSE: 2" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5) OVER

BASE COURSE: 3" SUPERPAVE BASE COURSE 37.5 (SBC-37.5) OVER

SUBBASE: 4" DENSE GRADED CRUSHED STONE
8" GRAVEL BORROW, TYPE b

MILL & OVERLAY:

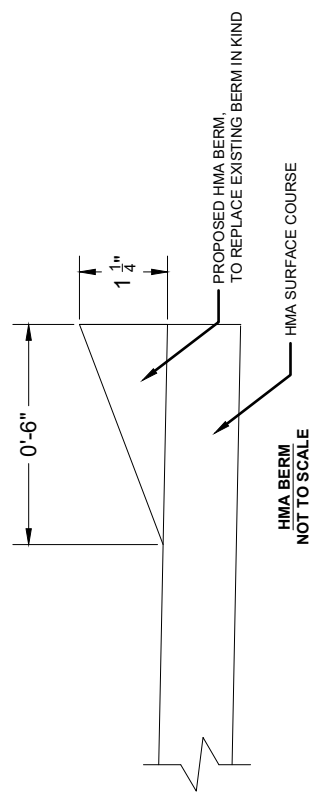
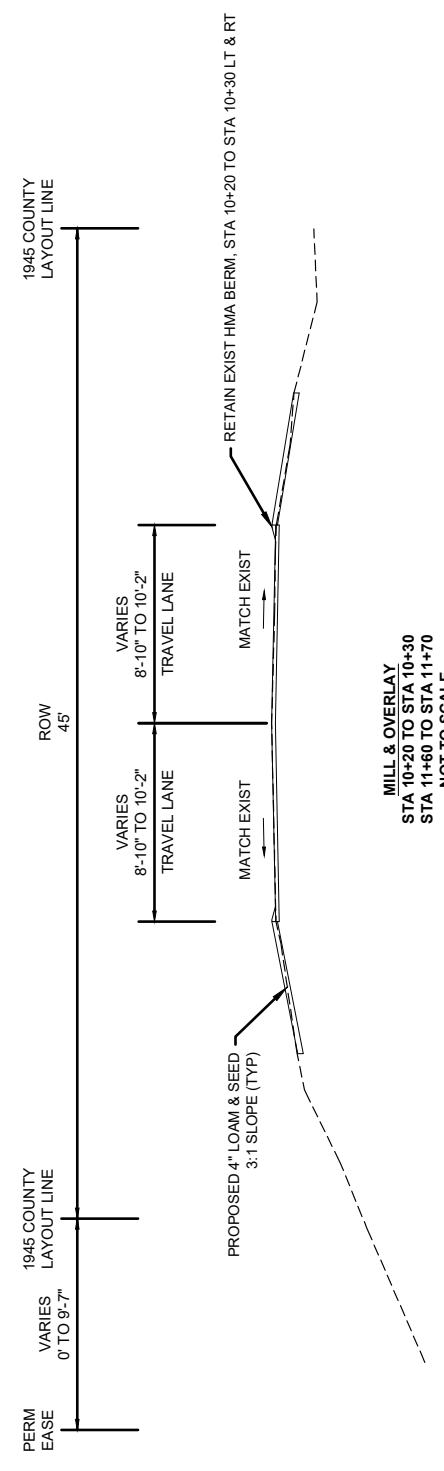
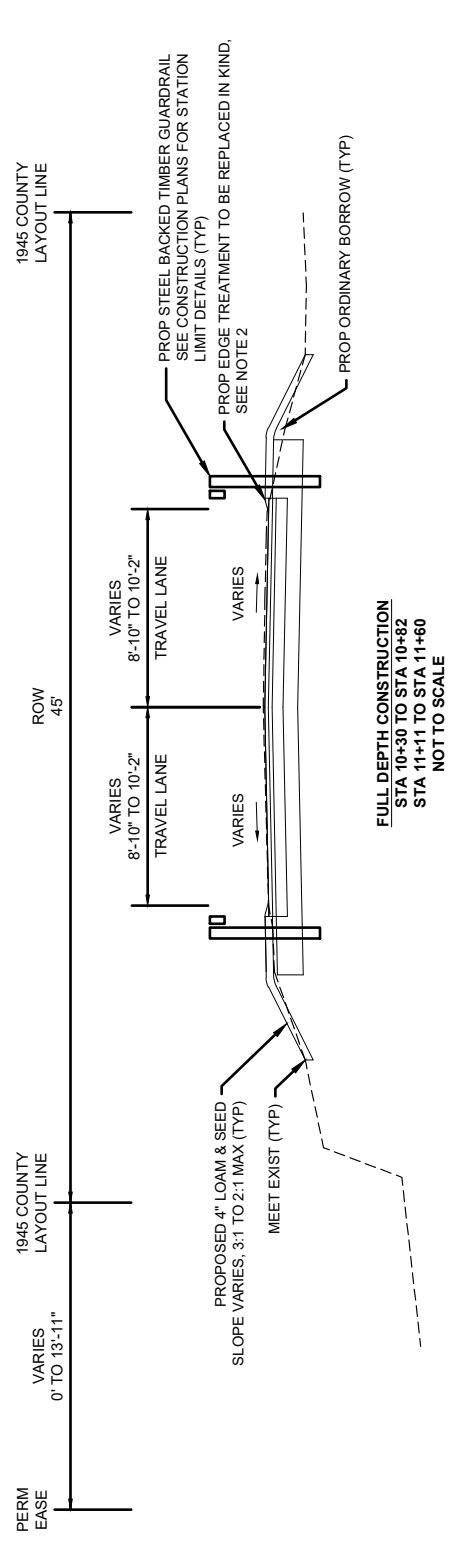
SURFACE: 2 1/4" MILLING,
2" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5)

DRIVEWAY TRANSITION:

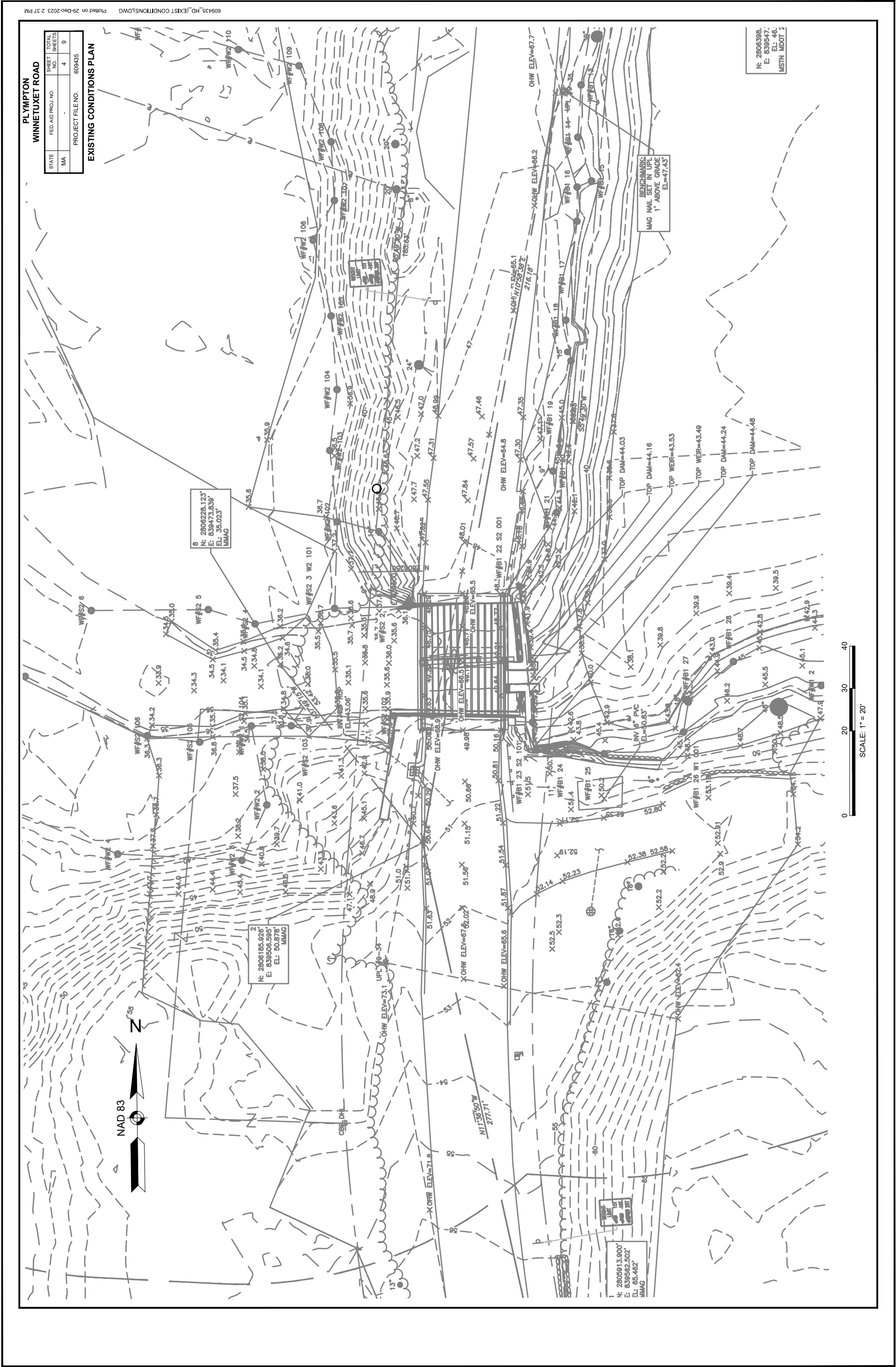
SURFACE: 2 1/4" MILLING,
2" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5)

NOTES:

- 1) TACK COAT SHALL BE APPLIED AT A RATE OF 0.07 GAL/SY ON MILLED SURFACES AND 0.05 GAL/SY ON SMOOTH (UNMILLED) SURFACES.
- 2) PROPOSED HMA BERM TO REPLACE EXISTING BERM IN KIND SHALL BE PLACED FROM STA 10+30 LT TO STA 10+82 LT AND RT. NO BERM SHALL BE PLACED FROM STA 10+20 TO STA 10+30 OR FROM STA 11+11 TO 11+60.
- 3) EXISTING CROSS SLOPE AT APPROACHES VARIES APPROXIMATELY 0% TO 2%. THE INTENT OF THE DESIGN IS TO MATCH EXISTING CONDITIONS.



- TYPICAL SECTION NOTES:**
- 1) STEEL BACKED TIMBER GUARDRAIL SHALL BE SET TANGENT WITH TIMBER BRIDGE RAIL AT THE NORTHWEST AND SOUTHWEST APPROACHES.
 - 2) STEEL BACKED TIMBER GUARDRAIL SHALL BE SET TO FOLLOW ROADWAY CURVATURE AT THE NORTHEAST AND SOUTHEAST APPROACHES.
 - 3) AT LIMITS, STEEL BACKED TIMBER GUARDRAIL SHALL BE OFFSET 7'-0" FROM EDGE OF PAVEMENT TO FACE.
 - 4) SEE CONSTRUCTION PLANS FOR GUARDRAIL STATION LIMITS.
 - 5) SEE STRUCTURAL PLANS FOR BRIDGE RAIL TO STEEL BACKED TIMBER RAIL TRANSITION DETAIL.



PLYMPTON ROAD
WINNETUXET ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		4	9
PROJECT FILE NO. 609435			

EXISTING CONDITIONS PLAN

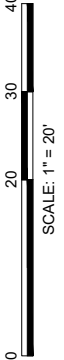
N: 2806398.
E: 839547.
MSTN MDOT 2
EL: 46.

BENCHMARK:
MAG NAIL SET IN UPL
1' ABOVE GRADE
EL=47.43'

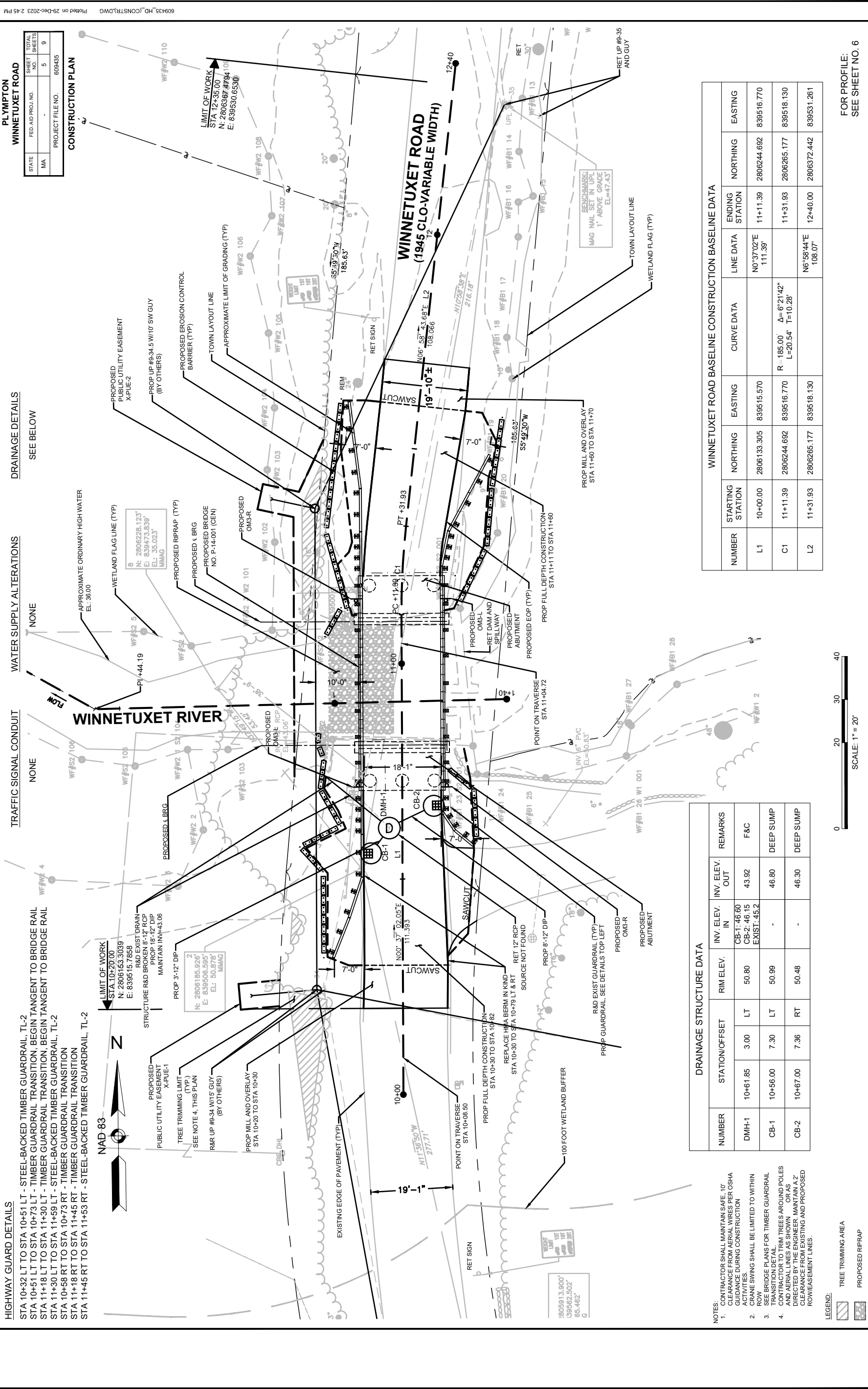
8
N: 2806228.123'
E: 839473.839'
EL: 35.023'
MMAG

2
N: 2806185.926'
E: 839506.595'
EL: 50.878'
MMAG

15
N: 2805913.900'
E: 839562.502'
EL: 65.462'
MMAG



609435_HD_EXIST CONDITIONS.DWG Printed on 29-Dec-2023 2:37 PM



PLYMPTON WINNETUXET ROAD CONSTRUCTION PLAN

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		5	9
PROJECT FILE NO. 609435			

WINNETUXET ROAD BASELINE CONSTRUCTION BASELINE DATA

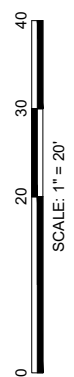
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L1	10+00.00	2806133.305	839516.570		N0°37'02"E 111.39'	11+11.39	2806244.692	839516.770
C1	11+11.39	2806244.692	839516.770	R = 185.00' Δ = 6°21'42" L = 20.54'		11+31.93	2806265.177	839518.130
L2	11+31.93	2806265.177	839518.130		N6°58'44"E 108.07'	12+40.00	2806372.442	839531.261

DRAINAGE STRUCTURE DATA

NUMBER	STATION/OFFSET	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT	REMARKS
DMH-1	10+61.85 3.00 LT	50.80	CB-1: 46.60 CB-2: 46.15 EXIST: 45.2	43.92	F&C
CB-1	10+56.00 7.30 LT	50.99	-	46.80	DEEP SUMP
CB-2	10+67.00 7.36 RT	50.48	-	46.30	DEEP SUMP

- NOTES:**
- CONTRACTOR SHALL MAINTAIN SAFE, 10' CLEARANCE FROM AERIAL WIRES PER OSHA ACTIVITIES DURING CONSTRUCTION
 - CRANE SWING SHALL BE LIMITED TO WITHIN ROW
 - SEE BRIDGE PLANS FOR TIMBER GUARDRAIL TRANSITION DETAIL
 - CONTRACTOR TO TRIM TREES AROUND POLES AND AERIAL LINES AS SHOWN OR AS INDICATED BY THE ENGINEER. MAINTAIN 2' CLEARANCE FROM EXISTING AND PROPOSED ROW/EASEMENT LINES.

- LEGEND:**
- TREE TRIMMING AREA
 - PROPOSED RIPRAP

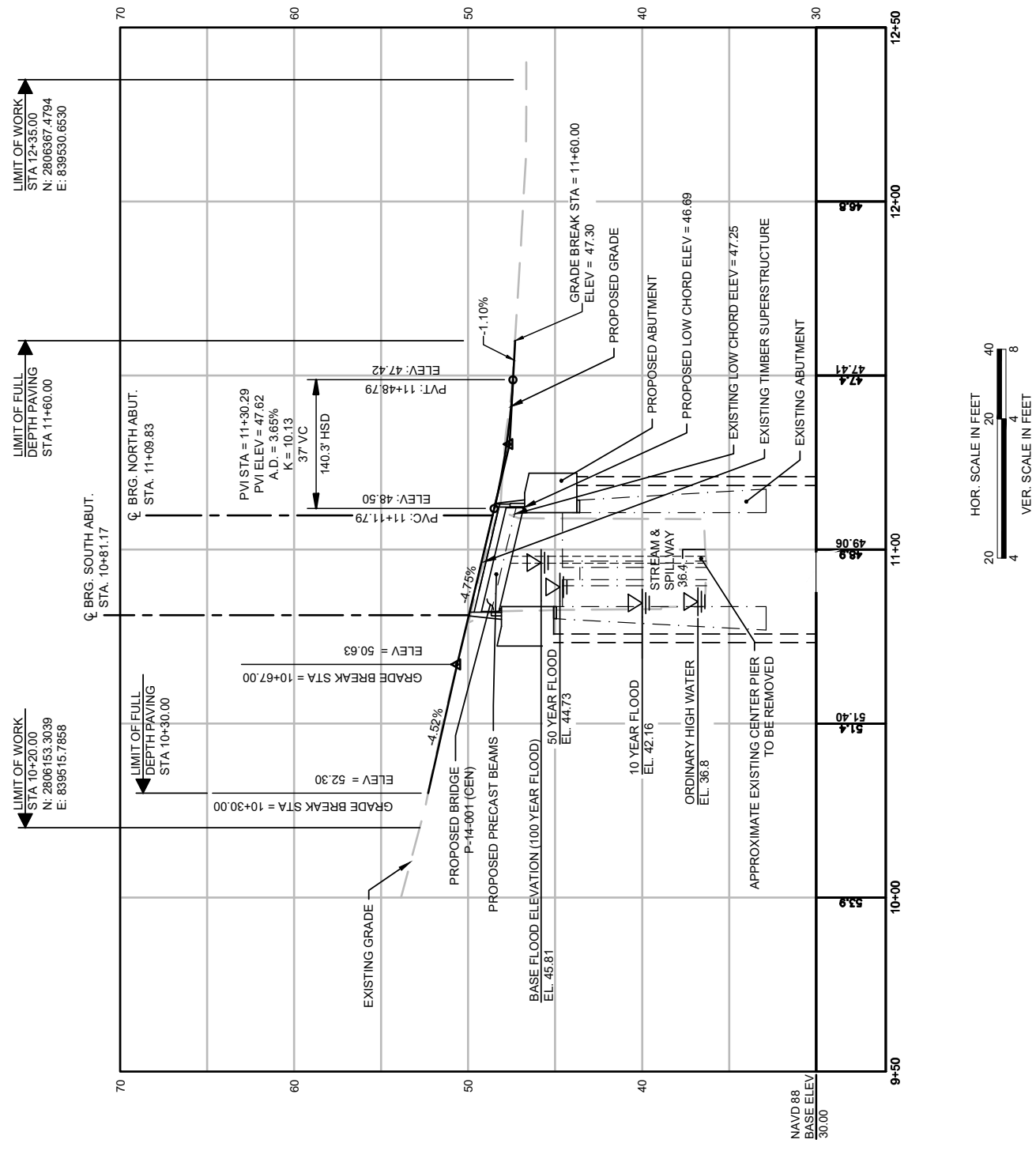


FOR PROFILE:
SEE SHEET NO. 6

609435_HD_CONSTR.DWG P1818 on 29-Dec-2023 2:45 PM

609435_HD_PROFILE.DWG Plotted on 2-Jan-2024 9:37 AM

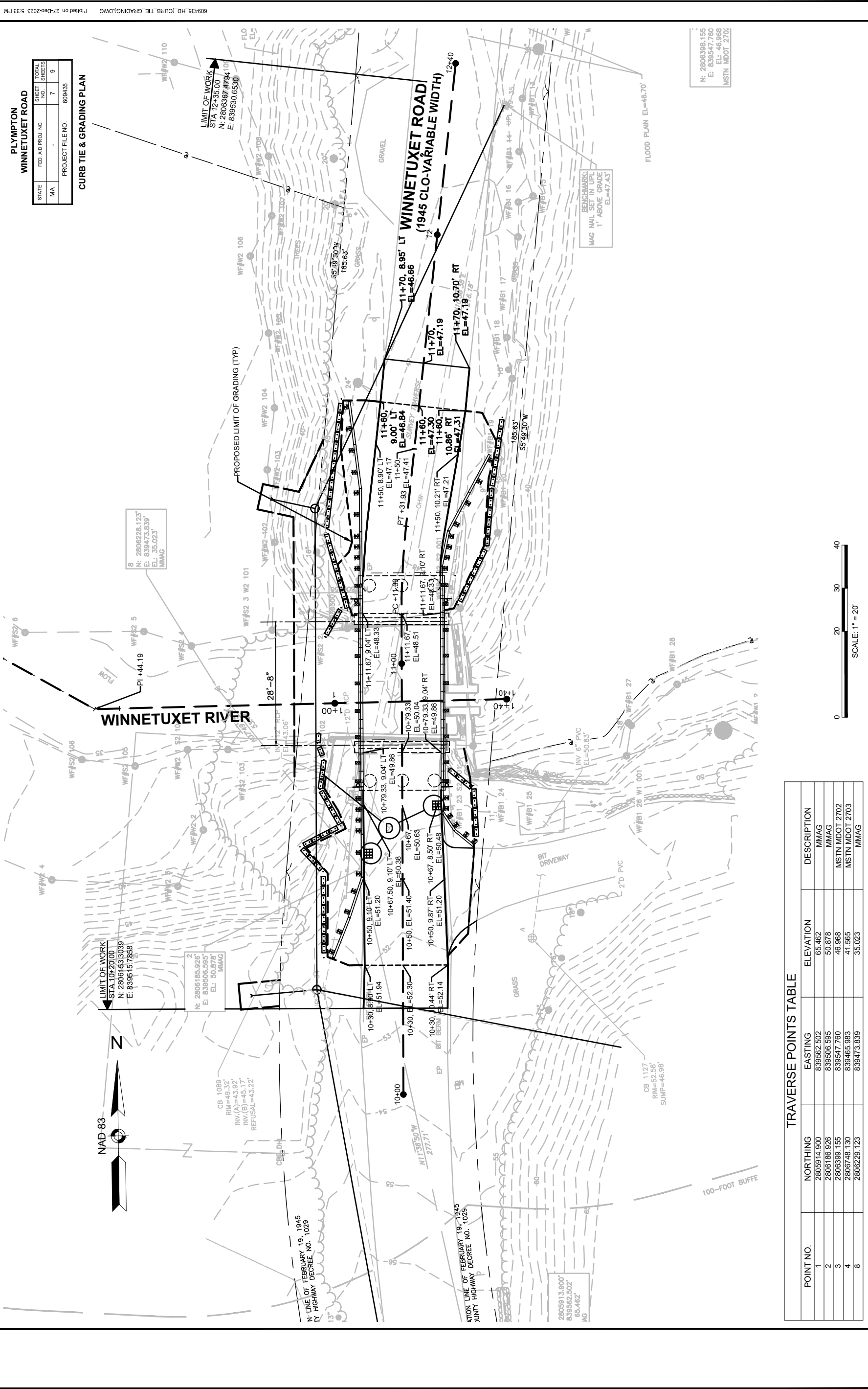
PLYMPTON WINNETUXET ROAD		SHEET NO.	TOTAL SHEETS
STATE	FED. AID PROJ. NO.	6	9
MA	PROJECT FILE NO.	609435	
PROFILE WINNETUXET ROAD			



NOTES:

1. ORDINARY HIGH WATER ELEVATION IS NOT AVAILABLE

FOR CONSTRUCTION PLAN:
SEE SHEET NO. 5



STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		7	9

PROJECT FILE NO.
609435

CURB TIE & GRADING PLAN

TRAVERSE POINTS TABLE

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	2805914.900	839562.502	65.462	MMAG
2	2806186.926	839506.995	50.878	MMAG
3	2806399.155	839547.760	46.968	MSTN MDOT 2702
4	2806748.130	839465.983	41.565	MSTN MDOT 2703
8	2806229.123	839473.839	35.023	MMAG

609435.MD\CURB_TIE_GRADING.DWG Plotted on 27-Dec-2023 5:33 PM

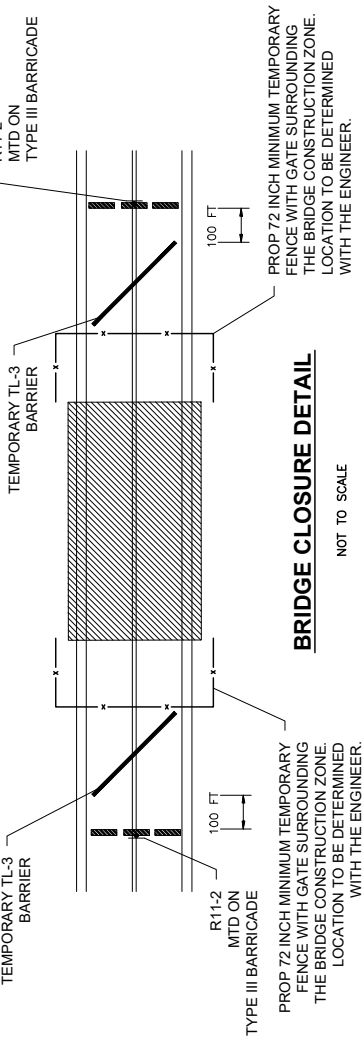
DETOUR SIGN SUMMARY

IDENTIFICATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)			NUMBER OF SIGNS REQUIRED	COLOR		
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.		BACK-GROUND	LEGEND	BORDER
M4-8a	24"	18"	END DETOUR	SEE STANDARDS (2)		2	F.O.*	BLACK	BLACK	
M4-8aL	30"	24"	DETOUR			1	F.O.	BLACK	BLACK	
M4-8aR	30"	24"	DETOUR			2	F.O.	BLACK	BLACK	
M4-9L	30"	24"	DETOUR			5	F.O.	BLACK	BLACK	
M4-9R	30"	24"	DETOUR			6	F.O.	BLACK	BLACK	
M4-9V	30"	24"	DETOUR			5	F.O.	BLACK	BLACK	
M4-10L	48"	18"	DETOUR			1	F.O.	BLACK	BLACK	
M4-10R	48"	18"	DETOUR			1	F.O.	BLACK	BLACK	
R11-2	48"	30"	ROAD CLOSED			2	WHITE	BLACK	BLACK	
R11-3ab	60"	30"	ROAD CLOSED AHEAD LOCAL TRAFFIC ONLY			2	F.O.	BLACK	BLACK	
W16-8	48"	12"	Winnetuxet Rd			19	F.O.	BLACK	BLACK	
W20-2	36"	36"	DETOUR AHEAD			3	F.O.	BLACK	BLACK	

*F.O. = FLUORESCENT ORANGE (SEE NOTE 4)

DETOUR NOTES

- ALL SIGNS SHALL BE MOUNTED ON THEIR OWN MASSDOT STANDARD TEMPORARY SIGN SUPPORTS. NO SIGNS SHALL BE MOUNTED ON DRUMS.
- PER THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE 2012 MASSDOT AMENDMENTS TO THE MUTCD, AND THE LATEST VERSION OF THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION STANDARD DRAWINGS FOR SIGNS AND SUPPORTS.
- THE MINIMUM MOUNTING HEIGHT OF POST MOUNTED SIGNS, MEASURED VERTICALLY FROM THE BOTTOM OF THE SIGN TO THE TOP OF THE GROUND, SHALL BE 7 FEET UNLESS OTHERWISE SPECIFIED ON THE PLANS.
- ALL TEMPORARY WARNING SIGNS SHALL HAVE FLUORESCENT ORANGE BACKGROUNDS WITH BLACK LEGENDS AND BORDERS UNLESS OTHERWISE SPECIFIED ON THE PLANS.
- ALL TRAFFIC CONTROL DEVICES INCLUDING SIGNS, DRUMS, BARRICADES, BARRIER AND OTHER DEVICES SHALL BE INSTALLED PER MUTCD/MASSDOT STANDARD SPECIFICATIONS.
- ALL TRAFFIC CONTROL DEVICES INCLUDING SIGNS, DRUMS, BARRICADES, BARRIER AND OTHER DEVICES SHALL BE INSTALLED INSIDE PUBLIC RIGHT OF WAY.
- ACCESS TO PRIVATE DRIVEWAYS TO BE MAINTAINED AT ALL TIMES.
- WORK AREA SHALL BE PROTECTED ADEQUATELY DURING WORKING AND NON-WORKING HOURS.
- ALL ROADS SHOWN ARE PUBLIC ROADS. ALL PROPOSED SIGNS SHALL BE PLACED WITHIN PUBLIC RIGHT OF WAY.



NOTES

- ACCESS TO PRIVATE DRIVEWAYS ARE TO BE MAINTAINED AT ALL TIMES.

PLYMPTON
WINNETUXET ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		8	9

PROJECT FILE NO. 609435

TEMPORARY TRAFFIC CONTROL PLAN
DETOUR PLAN

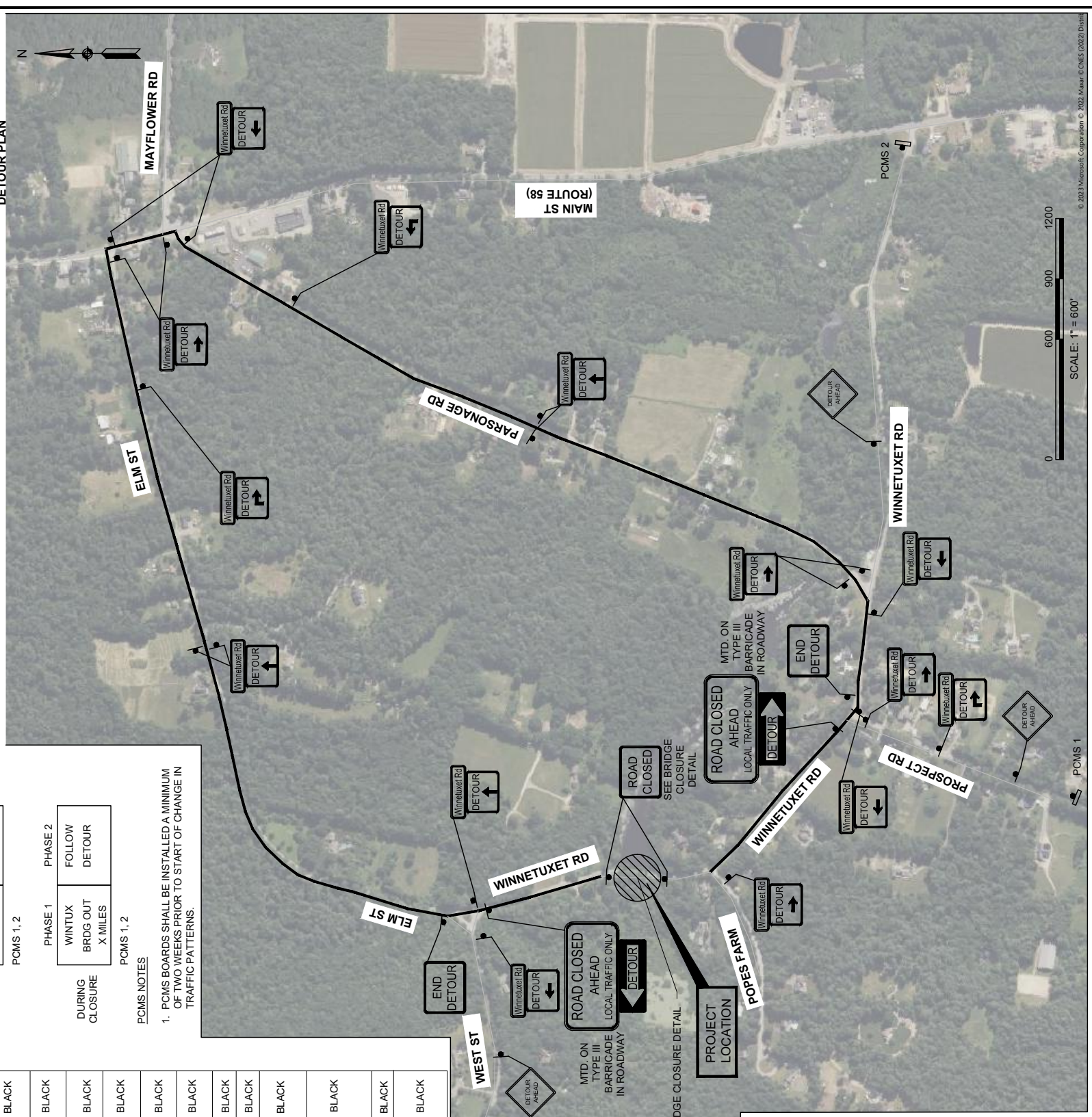
PHASE 1	PHASE 2
TWO WEEKS PRIOR TO BRDG OUT CLOSURE	STARTING MIM-DD

PCMS 1, 2

PHASE 1	PHASE 2
DURING CLOSURE	FOLLOW DETOUR
WINTUX BRDG OUT X MILES	

PCMS 1, 2

PCMS NOTES
1. PCMS BOARDS SHALL BE INSTALLED A MINIMUM OF TWO WEEKS PRIOR TO START OF CHANGE IN TRAFFIC PATTERNS.

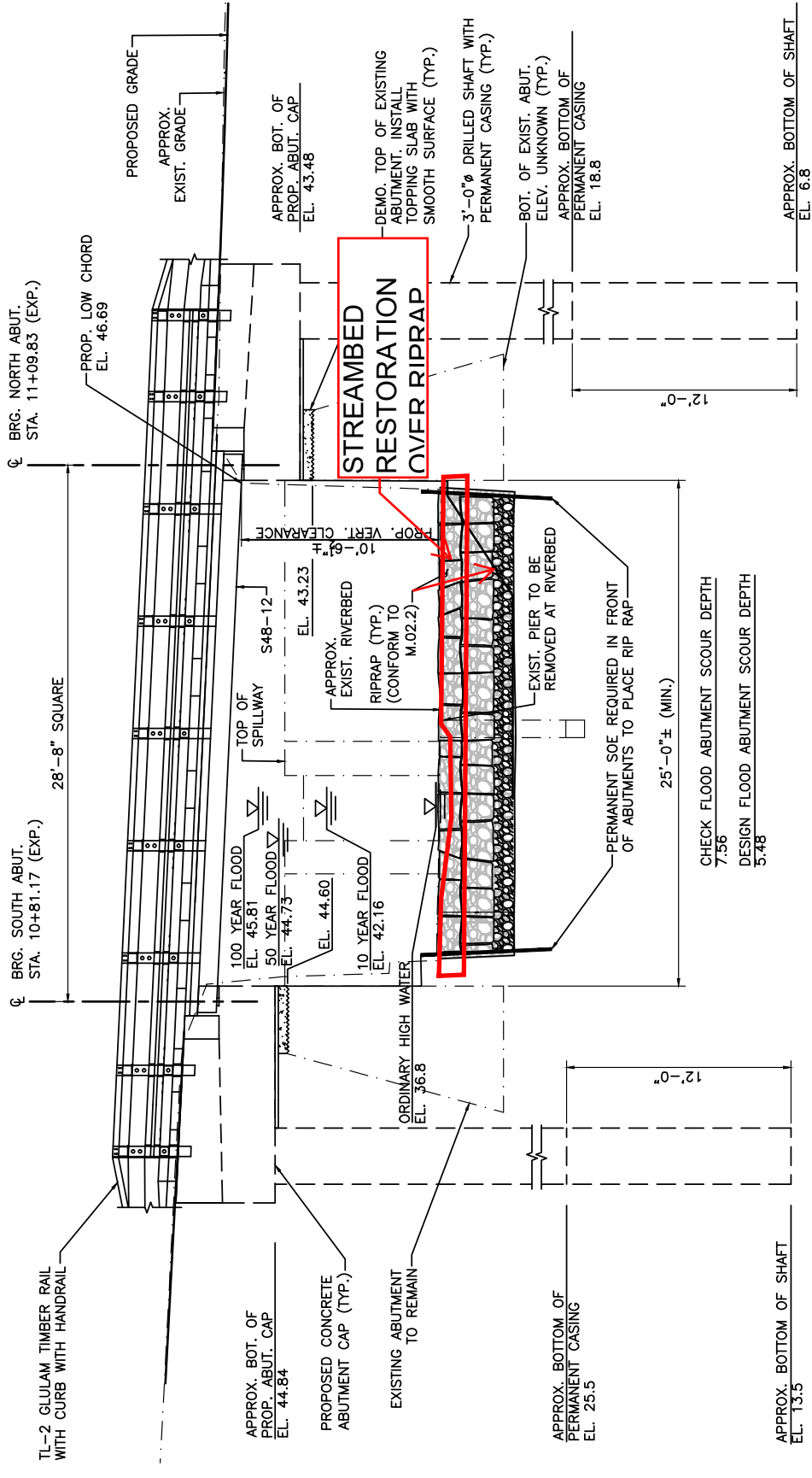


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609435_BR(10/14/01)-LONGITUDINAL SECTION.DWG P1011 on 2-Jun-2024 9:41 AM

PLYMPTON WINNETUXET ROAD			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	9	9
PROJECT FILE NO. 609435			

LONGITUDINAL SECTION



LONGITUDINAL SECTION
SCALE: 1/2" = 1'-0"

NOTES:

1. RIP RAP SHALL BE INSTALLED ALONG THE EXISTING CONCRETE SLAB, PLACE TO ELIMINATE SCOUR. RIP RAP SHALL HAVE 4'-0" THICKNESS, D50=24", AND D100=48".

DOCUMENT A00860

COMBINED APPLICATION

401 WATER QUALITY CERTIFICATION (WQC)

& 404 PRE- CONSTRUCTION NOTIFICATION (PCN)

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Combined Application 401 Water Quality Certification (WQC) and 404 Pre-Construction Notification (PCN)

MassDOT Winnetuxet Road Over Winnetuxet River Bridge Plan

Plympton, Massachusetts

Application for:

Massachusetts Department of Transportation



Submitted to:

The Massachusetts Department of Environmental Protection
(Wetlands and Waterways Division)

US Army Corps of Engineers, New England District, Regulatory Division

MassDOT Project Number: 609435

Prepared by:



February 23, 2024

PUBLIC NOTICE

Massachusetts Department of Environmental Protection
Division of Wetlands and Waterways
MassDEP Boston Office
100 Cambridge Street Suite 900
Boston, MA 02114

Pursuant to 33 U.S.C. 1341 and M.G.L. c. 21 §§ 26 - 53, notice is given of a 401 Water Quality Certification application for the replacement of Bridge #P-14-001 (445), Winnetuxet Road over Winnetuxet River in the Town of Plympton, Massachusetts by the Massachusetts Department of Transportation – Highway Division, Ten Park Plaza, Room 7360, Boston, MA 02116. The purpose of the project is to upgrade the existing bridge condition to a satisfactory state over the Winnetuxet River. The project is needed as the most recent bridge inspection identified structural deficiencies. A full superstructure bridge replacement is proposed. 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 twenty-one days of this notice.

Any group of ten persons, any aggrieved person, or any governmental body or private organization with a mandate to protect the environment who submits written comments may appeal the Department’s Certification. Failure to submit written comments before the end of the public comment period may result in the waiver of any right to an adjudicatory hearing.



Maura Healey, Governor
Kimberley Driscoll, Lieutenant Governor
Monica Tibbits-Nutt, Secretary & CEO
Jonathan L. Gulliver, Highway Administrator



February 29, 2024

Heidi Davis
Massachusetts Department of Environmental Protection
Wetlands Program
100 Cambridge Street, Suite 900
Boston, MA 02114

RE: Water Quality Certification
BRIDGE REPLACEMENT, P-14-001 (445), WINNETUXET ROAD OVER WINNETUXET
RIVER, PLYMPTON, MA
MassDOT Project 609435

Dear Ms. Davis,

The Massachusetts Department of Transportation, Highway Division (MassDOT) is submitting this 401 Water Quality Certification (WQC) application for the replacement of a bridge on Winnetuxet Road over the Winnetuxet River, in Plympton, MA, under the MassDOT bridge exemption. The bridge replacement is the functional equivalent and in similar alignment to the existing bridge.

The project requires a 401 WQC and authorization under Section 404 as it will impact an estimated 400 square feet of Land Under Water associated with the Winnetuxet River. There will be no impact to Bordering Vegetated Wetlands.

A pre-application meeting for this project was held on January 23, 2024, with the Massachusetts Department of Environmental Protection. 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 require any additional information regarding the subject project, please contact me at (857) 262-0757 or by email at courtney.l.walker@dot.state.ma.us.

Sincerely,

A handwritten signature in black ink that reads "Courtney Walker".

Courtney Walker
Wetlands & Water Resources Coordinator
MassDOT Highway Division, Environmental Services

Cc: Harry Adolphe, MassDOT
Michael Joa, MassDOT
Ryan Hale, MassDEP
Ryan Morrison, MassDEP

Ten Park Plaza, Suite 4160, Boston, MA 02116
Tel: 857-368-4636, TTY: 857-368-0655
mass.gov/massdot

Dan Vasconcelos, US Army Corps of Engineers
Brian Vasa, Plympton Conservation Commission



Maura Healey, Governor
Kimberley Driscoll, Lieutenant Governor
Monica Tibbitts-Nutt, Secretary & CEO
Jonathan L. Gulliver, Highway Administrator



February 29, 2024

Dan Vasconcelos
Regulatory Division
Department of the Army New England District, Corps of Engineers
696 Virginia Road
Concord, MA 01742

RE: Pre-Construction Notification Application
BRIDGE REPLACEMENT, P-14-001 (445), WINNETUXET ROAD OVER WINNETUXET RIVER
Plympton, MA
MassDOT Project 609435

Dear Mr. Vasconcelos,

The Massachusetts Department of Transportation, Highway Division (MassDOT) is submitting this application for a Pre-Construction Notification Application for the proposed replacement of the bridge on Winnetuxet Road over the Winnetuxet River in Plympton, MA, under the MassDOT bridge exemption.

The project requires a 401 WQC and authorization under Section 404 as there will be an estimated 400 square feet of permanent impact to Waters of the U.S associated with the Winnetuxet River. There will be no impacts to Bordering Vegetated Wetlands. If you require any additional information regarding the project, please contact me at (857) 262-0757 or by email at courtney.l.walker@dot.state.ma.us.

Sincerely,

A handwritten signature in black ink that reads "Courtney Walker".

Courtney Walker
Wetlands & Water Resources Coordinator
MassDOT Highway Division, Environmental Services

Cc:
Harry Adolphe, MassDOT
Michael Joa, MassDOT
Heidi Davis, MassDEP
Ryan Hale, MassDEP
Ryan Morrison, MassDEP
Brian Vasa, Plympton Conservation Commission

**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 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.

Disclosure

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 - Massachusetts Department of Transportation E-mail Address - courtney.l.walker@dot.state.ma.us	8. AUTHORIZED AGENT'S NAME AND TITLE (<i>agent is not required</i>) First - Jonathan Middle - D Last - Rickwood Company - AECOM E-mail Address - Jonny.Rickwood@aecom.com
6. APPLICANT'S ADDRESS: Address- 10 Park Plaza Room 7360 City - Boston State - MA Zip - 02166 Country - USA	9. AGENT'S ADDRESS: Address- 250 Apollo Drive City - Chelmsford State - MA Zip - 0182 Country - U.S.A
7. APPLICANT'S PHONE NOs. with AREA CODE a. Residence b. Business c. Fax d. Mobile 857-262-0757	10. AGENT'S PHONE NOs. with AREA CODE a. Residence b. Business c. Fax d. Mobile 5702903595

STATEMENT OF AUTHORIZATION

11. I hereby authorize, Jonathan Rickwood 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.


 Digitally signed by Courtney Walker
 Date: 2024.03.01 12:52:19 -05'00'

Courtney Walker 3/1/24
 SIGNATURE OF APPLICANT DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME or TITLE (<i>see instructions</i>) Plympton Winnetuxet Road Bridge Replacement Project	
13. NAME OF WATERBODY, IF KNOWN (<i>if applicable</i>) Winnetuxet River	14. PROPOSED ACTIVITY STREET ADDRESS (<i>if applicable</i>) Winnetuxet Road City: Plympton State: MA Zip: 02367
15. LOCATION OF PROPOSED ACTIVITY (<i>see instructions</i>) Latitude: 41.946430 °N Longitude: -70.826019 °W	

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)

State Tax Parcel ID: 20-1-22I

Municipality: Plympton

Section: 20

Township: T1

Range: 22I

17. DIRECTIONS TO THE SITE.

Take I-95 S to MA-24 S to US-44 E in Middleborough. Merge onto I-495 S toward Cape Cod. Exit onto US-44 E toward Middleboro/Plymouth. Turn left onto MA-105 N, and continue straight onto Plympton St. Continue onto Prospect road, and then take a left turn onto Winnetuxet Road. Follow the road until you reach the bridge that spans over the Winnetuxet River.

18. IDENTIFY THE SPECIFIC GENERAL PERMIT(S) YOU PROPOSE TO USE:

General Permit 23: Linear Transportation Projects and Wetland/Stream Crossings

19. DESCRIPTION OF PROPOSED GENERAL PERMIT ACTIVITY (see instructions)

The proposed project would repair an existing bridge over the Winnetuxet River, which would require work along the Winnetuxet Road. The project will start construction in the summer of 2024 and last into the fall of the same year. Construction will take place during low-flow periods in the stream and will utilize erosion control methods.

20. DESCRIPTION OF PROPOSED MITIGATION MEASURES (see instructions)

Any work that will be performed on the Winnetuxet Bridge will be confined to existing site conditions to avoid the need for excess land alterations that would lead to greater discharge of soil. Riprap will also be limited to a small area of the river to minimize the potential impacts. Erosion control barriers will also be implemented at the site of the bridge replacement. Streambed restoration will occur over the top of new riprap material.

21. PURPOSE OF GENERAL PERMIT ACTIVITY (Describe the reason or purpose of the project, see instructions)

The Town of Plympton has been utilizing a small, two-span timber bridge located over the primary spillway of a dam and the Winnetuxet River. An inspection of the bridge took place in 2022 and rating reports indicated that components of the structure rate between poor and good, and noted specific deficiencies within the two-span structure. In order to maintain short and long-term bridge safety standards, the bridge will need to undergo a replacement along with other components of the structure.

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
400	20	81	Permanent	Riprap & streambed dredging/placement: Waters of U.S

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)

N/A

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)

Impacts to the streambed will be restored in place and there will be no loss of aquatic resources.

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)*
 USFWS identified that the following species may be present at the site, but will not be adversely affected by the project; the Northern Long Eared Bat (NLEB) (*Myotis septentrionalis*), the Indian Bat (*Myotis sodalists*), the Plymouth Redbelly Turtle (*Pseudemys rubriventris bangsi*), and the Monarch Butterfly (*Danaus plexippus*).

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)*
 Using the Massachusetts Cultural Resource Information Systems Maps (MACRIS) and MassMappers, no historic properties are located near to the project or be affected by it. A letter for official review was sent to the ANTHPO, MTHPO. NTHPO, and BUAR with no comments received.

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:

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.
 Yes, General. Submitted at the same time this PCN will be submitted.

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.

<p>Courtney Walker <small>Digitally signed by Courtney Walker Date: 2024.03.01 12:52:42 -05'00'</small></p>	<p>3/1/2024</p>		<p>Rickwood, Jonny <small>Digitally signed by Rickwood, Jonny DN: cn=Rickwood, Jonny, ou=USCHL1, email=Jonny.Rickwood@aecom.com Date: 2024.03.01 12:12:30 -05'00'</small></p>	<p>3/1/2024</p>
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

Announcements | Logged in as: JONATHAN RICKWOOD | Collections(0) | Reports(14) | Account Management | Logout

Need Help? For technical assistance in using this web application, please call the ePLACE Help Desk Team at (844) 733-7522 or (844) 733-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, MASDEP
 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	Contact Information	2	Application Information	3	Documents	4	Special Fee Provision	5	Review	6
---	---------------------	---	-------------------------	---	-----------	---	-----------------------	---	--------	---

Step 1: Contact Information > Page 1 of 1

Instructions

Permittee

* indicates a required field.

Permittee is the individual or individual authorized by a company/organization (previously referred to as "Applicant").

If you are the Permittee you may click on "Add New" button and select the checkbox on the top "Use Login Information" and click "Continue". (Please note: if you are just filing this Application on your behalf, please disregard the language below!)

However,

If you are a consultant, engineer, attorney, or other authorized representative who is preparing the application on behalf of the

• If the Permittee does not have an EEA ePLACE account and does not want to contribute to the Application process, click "Add New" button and enter the Permittee information on their behalf.

Permittee:
 MassDOT Highway Division
 10 Park Plaza Room 7360
 Boston, MA, 02166
 Telephone #: 857-262-0757 Email: courtney.walker@dot.state.ma.us

[Edit or View](#) [Remove](#)

Application Contacts

An "Application Contact" is an individual or organization who is a party to the application (in addition to the Permittee), or who is contributing to the application. For example, a Property Owner, Additional Permittee, a consultant, an authorized representative etc.,

- If the Contact has an EEA ePLACE account and they will be contributing to the Application process, click "Look Up" button, search and select the appropriate Contact.
- If the Contact does not have an EEA ePLACE account and/or will not be contributing to the Application process, click "Add New" button and enter their Contact information.

Note – If a Contact who will be submitting information in the online Application process has not yet created an account, click on "save and resume later" button, advise the Contact to create an account in the EEA ePLACE Portal, and then resume the application and "Look Up" that person.

[Add New](#) [Look Up](#)

Showing 1-2 of 2

Contact Type	Name	Organization Name	Contact Person	Action
Application Prepared By	JONATHAN RICKWOOD			Edit/View Delete
Application Prepared By	JONATHAN RICKWOOD			Edit/View Delete

[Continue Application >](#)

[Save and resume later](#)

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Mass Gov® Site Policies

1 Contact Information

2 Application Information

3 Documents

4 Special Fee Provision

5 Review

6

WW11 - 401 Minor Fill and Excavation Project Application

Step 2: Application Information > Page 1 of 4

Instructions

Primary Project Location

* indicates a required field.

If the project site does not have a traditional physical address, please enter Street Number as "0", Street Name as "N/A", and enter the latitude and longitude coordinates.

To find the latitude and longitude information, type in your address on Search Google Maps - Right click on your location pin and select "What's here?"

The information will be displayed at the bottom of your page. The format should be in decimal degrees (i.e. Latitude XX.XXXXXX Longitude XXXXXXXX) Please do not include the "-" sign with the longitude.

Name of the Waterbody:

* Street #: * Street Name: Street Name 2

* City: * State: * Zip: * Longitude:

* Latitude:

Clear

Other Primary Location Info

* Parcel ID:

* Municipality:

Other Primary Location Info

- * Parcel ID:
- * Municipality:

Project Information

Project Name:

*** Proposed Activity:**
 The purpose of the project is to improve the bridge to a satisfactory state, as the most recent bridge inspection identified structural deficiencies. A full superstructure and substructure replacement is proposed. Anticipated project limits are approximately 120 feet along the bridge. The project will include the bridge piers, abutments as well as the pier below the bridge. The top of the existing abutments will be replaced with new abutments.

*** Will the project occur in multiple municipalities?**
 Yes No

Additional Project Sites

Additional Project Sites

Showing 0-0 of 0

Municipality	Property Description
No records found.	

[Add a Row](#)
[Edit Selected](#)
[Delete Selected](#)

[Continue Application](#)

[Save and resume later](#)



Step 2: Application Information > Page 2 of 4

Instructions

* indicates a required field.

Project Type

Commercial / Industrial:

Utility:

Real Estate Subdivision:

Institutional:

Other:

* Please provide additional information for the selection of your project type:

Project is a bridge replacement project that will be taking place on a local roadway that runs over the Winnebago River. It is does not necessarily fall under any of the other listed categories.

Proposed Areal Extent Info

Proposed Areal Extent of "Discharges of Dredged or Fill Material", including "redesign of dredged or excavated material" to "Waters of the United States within the Commonwealth"

Report the areal extent, as expressed in square feet, of all proposed "discharges of dredged or fill material", including "redesign of dredged or excavated material", both temporary and permanent, to each category of "Waters of the United States within the Commonwealth" below:

* Bordering Vegetated Wetland (sqft):

0

* Isolated Vegetated Wetland (sqft):

0

* Non-tidal Land Under Water (sqft):

400

* Salt Marsh (sqft):

0

roadway that runs over the Winnepesaukee River. It is does not necessarily fall under any of the other listed categories.

Proposed Areal Extent Info

Proposed Areal Extent of "Discharges of Dredged or Fill Material", including "redeposit of dredged or excavated material" to "Waters of the United States within the Commonwealth". Report the areal extent, as expressed in square feet, of all proposed "discharges of dredged or fill material", including "redeposit of dredged or excavated material", both temporary and permanent, to each category of "Waters of the United States within the Commonwealth" below:

* Bordering Vegetated Wetland (sqft):

0

* Isolated Vegetated Wetland (sqft):

0

* Non-tidal Land Under Water (sqft):

400

* Salt Marsh (sqft):

0

* Land Under the Ocean (sqft):

0

* Intertidal Zone (sqft):

0

Total cumulative loss (sqft):

400

[Continue Application >](#)

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UCC Applications

WW11 - 401 Minor Fill and Excavation Project Application

1 Contact Information 2 Application Information 3 Documents 4 Special Fee Provision 5 Review 6

Step 2: Application Information > Page 3 of 4

Instructions

* indicates a required field.

Compliance With 314 CMR 9.00

For additional details regarding the compliance, please visit mass.gov

- Does the proposed project meet the definition of a Single and Complete Project at 314 CMR 9.02?
 - Yes No
- Does the proposed project include "multi-phased activities"?
 - Yes No
- Does the proposed project meet the definition of an Ecological Restoration Project?
 - Yes 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.:
 - Yes 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 No

- Does this proposed project meet the definition of Water-Dependent at 314 CMR 9.02?
 - Yes No
- Is the proposed project restricted to access to one dwelling unit?
 - Yes 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?
 - Yes 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 No
- Will the proposed project include or consist of the construction of a new non-tidal crossing of any Land Under Water?
 - Yes No

* Is the proposed project restricted to access to one dwelling unit? Yes 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? Yes 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:

* 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 No

* Will the proposed project include or consist of the construction of a new non-tidal crossing of any Land Under Water? Yes No

* Will the proposed project include or consist of the construction of a new tidal crossing of any Land Under Water? Yes 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 No

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 No

* Will the proposed project include or consist of the repair, replacement, and/or expansion of an existing tidal crossing of any Land Under Water? Yes No

* Does the proposed project include any amount of discharges of dredged or fill material to any Outstanding Resource Water? Yes No

* Will any proposed "discharge of dredged or fill materials" occur within any certified Vernal Pool (as defined at 314 CMR 9.02)? Yes No

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Step 2: Application Information > Page 4 of 4

Instructions

* indicates a required field.

Additional Information

* Is your project subject to Massachusetts Environmental Policy Act (MEPA)?

Yes No

* Is your project subject to Massachusetts Wetlands Protection Act?

Yes No

* Is your project subject to Massachusetts Public Waterfront Act?

Yes No

* Is your project subject to Massachusetts Historical Commission?

Yes No

MHC File Number (if available):

Date of MHC Determination Letter (if available):

MM/DD/YYYY

* Is your project subject to Massachusetts Bureau of Underwater Archeological Resources?

Yes No

BUAR File Number (if available):

Date of BUAR Determination Letter (if available):

MM/DD/YYYY

* Is your project subject to U.S. Army Corps of Engineers - Section 404 of Federal Clean Water Act?

Yes No

USACE File Number (if available):

Date of USACE PCN Authorization (if available):

MM/DD/YYYY

Continue Application »

Save and resume later

Contents

USACE Pre-Construction Notification Form

Detailed Project Description and Alternatives Analysis

- 1.0 Introduction
- 2.0 Project Description
 - 2.1 Proposed Work Summary
 - 2.2 Detailed Project Description
- 3.0 Anticipated Construction Sequence
- 4.0 Stream Crossing Standards
 - 4.1 Type of Crossing
 - 4.2 Embedment
 - 4.3 Crossing Span
 - 4.4 Openness
 - 4.5 Substrate
 - 4.6 Water Depth and Velocity
 - 4.7 Banks
- 5.0 Existing Environmental Resource Areas
 - 5.1 Off-Site Mapping Review
 - 5.2 On-Site Wetland Delineation
- 6.0 Impacts to Commonwealth Waters and Wetlands
- 7.0 Alternatives to Project
 - 7.1 Alternative 1 – Full Bridge Replacement
 - 7.2 Alternative 2 – No Action
 - 7.3 Alternative 3 – Preferred -Superstructure and Limited Substructure Replacement
 - 7.4 Alternatives Meeting Stream Crossing Standards
- 8.0 Stormwater Management
- 9.0 Threatened and Endangered Species
- 10.0 NOAA Essential Fish Habitat
- 11.0 Mitigation
- 12.0 Conclusion

List of Figures:

- Figure 1 USGS Locus Map
- Figure 2 Winnetuxet Bridge Approximate Project Limits
- Figure 3 FEMA Flood Insurance Rate Map
- Figure 4 Web Soil Survey Map Detailing Soil Types and Properties

List of Tables:

- Table 1 Project Impacts

Attachments:

- Attachment A: Aerial Map and Environmental Constraints Map
- Attachment B: DOT USFWS NLAA Concurrence Verification Letter
- Attachment C: Wetland Data Sheets
- Attachment D: Site Plans
- Attachment E: Stormwater Management Report and Checklist
- Attachment F: DCR Dam Safety Permit Application Information
- Attachment G: Environmental Specifications
- Attachment H: Site Photographs
- Attachment I: Section 106 Documentation
- Attachment J: National Oceanic and Atmospheric Administration Essential Fish Habitat Form
- Attachment K: Section 408 Compliance
- Attachment L: Natural Heritage and Endangered Species Program Consultation

1.0 Introduction

The Massachusetts Department of Transportation proposes to remove and replace bridge (P-14-001(445)) on Winnetuxet Road over the Winnetuxet River in Plympton, MA. The Town of Plympton has been utilizing this small bridge in MassDOT District 5 since 1923. The roadway functional classification is regarded as “Rural Local” and is traveled by motor vehicles, pedestrians, and cyclists. The two-lane approach roadway is approximately 18’-0” to 20’-0” wide with one lane of traffic in each direction. There are no separate pedestrian or bicycle facilities present. Average Daily Traffic (ADT) on the bridge is approximately 357 vehicles per day with 14% trucks. The design speed within the project limits is 15 mph.

Figure 1 is a project locus map and **Figure 2** displays a map of land parcels as well as the approximate limits of work.

The two-span, timber bridge spans the primary spillway of a dam owned and controlled by the Town of Plympton. The waterbody supported by the dam is an impoundment of the Winnetuxet River known as Winnetuxet Pond and is used as a recreational site for activities such as fishing and kayaking. Winnetuxet Pond has a maximum storage of approximately 5.8 million gallons of water. The Winnetuxet Pond dam spillway can be manually controlled by a weir that is maintained by the Town. Water flow discharges from the impoundment through two outlets: over the spillway and through a culvert to the north. Both discharges converge into a single channel downstream of the bridge. Under existing conditions, most of the water from the Winnetuxet Pond impoundment flows out of the culvert to the north, and during drier periods of the year the spillway channel below the existing bridge receives very little flow as the weir is controlled by the Town of Plympton.

The bridge substructure consists of two stone abutments (with concrete facing on the south abutment only), a timber pier, and wingwalls. The timber pier consists of a pile cap, four pier columns, and cross bracing that runs from the bottom of the outside pier columns to the outside of the pile cap. It is bearing on a timber mud still. The two eastern most columns are timber and the other two western most columns have been rehabilitated with a fiberglass form jacket. The annular space between the post and the jacket has been filled with grout reinforced with welded wire fabric. Concrete has been placed in the channel below the bridge and the existing pier foundation is not visible. Foundation probing was not conducted at the pier. There are wingwalls at all four corners of the bridge.

MassDOT inspects the bridge biannually with the latest inspection occurring in 2022. A rating report was prepared in 2020 and was provided to the town. The inspection indicated that components of the structure were rated between poor and good, and noted specific deficiencies within the two-span structure. The deck of the bridge superstructure was noted to have several isolated areas of rot and decay, minor gouges, and missing/loose fasteners. Both northern and southern approaches have areas of minor wheel rutting and debris along the curb lines, with the northern approach also having a longitudinal crack in the northbound travel lane. The southern abutment has minor transverse cracking. Several superstructure planks, girders, beams, and various substructure components were rated as poor to good and showed signs of deterioration.

Per the 2020 bridge rating report, the deck and beams were most recently replaced in 2002. The 2020 bridge rating report also states that the railings were replaced and two of the bent piles were repaired in October of 2019. Despite slight repairs that were made recently, the inspection still recommended that the bridge undergo a repairment or replacement.

The bridge replacement project falls under the 2014 Transportation Bond Bill Bridge Exemption which exempts the project from state permitting such as the Massachusetts Wetlands Protection Act, MEPA, and Chapter 91 Public Waterfront Act. A Chapter 253 Dam Safety Part A Permit Exemption Application will be filed separately to the Massachusetts Department of Conservation and Recreation in order to make a jurisdictional determination on whether a dam safety permit will be needed for this project. It is proposed for bridge construction to begin between Summer 2024 and Fall 2024 and last approximately 2 to 4 months.

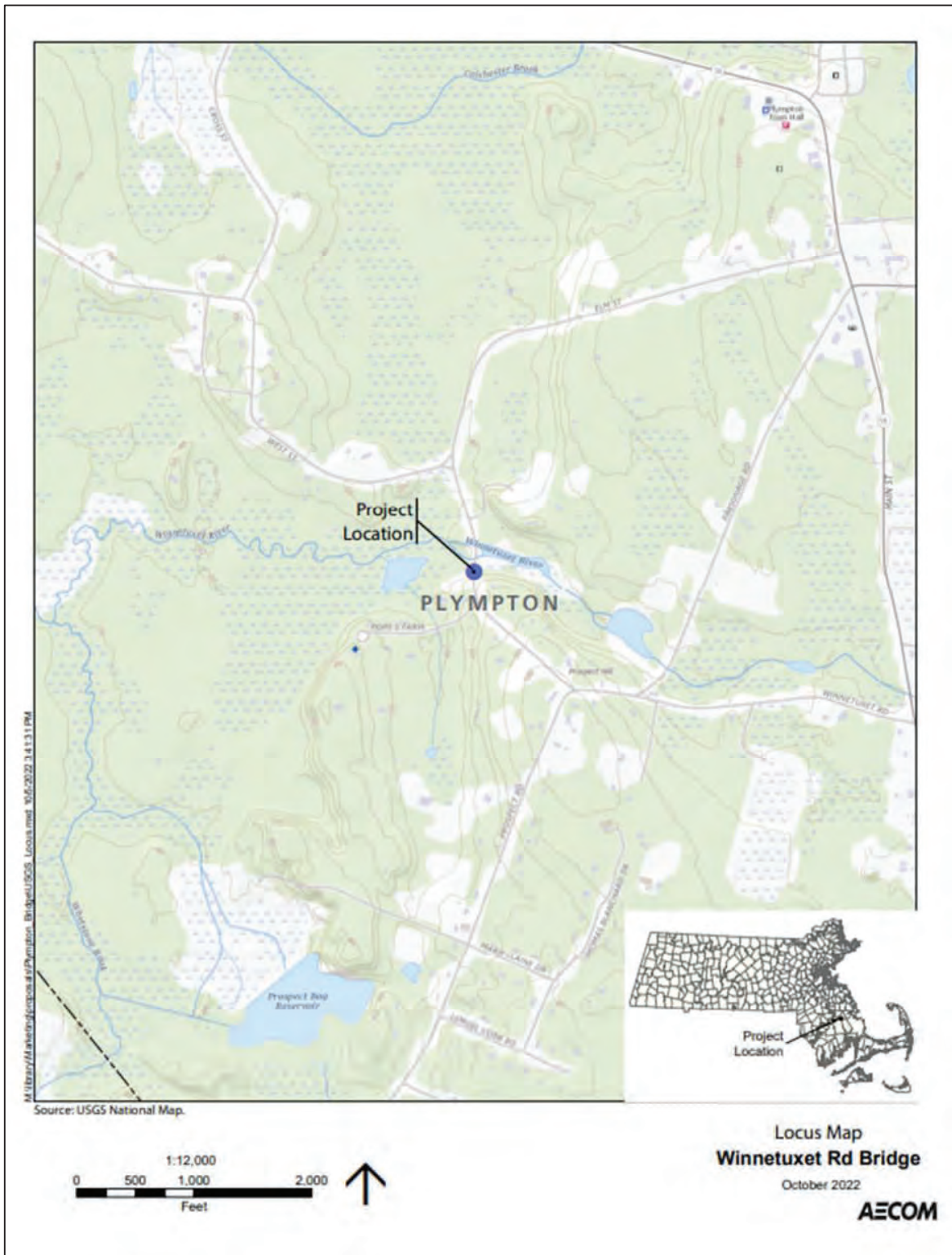


Figure 1: USGS Locus Map



Figure 2: Winnetuxet Bridge Approximate Project Limits

2.0 Project Description

2.1 Proposed Work Summary

The purpose of the project is to improve the bridge to a satisfactory state, as the most recent bridge inspection identified structural deficiencies. A full superstructure and substructure replacement is proposed. Anticipated project limits are approximately 120 feet along Winnetuxet Road. The existing bridge superstructure will be removed as well as the pier below the bridge. The top of the existing abutments will be demolished to allow for a new abutment cap to be cast over them. The new concrete bridge superstructure will be put into place, along with new bridge rails and guardrails at both the southern and northern approaches. A single existing catch basin will be replaced by two new deep sump catch basins, which will flow out of the existing outlet at the wingwall abutting the southwestern quadrant of the bridge. MassDOT standard stone for pipe ends will be placed at the catch basin outlet in order to minimize scour and erosion at the stormwater outfall. The stream bed between the existing abutments will be excavated and replaced with riprap for scour protection at a depth of six feet, and a one-foot layer of naturalized streambed sediment will be replaced above the riprap to match the existing stream bed channel. The natural stream bed channel will be restored within the limits of work. Two Support of Excavation (SOE) steel plates are also proposed to be used within the streambed underneath the bridge. These SOE's will be permanent additions within the streambed in order to support the placement of riprap but will be cut at or below the mudline of the stream.

The existing bridge's current span length is approximately 28 feet and 8 inches and crosses the Winnetuxet River with a bankfull width of approximately 26 feet. The proposed bridge replacement will match the current bridge dimensions. No increase to impervious surface on the project site is proposed.

2.2 Detailed Project Description

The two existing abutments that comprise the substructures will remain a part of the construction project as they are connected to the concrete spillway and must remain in place to avoid any disruption to the existing dam and spillway. These existing abutments will be partially demolished to a level just below the top of the existing spillway to allow for the construction of new abutment caps on the upslope side of the existing abutments. The new abutment caps will be supported on drilled shafts placed upslope of the existing abutments at the northern and southern approaches to the bridge. Prestressed concrete deck beams are proposed for the bridge superstructure.

The existing bridge also has a single support pier located underneath the superstructure, which will be removed. Although the pier is considered to be a single entity, it is comprised of 4 timber columns. The pier will be cut at 2' minimum below the existing streambed, where it will be more accessible during dredging. Cobble and other sediment will need to be excavated from the river before being replaced with new riprap material. The dredging of sediment will occur in the same area as the new riprap fill; therefore, the area of dredged material will be equal to the area of the fill riprap. Sediment excavation will be referred to as dredging for the remainder of the application because it is the excavation of material below the Ordinary High-Water elevation.

Existing stormwater management at the site includes a single catch basin, which flows through a reinforced concrete pipe and outlets at the southwest wingwall. The project proposes to replace the existing catch basin with two new deep sump catch basins located at the southern approach to the bridge. These new catch basins will also route stormwater runoff to the current southwestern outlet. This outlet has a small drop-off that may cause effluent to splatter, which can increase the area of impact of stormwater runoff. In order to mitigate this potential impact, MassDOT standard stone for pipe ends will be placed underneath the outlet to reduce the stormwater splatter radius. This is shown within project plans in **Attachment D**.

This proposed activity will require a submittal of a 401 Water Quality Certification WW-11 Minor Fill and Excavation form. Project activity will also require a Pre-Construction Notification under section 404 of the Clean Water Act from the United States Army Corps of Engineers. The 404 will be filed under Massachusetts General Permit 23 (GP23): Linear Transportation Projects and Wetland/Stream Crossings. GP23 includes activities required for the construction, expansion, modification, or improvement of linear transportation projects and attendant features.

Dredge depths will reach to approximately 6 feet deep within the Winnetuxet River, with total square footage of dredged area reaching approximately 400 square feet. Dredging activities for cobble/sediment will remove approximately 81 cubic yards (CY) of material, and an equal volume will be replaced. The angle of repose for dredging activities was not calculated due to the anticipation of work within the river occurring during low flow periods. A disposal site for excess dredged material has not yet been determined but there are no data that suggest the site contains contaminated material. Therefore, excess dredged materials will be disposed of at an off-site location and stored in a safe manner that complies with local, state, and federal regulations.

Erosion control barriers will be utilized for construction taking place on land, to prevent and mitigate potential sediment discharge into the river system. These will include compost filter tube, straw bales, straw wattle, silt fence, or similar. It is anticipated that work in and around the river will take place during low flow periods, and additionally that flow can be controlled by adjusting the spillway weir in coordination with the town to divert additional flow through the culvert to the north. Despite work within the river occurring during low flow periods, potential storm events may cause flooding. For erosion control within the stream, turbidity curtain will be available for use. The Proposed erosion control measures are detailed in **Attachment G**. MassDOT will coordinate with the contractor to determine which control measures to use and how they will best be implemented. Dredging will most likely be performed with a hydraulic excavator, but the means and methods will be left up to the contractor.

The guardrails leading up to the bridge were also noted to have deficiencies and are in need of replacement. The existing substandard guardrails will be replaced with a new steel back timber guardrail.

There are no underground utilities that will be affected by the proposed project, but there are aerial utility power lines that are within the site. The utility lines will be relocated parallel to the

western side of the bridge to allow for required construction clearances during the project. One new utility pole will be placed, and one existing utility pole will be relocated.

Due to the limited size of the project area and the limited space of the existing Winnetuxet Bridge and Winnetuxet Road, no alterations or additions of roadway shoulders are proposed. There are no existing pedestrian bicycle lanes or sidewalks near the bridge, and no bicycle lanes or sidewalks are proposed as the roadway and bridge at the project site are too narrow. The addition of pedestrian accommodations would require widening the roadway leading to the bridge and the bridge itself and therefore was deemed infeasible.

Members of the U.S Army Corps of Engineers (USACE) Section 408 team were contacted regarding the applicability of this project to the program. Although work will be done on abutments that are attached to the dam, the dam was not constructed by and is not maintained by the USACE. Therefore, no filing will need to be made under the USACE Section 408 program.

During the construction phase of the project, a full roadway closure and detour is proposed, and the detour plan can be found in **Attachment D** of the Project Construction Plans. The full road closure will allow for expedited construction without a required staging plan to maintain user access during construction.

3.0 Anticipated Construction Sequence

The project is estimated to start construction during summer or early fall of 2024, and last for 2 to 4 months to stay within a one season construction timeframe.

Traffic control will start at the beginning of the project, which will create a temporary detour route and bridge closure for the duration of construction which can be found in **Attachment D** as part of the site plans. Project staging for the storage of equipment and material will occur on the roadway approaches leading to the bridge. Overhead utilities will be relocated parallel west of the bridge to create required clearance for construction to take place. Erosion and turbidity controls will be set in place, both within the stream and on land. The approximate locations of these control measures can be seen within **Attachment D** as a part of the site plans. The existing bridge superstructure and pier will then be demolished and removed, respectively. Existing abutments will be demolished to a level just below the top of the existing spillway walls. Construction of two new abutments on the upslope side of the existing abutments wingwalls will then take place. New precast deck beams will then be erected and placed, along with the placement of the new concrete deck bridge. The existing catch basin will be removed, and two new deep sump catch basins will be constructed and routed to pipe to the existing outlet at the southwest wingwall. Stone for pipe ends will be placed the base of the outlet. The bridge railing will then be installed as well as the approach guardrail. The approach roadway work will be excavated and graded, and asphalt will be paved over the bridge deck and approaches. Once all construction activities have concluded, erosion control barriers will gradually be removed as required. The bridge will then be complete and be reopened for traffic.

4.0 Stream Crossing Standards

The proposed bridge replacement will comply with Massachusetts Stream Crossing Standards (MA SCS) to the extent possible. The compliance of the proposed project with the seven SCS standards is described below. The proposed project will comply with five of the seven standards; as noted below, the Embedment SCS is not applicable, and the Crossing Span standard cannot be met within the existing project footprint.

4.1 Type of Crossing

Spans are strongly preferred methods of stream and river crossings. The proposed project is a bridge replacement, which is the preferred choice for the “Type of Crossing” section. The intent of the project design is to match existing dimensions, and to replace the bridge with a concrete bridge. Current bridge dimensions meet the “Type of Crossing” stream crossing standards; therefore, the proposed project will also meet this standard.

4.2 Embedment

The Massachusetts Stream Crossing standards require all culverts to be embedded a minimum of 2 feet, and round pipe culverts to be embedded at least 25% into a stream. No culverts are proposed as part of this project. Therefore, the Embedment standard does not apply.

4.3 Crossing Span

The MA SCS requires that all stream crossing projects meet the “Crossing Span” Standard, which requires the crossing to span channel width a minimum of 1.2 times the bankfull width of the stream. The optimum crossing span recommendation would also provide sufficient headroom for wildlife dry passage. The current crossing span for the bridge does not span the channel width a minimum of 1.2 times the bankfull width, and since the project will match existing dimensions, the new bridge will also not span the channel 1.2 times the bankfull width (bankfull width approximately 26 ft). Altering the crossing span length of the bridge would require alterations to the roadway approaches and the earthen dam, which would increase impacts to environmental resources, including vegetated wetlands and Waters of the US/Commonwealth. The proposed bridge will provide ample headroom for wildlife dry passage, similar to existing conditions.

4.4 Openness

The “Openness” standard of the MA SCS requires that all crossing have an openness ratio (cross-sectional area/ crossing length) of at least 0.82 feet. Therefore, the crossing should be high and wide relative to its length. The optimum Openness ratio is listed as 1.64 feet by the MA SCS, with a minimum height of 6 feet.

The proposed work includes removing the existing pier below the bridge to the bottom of the excavation elevation. The proposed bridge dimensions include a cross-sectional area of 10’-6” in height and 18’-1” in width. The length of the bridge will be approximately 28’-8”. Using the proposed length, the Openness ratio will be approximately 6.57 feet which exceeds the optimum ratio listed by the MA SCS. Therefore, the project will meet the MA SCS for Openness.

4.5 Substrate

The MA SCS requires that all stream crossing projects meet the “Substrate” Standard, which requires natural bottom substrate to be used within the crossing. The substrate design intent is to resist displacement during floods and maintain an appropriate bottom during normal flows. Existing cobble/sediment will be dredged within the river, and replaced with new riprap, crushed stone, and replicated naturalized streambed material. The naturalized streambed material will be placed on the top one foot of the backfilled area in the streambed. Therefore, the MA SCS for “Substrate” will be met.

Additional details regarding the naturalized streambed restoration plans are provided in **Attachment G**.

4.6 Water Depth and Velocity

The MA SCS require that all projects maintain existing water depths and velocities for rivers and streams that are comparable to those found in the natural channel at a variety of flows. The project will maintain existing flow conditions which are controlled by the dam and the town of Plympton; therefore, the Water Depth and Velocity section of the stream crossing standards will be met.

4.7 Banks

The MA SCS require that all projects maintain stream banks on both sides, match the horizontal profile of the existing stream and banks, and not impede riverine wildlife use. The MA SCS also state that projects will optimally allow for sufficient headroom for wildlife.

Project activity for the bridge and riprap replacement will not alter the Winnetuxet Riverbanks and will maintain existing horizontal stream and bank conditions. The project will also implement a streambed restoration effort (**Attachment G**) in order to avoid impediments to riverine wildlife. The project will match existing bridge dimensions and will not alter existing headroom dimensions for wildlife. Therefore, the Banks section of the MA SCS will be met.

5.0 Existing Environmental Resource Areas

Environmental resources, including wetland resources, present in the vicinity of the project site were identified based on a combination of off-site mapping review and on-site wetland delineation. Environmental constraints within the project limits and near to the project site include three bordering vegetated wetlands and the Winnetuxet Pond

5.1 Off-Site Mapping Review

The off-site wetlands investigation included the use of various sources of information and consultation relative to the topography, wetland extent, flood plains, rare and endangered species, and other significant environmental media in the vicinity of the project zone. These resources included U.S Geological Survey (USGS) topographic maps, USDA Web Soil Survey soil maps (WSS), Federal Emergency Management Agency (FEMA) Q3 flood zone maps, MassGIS wetland and waterway data layers from MassDEP, the United States Fish and Wildlife Services (USFWS), the Massachusetts Natural Heritage and Endangered Species Program (NHESP) MassGIS overlay for estimated habitat of rare wildlife, priority habitat of rare species, certified vernal pools, and the Massachusetts Department of Conservation and Recreation Areas

of Critical Environmental Concern (ACEC) program on MassGIS, among others (MassGIS Mapper, accessed June 2023). Both the Winnetuxet River (MA62-24) and Winnetuxet Pond are located in the project vicinity.

The Winnetuxet River is listed as a Category 3 “No-Uses Assessed” waterbody in the MassDEP 2022 Integrated Report (MassDEP, 2021), and flows northwest after discharging from the impoundment, eventually converging with the Taunton River as a part of the Taunton River watershed. The Winnetuxet River is subject to the *Final Pathogen TMDL for the Taunton Watershed* (MassDEP, 2011). The Winnetuxet River is not designated as a Coldwater Fish Resource but is designated as Essential Fish Habitat for diadromous fish species by NOAA under the Fish and Wildlife Coordination Act, as further discussed in **Section 10**.

The findings from the USDA WSS are discussed in **Section 5.1.2** below. The USGS topographic maps show a slight shift in elevation from around 50 ft to 40 ft going west following the flow of the river. The FEMA Q3 flood zone map shows the wetlands and waterways near the project site as having a 1% annual chance flood hazard (**Figure 3**). The Winnetuxet River and Winnetuxet Pond north of the existing bridge are mapped as a regulatory floodway, however the tributary below the existing bridge is not included in the floodway.

The MassGIS wetland and waterway data layers from the MassDEP show no wetlands within the project area but do depict a large deciduous wooded swamp just downstream from the project site. There are no ACECs, Outstanding Resource Waters (ORWs) or NHESP mapped Estimated or Priority Habitat located within or near the project site.

The projects that occur on tributaries to a Wild and Scenic River must be more than a quarter mile away to be excluded from National Park Services and Federal Jurisdiction. The Winnetuxet River is a tributary of the Taunton River, which is designated as a Wild and Scenic River (WSR), but it is located over a mile upstream from the Taunton River.

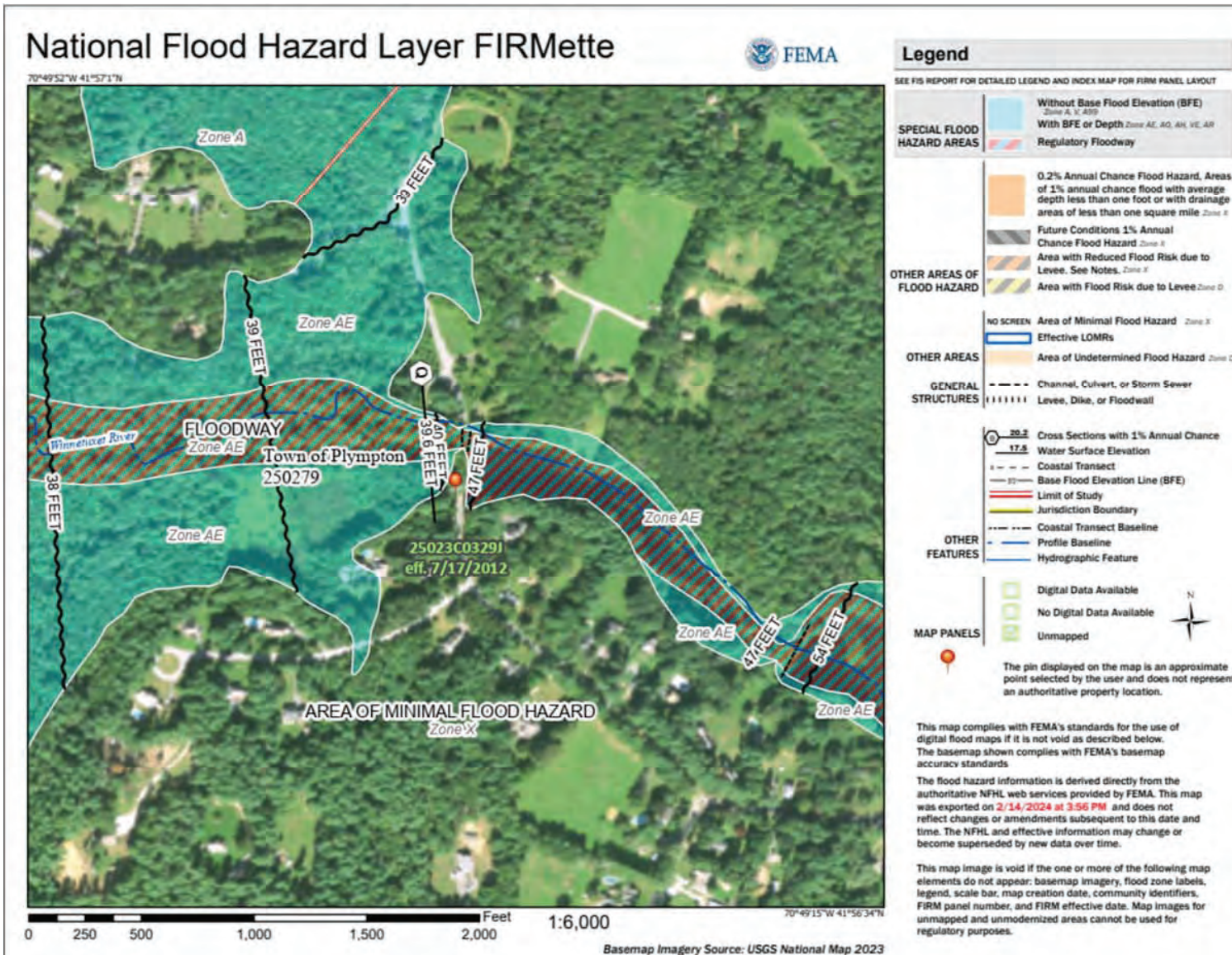


Figure 3: FEMA Flood Insurance Rate Map

5.1.2 Soil Map

The USDA's soil mapping system Web Soil Survey (WSS) was used to develop a detailed map of soil types in and around the project area (Figure 4). The proposed project is located primarily within the 53A type soil area, which is Freetown muck ponded and described as an acidic organic wetland soil. A small portion of the project is also within the 221B soil type, which is Eldridge fine sandy loam and described as a moist sandy outwash soil. Based on on-site



observations, the river is comprised of a combination of gravel and mud substrate with grain sizes ranging from granule to cobble.

Figure 4: Web Soil Survey Map Detailing Soil Types and Properties

5.2 On-Site Wetland Delineation

In addition to reviewing existing mapping materials and documents, the areas in the vicinity of the proposed Winnetuxet Road Bridge replacement were visited by AECOM Professional Wetland Scientists on April 19th and 20th of 2021 to confirm the presence or absence of wetlands or Land Under Water/Waters of the U.S in the proposed work zone. The delineations were conducted in accordance with Section 404 of the Clean Water Act (33 CFR 328), the Corps of Engineers Wetlands Delineation Manual (Technical Report Y-87-1; ACOE 1987), and Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast

region (USACE 2012), and the Massachusetts Wetlands Protection Act (WPA) regulations (310 CMR 10.000).

The on-site wetland delineation identified the waterway of the Winnetuxet River as well as three wetlands along the river and adjacent to the pond. These wetlands are identified as Wetlands 1, 2, and 3. The site plans in **Attachment D** identify the wetland flags marking the boundaries of the wetlands and waterways. While these wetlands are located close to the project site, no wetlands are within the limits of work.

5.2.1 Wetland 1 (W1-Wet)

Wetland 1 is a slightly concaved toed slope Bordering Vegetative Wetland adjacent to Winnetuxet Pond. Dominant Species within W1-Wet include sweet pepperbush (*Clethra alnifolia*), swamp dewberry (*Rubus hispidus*), and tussock sedge (*Carex stricta*). W1-Wet also contained three primary wetland hydrology indicators, including a high-water table (10-inch depth), saturation and water-stained leaves. Secondary positive hydrology indicators included its geomorphic position to nearby bodies of water and a passing grade on the FAC-Neutral Test. W1-wet also displayed hydric soil conditions with a mix of very dark and grey soils, with redox features at 5-14 inches deep and a depleted matrix below the dark surface. Because of the hydric soil ratings, the vegetation FAC-test, and location, Wetland 1 is considered a Bordering Vegetative Wetland (BVW) under the Massachusetts Wetlands Protection Act (WPA) regulations. Wetland 1 is located in the southeastern quadrant of the Winnetuxet Bridge, and is illustrated on the project plans in **Attachment D**.

5.2.2 Wetland 2 (W2-000 Series)

Wetland 2 (W2-000 S) is a slightly concaved palustrine forested wetland (PFO) near the toe of slope along the Winnetuxet River. Dominant Species include eastern white pine (*Pinus strobus*), black cherry (*Prunus serotina*), red maple (*Acer rubrum*), winterberry (*Ilex verticillate*), sweet pepperbush (*Clethra alnifolia*), Canada mayflower (*Maianthemum canadense*), intermediate wood fern (*Dryopteris intermedia*), and swamp dewberry (*Rubus hispidus*). W2-000-S contained two primary indicators for wetland hydrology, including a high-water table (11-inch depth) and saturation. Secondary wetland hydrology indicators included geomorphic position and microtopographic relief. Wetland 2 displayed hydric soil conditions, with a general mix of dark brown and grey soils with some hints of weak red. Redox features were located between 7-17 inches of depth which displayed strong brown coloring. The soil under wetland 2 was also depleted below dark surfaces which further strengthens the indication of the site containing hydric soils. Wetland 2 is located in the northwestern quadrant of the Winnetuxet Bridge, and is illustrated on the project plans in **Attachment D**.

5.2.3 Wetland 3 (W2-100 Series)

Wetland 3 (W2-100 S) is a fairly flat Palustrine forested wetland with slight variation located near to the Winnetuxet River. Dominant Species include red maple (*Acer rubrum*), eastern white pine (*Pinus strobus*), sweet pepperbush (*Clethra alnifolia*), tussock sedge (*Carex stricta*), and eastern skunk cabbage (*Symplocarpus foetidus*). W2-100 S also qualifies under 4 primary wetland hydrology indicators which includes a high-water table (2-inch depth), saturation, water-stained leaves, and oxidized rhizospheres on living roots. Wetland 3 also qualifies under 3 secondary indicators which includes geomorphic position, microtopographic relief, and passing the FAC-neutral Test. Wetland 3 displayed hydric soil conditions, with primarily dark grey soil layers between 2-16 inches as well as displaying redox features between 2-7 inches. The area depicted in **Attachment D** shows approximately 1,250 SF of wetland area, but W3 stretches beyond the map images. Wetland 3 can be found in the southwestern quadrant of the Winnetuxet Bridge.

6.0 Impacts to Commonwealth Waters and Wetlands

The bridge replacement project will require a minimal amount of alteration to the landscape within the project site. Existing vegetation will be maintained with only minimal, selective impacts. The construction process will slightly reduce impervious cover within the area as the roadway leading to the bridge will need to be demolished to replace the bridge and install the new abutment caps. The roadside bank on the eastern side of the northern bridge approach was previously covered in impervious surface but impervious material will be removed upon the completion of the project. There will be no new additions to road impervious surfaces within the area; therefore, there will be no increase in impervious surfaces and no changes to stormwater flows.

The project will impact the streambed of the Winnetuxet River, which is regulated as Land Under Water (LUW)/Waters of the US/Commonwealth, as a result of excavation of existing cobble/sediment and replacement with riprap to depth of six feet. The top one-foot of the impacted streambed will be backfilled with temporarily stockpiled native streambed material. Riprap placement was deemed necessary in order to reduce and limit any scour. Approximately 400 sq ft of impact to LUW/Waters of the US/Commonwealth is anticipated due to the dredging of existing streambed, and then filling with new material to match existing streambed elevations. This work will involve dredging of approximately 81 CY of material. The streambed will be restored to match existing downstream conditions using backfilled naturalized sediment material. Details for this plan can be found in **Attachment G**.

There are no anticipated impacts to vegetated wetlands. One tree is proposed for removal, as illustrated on the project plans in **Attachment D**. The removed tree will not be replanted to reduce the need for branch maintenance near utility poles. The proposed site is less than 1 acre and is mostly comprised of existing developed land and roadway.

The project will make no changes to the dam or spillway that impound water in Winnetuxet Pond. As mentioned above in **Section 2.1 Project Descriptions**, during drier periods, the Winnetuxet River segment flowing below the existing bridge receives very little flow from the Winnetuxet Pond's southwestern spillway and the Town is able to control the amount of water that discharges over the spillway. Work within the river will take place during these low flow periods when the Town can control flow, which will reduce the potential for impacts to water quality and turbidity. Therefore, work within the river is anticipated to produce little to no turbidity or sedimentation. As detailed **Attachment G**, erosion and sedimentation controls will be employed to mitigate turbidity, and turbidity curtain materials will be kept on site in the event that flows are high enough to facilitate deployment.

The project will not be taking place within FEMA designated floodway or 100-year Floodplain (**Figure 3**). Therefore, there will be no increases to FEMA FIRM base flood profile or alterations to regulatory floodways.

A streambed restoration plan has been prepared (**Attachment G**). The proposed work includes excavated existing streambed material to a depth of six feet to accommodate the need to implement layers of crushed stone, riprap, and natural streambed material. The excavated material will be stockpiled outside of wetlands and waterways and re-used in the top one-foot of the restored streambed. The excavated area will be backfilled with 1-foot of crushed stone, 4 feet of riprap, and the top 1 foot will be restored as natural streambed using the stockpiled cobble, gravel, and sand. Natural streambed material topping the replaced fill material will create permanent impacts to the stream. SOE will be necessary for the placement of the riprap fill but will need to remain within the stream once the riprap has been placed (**Attachment D**). The sheets will be cut 2' minimum below the existing streambed and will not result in any long-term or short-term negative impacts to resource areas within the project area.

The intent of the project design is to match existing roadway and bridge cross section dimensions. Widening the bridge and roadway cross section or deviating significantly from existing conditions would result in impacts to wetlands and Waters of the US/Commonwealth. The chosen project designs reduce the level of impact to environmental resource areas and help to prevent potential impacts in the future.

The impacts proposed as a result of the project are discussed within the table below.

Table 1: Project Impacts

What is being impacted	What is the impact	Estimated Area of Impact	Estimated volume of Impact	Type of impact	Reason for impact
Land Under Water/Waters of the U.S/Commonwealth	Sediment and riprap dredging/fill during low flow period. Natural streambed placement over and adjacent to dredged/backfill area	400 sq ft	81 Cubic Yards	Permanent	Crushed stone placement required to accompany riprap . Riprap placement required to limit scour at the abutments. Streambed restoration activity required to replicate the existing natural channel bed. Required to go over the top of rip rap and blend downstream with existing stream material

7.0 Alternatives to Project

The Winnetuxet bridge replacement project considered three primary alternatives to address the condition of the bridge; Each alternative was evaluated based on structural effectiveness and ability to reduce environmental impacts.

7.1 Alternative 1 – Full Bridge Replacement

The first alternative proposed was a complete bridge replacement including the complete removal and upgrade of existing bridge substructures and superstructure. The complete replacement would involve the removal of abutments and support pier. A complete bridge replacement would have resulted in a greater area of impact to wetlands and LUW/Waters of the US/Commonwealth. A complete removal would have also required the dredging and replacement of structures that have been embedded in soils both within and surrounding the Winnetuxet River. In addition to greater direct impacts, this alternative would have a greater potential for erosion, sedimentation and turbidity impacts to nearby wetlands and waterways. The complete bridge replacement alternative may have also required the need to dewater Winnetuxet Pond due to potential impacts to and undermining of the dam spillway, leading to additional short-term impacts. Therefore, this alternative was dismissed from consideration.

7.2 Alternative 2 – No Action

Another proposed alternative for the project was a No-Action alternative. The No-Action alternative would have resulted in no action being taken on the Winnetuxet bridge, and any potential replacements or repairs would not be considered. While this alternative would have eliminated any potential construction-related environmental impact, it also did not adequately address the issues involving deteriorating structures and materials within the existing bridge. The

No-Action alternative would have posed potential safety hazards that may have resulted from further structural deterioration. Therefore, this alternative was dismissed from consideration.

7.3 Alternative 3 – Preferred -Superstructure and Limited Substructure Replacement

The final alternative that was proposed and ultimately chosen, was a bridge replacement that retained part of the existing substructure. This alternative features new abutments constructed behind (i.e., on the upslope/non-stream side of) existing abutments in order to eliminate the need for their removal, which would result in greater impact on wetlands and Waters of the US/Commonwealth. In addition, the abutments are connected to the dam spillway, and it is not feasible to remove them without disrupting the existing dam and spillway. This selected alternative fits the project parameters, roadway geometry, and the arrangement, spacing and span of the substructure units. The selected alternative will also meet site accessibility requirements as well as constructability standards.

7.3.1 Bridge Structure Alternatives

A single span bridge is the most appropriate structure type for Winnetuxet Road over Winnetuxet River. There are three alternatives for the bridge structure. One (Alternative A) features new abutments constructed behind the existing abutments. These new abutments would also be installed underneath the existing roadway and not within the Winnetuxet River waterway. The substructure includes a concrete cap on drilled shafts. The superstructure type for this alternative is prestressed concrete deck beams. The other two (Alternatives B and C) include cantilevered concrete caps, that span over the existing abutments, on drilled shafts.

For Alternatives A and B, the proposed superstructure is precast concrete deck beams. The shallow depth of these beams helps limit the amount that the profile will need to be raised for Alternative A. They also require a shallower concrete deck. For Alternative C, the proposed superstructure is timber flitched beams. This more closely matches the existing structure and satisfies the Town of Plympton's preference.

All three options fit the project parameters, roadway geometry, site accessibility, constructability, and the arrangement, spacing and span of the substructure units. They also have shallow depths to minimize the impacts to the profile.

For all three alternatives the pier is to be removed and the existing abutments are to remain in place because they are connected to the retaining walls of the spillway. Leaving them in place is necessary to avoid any disruption to the existing dam and spillway. They will be demolished down to near the top of the spillway elevation.

Thus, Alternative B is proposed for the bridge replacement. It consists of a single span with concrete abutments which cantilever over the existing abutments and are supported on drilled shafts and prestressed concrete deck beams spanning between the proposed abutments. It is recommended that the existing abutments remain in place because they are connected to the spillway and are necessary to avoid any disruption to the existing dam and spillway.

7.4 Alternatives Meeting Stream Crossing Standards

The only alternative that would meet all Stream Crossing Standards is Alternative 1, which would be a complete bridge replacement that would replace both the superstructure and the substructure of the bridge. This alternative would meet all the listed stream crossing standards, including the Crossing Span Standard which would allow for the bridge to span 1.2 times bankfull width. However, this alternative would also require the removal and replacement of the current abutments, which are integral with the earthen dam and are attached to the concrete spillway. A full removal would also require a partial removal of the current Winnetuxet Pond Dam. If the dam was to be removed, the pond would need to be dewatered and the adjacent vegetated wetlands be impacted.

The Alternative 2 No-Action alternative would meet most of the stream crossing standards listed above but would still fail to meet the Crossing Span Standard.

Alternative 3 would meet all the listed applicable stream crossing standards but would fail to meet the Crossing Span Standard. However, as mentioned in **Section 4.3**, the preferred alternative would match existing bridge dimensions. Therefore, the Crossing Span Standard of the MA SCS would not be applicable.

8.0 Stormwater Management

A stormwater management report has been prepared for this project and can be found in **Attachment E**. The Winnetuxet Road over the Winnetuxet River Bridge Plan will match existing bridge dimensions and will add no new road impervious surfaces to the site. While the current bridge superstructure is wooden and will be replaced with a concrete deck bridge, stormwater will still sheetflow off the sides of the deck similar to existing conditions. There will also be two new deep sump catch basins that will be installed at the southern approach of the bridge, which will be routed to the same stormwater outlet that currently receives flow from the existing catch basin. There will be a slight reduction of impervious surface along the northeastern roadside edge of the bridge, which will amount to between 5 to 20 sq ft.

Structural stormwater control measures (SCMs) were considered early in the design phase but were dismissed from consideration due to the limited size and existing constraints of the project area. The project limits only extend 120 ft along Winnetuxet Road and Winnetuxet Bridge and there is very limited area outside of the road within the project limits of work. SCMs, such as a swale, would not be feasible with such a small project area.

Since there will be minimal alterations to impervious surfaces or existing grades, the drainage patterns and recharge rates of the area will remain the same. The existing stormwater management consists of a single catch basin and outfall, which are in a deteriorated condition. The site will meet MassDEP Stormwater Standards set forth in the Stormwater Management Report (**Attachment E**) to the maximum extent practicable by repairing the current outfall and replacing the existing catch basins with two new deep sump catch basins. The project will meet the Standards to the maximum extent practicable by improving stormwater quality via replacing the single catch basin with two deep sump catch basins.

9.0 Threatened and Endangered Species

The United States Fish and Wildlife Service (USFWS) was consulted to determine if any endangered species are located within the project vicinity. The verification request identified four threatened species within the project area: Northern Long Eared Bat (NLEB) (*Myotis septentrionalis*), the Indian Bat (*Myotis sodalists*), Plymouth Redbelly Turtle (*Pseudemys rubriventris bangsi*), and the Monarch Butterfly (*Danaus plexippus*). The USFWS consultation letter results are in **Attachment B**. Findings from the NHESP data layers on MassMapper also found that no estimated or priority habitats for rare wildlife or rare species are located within the project limits or buffer zones.

While the Plymouth Redbelly Turtle was identified as being potentially within the project site, consultation with the Massachusetts Natural Heritage and Endangered Species Program (NHESP) determined that there is no data to suggest the presence of habitat and/or individuals at this project location. The Monarch Butterfly is only a Candidate Species and has no conservation measures at this time (**Attachment B & Attachment L**).

It was determined that the proposed project activity may affect but is not likely to adversely affect the endangered Indian bat and/or threatened NLEB. The project is not within Indian bat range but is within NLEB range. After consultation with the USFWS regarding potential NLEB habitat alterations, a set of Avoidance and Minimization Measures (AMMs) were recommended. These AMMS included ensuring that all operators, employees, and contractors working in areas of known or presumed habitat are aware of all FWHA/FRA/FTA (Transportation Agencies) environmental commitments, including all applicable AMMs. A few select trees are being considered for removal on site, but the work will take place outside of the NLEB hibernacula and maternity roost trees buffer zones.

10.0 NOAA Essential Fish Habitat

Through coordination between MassDOT and the National Oceanic and Atmospheric Administration (NOAA), it was determined that the Winnetuxet River is designated as habitat for diadromous fish species (herring and eels). These species would be covered as prey for federally managed species and covered under the Fish and Wildlife Coordination Act. The consultation verification form for Essential Fish Habitat (EFH) was filled out and can be found in **Attachment J**.

Although the National Marine Fisheries Service (NMFS) Mapper page states that the proposed project site is conservatively mapped as Essential Fish Habitat for Atlantic Surfclam and Scup, the site does not provide habitat for these species. Both species require high salinity. Surfclam require coastal beach habitat. Scup are located in coastal waters. These species are not present at the site as a result of the lack of coastal habitat. The site supports inland wetland habitats. The NMFS Endangered Species Act Section 7 Mapper also does not list the site as a consultation area of concern for endangered species of concern.

According to the Massachusetts Division of Marine Fisheries Technical Report TR-47, the main branch of the Winnetuxet River has both a spring and fall Time of Year (TOY) restriction periods for the portion of the river in Halifax, but no restrictions are identified in Plympton.

11.0 Mitigation

Sediment and erosion control measures (installation of erosion control barriers) will be placed according to the project plans in **Attachment D**. These controls will also minimize the potential for sedimentation to impact waterways downstream and any adjacent wetlands. The bridge replacement plan will utilize and maintain existing site dimensions and conditions in order to both meet project requirements and minimize any potential environmental impacts. The project will also avoid the need for any equipment or gear from entering the stream during the construction process to avoid any further damages to surrounding waterways. Equipment will be utilized from either the banks or roadway, outside of the river.

Approximately 81 cubic yards will be dredged from the streambed just downgradient of the existing spillway to then be replaced at a depth of six feet with riprap to help reinforce the streambed from erosion and prevent long-term discharge. Therefore, work within the Winnetuxet River will be unavoidable. Naturalized streambed will be placed over the top of replacement riprap and blend into the existing natural streambed downstream. The permanent impacts to LUW/Waters of the U.S will be approximately 400 square feet.

The only vegetation that will be disturbed will be a grassed area within the road right-of-way, a tree identified for removal, and tree branches that require trimming. The disturbed grassed area will be re-graded to match existing conditions at the conclusion of construction, and the area will be seeded with a MassDOT landscaping native seed mix. There are also no known invasive species located within the project site, therefore no plan has been proposed for invasive species control.

General construction safety procedures will be followed to minimize the potential for events that could result in spills, releases, or other environmental damage. During construction, work locations will be secured in order to avoid unauthorized entry. Supplemental signs, construction barriers, etc., will be used as necessary to provide safety to construction workers during the construction process per OSHA and other applicable regulations. Waste material, debris, and trash will be cleaned from the work site at the end of each day and placed in trash barrels and/or dumpsters which will be disposed of off-site. Dumping spoiled material, waste, or other debris into wetland resource areas and/or buffer zones will not be allowed.

Any work done within the river, which will be the dredging and replacement of 81 CY of riprap and the addition of naturalized streambed material, will be done during low flow periods in which the town can also control the flow of water over the spillway with a weir. As stated previously, the project will have limited impacts to waterways within the project site or nearby. The only impact within the Winnetuxet River would be the addition of naturalized streambed which will top the replacement riprap. As stated above, the placement of riprap within the stream is necessary in order to limit scour. The naturalized material will be used to mitigate the impact of riprap placement and help to create a more natural streambed upon the completion of all project activity.

12.0 Conclusion

The Winnetuxet Road over the Winnetuxet River Bridge project will remove and replace the existing structurally deficient bridge. Construction will take place during low flow periods, when the Town of Plympton can limit water flowing over the dam spillway. Erosion and sediment control measures will be used for additional protection. Work done within Waters of the US/Commonwealth for the purpose of structural bridge stabilization, will have limited impacts on Land Under Water/Waters of the US/Commonwealth as this area will be re-graded to match existing grades and the top one foot restored with natural streambed material. Vegetated wetlands located downstream and adjacent to the project site will not be impacted. The applicant respectfully requests that MassDEP and the U.S Army Corps of Engineers find these measures adequately protective of the interests identified in the 401 Water Quality and Section 404 Regulations and issue a Water Quality Certificate and 404 Authorization approving the work shown on the accompanying plan set.

Attachment A: Aerial Map and Environmental Constraints Map



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Base map data supplied by MassGIS.
Date of photo: 2021



- Approximate Area of Work
- Parcel Line

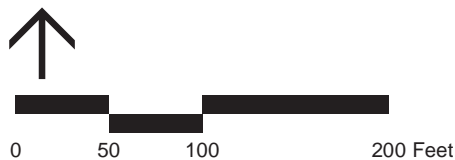
Approximate Area of Work

Winnetuxet Road
Bridge Over Winnetuxet River
(Bridge No. P-14-001(Cen))
Plympton, MA





Base map data supplied by MassGIS.
Date of photo: 2021



- Approximate Area of Work
- Parcel Line
- Delineated Wetlands
- Top of Inland Bank to Pond
- Top of Inland Bank to Stream
- Bordering Vegetated Wetland (BWV)

Environmental Constraints

Winnetuxet Road
Bridge Over Winnetuxet River
(Bridge No. P-14-001(Cen))
Plympton, MA



Attachment B: DOT USFWS NLAA Concurrence Verification Letter



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:

March 24, 2023

Project code: 2023-0059856

Project Name: 609435 - PLYMPTON- BRIDGE REPLACEMENT, P-14-001 (445),
WINNETUXET ROAD OVER WINNETUXET RIVER

Subject: Concurrence verification letter for the '609435 - PLYMPTON- BRIDGE REPLACEMENT, P-14-001 (445), WINNETUXET ROAD OVER WINNETUXET RIVER' project under the revised February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat.

To whom it may concern:

The U.S. Fish and Wildlife Service (Service) has received your request dated March 24, 2023 to verify that the **609435 - PLYMPTON- BRIDGE REPLACEMENT, P-14-001 (445), WINNETUXET ROAD OVER WINNETUXET RIVER** (Proposed Action) may rely on the concurrence provided in the February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat (PBO) to satisfy requirements under Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C 1531 *et seq.*).

Based on the information you provided (Project Description shown below), you have determined that the Proposed Action is within the scope and adheres to the criteria of the PBO, including the adoption of applicable avoidance and minimization measures, and may affect, but is not likely to adversely affect (NLAA) the endangered Indiana bat (*Myotis sodalis*) and/or the threatened Northern long-eared bat (*Myotis septentrionalis*). Consultation with the Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) is required.

The Service has 14 calendar days to notify the lead Federal action agency or designated non-federal representative if we determine that the Proposed Action does not meet the criteria for a NLAA determination under the PBO. If we do not notify the lead Federal action agency or designated non-federal representative within that timeframe, you may proceed with the Proposed Action under the terms of the NLAA concurrence provided in the PBO. This verification period allows Service Field Offices to apply local knowledge to implementation of the PBO, as we may

identify a small subset of actions having impacts that were unanticipated. In such instances, Service Field Offices may request additional information that is necessary to verify inclusion of the proposed action under the PBO.

For Proposed Actions that include bridge/culvert or structure removal, replacement, and/or maintenance activities: If your initial bridge/culvert or structure assessments failed to detect Indiana bats, but you later detect bats prior to, or during construction, please submit the Post Assessment Discovery of Bats at Bridge/Culvert or Structure Form (User Guide Appendix E) to this Service Office. In these instances, potential incidental take of Indiana bats may be exempted provided that the take is reported to the Service.

If the Proposed Action is modified, or new information reveals that it may affect the Indiana bat and/or Northern long-eared bat in a manner or to an extent not considered in the PBO, further review to conclude the requirements of ESA Section 7(a)(2) may be required. If the Proposed Action may affect any other federally-listed or proposed species, and/or any designated critical habitat, additional consultation between the lead Federal action agency and this Service Office is required. If the proposed action has the potential to take bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act may also be required. In either of these circumstances, please contact this Service Office.

The following species may occur in your project area and **are not** covered by this determination:

- Monarch Butterfly *Danaus plexippus* Candidate
- Plymouth Redbelly Turtle *Pseudemys rubriventris bangsi* Endangered

PROJECT DESCRIPTION

The following project name and description was collected in IPaC as part of the endangered species review process.

NAME

609435 - PLYMPTON- BRIDGE REPLACEMENT, P-14-001 (445), WINNETUXET ROAD OVER WINNETUXET RIVER

DESCRIPTION

609435 - PLYMPTON- BRIDGE REPLACEMENT, P-14-001 (445), WINNETUXET ROAD OVER WINNETUXET RIVER

Bridge replacement

Plymouth Redbelly Turtle: After consulting with the Massachusetts Natural Heritage and Endangered Species Program (NHESP), it was determined that there is no data to suggest the presence of habitat and/or individuals at this project location.

Monarch Butterfly: Candidate Species only, no conservation measures at this time.

DETERMINATION KEY RESULT

Based on your answers provided, this project(s) may affect, but is not likely to adversely affect the endangered Indiana bat and/or the threatened Northern long-eared bat, therefore, consultation with the U.S. Fish and Wildlife Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended 16 U.S.C. 1531 *et seq.*) is required. However, also based on your answers provided, this project may rely on the concurrence provided in the revised February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat.

QUALIFICATION INTERVIEW

1. Is the project within the range of the Indiana bat^[1]?

[1] See [Indiana bat species profile](#)

Automatically answered

No

2. Is the project within the range of the Northern long-eared bat^[1]?

[1] See [Northern long-eared bat species profile](#)

Automatically answered

Yes

3. Which Federal Agency is the lead for the action?

A) Federal Highway Administration (FHWA)

4. Are *all* project activities limited to non-construction^[1] activities only? (examples of non-construction activities include: bridge/abandoned structure assessments, surveys, planning and technical studies, property inspections, and property sales)

[1] Construction refers to activities involving ground disturbance, percussive noise, and/or lighting.

No

5. Does the project include *any* activities that are **greater than** 300 feet from existing road/rail surfaces^[1]?

[1] Road surface is defined as the actively used [e.g. motorized vehicles] driving surface and shoulders [may be pavement, gravel, etc.] and rail surface is defined as the edge of the actively used rail ballast.

No

6. Does the project include *any* activities **within** 0.5 miles of a known Indiana bat and/or NLEB hibernaculum^[1]?

[1] For the purpose of this consultation, a hibernaculum is a site, most often a cave or mine, where bats hibernate during the winter (see suitable habitat), but could also include bridges and structures if bats are found to be hibernating there during the winter.

No

7. Is the project located **within** a karst area?

No

8. Is there *any* suitable^[1] summer habitat for Indiana Bat or NLEB **within** the project action area^[2]? (includes any trees suitable for maternity, roosting, foraging, or travelling habitat)

[1] See the Service's [summer survey guidance](#) for our current definitions of suitable habitat.

[2] The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR Section 402.02). Further clarification is provided by the [User's Guide for the Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat](#).

Yes

9. Will the project remove *any* suitable summer habitat^[1] and/or remove/trim any existing trees **within** suitable summer habitat?

[1] See the Service's [summer survey guidance](#) for our current definitions of suitable habitat.

Yes

10. Will the project clear more than 20 acres of suitable habitat per 5-mile section of road/rail?

No

11. Have presence/probable absence (P/A) summer surveys^{[1][2]} been conducted^{[3][4]} **within** the suitable habitat located within your project action area?

[1] See the Service's [summer survey guidance](#) for our current definitions of suitable habitat.

[2] Presence/probable absence summer surveys conducted within the fall swarming/spring emergence home range of a documented Indiana bat hibernaculum (contact local Service Field Office for appropriate distance from hibernacula) that result in a negative finding requires additional consultation with the local Service Field Office to determine if clearing of forested habitat is appropriate and/or if seasonal clearing restrictions are needed to avoid and minimize potential adverse effects on fall swarming and spring emerging Indiana bats.

[3] For projects within the range of either the Indiana bat or NLEB in which suitable habitat is present, and no bat surveys have been conducted, the transportation agency will assume presence of the appropriate species. This assumption of presence should be based upon the presence of suitable habitat and the capability of bats to occupy it because of their mobility.

[4] Negative presence/probable absence survey results obtained using the [summer survey guidance](#) are valid for a minimum of two years from the completion of the survey unless new information (e.g., other nearby surveys) suggest otherwise.

Yes

SUBMITTED DOCUMENTS

- [609435_Plympton_MassDOT_AcousticSurvey_BridgeInspection.pdf https://ipac.ecosphere.fws.gov/project/EIRSRD2IHNBSNP66PRNM333WSQ/projectDocuments/118859215](https://ipac.ecosphere.fws.gov/project/EIRSRD2IHNBSNP66PRNM333WSQ/projectDocuments/118859215)

12. Did the presence/probable absence (P/A) summer surveys detect Indiana bats and/or NLEB^[1]?

[1] P/A summer surveys conducted within the fall swarming/spring emergence home range of a documented Indiana bat hibernaculum (contact local Service Field Office for appropriate home range) that result in a negative finding requires additional consultation with the local Service Field Office to determine if clearing of forested habitat is appropriate and/or if seasonal clearing restrictions are needed to avoid and minimize potential adverse effects on fall swarming and spring emerging Indiana bats.

No

13. Were the P/A summer surveys conducted **within** the fall swarming/spring emergence range of a documented Indiana bat hibernaculum^[1]?

[1] Contact the local Service Field Office for appropriate distance from hibernacula.

No

14. Does the project include activities **within documented NLEB habitat**^{[1][2]}?

[1] Documented roosting or foraging habitat – for the purposes of this consultation, we are considering documented habitat as that where Indiana bats and/or NLEB have actually been captured and tracked using (1) radio telemetry to roosts; (2) radio telemetry biangulation/triangulation to estimate foraging areas; or (3) foraging areas with repeated use documented using acoustics. Documented roosting habitat is also considered as suitable summer habitat within 0.25 miles of documented roosts.)

[2] For the purposes of this key, we are considering documented corridors as that where Indiana bats and/or NLEB have actually been captured and tracked to using (1) radio telemetry; or (2) treed corridors located directly between documented roosting and foraging habitat.

No

15. Will the removal or trimming of habitat or trees occur **within** suitable but **undocumented NLEB** roosting/foraging habitat or travel corridors?

Yes

16. What time of year will the removal or trimming of habitat or trees **within** suitable but **undocumented NLEB** roosting/foraging habitat or travel corridors occur?

C) During both the active and inactive seasons

17. Will *any* tree trimming or removal occur **within** 100 feet of existing road/rail surfaces?

Yes

18. Will *any* tree trimming or removal occur **between** 100-300 feet of existing road/rail surfaces?

No

19. Are *all* trees that are being removed clearly demarcated?

Yes

20. Will the removal of habitat or the removal/trimming of trees involve the use of **temporary** lighting?

Yes

21. Will the removal of habitat or the removal/trimming of trees include installing new or replacing existing **permanent** lighting?

No

22. Does the project include wetland or stream protection activities associated with compensatory wetland mitigation?

No

23. Does the project include slash pile burning?

No

24. Does the project include *any* bridge removal, replacement, and/or maintenance activities (e.g., any bridge repair, retrofit, maintenance, and/or rehabilitation work)?

Yes

25. Is there *any* suitable habitat^[1] for Indiana bat or NLEB **within** 1,000 feet of the bridge? (includes any trees suitable for maternity, roosting, foraging, or travelling habitat)

[1] See the Service's current [summer survey guidance](#) for our current definitions of suitable habitat.

Yes

26. Has a bridge assessment^[1] been conducted **within** the last 24 months^[2] to determine if the bridge is being used by bats?

[1] See [User Guide Appendix D](#) for bridge/structure assessment guidance

[2] Assessments must be completed no more than 2 years prior to conducting any work below the deck surface on all bridges that meet the physical characteristics described in the Programmatic Consultation, regardless of whether assessments have been conducted in the past. Due to the transitory nature of bat use, a negative result in one year does not guarantee that bats will not use that bridge/structure in subsequent years.

Yes

SUBMITTED DOCUMENTS

- [609435_Plympton_MassDOT_AcousticSurvey_BridgeInspection.pdf](https://ipac.ecosphere.fws.gov/project/EIRSRD2IHNBSNP66PRNM333WSQ/projectDocuments/118859215) <https://ipac.ecosphere.fws.gov/project/EIRSRD2IHNBSNP66PRNM333WSQ/projectDocuments/118859215>

27. Did the bridge assessment detect *any* signs of Indiana bats and/or NLEBs roosting in/under the bridge (bats, guano, etc.)^[1]?

[1] If bridge assessment detects signs of *any* species of bats, coordination with the local FWS office is needed to identify potential threatened or endangered bat species. Additional studies may be undertaken to try to identify which bat species may be utilizing the bridge prior to allowing *any* work to proceed.

Note: There is a small chance bridge assessments for bat occupancy do not detect bats. Should a small number of bats be observed roosting on a bridge just prior to or during construction, such that take is likely to occur or does occur in the form of harassment, injury or death, the PBO requires the action agency to report the take. Report all unanticipated take within 2 working days of the incident to the USFWS. Construction activities may continue without delay provided the take is reported to the USFWS and is limited to 5 bats per project.

No

28. Will the bridge removal, replacement, and/or maintenance activities include installing new or replacing existing **permanent** lighting?

No

29. Does the project include the removal, replacement, and/or maintenance of *any* structure other than a bridge? (e.g., rest areas, offices, sheds, outbuildings, barns, parking garages, etc.)

No

30. Will the project involve the use of *any* **temporary** lighting in addition to the lighting already indicated for habitat removal (including the removal or trimming of trees), or bridge/structure removal, replacement or maintenance activities?

Yes

31. Is there *any* suitable habitat **within** 1,000 feet of the location(s) where **temporary** lighting (other than the lighting already indicated for habitat removal (including the removal or trimming of trees) or bridge/structure removal, replacement or maintenance activities) will be used?

Yes

32. Will the project install new or replace existing **permanent** lighting?

No

33. Does the project include percussives or other activities (**not including tree removal/trimming or bridge/structure work**) that will increase noise levels above existing traffic/background levels?

Yes

34. Will the activities that use percussives (**not including tree removal/trimming or bridge/structure work**) and/or increase noise levels above existing traffic/background levels be conducted *during* the active season^[1]?

[1] Coordinate with the local Service Field Office for appropriate dates.

Yes

35. Will *any* activities that use percussives (**not including tree removal/trimming or bridge/structure work**) and/or increase noise levels above existing traffic/background levels be conducted *during* the inactive season^[1]?

[1] Coordinate with the local Service Field Office for appropriate dates.

Yes

36. Are *all* project activities that are **not associated with** habitat removal, tree removal/trimming, bridge and/or structure activities, temporary or permanent lighting, or use of percussives, limited to actions that DO NOT cause any additional stressors to the bat species?

Examples: lining roadways, unlighted signage, rail road crossing signals, signal lighting, and minor road repair such as asphalt fill of potholes, etc.

Yes

37. Will the project raise the road profile **above the tree canopy**?

No

38. Are the project activities that use percussives (not including tree removal/trimming or bridge/structure work) consistent with a Not Likely to Adversely Affect determination in this key?

Automatically answered

Yes, because the activities are within 300 feet of the existing road/rail surface, greater than 0.5 miles from a hibernacula, and conducted during the active season within undocumented habitat.

39. Are the project activities that use percussives (not including tree removal/trimming or bridge/structure work) and/or increase noise levels above existing traffic/background levels consistent with a No Effect determination in this key?

Automatically answered

Yes, because the activities are within 300 feet of the existing road/rail surface, greater than 0.5 miles from a hibernacula, and conducted during the inactive season

40. Is the location of this project consistent with a Not Likely to Adversely Affect determination in this key?

Automatically answered

Yes, because no bats were detected during presence/probable absence surveys conducted during the summer survey season and outside of the fall swarming/spring emergence periods. Additionally, all activities were at least 0.5 miles from any hibernaculum.

41. Is the bridge removal, replacement, or maintenance activities portion of this project consistent with a No Effect determination in this key?

Automatically answered

Yes, because the bridge has been assessed using the criteria documented in the BA and no signs of bats were detected

42. **General AMM 1**

Will the project ensure *all* operators, employees, and contractors working in areas of known or presumed bat habitat are aware of *all* FHWA/FRA/FTA (Transportation Agencies) environmental commitments, including all applicable Avoidance and Minimization Measures?

Yes

PROJECT QUESTIONNAIRE

1. Have you made a No Effect determination for *all* other species indicated on the FWS IPaC generated species list?

Yes

2. Have you made a May Affect determination for *any* other species on the FWS IPaC generated species list?

N/A

3. How many acres^[1] of trees are proposed for removal between 0-100 feet of the existing road/rail surface?

[1] If described as number of trees, multiply by 0.09 to convert to acreage and enter that number.

0.1

4. Please describe the proposed bridge work:

The two-span timber bridge spans the primary spillway of a dam owned and controlled by the Town of Plympton. Both full bridge replacement and superstructure replacement are under consideration at this time. Work will include associated excavation, fill, grading, paving and miscellaneous items. Anticipated project limits are approximately 120 feet along Winnetuxet Road, with activity limited to within the Town layout to avoid right-of-way and environmental impacts.

5. Please state the timing of all proposed bridge work:

Fall 2023 - Fall 2025

6. Please enter the date of the bridge assessment:

June 1, 2022

AVOIDANCE AND MINIMIZATION MEASURES (AMMS)

This determination key result includes the commitment to implement the following Avoidance and Minimization Measures (AMMs):

GENERAL AMM 1

Ensure all operators, employees, and contractors working in areas of known or presumed bat habitat are aware of all FHWA/FRA/FTA (Transportation Agencies) environmental commitments, including all applicable AMMs.

DETERMINATION KEY DESCRIPTION: FHWA, FRA, FTA PROGRAMMATIC CONSULTATION FOR TRANSPORTATION PROJECTS AFFECTING NLEB OR INDIANA BAT

This key was last updated in IPaC on October 11, 2022. Keys are subject to periodic revision.

This decision key is intended for projects/activities funded or authorized by the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), and/or Federal Transit Administration (FTA), which may require consultation with the U.S. Fish and Wildlife Service (Service) under Section 7 of the Endangered Species Act (ESA) for the endangered **Indiana bat** (*Myotis sodalis*) and the threatened **Northern long-eared bat** (NLEB) (*Myotis septentrionalis*).

This decision key should only be used to verify project applicability with the Service's [February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects](#). The programmatic biological opinion covers limited transportation activities that may affect either bat species, and addresses situations that are both likely and not likely to adversely affect either bat species. This decision key will assist in identifying the effect of a specific project/activity and applicability of the programmatic consultation. The programmatic biological opinion is not intended to cover all types of transportation actions. Activities outside the scope of the programmatic biological opinion, or that may affect ESA-listed species other than the Indiana bat or NLEB, or any designated critical habitat, may require additional ESA Section 7 consultation.

IPAC USER CONTACT INFORMATION

Agency: Massachusetts Department of Transportation

Name: Hana Isihara

Address: 10 Park Plaza

City: Boston

State: MA

Zip: 02116

Email: hana.l.isihara@dot.state.ma.us

Phone: 6178964454

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Federal Highway Administration

Attachment C: Wetland Data Sheets

<p>U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Northcentral and Northeast Region See ERDC/EL TR-12-1; the proponent agency is CECW-CO-R</p>	<p><i>OMB Control #: 0710-0024, Exp: 11/30/2024</i> Requirement Control Symbol EXEMPT: <i>(Authority: AR 335-15, paragraph 5-2a)</i></p>
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Project/Site: Winnetuxet Road City/County: Plympton Sampling Date: 4/20/21
 Applicant/Owner: _____ State: MA Sampling Point: UPL-1
 Investigator(s): Tom Touchet Section, Township, Range: _____
 Landform (hillside, terrace, etc.): Roadside/shoulder Local relief (concave, convex, none): none Slope %: 0 to 1
 Subregion (LRR or MLRA): LRR R, MLRA 144A Lat: 41.94655°N Long: 70.82608°W Datum: WGS84
 Soil Map Unit Name: Freetown muck, ponded, 0 to 1 percent slopes (53A) NWI classification: UPL

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 <u>X</u>	<p>Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____</p>
Hydric Soil Present?	Yes _____ No <u>X</u>	
Wetland Hydrology Present?	Yes _____ No <u>X</u>	
Remarks: (Explain alternative procedures here or in a separate report.)		

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <p>____ Surface Water (A1) ____ Water-Stained Leaves (B9) ____ High Water Table (A2) ____ Aquatic Fauna (B13) ____ Saturation (A3) ____ Marl Deposits (B15) ____ Water Marks (B1) ____ Hydrogen Sulfide Odor (C1) ____ Sediment Deposits (B2) ____ Oxidized Rhizospheres on Living Roots (C3) ____ Drift Deposits (B3) ____ Presence of Reduced Iron (C4) ____ Algal Mat or Crust (B4) ____ Recent Iron Reduction in Tilled Soils (C6) ____ Iron Deposits (B5) ____ Thin Muck Surface (C7) ____ Inundation Visible on Aerial Imagery (B7) ____ Other (Explain in Remarks) ____ Sparsely Vegetated Concave Surface (B8)</p>	<p><u>Secondary Indicators (minimum of two required)</u></p> <p>____ Surface Soil Cracks (B6) ____ 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) ____ Microtopographic Relief (D4) ____ FAC-Neutral Test (D5)</p>
<p>Field Observations:</p> <p>Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)</p>	<p>Wetland Hydrology Present? Yes _____ No <u>X</u></p>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: No hydrology present	

VEGETATION – Use scientific names of plants.

Sampling Point: UPL-1

<u>Tree Stratum</u> (Plot size: <u>10x40ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status																																	
1. <u>Quercus alba</u>	40	Yes	FACU	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0%</u> (A/B)																																
2. _____	_____	_____	_____																																	
3. _____	_____	_____	_____																																	
4. _____	_____	_____	_____																																	
5. _____	_____	_____	_____																																	
6. _____	_____	_____	_____																																	
7. _____	_____	_____	_____																																	
<u>40</u> =Total Cover																																				
<u>Sapling/Shrub Stratum</u> (Plot size: <u>10x40ft</u>)				Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="text-align:right;">Total % Cover of:</td> <td style="text-align:center;">_____</td> <td style="text-align:right;">Multiply by:</td> <td style="text-align:center;">_____</td> </tr> <tr> <td>OBL species</td> <td style="text-align:center;"><u>0</u></td> <td>x 1 =</td> <td style="text-align:center;"><u>0</u></td> </tr> <tr> <td>FACW species</td> <td style="text-align:center;"><u>0</u></td> <td>x 2 =</td> <td style="text-align:center;"><u>0</u></td> </tr> <tr> <td>FAC species</td> <td style="text-align:center;"><u>0</u></td> <td>x 3 =</td> <td style="text-align:center;"><u>0</u></td> </tr> <tr> <td>FACU species</td> <td style="text-align:center;"><u>156</u></td> <td>x 4 =</td> <td style="text-align:center;"><u>624</u></td> </tr> <tr> <td>UPL species</td> <td style="text-align:center;"><u>0</u></td> <td>x 5 =</td> <td style="text-align:center;"><u>0</u></td> </tr> <tr> <td>Column Totals:</td> <td style="text-align:center;"><u>156</u> (A)</td> <td></td> <td style="text-align:center;"><u>624</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align:right;">Prevalence Index = B/A =</td> <td></td> <td style="text-align:center;"><u>4.00</u></td> </tr> </table>	Total % Cover of:	_____	Multiply by:	_____	OBL species	<u>0</u>	x 1 =	<u>0</u>	FACW species	<u>0</u>	x 2 =	<u>0</u>	FAC species	<u>0</u>	x 3 =	<u>0</u>	FACU species	<u>156</u>	x 4 =	<u>624</u>	UPL species	<u>0</u>	x 5 =	<u>0</u>	Column Totals:	<u>156</u> (A)		<u>624</u> (B)	Prevalence Index = B/A =			<u>4.00</u>
Total % Cover of:	_____	Multiply by:	_____																																	
OBL species	<u>0</u>	x 1 =	<u>0</u>																																	
FACW species	<u>0</u>	x 2 =	<u>0</u>																																	
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Column Totals:	<u>156</u> (A)		<u>624</u> (B)																																	
Prevalence Index = B/A =			<u>4.00</u>																																	
1. _____	_____	_____	_____																																	
2. _____	_____	_____	_____																																	
3. _____	_____	_____	_____																																	
4. _____	_____	_____	_____																																	
5. _____	_____	_____	_____																																	
6. _____	_____	_____	_____																																	
7. _____	_____	_____	_____																																	
_____ =Total Cover																																				
<u>Herb Stratum</u> (Plot size: <u>5' radius</u>)				Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 ¹ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain)																																
1. <u>Poa pratensis</u>	100	Yes	FACU																																	
2. <u>Polygonum cuspidatum</u>	15	No	FACU																																	
3. _____	_____	_____	_____																																	
4. _____	_____	_____	_____																																	
5. _____	_____	_____	_____																																	
6. _____	_____	_____	_____																																	
7. _____	_____	_____	_____																																	
8. _____	_____	_____	_____																																	
9. _____	_____	_____	_____																																	
10. _____	_____	_____	_____																																	
11. _____	_____	_____	_____																																	
12. _____	_____	_____	_____																																	
<u>115</u> =Total Cover																																				
<u>Woody Vine Stratum</u> (Plot size: <u>10x40ft</u>)				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.																																
1. <u>Parthenocissus quinquefolia</u>	1	No	FACU																																	
2. _____	_____	_____	_____																																	
3. _____	_____	_____	_____																																	
4. _____	_____	_____	_____																																	
<u>1</u> =Total Cover																																				

Remarks: (Include photo numbers here or on a separate sheet.)

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Northcentral and Northeast Region See ERDC/EL TR-12-1; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 11/30/2024 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: Winnetuxet Road City/County: Plympton Sampling Date: 4/20/21
 Applicant/Owner: _____ State: MA Sampling Point: W1-WET
 Investigator(s): Tom Touchet Section, Township, Range: _____
 Landform (hillside, terrace, etc.): Toed slope adjacent to pond Local relief (concave, convex, none): Slightly concave Slope %: 1-2
 Subregion (LRR or MLRA): LRR R, MLRA 144A Lat: 41.94643°N Long: 70.82570°W Datum: WGS84
 Soil Map Unit Name: Montauk fine sandy loam, 8 to 15 percent slopes (300C) NWI classification: PSS
 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 <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) Plot is located near wetland floag B1-029. Wetland is BVW fringe located adjacent to Winnetuxet Pond.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) _____ ___ Surface Water (A1) <u>X</u> Water-Stained Leaves (B9) <u>X</u> High Water Table (A2) ___ Aquatic Fauna (B13) <u>X</u> Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) ___ Surface Soil Cracks (B6) ___ 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) <u>X</u> Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) <u>X</u> FAC-Neutral Test (D5)
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Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>10</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 Near pond edge, open water 8' from plot center



VEGETATION – Use scientific names of plants.

Sampling Point: W1-WET

<u>Tree Stratum</u> (Plot size: <u>8'x40'</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
_____ =Total Cover				Prevalence Index worksheet: <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%; text-align: center;">Total % Cover of:</td> <td style="width:50%; text-align: center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>15</u></td> <td>x 1 = <u>15</u></td> </tr> <tr> <td>FACW species <u>45</u></td> <td>x 2 = <u>90</u></td> </tr> <tr> <td>FAC species <u>70</u></td> <td>x 3 = <u>210</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>5</u></td> <td>x 5 = <u>25</u></td> </tr> <tr> <td>Column Totals: <u>135</u> (A)</td> <td><u>340</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>2.52</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>15</u>	x 1 = <u>15</u>	FACW species <u>45</u>	x 2 = <u>90</u>	FAC species <u>70</u>	x 3 = <u>210</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>5</u>	x 5 = <u>25</u>	Column Totals: <u>135</u> (A)	<u>340</u> (B)	Prevalence Index = B/A = <u>2.52</u>	
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OBL species <u>15</u>	x 1 = <u>15</u>																			
FACW species <u>45</u>	x 2 = <u>90</u>																			
FAC species <u>70</u>	x 3 = <u>210</u>																			
FACU species <u>0</u>	x 4 = <u>0</u>																			
UPL species <u>5</u>	x 5 = <u>25</u>																			
Column Totals: <u>135</u> (A)	<u>340</u> (B)																			
Prevalence Index = B/A = <u>2.52</u>																				
<u>Sapling/Shrub Stratum</u> (Plot size: <u>8'x20'</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
1. <u>Clethra alnifolia</u>	<u>70</u>	<u>Yes</u>	<u>FAC</u>																	
2. <u>Vaccinium corymbosum</u>	<u>5</u>	<u>No</u>	<u>FACW</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
_____ =Total Cover				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 <u>X</u> No _____																
<u>Herb Stratum</u> (Plot size: <u>5' radius</u>)																				
1. <u>Rubus hispidus</u>	<u>40</u>	<u>Yes</u>	<u>FACW</u>																	
2. <u>Carex stricta</u>	<u>15</u>	<u>Yes</u>	<u>OBL</u>																	
3. <u>Sphagnum atlanticum</u>	<u>5</u>	<u>No</u>	<u>UPL</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
_____ =Total Cover																				
<u>Woody Vine Stratum</u> (Plot size: <u>8'x40'</u>)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
_____ =Total Cover																				

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W1-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR 2/1	100					Muck	hemic w/ small amount of fibric on top 1/2"
2-5	10YR 3/1	100					Mucky Loam/Clay	
5-14	10YR 4/2	85	5YR 3/4	15	C	M	Loamy/Clayey	Fine sandy loam

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: 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)
- Mesic Spodic (A17)
- (MLRA 144A, 145, 149B)**
- 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)
- Red Parent Material (F21) (MLRA 145)

Indicators for Problematic Hydric Soils³:

- 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)
- Red Parent Material (F21) (outside MLRA 145)
- Very Shallow Dark Surface (F22)
- Other (Explain in Remarks)

³Indicators 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

Remarks:

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Northcentral and Northeast Region See ERDC/EL TR-12-1; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 11/30/2024 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: Winnetuxet Road City/County: Plympton Sampling Date: 4/20/21
 Applicant/Owner: _____ State: MA Sampling Point: W2(000 series)-WET
 Investigator(s): Tom Touchet Section, Township, Range: _____
 Landform (hillside, terrace, etc.): Toe of slope to permanent stream Local relief (concave, convex, none): slightly concave Slope %: 5
 Subregion (LRR or MLRA): LRR R, MLRA 144A Lat: 41.94635°N Long: 70.82630°W Datum: WGS-84
 Soil Map Unit Name: Eldridge fine sandy loam, 3 to 8 percent slopes (221B) NWI classification: PFO
 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 <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) Wetland W2 is a palustrine forested wetland (PFO) near the toe of slope along Winnetuxet River. Plot is located approx. 15' south of flag S2-106.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) _____ ___ Surface Water (A1) ___ Water-Stained Leaves (B9) <u>X</u> High Water Table (A2) ___ Aquatic Fauna (B13) <u>X</u> Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) ___ Surface Soil Cracks (B6) ___ 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) <u>X</u> Geomorphic Position (D2) ___ Shallow Aquitard (D3) <u>X</u> Microtopographic Relief (D4) ___ FAC-Neutral Test (D5)
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Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>11</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>2</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:



VEGETATION – Use scientific names of plants.

Sampling Point: W2(000 series)-WET

<u>Tree Stratum</u> (Plot size: <u>20'x60'</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Pinus strobus</u>	25	Yes	FACU	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>8</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>62.5%</u> (A/B)																
2. <u>Prunus serotina</u>	15	Yes	FACU																	
3. <u>Acer rubrum</u>	15	Yes	FAC																	
4. <u>Quercus bicolor</u>	10	No	FACW																	
5. <u>Ulmus americana</u>	7	No	FACW																	
6. <u>Fraxinus pennsylvanica</u>	5	No	FACW																	
7. _____																				
	<u>77</u>	=Total Cover		Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="width:50%; text-align:center;">Total % Cover of:</td> <td style="width:50%; text-align:center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>2</u></td> <td>x 1 = <u>2</u></td> </tr> <tr> <td>FACW species <u>113</u></td> <td>x 2 = <u>226</u></td> </tr> <tr> <td>FAC species <u>92</u></td> <td>x 3 = <u>276</u></td> </tr> <tr> <td>FACU species <u>115</u></td> <td>x 4 = <u>460</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>322</u> (A)</td> <td><u>964</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align:center;">Prevalence Index = B/A = <u>2.99</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>2</u>	x 1 = <u>2</u>	FACW species <u>113</u>	x 2 = <u>226</u>	FAC species <u>92</u>	x 3 = <u>276</u>	FACU species <u>115</u>	x 4 = <u>460</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>322</u> (A)	<u>964</u> (B)	Prevalence Index = B/A = <u>2.99</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>2</u>	x 1 = <u>2</u>																			
FACW species <u>113</u>	x 2 = <u>226</u>																			
FAC species <u>92</u>	x 3 = <u>276</u>																			
FACU species <u>115</u>	x 4 = <u>460</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>322</u> (A)	<u>964</u> (B)																			
Prevalence Index = B/A = <u>2.99</u>																				
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15' radius</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)																
1. <u>Ilex verticillata</u>	40	Yes	FACW																	
2. <u>Clethra alnifolia</u>	15	Yes	FAC																	
3. <u>Viburnum lentago</u>	2	No	FAC																	
4. _____																				
5. _____																				
6. _____																				
	<u>57</u>	=Total Cover																		
<u>Herb Stratum</u> (Plot size: <u>10' radius</u>)				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 <input checked="" type="checkbox"/> No <input type="checkbox"/>																
1. <u>Maianthemum canadense</u>	75	Yes	FACU																	
2. <u>Dryopteris intermedia</u>	60	Yes	FAC																	
3. <u>Rubus hispida</u>	50	Yes	FACW																	
4. <u>Carex stricta</u>	2	No	OBL																	
5. <u>Thalictrum dasycarpum</u>	1	No	FACW																	
6. _____																				
7. _____																				
8. _____																				
9. _____																				
10. _____																				
11. _____																				
12. _____																				
	<u>188</u>	=Total Cover																		
<u>Woody Vine Stratum</u> (Plot size: <u>20'x40'</u>)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																
1. <u>Toxicodendron radicans</u>			FAC																	
2. _____																				
3. _____																				
4. _____																				

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W2(000 series)-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR 2/1						Muck	fibric muck
2-7	5YR 3/1	100					Loamy/Clayey	Fine sandy loam
7-16	2.5YR 4/2	60	7.5YR 4/6	40	C	M	Sandy	silty sand

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

<p>Hydric Soil Indicators:</p> <p><input type="checkbox"/> Histosol (A1)</p> <p><input type="checkbox"/> Histic Epipedon (A2)</p> <p><input type="checkbox"/> Black Histic (A3)</p> <p><input type="checkbox"/> Hydrogen Sulfide (A4)</p> <p><input type="checkbox"/> Stratified Layers (A5)</p> <p><input checked="" type="checkbox"/> Depleted Below Dark Surface (A11)</p> <p><input type="checkbox"/> Thick Dark Surface (A12)</p> <p><input type="checkbox"/> Mesic Spodic (A17)</p> <p>(MLRA 144A, 145, 149B)</p> <p><input type="checkbox"/> Sandy Mucky Mineral (S1)</p> <p><input type="checkbox"/> Sandy Gleyed Matrix (S4)</p> <p><input type="checkbox"/> Sandy Redox (S5)</p> <p><input type="checkbox"/> Stripped Matrix (S6)</p> <p><input type="checkbox"/> Dark Surface (S7)</p> <p><input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)</p> <p><input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)</p> <p><input type="checkbox"/> High Chroma Sands (S11) (LRR K, L)</p> <p><input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)</p> <p><input type="checkbox"/> Loamy Gleyed Matrix (F2)</p> <p><input type="checkbox"/> Depleted Matrix (F3)</p> <p><input type="checkbox"/> Redox Dark Surface (F6)</p> <p><input type="checkbox"/> Depleted Dark Surface (F7)</p> <p><input type="checkbox"/> Redox Depressions (F8)</p> <p><input type="checkbox"/> Marl (F10) (LRR K, L)</p> <p><input type="checkbox"/> Red Parent Material (F21) (MLRA 145)</p>	<p>Indicators for Problematic Hydric Soils³:</p> <p><input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)</p> <p><input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)</p> <p><input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)</p> <p><input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)</p> <p><input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)</p> <p><input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)</p> <p><input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)</p> <p><input type="checkbox"/> Red Parent Material (F21) (outside MLRA 145)</p> <p><input type="checkbox"/> Very Shallow Dark Surface (F22)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p> <p>³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.</p>
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Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Northcentral and Northeast Region See ERDC/EL TR-12-1; the proponent agency is CECW-CO-R	OMB Control #: 0710-0024, Exp: 11/30/2024 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)
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Project/Site: Winnetuxet Road City/County: Plympton Sampling Date: 4/20/21
 Applicant/Owner: _____ State: MA Sampling Point: W2-100 series
 Investigator(s): Tom Touchet Section, Township, Range: _____
 Landform (hillside, terrace, etc.): bottomland - (PFO) Local relief (concave, convex, none): fairly flat w/ slight variation Slope %: <1%
 Subregion (LRR or MLRA): LRR R, MLRA 144A Lat: 41.94656°N Long: 70.82630°W Datum: WGS84
 Soil Map Unit Name: Freetown muck, ponded, 0 to 1 percent slopes (53A) NWI classification: PFO
 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 <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) Plot is located in Palustrine forested wetland. Drainage patterns in wetland, but not directly in plot.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) _____ ___ Surface Water (A1) <u>X</u> Water-Stained Leaves (B9) <u>X</u> High Water Table (A2) ___ Aquatic Fauna (B13) <u>X</u> Saturation (A3) ___ Marl Deposits (B15) ___ Water Marks (B1) ___ Hydrogen Sulfide Odor (C1) ___ Sediment Deposits (B2) <u>X</u> Oxidized Rhizospheres on Living Roots (C3) ___ Drift Deposits (B3) ___ Presence of Reduced Iron (C4) ___ Algal Mat or Crust (B4) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Iron Deposits (B5) ___ Thin Muck Surface (C7) ___ Inundation Visible on Aerial Imagery (B7) ___ Other (Explain in Remarks) ___ Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) ___ Surface Soil Cracks (B6) ___ 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) <u>X</u> Geomorphic Position (D2) ___ Shallow Aquitard (D3) <u>X</u> Microtopographic Relief (D4) <u>X</u> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>2</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Pond	
Remarks:	



VEGETATION – Use scientific names of plants.

Sampling Point: W2-100 series

<u>Tree Stratum</u> (Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Acer rubrum</u>	35	Yes	FAC	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>80.0%</u> (A/B)																
2. <u>Pinus strobus</u>	35	Yes	FACU																	
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
	<u>70</u>	=Total Cover																		
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15' radius</u>)				Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="width:50%; text-align:center;">Total % Cover of:</td> <td style="width:50%; text-align:center;">Multiply by:</td> </tr> <tr> <td>OBL species <u>70</u></td> <td>x 1 = <u>70</u></td> </tr> <tr> <td>FACW species <u>32</u></td> <td>x 2 = <u>64</u></td> </tr> <tr> <td>FAC species <u>68</u></td> <td>x 3 = <u>204</u></td> </tr> <tr> <td>FACU species <u>42</u></td> <td>x 4 = <u>168</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>212</u> (A)</td> <td><u>506</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align:center;">Prevalence Index = B/A = <u>2.39</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>70</u>	x 1 = <u>70</u>	FACW species <u>32</u>	x 2 = <u>64</u>	FAC species <u>68</u>	x 3 = <u>204</u>	FACU species <u>42</u>	x 4 = <u>168</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>212</u> (A)	<u>506</u> (B)	Prevalence Index = B/A = <u>2.39</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>70</u>	x 1 = <u>70</u>																			
FACW species <u>32</u>	x 2 = <u>64</u>																			
FAC species <u>68</u>	x 3 = <u>204</u>																			
FACU species <u>42</u>	x 4 = <u>168</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>212</u> (A)	<u>506</u> (B)																			
Prevalence Index = B/A = <u>2.39</u>																				
1. <u>Clethra alnifolia</u>	30	Yes	FAC																	
2. <u>Ilex verticillata</u>	10	No	FACW																	
3. <u>Rosa multiflora</u>	5	No	FACU																	
4. <u>Vaccinium corymbosum</u>	5	No	FACW																	
5. <u>Viburnum dentatum</u>	2	No	FAC																	
6. <u>Sambucus nigra</u>	2	No	FACW																	
7. _____																				
	<u>54</u>	=Total Cover																		
<u>Herb Stratum</u> (Plot size: <u>10' radius</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
1. <u>Carex stricta</u>	40	Yes	OBL																	
2. <u>Symplocarpus foetidus</u>	30	Yes	OBL																	
3. <u>Impatiens capensis</u>	15	No	FACW																	
4. <u>Rosa multiflora</u>	2	No	FACU																	
5. _____																				
6. _____																				
7. _____																				
8. _____																				
9. _____																				
10. _____																				
11. _____																				
12. _____																				
	<u>87</u>	=Total Cover																		
<u>Woody Vine Stratum</u> (Plot size: <u>30' radius</u>)				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.																
1. <u>Toxicodendron radicans</u>	1	No	FAC																	
2. _____																				
3. _____																				
4. _____																				
	<u>1</u>	=Total Cover																		

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W2-100 series

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR 2/1	100					Muck	sapric muck
2-7	10YR 4/1	80	5YR 3/4	20	C	M	Loamy/Clayey	Silty loam
7-9	10YR 4/3	100					Sandy	reddish hue is from iron on sand
9-16	10YR 2/1	100					Muck	Silty muck

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

<p>Hydric Soil Indicators:</p> <p><input type="checkbox"/> Histosol (A1)</p> <p><input type="checkbox"/> Histic Epipedon (A2)</p> <p><input type="checkbox"/> Black Histic (A3)</p> <p><input type="checkbox"/> Hydrogen Sulfide (A4)</p> <p><input type="checkbox"/> Stratified Layers (A5)</p> <p><input type="checkbox"/> Depleted Below Dark Surface (A11)</p> <p><input type="checkbox"/> Thick Dark Surface (A12)</p> <p><input type="checkbox"/> Mesic Spodic (A17)</p> <p>(MLRA 144A, 145, 149B)</p> <p><input type="checkbox"/> Sandy Mucky Mineral (S1)</p> <p><input type="checkbox"/> Sandy Gleyed Matrix (S4)</p> <p><input type="checkbox"/> Sandy Redox (S5)</p> <p><input type="checkbox"/> Stripped Matrix (S6)</p> <p><input type="checkbox"/> Dark Surface (S7)</p> <p><input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)</p> <p><input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)</p> <p><input type="checkbox"/> High Chroma Sands (S11) (LRR K, L)</p> <p><input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)</p> <p><input type="checkbox"/> Loamy Gleyed Matrix (F2)</p> <p><input checked="" type="checkbox"/> Depleted Matrix (F3)</p> <p><input type="checkbox"/> Redox Dark Surface (F6)</p> <p><input type="checkbox"/> Depleted Dark Surface (F7)</p> <p><input type="checkbox"/> Redox Depressions (F8)</p> <p><input type="checkbox"/> Marl (F10) (LRR K, L)</p> <p><input type="checkbox"/> Red Parent Material (F21) (MLRA 145)</p>	<p>Indicators for Problematic Hydric Soils³:</p> <p><input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)</p> <p><input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)</p> <p><input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)</p> <p><input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)</p> <p><input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)</p> <p><input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)</p> <p><input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)</p> <p><input type="checkbox"/> Red Parent Material (F21) (outside MLRA 145)</p> <p><input type="checkbox"/> Very Shallow Dark Surface (F22)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p> <p>³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.</p>
---	---

<p>Restrictive Layer (if observed):</p> <p>Type: _____</p> <p>Depth (inches): _____</p>	<p>Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
--	--

Remarks:

Attachment D- Project Site Plans

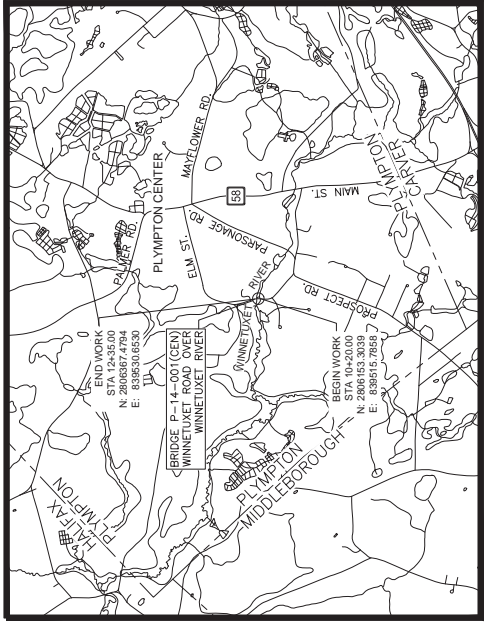
MASSACHUSETTS DEPARTMENT OF TRANSPORTATION HIGHWAY DIVISION

PLAN AND PROFILE OF
WINNETUXET ROAD
(BRIDGE NO. P-14-001(CEN))
IN THE TOWN OF

PLYMPTON
PLYMOUTH COUNTY
FEDERAL AID PROJECT NO.

PERMITTING SUBMITTAL

SHEET NO.	DESCRIPTION
1	TITLE SHEET & INDEX
2	LEGEND, ABBREVIATIONS, & GENERAL NOTES
3	TYPICAL SECTIONS
4	EXISTING CONDITIONS PLAN
5	CONSTRUCTION PLAN
6	EXISTING PROFILE
7	PROPOSED PROFILE
8	TEMPORARY TRAFFIC CONTROL PLAN
9	EXISTING LONGITUDINAL SECTION
10	PROPOSED LONGITUDINAL SECTION



LOCUS
SCALE: 1" = 4000'

LENGTH OF PROJECT = 215.00 FEET = 0.041 MILES

609435_126585_01111313.DWG Printed on 25-Feb-2024 10:05 AM

PLYMPTON WINNETUXET ROAD	
STATE	MA
FED. AID PROJ. NO.	
PROJECT FILE NO.	609435
SHEET NO.	1
TOTAL SHEETS	10

TITLE SHEET & INDEX

THESE PLANS ARE SUPPLEMENTED BY THE OCTOBER 2017 CONSTRUCTION STANDARD DETAILS, THE 2015 OVERHEAD SIGNAL STRUCTURE AND FOUNDATION STANDARD DRAWINGS, MASSDOT TRAFFIC MANAGEMENT PLANS AND DETAIL DRAWINGS, THE 1980 STANDARD DRAWINGS FOR SIGNS AND MARKINGS, THE 1980 STANDARD DRAWINGS FOR HIGHWAY LIGHTING, AND THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK.

DESIGN DESIGNATION - WINNETUXET ROAD	
DESIGN SPEED	15 MPH
ADT (2022)	357
ADT (2029)	383
K	10.6%
D	51%
T (PEAK HOUR)	21%
T (AVERAGE DAY)	14%
DIV	38
DDIV	20
FUNCTIONAL CLASSIFICATION	RURAL LOCAL ROAD

DATE	DESCRIPTION	REV #
12/29/2023	PERMITTING	0



TRANSPORTATION

AECOM

AECOM TECHNICAL SERVICES, Inc.
Chesham, Massachusetts 01924
T 978.952.2100 F 978.952.2101 www.aecom.com

APPROVED

CHIEF ENGINEER

DATE

609435_126585_TYPICAL.DWG
 PLOTTED ON 25-Feb-2024 10:05 AM

PLYMPTON WINNETUKET ROAD				
STATE	FED. AID PROJ. NO.	FED. ROAD DISTRICT	SHEET NO.	TOTAL SHEETS
MA	-	-	3	10
PROJECT FILE NO. 609435				

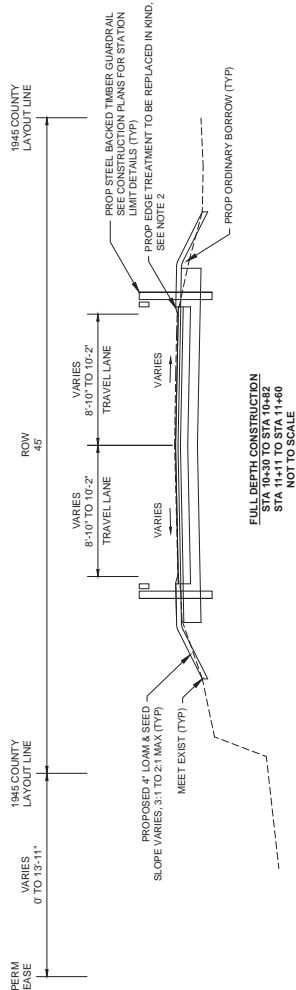
TYPICAL SECTIONS

PAVEMENT NOTES

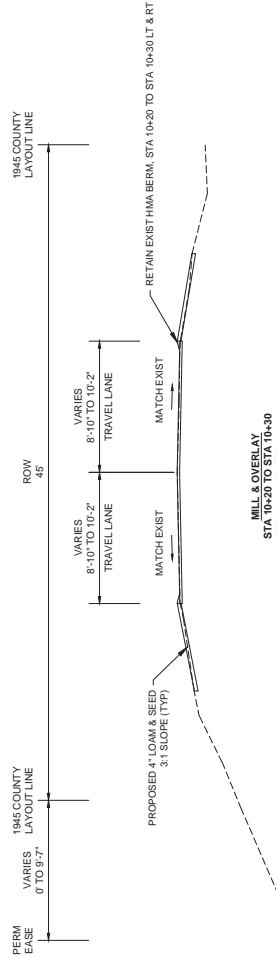
FULL DEPTH PAVEMENT AT BRIDGE APPROACHES:

- SURFACE COURSE: 2" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER
- INTERMEDIATE COURSE: 2" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5) OVER
- BASE COURSE: 3" SUPERPAVE BASE COURSE 37.5 (SBC-37.5) OVER
- SUBBASE: 4" DENSE GRADED CRUSHED STONE
8" GRAVEL BORROW, TYPE B
- MILL & OVERLAY:
SURFACE: 2" ± MILLING,
2" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5)
- DRIVEWAY TRANSITION:
SURFACE: 2" ± MILLING,
2" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5)

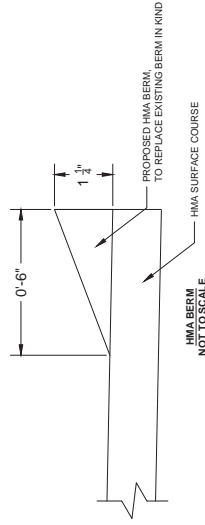
- NOTES:**
- TACK COAT SHALL BE APPLIED AT A RATE OF 0.07 GAL/SY ON MILLED SURFACES
 - FOR ALL MILLING OPERATIONS, THE MILLING DEPTH SHALL BE 2" ±
 - PROPOSED HMA BERM TO REPLACE EXISTING BERM IN KIND SHALL BE PLACED FROM STA 10+30 LT TO STA 10+42 LT AND RT. NO BERM SHALL BE PLACED FROM STA 10+20 TO STA 10+30 OR FROM STA 11+11 TO 11+60.
 - EXISTING CROSS SLOPE AT APPROACHES VARIES APPROXIMATELY 0% TO 2%. THE INTENT OF THE DESIGN IS TO MATCH EXISTING CONDITIONS.



FULL DEPTH CONSTRUCTION
 STA 10+30 TO STA 10+42
 STA 11+46 TO STA 11+60
 NOT TO SCALE

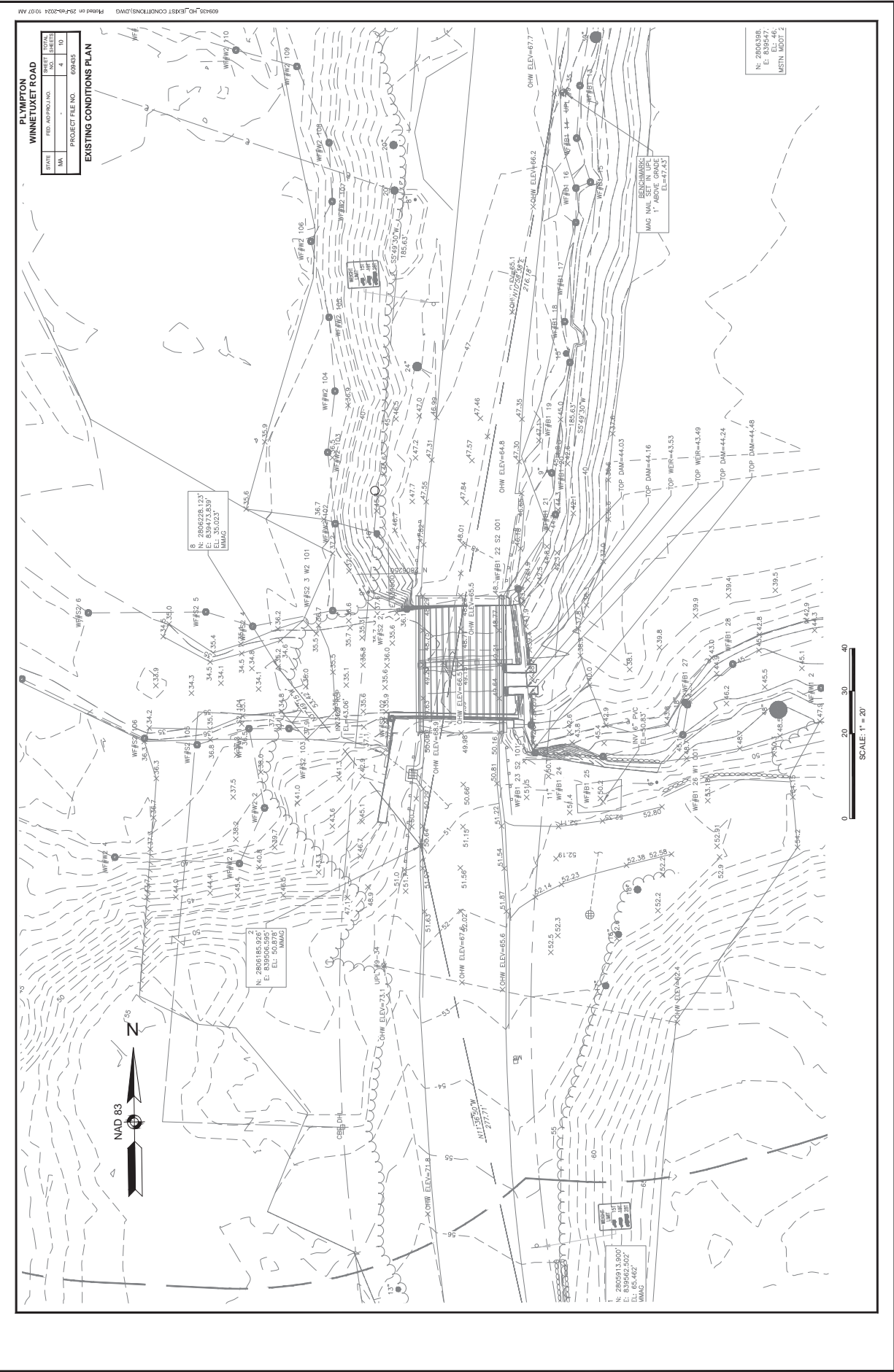


MILL & OVERLAY
 STA 10+42 TO STA 11+40
 STA 11+40 TO STA 11+70
 NOT TO SCALE



HMA BERM
 NOT TO SCALE
 PROPOSED HMA BERM,
 TO REPLACE EXISTING BERM IN KIND
 HMA SURFACE COURSE

- TYPICAL SECTION NOTES:**
- STEEL BACKED TIMBER GUARDRAIL SHALL BE SET TANGENT WITH TIMBER BRIDGE RAIL AT THE NORTHWEST AND SOUTHWEST APPROACHES.
 - STEEL BACKED TIMBER GUARDRAIL SHALL BE SET TANGENT WITH FOLLOW ROADWAY CURVATURE AT THE NORTHEAST AND SOUTHEAST APPROACHES.
 - AT LIMITS, STEEL BACKED TIMBER GUARDRAIL SHALL BE OFFSET 7'-0" FROM EDGE OF PAVEMENT TO FACE.
 - SEE STRUCTURAL PLANS FOR GUARDRAIL DETAIL UNITS.
 - SEE STRUCTURAL PLANS FOR BRIDGE RAIL TO STEEL BACKED TIMBER RAIL TRANSITION DETAIL.



PLYMPTON WINNETUXET ROAD			
SHEET NO.	TOTAL SHEETS	DATE	SCALE
100	100	10/07/2024	1" = 20'
MA	PROJECT FILE NO.	609435-126585	

EXISTING CONDITIONS PLAN



NAD 83

B
N: 2804228.123'
E: 839473.839'
ELEV: 35.023'
UMMS

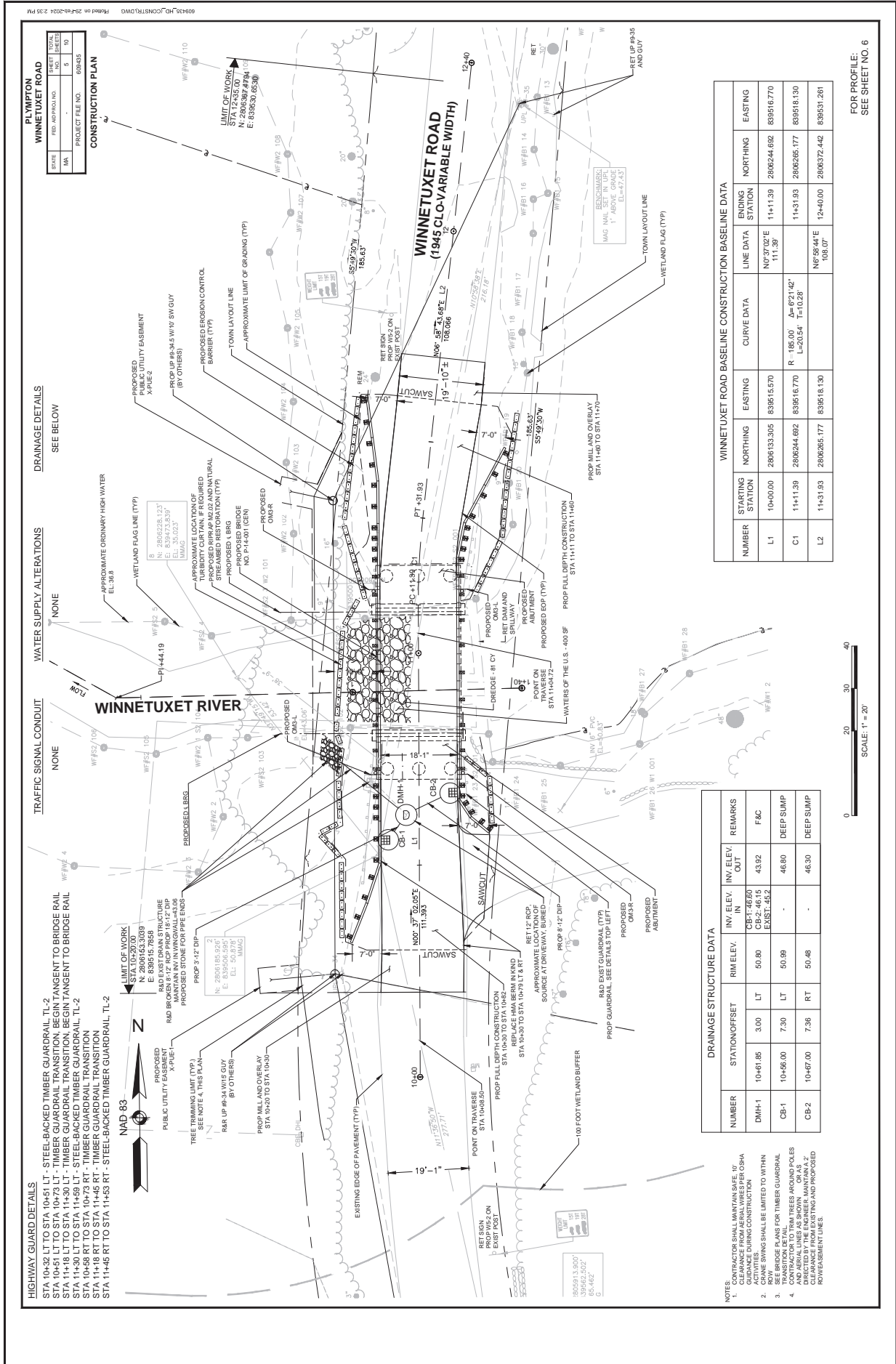
N: 2805185.926'
E: 839506.595'
ELEV: 50.072'
UMMS

N: 2805913.500'
E: 839662.502'
ELEV: 4.462'
UMMS

N: 2806396.
E: 839547.
ELEV: 47.431'
MSTN MDTT 2

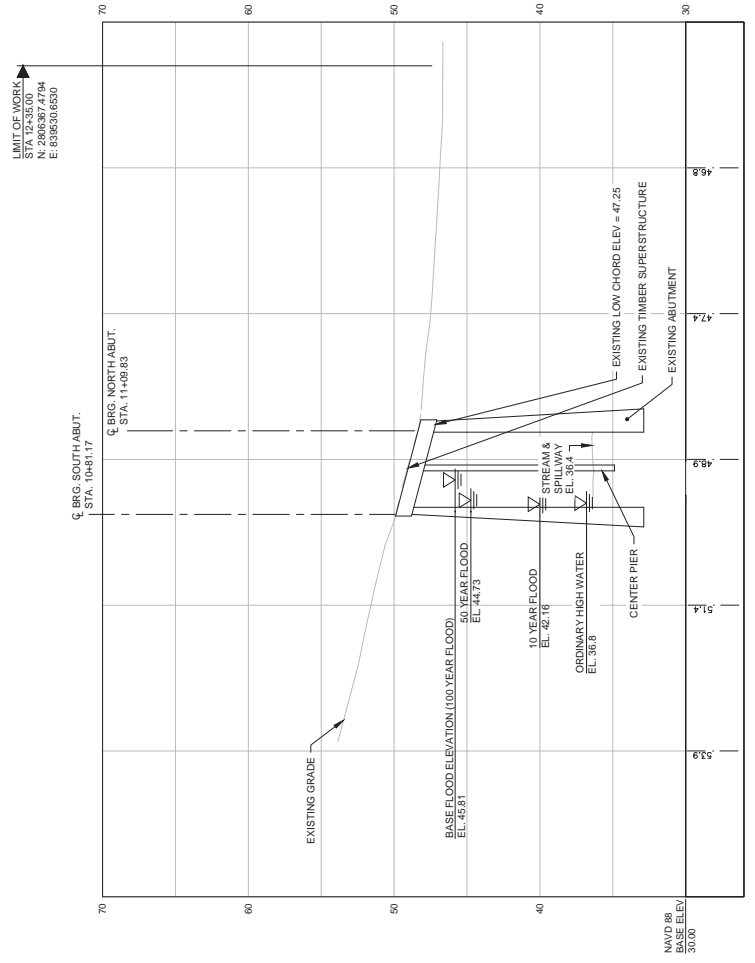


SCALE: 1" = 20'



609435_126585_13 - EXISTING (REVISED) - 10/07/2014

PLYMPTON WINNETUKET ROAD			
STATE	REG. NO. PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	.	6	10
PROJECT FILE NO. 609435			
EXISTING PROFILE WINNETUKET ROAD			

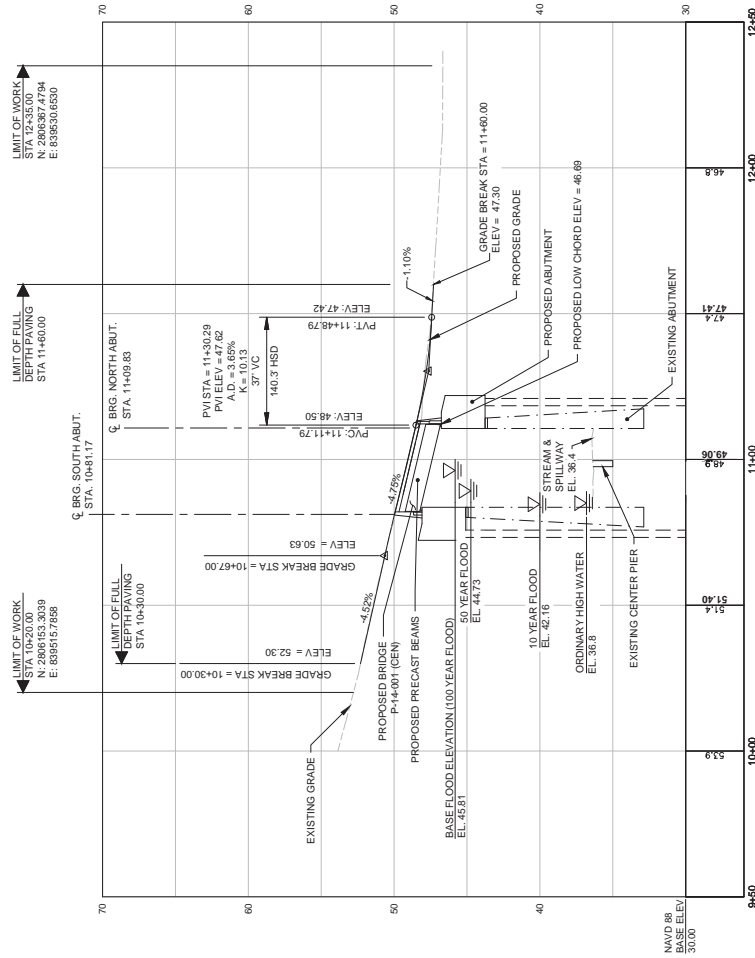


PROFILE — EXISTING CONDITIONS

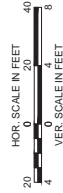


FOR CONSTRUCTION PLAN:
SEE SHEET NO. 5

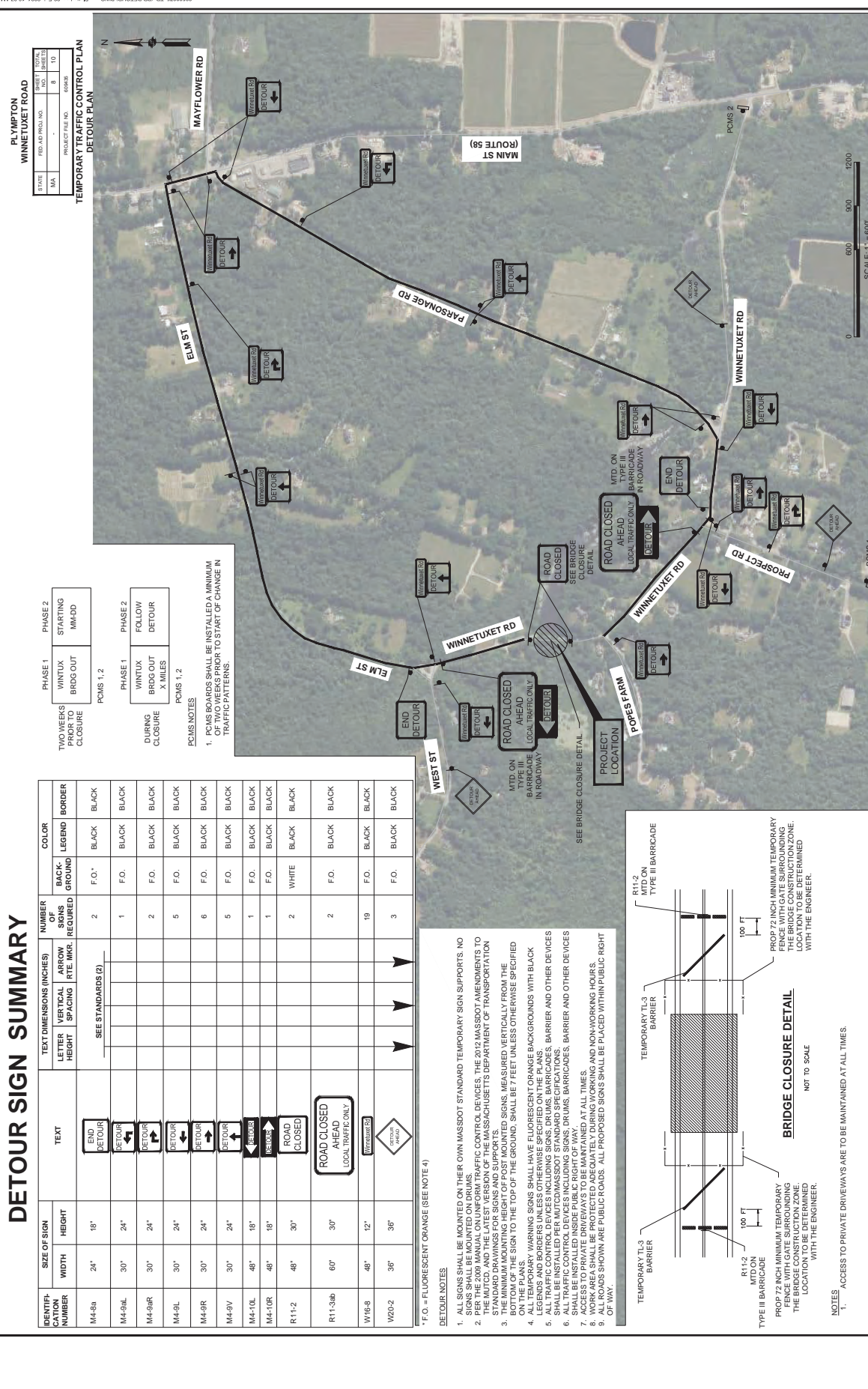
PLYMPTON WINNETUKET ROAD	
STATE	SHEET NO.
MA	7
PROJECT FILE NO.	609435
PROPOSED PROFILE WINNETUKET ROAD	



PROFILE -- PROPOSED CONDITIONS



FOR CONSTRUCTION PLAN:
SEE SHEET NO. 5



**PLYMPTON WINNETUXET ROAD
TEMPORARY TRAFFIC CONTROL PLAN
DETOUR PLAN**

STATE	MA	PROJECT FILE NO.	609435
FED. AID PROJ. NO.	-	SHEET	8 OF 10

PHASE 1

TWO WEEKS ROAD TO CLOSURE	WINTUX BRG OUT	PHASE 2 STARTING MM-DD
---------------------------------	-------------------	------------------------------

PCMS 1, 2

PHASE 2

DURING CLOSURE	WINTUX BRG OUT X MILES	FOLLOW DETOUR
-------------------	------------------------------	------------------

PCMS 1, 2

PCMS NOTES

1. PCMS BOARDS SHALL BE INSTALLED A MINIMUM OF TWO WEEKS PRIOR TO START OF CHANGE IN TRAFFIC PATTERNS.

DETOUR SIGN SUMMARY

SIGN/CATEGORY NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)		NUMBER OF SIGNS REQUIRED	COLOR	
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL ARROW SPACING (TYPE, INCH)		BACK-GROUND	BORDER
M4-5b	24"	18"	END DETOUR	SEE STANDARDS (2)		2	F.O.*	BLACK
M4-9aL	30"	24"	DETOUR			1	F.O.	BLACK
M4-9aR	30"	24"	DETOUR			2	F.O.	BLACK
M4-9L	30"	24"	DETOUR			5	F.O.	BLACK
M4-9R	30"	24"	DETOUR			6	F.O.	BLACK
M4-9V	30"	24"	DETOUR			5	F.O.	BLACK
M4-10L	48"	18"	ROAD CLOSED			1	F.O.	BLACK
M4-10R	48"	18"	ROAD CLOSED			1	F.O.	BLACK
R11-2	48"	30"	ROAD CLOSED AHEAD LOCAL TRAFFIC ONLY			2	WHITE	BLACK
R11-3aB	60"	30"	ROAD CLOSED AHEAD LOCAL TRAFFIC ONLY			2	F.O.	BLACK
W16-6	48"	12"	ROAD CLOSED			19	F.O.	BLACK
W20-2	36"	36"	ROAD CLOSED			3	F.O.	BLACK

- DETOUR NOTES**
- ALL SIGNS SHALL BE MOUNTED ON THEIR OWN MASSDOT STANDARD TEMPORARY SIGN SUPPORTS. NO SIGNS SHALL BE MOUNTED ON DRUMS.
 - ALL TRAFFIC CONTROL DEVICES, THE 24x36 MASSDOT DIMENSIONS TO THE MUTCD, AND THE LATEST VERSION OF THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION STANDARD DRAWINGS FOR SIGNS AND SUPPORTS.
 - THE MINIMUM MOUNTING HEIGHT OF POST MOUNTED SIGNS, MEASURED VERTICALLY FROM THE TOP OF THE SIGN TO THE TOP OF THE GROUND, SHALL BE 7 FEET UNLESS OTHERWISE SPECIFIED ON THE PLANS.
 - ALL TEMPORARY WARNING SIGNS SHALL HAVE FLUORESCENT ORANGE BACKGROUNDS WITH BLACK LEGENDS AND BORDERS UNLESS OTHERWISE SPECIFIED ON THE PLANS. BARRIERS AND OTHER DEVICES SHALL BE INSTALLED PER AUTOCOMMASSDOT STANDARD SPECIFICATIONS.
 - ALL TRAFFIC CONTROL DEVICES INCLUDING SIGNS, DRUMS, BARRICADES, BARRIERS AND OTHER DEVICES SHALL BE INSTALLED INSIDE PUBLIC RIGHT OF WAY AT ALL TIMES.
 - WORK AREA SHALL BE PROTECTED ADEQUATELY DURING WORKING AND NON-WORKING HOURS.
 - ALL ROADS SHOWN ARE PUBLIC ROADS. ALL PROPOSED SIGNS SHALL BE PLACED WITHIN PUBLIC RIGHT OF WAY.

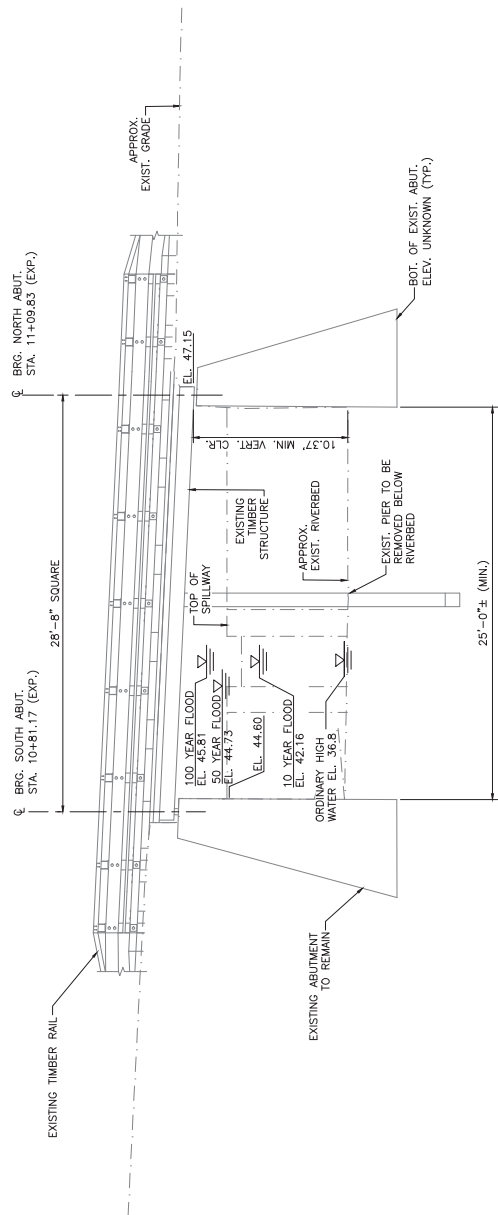


- NOTES**
- ACCESS TO PRIVATE DRIVEWAYS ARE TO BE MAINTAINED AT ALL TIMES.

609435_38107142011-EXISTING LONGITUDINAL SECTION.DWG PLOT# 25-Feb-2024 2:28 PM

PLYMPTON WINNETUKET ROAD	
BRIDGE NO.	SHEET NO.
MA	10
PROJECT FILE NO.	609435

EXISTING LONGITUDINAL SECTION



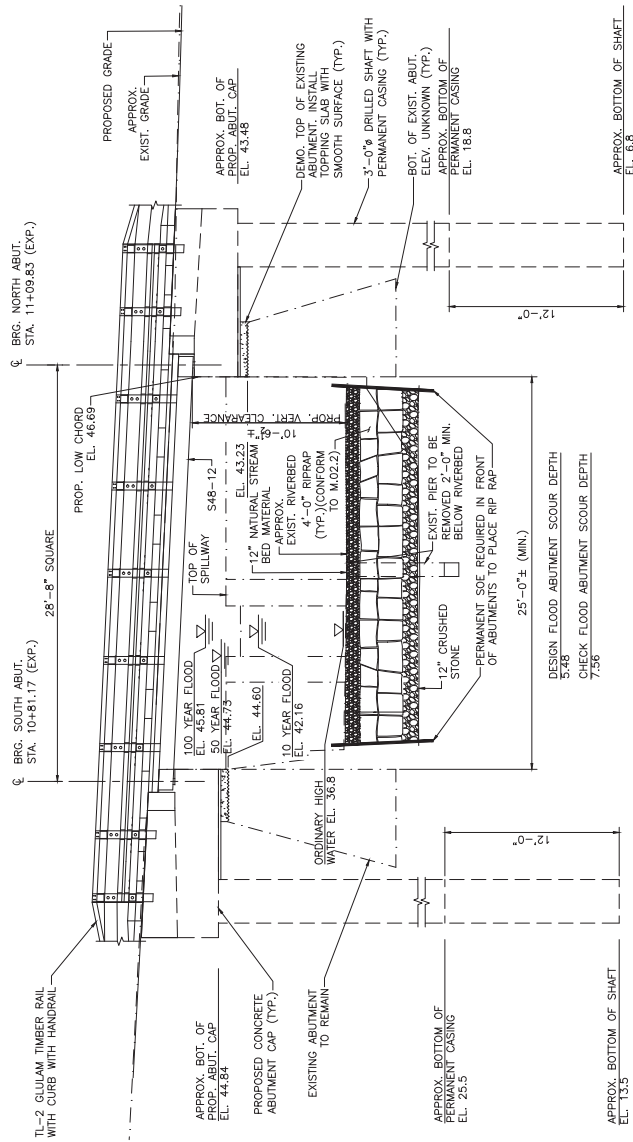
DESIGN FLOOD ABUTMENT SCOUR DEPTH
 7.58'
 CHECK FLOOD ABUTMENT SCOUR DEPTH
 7.58'

EXISTING LONGITUDINAL SECTION
 SCALE: 1/4"=1'-0"

09353 BR191P10011-LONGITUDINAL SECTION.DWG Print on 25-Feb-2024 10:07 AM

PLYMPTON WINNETUKET ROAD	
STATE	MA
FED. AID PROJ. NO.	
PROJECT FILE NO.	609435
SHEET NO.	10
TOTAL SHEETS	10
DATE	08/24/23

PROPOSED LONGITUDINAL SECTION



PROPOSED LONGITUDINAL SECTION
SCALE: 3/8"=1'-0"

- NOTES:**
- RIP RAP SHALL BE INSTALLED ALONG THE EXISTING CONCRETE SLAB, PLACE TO ELIMINATE SCOUR. RIP RAP SHALL HAVE 4'-0" THICKNESS, D50-24", AND D100=48".

Stormwater Management Report

Winnetuxet Road Over Winnetuxet River Bridge Plan

Plympton, MA

PREPARED FOR

The logo for massDOT, featuring the word "mass" in a green, lowercase, sans-serif font and "DOT" in a blue, uppercase, sans-serif font, both underlined.

10 Park Plaza
Boston, MA 02116

PREPARED BY

The logo for AECOM, featuring the word "AECOM" in a bold, black, uppercase, sans-serif font.

AECOM
250 Apollo Drive
Chelmsford, MA, 01824

February 23, 2024

Table of Contents

Introduction

Project Summary

Existing Conditions

Proposed Conditions

Impaired Waters and TMDLs

Stormwater Management Standards

Figures

Stormwater Management System Operation and Maintenance (O&M) Plan

Long-Term Pollution Prevention Plan

List of Figures

Figure No.	Description	Page
Figure 1	Locus Figure	

List of Tables

Table No.	Description	Page
Table 1	Required WQV and MEP WQV at Each Design Point.....	
Table 2	Provided WQV by the SCMs at Each Design Point	

Attachments

Appendix A: MassDEP Checklist for Stormwater Report

Appendix B: Soils and FEMA Information

Appendix C: Hydraulic and Hydrologic Data

Appendix D: O&M Plan and LTPPPHydraulic and Hydrologic Data

Appendix E: Calculations

1

Introduction

This Stormwater Management Report has been prepared to demonstrate compliance with the Massachusetts Stormwater Management Standards (the Standards) in accordance with the Massachusetts Wetlands Protection Act Regulations (310 CMR 10.00) and Water Quality Certification Regulations (314 CMR 9.00). Appendix A includes a completed Massachusetts Department of Environmental Protection (MassDEP) Checklist for Stormwater Report, stamped by a Massachusetts registered professional engineer.

The Project follows the guidance presented in the MassDOT Stormwater Design Guide (SDG), and stormwater management systems are designed in accordance with the Standards.

2

Project Summary

The Applicant, MassDOT, is proposing Project 609435 to replace a bridge located in Plympton, MA. As proposed, the Project will be a bridge replacement which would consist of a full superstructure replacement, excavation of existing streambed to a depth of six feet and backfilling with riprap salvaged streambed substrate in the top one-foot; capping of existing abutments; replacement of guardrails located on the northern and southern approaches; installation of a utility pole and installation of two new deep sump catch basins. The purpose of the project is to upgrade the existing bridge condition to a satisfactory state, as the most recent bridge inspection identified structural deficiencies. The project will occur at the Winnetuxet Road bridge, that currently crosses over the the Winnetuxet Pond spillway which is directly east of the existing bridge and a tributary of the Winnetuxet River. Anticipated project limits are approximately 120 feet along Winnetuxet Road. The project is estimated to start construction during the summer of 2024, and last for two to four months to stay within a one season construction timeframe. The project is anticipated to have less than 1 acre of disturbed area throughout the course of construction.

The bridge replacement will occur over the Winnetuxet River and within the 100-Foot Buffer Zone of Bordering Vegetated Wetlands. However, the project has been exempted from the Wetlands Protection Act regulations. Work will not occur within areas that are marked as 100-year flood zones and effective NFIP regulatory floodway delineations, according to MassGIS data and the FEMA map for the area. The stream is also considered to be perennial, and therefore has a 200-foot riverfront area is present. The project is not located within or near any Areas of Critical Environmental Concern (ACEC). There are also no Land Uses with Higher Potential Pollutant Loads (LUHPPL) within or near the project site. A Project Notification Form was sent by MassDOT on February 2nd, 2023 to the necessary Tribal Historic Preservation Officers (THPO) and the Board of Underwater Archaeological Resources (BUAR). MassDOT documented in-house clearance for this bridge replacement project rather than providing the PNF to MHC, as no NR listed or eligible properties were documented in the Area of Potential Effect.

See Figure 1 in Section 7 for the Project Locus Map.

3

Existing Conditions

The project location currently consists of a wooden bridge deck and adjacent roadway on either side of the bridge. The bridge spans the discharge spillway of the dam impounding Winnetuxet Pond. The project is located within the Taunton River watershed, which flows into Mount Hope Bay at the southern border of Massachusetts.

Currently there is an existing drainage system located on the roadway on the southern approach of the bridge. This drainage system is made up of a single catch basin, which directs stormwater to an outfall discharging on the southwestern portion of the bridge adjacent to the Winnetuxet River below. Drainage area was not calculated for determining the drainage patterns for the existing design points. However, the project will not be adding any additional road impervious surfaces and the replacement catch basins will route runoff water to the same outfall. Therefore, there will be no alterations in the existing drainage patterns or drainage area of the site. The drainage area for the existing bridge catch basins will be less than 1 acre. Key features in and around the project area include two bordering vegetated wetlands downstream from the bridge and are shown on Figure 2.

This is shown within Appendix B in the Custom Soil Resource Report. On-site subsurface investigations performed at the project area included four test borings and five probes. Three of the test borings were performed along the center of the river while one was performed within the Winnetuxet Pond, adjacent to the spillway. The first test boring within the pond reached to a depth of around 46 feet, while the three within the river reached to between 50 to 55 feet. Four of the five test probes were performed just to the east of the spillway within Winnetuxet Pond, while the last probe was taken within the river. More detailed information on the subsurface investigation can be found within Appendix B. Review of the soils resource report information shows that the soils within the project area are comprised of Freetown Muck, Poned, as illustrated in Appendix B. This soil type is in the hydrologic soil groups (HSG) B and D. This soil type is commonly found on the toeslopes of concave landforms such as kettles, marshes, depressions, bogs and swamps. It has a slope of 0 to 1 percent, is very poorly drained, and has a depth to water table of about 0 to 6 inches. The area is indicated to rarely flood but may frequently pond. It also has a moderately low to high capacity of the most limiting layer to transmit water with a rate of around 0.14 to 14.17 inch/hour. Appendix B provides detailed soils information, including the NRCS soil survey data for the project area and results of on-site subsurface investigations.

4

Proposed Conditions

The Project will include repair of an existing bridge and pavement on either side. The dimensions of the bridge will not change, nor will the dimensions of the approach pavement on either side. The existing bridge has a wood deck, which will be replaced with a concrete deck. But stormwater will continue to sheetflow off of the bridge deck to the dam discharge channel in the future the same way that it does now. This project is a redevelopment project with no new roadway impervious surface proposed. The work proposed includes resurfacing the road pavement on either side of the bridge with mill and overlay and full depth pavement replacement where excavation is needed to transition to the new bridge. There is some minor regrading proposed to establish a roadway crown, but no horizontal changes to the limit of the existing pavement are proposed. There is one existing catch basin on the southern approach leading to the bridge that connects to an existing stormwater outfall that discharges on the southwestern side of the Winnetuxet Bridge. The proposed project includes upgrading the stormwater drainage system with two new deep sump catch basins to improve existing water quality conditions. The two new catch basins will connect in a new drain manhole (DMH) which will discharge to the existing stormwater outlet. There will be a reduction of approximately 10 square feet of impervious surface at the northeastern quadrant of the bridge approach on the roadside slope. There is existing pavement that covers this slope that will not be necessary for the installation of the new bridge. Because no increase in impervious area discharging to the outfall is proposed and there will be a small reduction in impervious surfaces, no change in runoff volume, discharge rate is expected. Area of existing road impervious surface is around 1584 square feet, and the proposed impervious surface represents a reduction of approximately 10 square feet to 1574 square feet and minimal changes, the net change will be approximately 10 square feet. Since no new road impervious surfaces are being added and the replacement catch basins will route stormwater to the same outfall area, there will be no changes to the site's drainage area or drainage patterns. Thus, the existing and proposed drainage areas were not delineated or calculated and remain at less than 1 acre.

5

Impaired Waters and TMDLs

As described under the Proposed Conditions section, the Project will discharge to the Winnetuxet River (MA62-24), which is identified as a Category 3, “Uses not Assessed” waterbody on the MassDEP Year 2022 Integrated List of Waters, also known as the 303(d) list.

MassDOT is expecting to receive a Transportation Separate Storm Sewer System (TS4) Permit from EPA, which will require that pollutant reductions presented in the TMDL be met on the watershed scale. As a result, the TMDL reductions do not need to be met by MassDOT on a project-by-project basis, but rather, MassDOT strives to make incremental progress towards achieving the required TMDL pollutant reductions with each project. Incremental progress is achieved through the implementation of SCMs designed to treat for the specific pollutants of concern for waterbodies within the watershed.

The Winnetuxet River is a major tributary of the Taunton River watershed, which has a Final Pathogen TMDL. Major sources of bacteria that have been identified within the watershed during dry weather include leaking sewer pipes, stormwater drainage systems (illicit connections of sanitary sewers to storm drains) and failing septic systems. Wet weather sources include stormwater runoff including municipal separate storm sewer systems (MS4), combined sewer overflows (CSOs), and sanitary sewer overflows (SSOs). Illicit connections, leaking sewer pipes, and sanitary sewer overflows must be detected (sources) and eliminated.

The size and scale of the Winnetuxet Road bridge replacement project limits the implementation of SCMs. The installation of two new deep sump catch basins will provide a greater level of stormwater management at the southern approach to the bridge. This will help to limit debris and potential contaminants from entering the Winnetuxet River and Taunton River watershed.

6

Stormwater Management Standards

As demonstrated below, the proposed Project complies with the MassDEP Stormwater Management Standards (the Standards). The Winnetuxet Bridge Replacement Project is a redevelopment project. As stated, the project will match existing bridge dimensions and will not alter the drainage patterns or impervious surface standards within the area. However, the project will only meet certain standards to the maximum extent practicable. For example, the project will not meet the design requirements to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS). The project will meet the standards to the maximum extent practicable by repairing the current outfall and replacing the existing catch basins with two new deep sump catch basins. The project will meet the Standards to the maximum extent practicable by improving current stormwater control measures, improving pre-treatment measures for stormwater control, slightly reducing road impervious surfaces within the site, performing routine SCM inspections and maintenance, performing yearly street sweeping, and maintaining current drainage areas and drainage patterns.

Standard 1: No New Untreated Discharges

No new stormwater conveyances may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.

The Project has been designed to comply with Standard 1. This project is a redevelopment project with no new roadway impervious surface proposed. There is one existing catch basin with one existing stormwater outfall will be utilized to discharge stormwater runoff from the improved roadway. The bridge deck will be changed from wood to concrete, but stormwater will continue to sheetflow off the bridge deck to the dam discharge channel in the future the same way that it does now.

No new stormwater outfalls are proposed for the Project. There are two proposed new deep sump catch basins which will replace the one existing catch basin. These deep sumps catch basins will treat stormwater runoff by collecting trash and debris, as well as some sediment. The two new catch basins will connect to a new Drain Manhole (DMH) and outlet to the existing outfall which will be retrofitted with new stone at the pipe discharge point for erosion protection.

Standard 2: Peak Rate/Flood Control

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.

This project is a redevelopment project with no new roadway impervious surface proposed, and includes slight reduction in impervious surface. The work proposed includes re-paving the roadway to the current dimensions and upgrading the stormwater drainage system with new catch basins to improve existing conditions. There is one existing catch basin with one existing stormwater outfall will be utilized to discharge stormwater runoff from the re-paved roadway. The bridge deck will be changed from wood to concrete, but stormwater will continue to sheetflow off of the bridge deck to the dam discharge channel in the future the same way that it does now. Therefore, there will be no change in drainage characteristics. Because the drainage characteristics of the site will not be changed and will be the same in the future as they are now, post-development discharge rates will be the same as pre-development discharge rates. Since drainage conditions and discharge rates will be unchanged from current conditions, modeling was not performed to assess discharge rates.

Standard 3: Recharge

Loss of annual recharge to groundwater shall be eliminated or minimized through the use of infiltration measures, including environmentally sensitive site design, low impact development techniques, stormwater best management practices, and good operation and maintenance. At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil type. This Standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook. S

This project is a redevelopment project with no new roadway impervious surface proposed and therefore the project meets this standard. The work proposed includes re-paving the roadway to the current dimensions and upgrading the stormwater drainage system with new catch basins to improve existing conditions. The re-paving will not alter recharge. The bridge deck will be changed from wood to concrete, but stormwater will continue to sheetflow off of the bridge deck to the dam discharge channel in the future the same way that it does now. Therefore, there will be no change in recharge. Because the drainage characteristics of the site are not changed and will be the same in the future as they are now, no recharge calculations were conducted. Information on existing recharge and infiltration rates for soils within the project site can be found within the Custom Soil Resource Report in Appendix B.

Standard 4: Water Quality Treatment Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS).

This Standard is met when:

- › *Suitable practices for source control and pollution prevention are identified in a long-term pollution prevention plan, and thereafter are implemented and maintained.*
- › *Structural stormwater best management practices are sized to capture the required water quality volume determined in accordance with the Massachusetts Stormwater Handbook.*
- › *Pretreatment is provided in accordance with the Massachusetts Stormwater Handbook.*

This project is a redevelopment project with no new roadway impervious surface proposed. There is one existing catch basin with one existing stormwater outfall which will be utilized to discharge stormwater runoff from the improved roadway. The bridge deck will be changed from wood to concrete, but stormwater will continue to sheetflow off of the bridge deck to the dam discharge channel in the future the same way that it does now. The Project has been designed to comply with Standard 4 to the maximum extent practicable as a redevelopment project.

Proposed stormwater management measures include two new deep sump catch basins, which will treat existing impervious area to the MEP. These deep sump catch basins will remove sediment and reduce total suspended solids by 25% based on the MassDEP Stormwater Handbook. The existing single catch basin does not include deep sumps, so the proposed retrofit will improve existing conditions. Table 1 shows the WQV to be treated for existing impervious area within the drainage area associated with the single outlet present north of the bridge. No new impervious surface runoff will be directed to this outfall. South of the bridge, all stormwater flow drains to the site of the road into grass area via country drainage, and there is no point source present. As indicated above, water from the bridge deck will sheet flow off of the deck in the future the same way it does now and does not enter a waterbody via a point source outfall.

Table 1 Required WQV and MEP WQV at Each Design Point

Design Point	MEP WQV for Existing IA (cf)
DP-1	100
Project Total	100

Table 2 shows the WQV provided by the SCMs at each design point

Table 2 Provided WQV by the SCMs at Each Design Point

Design Point	Pretreatment (y/n)	WQV Provided (cf)	MEP WQV for Existing IA (cf)
DP-1			
<i>Two Deep Sump Catch basins</i>	<i>No</i>	<i>100</i>	<i>100</i>
Project Total		100	100

Appendix E provides the MassDEP TSS Removal Calculation Worksheets.

For MassDOT facilities, Long-Term Pollution Prevention Plans (LTPPPs) are implemented at a programmatic level through MassDOT's highway operation and maintenance program by district. Appendix D includes the LTPPP for this project.

Standard 5: Land Uses with Higher Potential Pollutant Loads

For Land Uses with Higher Potential Pollutant Loads (LUHPPLs), source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable. If through source control and/or pollution prevention all LHPPLs cannot be completely protected from exposure to rain, snow, snow melt, and stormwater runoff, the proponent shall use the specific structural stormwater BMPs determined by the Department to be suitable for such uses as provided in the Massachusetts Stormwater Handbook. Stormwater discharges from LUHPPLs shall also comply with the requirements of the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53 and the regulations promulgated thereunder at 314 CMR 3.00, 314 CMR 4.00 and 314 CMR 5.00.

Standard 5 does not apply to the Project. There are no Land Uses with Higher Potential Pollutant Loads within the project area.

Standard 6: Critical Areas

Stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply and stormwater discharges near or to any other critical area require the use of the specific source control and pollution prevention measures and the specific structural stormwater best management practices determined by the Department to be suitable for managing discharges to such areas as provided in the Massachusetts Stormwater Handbook. A discharge is near a critical area if there is a strong likelihood of a significant impact occurring to said area, taking into account site-specific factors. Stormwater discharges to Outstanding Resource Waters and Special Resource Waters shall be removed and set back from the receiving water or wetland and receive the highest and best practical method of treatment. A "stormwater discharge" as defined in 314 CMR 3.04(2)(a)1 or (b), to an Outstanding Resource Water or Special Resource Water shall comply with 314 CMR 3.00 and 314 CMR 4.00. Stormwater discharges to a Zone I or Zone A are prohibited unless essential to the operation of a public water supply.

Standard 6 does not apply to the Project. There are no Critical Areas near the project area.

Standard 7: Redevelopment

A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural best management practice requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.

The Project will completely replace the bridge superstructure and partially replace substructures to match existing dimensions. Redevelopment areas include stormwater management measures such as rehabilitating the existing outfall and two new deep sum catch basins. The current bridge superstructure is wooden and will be replaced with a concrete deck. Despite the material being changed from wood to concrete, stormwater will continue to sheetflow off of the bridge deck to the dam discharge channel in the future the same way that it does now. The guardrails leading up to the southern and northern bridge approaches will also be replaced, but this will have no effect on stormwater management or impervious surfaces.

Standards 1 through 3 were not considered for assessment, as the project will match existing bridge dimensions. As stated previously, the project will have no effect on current drainage patterns, recharge rates, and will not be adding any new sources of untreated discharge. Standard 4 is the only standard that will be met to the max extent practicable. Standard 4 requests that Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS). However, since this project will match existing site dimensions it will not be able to fully meet these standards. The current stormwater management system does not currently remove any TSS loads, but the implementation of two new deep sump catch basins will increase the removal of average annual post-construction loads of TSS from 0% to around 60%. Standards 5 and 6 are not applicable as no Areas of Critical Environmental Concern or LUHPPL's areas are located within or near to the project site.

Standard 8: Erosion and Sediment Control

A plan to control construction related impacts, including erosion, sedimentation and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan) shall be developed and implemented.

The implementation of erosion and sediment controls (ESC) during construction is considered a standard practice for all MassDOT projects. ESC will be installed before any land disturbance begins for the Project and will remain in place for the duration of the Project.

The Project disturbs less than one acre of land; therefore, the project contractor will not request coverage under the NPDES Construction General Permit (CGP). The contractor will

develop a Stormwater Pollution Prevention Plan (SWPPP) and a sediment and erosion control plan.

Standard 9: O&M Plan

A long-term operation and maintenance plan shall be developed and implemented to ensure that stormwater management systems function as designed.

The Winnetuxet Road included in this project is not owned by MassDOT. The activities included in the O&M Plan will be implemented by the municipality. Appendix D includes the O&M Plan for this project.

Standard 10: Illicit Discharges

All illicit discharges to the stormwater management system are prohibited.

The design plans submitted with this report have been designed in full compliance with Standard 10. The project area does not have any known illicit connections. The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges. Appendix D includes the LTPPP for this project.

7

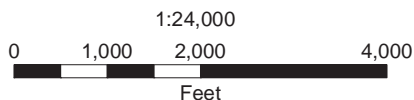
Figures

Figure 1 Locus Figure



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Source: USGS Portion of Plympton USGS Quadrangle



Locus Map
Winnetuxet Rd Bridge

February 2024



Appendix A: MassDEP Checklist for Stormwater Report

Insert a completed checklist, stamped by a registered professional engineer.

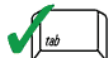


Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

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 8²
- 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



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

Checklist for 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

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature

Signature and Date



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

Checklist for Stormwater Report

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

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



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

Checklist for Stormwater Report

Green Roof

Other (describe):

The proposed structures are anticipated to have no impact on stormwater runoff volume because the impact area is already paved (impervious surface). There will be no additional impervious surface created by the project and 2 new catch basins will be put in place.

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.

Checklist (continued)

N/A – the project will match existing site dimensions and will implement no new impervious surfaces, structures or utilities. The long-term and short-term impacts to peak rate attenuation should be none. The rest of the construction area and any impacted resource area will be restored to previous conditions.

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

N/A – the project will match existing site dimensions and will implement no new impervious surfaces, structures or utilities. The long-term and short-term impacts to peak rate attenuation should be none. The rest of the construction area and any impacted resource area will be restored to previous conditions.

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 Field¹

Runoff from all impervious areas at the site discharging to the infiltration BMP.



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

Checklist for Stormwater Report

- 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.

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;



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

Checklist for Stormwater Report

-
- 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;
-
- A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent. Is included as an attachment to the General 401 WQC
 - 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.

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.



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

Checklist for Stormwater Report

- 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.

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.



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

Checklist for Stormwater Report

-
- 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.

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)



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

Checklist for Stormwater Report

- 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; **(See below)**
- NO Illicit Discharge Compliance Statement is attached but will be submitted **prior to** the discharge of any stormwater to post-construction BMPs.

Based on review of available design information and discussions with project personnel, the project team is unaware of any illicit discharges to the existing storm drainage system that is present in the vicinity of project activities.

Appendix B: Soils

- › NRCS Soil Survey Information
- › On-Site Subsurface Investigations



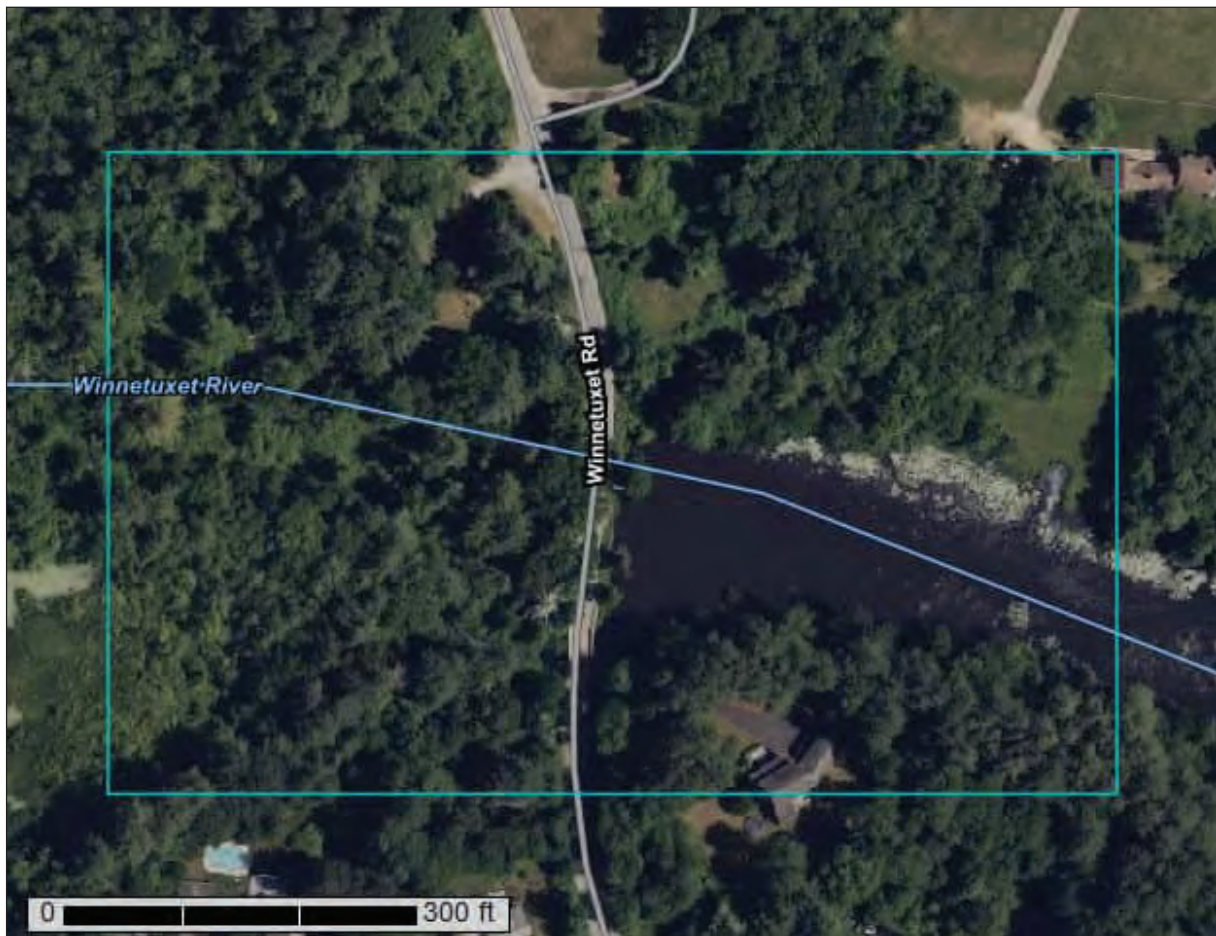
United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Plymouth County, Massachusetts



December 18, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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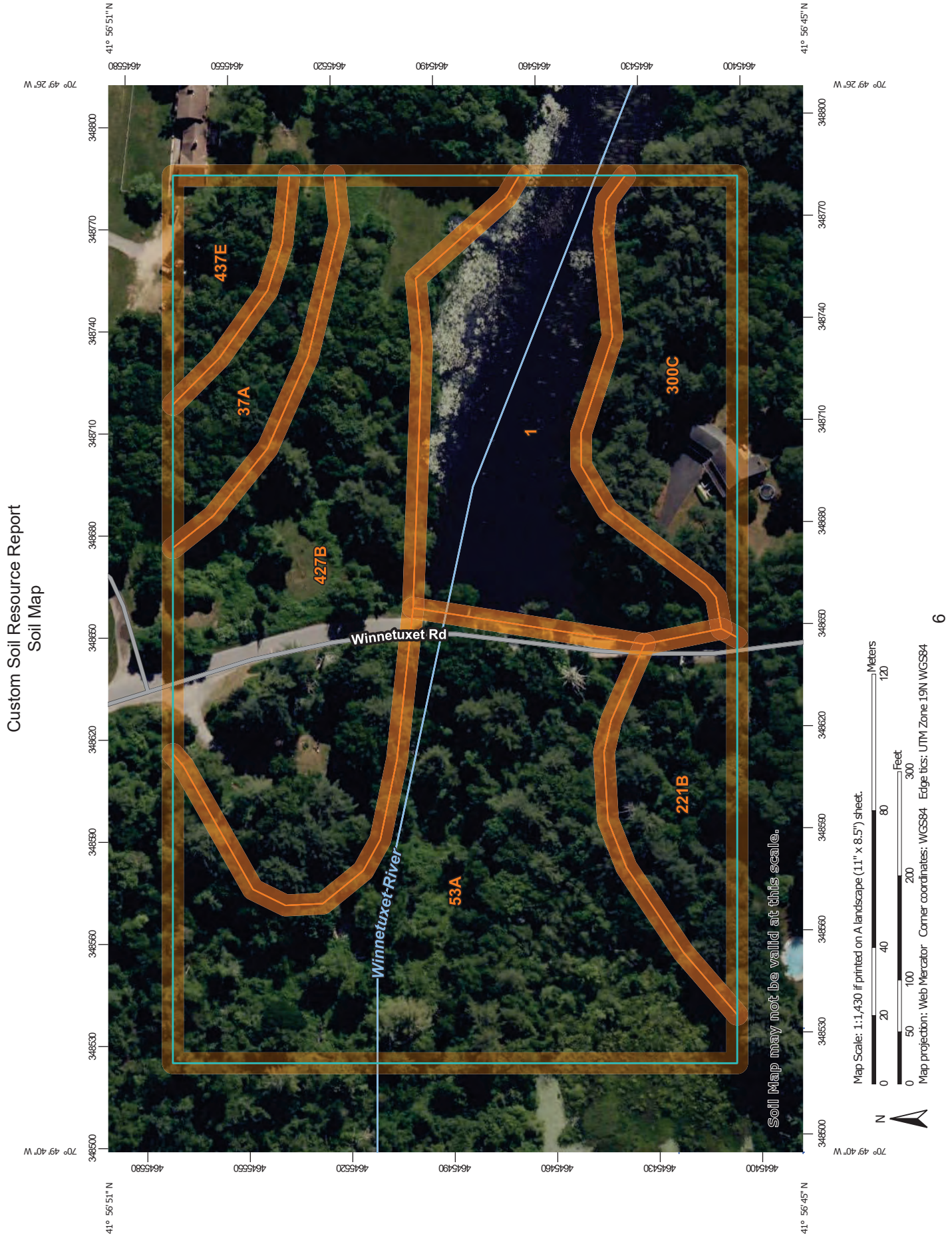
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Contents

Preface	2
Soil Map	5
Soil Map.....	6
Legend.....	7
Map Unit Legend.....	8
Map Unit Descriptions.....	8
Plymouth County, Massachusetts.....	10
1—Water.....	10
37A—Massasoit - Mashpee complex, 0 to 3 percent slopes.....	10
53A—Freetown muck, ponded, 0 to 1 percent slopes.....	13
221B—Eldridge fine sandy loam, 3 to 8 percent slopes.....	14
300C—Montauk fine sandy loam, 8 to 15 percent slopes.....	16
427B—Newfields fine sandy loam, 3 to 8 percent slopes, extremely stony.....	17
437E—Plymouth loamy coarse sand, 15 to 35 percent slopes, bouldery...	19
References	22

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.



Custom Soil Resource Report
Soil Map

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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: Plymouth County, Massachusetts
 Survey Area Data: Version 16, Sep 10, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 10, 2022—Jun 30, 2022

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.

MAP LEGEND

 Area of Interest (AOI)	 Area of Interest (AOI)	 Spoil Area
 Soils	 Soil Map Unit Polygons	 Stony Spot
	 Soil Map Unit Lines	 Very Stony Spot
	 Soil Map Unit Points	 Wet Spot
 Special Point Features	 Blowout	 Other
	 Borrow Pit	 Special Line Features
	 Clay Spot	 Streams and Canals
	 Closed Depression	 Transportation
	 Gravel Pit	 Rails
	 Gravelly Spot	 Interstate Highways
	 Landfill	 US Routes
	 Lava Flow	 Major Roads
	 Marsh or swamp	 Local Roads
	 Mine or Quarry	 Background
	 Miscellaneous Water	 Aerial Photography
	 Perennial Water	
	 Rock Outcrop	
	 Saline Spot	
	 Sandy Spot	
	 Severely Eroded Spot	
	 Sinkhole	
	 Slide or Slip	
	 Sodic Spot	

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Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1	Water	1.8	17.3%
37A	Massasoit - Mashpee complex, 0 to 3 percent slopes	0.5	5.1%
53A	Freetown muck, ponded, 0 to 1 percent slopes	3.3	31.2%
221B	Eldridge fine sandy loam, 3 to 8 percent slopes	0.8	7.3%
300C	Montauk fine sandy loam, 8 to 15 percent slopes	1.1	10.5%
427B	Newfields fine sandy loam, 3 to 8 percent slopes, extremely stony	2.7	25.0%
437E	Plymouth loamy coarse sand, 15 to 35 percent slopes, bouldery	0.4	3.7%
Totals for Area of Interest		10.7	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit

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descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Plymouth County, Massachusetts

1—Water

Map Unit Setting

National map unit symbol: bd0b
Elevation: 0 to 330 feet
Mean annual precipitation: 41 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 98 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Minor Components

Swansea

Percent of map unit: 1 percent
Landform: Depressions, marshes, swamps, bogs, kettles
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Freetown

Percent of map unit: 1 percent
Landform: Depressions, swamps, kettles, marshes, bogs
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

37A—Massasoit - Mashpee complex, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: bd1q
Elevation: 0 to 400 feet
Mean annual precipitation: 41 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Massasoit and similar soils: 55 percent
Mashpee and similar soils: 35 percent

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Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Massasoit

Setting

Landform: Terraces, depressions, drainageways

Landform position (two-dimensional): Footslope, toeslope

Landform position (three-dimensional): Tread

Down-slope shape: Concave

Across-slope shape: Concave

Parent material: Sandy and gravelly glaciofluvial deposits

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material

Oa - 1 to 3 inches: highly decomposed plant material

A - 3 to 5 inches: fine sand

Eg1 - 5 to 11 inches: fine sand

Eg2 - 11 to 13 inches: fine sand

Bhs - 13 to 17 inches: fine sand

Bsm - 17 to 23 inches: fine sand

Bs - 23 to 26 inches: fine sand

BC - 26 to 43 inches: fine sand

Cg - 43 to 80 inches: loamy very fine sand

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: 7 to 20 inches to ortstein

Drainage class: Poorly drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)

Depth to water table: About 0 to 12 inches

Frequency of flooding: None

Frequency of ponding: Occasional

Available water supply, 0 to 60 inches: Very low (about 1.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4w

Hydrologic Soil Group: D

Ecological site: F144AY028MA - Wet Outwash

Hydric soil rating: Yes

Description of Mashpee

Setting

Landform: Drainageways, depressions, terraces

Landform position (two-dimensional): Footslope, toeslope

Landform position (three-dimensional): Tread

Down-slope shape: Concave

Across-slope shape: Concave

Parent material: Sandy and gravelly glaciofluvial deposits

Typical profile

Oe1 - 0 to 2 inches: moderately decomposed plant material

Oe2 - 2 to 4 inches: moderately decomposed plant material

Custom Soil Resource Report

Oa - 4 to 5 inches: highly decomposed plant material
AE - 5 to 7 inches: loamy fine sand
Eg - 7 to 11 inches: fine sand
Bh1 - 11 to 13 inches: fine sand
Bh2 - 13 to 17 inches: fine sand
Bs - 17 to 24 inches: loamy fine sand
C1 - 24 to 39 inches: fine sand
C2 - 39 to 65 inches: fine sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(1.42 to 5.95 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: Occasional
Available water supply, 0 to 60 inches: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Ecological site: F144AY028MA - Wet Outwash
Hydric soil rating: Yes

Minor Components

Deerfield

Percent of map unit: 5 percent
Landform: Deltas, terraces, outwash plains
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: No

Rainberry

Percent of map unit: 3 percent
Landform: Kettles, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: Yes

Squamscott

Percent of map unit: 2 percent
Landform: Lake terraces, lake plains
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

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53A—Freetown muck, ponded, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2t2qc
Elevation: 0 to 1,140 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Freetown, ponded, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Freetown, Ponded

Setting

Landform: Kettles, marshes, depressions, depressions, bogs, swamps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Highly decomposed organic material

Typical profile

Oe - 0 to 2 inches: mucky peat
Oa - 2 to 79 inches: muck

Properties and qualities

Slope: 0 to 1 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high
(0.14 to 14.17 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: Rare
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: Very high (about 19.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Ecological site: F144AY043MA - Acidic Organic Wetlands
Hydric soil rating: Yes

Custom Soil Resource Report

Minor Components

Whitman, ponded

Percent of map unit: 5 percent
Landform: Depressions on ground moraines
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Scarboro

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Swansea, ponded

Percent of map unit: 5 percent
Landform: Bogs, swamps, marshes, depressions, depressions, kettles
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

221B—Eldridge fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: bcwz
Elevation: 0 to 310 feet
Mean annual precipitation: 41 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 145 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Eldridge and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Eldridge

Setting

Landform: Lake terraces, lake plains
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Rise

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Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Sandy eolian deposits and/or sandy glaciofluvial deposits over coarse-silty glaciolacustrine deposits

Typical profile

Ap - 0 to 10 inches: fine sandy loam
Bw - 10 to 20 inches: fine sandy loam
C1 - 20 to 29 inches: fine sand
C2 - 29 to 38 inches: fine sand
2C3 - 38 to 52 inches: silt
2C4 - 52 to 74 inches: silt

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 inches to strongly contrasting textural stratification
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.01 to 1.13 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C/D
Ecological site: F144AY027MA - Moist Sandy Outwash
Hydric soil rating: No

Minor Components

Squamscott

Percent of map unit: 5 percent
Landform: Lake terraces, lake plains
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Hinesburg

Percent of map unit: 4 percent
Landform: Lake plains, deltas
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Scio

Percent of map unit: 3 percent
Landform: Lake terraces, lakebeds, lake plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Talf

Custom Soil Resource Report

Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Deerfield

Percent of map unit: 3 percent
Landform: Deltas, terraces, outwash plains
Landform position (two-dimensional): Shoulder, footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

300C—Montauk fine sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2w80p
Elevation: 0 to 1,100 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Montauk and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Montauk

Setting

Landform: Recessional moraines, ground moraines, hills, drumlins
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 4 inches: fine sandy loam
Bw1 - 4 to 26 inches: fine sandy loam
Bw2 - 26 to 34 inches: sandy loam
2Cd - 34 to 72 inches: gravelly loamy sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Drainage class: Well drained
Runoff class: Low

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Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Minor Components

Scituate

Percent of map unit: 6 percent
Landform: Ground moraines, hills, drumlins
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Canton

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Ridgebury

Percent of map unit: 4 percent
Landform: Depressions, ground moraines, hills, drainageways
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Head slope, base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

427B—Newfields fine sandy loam, 3 to 8 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: bcxt
Elevation: 10 to 400 feet
Mean annual precipitation: 41 to 54 inches

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Mean annual air temperature: 43 to 54 degrees F

Frost-free period: 145 to 240 days

Farmland classification: Not prime farmland

Map Unit Composition

Newfields, extremely stony, and similar soils: 80 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Newfields, Extremely Stony

Setting

Landform: Moraines, till plains, hills

Landform position (two-dimensional): Shoulder, footslope

Landform position (three-dimensional): Interfluve

Down-slope shape: Linear

Across-slope shape: Concave

Parent material: Coarse-loamy eolian deposits over sandy and gravelly supraglacial meltout till

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material

A - 2 to 3 inches: fine sandy loam

Bs - 3 to 4 inches: fine sandy loam

Bw1 - 4 to 16 inches: fine sandy loam

Bw2 - 16 to 28 inches: gravelly fine sandy loam

2C - 28 to 63 inches: gravelly loamy coarse sand

Properties and qualities

Slope: 3 to 8 percent

Surface area covered with cobbles, stones or boulders: 9.0 percent

Depth to restrictive feature: 15 to 36 inches to strongly contrasting textural stratification

Drainage class: Moderately well drained

Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)

Depth to water table: About 18 to 30 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: B

Ecological site: F144AY008CT - Moist Till Uplands

Hydric soil rating: No

Minor Components

Barnstable, very stony

Percent of map unit: 8 percent

Landform: Moraines

Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Interfluve

Down-slope shape: Convex

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Across-slope shape: Convex

Hydric soil rating: No

Norwell, extremely stony

Percent of map unit: 7 percent

Landform: Drainageways, depressions

Landform position (two-dimensional): Foothlope, toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Scituate, very stony

Percent of map unit: 5 percent

Landform: Drumlins, ridges

Landform position (two-dimensional): Shoulder, foothlope

Landform position (three-dimensional): Interflue

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: No

437E—Plymouth loamy coarse sand, 15 to 35 percent slopes, bouldery

Map Unit Setting

National map unit symbol: bcyq

Elevation: 0 to 400 feet

Mean annual precipitation: 41 to 54 inches

Mean annual air temperature: 43 to 54 degrees F

Frost-free period: 145 to 240 days

Farmland classification: Not prime farmland

Map Unit Composition

Plymouth, bouldery, and similar soils: 80 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Plymouth, Bouldery

Setting

Landform: Moraines, outwash plains

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope, riser

Down-slope shape: Linear

Across-slope shape: Convex

Parent material: Sandy and gravelly supraglacial meltout till over sandy and gravelly glaciofluvial deposits

Typical profile

O_i - 0 to 4 inches: slightly decomposed plant material

O_e - 4 to 6 inches: moderately decomposed plant material

A - 6 to 7 inches: loamy coarse sand

Custom Soil Resource Report

E - 7 to 11 inches: coarse sand
Bs - 11 to 15 inches: loamy coarse sand
Bw - 15 to 20 inches: coarse sand
BC - 20 to 29 inches: coarse sand
C - 29 to 64 inches: gravelly coarse sand

Properties and qualities

Slope: 15 to 35 percent
Surface area covered with cobbles, stones or boulders: 0.1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Ecological site: F149BY005MA - Dry Outwash
Hydric soil rating: No

Minor Components

Gloucester, bouldery

Percent of map unit: 5 percent
Landform: Ground moraines, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Poquonock, bouldery

Percent of map unit: 5 percent
Landform: Till plains, ground moraines, drumlins
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Barnstable, bouldery

Percent of map unit: 5 percent
Landform: Moraines
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluvium
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Carver, bouldery

Percent of map unit: 5 percent

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Landform: Moraines, pitted outwash plains, outwash plains

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Riser

Down-slope shape: Linear

Across-slope shape: Convex

Hydric soil rating: No

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Geotechnical Design Report

Winnetuxet Road Over Winnetuxet River
Plympton, Massachusetts

Bridge No. P-14-001 (445)

Revision 3
July 28, 2023

Geotechnical Design Report

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Table of Contents

1.	Introduction	5
1.1	Scope of Report.....	5
1.2	Site History and Proposed Improvements	5
1.3	Site Description.....	6
1.4	Project Datum	6
2.	Subsurface Conditions	7
2.1	Surficial Geology.....	7
2.2	Bedrock Geology	8
2.3	Subsurface Exploration Program	9
2.4	Laboratory Testing	10
2.5	Sample Description Verification.....	10
2.6	Subsurface Profile.....	10
2.6.1	Winnetuxet Road over Winnetuxet River Bridge	10
2.6.2	Non-sampling Probes	12
2.6.3	Winnetuxet Road Dam.....	13
3.	Geotechnical Design Recommendations	15
3.1	Foundation Recommendations	15
3.1.1	Drilled Shafts	15
3.2	Lateral Earth Pressures	18
3.3	Seismic Design Criteria.....	19
4.	Construction Considerations	20
4.1	Drilled Shaft Considerations.....	20
4.2	Subgrade Preparation.....	20
4.3	Subgrade Protection	21
4.4	Water Control.....	21
4.5	Engineered Fill.....	21
4.6	Fill Placement	22
4.7	Soil Excavations	22
4.8	Protection of Existing Utilities.....	22
4.9	Temporary Earth Support.....	22
4.10	Construction Monitoring	22
5.	Winnetuxet Road Dam Seepage and Slope Stability Evaluation	23
5.1	Model Geometry	23
5.2	Stratigraphy	24
5.3	Phreatic Conditions.....	25
5.4	Methodology	25
5.5	Results and Conclusions.....	26
6.	Limitations.....	27
7.	References	29
	Appendix A Boring Location Plan, Test Boring Logs, Probe Logs, and Geologic Profile	
	Appendix B Groundwater Monitoring Well Installation Log	
	Appendix C Laboratory Testing Results.....	
	Appendix D Bridge Foundation Analysis Results.....	
	Appendix E Seepage and Slope Stability Analysis Results.....	

Figures

Figure 1. Project Locus Map6
 Figure 2. Surficial Geology at the Project Site7
 Figure 3. Surficial Materials at the Project Site8
 Figure 4. Bedrock Geology at the Project Site9
 Figure 5. Cross-Section A-A' Location24

Tables

Table 2-1 Probe Measurements and Observations13
 Table 2-2 Groundwater Monitoring Well Readings15
 Table 3-1 Recommended Drilled Shaft Socket Elevation16
 Table 3-2 SHAFT Soil Parameters16
 Table 3-3 LPILE Soil Parameters – South Abutment17
 Table 3-4 LPILE Rock Parameters – South Abutment17
 Table 3-5 LPILE Soil Parameters – North Abutment18
 Table 3-6 LPILE Rock Parameters – North Abutment18
 Table 3-7 Retaining Wall Design Parameters19
 Table 5-1 Minimum Required Factors of Safety26
 Table 5-2 Summary of Critical Slope Stability Factors of Safety27

1. Introduction

AECOM is pleased to submit our geotechnical report for the evaluation of the condition of the existing Winnetuxet Road over Winnetuxet River Bridge, as well as that of the Winnetuxet Road Dam, both located in Plympton, Massachusetts.

1.1 Scope of Report

This geotechnical report will serve to support the design and construction of the proposed bridge rehabilitation work and present what impacts, if any, the bridge improvements will have on the existing Winnetuxet Road Dam. A subsurface investigation program consisting of soil borings, non-sampling probes, monitoring well installations, and laboratory testing, was conducted in the area of the existing Winnetuxet Road over Winnetuxet River Bridge. Data collected during the recent exploration and laboratory testing programs are provided in this report and were used in conjunction with readily available subsurface information to develop the geotechnical design recommendations and construction considerations presented herein, in accordance with the requirements of the AASHTO LRFD Bridge Design Manual, 9th Edition (AASHTO-9) and the MassDOT LRFD Bridge Manual, Revision 2020.

1.2 Site History and Proposed Improvements

The existing Winnetuxet Road over Winnetuxet River Bridge is a timber plank deck bridge supported on timber beams. The existing structure was originally constructed prior to 1923. It is a two-span bridge measuring about 21 feet in out-to-out width but due to slight skew of the south abutment and piers, there is a slight variation in each span length. Generally, each span is approximately 15 feet long. Information about the original abutments is not available. However, based on the Plan of Topographic Survey of Winnetuxet Road, prepared by Green International Affiliates, Inc., of Westford, MA, the existing north abutment consists of stacked granite and the south abutment is stacked granite with a concrete facing. In addition to the abutments, the bridge also has wingwalls on all four corners and a timber pier at the center which is bearing on a timber mudsill.

The planned improvements consist of replacement of the bridge with three different single-span alternatives being considered. The first alternative (Alt. 1) consists of new abutments built behind the existing abutments with the substructure being a concrete cap on drilled shafts. The superstructure type for this alternative is 15-inch-deep prestressed concrete deck beams. The other two alternatives include concrete caps that cantilever over the existing abutments, founded on drilled shafts. The superstructure types for the two alternatives are 12-inch-deep prestressed concrete deck beams (Alt.2) and flitched beams (Alt.3).

The Winnetuxet Road Dam consists of an earthen dam measuring approximately 230 feet in length with a maximum height of 12 feet. The right (north of primary spillway) embankment is approximately 200 feet long, extending north from the north abutment. A primary concrete spillway is integral with the bridge's north and south abutment and an auxiliary box culvert spillway is located approximately 180 feet north of the bridge's north abutment. The primary spillway includes a broad crested weir with a sluiceway opening of 4.5 feet. The dam is classified as Significant Hazard. The downstream slope of the dam is graded at 1.5H:1V (horizontal:vertical) and is substantially covered with vegetation, including large trees. The upstream slope of the dam is

2.7H:1V and contains trees and vegetation. The crest of the embankment is paved and includes the Winnetuxet Road.

1.3 Site Description

Winnetuxet Road over Winnetuxet River is located in a rural area of Plympton, MA. The existing ground slopes down from south to north with an approximate 2-foot difference between the north and south abutments of the existing bridge. Wooded areas are immediately adjacent to the bridge with residential properties located further south off Winnetuxet Road. A 12-inch diameter drainage pipe runs across the southern bridge approach and overhead wires run from south to north across the existing bridge. The location of the site is presented on Figure 1.

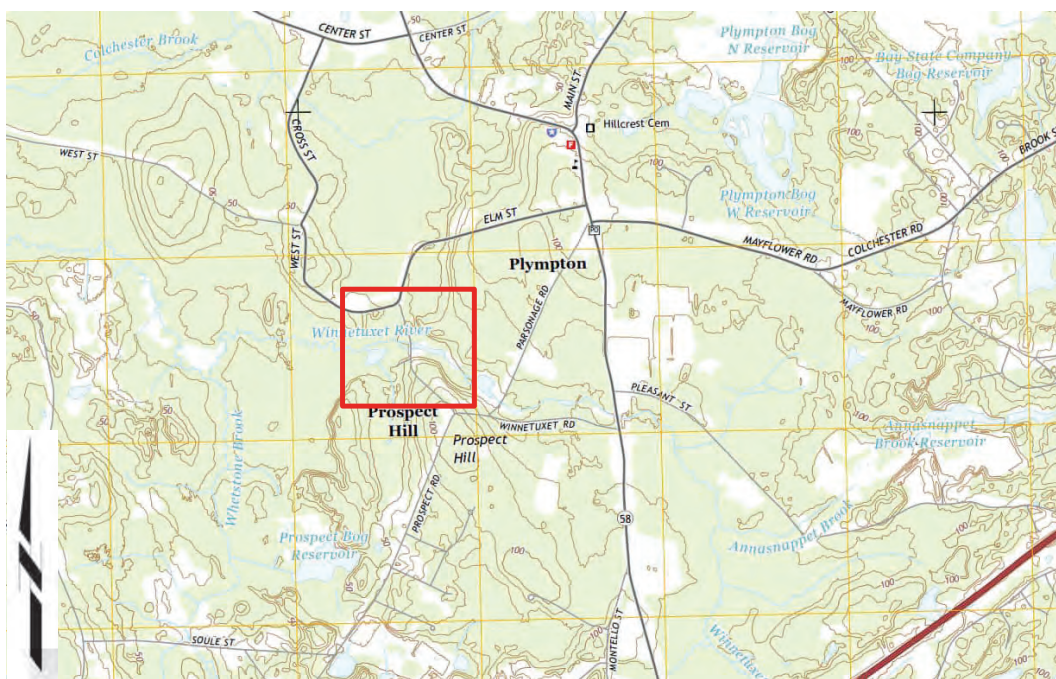


Photo courtesy USGS.

Figure 1. Project Locus Map

1.4 Project Datum

The horizontal datum for the project is the North American Datum of 1983 (NAD 83). All elevations referred to in this report, unless otherwise noted, are in feet and are based on the North American Vertical Datum of 1988 (NAVD 88). The record bridge plans and dam inspection report each refer to a different historical datum. Where applicable, the elevations have been converted to NAVD 88.

2. Subsurface Conditions

2.1 Surficial Geology

Based on the Surficial Materials Map of the Plympton Quadrangle, Massachusetts published by the United States Geological Survey (USGS) in 2011, surficial geology at the project site consists of coarse and fine deposits which can include sand and gravel, very fine sands, clay, and silt. In addition, swamp deposits of organic muck and peat with small amounts of sand, silt, and clay might be encountered, as well as thin till deposits consisting of sand, silt, and little clay. An excerpt of the surficial geological map and materials for Plympton are presented on Figures 2 and 3 below.

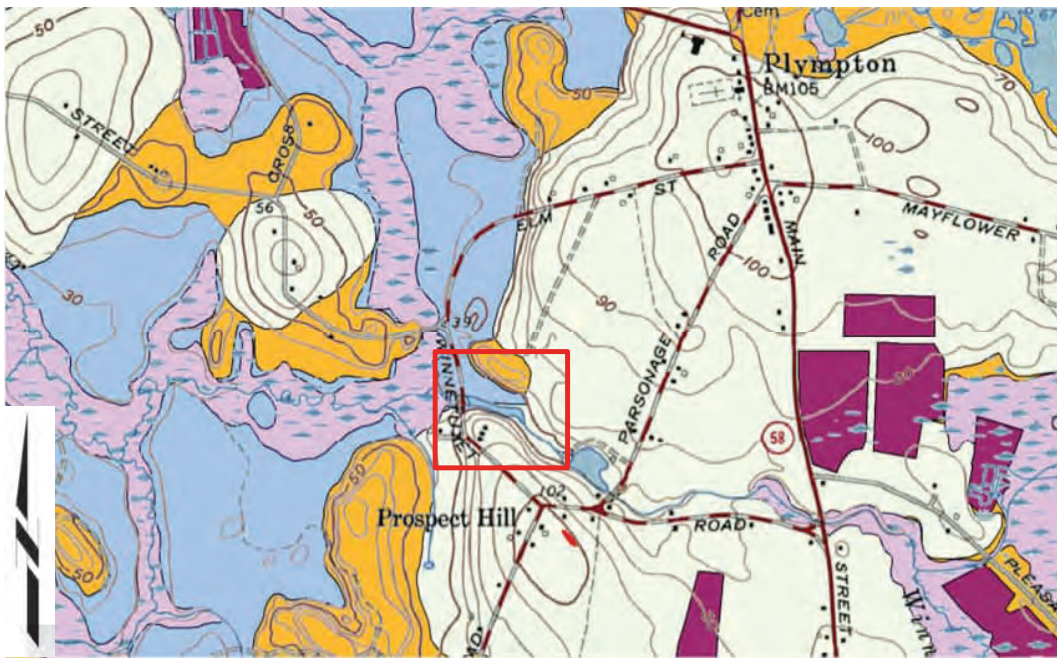


Photo courtesy USGS.

Figure 2. Surficial Geology at the Project Site

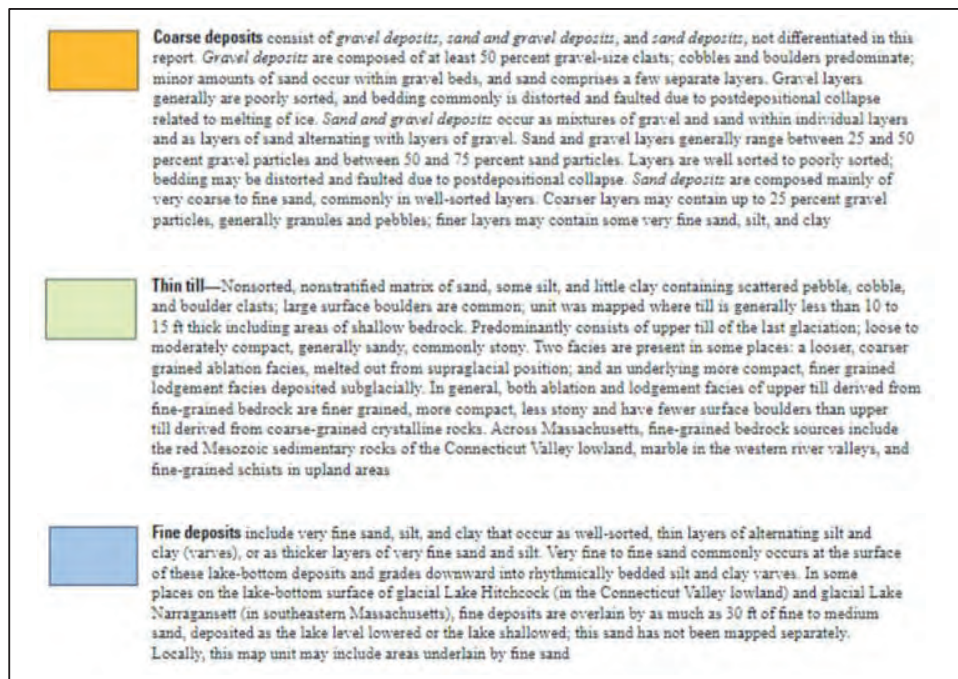


Figure 3. Surficial Materials at the Project Site

2.2 Bedrock Geology

The bedrock underlying the site is the Rhode Island formation, which is made up of Sandstone, Graywacke, Conglomerate, and Shale according to the 1983 USGS map titled “Bedrock Geologic Map of Massachusetts” prepared by Richard Goldsmith et al. An excerpt of this map for the Plympton area is presented in Figure 4.

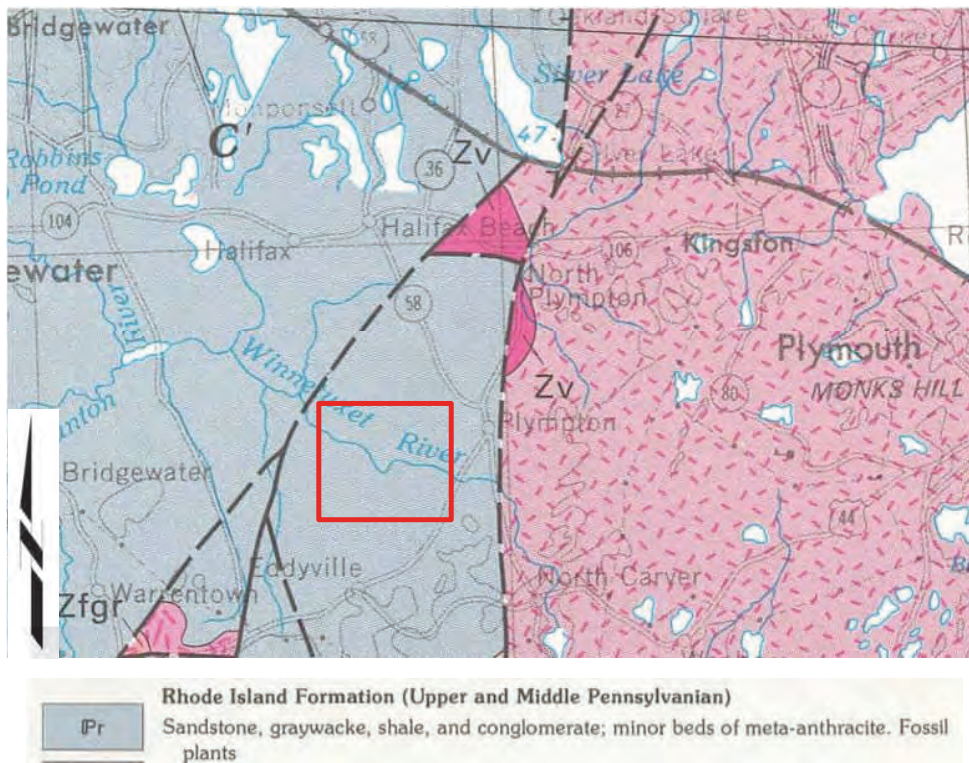


Figure courtesy USGS.

Figure 4. Bedrock Geology at the Project Site

2.3 Subsurface Exploration Program

A subsurface investigation program consisting of four (4) test borings and five (5) probes was performed by Northern Drill Service, Inc. of Northborough, MA between February 7 and February 16, 2022. The test borings and probes were logged by AECOM representatives.

The test borings ranged in depth from 46.5 to 55 feet below the ground surface (bgs). Test borings were vacuum cleared prior to the start of drilling to avoid utilities. Each test boring was vacuum cleared to 6 feet bgs. Standard 2-inch outside diameter Standard Penetration Test (SPT) split spoon samples were typically collected at 5-foot intervals from 6 feet bgs until SPT refusal was encountered on the top of bedrock. Rock core samples were collected by drilling a minimum of 10 feet of rock core in each boring except B-2, where only 9 feet of bedrock was cored due to a core barrel jam. Upon completion, the test borings were backfilled with grout. A groundwater observation well was installed in boring B-3.

Probes were performed using rotary methods with a 3-inch roller cone bit. Probe depths varied between 1 (refusal) and 24 feet below the existing ground surface. Soil and rock samples were not collected in the probes. Boring and probe logs are presented in Appendix A. A geologic profile depicting the test boring stick logs is also included in Appendix A.

The groundwater level encountered during drilling ranged from 6.9 to 12 feet bgs. It should be noted that groundwater levels may fluctuate with reservoir water level, precipitation, season, construction activities, run-off controls, and other factors. As a result, water levels during construction may vary from those observed during the subsurface investigation.

2.4 Laboratory Testing

Laboratory testing was conducted on soil samples by GeoTesting Express of Acton, MA, including particle size and Atterberg limits. The results of laboratory tests are presented in Appendix C.

2.5 Sample Description Verification

Soil samples were identified and described by an AECOM field representative using procedures outlined in ASTM D2488-17, "*Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)*". Sample descriptions were then verified by AECOM senior personnel.

2.6 Subsurface Profile

2.6.1 Winnetuxet Road over Winnetuxet River Bridge

Borings performed for the bridge at Winnetuxet Road over Winnetuxet River are identified as B-1 and B-2. The subsurface conditions encountered within these borings are summarized by strata below.

Pavement

Approximately 5 inches of bituminous pavement was encountered at the ground surface at both borings B-1 and B-2.

Fill

A 10.6-foot-thick fill layer was encountered beneath the bituminous pavement in both borings B-1 and B-2. The fill samples were most often classified as silty sand and less often as well-graded sand with silt and well-graded gravel with silt. The sand and gravel were observed to be fine to coarse grained, while the fines varied from few to little and were classified as non-plastic. Occasional boulders were noted in the fill. The fill extended to approximately elevation (El.) 40 in B-1 and El. 36.8 in B-2.

The SPT N-values within the fill ranged between 6 and 10 blows per foot (bpf) indicating loose consistency.

Organics

A 3-foot-thick deposit of organic material was observed below the fill in boring B-2. The organics were encountered at a depth of 11 feet, corresponding to El. 36.8 and consisted of slightly plastic organic silt with few fine grained sand.

The SPT N-value within the organics was recorded as 2 bpf indicating a very soft deposit.

Sand

An 8.8-foot-thick deposit of sand was encountered beneath the existing fill between El. 40 and 31.2 in boring B-1. In B-2 a 4-foot-thick deposit of sand was sampled between approximately El. 33.8 and 29.8. The sand layer mainly consisted of silty sand with occasional gravel. The sand was observed to vary between fine to medium or coarse grained while the gravel varied between few to some fine to coarse grained subrounded and subangular gravel. Little non-plastic to low plasticity fines were present throughout the sand deposit.

The SPT N-values within the sand ranged between 17 and 57 bpf indicating medium dense to very dense consistency.

Glacial Till

A 2.7- to 15-foot-thick deposit of glacial till was encountered beneath the sand in both borings B-1 and B-2 at El. 31.2 and El. 29.8, respectively. The glacial till mainly consisted of silty sand, with one sample classified as silty gravel. The sand and gravel in the samples were observed to be fine to coarse grained and contained some low plasticity fines. Note that few cobbles were observed within the glacial till deposit.

The SPT N-values within the glacial till ranged between 39 bpf and refusal (over 60 blows per 6 inches) indicating dense to very dense consistency.

Residual Soils

A 6- to 13.8-foot-thick deposit of residual soils was encountered beneath the glacial till at El. 28.5 and El. 14.8 at borings B-1 and B-2, respectively. The residual soils were mainly classified as silt with sand or gravel. The silt was noted to be non-plastic. The sand, when encountered, was observed to be fine grained, while the gravel varied from coarse to fine grained. Rock fragments were also observed within the samples.

The SPT N-values within the residual soils consisted of refusal indicating very dense consistency.

Bedrock

Bedrock was encountered beneath the residual soils in both borings B-1 and B-2 at El. 14.8 and El. 8.8, respectively. The bedrock in boring B-1 was observed to consist of slightly weathered, moderately to highly fractured Sandstone with moderately dipping bedding. Rock Quality Designation (RQD) values for the recovered cores were 55% and 58%, indicating fair quality rock.

Bedrock in boring B-2 consisted of slightly to highly weathered, weakly- to well-bedded, very soft to hard Siltstone. RQD values for the recovered cores were 14% and 68%, indicating very poor to fair quality rock.

Both borings B-1 and B-2 were terminated within the bedrock at depths of 46.5 and 49 feet bgs, corresponding to El. 4.5 and El. -1.2, respectively.

Groundwater

The groundwater depth in borings B-1 and B-2 at the time of drilling was recorded as 12 feet below the ground surface, corresponding to El. 39 and El. 35.8, respectively. It should be noted that groundwater levels may fluctuate with precipitation, season, construction activities, run-off

controls, and other factors. As a result, water levels during construction may vary from those observed during the subsurface exploration.

2.6.2 Non-sampling Probes

Five (5) probes were advanced to evaluate the geometry of the back face of the existing abutments, and to determine if the abutments are founded on a concrete footing. Four (4) probes, P1-1, P1-2, P1-3, and P1-4 were performed in the area of the south abutment and one probe, P2-1, was performed in the area of the north abutment. The probing program began with the first probe located within 1 foot of the existing bridge deck and subsequent probes were incrementally spaced farther from the deck. In this manner the approximate abutment geometry may be inferred based on the depth to refusal measured in each probe.

At the south abutment the first two (2) probes (P1-1 and P1-2) encountered refusal within 2 feet of the existing ground surface. The next two (2) probes (P1-3 and P1-4) advanced to 24 feet bgs without encountering obstructions or presumed foundation. The horizontal spacing between P1-2 and P1-3 was 19 inches. Based on the close horizontal distance between the probes and large vertical separation, we perceive the south abutment to have a near-vertical stem on the back side. Since probe P1-3 advanced deeper than the assumed depth of the abutment footing without impediment, it is assumed that the existing south abutment is not founded on concrete or structural footing.

Only one (1) probe was advanced at the north abutment because P2-1 extended to 24 feet bgs without encountering obstructions or presumed foundation. P2-1 was located 17 inches horizontally from the edge of the existing wood bridge deck. These findings indicate that the back side of the north abutment stem is near-vertical and that the abutment is not supported by a concrete or structural footing. Table 2-1 presents the probe observations and measurements.

Table 2-1 Probe Measurements and Observations

Probe ID	Substructure Location	Date of Probe	Distance from Edge of Wood Deck to Center of Probe (inch)	Depth of Probe Refusal or Termination (feet bgs)	Observations
P1-1	South Abutment	2/11/2022	11	1.0	Refusal
P1-2	South Abutment	2/11/2022	21	2.0	Refusal
P1-3	South Abutment	2/11/2022	40	24.0	Termination. No obstructions or presumed foundation encountered.
P1-4	South Abutment	2/11/2022	58	24.0	Termination. No obstructions or presumed foundation encountered.
P2-1	North Abutment	2/16/2022	17	24.0	Termination. No obstructions or presumed foundation encountered.

2.6.3 Winnetuxet Road Dam

Borings performed for the Winnetuxet Road Dam are identified as B-3 and B-4. The subsurface conditions encountered within these borings are summarized by strata below.

Pavement

Approximately 5 inches of bituminous pavement was encountered at the ground surface at both borings.

Fill

A 7.6- to 10.1-foot-thick fill layer was encountered beneath the bituminous pavement at both boring locations. The fill samples were most often classified as silty sand and less often as well-graded sand with silt and well-graded gravel with silt. The sand and gravel were observed to be mostly fine to coarse grained, with the gravel noted as subangular to angular. The fines varied from few to little and were classified as non-plastic. Occasional cobbles were noted in the fill.

The SPT N-values within the fill ranged between 5 and 24 bpf indicating loose to medium dense consistency.

Gravel

A 7-foot-thick layer of gravel was encountered beneath the fill in boring B-3 at El. 35.7. The gravel deposit consisted of poorly graded gravel with silt and sand. The gravel was noted as fine to

coarse while the few fines were classified as non-plastic. The samples contained little to some fine to coarse sand.

The SPT N-values within the gravel were recorded as 28 and 17 bpf indicating medium dense consistency.

Silt

A 6-foot-thick layer of sandy silt was encountered beneath the existing fill in boring B-4 at El. 38.7. The silt was noted to be non-plastic with fine to coarse sand and few subangular gravel.

The SPT N-value within the silt was recorded as 15 bpf indicating medium dense consistency.

Sand

An 8.1-foot-thick deposit of sand was encountered beneath the sandy silt between El. 34.7 and 26.6 in boring B-4. The sand layer consisted of silty sand and well-graded sand. The sand was observed to be fine to coarse grained. One of the samples contained little fine subangular gravel and traces to some non-plastic to low plasticity fines.

The SPT N-values within the sand ranged between 48 and 95 bpf indicating dense to very dense sand.

Glacial Till

A deposit of glacial till was encountered beneath the gravel in boring B-3 and beneath the sand in borings B-4. The glacial till was 12.4- to 17.5-foot-thick and was first encountered at El. 28.7 and El. 26.6. The glacial till mainly consisted of sandy silt, with one sample classified as silty sand. The silt in the samples was observed to have low plasticity with mostly fine grained or fine to medium grained sand. Gravel, where observed, was classified as few to little, fine, subangular to angular gravel. Three samples were noted to contain occasional clay laminae. The glacial till extended to depths of 32.5 and 35 feet bgs, corresponding to El. 14.2 and 11.2, respectively.

The SPT N-values within the glacial till ranged between 53 bpf and refusal, indicating very dense consistency.

Residual Soils

A deposit of residual soils was encountered beneath the glacial till at both borings, at El. 14.2 and El. 11.2. The residual soils were mainly classified as silt or clay. The silt was noted to be non-plastic. The samples contained little to few fine grained sand with trace to few fine grained subangular gravel. Boring B-4 was terminated within the residual soils at a depth of 51.8 feet below the ground surface, corresponding to El. -5.1.

The SPT N-values within the residual soils consisted of refusal indicating very dense consistency.

Bedrock

Bedrock was encountered beneath the residual soils in boring B-3 at El. 0.2. The bedrock consisted of grey, moderately hard, slightly weathered Siltstone. RQD values for the recovered cores were recorded as 14% and 10.5%, indicating very poor-quality rock.

Boring B-3 was terminated within the bedrock at a depth of 55 feet bgs, corresponding to El. -8.8.

Groundwater

The groundwater depth in the borings the time of drilling was observed between 6.9 and 10.5 feet below the ground surface, corresponding to El. 39.8 and El. 35.7. Boring B-3 was completed as a groundwater monitoring well. The monitoring well installation log is presented in Appendix B, while the groundwater readings taken since the time of drilling are presented in Table 2-2 below. As previously stated, it should be noted that groundwater levels may fluctuate with precipitation, season, construction activities, run-off controls, and other factors. As a result, water levels during construction may vary from those observed during the subsurface exploration.

Table 2-2 Groundwater Monitoring Well Readings

Well No.	Ground Surface Elevation (ft)	Date	Elapsed time (days)	Depth from Roadway Surface (ft)	Groundwater Elevation (ft)
B-3	46.82	2/14/2022	Initial	10.5	36.32
		4/3/2022	48	9.8	37.02
		5/18/2022	93	10.8	36.02
		8/21/2022	188	12	34.82

3. Geotechnical Design Recommendations

Geotechnical engineering evaluations have been made on various aspects related to the substructure foundation options for the proposed bridge replacement. In general, these recommendations have been based on the results of subsurface investigations, laboratory testing results, engineering evaluations, and our project understanding. Final foundation designs should be based on detailed structural analyses, utilizing the final system configuration and design loads.

Bridge foundation analyses were performed in accordance with the *AASHTO LRFD Bridge Design Specifications, 9th Edition (AASHTO-9)* and the *MassDOT LRFD Bridge Manual, 2020 Revision*.

3.1 Foundation Recommendations

3.1.1 Drilled Shafts

It is our understanding that the proposed bridge alternatives for the replacement of the Winnetuxet Road over Winnetuxet River Bridge have the proposed abutments supported by deep foundations constructed behind the existing abutments. In each alternative the new bridge superstructure will span over the existing substructures. The existing center pier will be removed down to the level of the riverbed and the new bridge will be a single span. The recommended foundation type for support of the proposed abutments is drilled shafts.

Each of the drilled shafts will derive their support from the underlying very dense glacial till and residual soil. The glacial till and residual soil exhibit similar soil like consistency and are anticipated to provide comparable shaft side resistances. We recommend that permanent casing be advanced at least one diameter into the glacial till/ residual soil. Side resistance along the portion of the shaft with permanent casing should be neglected, including the portion of casing embedded within the glacial till/ residual soil. The diameter of the shaft below the permanent casing, known as the “socket”, will be approximately six inches less than the diameter of the cased portion. Temporary casing may be required to install the socket. Table 3-1 below presents the recommended top of socket elevations for each abutment:

Table 3-1 Recommended Drilled Shaft Socket Elevation

Bridge Abutment	Top of Socket Elevation (ft)
North	18.8
South	25.5

The factored drilled shaft side resistance was estimated using the computer software SHAFT by Ensoft, Inc. The SHAFT software computes the estimated settlement of the drilled shaft under axial loading based on inputs of shaft geometry and subsurface parameters. The factored unit side resistance of the drilled shaft was computed from the SHAFT analysis results. Table 3-2 shows the soil and rock parameters used in the SHAFT evaluation. The soil layers which the drilled shaft permanent casing is embedded were assigned properties to indicate that load transfer should be neglected. The socket bearing material was evaluated for load transfer and settlement was computed.

Table 3-2 SHAFT Soil Parameters

Soil Layer	Depth at Bottom of Each Layer (ft)	Total Unit Weight Top & Bot. (pcf)	Poisson's Ratio	Blow Counts from SPT Top & Bot.	Socket Diameter (ft)
1. Cased Shaft	25	Permanent Casing, no load transfer			
2. Decomposed Rock/ Gravel (FHWA Spec)	50	140	0.25	100	2.5

The drilled shaft axial resistance evaluation considered drilled shafts with diameters ranging from 3 feet to 5 feet, with a socket to shaft diameter ratio of 0.83. A groundwater depth of 8 feet was used in the model. The side friction resistance factor used was equal to 0.55. The recommended factored unit side resistance is 2.6 ksf, which is anticipated to limit the deformation under service load conditions to approximately 0.1 inches or less. The minimum socket length should be based on the final design factored axial load demand on the drilled shaft. End bearing resistance was neglected in the estimate of the drilled shaft factored resistance since the deformation required to

activate end bearing resistance will be greater than the deformation necessary to engage side resistance. The SHAFT drilled shaft axial response input parameters and results are included in Appendix D.

Drilled shafts will be required to support lateral loads and overturning moments resulting from the bridge design loads. Preliminary lateral foundation analyses were completed using the LPILE software by Ensoft, Inc., in conjunction with subsurface information obtained from the borings. The analyses were performed for a 3-foot-diameter drilled shaft with a 2.5-foot-diameter socket that extended 12 feet into the glacial till and/or residual soils. Given the anticipated service loading conditions, the resulting live load deflection at the top of the pile was estimated to be 0.33 inches. The lateral response input parameters and results are included in Appendix D. Tables 3-3 and 3-4 present the subsurface profile properties used for the analyses at the South Abutment. Tables 3-5 and 3-6 present the subsurface profile properties used for the analyses at the North Abutment.

Table 3-3 LPILE Soil Parameters – South Abutment

Soil Type	Model As	Effective Unit Weight (pcf)	Elevation of Top of Layer (ft)	Elevation of Bottom of Layer (ft)	Friction Angle Top & Bot. (deg)	k Top & Bot. (pci)	Undrained Cohesion Top & Bot. (psf)	Strain Factor £50 Top & Bot.
Fill (Dry)	Sand (Reese)	120	48.4	39.0	30	3.5	-	-
Sand I	Sand (Reese)	59.6	39.0	28.5	34	27	-	-
Till / Residual Soil	Sand (Reese)	67.6	28.5	14.8	38	64	-	-

Table 3-4 LPILE Rock Parameters – South Abutment

Soil Type	Model As	Effective Unit Weight (pcf)	Elevation to Top of Layer (ft)	Depth to Bottom of Layer (ft)	Strain Factor k_{rm}	Uniaxial Compressive Strength (psi)	Initial Modulus of Rock Mass (psi)	RQD (%)
Bedrock	Weak Rock (Reese)	72.6	14.8	-	0.0005	200	150000	56

Table 3-5 LPILE Soil Parameters – North Abutment

Soil Type	Model As	Effective Unit Weight (pcf)	Elevation of Top of Layer (ft)	Elevation of Bottom of Layer (ft)	Friction Angle Top & Bot. (deg)	k Top & Bot. (pci)	Undrained Cohesion Top & Bot. (psf)	Strain Factor £50 Top & Bot.
Fill (Dry)	Sand (Reese)	120	47.8	36.8	30	3.5	-	-
Organics	Soft Clay (Matlock)	42.6	36.8	33.8	-	-	200	0.02
Sand II	Sand (Reese)	59.6	33.8	29.8	34	27	-	-
Till	Sand (Reese)	67.6	29.8	14.8	38	64	-	-

Table 3-6 LPILE Rock Parameters – North Abutment

Soil Type	Model As	Effective Unit Weight (pcf)	Elevation to Top of Layer (ft)	Depth to Bottom of Layer (ft)	Strain Factor k_{rm}	Uniaxial Compressive Strength (psi)	Initial Modulus of Rock Mass (psi)	RQD (%)
Residual Soil + Bedrock	Weak Rock (Reese)	72.6	14.8	-	0.0005	200	150000	56

Note that a reduction for corrosion effects was applied to the casing thickness for these analyses and the shafts were assumed to be pinned at the head. The preliminary drilled shaft dimensions, as well as the axial and lateral capacity analyses should be updated during a later design stage using the final bridge loads and configurations.

3.2 Lateral Earth Pressures

Abutments will be subject to soil lateral pressures from earth, traffic loads, seismic loads, as well as other loads, and hydrostatic pressures. The design lateral pressures should be calculated by adding earth and water pressures, and surcharge pressures from structures near the proposed wall. Counterfort walls, cantilever walls, or gravity walls that are founded on rock or piles shall use at-rest earth pressure coefficient, K_o .

Lateral earth pressure design parameters presented in the following table assume horizontal grades in front of and behind walls.

Table 3-7 Retaining Wall Design Parameters

Material	Total Unit Weight (pcf)	Friction Angle (degrees)	At-Rest Earth Pressure Coefficient, K_o
On-Site Granular Soils	120	30	0.50
Engineered Fill	125	34	0.44

3.3 Seismic Design Criteria

In accordance with AASHTO-9, Section 3.10, the seismic criteria are as follows for the seven percent probability of exceedance in 75 years (1,000-year return period).

- Site Class: D
- Horizontal Peak Ground Acceleration (PGA): 0.06 g
- Spectral Response Acceleration at short period (S_s): 0.13 g
- Spectral Response Acceleration at 1 sec (S_1): 0.035 g
- Site Coefficient F_{pga} (Table 3.10.3.2-1): 1.6
- Site Coefficient F_a for Short Period (Table 3.10.3.2-2): 1.6
- Site Coefficient F_v for Long Period (Table 3.10.3.2-3): 2.4
- Adjusted Peak Ground Acceleration, A_S : 0.096 g
- Adjusted spectral response S_{DS} : 0.208 g
- Adjusted spectral responses S_{D1} : 0.084 g

Based on the density of the submerged granular layers, soils at the site are not likely to be susceptible to liquefaction.

4. Construction Considerations

The purpose of this section is to discuss geotechnical related construction issues for the planned bridge and retaining walls.

4.1 Drilled Shaft Considerations

We anticipate that the entirety of the drilled shaft socket will bear within the glacial till and residual soils. If longer sockets are required based on final load demands, they may penetrate low RQD rock in the upper 5 feet of the bedrock zone. Based on the borings taken at each abutment, the upper 5 feet of cored bedrock exhibited RQD from 14 to 55 percent. Sound rock with RQD greater than 60 percent may not be encountered higher than approximately Elevation 4 feet.

Prior to shaft construction, a test boring should be conducted at one drilled shaft location per abutment, to verify the subsurface conditions at the shaft location. The test borings shall extend to a minimum depth of 10 feet into sound rock. The boring logs shall be reviewed by the Contractor and be submitted to the Engineer for approval prior to mobilizing drilled shaft equipment.

Design recommendations provided herein assume drilled shaft concrete will have a minimum 28-day compressive strength of 4,000 psi and a slump of 8 to 9 inches. Drilled shaft construction will likely encounter high groundwater and require dewatering or wet shaft construction using tremie placement methods. Slurry may be used to advance casings through the cohesionless soils into the silty residual soil, but only water should be used to drill within the residual soil and bedrock in order to eliminate/minimize slurry 'cake' formation at the residual soil socket's side and tip.

Drilled shaft construction should be observed by a representative of the Owner to ensure shafts and sockets are properly advanced to the required depths, materials encountered are adequate for design loadings and are consistent with conditions assumed in the design, sockets are inspected to be properly cleaned, and placement of reinforcement and concreting has been satisfactorily performed.

It is recommended that the drilled shaft's factored resistance be confirmed in the field by load tests. Drilled shafts shall be load tested in accordance with Article 10.8.3.5.6 of the AASHTO-9. The test loading method should follow the Quick Load Test Procedure and be conducted on a production shaft located at the North Abutment.

4.2 Subgrade Preparation

Existing asphalt, any organic soils, existing fill that cannot be compacted in place, abandoned utilities, and other below-ground structures not being abandoned in place, should be entirely removed below and 1 foot outside of the proposed foundation. Should boulders be encountered at the drilled shaft cap subgrade, the boulders should be removed prior to shaft construction.

Loose or soft soils identified during the compaction of the subgrade should be excavated to a suitable bearing stratum as determined by the field representative of AECOM. Grades should be restored by backfilling with Granular Borrow, Gravel Borrow, or crushed stone. Gravel Borrow should be placed in maximum loose lifts 12-inches thick and compacted to 95% of the maximum dry density as determined from the modified Proctor test (AASHTO T-180).

4.3 Subgrade Protection

The onsite soils are anticipated to be frost susceptible. If construction takes place during freezing weather, special measures such as heat blankets or other measures should be taken to prevent the subgrade from freezing. Excavations should be backfilled as soon as possible after construction. Soil used as backfill should be free of frozen material, as should be the ground on which it is placed. Fill placement should be halted during freezing weather.

Surface drainage of the site should be properly maintained during construction such that subgrades are kept free of standing water. Up to the time of subgrade preparation, elevations of areas to be excavated should remain several inches above the final bearing elevation to minimize potential exposure to wet weather and softening of the bearing soils.

4.4 Water Control

Based on the groundwater levels encountered during drilling, large scale dewatering is not anticipated for this project. However, the Contractor may encounter perched groundwater and runoff due to rainfall or seasonal fluctuation. If dewatering is necessary, the Contractor will be responsible for the dewatering system design and operations.

Dewatering systems for bridge foundation construction should be designed by the Contractor's Professional Engineer registered in the Commonwealth of Massachusetts and submitted to the Geotechnical Engineer for review at least two weeks prior to the start of construction. Discharge water must be managed in accordance with local, State, and federal government requirements.

4.5 Engineered Fill

Engineered fill for backfill behind bridge abutments and wingwalls should meet the gradation and compaction requirements of Gravel Borrow (MassDOT M1.03.0, Type b), unless specifically approved by the Geotechnical Engineer. Engineered fill for backfill below bridge foundations should meet the gradation and compaction requirements of Gravel Borrow (MassDOT M1.03.0, Type a). Materials to be used as fill should first be tested for compliance with the applicable gradation specifications. Any proposed embankment material must meet or exceed design recommendations of Chapter 150 of the MassDOT Standards and Specifications.

Prior to placement of any engineered fill, compliance testing should be performed on a minimum of two bulk soil samples from each proposed fill source (including any on-site materials to be reused) and test results should be submitted to the Geotechnical Engineer for approval. The bulk samples that are tested should represent the fill materials as they are to be compacted in place – i.e., if materials are to be mixed or otherwise modified or treated, the test samples should be prepared to simulate the construction conditions.

Compliance testing on each bulk sample should include the following battery of tests: Sieve Analysis of Fine and Coarse Aggregates (AASHTO T-27) and Modified Proctor Compaction testing (AASHTO T-180). A qualified Geotechnical Engineer should review the test results and determine whether the materials meet the above fill selection recommendations.

4.6 Fill Placement

Soil used as backfill should be free of frozen material, organic matter, cobbles, boulders, unnatural soil materials such as slag, asphalt, or concrete, and other rubble greater than 6 inches in largest diameter. When crushed stone is required in the drawings or it is used for the convenience of the contractor, it should be wrapped in a geotextile fabric for separation except where introduction of the geotextile promotes sliding.

4.7 Soil Excavations

The Contractor will be responsible for the excavation in accordance with the applicable federal and state laws and regulations, including OSHA.

The site soils should generally be considered Type "C" in accordance with OSHA and should have a maximum allowable slope of 1.5 horizontal:1 vertical for excavations less than 20 feet deep. In areas where the horizontal distance between the edge of any excavation and the bottom of existing structures is less than twice the vertical distance between the bottom of the excavation and the bottom of the existing structure, excavation support systems will be required to prevent the undermining of existing structures. Due to the interconnected nature of the existing abutments with the dam structure, support of excavation construction which induces vibrations is not recommended. Any excavation support system, if required, should be designed by the contractor's Professional Engineer registered in the Commonwealth of Massachusetts. The design should be submitted to the Geotechnical Engineer of record for review at least two weeks prior to the start of construction.

4.8 Protection of Existing Utilities

Existing utilities may be encountered in the vicinity of the work. Proper planning and protection measures should be implemented to protect the existing utilities and minimize impacts accordingly.

4.9 Temporary Earth Support

Rehabilitation of the bridge may require a temporary earth support system. The contractor should select the excavation support type to fit the construction sequence, including the support of any utilities crossing the bridge. In accordance with the MassDOT LRFD Bridge Manual, Section 3.2.5.8, all temporary support of excavation that protrudes into the soil that supports the bridge structure and/or the existing abutments and existing dam structure shall be left in place. The temporary earth support system should be designed by a professional engineer registered in the Commonwealth of Massachusetts and engaged by the Contractor. The design should be submitted to the Geotechnical Engineer of record for review at least two weeks prior to the start of construction.

4.10 Construction Monitoring

A settlement monitoring plan should be developed by the Contractor and submitted to the Engineer for review and approval, to monitor movement of the existing abutments, existing spillway and the dam structure during construction. Geotechnical instrumentation consisting of Deformation Monitoring Points (DMPs), inclinometers, settlement plates and monuments, should be utilized to monitor movements. The settlement monitoring plan should prescribe the frequency

of instrumentation readings and provide threshold levels for triggering a response. Monitoring of the existing dam and abutments should occur during construction and for a period after construction is complete.

It is recommended that AECOM be retained to provide geotechnical engineering observation and consultation services during construction to observe compliance with design and construction recommendations and specifications. The field representative would undertake the following responsibilities:

- Verify drilled shaft installation procedures.
- Observe and document drilled shaft installation.
- Observe drilled shaft load testing, if any.
- Monitor all excavation activities.
- Monitor all SOE operations, if required.
- Monitor all dewatering operations, if any.
- Provide recommendations regarding re-use of on-site soils.
- Observe and document the placement and compaction of fill materials.
- Review geotechnical instrumentation data and provide responses, as needed.

Additionally, the field representative would be present to verify and provide timely responses to the project team if the actual conditions encountered differ from those described herein.

5. Winnetuxet Road Dam Seepage and Slope Stability Evaluation

In order to assess the impacts that bridge construction may have on the existing Winnetuxet Road Dam, seepage and slope stability analyses were conducted using the results of recently conducted soil borings, laboratory testing, and groundwater monitoring well readings. The seepage and slope stability evaluation was performed for the existing condition of the Winnetuxet Road Dam. Seepage analyses and slope stability analyses have been conducted on the right (north of primary spillway) earthen embankment of the dam, in accordance with 302 CMR 10.

5.1 Model Geometry

A critical cross-section was selected to represent the typical existing embankment configuration. Based on the existing slope grading and subsurface information, cross-section A-A' (see Figure 5 below) through the right (north of primary spillway) embankment, aligned with boring B-3, is analyzed as the representative cross-section.

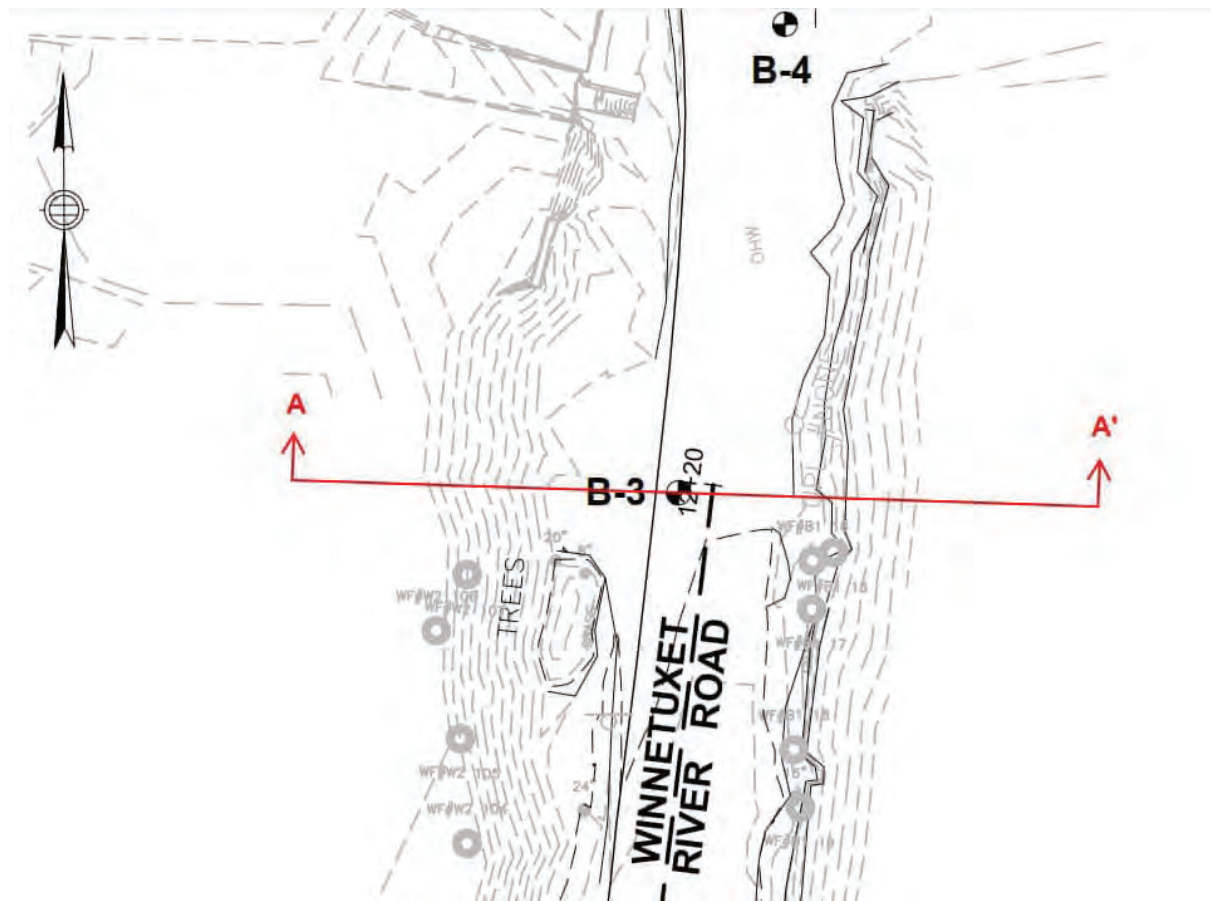


Figure 5. Cross-Section A-A' Location

Stability section A-A' has a maximum embankment crest elevation (El.) of 46.9 feet, and an embankment width of 41 feet. The upstream slope grades at approximately 2.7H:1V, and the downstream slope grades at approximately 1.5H:1V. The upstream toe of the slope is approximately El. 38.1 feet and the downstream toe of the slope is approximately El. 35.6 feet.

5.2 Stratigraphy

As discussed in Section 2.6.3, the subsurface conditions encountered through the right (north of primary spillway) embankment and underlying foundation soils generally consist of embankment fill material, granular alluvium, glacial till, residual soil, and siltstone bedrock. The embankment fill material is predominantly coarse grained and non-plastic, with fines content ranging from approximately 5 to 15%. The embankment exhibited a loose to medium dense density, with SPT N-values primarily lower than 12 blows per foot (bpf).

Underlying the embankment fill was medium dense native soil consisting of gravel with silt and sand, and very dense glacial till consisting of sandy non-plastic silt.

The residual soil was encountered approximately 24.5 feet below the bottom of the embankment fill and had a very dense consistency.

Bedrock was encountered at 46 feet bgs. The bedrock is described as Rhode Island Formation greenish-gray siltstone. The RQD ranged from 14% to 68%, indicating the rock quality varied between very poor and fair.

5.3 Phreatic Conditions

The groundwater level readings obtained in monitoring Well B-3 are presented in Table 2-2, above. The upstream hydraulic boundary conditions applied in the SEEP/W models were set equal to the normal pool and flood pool elevations. The normal pool elevation in the Winnetuxet River upstream was assumed to be 3.7-foot lower than the top of dam, based on the 2011 Dam Inspection Report prepared by Churchill Engineering, Inc., of Plymouth, MA. The flood pool elevation was determined by the MassDOT Bridge Section Hydraulics Group, for the 100-year base flood. The normal pool and flood pool elevations are summarized below.

- Winnetuxet River Upstream Normal Pool El. 40.30 feet NAVD88
- Winnetuxet River Upstream Flood Pool El. 46.25 feet NAVD88

An iterative procedure was implemented in which seepage properties (hydraulic conductivity, hydraulic conductivity ratio, saturation) of the embankment materials and native soils were varied within pre-established ranges until a reasonable match between the seepage model's computed phreatic surface elevation and the water level in Well B-3 was obtained under similar conditions.

5.4 Methodology

Seepage and slope stability analyses were performed with the SEEP/W and SLOPE/W software by GEOSLOPE International Ltd. SEEP/W uses finite element analysis to perform steady-state seepage evaluation of groundwater flow in saturated and unsaturated soils. The pore-water pressure results computed by SEEP/W are used directly in the SLOPE/W stability models. SLOPE/W uses limit equilibrium theory to determine factors of safety for failure surface geometries. For the cross section evaluated, circular slip surface geometries were analyzed by defining entry/exit limits. The stability analysis was performed using 2-dimensional limit equilibrium analysis based on the method of slices according to Spencer's Method.

Loading Conditions

The following loading conditions were evaluated in the analysis:

- Case 1: Usual Loading Combination – Normal Operating Condition: This analysis considers the normal operating stability condition. For this analysis, it is assumed that pore pressures have had sufficient time to reach equilibrium both within, and underneath the dike, and steady-state hydrostatic conditions exist. The normal operating pool level in the Winnetuxet River was used for the upstream seepage boundary condition. The seepage model was used to predict the downstream normal pool water level.
- Case 2: Unusual Loading Combination - Flood Discharge Condition: This analysis considers the upstream and downstream pools under the design flood condition. The flood pool level in the Winnetuxet River was used for the upstream seepage boundary condition.

The seepage model was used to predict the downstream flood pool water level. For this analysis, it is assumed that steady-state hydrostatic conditions exist.

- Case 3: Extreme Loading Combination – Normal Operating with Earthquake: These analyses incorporate a horizontal seismic coefficient, k_h expected to model loading during the design earthquake event (1,000-year return period event). The seismic coefficient was determined by generating the Peak Ground Acceleration (PGA) on firm bedrock (site class B/C boundary) at the site using the U.S. Geological Survey (USGS) Seismic Design Web Services. The PGA from the web service tool was 0.062g. This acceleration was then modified to account for amplification of the bedrock motions through soil, for a site modified peak ground acceleration of 0.149g. Steady-state seepage conditions under the normal operating pool are used for the seepage boundary conditions.

The target factors of safety for each analysis case are provided in Table 5-1 below. The target values presented herein are consistent with the minimum factors of safety presented in 302 CMR 10.

Table 5-1 Minimum Required Factors of Safety

Loading Condition	Minimum Factor of Safety	Slope to be Analyzed
Normal Operating Conditions	1.5	Upstream and Downstream
Flood Discharge Condition	1.4	Downstream
Normal Operating with Earthquake	>1.0	Upstream and Downstream

5.5 Results and Conclusions

Steady-state seepage and slope stability models have been developed for each loading condition presented in Table 5-1. The predicted phreatic surface from SEEP/W is considered to be consistent with the groundwater elevation measured in Well B-3 under similar reservoir pool condition. The SEEP/W predicted phreatic surface was utilized in the SLOPE/W stability models.

The following table summarizes the computed factors of safety for the critical design cross section. Figures showing the seepage model results and critical slip surface geometries with factors of safety for all loading conditions analyzed are included in Appendix E.

Table 5-2 Summary of Critical Slope Stability Factors of Safety

Loading Condition	Design Criteria	Slope Analyzed	Minimum Computed Factor of Safety
Normal Operating Conditions	1.5	Upstream	1.71
		Downstream	1.23
Flood Discharge Condition	1.4	Downstream	1.13
Normal Operating with Earthquake	>1.0	Upstream	1.15
		Downstream	0.93

As indicated in the table above, the upstream slope stability exceeds the minimum required factors of safety for all load cases analyzed. However, for the downstream slopes, the minimum factor of safety is not met, for all load cases analyzed. In general, the critical failure surface corresponding to the minimum factor of safety is a deep-seated global failure, passing through much of the embankment slope. Factors such as the steep downstream slope configuration, and the loose density of the embankment fill, are likely triggering the low existing conditions factors of safety.

In the current condition, the Winnetuxet Road Dam does not meet the minimum stability factors of safety for the downstream slope prescribed in 302 CMR 10. The proposed drilled shaft supported abutments are the preferred substructure alternative since it reduces vibrations induced during construction activities. A bridge replacement alternative which utilizes vibrated-in foundations or requires significant excavation of the dam embankment is not recommended. The Contractor should develop a settlement monitoring plan to monitor the dam and spillway structures during construction. Refer to the construction monitoring discussion in Section 4.10 for guidance on the geotechnical instrumentation and monitoring during construction.

6. Limitations

The conclusions and recommendations presented in this report are based on the assumption that our understanding of the existing site conditions and the scope of the project do not change substantially from what has been described herein, and that soil conditions do not deviate substantially from those represented by the soil borings. It is recommended that communication be maintained with AECOM to ensure that the recommendations made herein are properly interpreted and incorporated into the design and during construction.

The data presented herein represent the conditions encountered at the specific locations and at the specific times at which our exploration took place. It should be noted that variations in soil and rock stratigraphy and characteristics and groundwater conditions between exploration locations, that may become evident during construction, are possible.

Background information and other data furnished to AECOM by third parties have been used to prepare this report. AECOM has relied on this information as furnished and is neither responsible

for its content or accuracy. The geotechnical information presented in this report should not be used for other projects or purposes; any conclusions made by Others using these data are not the responsibility of AECOM. Our recommendations are based on available information from current investigations.

This geotechnical investigation was performed in accordance with the standard of care commonly used as state-of-practice in our profession. Specifically, our services have been performed in accordance with accepted principles and practices of the geological and geotechnical engineering professions. Our services were provided in a manner consistent with the level of care and skill ordinarily exercised by other professional consultants under similar circumstances. No other representation is intended.

In the event that changes are made to the nature, design, or location of the proposed improvements, the conclusions and recommendations presented herein should not be considered valid, unless AECOM has reviewed the changes, and incorporated their impact in the recommendations provided herein.

7. References

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Appendix C: Hydraulic and Hydrologic Data and FEMA Information

- › Node diagrams
- › Modeling inputs (precipitation, curve numbers, etc.)
- › Modeling results (hydraulic capacity calculations for conduits, linear practices, basins, and other structural components, etc.)
- › FEMA Flood Insurance Rate Map (FIRM)
- › Flood Insurance Study (FIS)



HYDRAULIC STUDY REPORT

Town of Plympton

Winnetuxet Rd over Winnetuxet River

Bridge No. P-14-001 (445)

Plymouth County, District 5

Project File No. 609435



Prepared By:

MassDOT/Hydraulics Unit

September 18, 2023

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY 1

2. PROJECT DESCRIPTION 1

2.1 PROJECT LOCATION1

2.2 HIGHWAY CONVEYED.....2

2.3 LAND USE IN THE VICINITY OF THE BRIDGE2

2.4 SPECIAL SITE CONSIDERATIONS.....2

2.5 EXISTING STRUCTURE.....3

2.6 PROPOSED STRUCTURE5

2.7 DESIGN CRITERIA6

 2.7.1 *Hydraulic and Scour Design Frequency*.....6

 2.7.2 *Freeboard Requirement*.....6

 2.7.3 *FEMA Regulatory Compliance*.....6

3. HYDROLOGIC STUDY AND ANALYSIS..... 6

3.1 WATERSHED CHARACTERISTICS6

3.2 NATURE OF FLOOD RISK7

3.3 PRIOR HYDROLOGICAL STUDIES7

 3.3.1 *FEMA*.....7

3.4 HYDROLOGIC ANALYSIS (RIVERINE)8

 3.4.1 *Climate Change Indicator*8

 3.4.2 *Selected Level of Analysis*.....9

 3.4.3 *Regional Regression Equations*9

 3.4.4 *Selection of Design Discharges*9

4. ONE DIMENSIONAL (1D) HYDRAULIC ANALYSIS 10

4.1 FEMA DATA10

4.2 EXISTING CONDITION MODEL DEVELOPMENT10

 4.2.1 *Terrain Data*.....10

 4.2.2 *Model Parameters*11

 4.2.3 *Boundary Conditions*12

4.3 EXISTING CONDITION ANALYSIS.....12

4.4 PROPOSED CONDITION ANALYSIS12

 4.4.1 *FEMA No-Rise Analysis*12

 4.4.2 *Project Impact*12

4.5 SUMMARY OF HYDRAULIC PERFORMANCE14

5. SCOUR ANALYSIS AND COUNTERMEASURE DESIGN 14

5.1 BRIDGE SITE SCOUR HISTORY14

5.2 SCOUR ANALYSIS.....15

5.3 SCOUR COUNTERMEASURE DESIGN15

6. CONCLUSIONS & RECOMMENDATIONS 16

6.1 CONCLUSIONS16

6.2 RECOMMENDATIONS16

7. REFERENCES..... 18

8. APPLICATIONS/SOFTWARE 18

9. APPENDICES 19

APPENDIX A. FEMA DOCUMENTS19

APPENDIX B. HYDROLOGIC ANALYSIS19

APPENDIX C. HYDRAULIC ANALYSIS19

APPENDIX D SCOUR AND COUNTERMEASURE DESIGN 19

LIST OF FIGURES

Figure 2-1 Project Location 1
 Figure 2-2 Land Use Pattern 2
 Figure 2-3 Flood Insurance Rate Map (FIRM)..... 3
 Figure 2-4 Existing Bridge Plan 4
 Figure 2-5 Existing Bridge Upstream Elevation..... 4
 Figure 2-6 Proposed Bridge Cross Section..... 5
 Figure 2-7 Proposed Bridge Longitudinal Section 5
 Figure 3-1 Drainage Area 7
 Figure 4-1 HEC-RAS Cross Section Layout 11

LIST OF TABLES

Table 3-1 FIS Peak Discharges..... 8
 Table 3-2 Climate Change Indicator (CCI) 9
 Table 3-3 Summary of Peak Discharges..... 10
 Table 4-1 Summary of No-Rise Analyses for FEMA Base Flood (100-yr) 13
 Table 4-2 Summary of Hydraulic Performance..... 14
 Table 5-1 Summary of Calculated Scour..... 15
 Table 5-2 Summary of Countermeasure Design..... 16
 Table 5-3 Gradation Requirements for Riprap⁽¹⁾ for Bridge Abutments 16
 Table 6-1 Hydraulic Design Data (Proposed Condition)..... 17

1. Executive Summary

The following report presents the hydrologic, hydraulic and scour analysis conducted for the Winnetuxet Road over the Winnetuxet River in the Town of Plympton, Plymouth County in Massachusetts. The intent of this study is to evaluate the hydraulic performance of the existing and replacement alternatives for the subject crossing. 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 this investigation consisted of review of pertinent hydrologic analysis data for the Winnetuxet River at the project site and a detailed hydraulic analysis. Data collected, hydraulic model input/output and scour calculations are presented in the appendices of this report. A narrative discussion of the problem statement, engineering methods, as well as conclusions of the hydraulic study follows.

2. Project Description

The following sections describe the project location along with existing condition and proposed project.

2.1 Project Location

The bridge is located on Winnetuxet Road over the Winnetuxet River in the Town of Plympton, Plymouth County in Massachusetts (**Figure 2-1**).

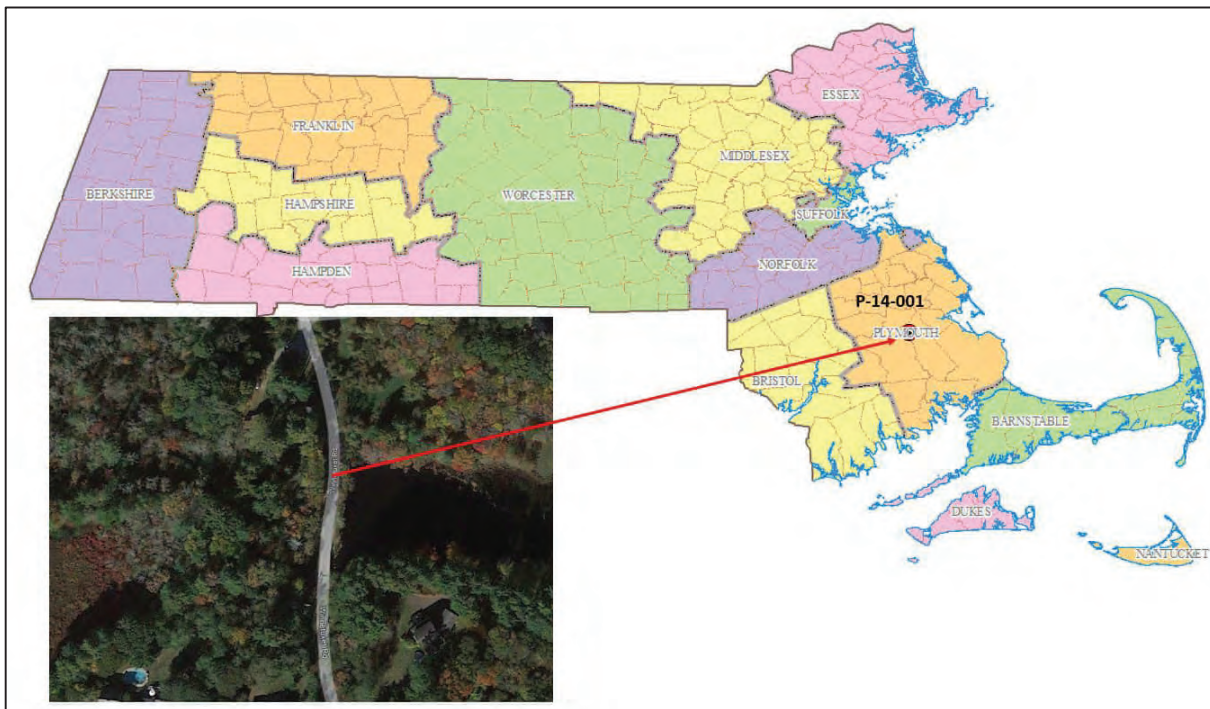


Figure 2-1 Project Location

2.2 Highway Conveyed

The Winnetuxet Road is classified as a Rural Local Road. As per the 2018 average daily traffic (ADT) information, this bridge conveys an ADT volume of about 900 vehicles per day with no truck traffic (1).

2.3 Land Use in the Vicinity of the Bridge

Land use near the bridge is a mix of forest, forested wetland, and low density residential (Figure 2-2).

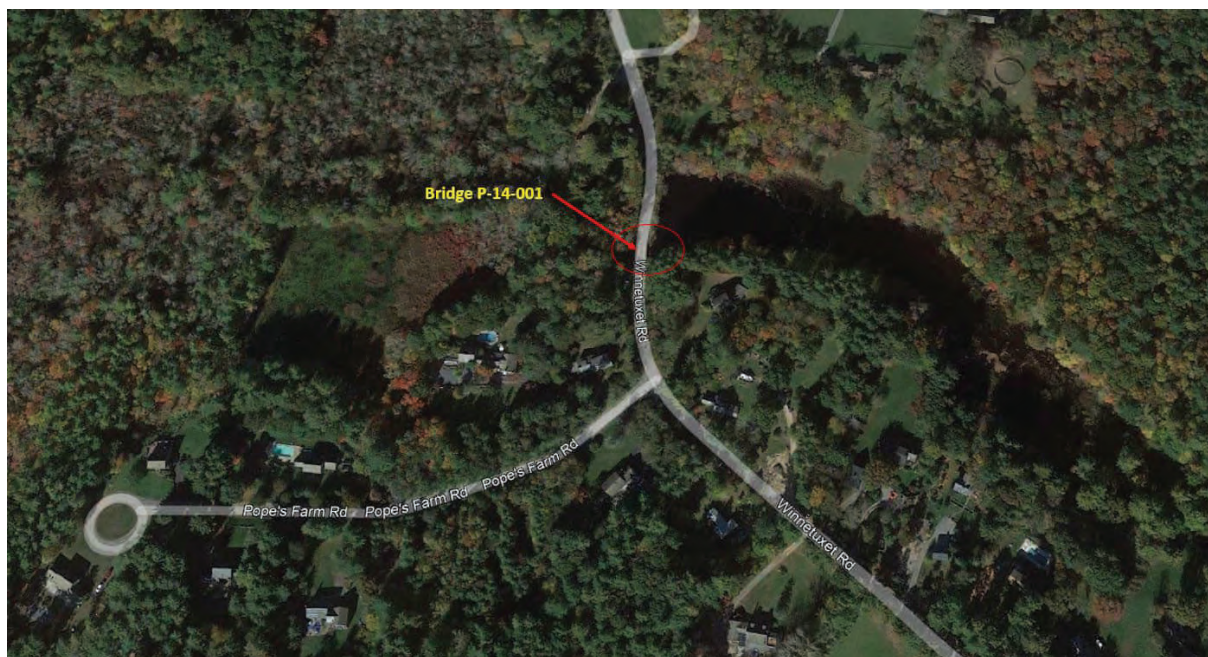


Figure 2-2 Land Use Pattern

2.4 Special Site Considerations

The existing bridge spans over the National Flood Insurance Program (NFIP) Zone AE, of the regulatory floodway delineations in the July 17, 2012, Plymouth County, Flood Insurance Rate Map (FIRM) (2,3), Figure 2-3). Zone AE refers to the area subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods and where the Base Flood Elevations (BFEs) are established. Hence, No-Rise analyses is required.

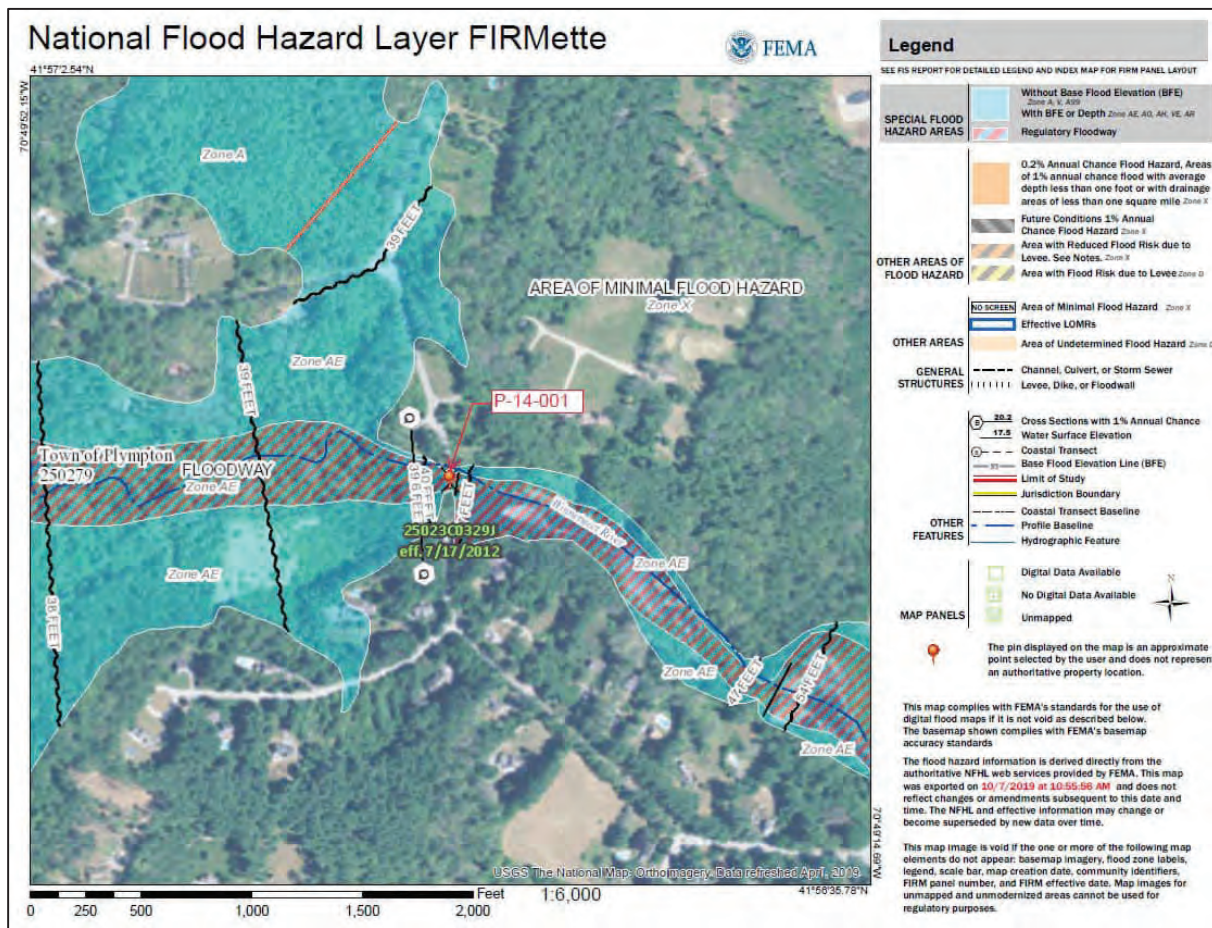


Figure 2-3 Flood Insurance Rate Map (FIRM)

2.5 Existing Structure

The Winnetuxet Road Bridge is designated as Bridge No. P-14-001/445 in the NBIS inventory. The existing bridge was built in 1923 with a record of reconstruction in 2002. The structure has a National Bridge Inspection Standard (NBIS) Item 113 (Scour Critical Bridges) of 4, which states that “*Bridge foundations determined to be stable for calculated scour conditions; field review indicates action is required to protect exposed foundations from effects of additional erosion and corrosion.*”(1,4).

The existing Bridge is a two-span timber deck structure bridge with vertical abutments. The left abutment is concrete with concrete footing and the right abutment is masonry. The bridge is oriented in the northwest-southeast direction. The existing bridge has a clear span of about 25.6’ and supports a deck with an out-to-out width of approximately 21.3’. The existing bridge has a lowest low chord at an elevation of 47.15 feet (NAVD88). The channel bottom elevation at the bridge location varies around ±35.3 feet (NAVD88) as per the survey data. There is a dam located just upstream of the bridge. **Figures 2-4 and 2-5** show the existing bridge plan and elevation obtained from recent survey.

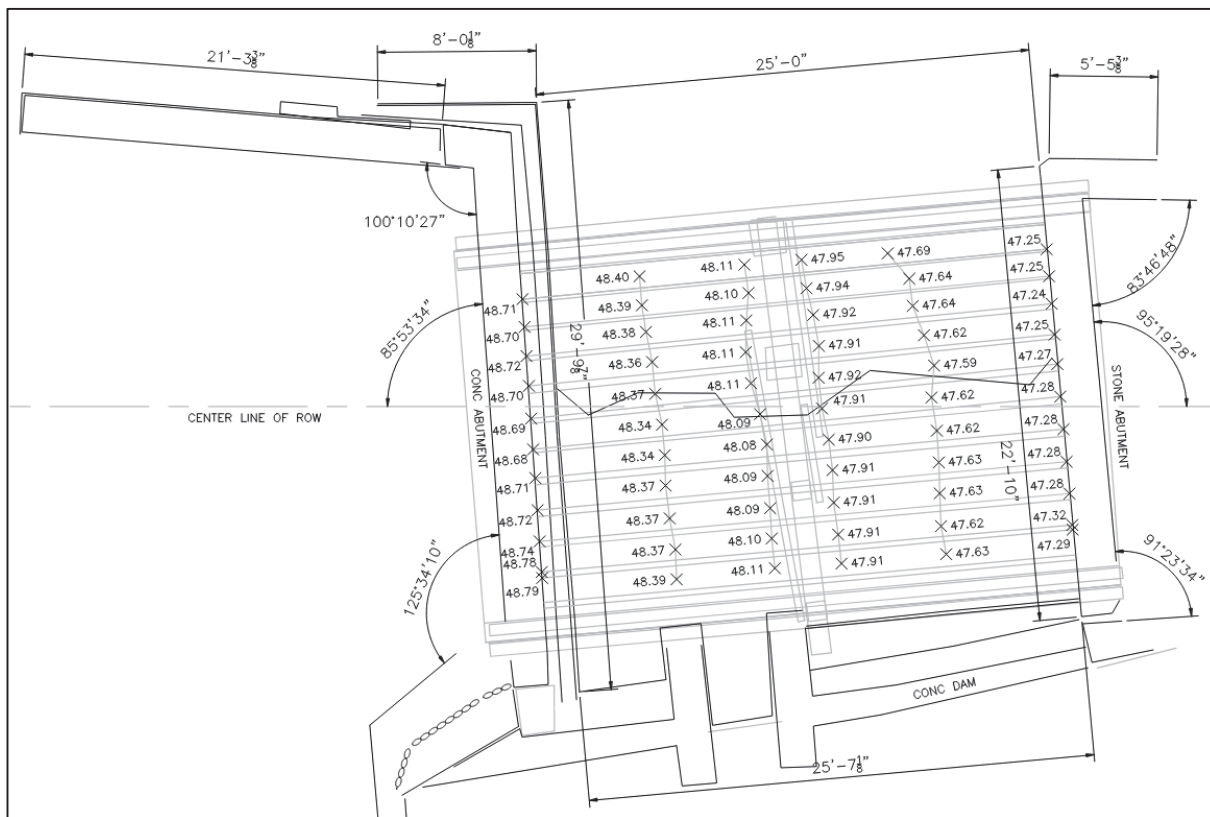


Figure 2-4 Existing Bridge Plan

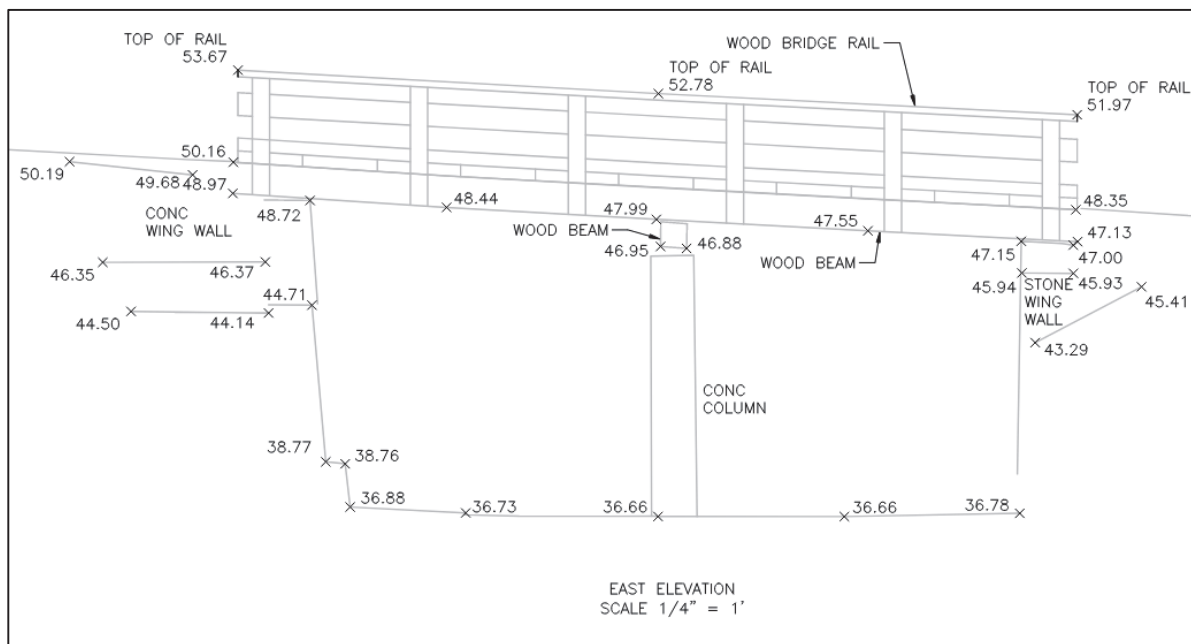


Figure 2-5 Existing Bridge Upstream Elevation

2.6 Proposed Structure

The principal project objective is to upgrade the existing load and service capacity to current highway standards along Winnetuxet Road. The proposed plan is to maintain the clear span and remove the pier above the riverbed. The existing abutments which are connected to the retaining wall of the dam will remain in place. The proposed bridge has a deck width of 20', clear span of ±25' and a low chord of 46.71'. **Figures 2-6 and 2-7** show the proposed cross section and longitudinal section of the bridge.

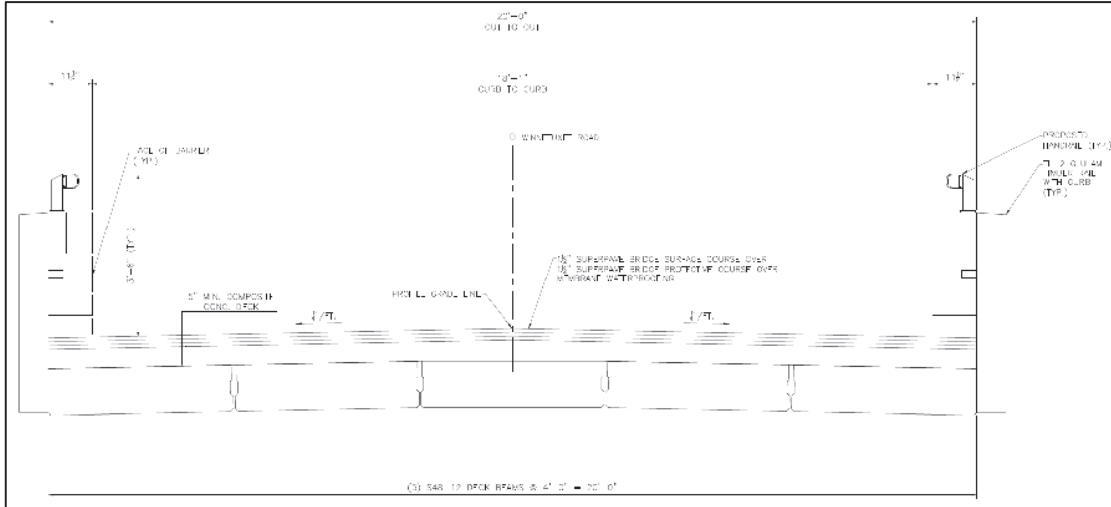


Figure 2-6 Proposed Bridge Cross Section

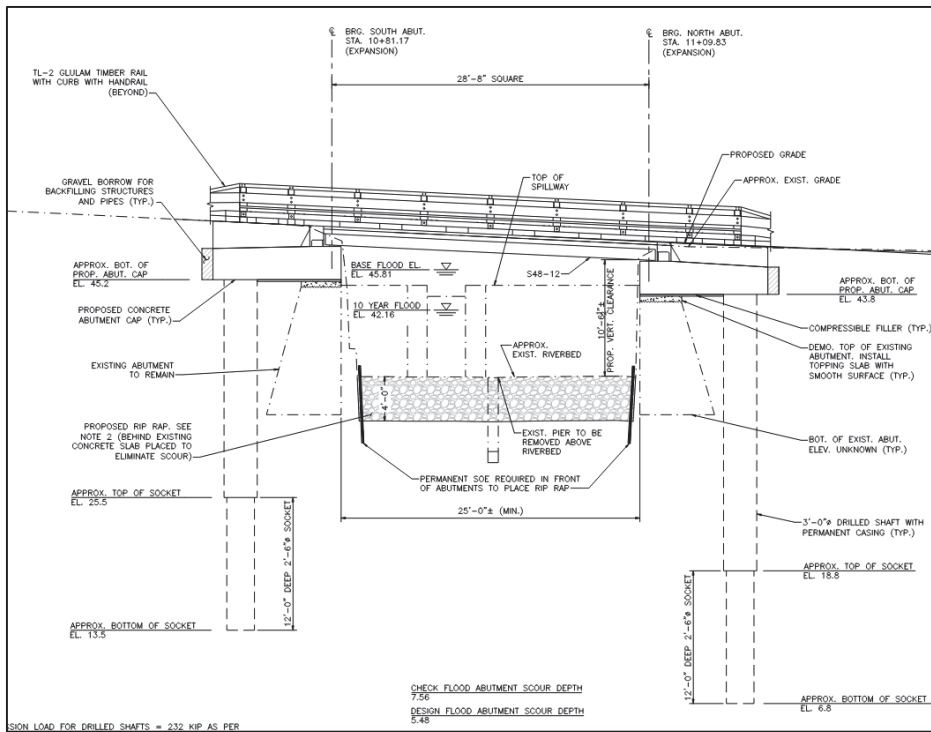


Figure 2-7 Proposed Bridge Longitudinal Section

2.7 Design Criteria

The design of the proposed bridge should comply with certain State and Federal regulations and criteria.

2.7.1 Hydraulic and Scour Design Frequency

In accordance with the MassDOT LRFD Bridge Manual Section 1.3.4, the hydraulic and scour design flood frequencies are as follows (5):

- Hydraulic Design Flood = 10% AEP [10-year]
- Scour Design Flood = 4% AEP [25-year]
- Scour Check Flood = 2% AEP [50-year]

2.7.2 Freeboard Requirement

In accordance with the MassDOT LRFD Bridge Manual Section 1.3.2, a freeboard of two feet must be provided between the design flood water surface elevation and the proposed bridge's low chord, to allow for the passage of debris and ice.

2.7.3 FEMA Regulatory Compliance

The existing bridge spans an effective NFIP regulatory floodway delineation. Hence, it was necessary to perform a "No Rise" hydraulic analysis, as outlined in MassDOT Bridge LRFD Manual, Chapter 1, and Subsection 1.3.5 (5), to demonstrate project compliance with applicable NFIP base floodplain development performance standards. The Code of Federal Regulations (CFR), Title 44 (Emergency Management and Assistance), PART 60 (Criteria for Land Management and Use), Subpart A (Requirement for Flood Plain Management Regulations), Section 60.3 (Floodplain management criteria for flood-prone areas) 44 CFR 60.3 (d) (3) states that:

"(3) The community shall Prohibit encroachments, including fill, new construction, substantial improvements, and other development within the adopted regulatory floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge."

3. Hydrologic Study and Analysis

The objective of the hydrologic study and analysis was to understand the watershed characteristics and to establish the peak flood discharges and boundary conditions required for the hydraulic and scour analyses. The functional classification of Winnetuxet Road is Rural Local; therefore, the hydraulic design flood frequency is the 10% (10-year) annual chance event based on Table 1.3.4-1 of the LRFD Part I (5).

3.1 Watershed Characteristics

The Winnetuxet River originates from upstream of Cole Mill Pond in Carver, Massachusetts, and flows in the northwest direction through the towns of Carver and Plympton. The river ultimately flows into Taunton River. The Winnetuxet River crosses the subject bridge from east to west.

The contributing drainage area at the bridge was delineated using the USGS StreamStats Web application. The river's drainage area at the crossing site was estimated to be 11.5 square miles

as per StreamStats (6, **Figure 3-1**). The basin characteristics and estimates of flow statistics using USGS regression equations were also obtained using this application (7). The watershed contains a mix of land use with around 69.79% forest and 18.4% developed (urban) land. The watershed has 16.94% of combined wetlands and water bodies. The mean basin slope computed from a 10-meter DEM was around 4.759% as per StreamStats. The mean basin elevation of the watershed is around 134 feet. The bankfull width of the stream at the bridge location is around 36.6 feet and bankfull depth is around 1.82 feet. The bankfull streamflow is around 172 cfs.

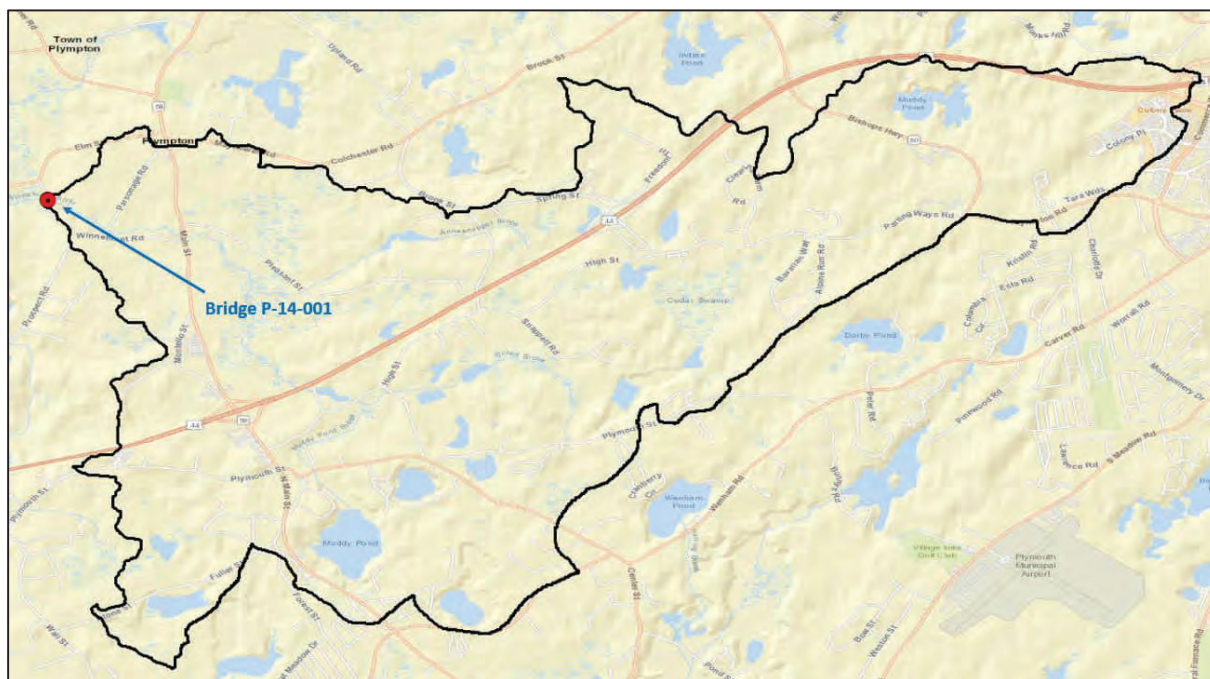


Figure 3-1 Drainage Area

3.2 Nature of Flood Risk

As per the documentation in the November 4, 2016, Plymouth County Flood Insurance Study, there has been no history of major flooding in the Town of Plympton where the subject bridge is. There has been minimal damage caused by flooding as the low-lying areas and floodplains are mostly undeveloped. In the Town of Plympton, although there are no actual flood protection measures located, there is a relatively large area of swamps and bogs which tend to reduce flood flows and the damage resulting from flood events.

3.3 Prior Hydrological Studies

This section summarizes any prior studies conducted on the Winnetuxet River, in the project vicinity.

3.3.1 FEMA

The current effective FIS for the Town of Plympton in Plymouth County is the FIS dated November 4, 2016. Peak Discharges reported in the FIS report 6000 feet downstream of Winnetuxet Road bridge in Plympton are shown in **Table 3-1**. The peak discharges for the

Winnetuxet River were computed from regional regression equations developed by USGS for ungaged drainage basins in Massachusetts.

Table 3-1 FIS Peak Discharges

Flooding Source	Location	Drainage Area (mi ²)	Peak Discharges (cfs)				
			10% (10-yr)	4% (25-yr)	2% (50-yr)	1% (100-yr)	0.2% (500-yr)
Winnetuxet River	6,000 feet downstream of Winnetuxet Road bridge in Plympton	10.9	350	---	580	705	1,075

3.4 Hydrologic Analysis (Riverine)

Hydrologic analyses were conducted to estimate the peak design discharges at the bridge location. The following sections briefly describe the analyses performed and the recommended methodology.

3.4.1 Climate Change Indicator

Most bridges are designed and built under current stream and hydrologic conditions. To design a bridge to be resilient to future changes in stream conditions, FHWA recommends using “The Climate Change Indicator (*CCI*)” to determine the levels of analysis for performing risk and vulnerability assessments for a project. The *CCI* is a measure of how much the mean value of the T-year 24-hour precipitation is changing from observed to projected conditions. This projected change is a useful indicator for evaluating the potential for changes in flood flows resulting from projected climate change. *CCI* is calculated using the equation below (8).

$$CCI = \frac{P_{24,T,P} - P_{24,T,O}}{P_{24,T,O,U} - P_{24,T,O}}$$

Where:

CCI – is the Climate Change Indicator

P_{24,T,P} – is the Projected T-Year 24-hour precipitation

P_{24,T,O} – is the Observed T-year 24-hour precipitation

P_{24,T,O,U} – is the upper 90% confidence limit T-year 24-hour precipitation for the observed data

The observed T-year 24-hour precipitation (*P_{24,T,O}*) and the upper 90% confidence limit T-year 24-hour precipitation for the observed data (*P_{24,T,O,U}*) were obtained from NOAA Atlas-14 for the project area (9). The downscaled daily precipitation data along with location, global climate models, and emissions scenarios were downloaded for the project site from the DCHP (Downscaled CMIP Climate and Hydrology Projections) archive. The FHWA CMIP (Coupled Model Intercomparison Project) Processing Tool Version 2.1 (2020), is used for processing this data for estimating the projected T-year 24-hour precipitation (*P_{24,T,P}*). This tool is a web-based software package that processes readily available downscaled climate data at the local level into relevant statistics for transportation planners and designers (10,11). Using the FHWA CMIP Climatic Data Processing Tool, this data from the DCHP website was processed to future return



period precipitation variables. The hence estimated CCI for various flood frequencies are presented in **Table 3-2**.

Table 3-2 Climate Change Indicator (CCI)

Climate Change Indicator (CCI)							
50% (2-yr)	20% (5-yr)	10% (10-yr)	4% (25-yr)	2% (50-yr)	1% (100-yr)	0.5 % (200-yr)	0.2% (500-yr)
1.00	1.03	1.01	0.91	0.85	0.76	0.75	0.69

3.4.2 Selected Level of Analysis

The level of analysis is selected based on the discussion by the project team on the CCI values. There are 4 levels of analysis.

- A CCI value less than 0.4 requires only Level 1 analysis, which is based on the application of standard hydrologic design techniques.
- A CCI value more than 0.8 requires level 3 or 4 analysis, where detailed analysis on the projected precipitation is recommended.
- For CCI values between 0.4 and 0.8, the project specifics would need to be weighed by the design team and a suitable methodology is selected.

This project has a CCI >0.8 for hydraulic design flood, scour design and check flood events. Hence, it is recommended that the upper bound flows be selected for both the hydraulic and scour design. Levels of analysis for a range of CCI values are shown in a flow chart created by MassDOT and is presented in the appendix.

3.4.3 Regional Regression Equations

Various streamflow statistics and peak discharges were estimated using StreamStats’ web-based Geographic Information Systems (GIS) application at the bridge location. This was achieved by solving regression equations developed by USGS, prepared in cooperation with MassDOT. The regression equations generally were developed separately for each state and are incorporated into the StreamStats application. Drainage area, mean basin elevation, percent basin area classified as wetlands, and open water are the selected basin characteristics considered in the development of regional flood flow regression equations for Massachusetts. The State Regional equations to estimate peak flood discharges at ungagged sites were developed using known peak flood discharges at selected gaged sites and their respective basin characteristics.

3.4.4 Selection of Design Discharges

The FIS peak discharges and the USGS StreamStats peak discharges are presented in **Table 3-3** for comparison. Considering CCI value being greater than 0.8, the StreamStats upper bound flows presented in the **Table 3-3**, were used for the existing and proposed condition hydraulic and scour analysis. FEMA FIS base flood (100-yr) was used for the No-Rise analysis. Supporting documents and hydrologic calculations are included in **Appendix B** of this report.

Table 3-3 Summary of Peak Discharges

Methodology	Drainage Area (mi ²)	Peak Discharges (cfs)							
		50% (2-yr)	20% (5-yr)	10% (10-yr)	4% (25-yr)	2% (50-yr)	1% (100-yr)	0.5 % (200-yr)	0.2% (500-yr)
2016 FIS Report	10.9	---	---	350	---	580	705¹	---	1,075
StreamStats <i>Lower Bound</i>	11.5	105	169	214	275	320	365	411	471
StreamStats	11.5	205	333	432	574	690	811	942	1,130
StreamStats <i>Upper Bound</i> ²	11.5	400	658	873	1,200	1,490	1,800	2,160	2,710

1.Flow used for No-Rise analysis

2.Flows used for design

4. One Dimensional (1D) Hydraulic Analysis

The scope of this 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 peak discharge events were developed in a manner consistent with the applicable NFIP base floodplain development performance standards. USACOE HEC-RAS Version 6.2 application was used to develop flood elevation profiles for various return events at the project site (12,17). The datum used in all hydraulic models is NAVD 1988 unless specified.

4.1 FEMA Data

The FEMA HEC-2 data in PDF format was received after requesting the backup data from FEMA Engineering Library. The no-rise analysis was conducted by developing an existing condition HEC-RAS model and running it using FIS flows. The hence developed model results were compared with the proposed model results to verify no-rise due to project construction. The development of an existing condition HEC-RAS model is described in the following section.

4.2 Existing Condition Model Development

The existing condition model was developed using the actual surveyed channel bathymetry, extracting model parameters such as manning’s roughness co-efficient, reach lengths, ineffective flows areas etc. as per actual ground conditions.

4.2.1 Terrain Data

The terrain data was obtained by MassDOT Survey Unit. The one-dimensional existing condition HEC-RAS model was developed by incorporating relevant cross section data upstream and downstream of the subject bridge. The cross-section data was extracted from the recent

survey data, using MassDOT Civil 3D, ArcGIS and RAS Mapper modeling tools. This survey data covered the channel bathymetry only. Hence, the survey data was supplemented with LiDAR data, which was obtained from MassGIS website, to cover the floodplain in the overbank areas (13,18,19).

4.2.2 Model Parameters

The model parameters such as Manning’s roughness coefficients, ineffective flow areas, bank stations and expansion and contraction coefficients were selected based on aerial photographs and site visit photographs to reflect current conditions. A manning’s ‘n’ values varying between 0.012 to 0.04 were used for the channel flow and value of 0.08 was used for overland flows. Ineffective flow areas were assigned to areas that do not convey flood flows. Expansion and contraction coefficients were applied to the upstream and downstream of the subject bridge to reflect energy loss due to expansion and contraction. Expansion coefficient varied between 0.1 and 0.3 in the model domain while the contraction coefficient varied between 0.3 and 0.5. The reach domain, used in this analysis, extends from HEC-RAS cross section 3,987 upstream to cross-section 3,068 downstream of the bridge, making it about 919 feet of stream length. See **Figure 4-1** for the HEC-RAS model domain and cross-section layout.

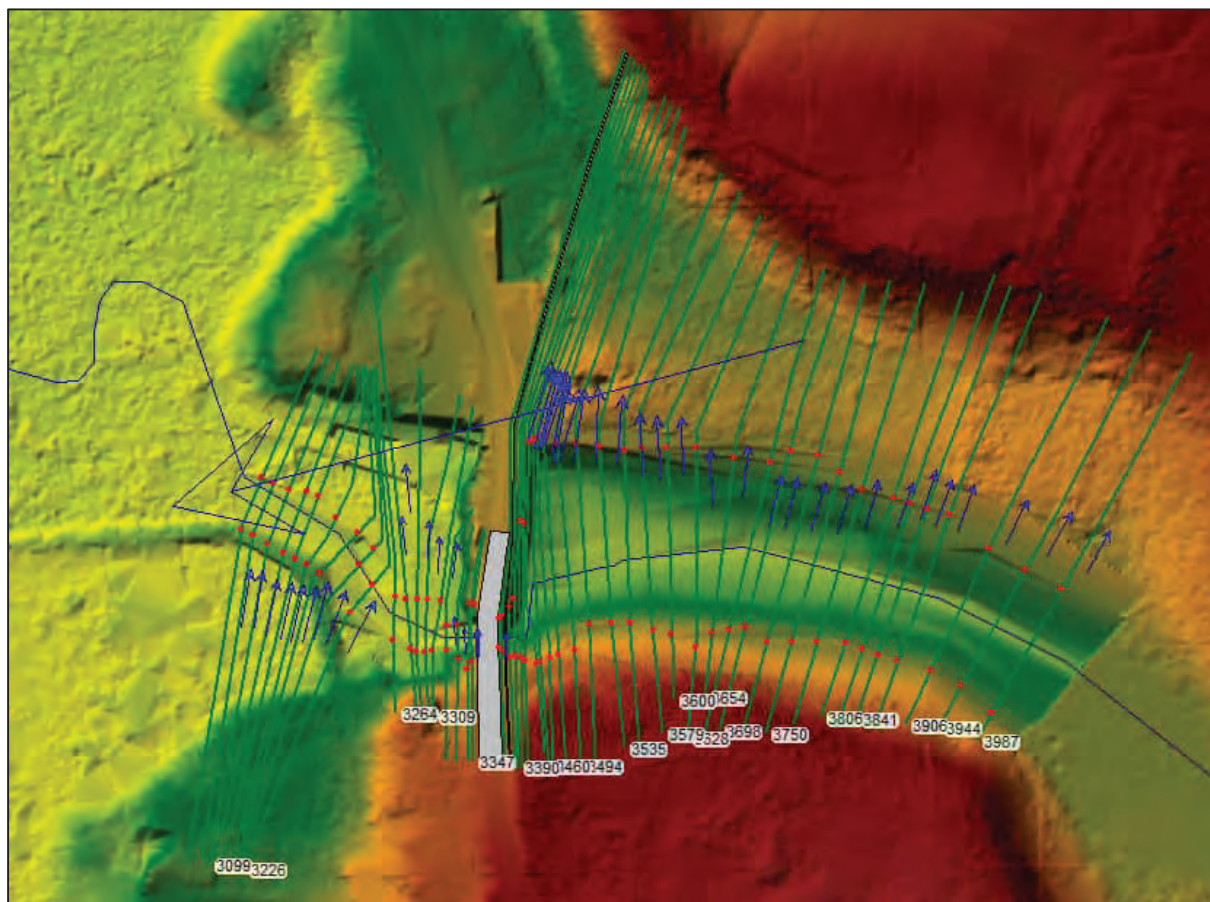


Figure 4-1 HEC-RAS Cross Section Layout

4.2.3 Boundary Conditions

The peak flows highlighted in Table 3-3 were applied at the upstream cross-section of the HEC-RAS model. Normal depth was selected as the downstream boundary condition to estimate the downstream stage using Manning's equation. The energy slope selected for the normal depth boundary condition was 0.004. The flood simulations were run in a sub-critical flow regime.

4.3 Existing Condition Analysis

The hence developed, existing condition model was used for the one dimensional steady-state HEC-RAS analysis. Energy method and pressure flow methods were selected as the bridge modeling approach for low flows and high flows, respectively. The flood simulations were run in a sub-critical flow regime. For the peak flows presented in Table 3-3, normal depth slopes were used as the downstream boundary condition.

4.4 Proposed Condition Analysis

The recommended proposed alternative described in Section 2.6 was evaluated in the proposed condition analysis. All other model parameters were maintained from the existing condition model. The following analyses were performed:

- (1) FEMA No-Rise Analysis to demonstrate project compliance with applicable NFIP standards.
- (2) Hydraulic Analysis to evaluate the project impact due to proposed construction.

4.4.1 FEMA No-Rise Analysis

The no-rise analysis was conducted using the existing condition HEC-RAS model and running it using FIS flows. The FEMA no-rise analysis used the FIS base (100-Year) flow at the upstream cross section and known water surface elevation from the FIS flood profile as the downstream boundary condition (Reference 3). The hence developed model results were compared with the proposed model results to verify no-rise due to project construction.

It is observed that the FIS base flow did not increase the WSEL for the proposed alternative. Hence, the project is in compliance with the applicable NFIP standards. The summary of existing and proposed condition No-Rise analysis is presented in **Table 4-1**.

4.4.2 Project Impact

The proposed condition analysis was performed to evaluate the project impact due to bridge replacement. Energy method and pressure flow methods were selected as the bridge modeling approach for low flows and high flows, respectively. The flood simulations were run in a sub-critical flow regime. For the peak flows presented in Table 3-3, normal depth slope was used as the downstream boundary condition.

It is observed that the proposed alternative did not have any increase in WSEL for the hydraulic and scour design flood events and it safely conveyed the maximum allowed design flood. Instead, the water surface elevation was lower than the existing water surface elevation due to increased hydraulic opening due to the removal of pier.



Table 4-1 Summary of No-Rise Analyses for FEMA Base Flood (100-yr)

HEC-RAS Cross-Sections	FIS Cross-Sections	[1] Existing WSEL (ft, NAVD)	[2] Proposed WSEL (ft, NAVD)	[2]-[1] No-Rise Evaluation
3987	---	43.14	43.13	-0.01
3944	---	43.13	43.12	-0.01
3906	---	43.12	43.11	-0.01
3863	---	43.1	43.1	0.00
3841	---	43.1	43.1	0.00
3824	---	43.1	43.1	0.00
3806	---	43.1	43.1	0.00
3775	---	43.1	43.1	0.00
3750	---	43.1	43.1	0.00
3725	---	43.1	43.1	0.00
3698	---	43.1	43.1	0.00
3682	---	43.1	43.09	-0.01
3654	---	43.1	43.09	-0.01
3628	---	43.1	43.09	-0.01
3600	---	43.09	43.09	0.00
3579	---	43.09	43.09	0.00
3557	---	43.09	43.09	0.00
3535	---	43.09	43.09	0.00
3512	---	43.09	43.09	0.00
3494	---	43.09	43.09	0.00
3479	---	43.09	43.09	0.00
3468	---	43.09	43.09	0.00
3460	---	43.09	43.09	0.00
3425	---	43.08	43.08	0.00
3401	---	43.07	43.06	-0.01
3396	---	43.04	43.04	0.00
3390	---	42.88	42.88	0.00
3385	---	42.81	42.8	-0.01
3381 Dam	---			0.00
3377	---	41.52	41.44	-0.08
3376	---	41.42	40.92	-0.50
3364 Bridge	---			0.00
3347	---	38.83	38.83	0.00
3345	---	38.7	38.7	0.00
3333	FIS Q	38.81	38.81	0.00
3322	---	38.97	38.97	0.00
3309	---	39.01	39.01	0.00
3299	---	39.02	39.02	0.00
3289	---	39.01	39.01	0.00
3279	---	39.02	39.02	0.00
3264	---	39.02	39.02	0.00
3226	---	39.01	39.01	0.00
3201	---	39.01	39.01	0.00
3177	---	39.01	39.01	0.00
3154	---	39.01	39.01	0.00
3129	---	39	39	0.00
3116	---	39	39	0.00

HEC-RAS Cross-Sections	FIS Cross-Sections	[1] Existing WSEL (ft, NAVD)	[2] Proposed WSEL (ft, NAVD)	[2]-[1] No-Rise Evaluation
3099	---	39	39	0.00
3081	---	39	39	0.00
3068	---	39	39	0.00

4.5 Summary of Hydraulic Performance

Table 4-2 summarizes the hydraulic performance at the upstream of the bridge for both existing and proposed condition. The water surface elevations are taken from the cross section upstream of the proposed bridge. The velocity results are the maximum velocity taken from the contracted bridge section. The freeboard predicted by the hydraulic model during the 10% annual chance design flood event for the existing and proposed alternative is 4.97 feet and 4.55 feet, respectively. The proposed structure meets the recommended freeboard requirements. Hydraulic model results are included in the **Appendix C** of this report.

Table 4-2 Summary of Hydraulic Performance

AEP % (Return period year)	Peak Flow (cfs)	Existing Condition		Proposed Alternative	
		WSEL (ft, NAVD)	Velocity (ft/s)	WSEL (ft, NAVD)	Velocity (ft/s)
50% (2yr)	400	40.39	8.50	40.41	8.28
20% (5yr)	658	41.34	9.77	41.39	9.70
10% (10yr)	873	42.18	10.54	42.16	10.36
4% (25yr)	1,200	43.91	11.74	43.12	11.48
2% (50yr)	1,490	45.14	12.60	44.73	12.33
1% (100yr)	1,800	46.25	13.45	45.81	13.12
0.5% (200yr)	2,160	47.32	14.27	46.99	13.95
0.2% (500yr)	2,710	48.78	14.88	48.71	14.79

5. Scour Analysis and Countermeasure Design

The functional classification of Winnetuxet Road is Rural Local; therefore, the scour design frequency for the bridge is the 4% (25-year), and the scour check frequency is the 2% (50-year) annual chance event based on Table 1.3.4-4 of the LRFD Part I. This section describes the methodology and analysis used to evaluate scour and design scour countermeasure.

5.1 Bridge Site Scour History

The Item 113 (Scour Critical Bridges) in the Structure Inventory and Inspection (SI&A) report is 4, which states that the “*Bridge foundations determined to be stable for calculated scour conditions; field review indicates action is required to protect exposed foundations from effects of additional erosion and corrosion.*” The Item 61 (Channel & Channel Protection) in the Structure Inventory and Inspection (SI&A) report is 7, which states that “*Bank protection is in need of minor repairs. River control devices and embankment protection have a little minor damage. Banks and/or channel have minor amounts of drift*”. As per survey, the channel thalweg is around ±35.3’. As per the 2021 inspection report, the concrete footing is exposed at the entire length of the left abutment. There is minor erosion and slumping of the downstream



embankments due to roadway runoff. There is minor slumping of the riprap at the downstream embankments. Previous undermining has been repaired with a concrete pad.

5.2 Scour Analysis

Scour potential at the crossing site under MassDOT’s existing and proposed conditions was analyzed using the requirements set forth by MassDOT’s LRFD Bridge Manual and AASHTO LRFD Bridge Design Specifications, Sections 2.6.4.4.2 and 3.7.5 and using the guidelines by FHWA HEC-18, “Evaluating scour at bridges” (14), HDS-7, “Hydraulic Design of Safe Bridges” (15) and HEC-23, “Bridge Scour and Stream Instability Countermeasures” (16).

Our general analytical approach was to estimate long term aggradation/degradation, flood related contraction (conveyance reduction) and local (vortex induced) abutment scour depths for the 4% and 2% chance flood events. In this study, the abutment scour is calculated using National Cooperative Highway Research Program (NCHRP 24-20) method described in HEC-18. The hydraulic variables for scour calculations were obtained from 1-D HEC-RAS model results at the approach and contracted bridge cross-sections. The soil data for scour calculations was obtained from sampling & analysis conducted as part of this project. No historical data was available to calculate scour due to long term aggradation and degradation. In the scour design and check event analyses, it is assumed that the channel bed elevation will not degrade over the service life of the bridge. A summary of computed 4% and 2% annual chance flood scour depths under existing and proposed site conditions is presented in **Table 5-1**. See **Appendix D** for detailed scour calculations.

Table 5-1 Summary of Calculated Scour

Alternative	AEP % (Return period year)	Contraction Scour (feet)	Design Abutment Scour (feet)
Proposed Alternative	4% (25yr)	1.48	5.48
	2% (50yr)	3.92	7.56

5.3 Scour Countermeasure Design

Scour countermeasures are designed for the proposed crossing using the guidance set forth in the Federal Highway Administration, Hydraulic Engineering Circular-23 (HEC-23) Bridge Scour and Stream Instability Countermeasures. The summary of scour countermeasure design is presented in **Table 5-2 and Table 5-3**.

The FHWA HEC-23 recommended rip rap extents should be verified against actual site conditions and adjusted were necessary to fit within the actual project footprint sufficiently to project against scour. As discussed in Section 5.1, the previous undermining was repaired with a concrete pad under the bridge to the face of the dam. As per the 2021 inspection report the concrete pad extends from the face of the Left Abutment exposed footing to the Right breastwall. Hence, the new countermeasure shall be installed at the remaining portion.

Table 5-2 Summary of Countermeasure Design

Alternative	Class #	Riprap Size D ₅₀ (Inches)	Riprap Size D ₁₀₀ (Inches)	Riprap Thickness (Feet)
Proposed Alternative	7	24	48	4.0

Table 5-3 Gradation Requirements for Riprap⁽¹⁾ for Bridge Abutments

Class	% of Rock Equal or Smaller by Count, D _x	Range of Intermediate Dimensions, ⁽²⁾ inches	Range of Rock Mass, ⁽³⁾ pounds
7	100	45 – 54	7,400 – 12,800
	85	32 – 38	2,650 – 4,450
	50	23 – 28	990 – 1800
	15	15 – 20	270 – 650

(1) Gradation includes spalls and rock fragments to provide a stable, dense mass.

(2) The intermediate dimension is the longest straight-line distance across the rock that is perpendicular to the rock’s longest axis on the rock face with the largest projection plane.

(3) Rock mass is based on a specific gravity of 2.65 and 85 percent of the cubic volume as calculated using the intermediate dimension.

6. Conclusions & Recommendations

6.1 Conclusions

1. The project hydraulic model predicts that both the existing bridge and the preferred replacement bridge type will safely convey the maximum allowed design flood.
2. The freeboard predicted by the hydraulic model during the 10% annual chance design flood event for the existing and proposed alternative is 4.97 feet and 4.55 feet respectively. The proposed structure meets the recommended two feet freeboard requirements.
3. Analysis performed within this hydraulic study indicates that project activities will not result in increase in flood elevations within the community during the occurrence of Winnetuxet River’s base flood discharge. Hence, the project does meet the applicable NFIP base floodplain development performance standards.

6.2 Recommendations

1. The information in Table 6-1 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 calculated total scour depth presented in **Table 6-1** for the recommended alternative should be considered for use as a bridge foundation condition in LRFD strength and service and extreme event limit state foundation stability determination. Also, the design engineer should be cognizant that the proposed bridge substructure



will meet the foundation scour stability requirements set forth in MassDOT Bridge LRFD Manual, Section 3.2.10.4, and presented below.

For new bridges or full bridge replacements, the substructures shall be designed to meet the requirements of Paragraphs 3.2.10.2 and 3.2.10.3 for the calculated design and check scour without using scour countermeasures.

Table 6-1 Hydraulic Design Data (Proposed Condition)

<u>Hydraulic Design Data</u>	
Drainage Area:	11.5 Square miles
Design Flood Annual Chance (Return Frequency):	10% (10 year)
Design Flood Discharge:	873 Cubic Feet Per Second
Design Flood Elevation (Upstream of bridge):	42.16 feet NAVD
Design Flood Velocity (Maximum under the bridge):	10.36 Feet Per Second
<u>Base (100- YEAR) Flood Data</u>	
Base Flood Discharge:	1,800 Cubic Feet per Second
Base Flood Elevation (Upstream of the bridge):	45.81 Feet, NAVD
<u>Design and Check Scour Data</u>	
Scour Design Flood Annual Chance (Return Frequency):	4% (25 year)
Design Flood Abutment Scour Depth:	5.48 Feet
Scour Check Flood Annual Chance (Return Frequency):	2% (50 year)
Scour Check Flood Elevation (in the bridge opening in MC):	44.73 Feet, NAVD
Check Flood Abutment Scour Depth:	7.56 Feet
<u>Flood of Record</u>	
Discharge:	Not Known
Frequency (If known):	Not Known
Maximum Elevation:	Not Known
Date:	Not Known
History of Ice Floes:	None Documented
Evidence of Scour and Erosion:	Concrete footing exposed along left abutment

7. References

1. MassDOT NBIS Bridge Inspection File, Bridge No. P-14-001 (445)
2. Plymouth County, Flood Insurance Study (FIS), Revised November 04, 2016
3. Flood Insurance Rate Map (FIRM) Number 25023C0329J, July 17, 2012.
4. Recording and Coding Guide for the Structural Inventory and Appraisal of the Nation's Bridges, FHWA-PD-96-001, December 1995
<https://www.fhwa.dot.gov/bridge/mtguide.pdf> & June 2012 Errata Sheet
<https://www.fhwa.dot.gov/bridge/errata.pdf>
5. MassDOT Bridge Load and Resistance Factor Design (LRFD) manual, January 2020 Revision <https://www.mass.gov/doc/chapter-1-bridge-site-exploration/download>
6. U.S. Geological Survey (USGS) StreamStats Application. <https://streamstats.usgs.gov/ss/>
7. Zarriello, P.J., 2017, Magnitude of flood flows at selected annual exceedance probabilities for streams in Massachusetts: USGS Scientific Investigations Report 2016-5156, 54 p., <https://doi.org/10.3133/sir20165156>.
8. U.S. Department of Transportation, Federal Highway Administration, Publication No. FHWA-HIF-16-018_ Hydraulic Engineering Circular No. 17 (HEC-17), 2nd Edition, June 2016 "Highways in the River Environment-Floodplains, Extreme Events, Risk, and Resilience". <https://www.fhwa.dot.gov/engineering/hydraulics/pubs/hif16018.pdf>
9. NOAA Atlas 14 Point Precipitation Frequency Estimate: MA
https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html?bkmrk=ma
10. FHWA Coupled Model Intercomparison Project (CMIP) Climate Data Processing Tool 2.1 <https://fhwaapps.fhwa.dot.gov/cmip> &
11. FHWA CMIP User's Guide, March 2021
https://www.fhwa.dot.gov/engineering/hydraulics/pubs/CMIP_Tool_User_Guide_Version_2_1_508_version_03092021.pdf
12. USACE, HEC-RAS, <https://www.hec.usace.army.mil/software/hec-ras/>
13. MassGIS (Bureau of Geographic Information) <https://www.mass.gov/orgs/massgis-bureau-of-geographic-information>
14. Federal Highway Administration (FHWA), Hydraulic Engineering Circular, HEC-18 "Evaluating Scour at Bridges", April 2013
15. Federal Highway Administration (FHWA), Hydraulic Design Series, HDS-7 "Hydraulic Design of Safe Bridges", April 2012
16. Federal Highway Administration (FHWA), Hydraulic Engineering Circular, HEC-23 "Bridge Scour and Stream Instability Countermeasures", September 2009

8. Applications/Software

17. Hydraulic Engineering Center, River Analysis System (HEC-RAS) version 6.2
18. Autodesk Civil 3D 2022
19. ESRI ArcGIS Desktop version 10.8.1

9. Appendices

Appendix A. FEMA Documents

1. Plymouth County, Flood Insurance Study (FIS), Revised November 04, 2016
2. Flood Insurance Rate Map (FIRM), July 17, 2012

Appendix B. Hydrologic Analysis

1. USGS StreamStats Report
2. CCI Calculations

Appendix C. Hydraulic Analysis

1. Existing Condition Analysis Results
 - a. Existing Condition Bridge
 - b. Existing Condition WSEL Upstream of Bridge for Design Flows
 - c. Existing Condition River Profiles for Design Flows
 - d. Existing Condition Analysis Output Table for Design Flows
 - e. Existing Condition No-Rise Analysis Output Table
2. Proposed Condition Analysis Results
 - a. Proposed Condition Bridge
 - b. Proposed Condition WSEL Upstream of Bridge for Design Flows
 - c. Proposed Condition River Profiles for Design Flows
 - d. Proposed Condition Analysis Output Table for Design Flows
 - e. Proposed Condition No-Rise Analysis Output Table

Appendix D Scour and Countermeasure Design

1. Soil Sample Results
2. Scour Calculations
3. Scour Countermeasure Design

Appendix A. FEMA Documents

1. Plymouth County, Flood Insurance Study (FIS), Revised November 04, 2016
2. Flood Insurance Rate Map (FIRM), July 17, 2012

FLOOD INSURANCE STUDY

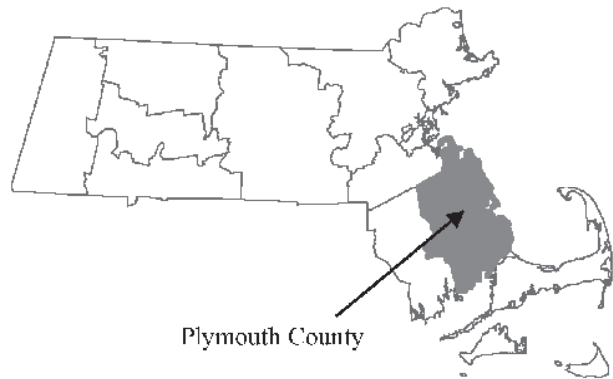


PLYMOUTH COUNTY, MASSACHUSETTS (ALL JURISDICTIONS)

Volume 1 of 4

COMMUNITY NAME
 ABINGTON, TOWN OF
 BRIDGEWATER, TOWN OF
 BROCKTON, CITY OF
 CARVER, TOWN OF
 DUXBURY, TOWN OF
 EAST BRIDGEWATER, TOWN OF
 HALIFAX, TOWN OF
 HANOVER, TOWN OF
 HANSON, TOWN OF
 HINGHAM, TOWN OF
 HULL, TOWN OF
 KINGSTON, TOWN OF
 LAKEVILLE, TOWN OF
 MARION, TOWN OF
 MARSHFIELD, TOWN OF
 MATTAPOISETT, TOWN OF
 MIDDLEBOROUGH, TOWN OF
 NORWELL, TOWN OF
 PEMBROKE, TOWN OF
 PLYMOUTH, TOWN OF
 PLYMPTON, TOWN OF
 ROCHESTER, TOWN OF
 ROCKLAND, TOWN OF
 SCITUATE, TOWN OF
 WAREHAM, TOWN OF
 WEST BRIDGEWATER, TOWN OF
 WHITMAN, TOWN OF

COMMUNITY NUMBER
 250259
 250260
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REVISED
NOVEMBER 4, 2016



Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
25023CV001C

- Middleborough, Town of: The hydrologic and hydraulic analyses in the February 1, 1983 study represent a revision of the original analyses by Sverdrup and Parcel and Associates for FEMA, under Contract No. H-4306. The updated February 1983 version was prepared by Dewberry and Davis under agreement with FEMA. The February 1983 study was completed in August 1982. The hydrologic and hydraulic analyses in the updated study were computed by Dewberry and Davis.
- Norwell, Town of: The hydrologic and hydraulic analyses for the January 19, 1982 study were prepared by PJR Consulting Engineers for FEMA, under Contract No. H-4795. This work was completed in July 1980.
- Pembroke, Town of: The hydrologic and hydraulic analyses for the February 1982 study were performed by CDM, for the FIA, under Contract No. H- 3861. This work, which was completed in January 1978, covered all significant flooding sources affecting the Town of Pembroke.
- Plymouth, Town of: The hydrologic and hydraulic analyses for the July 17, 1986 study were prepared by PRC Harris, Inc., for FEMA, under Contract No. H-4776. This work was completed in June 1983.
- For the December 19, 2006 study, the hydrologic and hydraulic analyses for the entire shorelines of Cape Cod Bay, Kingston Bay, Massachusetts Bay, Plymouth Bay, and Plymouth Harbor were prepared by ENSR International for FEMA, under Contract No. EMB-96-CO0404. This work was completed in March 2002.
- Plympton, Town of: The hydrologic and hydraulic analyses for the January 5, 1982 study were performed by PJR Consulting Engineers for FEMA, under Contract No. H-4795. This work was completed in March 1980.
- Rochester, Town of: The hydrologic and hydraulic analyses for the January 5, 1982 study were prepared by PJR Consulting Engineers for FEMA, under Contract No. H-4795. This work was completed in May 1980.

TABLE 2 – FLOODING SOURCES STUDIED BY DETAILED METHODS -
continued

<u>Flooding Source Name</u>	<u>Description of Study Reaches</u>
Nemasket River ¹	From the confluence with Taunton River to the Assawompset Pond Dam in Middleborough
Northern Branch of Ben Mann Brook	From Hingham Street to approximately 950 feet upstream
Nunkets Pond	For the entire shoreline
Oldham Pond	For the entire shoreline
Palmer Mill Brook	From the confluence with Winnetuxet River to approximately 1,660 feet upstream of Hayward Street in Halifax
Pine Point	Tidal flooding including its wave action within the Town of Marshfield
Pine Point River	At the wetlands area in the Town of Duxbury
Plymouth Bay	The entire coastline in Plymouth County
Plymouth Harbor	The entire coastline in Plymouth County
Plymouth River	From Cushing Pond Dam in Hingham to approximately 2,068 feet upstream of Old Ward Street in Hingham
Pocksha Pond	The entire shoreline within Plymouth County
Poor Meadow Brook	From approximately 8,700 feet downstream of Main Street in Hanson to approximately 4,675 feet upstream of West Washington Street in Hanson
Rocky Meadow Brook	From its confluence with Weweantic River to approximately 2,868 feet upstream of France Street in Carver
Salisbury Brook	From its confluence with Salisbury Plain River to Elmwood Avenue in Brockton

¹Flooding source re-studied during July 16, 2015 revision (see Table 3)

TABLE 2 – FLOODING SOURCES STUDIED BY DETAILED METHODS -
continued

<u>Flooding Source Name</u>	<u>Description of Study Reaches</u>
Weweantic River	From the corporate limits of Wareham-Carver, 5,700 feet downstream of Tremont Street in Carver, to the confluence of Rocky Meadow Brook and South Meadow Brook
Willow Brook	From its confluence with Town River in West Bridgewater to approximately 950 feet upstream of Main Street in West Bridgewater
Winnetuxet River	From its confluence with Taunton River to approximately 4,900 feet upstream of Main Street in Plympton

Detailed study streams that were not re-studied as part of any revision may include a profile baseline on the FIRM. The profile baselines for these streams were based on the best available data at the time of their study and are depicted as they were on the previous FIRMs. In some cases the transferred profile baseline may deviate significantly from the channel or may be outside of the floodplain.

July 16, 2015 Narragansett Watershed Study

The riverine flooding analysis for the July 16, 2015 Narragansett Watershed study was prepared by USGS. This new analysis updated the hydrologic and hydraulic engineering data for the Nemasket and Taunton Rivers and Assawompset and Long Ponds in Plymouth County, as described in Table 3. The analysis resulted in revisions to the FIRM for the Towns of Bridgewater, East Bridgewater, Halifax, Lakeville, Middleborough, and Rochester. No LOMCs were incorporated into this revision.

November 4, 2016 Coastal Study Update

The coastal wave height analysis for this countywide coastal study was prepared by STARR. This new analysis resulted in revisions to the FIRM for the Towns of Duxbury, Kingston, Marshfield, Norwell, Plymouth and Scituate. Additional material submitted by the Towns of Duxbury, Marshfield and Scituate during the appeal period was incorporated into the mapping.

For flooding sources studied by detailed methods for July 17, 2012 countywide study, the July 16, 2015 revision, and this coastal revision, see Table 3, “Scope of Revision.”

TABLE 4 – FLOODING SOURCES STUDIED BY APPROXIMATE METHODS
- continued

<u>Flooding Source Name</u>	<u>Community (s)</u>
Upper Chandler Pond	Duxbury
Valley Swamp	Norwell
Wampum Swamp, portions of	Hanover
Wankinco River	Plymouth
Warner Pond	Plymouth
West Branch Sippican River	Rochester
West Meadow Brook	Brockton, West Bridgewater
West Rocky Gutter Brook	Middleborough
Weweantic River	Wareham, Middleborough
White Island Pond	Plymouth
White Oak Island Brook	Middleborough
Wildcat Brook	Norwell
Wildcat Creek	Norwell
Winkinco River	Carver
Winnetuxet River	Carver

The July 17, 2012 FIS also incorporates the determinations of letters issued by FEMA resulting in map changes (Letters of Map Revision [LOMR], Letters of Map Revision - based on Fill [LOMR-F], and Letters of Map Amendment [LOMA]), as shown in Table 5, “Letters of Map Change.”

TABLE 5 – LETTERS OF MAP CHANGE

<u>Community</u>	<u>Case Number</u>	<u>Flooding Source</u>	<u>Letter Date</u>
Bridgewater, Town of	199102216FIA	Town River	10/23/1984
	05-01-0410P ¹	Kingston Bay	11/07/2005
East Bridgewater, Town of	95-01-061P ¹	Unnamed Tributary to Matfield River	08/19/1996
Hanover, Town of	01-01-023P ¹	Areas 1-9 Ponding	03/13/2002
	04-01-063P ¹	Unnamed Tributaries to Third Herring Brook, Iron Mine Brook, and Silver Brook	09/07/2005
	07-01-0795P ¹	Shinglemill Brook, Unnamed Tributary to Shinglemill Brook	12/26/2007
Rockland, Town of	08-01-0140P ¹	Hingham Street Basins and Northern Branch of Ben Mann Brook	06/16/2008
Scituate, Town of	06-01-B143P ¹	Massachusetts Bay	08/23/2006

¹Incorporated during July 17, 2012 study

The peak discharges for the Winnetuxet River, Palmer Mill Brook, Indian Head Brook, Drinkwater River upstream of the tributary entering from Hell Swamp, and Longwater Brook from its confluence with the Drinkwater River to the upstream corporate limits were computed from regional regression equations developed by USGS for ungaged drainage basins in Massachusetts (Reference 45). Peak discharges for Poor Meadow Brook were computed from the revised version of the USGS regression equations (Reference 35). These equations relate peak flow to drainage area and slope. Peak discharges for the Taunton River were obtained from the September 8, 1999 FIS for the Town of Bridgewater (Reference 46).

A standard log-Pearson Type III analysis was used to determine peak flows on the Indian Head River for the selected recurrence intervals (Reference 47). Data used in this analysis was obtained at the USGS gage 01105730, located on the Indian Head River in the Town of Hanover (Reference 48). The analysis was based on a 12-year period of record. The discharges determined by this method for the Indian Head River were in close agreement with those used in the February 1982 FIS for the Town of Pembroke (References 47, 49, and 50). Because of the close agreement, the previously established discharges were used for the Indian Head River. On the Drinkwater River, from Factory Pond upstream to the tributary entering the river from Hell Swamp, the discharges were computed based on averaging results obtained by two methods. The first method was the log-Pearson Type III analysis of the Indian Head River gage (Reference 47). The second method used the regional regression equations developed by the USGS for ungaged drainage basins in Massachusetts (Reference 45). This combination of methods was also used to compute peak flows on French Stream and Drinkwater River Tributary. Peak discharges at other locations along the Indian Head River were transposed upstream and downstream of the gage based on drainage area.

Peak discharges for the 10-, 2-, 1-, and 0.2-percent-annual-chance floods in the Town of Hingham and along Smelt Brook were computed by the USGS regional formula for estimating flood magnitude and frequency (Reference 45). This formula is based on an analysis of all gaging stations in eastern Massachusetts; the following equation is used:

$$Q_n = C_1 A^{C_2} S^{C_3}$$

where Q_n is the peak discharge for recurrence interval n in cubic feet per second, A is the drainage area, S is the stream slope and C_1 , C_2 , and C_3 are coefficients specific to recurrence interval n .

The 10-, 2-, 1-, and 0.2-percent-annual-chance discharges for Jones River Brook, Halls Brook, Mile Brook, and the Jones River were determined using the HEC-1 flood hydrograph computer model (References 51 and 52). The model was calibrated to the March 1968 flood, which was slightly greater than a 10-percent-annual-chance storm measured at USGS gage 01105870, downstream of Elm Street on the Jones River. Unit hydrograph coefficients developed in the calibration run were used to synthesize hydrographs for the 10-, 2-, 1-, and 0.2- percent-annual-chance floods. Synthetic rainfall hyetographs were developed from Technical Paper No. 40 (Reference 53). Sub-basin hydrographs were routed through the numerous storage areas along the streams and were combined to develop the composite basin models.

The hydrologic data for Hannah Eames Brook and the streams studied by approximate methods in the Town of Marshfield were taken from the October 1, 1983 FIS for the Town

TABLE 6 – SUMMARY OF DISCHARGES - continued

<u>FLOODING SOURCE AND LOCATION</u>	<u>DRAINAGE AREA (SQUARE MILES)</u>	<u>PEAK DISCHARGES (CUBIC FEET PER SECOND)</u>			
		<u>10- PERCENT ANNUAL CHANCE</u>	<u>2- PERCENT ANNUAL CHANCE</u>	<u>1- PERCENT ANNUAL CHANCE</u>	<u>0.2- PERCENT ANNUAL CHANCE</u>
WEWEANTIC RIVER - continued					
At the confluence of South Meadow Brook and Rocky Meadow Brook	19.7	405	600	700	890
WILLOW BROOK					
At East Center Street in West Bridgewater	1.5	97	132	151	186
At the railroad bridge in West Bridgewater	1.3	86	118	134	166
WINNETUXET RIVER					
At confluence with Taunton River	36.5	865	1,415	1,710	2,565
Downstream of River Street bridge in Halifax	30.8	810	1,325	1,605	2,420
Downstream of confluence with Palmer Mill Brook	23.8	730	1,210	1,465	2,220
Upstream of confluence with Palmer Mill Brook	15.2	485	810	980	1,490
At downstream Plympton corporate limits	15.1	485	810	980	1,490
6,000 feet downstream of Winnetuxet Road bridge in Plympton	10.9	350	580	705	1,075

Starting water-surface elevations for South Meadow Brook and Crane Brook were obtained from flood profiles of the Weweantic River. Starting water-surface elevations for the Taunton River were taken from the FIS for the Town of Middleborough (Reference 65). Starting water-surface elevations for the Town River were taken from the Taunton River profile. Starting water-surface elevations for the Taunton River and Sawmill Brook were obtained from the profile of the Taunton River published in the 1982 FIS. The starting water-surface elevations for the Town and Matfield Rivers were obtained from the hydraulic model for the revised portion of the Taunton River. The starting water-surface elevation for Tributary A to Sawmill Brook was obtained from the hydraulic model for Sawmill Brook computed for the revised 1999 Bridgewater FIS. The starting water-surface elevations for Tributary to Meadow Brook were based on coincident flow. Starting water-surface elevations for the Mattapoissett River, Tributary A, Weweantic River, Crane Brook, Stream River, and all other brooks, streams, and rivers were determined using the slope/area method.

Starting water-surface elevations for French Stream were taken from the FIS for the Town of Hanover (Reference 66).

Starting water-surface elevations for the Winnetuxet River were obtained from the Taunton River water-surface profiles. Coincident flow was chosen for these two streams because the topographic and soil characteristics of this particular drainage area indicate the occurrence of coincident peak flows for the Taunton and Winnetuxet Rivers. Starting water-surface elevations for Palmer Mill Brook were obtained from the Winnetuxet River flood profiles.

Water-surface elevations taken from the FIS for the Town of Pembroke were used for the Indian Head River up to the Pembroke-Hanover corporate limits, where the end elevations were used to start new computations (Reference 50). Starting water-surface elevations for the Drinkwater River were developed using the generalized weir flow equation for Factory Pond (Reference 67). The starting water-surface elevations for Longwater Brook and French Stream were obtained from the Drinkwater River. Water-surface elevations for the North River were obtained from the tidal elevations computed for Massachusetts Bay (Reference 68). Starting water-surface elevations for Indian Head Brook were determined assuming coincident peak flows at its confluence with the Indian Head River. Starting water-surface elevations for Poor Meadow Brook were estimated by the slope/area method based on a 0.0006 energy grade line slope at the downstream corporate limits. Starting water-surface elevations for the Shumatuscacant River and Shumatuscacant Tributary were determined by the slope/area method. Starting water-surface elevations for Meadow Brook were taken from the FIS for the Town of East Bridgewater (Reference 69). Known water-surface elevations from Meadow Brook were used as starting elevations on Meadow Brook Tributary.

The starting water-surface elevations for the Salisbury Plain River were determined by solution of Manning's equation together with interpolated cross sections (slope-area method). A relationship was established such that, for any given flow, a starting water-surface elevation could be calculated. The starting water-surface elevations for Trout Brook were determined from the computed profile elevation of Salisbury Plain River at the confluence of Salisbury and Trout Brooks.

Approximate methods were used to study portions of Lovett, Daley, Dorchester, West Meadow, Edson, and Beaver Brooks; Thirty Acre, Ellis Brett, and Cross Ponds; the

TABLE 7 – MANNING’S “n” VALUES - continued

<u>Flooding Source</u>	<u>Channel “n”</u>	<u>Overbanks</u>
Satucket River	0.031-0.050	0.016-0.080
Satuit Brook	0.013-0.060	0.1
Sawmill Brook	0.04	0.100-0.120
Shumatuscacant River	0.035-0.040	0.080-0.100
Shumatuscacant River – North Tributary	0.012-0.040	0.080-0.100
Shumatuscacant Tributary	0.030-0.045	0.090-0.100
Smelt Brook	0.015-0.040	0.070-0.100
Snows Brook	0.013-0.060	0.016-0.070
South Brook	0.013-0.060	0.016-0.090
South Meadow Brook	0.033-0.037	0.060-0.080
Stream River	0.013-0.060	0.060-0.180
Taunton River ¹	0.035-0.060	0.080-0.10
Town Brook (Plymouth)	0.012-0.060	0.060-0.110
Town Brook (Hingham)	0.017-0.050	0.070-0.100
Town River	0.03-0.06	0.050-0.100
Tributary 1 to Stream Channel to Unnamed Tributary to Third Herring Brook	*	*
Tributary 1 to Tributary to Iron Mine Brook	*	*
Tributary 2 to Stream Channel to Unnamed Tributary to Third Herring Brook	*	*
Tributary 2 to Tributary to Iron Mine Brook	*	*
Tributary A	0.035-0.040	0.08
Tributary A to Sawmill Brook	0.04	0.12
Tributary to Meadow Brook	0.05	0.08
Trout Brook	0.025-0.040	0.060-0.080
Turkey Hill Brook	0.015-0.070	0.090-0.110
Weir River	0.014-0.050	0.080-0.120
West Meadow Brook	0.030-0.060	0.050-0.100
Weweantic River	0.025-0.037	0.060-0.090
Willow Brook	0.030-0.060	0.050-0.100
Winnetuxet River (Halifax)	0.035-0.045	0.050-0.100
Winnetuxet River (Plympton)	0.030-0.050	0.080-0.100

¹July 16, 2015 Narragansett Watershed study

*Data not available

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	2,120	50	269	6.4	26.3	19.0 ²	19.6	0.6
B	4,530	80	635	2.7	26.3	21.6 ²	22.6	1.0
C	6,780	300	2,277	0.8	26.5	22.0 ²	23.0	1.0
D	9,200	620	3,710	0.4	26.5	22.1 ²	23.1	1.0
E	13,200	300	1,599	1.0	26.6	22.6 ²	23.5	0.9
F	16,400	600	3,035	0.5	26.7	22.9 ²	23.8	0.9
G	22,280	325	1,515	1.0	26.7	23.5 ²	24.5	1.0
H	27,380	320	1,530	1.0	26.9	24.7 ²	25.6	0.9
I	28,670	180	589	2.5	26.9	25.2 ²	26.1	0.9
J	29,970	120	617	1.6	28.2	27.5 ²	28.4	0.9
K	30,760	350	2,158	0.5	28.5	28.2 ²	28.9	0.7
L	34,810	210	707	1.4	28.7	28.4 ²	29.1	0.7
M	37,180	310	1,085	0.9	29.1	29.0 ²	29.9	0.9
N	39,740	350	1,002	1.0	29.9	29.9	30.8	0.9
O	43,600	830	698	1.4	32.5	32.5	33.4	0.9
P	47,000	530	916	0.8	36.4	36.4	37.4	1.0
Q	49,950	150	401	1.5	39.6	39.6	39.8	0.2
R	53,540	24	126	5.6	67.0	67.0	67.3	0.3
S	55,060	60	207	3.4	72.4	72.4	72.5	0.1
T	57,170	200	691	1.0	74.1	74.1	74.7	0.6
U	59,700	280	798	0.9	75.0	75.0	75.9	0.9

¹ FEET ABOVE CONFLUENCE WITH THE TAUNTON RIVER

² ELEVATION COMPUTED WITHOUT CONSIDERATION OF COINCIDENT FLOW WITH THE TAUNTON RIVER

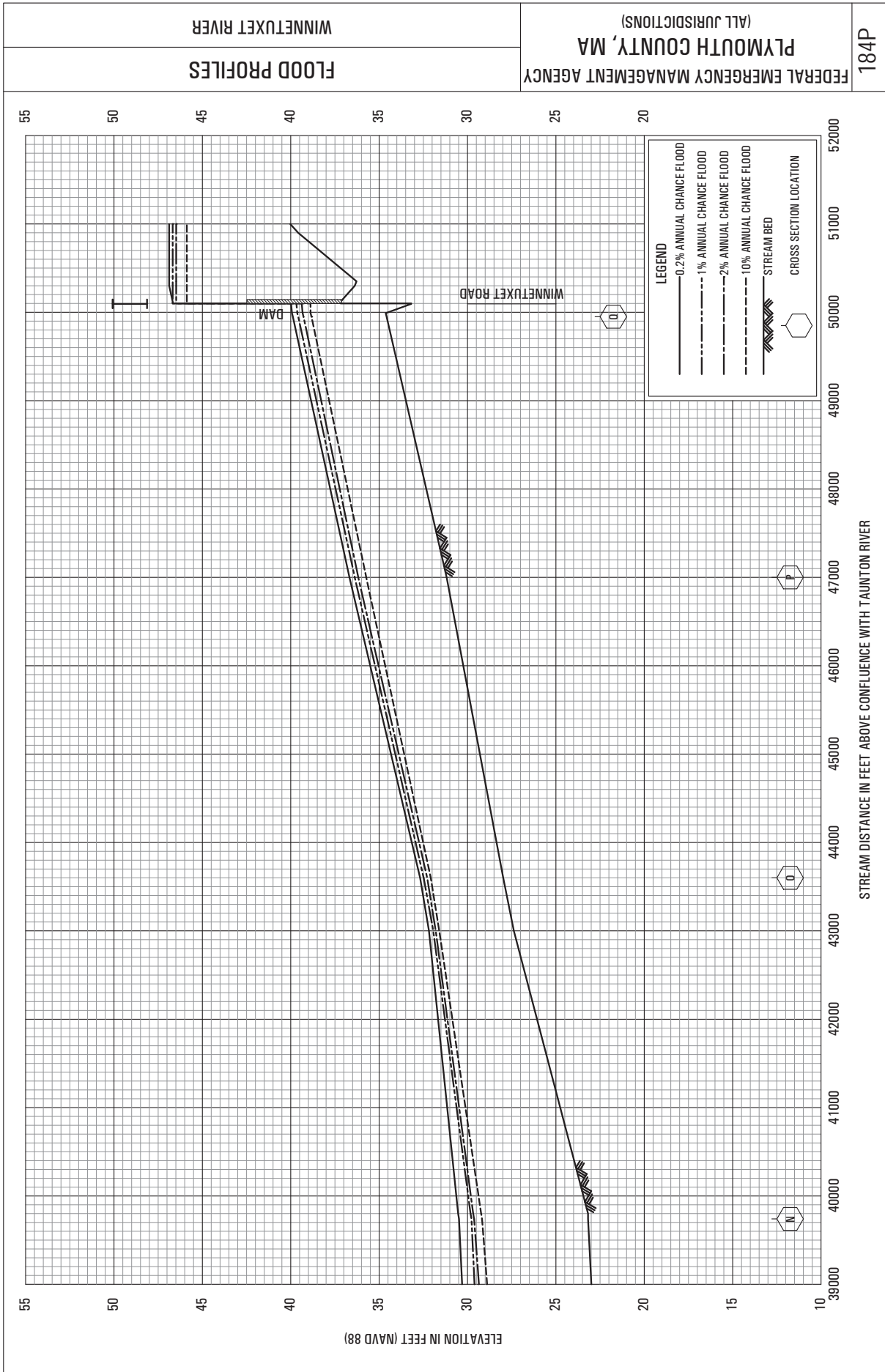
FEDERAL EMERGENCY MANAGEMENT AGENCY

PLYMOUTH COUNTY, MA
(ALL JURISDICTIONS)

FLOODWAY DATA

WINNETUXET RIVER

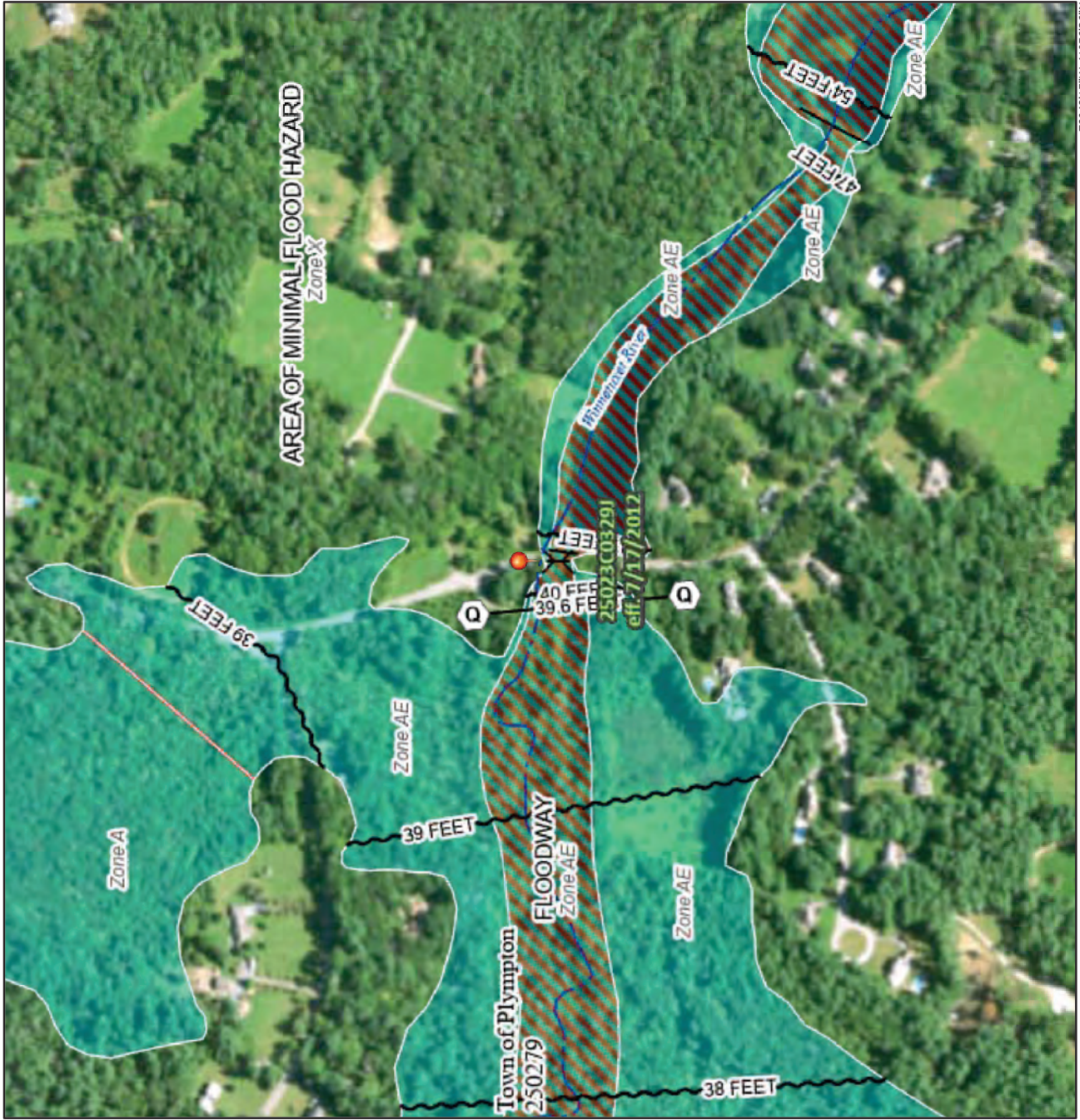
TABLE 15



National Flood Hazard Layer FIRMette



70°49'52"W 41°53'3"N



70°49'15"W 41°53'36"N

0 250 500 1,000 1,500 2,000 Feet 1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS

- Without Base Flood Elevation (BFE) Zone A, V, A99
- With BFE or Depth Zone AE, AO, AH, VE, AR
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD

- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
- Future Conditions 1% Annual Chance Flood Hazard Zone X
- Area with Reduced Flood Risk due to Levee, See Notes. Zone X
- Area with Flood Risk due to Levee Zone D

OTHER AREAS

- NO SCREEN Area of Minimal Flood Hazard Zone X
- Effective LOMRs
- Area of Undetermined Flood Hazard Zone D

GENERAL STRUCTURES

- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES

- Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS

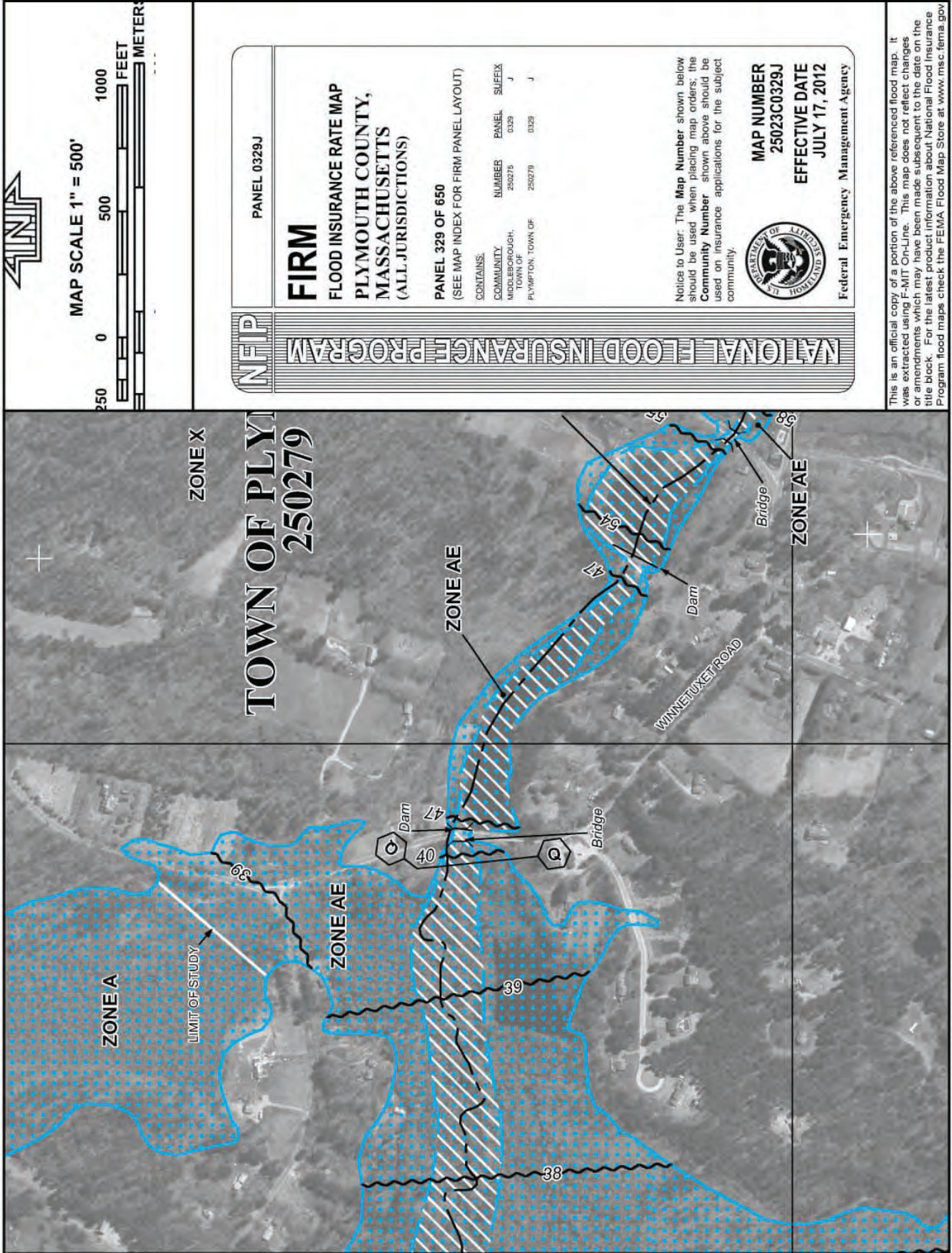
- Digital Data Available
- No Digital Data Available
- Unmapped

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 6/6/2022 at 3:14 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



Appendix B. Hydrologic Analysis

1. USGS StreamStats Report
2. CCI Calculations

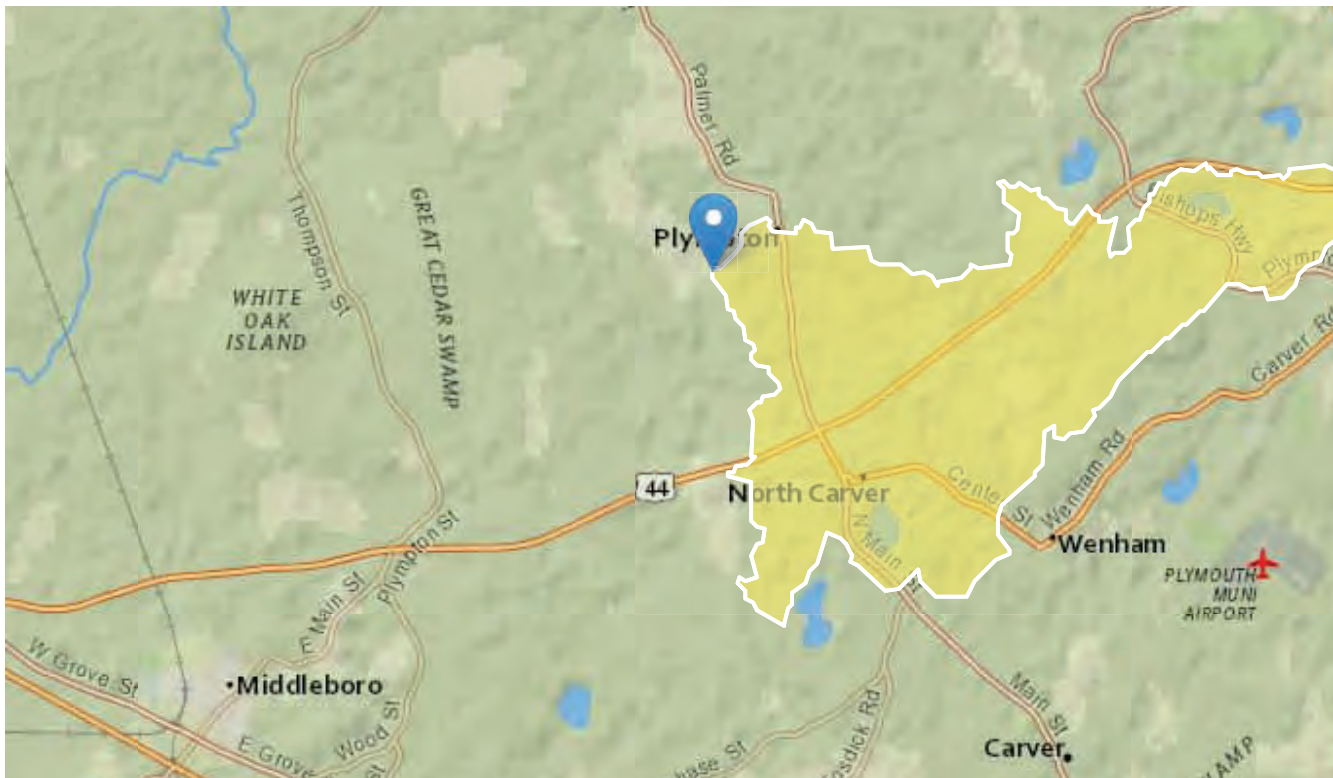
P-14-001 StreamStats Report

Region ID: MA

Workspace ID: MA20220606190241580000

Clicked Point (Latitude, Longitude): 41.94709, -70.82596

Time: 2022-06-06 15:03:05 -0400



P-14-001 StreamStats Report

[+ Collapse All](#)

➤ Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
ACRSDF	Area underlain by stratified drift	10.4	square miles
BSLDEM10M	Mean basin slope computed from 10 m DEM	4.759	percent
BSLDEM250	Mean basin slope computed from 1:250K DEM	1.149	percent

Parameter Code	Parameter Description	Value	Unit
CAT1ROADS	Length of interstates lmtd access highways and ramps for lmtd access highways, includes cloverleaf interchanges (USGS Ntl Transp Dataset)	13.2	miles
CAT2ROADS	Length of sec hwy or maj connecting roads; main arteries & hwys not lmtd access, usually in the US Hwy or State Hwy systems (USGS Ntl Transp Dataset)	0.0154	miles
CAT3ROADS	Length of local connecting roads; roads that collect traffic from local roads & connect towns, subdivisions & neighborhoods (USGS Nat Transp Dataset)	8.32	miles
CAT4ROADS	Length of local roads; generally paved street, road, or byway that usually have single lane of traffic in each direction (USGS Ntnl Transp Dataset)	43	miles
CENTROIDX	Basin centroid horizontal (x) location in state plane coordinates	259756.9	meters
CENTROIDY	Basin centroid vertical (y) location in state plane units	854123.5	meters
CROSCOUNT1	Number of intersections between streams and roads, where the roads are interstate, limited access highway, or ramp (CAT1ROADS)	17	dimensionless
CROSCOUNT2	Number of intersections between streams and roads, where the roads are secondary highway or major connecting road (CAT2ROADS)	0	dimensionless
CROSCOUNT3	Number of intersections between streams and roads, where roads are local connecting roads (CAT3ROADS)	3	dimensionless
CROSCOUNT4	Number of intersections between streams and roads, where roads are local roads (CAT4ROADS)	42	dimensionless
CRSDFT	Percentage of area of coarse-grained stratified drift	90.75	percent

Parameter Code	Parameter Description	Value	Unit
CSL10_85	Change in elevation divided by length between points 10 and 85 percent of distance along main channel to basin divide - main channel method not known	8.99	feet per mi
DRFTPERSTR	Area of stratified drift per unit of stream length	0.35	square mile per mile
DRNAREA	Area that drains to a point on a stream	11.5	square miles
ELEV	Mean Basin Elevation	134	feet
FOREST	Percentage of area covered by forest	69.79	percent
LAKEAREA	Percentage of Lakes and Ponds	4.99	percent
LC06STOR	Percentage of water bodies and wetlands determined from the NLCD 2006	16.94	percent
LC11DEV	Percentage of developed (urban) land from NLCD 2011 classes 21-24	18.4	percent
LC11IMP	Average percentage of impervious area determined from NLCD 2011 impervious dataset	6.4	percent
LFPLENGTH	Length of longest flow path	9.93	miles
MAREGION	Region of Massachusetts 0 for Eastern 1 for Western	0	dimensionless
MAXTEMPC	Mean annual maximum air temperature over basin area, in degrees Centigrade	14.9	degrees C
OUTLETX	Basin outlet horizontal (x) location in state plane coordinates	255885	feet
OUTLETY	Basin outlet vertical (y) location in state plane coordinates	855415	feet
PCTSNDGRV	Percentage of land surface underlain by sand and gravel deposits	90.75	percent
PRECPRI00	Basin average mean annual precipitation for 1971 to 2000 from PRISM	49.6	inches
STRMTOT	total length of all mapped streams (1:24,000-scale) in the basin	29.4	miles
WETLAND	Percentage of Wetlands	19.52	percent

➤ Peak-Flow Statistics

Peak-Flow Statistics Parameters [99.8 Percent (11.5 square miles) Peak Statewide 2016 5156]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	11.5	square miles	0.16	512
ELEV	Mean Basin Elevation	134	feet	80.6	1948
LC06STOR	Percent Storage from NLCD2006	16.94	percent	0	32.3

Peak-Flow Statistics Flow Report [99.8 Percent (11.5 square miles) Peak Statewide 2016 5156]

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	Plu	ASEp
50-percent AEP flood	205	ft ³ /s	105	400	42.3
20-percent AEP flood	333	ft ³ /s	169	658	43.4
10-percent AEP flood	432	ft ³ /s	214	873	44.7
4-percent AEP flood	574	ft ³ /s	275	1200	47.1
2-percent AEP flood	690	ft ³ /s	320	1490	49.4
1-percent AEP flood	811	ft ³ /s	365	1800	51.8
0.5-percent AEP flood	942	ft ³ /s	411	2160	54.1
0.2-percent AEP flood	1130	ft ³ /s	471	2710	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>)

➤ Low-Flow Statistics

Low-Flow Statistics Parameters [99.8 Percent (11.5 square miles) Statewide Low Flow WRIR00 4135]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	11.5	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	1.149	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	0.35	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1

Low-Flow Statistics Flow Report [99.8 Percent (11.5 square miles) Statewide Low Flow WRIR00 4135]

PIl: Prediction Interval-Lower, Plu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PIl	Plu	SE	ASEp
7 Day 2 Year Low Flow	1.43	ft ³ /s	0.463	4.25	49.5	49.5
7 Day 10 Year Low Flow	0.583	ft ³ /s	0.149	2.12	70.8	70.8

Low-Flow Statistics Citations

Ries, K.G., III, 2000, Methods for estimating low-flow statistics for Massachusetts streams: U.S. Geological Survey Water Resources Investigations Report 00-4135, 81 p. (<http://pubs.usgs.gov/wri/wri004135/>)

➤ Flow-Duration Statistics

Flow-Duration Statistics Parameters [99.8 Percent (11.5 square miles) Statewide Low Flow WRIR00 4135]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	11.5	square miles	1.61	149
DRFTPERSTR	Stratified Drift per Stream Length	0.35	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
BSLDEM250	Mean Basin Slope from 250K DEM	1.149	percent	0.32	24.6

Flow-Duration Statistics Flow Report [99.8 Percent (11.5 square miles) Statewide Low Flow WRIR00 4135]

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	Plu	SE	ASEp
50 Percent Duration	11.5	ft^3/s	6.68	19.7	17.6	17.6
60 Percent Duration	8.99	ft^3/s	3.5	23	19.8	19.8
70 Percent Duration	6.23	ft^3/s	2.67	14.4	23.5	23.5
75 Percent Duration	5.04	ft^3/s	2.22	11.3	25.8	25.8
80 Percent Duration	3.99	ft^3/s	1.68	9.34	28.4	28.4
85 Percent Duration	2.91	ft^3/s	1.16	7.18	31.9	31.9
90 Percent Duration	2.21	ft^3/s	0.856	5.58	36.6	36.6
95 Percent Duration	1.27	ft^3/s	0.423	3.69	45.6	45.6
98 Percent Duration	0.853	ft^3/s	0.25	2.75	60.3	60.3
99 Percent Duration	0.64	ft^3/s	0.174	2.22	65.1	65.1

Flow-Duration Statistics Citations

Ries, K.G., III,2000, Methods for estimating low-flow statistics for Massachusetts streams: U.S. Geological Survey Water Resources Investigations Report 00-4135, 81 p. (<http://pubs.usgs.gov/wri/wri004135/>)

➤ **August Flow-Duration Statistics**

August Flow-Duration Statistics Parameters [99.8 Percent (11.5 square miles) Statewide Low Flow WRIR00 4135]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	11.5	square miles	1.61	149

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
BSLDEM250	Mean Basin Slope from 250K DEM	1.149	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	0.35	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1

August Flow-Duration Statistics Flow Report [99.8 Percent (11.5 square miles) Statewide Low Flow WRIR00 4135]

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	Plu	SE	ASEp
August 50 Percent Duration	3.3	ft ³ /s	1.28	8.35	33.2	33.2

August Flow-Duration Statistics Citations

Ries, K.G., III, 2000, Methods for estimating low-flow statistics for Massachusetts streams: U.S. Geological Survey Water Resources Investigations Report 00-4135, 81 p. (<http://pubs.usgs.gov/wri/wri004135/>)

➤ Bankfull Statistics

Bankfull Statistics Parameters [99.8 Percent (11.5 square miles) Bankfull Statewide SIR2013 5155]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	11.5	square miles	0.6	329
BSLDEM10M	Mean Basin Slope from 10m DEM	4.759	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	11.5	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	11.5	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	11.5	square miles	0.07722	59927.7393

Bankfull Statistics Flow Report [99.8 Percent (11.5 square miles) Bankfull Statewide SIR2013 5155]

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	ASEp
Bankfull Width	36.6	ft	21.3
Bankfull Depth	1.82	ft	19.8
Bankfull Area	66.2	ft^2	29
Bankfull Streamflow	172	ft^3/s	55

Bankfull Statistics Flow Report [Appalachian Highlands D Bieger 2015]

Statistic	Value	Unit
Bieger_D_channel_width	41.9	ft
Bieger_D_channel_depth	2.26	ft
Bieger_D_channel_cross_sectional_area	96.2	ft^2

Bankfull Statistics Flow Report [New England P Bieger 2015]

Statistic	Value	Unit
Bieger_P_channel_width	50.1	ft
Bieger_P_channel_depth	2.35	ft
Bieger_P_channel_cross_sectional_area	120	ft^2

Bankfull Statistics Flow Report [USA Bieger 2015]

Statistic	Value	Unit
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Statistic	Value	Unit
Bieger_USA_channel_width	29.3	ft
Bieger_USA_channel_depth	2.03	ft
Bieger_USA_channel_cross_sectional_area	63.9	ft^2

Bankfull Statistics Flow Report [Area-Averaged]

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	ASEp
Bankfull Width	36.5	ft	21.3
Bankfull Depth	1.82	ft	19.8
Bankfull Area	66.1	ft^2	29
Bankfull Streamflow	172	ft^3/s	54.9
Bieger_D_channel_width	41.9	ft	
Bieger_D_channel_depth	2.26	ft	
Bieger_D_channel_cross_sectional_area	96.2	ft^2	
Bieger_P_channel_width	50.1	ft	
Bieger_P_channel_depth	2.35	ft	
Bieger_P_channel_cross_sectional_area	120	ft^2	
Bieger_USA_channel_width	29.3	ft	
Bieger_USA_channel_depth	2.03	ft	
Bieger_USA_channel_cross_sectional_area	63.9	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_

➤ Probability Statistics

Probability Statistics Parameters [99.8 Percent (11.5 square miles) Perennial Flow Probability]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	11.5	square miles	0.01	1.99
PCTSNDGRV	Percent Underlain By Sand And Gravel	90.75	percent	0	100
FOREST	Percent Forest	69.79	percent	0	100
MAREGION	Massachusetts Region	0	dimensionless	0	1

Probability Statistics Disclaimers [99.8 Percent (11.5 square miles) Perennial Flow Probability]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Probability Statistics Flow Report [99.8 Percent (11.5 square miles) Perennial Flow Probability]

Statistic	Value	Unit
Probability Stream Flowing Perennially	0.99	dim

Probability Statistics Citations

Bent, G.C., and Steeves, P.A.,2006, A revised logistic regression equation and an automated procedure for mapping the probability of a stream flowing perennially in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2006–5031, 107 p. (http://pubs.usgs.gov/sir/2006/5031/pdfs/SIR_2006-5031rev.pdf)

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Application Version: 4.9.0

StreamStats Services Version: 1.2.22

NSS Services Version: 2.2.0



NOAA Atlas 14, Volume 10, Version 3
Location name: Plympton, Massachusetts, USA*
Latitude: 41.9471°, Longitude: -70.826°
Elevation: 45.99 ft**
 * source: ESRI Maps
 ** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

[PF tabular](#) | [PF graphical](#) | [Maps & aeriels](#)

PF tabular

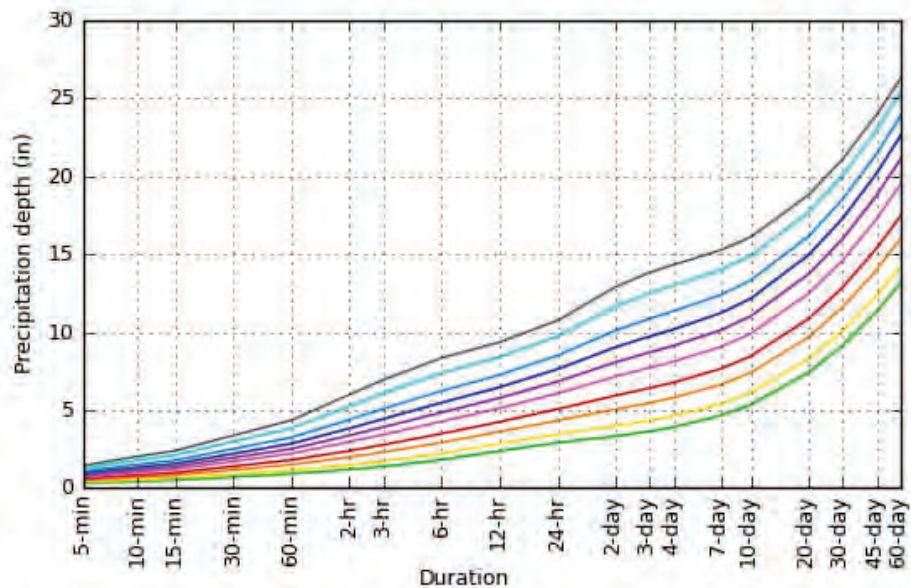
PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.297 (0.239-0.368)	0.370 (0.296-0.459)	0.489 (0.390-0.607)	0.587 (0.466-0.734)	0.723 (0.554-0.936)	0.823 (0.618-1.09)	0.932 (0.680-1.27)	1.06 (0.723-1.45)	1.26 (0.822-1.76)	1.43 (0.908-2.02)
10-min	0.421 (0.338-0.522)	0.524 (0.420-0.650)	0.692 (0.553-0.861)	0.832 (0.660-1.04)	1.02 (0.785-1.33)	1.17 (0.876-1.54)	1.32 (0.963-1.80)	1.51 (1.02-2.05)	1.79 (1.16-2.49)	2.02 (1.29-2.86)
15-min	0.496 (0.398-0.614)	0.617 (0.494-0.765)	0.815 (0.650-1.01)	0.979 (0.776-1.22)	1.21 (0.924-1.56)	1.37 (1.03-1.81)	1.55 (1.13-2.11)	1.77 (1.21-2.41)	2.10 (1.37-2.93)	2.38 (1.51-3.37)
30-min	0.701 (0.562-0.869)	0.872 (0.699-1.08)	1.15 (0.919-1.43)	1.38 (1.10-1.73)	1.70 (1.31-2.20)	1.94 (1.46-2.55)	2.19 (1.60-2.98)	2.50 (1.70-3.41)	2.97 (1.93-4.14)	3.36 (2.14-4.75)
60-min	0.907 (0.727-1.12)	1.13 (0.903-1.40)	1.49 (1.19-1.85)	1.79 (1.42-2.23)	2.20 (1.69-2.85)	2.51 (1.88-3.30)	2.84 (2.07-3.86)	3.23 (2.20-4.40)	3.83 (2.50-5.34)	4.34 (2.76-6.14)
2-hr	1.17 (0.947-1.44)	1.48 (1.19-1.82)	1.97 (1.58-2.43)	2.38 (1.90-2.95)	2.94 (2.28-3.79)	3.36 (2.55-4.40)	3.82 (2.82-5.17)	4.37 (3.00-5.90)	5.24 (3.45-7.23)	5.98 (3.84-8.37)
3-hr	1.37 (1.11-1.68)	1.72 (1.39-2.11)	2.29 (1.85-2.82)	2.77 (2.22-3.41)	3.42 (2.66-4.38)	3.90 (2.97-5.09)	4.43 (3.29-5.97)	5.08 (3.51-6.81)	6.08 (4.03-8.35)	6.94 (4.49-9.66)
6-hr	1.81 (1.48-2.20)	2.23 (1.82-2.71)	2.91 (2.37-3.55)	3.48 (2.81-4.26)	4.26 (3.33-5.40)	4.84 (3.71-6.24)	5.47 (4.08-7.27)	6.22 (4.34-8.27)	7.36 (4.94-10.0)	8.34 (5.46-11.5)
12-hr	2.37 (1.95-2.86)	2.84 (2.33-3.43)	3.60 (2.95-4.36)	4.24 (3.45-5.15)	5.11 (4.02-6.41)	5.77 (4.45-7.33)	6.46 (4.83-8.43)	7.25 (5.12-9.54)	8.40 (5.70-11.3)	9.35 (6.19-12.8)
24-hr	2.90 (2.40-3.48)	3.44 (2.85-4.13)	4.32 (3.57-5.20)	5.06 (4.15-6.11)	6.07 (4.81-7.53)	6.83 (5.30-8.59)	7.62 (5.74-9.82)	8.50 (6.07-11.1)	9.74 (6.69-13.0)	10.7 (7.20-14.5)
2-day	3.32 (2.77-3.95)	3.97 (3.31-4.74)	5.04 (4.19-6.02)	5.93 (4.90-7.10)	7.15 (5.72-8.81)	8.07 (6.32-10.1)	9.03 (6.87-11.6)	10.1 (7.29-13.1)	11.6 (8.08-15.4)	12.9 (8.74-17.2)
3-day	3.62 (3.04-4.30)	4.32 (3.62-5.13)	5.46 (4.56-6.50)	6.41 (5.32-7.65)	7.72 (6.20-9.46)	8.70 (6.85-10.8)	9.73 (7.44-12.4)	10.9 (7.89-14.0)	12.5 (8.73-16.4)	13.8 (9.44-18.4)
4-day	3.90 (3.28-4.61)	4.62 (3.88-5.47)	5.79 (4.85-6.87)	6.77 (5.63-8.05)	8.11 (6.54-9.91)	9.13 (7.21-11.3)	10.2 (7.81-12.9)	11.3 (8.27-14.5)	13.0 (9.12-17.0)	14.3 (9.82-18.9)
7-day	4.64 (3.92-5.46)	5.39 (4.56-6.35)	6.62 (5.58-7.81)	7.65 (6.40-9.04)	9.05 (7.34-11.0)	10.1 (8.04-12.4)	11.2 (8.64-14.0)	12.4 (9.12-15.7)	14.0 (9.92-18.1)	15.3 (10.6-20.0)
10-day	5.34 (4.53-6.25)	6.12 (5.19-7.17)	7.39 (6.25-8.68)	8.45 (7.10-9.95)	9.90 (8.06-11.9)	11.0 (8.78-13.4)	12.1 (9.38-15.1)	13.3 (9.86-16.8)	14.9 (10.6-19.2)	16.1 (11.2-21.0)
20-day	7.42 (6.34-8.62)	8.28 (7.07-9.63)	9.69 (8.25-11.3)	10.9 (9.20-12.7)	12.5 (10.2-14.9)	13.7 (11.0-16.5)	15.0 (11.6-18.3)	16.2 (12.1-20.2)	17.7 (12.8-22.5)	18.8 (13.3-24.3)
30-day	9.15 (7.86-10.6)	10.1 (8.65-11.7)	11.6 (9.92-13.5)	12.9 (10.9-15.0)	14.6 (12.0-17.3)	16.0 (12.9-19.1)	17.3 (13.5-20.9)	18.5 (14.0-23.0)	20.1 (14.6-25.4)	21.1 (15.0-27.1)
45-day	11.3 (9.77-13.1)	12.3 (10.6-14.2)	14.0 (12.0-16.2)	15.4 (13.1-17.8)	17.3 (14.3-20.3)	18.8 (15.2-22.3)	20.2 (15.8-24.3)	21.5 (16.3-26.5)	23.0 (16.8-28.9)	24.0 (17.1-30.5)
60-day	13.2 (11.4-15.1)	14.2 (12.3-16.4)	16.0 (13.8-18.5)	17.5 (15.0-20.2)	19.5 (16.2-22.9)	21.1 (17.2-24.9)	22.6 (17.7-27.0)	23.9 (18.2-29.4)	25.4 (18.7-31.8)	26.3 (18.9-33.4)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

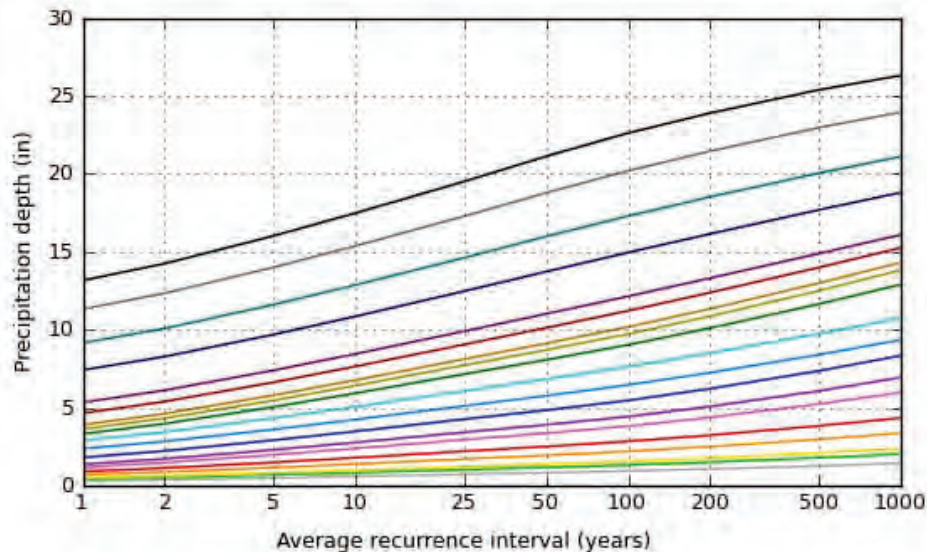
[Back to Top](#)

PF graphical

PDS-based depth-duration-frequency (DDF) curves
 Latitude: 41.9471°, Longitude: -70.8260°



Average recurrence interval (years)
1
2
5
10
25
50
100
200
500
1000



Duration	
5-min	2-day
10-min	3-day
15-min	4-day
30-min	7-day
60-min	10-day
2-hr	20-day
3-hr	30-day
6-hr	45-day
12-hr	60-day
24-hr	

[Back to Top](#)

Maps & aerials

Small scale terrain

$P_{24,T,O}$ = Observed T-year 24-hour precipitation (from NOAA Atlas 14 PFDS)

$P_{24,T,O,U}$ = Upper 90% confidence limit T-year 24-hour precipitation for the observed data (from NOAA Atlas 14 PFDS)

	2-year	5-year	10-year	25-year	50-year	100-year	200-year	500-year
$P_{24,T,O}(P_{q,h}) =$	3.44	4.32	5.06	6.07	6.83	7.62	8.5	9.74
$P_{24,T,O,U} =$	4.13	5.2	6.11	7.53	8.59	9.82	11.1	13

Projected T-year 24-hour precipitation ($P_{24,T,P}$):

$$P_{q,p} = P_{q,h}(RFB_q) \quad P_{q,p} = P_{q,h}(RFB_{0.1})$$

RFB_q = Ratio of the model future to model baseline for the 24-hour precipitation quantile (from CMIP tool)

$RFB_{0.1}$ = Ratio of the model future to model baseline for the 24-hour precipitation 0.1 AEP quantile (from CMIP tool)

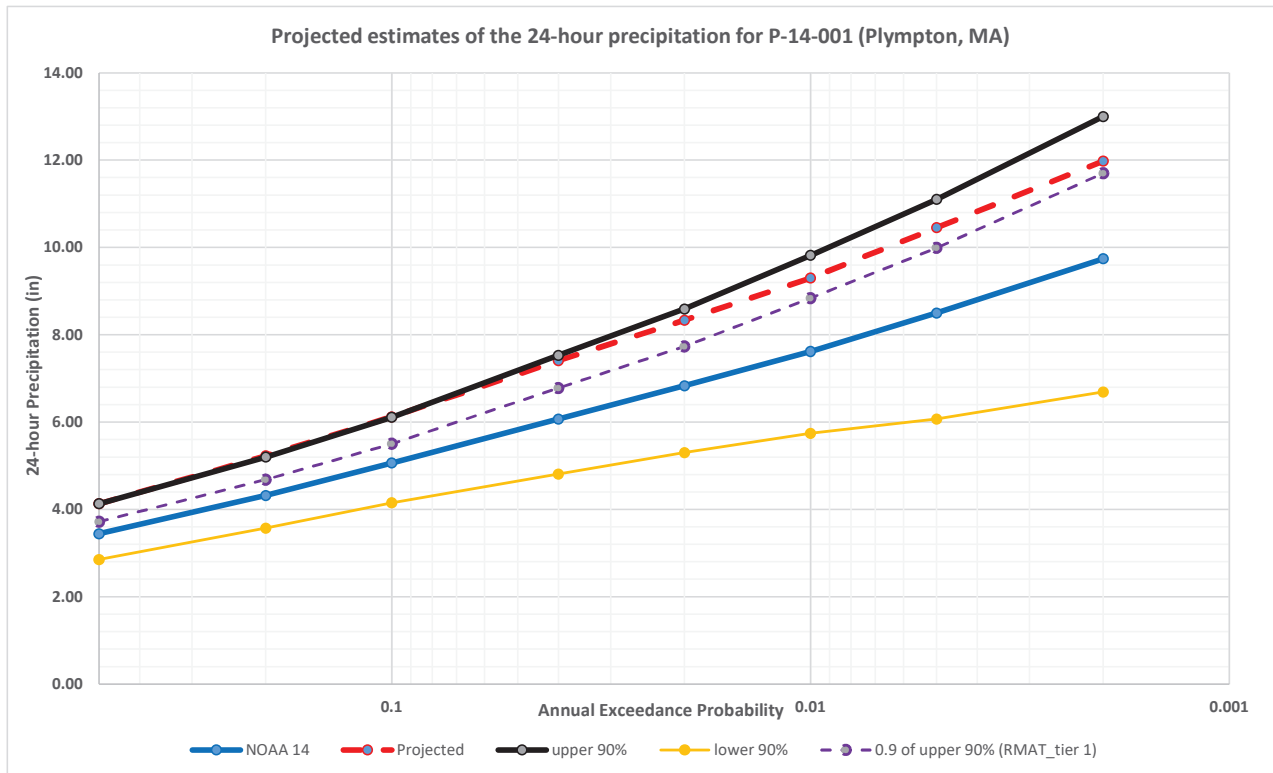
$P_{24,T,P}(P_{q,p})$ = Projected T-year 24-hour precipitation

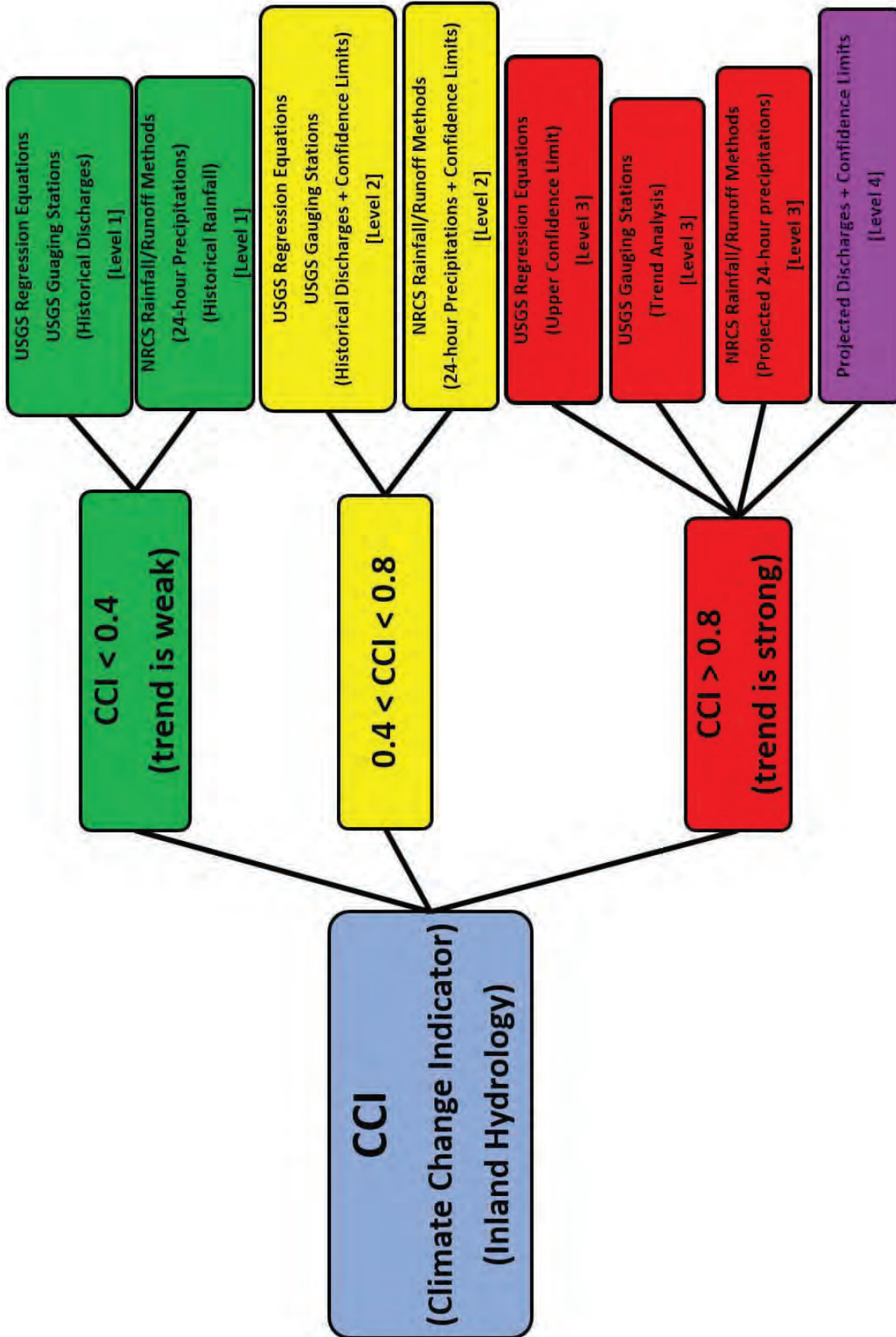
	2-year	5-year	10-year	25-year	50-year	100-year	200-year	500-year
$RFB_q =$	1.2	1.21	1.21	1.22	1.22	1.22	1.23	1.23
$P_{24,T,P} =$	4.13	5.23	6.12	7.41	8.33	9.30	10.46	11.98

Climate Change Indicator (CCI):

$$CCI = \frac{P_{24,T,P} - P_{24,T,O}}{P_{24,T,O,U} - P_{24,T,O}}$$

	2-year	5-year	10-year	25-year	50-year	100-year	200-year	500-year
CCI =	1.00	1.03	1.01	0.91	0.85	0.76	0.75	0.69





Appendix C. Hydraulic Analysis

1. Existing Condition Analysis Results
 - a. Existing Condition Bridge
 - b. Existing Condition WSEL Upstream of Bridge for Design Flows
 - c. Existing Condition River Profiles for Design Flows
 - d. Existing Condition Analysis Output Table for Design Flows
 - e. Existing Condition No-Rise Analysis Output Table
2. Proposed Condition Analysis Results
 - a. Proposed Condition Bridge
 - b. Proposed Condition WSEL Upstream of Bridge for Design Flows
 - c. Proposed Condition River Profiles for Design Flows
 - d. Proposed Condition Analysis Output Table for Design Flows
 - e. Proposed Condition No-Rise Analysis Output Table

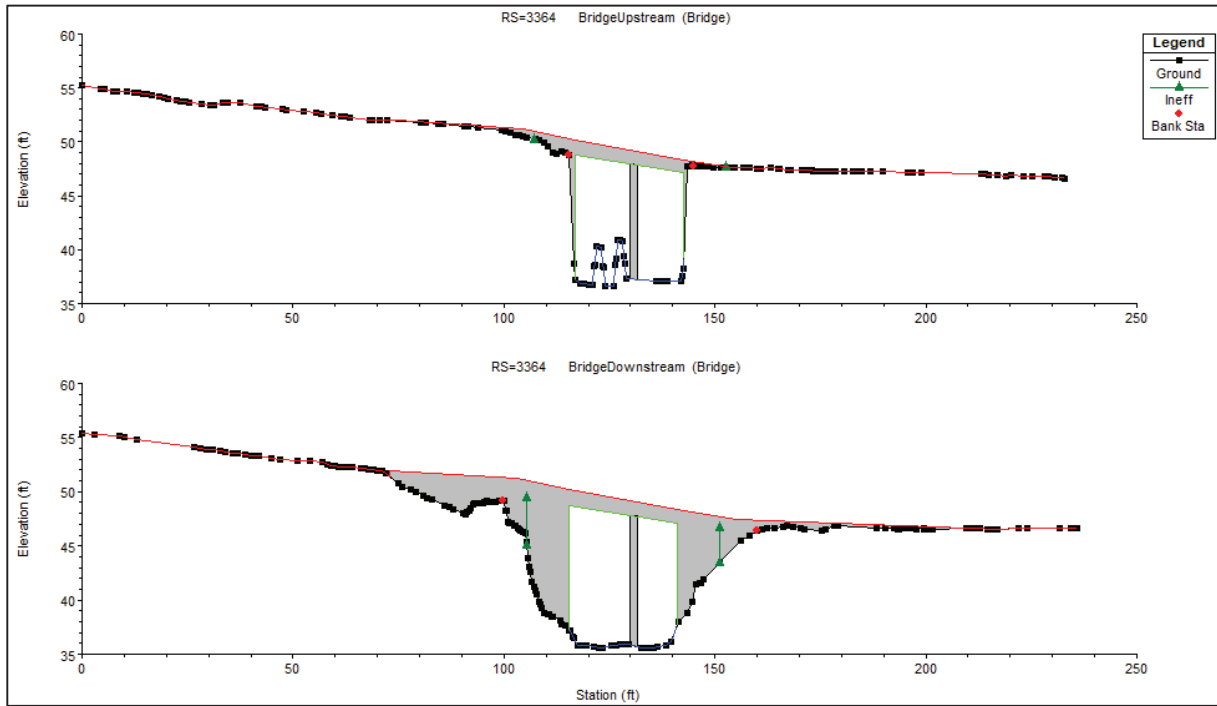


Figure 1a: Existing Condition Bridge

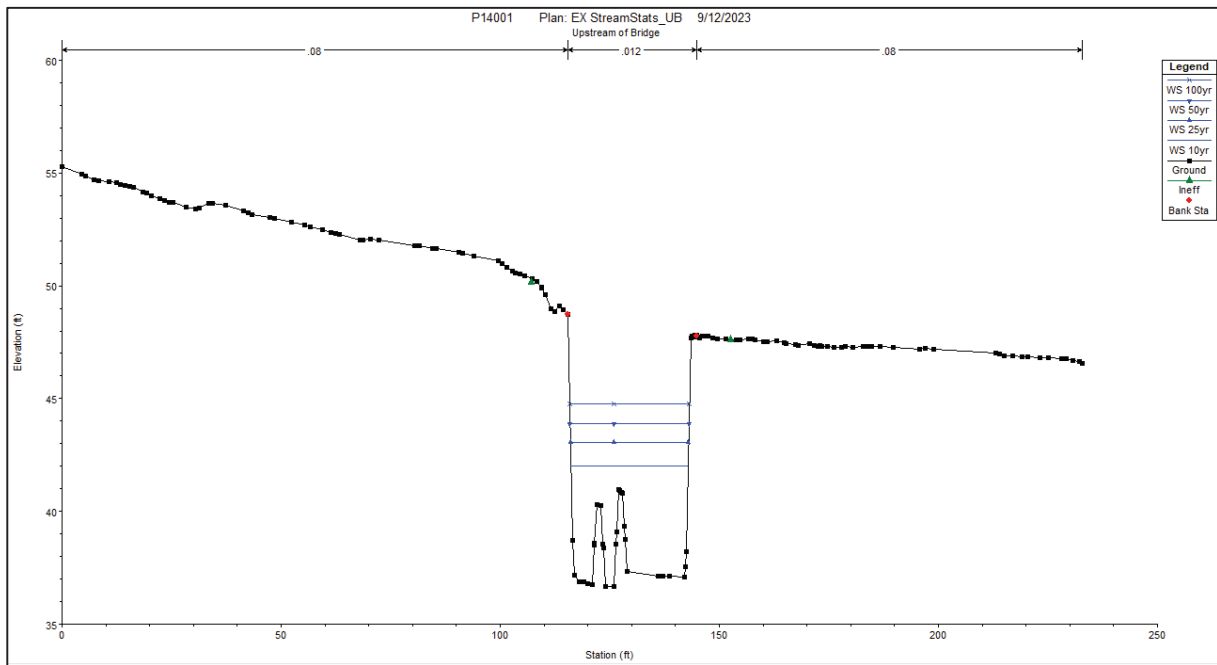


Figure 1b: Existing Condition WSEL Upstream of Bridge for Design Flows

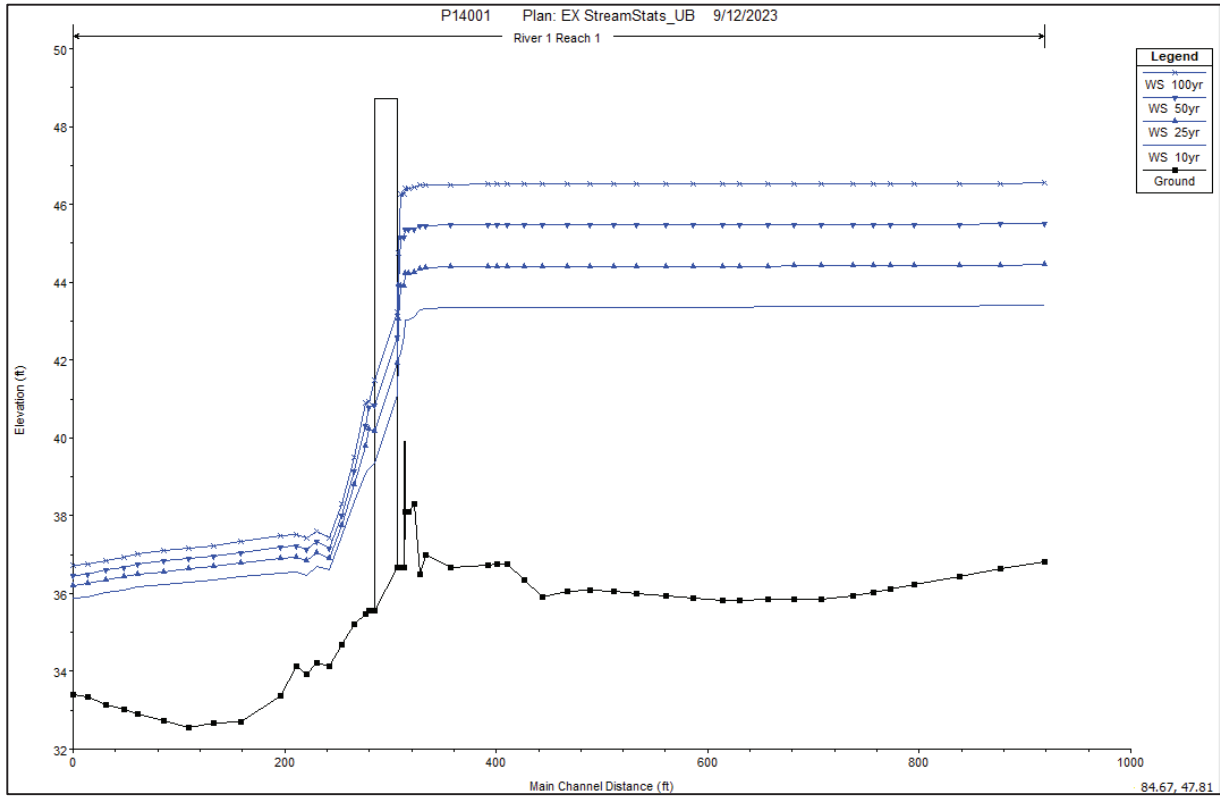


Figure 1c: Existing Condition River Profiles for Design Flows

HEC-RAS Plan: EX SS-UB River: River 1 Reach: Reach 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach 1	3987	2yr	400.00	36.81	42.54		42.56	0.000155	1.07	374.84	129.58	0.11
Reach 1	3987	5yr	658.00	36.81	43.06		43.09	0.000264	1.48	444.79	140.74	0.15
Reach 1	3987	10yr	873.00	36.81	43.41		43.46	0.000334	1.76	495.14	143.42	0.17
Reach 1	3987	25yr	1200.00	36.81	44.46		44.51	0.000264	1.85	654.40	165.19	0.16
Reach 1	3987	50yr	1490.00	36.81	45.51		45.56	0.000197	1.85	842.40	196.92	0.14
Reach 1	3987	100yr	1800.00	36.81	46.54		46.60	0.000159	1.86	1062.62	227.80	0.13
Reach 1	3987	200yr	2160.00	36.81	47.66		47.71	0.000131	1.88	1337.14	264.80	0.12
Reach 1	3987	500yr	2710.00	36.81	48.97		49.02	0.000117	1.97	1707.95	312.97	0.12
Reach 1	3944	2yr	400.00	36.63	42.53		42.55	0.000145	1.06	376.50	124.92	0.11
Reach 1	3944	5yr	658.00	36.63	43.05		43.08	0.000245	1.48	443.36	131.68	0.14
Reach 1	3944	10yr	873.00	36.63	43.40		43.45	0.000315	1.78	489.85	134.01	0.16
Reach 1	3944	25yr	1200.00	36.63	44.44		44.50	0.000259	1.90	639.55	154.93	0.16
Reach 1	3944	50yr	1490.00	36.63	45.50		45.55	0.000201	1.91	813.15	174.25	0.14
Reach 1	3944	100yr	1800.00	36.63	46.53		46.59	0.000165	1.94	1008.58	202.76	0.13
Reach 1	3944	200yr	2160.00	36.63	47.64		47.70	0.000139	1.97	1249.22	230.11	0.12
Reach 1	3944	500yr	2710.00	36.63	48.95		49.02	0.000127	2.08	1570.59	278.69	0.12
Reach 1	3906	2yr	400.00	36.44	42.53		42.54	0.000140	1.06	377.01	121.59	0.11
Reach 1	3906	5yr	658.00	36.44	43.04		43.07	0.000234	1.50	439.86	124.43	0.14
Reach 1	3906	10yr	873.00	36.44	43.38		43.44	0.000309	1.81	483.37	127.00	0.16
Reach 1	3906	25yr	1200.00	36.44	44.43		44.49	0.000277	1.93	626.02	148.33	0.16
Reach 1	3906	50yr	1490.00	36.44	45.49		45.55	0.000212	1.93	794.26	169.01	0.14
Reach 1	3906	100yr	1800.00	36.44	46.52		46.58	0.000173	1.95	979.89	189.24	0.13
Reach 1	3906	200yr	2160.00	36.44	47.64		47.70	0.000145	1.98	1202.80	210.34	0.13
Reach 1	3906	500yr	2710.00	36.44	48.95		49.01	0.000133	2.11	1517.47	320.31	0.12
Reach 1	3863	2yr	400.00	36.22	42.52		42.54	0.000118	1.06	377.94	108.03	0.10
Reach 1	3863	5yr	658.00	36.22	43.03		43.06	0.000221	1.52	434.09	115.47	0.14
Reach 1	3863	10yr	873.00	36.22	43.37		43.42	0.000321	1.84	475.27	125.49	0.17
Reach 1	3863	25yr	1200.00	36.22	44.42		44.47	0.000326	1.93	623.07	154.97	0.17
Reach 1	3863	50yr	1490.00	36.22	45.48		45.53	0.000233	1.88	797.21	176.64	0.15
Reach 1	3863	100yr	1800.00	36.22	46.52		46.57	0.000180	1.88	991.76	199.74	0.13
Reach 1	3863	200yr	2160.00	36.22	47.64		47.69	0.000145	1.88	1220.87	210.62	0.12
Reach 1	3863	500yr	2710.00	36.22	48.95		49.00	0.000128	1.98	1548.81	320.16	0.12
Reach 1	3841	2yr	400.00	36.10	42.52		42.54	0.000105	0.99	402.77	116.04	0.09
Reach 1	3841	5yr	658.00	36.10	43.03		43.06	0.000191	1.42	463.08	122.04	0.13
Reach 1	3841	10yr	873.00	36.10	43.37		43.41	0.000278	1.72	506.36	132.21	0.16
Reach 1	3841	25yr	1200.00	36.10	44.41		44.47	0.000270	1.82	658.93	154.80	0.16
Reach 1	3841	50yr	1490.00	36.10	45.48		45.53	0.000201	1.80	835.10	181.00	0.14
Reach 1	3841	100yr	1800.00	36.10	46.52		46.57	0.000159	1.81	1035.57	204.14	0.13
Reach 1	3841	200yr	2160.00	36.10	47.63		47.69	0.000130	1.83	1280.72	241.75	0.12
Reach 1	3841	500yr	2710.00	36.10	48.95		49.00	0.000115	1.92	1663.41	332.35	0.11
Reach 1	3824	2yr	400.00	36.03	42.52		42.53	0.000091	0.93	431.89	123.70	0.09
Reach 1	3824	5yr	658.00	36.03	43.03		43.05	0.000164	1.33	495.76	129.13	0.12
Reach 1	3824	10yr	873.00	36.03	43.37		43.41	0.000232	1.61	540.86	136.25	0.14
Reach 1	3824	25yr	1200.00	36.03	44.41		44.46	0.000224	1.72	695.84	154.18	0.14
Reach 1	3824	50yr	1490.00	36.03	45.48		45.52	0.000173	1.73	873.76	184.64	0.13
Reach 1	3824	100yr	1800.00	36.03	46.52		46.57	0.000140	1.75	1079.12	208.72	0.12
Reach 1	3824	200yr	2160.00	36.03	47.63		47.68	0.000117	1.77	1356.86	325.12	0.11
Reach 1	3824	500yr	2710.00	36.03	48.95		49.00	0.000102	1.84	1798.81	344.63	0.11
Reach 1	3806	2yr	400.00	35.94	42.52		42.53	0.000072	0.85	472.96	130.57	0.08
Reach 1	3806	5yr	658.00	35.94	43.03		43.05	0.000132	1.22	540.35	135.93	0.11
Reach 1	3806	10yr	873.00	35.94	43.37		43.40	0.000184	1.49	587.28	140.24	0.13
Reach 1	3806	25yr	1200.00	35.94	44.41		44.45	0.000178	1.61	744.10	153.62	0.13
Reach 1	3806	50yr	1490.00	35.94	45.48		45.52	0.000143	1.64	924.04	188.81	0.12
Reach 1	3806	100yr	1800.00	35.94	46.52		46.56	0.000119	1.67	1137.20	219.28	0.11
Reach 1	3806	200yr	2160.00	35.94	47.64		47.68	0.000101	1.70	1473.49	336.84	0.11
Reach 1	3806	500yr	2710.00	35.94	48.95		48.99	0.000090	1.77	1928.33	356.19	0.10
Reach 1	3775	2yr	400.00	35.85	42.52		42.53	0.000050	0.73	549.15	144.99	0.07
Reach 1	3775	5yr	658.00	35.85	43.03		43.04	0.000094	1.05	624.09	151.28	0.09
Reach 1	3775	10yr	873.00	35.85	43.37		43.39	0.000131	1.29	676.52	155.36	0.11
Reach 1	3775	25yr	1200.00	35.85	44.42		44.45	0.000124	1.43	841.25	159.07	0.11
Reach 1	3775	50yr	1490.00	35.85	45.48		45.51	0.000105	1.47	1032.13	202.24	0.10
Reach 1	3775	100yr	1800.00	35.85	46.52		46.56	0.000091	1.51	1271.39	285.72	0.10
Reach 1	3775	200yr	2160.00	35.85	47.64		47.67	0.000078	1.54	1632.57	342.60	0.09
Reach 1	3775	500yr	2710.00	35.85	48.95		48.99	0.000071	1.62	2094.99	360.45	0.09
Reach 1	3750	2yr	400.00	35.84	42.52		42.53	0.000044	0.70	569.85	144.12	0.06
Reach 1	3750	5yr	658.00	35.84	43.03		43.04	0.000083	1.02	643.98	148.91	0.09
Reach 1	3750	10yr	873.00	35.84	43.37		43.39	0.000121	1.25	696.09	156.85	0.10
Reach 1	3750	25yr	1200.00	35.84	44.41		44.44	0.000129	1.38	867.23	176.79	0.11
Reach 1	3750	50yr	1490.00	35.84	45.48		45.51	0.000104	1.41	1072.57	215.31	0.10
Reach 1	3750	100yr	1800.00	35.84	46.52		46.55	0.000087	1.44	1333.95	315.21	0.10
Reach 1	3750	200yr	2160.00	35.84	47.64		47.67	0.000074	1.46	1703.37	336.78	0.09

Proposal No. 609435-126585

HEC-RAS Plan: EX SS-UB River: River 1 Reach: Reach 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach 1	3750	500yr	2710.00	35.84	48.95		48.99	0.000066	1.53	2167.81	364.01	0.09
Reach 1	3725	2yr	400.00	35.84	42.52		42.53	0.000040	0.68	590.68	146.80	0.06
Reach 1	3725	5yr	658.00	35.84	43.02		43.04	0.000075	0.99	665.35	149.84	0.08
Reach 1	3725	10yr	873.00	35.84	43.36		43.39	0.000107	1.22	717.07	153.85	0.10
Reach 1	3725	25yr	1200.00	35.84	44.41		44.44	0.000123	1.35	892.06	183.27	0.11
Reach 1	3725	50yr	1490.00	35.84	45.48		45.51	0.000104	1.36	1102.96	216.69	0.10
Reach 1	3725	100yr	1800.00	35.84	46.52		46.55	0.000084	1.37	1406.96	335.33	0.09
Reach 1	3725	200yr	2160.00	35.84	47.64		47.67	0.000069	1.38	1794.97	354.95	0.09
Reach 1	3725	500yr	2710.00	35.84	48.95		48.98	0.000062	1.44	2271.01	369.44	0.08
Reach 1	3698	2yr	400.00	35.81	42.52		42.53	0.000039	0.66	608.01	153.98	0.06
Reach 1	3698	5yr	658.00	35.81	43.02		43.04	0.000073	0.96	687.14	158.84	0.08
Reach 1	3698	10yr	873.00	35.81	43.36		43.38	0.000104	1.18	742.18	164.74	0.10
Reach 1	3698	25yr	1200.00	35.81	44.41		44.44	0.000109	1.30	922.08	181.58	0.10
Reach 1	3698	50yr	1490.00	35.81	45.48		45.50	0.000090	1.33	1142.69	270.31	0.10
Reach 1	3698	100yr	1800.00	35.81	46.52		46.55	0.000076	1.35	1475.58	350.35	0.09
Reach 1	3698	200yr	2160.00	35.81	47.64		47.67	0.000064	1.37	1877.02	366.91	0.08
Reach 1	3698	500yr	2710.00	35.81	48.95		48.98	0.000057	1.44	2367.01	379.07	0.08
Reach 1	3682	2yr	400.00	35.81	42.52		42.52	0.000038	0.64	621.60	158.86	0.06
Reach 1	3682	5yr	658.00	35.81	43.02		43.04	0.000071	0.94	702.99	164.30	0.08
Reach 1	3682	10yr	873.00	35.81	43.36		43.38	0.000099	1.15	759.80	168.36	0.10
Reach 1	3682	25yr	1200.00	35.81	44.41		44.43	0.000095	1.28	942.09	182.41	0.10
Reach 1	3682	50yr	1490.00	35.81	45.48		45.50	0.000083	1.32	1173.10	281.51	0.09
Reach 1	3682	100yr	1800.00	35.81	46.52		46.55	0.000071	1.35	1517.42	355.58	0.09
Reach 1	3682	200yr	2160.00	35.81	47.64		47.67	0.000060	1.37	1927.39	374.29	0.08
Reach 1	3682	500yr	2710.00	35.81	48.95		48.98	0.000055	1.44	2426.61	385.39	0.08
Reach 1	3654	2yr	400.00	35.88	42.52		42.52	0.000036	0.63	632.82	161.74	0.06
Reach 1	3654	5yr	658.00	35.88	43.02		43.03	0.000068	0.92	715.59	166.20	0.08
Reach 1	3654	10yr	873.00	35.88	43.36		43.38	0.000093	1.13	772.18	167.40	0.09
Reach 1	3654	25yr	1200.00	35.88	44.41		44.43	0.000091	1.26	955.36	183.98	0.09
Reach 1	3654	50yr	1490.00	35.88	45.47		45.50	0.000081	1.30	1199.05	276.62	0.09
Reach 1	3654	100yr	1800.00	35.88	46.52		46.54	0.000069	1.33	1543.35	366.56	0.09
Reach 1	3654	200yr	2160.00	35.88	47.64		47.66	0.000059	1.35	1960.91	379.04	0.08
Reach 1	3654	500yr	2710.00	35.88	48.95		48.98	0.000054	1.42	2466.65	390.58	0.08
Reach 1	3628	2yr	400.00	35.94	42.52		42.52	0.000030	0.61	654.46	153.88	0.05
Reach 1	3628	5yr	658.00	35.94	43.02		43.03	0.000059	0.90	732.90	159.40	0.07
Reach 1	3628	10yr	873.00	35.94	43.36		43.38	0.000085	1.11	787.73	164.54	0.09
Reach 1	3628	25yr	1200.00	35.94	44.41		44.43	0.000090	1.24	968.38	211.12	0.09
Reach 1	3628	50yr	1490.00	35.94	45.47		45.50	0.000080	1.27	1241.06	309.49	0.09
Reach 1	3628	100yr	1800.00	35.94	46.52		46.54	0.000071	1.29	1621.14	391.87	0.09
Reach 1	3628	200yr	2160.00	35.94	47.64		47.66	0.000060	1.29	2066.51	402.15	0.08
Reach 1	3628	500yr	2710.00	35.94	48.95		48.98	0.000053	1.34	2602.21	413.63	0.08
Reach 1	3600	2yr	400.00	36.00	42.52		42.52	0.000028	0.59	678.93	157.27	0.05
Reach 1	3600	5yr	658.00	36.00	43.02		43.03	0.000053	0.87	758.74	160.73	0.07
Reach 1	3600	10yr	873.00	36.00	43.36		43.37	0.000076	1.07	813.49	162.81	0.08
Reach 1	3600	25yr	1200.00	36.00	44.40		44.43	0.000080	1.21	1003.89	234.16	0.09
Reach 1	3600	50yr	1490.00	36.00	45.47		45.50	0.000074	1.25	1294.65	309.00	0.09
Reach 1	3600	100yr	1800.00	36.00	46.52		46.54	0.000065	1.27	1656.40	407.44	0.08
Reach 1	3600	200yr	2160.00	36.00	47.64		47.66	0.000054	1.28	2123.74	422.48	0.08
Reach 1	3600	500yr	2710.00	36.00	48.95		48.98	0.000049	1.33	2685.70	432.79	0.08
Reach 1	3579	2yr	400.00	36.06	42.52		42.52	0.000025	0.57	705.06	162.37	0.05
Reach 1	3579	5yr	658.00	36.06	43.02		43.03	0.000049	0.84	787.38	165.63	0.07
Reach 1	3579	10yr	873.00	36.06	43.36		43.37	0.000069	1.03	844.87	185.46	0.08
Reach 1	3579	25yr	1200.00	36.06	44.40		44.42	0.000071	1.17	1084.11	265.11	0.08
Reach 1	3579	50yr	1490.00	36.06	45.47		45.49	0.000066	1.20	1404.84	338.80	0.08
Reach 1	3579	100yr	1800.00	36.06	46.52		46.54	0.000057	1.22	1779.16	386.18	0.08
Reach 1	3579	200yr	2160.00	36.06	47.64		47.66	0.000049	1.25	2243.53	443.75	0.07
Reach 1	3579	500yr	2710.00	36.06	48.95		48.97	0.000045	1.31	2837.94	457.25	0.07
Reach 1	3557	2yr	400.00	36.09	42.52		42.52	0.000021	0.54	743.97	163.11	0.04
Reach 1	3557	5yr	658.00	36.09	43.02		43.03	0.000042	0.80	826.92	174.08	0.06
Reach 1	3557	10yr	873.00	36.09	43.36		43.37	0.000060	0.99	890.70	202.36	0.08
Reach 1	3557	25yr	1200.00	36.09	44.40		44.42	0.000063	1.12	1149.40	270.35	0.08
Reach 1	3557	50yr	1490.00	36.09	45.47		45.49	0.000055	1.16	1478.94	350.59	0.08
Reach 1	3557	100yr	1800.00	36.09	46.51		46.54	0.000049	1.19	1866.58	398.58	0.07
Reach 1	3557	200yr	2160.00	36.09	47.64		47.66	0.000043	1.22	2334.79	430.16	0.07
Reach 1	3557	500yr	2710.00	36.09	48.95		48.97	0.000041	1.30	2932.83	469.20	0.07
Reach 1	3535	2yr	400.00	36.06	42.52		42.52	0.000017	0.49	820.33	206.97	0.04
Reach 1	3535	5yr	658.00	36.06	43.02		43.03	0.000033	0.73	927.99	219.35	0.06
Reach 1	3535	10yr	873.00	36.06	43.36		43.37	0.000048	0.91	1009.57	260.08	0.07
Reach 1	3535	25yr	1200.00	36.06	44.40		44.42	0.000051	1.03	1310.58	304.55	0.07
Reach 1	3535	50yr	1490.00	36.06	45.47		45.49	0.000046	1.08	1662.67	368.97	0.07

Proposal No. 609435-126585

HEC-RAS Plan: EX SS-UB River: River 1 Reach: Reach 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach 1	3535	100yr	1800.00	36.06	46.52		46.53	0.000041	1.11	2064.65	400.23	0.07
Reach 1	3535	200yr	2160.00	36.06	47.64		47.66	0.000036	1.14	2539.66	450.53	0.07
Reach 1	3535	500yr	2710.00	36.06	48.95		48.97	0.000035	1.22	3172.68	496.18	0.07
Reach 1	3512	2yr	400.00	35.91	42.52		42.52	0.000015	0.47	881.00	228.16	0.04
Reach 1	3512	5yr	658.00	35.91	43.02		43.03	0.000029	0.69	1006.19	274.16	0.05
Reach 1	3512	10yr	873.00	35.91	43.36		43.37	0.000042	0.86	1100.65	284.52	0.06
Reach 1	3512	25yr	1200.00	35.91	44.40		44.42	0.000044	0.98	1416.37	316.91	0.07
Reach 1	3512	50yr	1490.00	35.91	45.47		45.49	0.000040	1.02	1777.31	373.94	0.07
Reach 1	3512	100yr	1800.00	35.91	46.52		46.53	0.000036	1.05	2193.38	420.00	0.06
Reach 1	3512	200yr	2160.00	35.91	47.64		47.65	0.000033	1.09	2686.27	461.04	0.06
Reach 1	3512	500yr	2710.00	35.91	48.95		48.97	0.000032	1.17	3328.71	512.43	0.06
Reach 1	3494	2yr	400.00	36.36	42.52		42.52	0.000016	0.48	873.76	234.26	0.04
Reach 1	3494	5yr	658.00	36.36	43.02		43.02	0.000032	0.71	995.57	252.44	0.06
Reach 1	3494	10yr	873.00	36.36	43.35		43.37	0.000045	0.88	1086.10	279.64	0.07
Reach 1	3494	25yr	1200.00	36.36	44.40		44.42	0.000047	0.99	1399.97	320.01	0.07
Reach 1	3494	50yr	1490.00	36.36	45.47		45.49	0.000044	1.02	1773.41	376.48	0.07
Reach 1	3494	100yr	1800.00	36.36	46.52		46.53	0.000039	1.04	2208.88	444.97	0.07
Reach 1	3494	200yr	2160.00	36.36	47.64		47.65	0.000035	1.06	2726.47	481.07	0.06
Reach 1	3494	500yr	2710.00	36.36	48.95		48.97	0.000033	1.12	3408.57	529.40	0.06
Reach 1	3479	2yr	400.00	36.75	42.51		42.52	0.000018	0.49	856.65	232.88	0.04
Reach 1	3479	5yr	658.00	36.75	43.02		43.02	0.000034	0.72	978.75	256.68	0.06
Reach 1	3479	10yr	873.00	36.75	43.35		43.37	0.000049	0.89	1067.92	272.36	0.07
Reach 1	3479	25yr	1200.00	36.75	44.40		44.42	0.000050	1.00	1381.43	316.18	0.07
Reach 1	3479	50yr	1490.00	36.75	45.47		45.49	0.000047	1.03	1750.14	376.05	0.07
Reach 1	3479	100yr	1800.00	36.75	46.52		46.53	0.000042	1.05	2192.04	456.93	0.07
Reach 1	3479	200yr	2160.00	36.75	47.64		47.65	0.000036	1.06	2736.59	514.27	0.06
Reach 1	3479	500yr	2710.00	36.75	48.95		48.97	0.000035	1.11	3442.16	546.61	0.06
Reach 1	3468	2yr	400.00	36.75	42.51		42.52	0.000019	0.50	842.68	239.64	0.04
Reach 1	3468	5yr	658.00	36.75	43.02		43.02	0.000037	0.73	969.26	261.76	0.06
Reach 1	3468	10yr	873.00	36.75	43.35		43.37	0.000052	0.90	1059.37	271.36	0.07
Reach 1	3468	25yr	1200.00	36.75	44.40		44.42	0.000052	1.00	1366.19	314.07	0.07
Reach 1	3468	50yr	1490.00	36.75	45.47		45.49	0.000047	1.03	1742.17	387.04	0.07
Reach 1	3468	100yr	1800.00	36.75	46.51		46.53	0.000042	1.05	2192.72	470.02	0.07
Reach 1	3468	200yr	2160.00	36.75	47.64		47.65	0.000038	1.07	2771.13	549.74	0.06
Reach 1	3468	500yr	2710.00	36.75	48.95		48.97	0.000034	1.10	3503.17	561.47	0.06
Reach 1	3460	2yr	400.00	36.72	42.51		42.52	0.000024	0.52	822.09	256.94	0.05
Reach 1	3460	5yr	658.00	36.72	43.01		43.02	0.000043	0.75	955.59	279.04	0.06
Reach 1	3460	10yr	873.00	36.72	43.35		43.36	0.000060	0.92	1051.19	292.18	0.07
Reach 1	3460	25yr	1200.00	36.72	44.40		44.42	0.000057	1.01	1375.68	334.45	0.07
Reach 1	3460	50yr	1490.00	36.72	45.47		45.49	0.000050	1.03	1768.19	392.76	0.07
Reach 1	3460	100yr	1800.00	36.72	46.51		46.53	0.000043	1.04	2231.31	490.28	0.07
Reach 1	3460	200yr	2160.00	36.72	47.64		47.65	0.000037	1.05	2838.04	564.59	0.06
Reach 1	3460	500yr	2710.00	36.72	48.95		48.97	0.000033	1.09	3585.91	571.75	0.06
Reach 1	3425	2yr	400.00	36.66	42.51		42.52	0.000056	0.66	662.17	263.19	0.07
Reach 1	3425	5yr	658.00	36.66	43.01		43.02	0.000092	0.92	799.12	285.84	0.09
Reach 1	3425	10yr	873.00	36.66	43.34		43.36	0.000122	1.11	900.08	314.07	0.10
Reach 1	3425	25yr	1200.00	36.66	44.39		44.41	0.000097	1.15	1251.62	363.45	0.09
Reach 1	3425	50yr	1490.00	36.66	45.46		45.48	0.000073	1.13	1664.10	395.86	0.08
Reach 1	3425	100yr	1800.00	36.66	46.51		46.53	0.000060	1.12	2122.81	507.18	0.08
Reach 1	3425	200yr	2160.00	36.66	47.63		47.65	0.000049	1.12	2747.62	572.11	0.07
Reach 1	3425	500yr	2710.00	36.66	48.95		48.97	0.000041	1.13	3505.86	579.29	0.07
Reach 1	3401	2yr	400.00	37.00	42.50		42.51	0.000086	0.89	526.13	240.92	0.08
Reach 1	3401	5yr	658.00	37.00	42.99		43.02	0.000144	1.25	655.13	280.19	0.11
Reach 1	3401	10yr	873.00	37.00	43.32		43.36	0.000188	1.50	750.34	296.95	0.13
Reach 1	3401	25yr	1200.00	37.00	44.38		44.41	0.000154	1.56	1091.92	352.55	0.12
Reach 1	3401	50yr	1490.00	37.00	45.45		45.48	0.000114	1.51	1489.38	386.56	0.11
Reach 1	3401	100yr	1800.00	37.00	46.50		46.53	0.000096	1.51	1944.63	523.75	0.10
Reach 1	3401	200yr	2160.00	37.00	47.62		47.65	0.000075	1.47	2579.81	575.16	0.09
Reach 1	3401	500yr	2710.00	37.00	48.94		48.96	0.000062	1.46	3342.75	582.17	0.08
Reach 1	3396	2yr	400.00	36.49	42.49		42.51	0.000303	1.33	371.91	210.24	0.15
Reach 1	3396	5yr	658.00	36.49	42.97		43.01	0.000440	1.76	476.69	222.14	0.19
Reach 1	3396	10yr	873.00	36.49	43.29		43.35	0.000539	2.05	551.84	244.19	0.21
Reach 1	3396	25yr	1200.00	36.49	44.35		44.41	0.000363	1.98	856.30	326.30	0.18
Reach 1	3396	50yr	1490.00	36.49	45.44		45.48	0.000228	1.81	1239.40	369.74	0.15
Reach 1	3396	100yr	1800.00	36.49	46.49		46.52	0.000162	1.73	1669.46	492.72	0.13
Reach 1	3396	200yr	2160.00	36.49	47.61		47.65	0.000120	1.66	2306.82	579.68	0.11
Reach 1	3396	500yr	2710.00	36.49	48.94		48.96	0.000089	1.59	3075.85	586.38	0.10
Reach 1	3390	2yr	400.00	38.30	42.39		42.50	0.001546	2.95	209.58	152.77	0.34
Reach 1	3390	5yr	658.00	38.30	42.82		43.00	0.002245	3.80	279.17	173.97	0.41
Reach 1	3390	10yr	873.00	38.30	43.10		43.33	0.002794	4.37	332.13	196.49	0.46

Proposal No. 609435-126585

HEC-RAS Plan: EX SS-UB River: River 1 Reach: Reach 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach 1	3390	25yr	1200.00	38.30	44.25		44.39	0.001289	3.66	599.38	260.32	0.33
Reach 1	3390	50yr	1490.00	38.30	45.36		45.47	0.000761	3.29	937.83	362.38	0.26
Reach 1	3390	100yr	1800.00	38.30	46.45		46.52	0.000459	2.88	1349.89	453.95	0.21
Reach 1	3390	200yr	2160.00	38.30	47.58		47.64	0.000324	2.68	1994.39	598.33	0.18
Reach 1	3390	500yr	2710.00	38.30	48.92		48.96	0.000202	2.34	2800.26	604.86	0.14
Reach 1	3385	2yr	400.00	38.09	42.33	41.23	42.49	0.002381	3.62	193.56	153.05	0.41
Reach 1	3385	5yr	658.00	38.09	42.74	41.96	42.98	0.003372	4.59	260.27	166.26	0.50
Reach 1	3385	10yr	873.00	38.09	43.02	42.42	43.31	0.003978	5.20	307.07	172.01	0.55
Reach 1	3385	25yr	1200.00	38.09	44.22	42.77	44.38	0.001822	4.16	536.16	206.52	0.38
Reach 1	3385	50yr	1490.00	38.09	45.35	43.02	45.46	0.001065	3.55	787.28	249.56	0.30
Reach 1	3385	100yr	1800.00	38.09	46.42	43.18	46.51	0.000715	3.32	1129.52	404.93	0.25
Reach 1	3385	200yr	2160.00	38.09	47.56	43.58	47.64	0.000523	3.18	1751.68	602.19	0.22
Reach 1	3385	500yr	2710.00	38.09	48.92	43.91	48.96	0.000289	2.58	2573.25	608.84	0.16
Reach 1	3381	Weir										
			Inl Struct									
Reach 1	3377	2yr	400.00	36.66	40.39	40.39	41.45	0.003043	8.27	53.05	37.86	0.98
Reach 1	3377	5yr	658.00	36.66	41.34	41.34	42.58	0.002792	9.13	105.21	77.40	0.92
Reach 1	3377	10yr	873.00	36.66	42.18	42.18	43.23	0.002141	8.72	211.74	151.77	0.79
Reach 1	3377	25yr	1200.00	36.66	43.91	42.83	44.34	0.000889	6.35	515.32	187.67	0.49
Reach 1	3377	50yr	1490.00	36.66	45.14		45.44	0.000567	5.54	757.24	206.24	0.40
Reach 1	3377	100yr	1800.00	36.66	46.25		46.50	0.000447	5.23	1013.00	271.76	0.37
Reach 1	3377	200yr	2160.00	36.66	47.32		47.63	0.000460	5.66	1486.84	598.65	0.40
Reach 1	3377	500yr	2710.00	36.66	48.78		48.94	0.000233	4.63	2365.79	607.45	0.29
Reach 1	3376	2yr	400.00	36.66	40.10	39.36	40.67	0.001187	6.08	65.84	23.90	0.65
Reach 1	3376	5yr	658.00	36.66	41.24	40.22	41.99	0.001158	6.93	94.98	26.57	0.65
Reach 1	3376	10yr	873.00	36.66	42.03	40.86	42.91	0.001100	7.53	115.89	26.73	0.64
Reach 1	3376	25yr	1200.00	36.66	43.06	41.66	44.15	0.001076	8.35	143.66	26.95	0.64
Reach 1	3376	50yr	1490.00	36.66	43.91	42.28	45.15	0.001062	8.95	166.50	27.12	0.64
Reach 1	3376	100yr	1800.00	36.66	44.75	42.90	46.15	0.001053	9.50	189.44	27.29	0.64
Reach 1	3376	200yr	2160.00	36.66	45.67	43.58	47.25	0.001046	10.06	214.78	27.48	0.63
Reach 1	3376	500yr	2710.00	36.66	46.10	44.55	48.33	0.001406	11.96	226.64	27.57	0.74
Reach 1	3364	Bridge										
			Bridge									
Reach 1	3347	2yr	400.00	35.56	37.88	37.88	38.81	0.020156	7.73	51.74	27.82	1.00
Reach 1	3347	5yr	658.00	35.56	38.70	38.70	39.85	0.018897	8.62	76.35	33.15	1.00
Reach 1	3347	10yr	873.00	35.56	39.21	39.21	40.55	0.018062	9.30	93.88	34.87	1.00
Reach 1	3347	25yr	1200.00	35.56	40.22	39.87	41.54	0.012653	9.22	130.20	36.82	0.86
Reach 1	3347	50yr	1490.00	35.56	40.77	40.40	42.29	0.012585	9.90	150.54	37.64	0.87
Reach 1	3347	100yr	1800.00	35.56	40.92	40.92	42.98	0.016453	11.53	156.17	37.87	1.00
Reach 1	3347	200yr	2160.00	35.56	41.51	41.51	43.78	0.016120	12.07	178.92	39.51	1.00
Reach 1	3347	500yr	2710.00	35.56	42.33	42.33	44.86	0.015711	12.74	212.65	42.07	1.00
Reach 1	3345	2yr	400.00	35.46	37.82	37.82	38.72	0.020423	7.65	52.29	29.05	1.01
Reach 1	3345	5yr	658.00	35.46	38.57	38.57	39.74	0.018977	8.69	75.74	32.69	1.01
Reach 1	3345	10yr	873.00	35.46	39.08	39.08	40.46	0.018264	9.41	92.80	34.20	1.01
Reach 1	3345	25yr	1200.00	35.46	39.78	39.78	41.41	0.017250	10.24	117.13	35.95	1.00
Reach 1	3345	50yr	1490.00	35.46	40.33	40.33	42.16	0.016713	10.85	137.33	37.50	1.00
Reach 1	3345	100yr	1800.00	35.46	40.90	40.90	42.87	0.016336	11.28	159.53	40.37	1.00
Reach 1	3345	200yr	2160.00	35.46	41.49	41.49	43.62	0.015975	11.73	184.21	43.26	1.00
Reach 1	3345	500yr	2710.00	35.46	42.30	42.30	44.64	0.015530	12.25	221.23	47.67	1.00
Reach 1	3333	2yr	400.00	35.20	37.54	37.54	38.13	0.010952	6.69	92.35	82.23	0.86
Reach 1	3333	5yr	658.00	35.20	38.03	38.03	38.78	0.012014	7.90	133.29	85.31	0.92
Reach 1	3333	10yr	873.00	35.20	38.36	38.36	39.24	0.012826	8.73	161.20	87.28	0.97
Reach 1	3333	25yr	1200.00	35.20	38.79	38.79	39.84	0.013537	9.70	199.72	89.95	1.02
Reach 1	3333	50yr	1490.00	35.20	39.15	39.15	40.32	0.013762	10.35	232.08	92.18	1.04
Reach 1	3333	100yr	1800.00	35.20	39.48	39.48	40.78	0.014059	10.98	263.52	94.28	1.06
Reach 1	3333	200yr	2160.00	35.20	39.83	39.83	41.28	0.014446	11.66	296.92	96.44	1.09
Reach 1	3333	500yr	2710.00	35.20	40.36	40.36	41.96	0.014497	12.40	348.14	99.84	1.11
Reach 1	3322	2yr	400.00	34.68	36.84	36.84	37.28	0.012230	6.56	119.83	121.21	0.88
Reach 1	3322	5yr	658.00	34.68	37.20	37.20	37.79	0.014266	7.90	163.73	122.84	0.98
Reach 1	3322	10yr	873.00	34.68	37.48	37.48	38.14	0.014589	8.53	199.06	124.63	1.00
Reach 1	3322	25yr	1200.00	34.68	37.74	37.74	38.60	0.018178	9.95	231.08	127.77	1.13
Reach 1	3322	50yr	1490.00	34.68	38.01	38.01	38.99	0.018252	10.72	266.29	129.07	1.16
Reach 1	3322	100yr	1800.00	34.68	38.29	38.29	39.38	0.018074	11.39	302.70	131.61	1.17
Reach 1	3322	200yr	2160.00	34.68	38.56	38.56	39.80	0.018530	12.23	338.65	133.50	1.20
Reach 1	3322	500yr	2710.00	34.68	38.97	38.97	40.39	0.018440	13.22	394.16	136.80	1.22
Reach 1	3309	2yr	400.00	34.12	36.13		36.29	0.008665	4.03	147.19	166.78	0.70
Reach 1	3309	5yr	658.00	34.12	36.40		36.70	0.012253	5.56	193.86	176.67	0.86
Reach 1	3309	10yr	873.00	34.12	36.61		37.01	0.013644	6.45	232.84	186.61	0.93
Reach 1	3309	25yr	1200.00	34.12	36.92	36.58	37.43	0.014209	7.37	291.76	205.87	0.98
Reach 1	3309	50yr	1490.00	34.12	37.17	36.87	37.76	0.013749	7.93	346.46	222.89	0.98
Reach 1	3309	100yr	1800.00	34.12	37.42	37.16	38.08	0.013270	8.42	405.07	240.45	0.98

Proposal No. 609435-126585

HEC-RAS Plan: EX SS-UB River: River 1 Reach: Reach 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach 1	3309	200yr	2160.00	34.12	37.73	37.48	38.40	0.011709	8.60	479.73	247.39	0.94
Reach 1	3309	500yr	2710.00	34.12	38.14		38.84	0.010276	8.90	583.91	251.95	0.91
Reach 1	3299	2yr	400.00	34.21	36.11		36.20	0.004825	3.21	225.66	221.37	0.53
Reach 1	3299	5yr	658.00	34.21	36.43		36.56	0.005456	3.99	296.55	223.44	0.58
Reach 1	3299	10yr	873.00	34.21	36.69		36.85	0.005402	4.40	356.34	234.24	0.60
Reach 1	3299	25yr	1200.00	34.21	37.05		37.25	0.005192	4.91	442.10	242.83	0.60
Reach 1	3299	50yr	1490.00	34.21	37.33		37.57	0.005070	5.29	511.77	247.12	0.61
Reach 1	3299	100yr	1800.00	34.21	37.61		37.88	0.004972	5.65	581.43	251.08	0.62
Reach 1	3299	200yr	2160.00	34.21	37.90		38.20	0.004929	6.03	655.26	253.19	0.62
Reach 1	3299	500yr	2710.00	34.21	38.31		38.66	0.004906	6.57	757.99	254.67	0.64
Reach 1	3289	2yr	400.00	33.94	35.77	35.77	36.09	0.015238	5.34	133.14	211.55	0.92
Reach 1	3289	5yr	658.00	33.94	36.15		36.47	0.011080	5.57	215.01	216.10	0.83
Reach 1	3289	10yr	873.00	33.94	36.47		36.77	0.008710	5.61	285.28	232.52	0.76
Reach 1	3289	25yr	1200.00	33.94	36.85		37.18	0.007397	5.92	376.77	243.08	0.72
Reach 1	3289	50yr	1490.00	33.94	37.15		37.50	0.006819	6.21	449.47	249.29	0.71
Reach 1	3289	100yr	1800.00	33.94	37.43		37.81	0.006406	6.50	522.22	254.27	0.70
Reach 1	3289	200yr	2160.00	33.94	37.74		38.14	0.006092	6.80	599.10	256.66	0.70
Reach 1	3289	500yr	2710.00	33.94	38.15		38.60	0.005827	7.26	704.89	257.17	0.70
Reach 1	3279	2yr	400.00	34.14	35.82		35.88	0.003947	2.82	246.55	213.18	0.48
Reach 1	3279	5yr	658.00	34.14	36.25		36.34	0.003707	3.38	340.35	226.37	0.49
Reach 1	3279	10yr	873.00	34.14	36.54		36.66	0.003684	3.79	409.49	240.64	0.50
Reach 1	3279	25yr	1200.00	34.14	36.92		37.07	0.003710	4.32	502.24	248.13	0.52
Reach 1	3279	50yr	1490.00	34.14	37.22		37.39	0.003753	4.73	575.70	251.65	0.53
Reach 1	3279	100yr	1800.00	34.14	37.50		37.71	0.003790	5.11	648.40	254.91	0.54
Reach 1	3279	200yr	2160.00	34.14	37.80		38.04	0.003858	5.53	725.15	258.27	0.56
Reach 1	3279	500yr	2710.00	34.14	38.21		38.50	0.003950	6.08	832.32	262.14	0.58
Reach 1	3264	2yr	400.00	33.37	35.79		35.83	0.002131	2.35	299.55	228.51	0.36
Reach 1	3264	5yr	658.00	33.37	36.22		36.29	0.002332	2.96	402.00	237.17	0.39
Reach 1	3264	10yr	873.00	33.37	36.52		36.60	0.002493	3.40	472.20	241.09	0.42
Reach 1	3264	25yr	1200.00	33.37	36.90		37.01	0.002702	3.96	564.63	246.01	0.45
Reach 1	3264	50yr	1490.00	33.37	37.19		37.33	0.002856	4.40	637.46	249.76	0.47
Reach 1	3264	100yr	1800.00	33.37	37.48		37.65	0.002989	4.81	709.66	253.56	0.49
Reach 1	3264	200yr	2160.00	33.37	37.78		37.98	0.003138	5.25	785.92	257.37	0.51
Reach 1	3264	500yr	2710.00	33.37	38.19		38.44	0.003294	5.82	892.56	259.43	0.53
Reach 1	3226	2yr	400.00	32.70	35.72		35.77	0.001271	2.41	331.25	205.44	0.30
Reach 1	3226	5yr	658.00	32.70	36.14		36.21	0.001723	3.07	418.25	210.19	0.35
Reach 1	3226	10yr	873.00	32.70	36.42		36.52	0.002021	3.59	477.72	215.27	0.39
Reach 1	3226	25yr	1200.00	32.70	36.78		36.92	0.002408	4.26	556.58	225.69	0.43
Reach 1	3226	50yr	1490.00	32.70	37.06		37.23	0.002697	4.78	620.50	235.34	0.47
Reach 1	3226	100yr	1800.00	32.70	37.33		37.53	0.002973	5.29	685.86	252.46	0.50
Reach 1	3226	200yr	2160.00	32.70	37.61		37.85	0.003229	5.81	758.88	263.10	0.52
Reach 1	3226	500yr	2710.00	32.70	38.01		38.30	0.003494	6.45	864.51	273.14	0.55
Reach 1	3201	2yr	400.00	32.66	35.67		35.73	0.001464	2.99	322.02	225.52	0.33
Reach 1	3201	5yr	658.00	32.66	36.06		36.17	0.001997	3.85	417.01	249.08	0.39
Reach 1	3201	10yr	873.00	32.66	36.33		36.46	0.002365	4.44	485.26	258.45	0.44
Reach 1	3201	25yr	1200.00	32.66	36.68		36.85	0.002754	5.13	577.44	265.02	0.48
Reach 1	3201	50yr	1490.00	32.66	36.96		37.15	0.003029	5.65	651.08	270.50	0.51
Reach 1	3201	100yr	1800.00	32.66	37.23		37.45	0.003256	6.13	725.17	275.90	0.53
Reach 1	3201	200yr	2160.00	32.66	37.51		37.77	0.003502	6.65	803.97	282.20	0.56
Reach 1	3201	500yr	2710.00	32.66	37.91		38.21	0.003768	7.30	917.24	289.52	0.59
Reach 1	3177	2yr	400.00	32.54	35.62		35.69	0.002382	2.70	274.96	241.96	0.39
Reach 1	3177	5yr	658.00	32.54	36.01		36.11	0.002782	3.32	373.21	257.42	0.43
Reach 1	3177	10yr	873.00	32.54	36.28		36.39	0.003023	3.72	442.15	262.33	0.46
Reach 1	3177	25yr	1200.00	32.54	36.63		36.77	0.003302	4.22	534.73	269.80	0.49
Reach 1	3177	50yr	1490.00	32.54	36.90		37.07	0.003482	4.59	609.13	275.61	0.51
Reach 1	3177	100yr	1800.00	32.54	37.17		37.36	0.003612	4.93	684.07	281.17	0.53
Reach 1	3177	200yr	2160.00	32.54	37.45		37.67	0.003749	5.28	764.23	286.86	0.54
Reach 1	3177	500yr	2710.00	32.54	37.85		38.11	0.003814	5.77	881.07	305.46	0.56
Reach 1	3154	2yr	400.00	32.72	35.58		35.63	0.001969	2.42	302.18	243.54	0.35
Reach 1	3154	5yr	658.00	32.72	35.97		36.04	0.002417	3.06	396.29	250.06	0.40
Reach 1	3154	10yr	873.00	32.72	36.23		36.32	0.002712	3.50	461.63	254.94	0.43
Reach 1	3154	25yr	1200.00	32.72	36.56		36.69	0.003073	4.06	549.34	262.22	0.47
Reach 1	3154	50yr	1490.00	32.72	36.83		36.99	0.003320	4.47	620.03	268.14	0.50
Reach 1	3154	100yr	1800.00	32.72	37.10		37.28	0.003505	4.84	691.68	273.59	0.52
Reach 1	3154	200yr	2160.00	32.72	37.37		37.58	0.003671	5.21	768.27	277.76	0.54
Reach 1	3154	500yr	2710.00	32.72	37.77		38.01	0.003872	5.70	878.80	285.77	0.56
Reach 1	3129	2yr	400.00	32.91	35.54		35.58	0.001948	2.32	305.49	252.68	0.35
Reach 1	3129	5yr	658.00	32.91	35.91		35.98	0.002334	2.92	400.24	257.30	0.39
Reach 1	3129	10yr	873.00	32.91	36.16		36.26	0.002590	3.34	465.58	260.58	0.42
Reach 1	3129	25yr	1200.00	32.91	36.49		36.62	0.002935	3.89	553.01	268.51	0.46

Proposal No. 609435-126585

HEC-RAS Plan: EX SS-UB River: River 1 Reach: Reach 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach 1	3129	50yr	1490.00	32.91	36.75		36.91	0.003143	4.28	623.76	273.77	0.48
Reach 1	3129	100yr	1800.00	32.91	37.01		37.19	0.003411	4.71	694.31	285.00	0.51
Reach 1	3129	200yr	2160.00	32.91	37.28		37.49	0.003606	5.11	772.43	293.59	0.53
Reach 1	3129	500yr	2710.00	32.91	37.66		37.92	0.003773	5.60	888.43	304.97	0.55
Reach 1	3116	2yr	400.00	33.02	35.49		35.55	0.002678	2.69	274.83	254.81	0.41
Reach 1	3116	5yr	658.00	33.02	35.85		35.95	0.003005	3.29	368.66	261.07	0.45
Reach 1	3116	10yr	873.00	33.02	36.10		36.22	0.003240	3.70	433.70	265.50	0.47
Reach 1	3116	25yr	1200.00	33.02	36.42		36.57	0.003557	4.25	520.64	274.08	0.51
Reach 1	3116	50yr	1490.00	33.02	36.68		36.86	0.003741	4.63	591.88	280.75	0.53
Reach 1	3116	100yr	1800.00	33.02	36.93		37.14	0.003997	5.05	663.29	294.80	0.55
Reach 1	3116	200yr	2160.00	33.02	37.20		37.44	0.004081	5.39	744.52	301.01	0.56
Reach 1	3116	500yr	2710.00	33.02	37.59		37.87	0.004113	5.80	864.96	309.58	0.58
Reach 1	3099	2yr	400.00	33.13	35.43		35.50	0.002891	2.86	272.98	269.56	0.42
Reach 1	3099	5yr	658.00	33.13	35.79		35.89	0.003183	3.45	371.11	275.12	0.46
Reach 1	3099	10yr	873.00	33.13	36.03		36.16	0.003393	3.84	438.85	278.68	0.48
Reach 1	3099	25yr	1200.00	33.13	36.36		36.51	0.003654	4.36	529.63	292.45	0.51
Reach 1	3099	50yr	1490.00	33.13	36.60		36.79	0.003974	4.82	604.04	304.29	0.54
Reach 1	3099	100yr	1800.00	33.13	36.86		37.07	0.004093	5.16	681.95	311.48	0.56
Reach 1	3099	200yr	2160.00	33.13	37.13		37.36	0.004107	5.44	768.54	315.18	0.57
Reach 1	3099	500yr	2710.00	33.13	37.53		37.79	0.004072	5.76	895.79	320.77	0.57
Reach 1	3081	2yr	400.00	33.34	35.32		35.44	0.004444	3.48	229.04	274.59	0.52
Reach 1	3081	5yr	658.00	33.34	35.68		35.82	0.004524	4.03	330.02	290.03	0.55
Reach 1	3081	10yr	873.00	33.34	35.92		36.09	0.004571	4.39	401.76	296.68	0.56
Reach 1	3081	25yr	1200.00	33.34	36.24		36.44	0.004579	4.82	499.07	301.79	0.57
Reach 1	3081	50yr	1490.00	33.34	36.50		36.72	0.004587	5.14	577.26	308.27	0.58
Reach 1	3081	100yr	1800.00	33.34	36.75		36.99	0.004614	5.45	656.37	317.93	0.59
Reach 1	3081	200yr	2160.00	33.34	37.02		37.29	0.004693	5.79	743.36	325.74	0.61
Reach 1	3081	500yr	2710.00	33.34	37.43		37.71	0.004473	6.07	876.93	335.17	0.60
Reach 1	3068	2yr	400.00	33.41	35.27	34.83	35.38	0.004005	3.28	243.88	301.53	0.50
Reach 1	3068	5yr	658.00	33.41	35.63	35.11	35.76	0.004000	3.78	355.03	312.16	0.51
Reach 1	3068	10yr	873.00	33.41	35.88	35.32	36.02	0.004001	4.09	432.63	315.54	0.52
Reach 1	3068	25yr	1200.00	33.41	36.21	35.54	36.37	0.004004	4.49	536.62	319.49	0.54
Reach 1	3068	50yr	1490.00	33.41	36.47	35.73	36.65	0.004002	4.79	619.74	321.97	0.54
Reach 1	3068	100yr	1800.00	33.41	36.72	35.87	36.92	0.004000	5.07	702.24	324.98	0.55
Reach 1	3068	200yr	2160.00	33.41	37.00	36.03	37.21	0.004003	5.35	792.44	335.67	0.56
Reach 1	3068	500yr	2710.00	33.41	37.40	36.26	37.65	0.004001	5.77	930.29	354.94	0.57

Proposal No. 609435-126585

HEC-RAS Plan: EX No-Rise River: River 1 Reach: Reach 1 Profile: 100-yr

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach 1	3987	100-yr	705.00	36.81	43.14		43.18	0.000281	1.55	456.07	141.53	0.15
Reach 1	3944	100-yr	705.00	36.63	43.13		43.16	0.000261	1.55	453.78	132.13	0.15
Reach 1	3906	100-yr	705.00	36.44	43.12		43.15	0.000250	1.57	449.61	124.85	0.15
Reach 1	3863	100-yr	705.00	36.22	43.10		43.14	0.000243	1.59	443.08	117.73	0.14
Reach 1	3841	100-yr	705.00	36.10	43.10		43.14	0.000209	1.49	472.52	123.65	0.13
Reach 1	3824	100-yr	705.00	36.03	43.10		43.13	0.000178	1.39	505.75	130.24	0.12
Reach 1	3806	100-yr	705.00	35.94	43.10		43.13	0.000143	1.28	550.85	136.57	0.11
Reach 1	3775	100-yr	705.00	35.85	43.10		43.12	0.000102	1.11	635.80	152.22	0.10
Reach 1	3750	100-yr	705.00	35.84	43.10		43.12	0.000090	1.08	655.48	149.64	0.09
Reach 1	3725	100-yr	705.00	35.84	43.10		43.12	0.000082	1.04	676.91	150.75	0.09
Reach 1	3698	100-yr	705.00	35.81	43.10		43.12	0.000080	1.01	699.45	160.69	0.09
Reach 1	3682	100-yr	705.00	35.81	43.10		43.11	0.000077	0.99	715.64	165.63	0.08
Reach 1	3654	100-yr	705.00	35.88	43.10		43.11	0.000073	0.97	728.33	166.46	0.08
Reach 1	3628	100-yr	705.00	35.94	43.10		43.11	0.000065	0.95	745.13	160.37	0.08
Reach 1	3600	100-yr	705.00	36.00	43.09		43.11	0.000058	0.91	771.04	161.26	0.07
Reach 1	3579	100-yr	705.00	36.06	43.09		43.11	0.000053	0.88	800.04	165.89	0.07
Reach 1	3557	100-yr	705.00	36.09	43.09		43.10	0.000046	0.84	840.50	181.82	0.07
Reach 1	3535	100-yr	705.00	36.06	43.09		43.10	0.000036	0.77	945.06	230.00	0.06
Reach 1	3512	100-yr	705.00	35.91	43.09		43.10	0.000032	0.73	1027.19	275.62	0.06
Reach 1	3494	100-yr	705.00	36.36	43.09		43.10	0.000035	0.74	1015.00	260.15	0.06
Reach 1	3479	100-yr	705.00	36.75	43.09		43.10	0.000038	0.76	998.48	260.21	0.06
Reach 1	3468	100-yr	705.00	36.75	43.09		43.10	0.000040	0.77	989.31	264.74	0.06
Reach 1	3460	100-yr	705.00	36.72	43.09		43.10	0.000047	0.79	976.92	281.08	0.07
Reach 1	3425	100-yr	705.00	36.66	43.08		43.10	0.000100	0.97	821.13	295.09	0.09
Reach 1	3401	100-yr	705.00	37.00	43.07		43.09	0.000154	1.31	676.12	283.66	0.12
Reach 1	3396	100-yr	705.00	36.49	43.04		43.09	0.000463	1.83	492.99	224.91	0.19
Reach 1	3390	100-yr	705.00	38.30	42.88		43.07	0.002362	3.94	290.39	177.32	0.42
Reach 1	3385	100-yr	705.00	38.09	42.81	41.92	43.05	0.003521	4.73	270.96	167.59	0.51
Reach 1	3381 Weir		Inl Struct									
Reach 1	3377	100-yr	705.00	36.66	41.52	41.52	42.77	0.002710	9.19	122.23	113.01	0.90
Reach 1	3376	100-yr	705.00	36.66	41.42	40.39	42.20	0.001142	7.07	99.73	26.61	0.64
Reach 1	3364 Bridge		Bridge									
Reach 1	3347	100-yr	705.00	35.56	38.83	38.83	40.01	0.018635	8.74	80.71	33.96	1.00
Reach 1	3345	100-yr	705.00	35.46	38.70	38.70	39.91	0.018551	8.82	79.95	33.09	1.00
Reach 1	3333	100-yr	705.00	35.20	38.81		39.17	0.004551	5.65	201.64	90.09	0.59
Reach 1	3322	100-yr	705.00	34.68	38.97		39.07	0.001252	3.44	393.69	136.76	0.32
Reach 1	3309	100-yr	705.00	34.12	39.01		39.04	0.000262	1.68	804.23	254.57	0.15
Reach 1	3299	100-yr	705.00	34.21	39.02		39.03	0.000168	1.38	939.65	257.23	0.12
Reach 1	3289	100-yr	705.00	33.94	39.01		39.03	0.000167	1.43	928.97	260.23	0.12
Reach 1	3279	100-yr	705.00	34.14	39.02		39.03	0.000132	1.28	1045.06	269.36	0.11
Reach 1	3264	100-yr	705.00	33.37	39.02		39.03	0.000111	1.22	1108.18	264.59	0.10
Reach 1	3226	100-yr	705.00	32.70	39.01		39.02	0.000106	1.29	1162.34	309.54	0.10
Reach 1	3201	100-yr	705.00	32.66	39.01		39.02	0.000105	1.40	1255.98	316.60	0.10
Reach 1	3177	100-yr	705.00	32.54	39.01		39.02	0.000094	1.11	1246.76	327.14	0.09
Reach 1	3154	100-yr	705.00	32.72	39.01		39.01	0.000092	1.08	1270.59	330.23	0.09
Reach 1	3129	100-yr	705.00	32.91	39.00		39.01	0.000077	1.01	1321.13	342.12	0.08
Reach 1	3116	100-yr	705.00	33.02	39.00		39.01	0.000077	1.01	1327.81	352.71	0.08
Reach 1	3099	100-yr	705.00	33.13	39.00		39.01	0.000073	1.00	1396.59	377.95	0.08
Reach 1	3081	100-yr	705.00	33.34	39.00		39.01	0.000076	1.04	1439.40	407.69	0.08
Reach 1	3068	100-yr	705.00	33.41	39.00	35.16	39.01	0.000065	0.97	1531.08	413.71	0.08

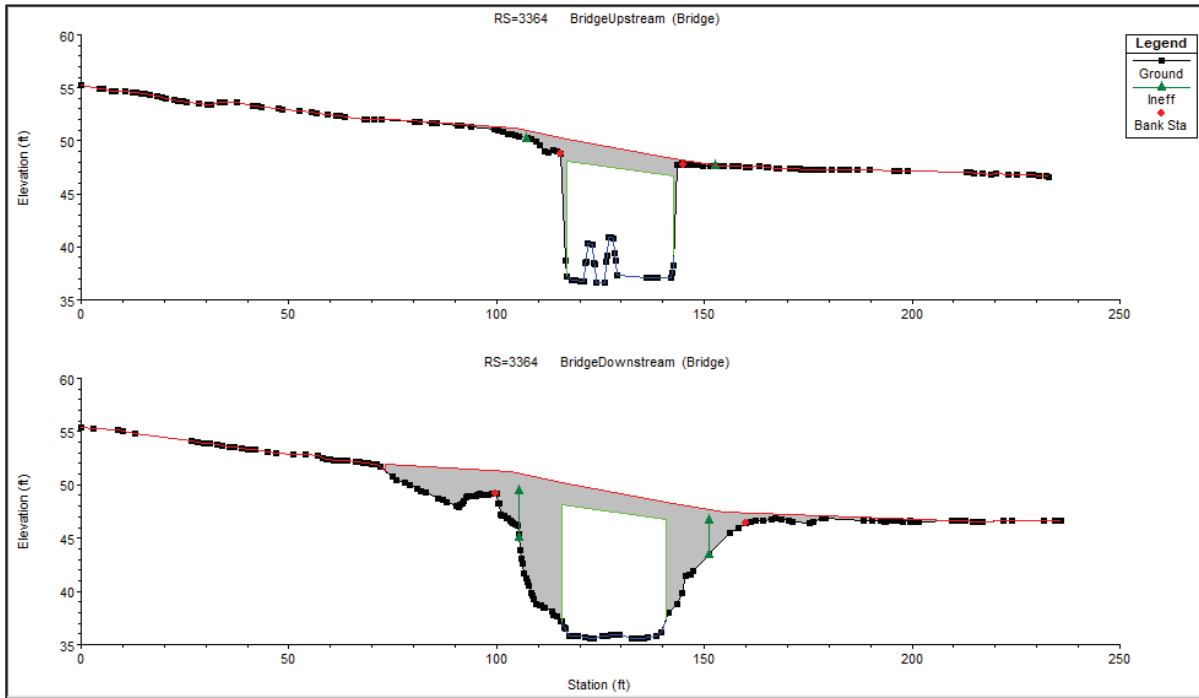


Figure 2a: Proposed Condition Bridge

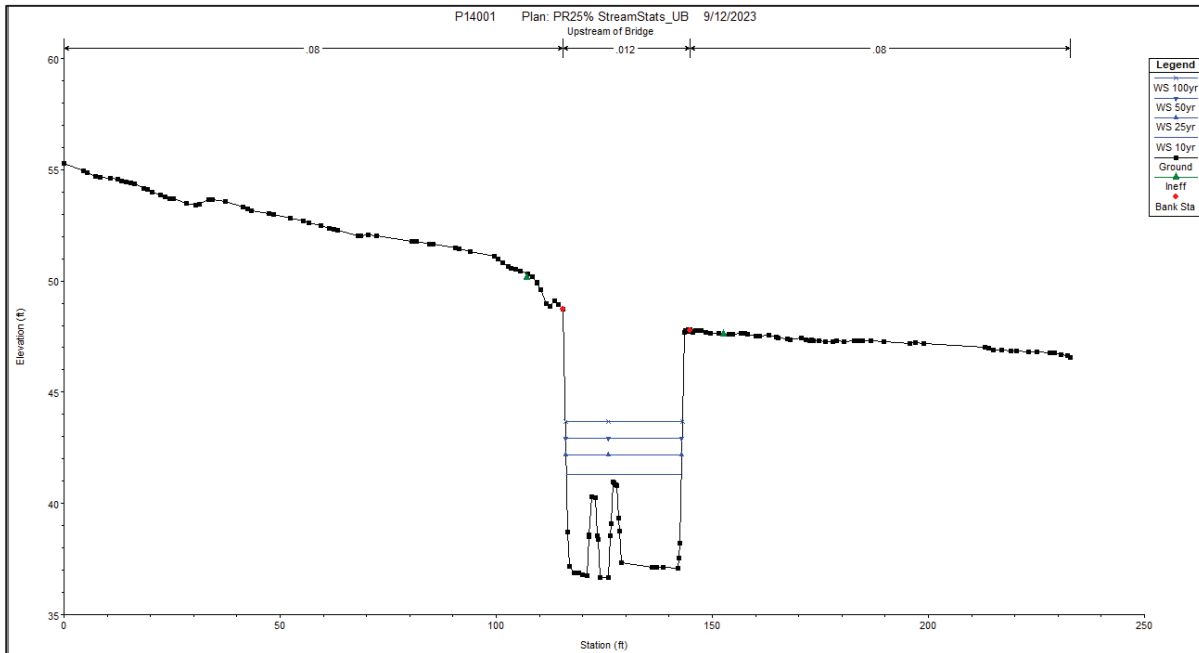


Figure 2b: Proposed Condition WSEL Upstream of Bridge for Design Flows

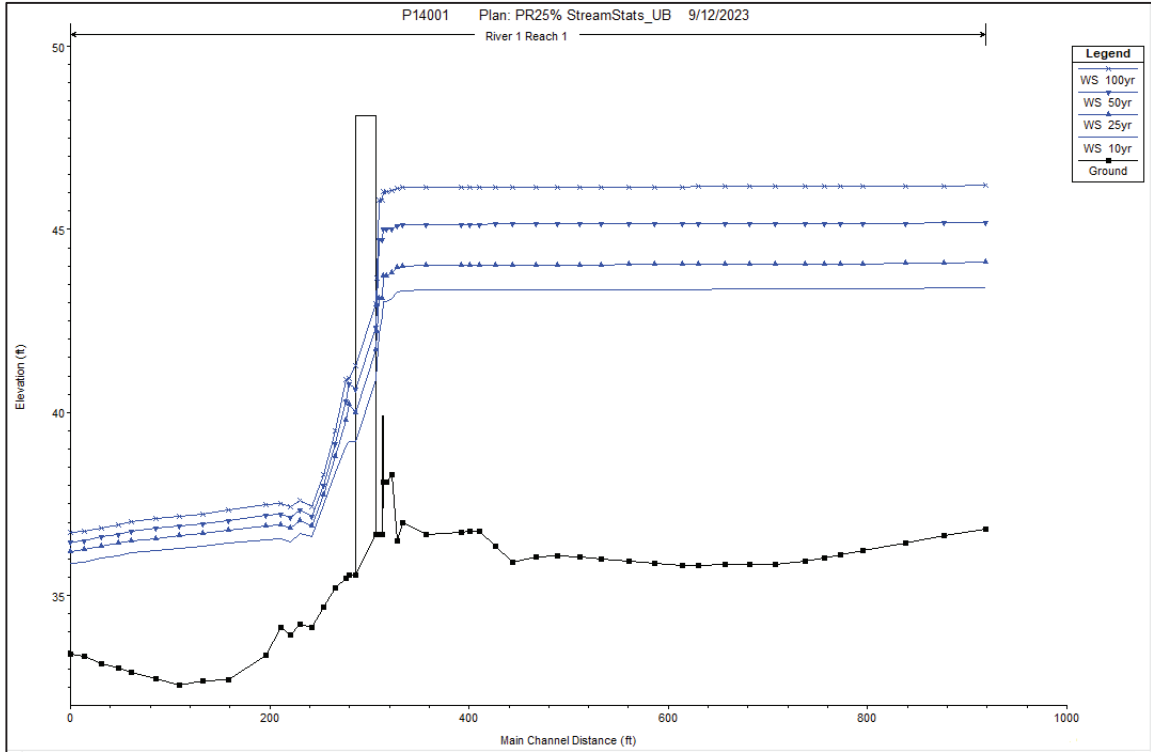


Figure 2c: Proposed Condition River Profiles for Design Flows

HEC-RAS Plan: PR25%_SSUB River: River 1 Reach: Reach 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach 1	3987	2yr	400.00	36.81	42.54		42.56	0.000155	1.07	374.87	129.58	0.11
Reach 1	3987	5yr	658.00	36.81	43.06		43.09	0.000264	1.48	444.73	140.74	0.15
Reach 1	3987	10yr	873.00	36.81	43.41		43.46	0.000334	1.76	495.15	143.42	0.17
Reach 1	3987	25yr	1200.00	36.81	44.10		44.16	0.000348	2.02	597.48	156.46	0.18
Reach 1	3987	50yr	1490.00	36.81	45.19		45.25	0.000242	1.97	782.43	182.20	0.15
Reach 1	3987	100yr	1800.00	36.81	46.19		46.25	0.000192	1.97	984.94	217.75	0.14
Reach 1	3987	200yr	2160.00	36.81	47.41		47.47	0.000147	1.95	1272.94	261.64	0.13
Reach 1	3987	500yr	2710.00	36.81	48.90		48.96	0.000120	1.99	1687.14	311.82	0.12
Reach 1	3944	2yr	400.00	36.63	42.53		42.55	0.000145	1.06	376.53	124.94	0.11
Reach 1	3944	5yr	658.00	36.63	43.05		43.08	0.000245	1.48	443.30	131.68	0.14
Reach 1	3944	10yr	873.00	36.63	43.40		43.45	0.000315	1.78	489.86	134.01	0.16
Reach 1	3944	25yr	1200.00	36.63	44.08		44.15	0.000339	2.06	585.41	147.01	0.17
Reach 1	3944	50yr	1490.00	36.63	45.18		45.24	0.000244	2.03	758.33	168.33	0.15
Reach 1	3944	100yr	1800.00	36.63	46.18		46.25	0.000199	2.05	939.02	193.93	0.14
Reach 1	3944	200yr	2160.00	36.63	47.40		47.46	0.000156	2.04	1194.01	222.17	0.13
Reach 1	3944	500yr	2710.00	36.63	48.89		48.95	0.000130	2.10	1552.19	271.48	0.12
Reach 1	3906	2yr	400.00	36.44	42.53		42.55	0.000140	1.06	377.03	121.59	0.11
Reach 1	3906	5yr	658.00	36.44	43.04		43.07	0.000234	1.50	439.81	124.42	0.14
Reach 1	3906	10yr	873.00	36.44	43.38		43.44	0.000309	1.81	483.37	127.00	0.16
Reach 1	3906	25yr	1200.00	36.44	44.07		44.14	0.000363	2.09	573.72	140.44	0.18
Reach 1	3906	50yr	1490.00	36.44	45.17		45.23	0.000260	2.05	740.83	162.79	0.16
Reach 1	3906	100yr	1800.00	36.44	46.17		46.24	0.000209	2.07	914.49	182.31	0.15
Reach 1	3906	200yr	2160.00	36.44	47.39		47.46	0.000162	2.05	1151.61	206.40	0.13
Reach 1	3906	500yr	2710.00	36.44	48.88		48.95	0.000136	2.12	1496.64	309.95	0.12
Reach 1	3863	2yr	400.00	36.22	42.52		42.54	0.000118	1.06	377.96	108.03	0.10
Reach 1	3863	5yr	658.00	36.22	43.03		43.06	0.000221	1.52	434.03	115.46	0.14
Reach 1	3863	10yr	873.00	36.22	43.37		43.42	0.000321	1.84	475.27	125.49	0.17
Reach 1	3863	25yr	1200.00	36.22	44.05		44.12	0.000408	2.11	567.81	145.60	0.19
Reach 1	3863	50yr	1490.00	36.22	45.16		45.22	0.000292	2.02	740.84	169.56	0.16
Reach 1	3863	100yr	1800.00	36.22	46.17		46.23	0.000221	2.00	923.01	190.11	0.15
Reach 1	3863	200yr	2160.00	36.22	47.39		47.45	0.000163	1.96	1169.33	208.13	0.13
Reach 1	3863	500yr	2710.00	36.22	48.88		48.94	0.000131	2.00	1527.55	316.83	0.12
Reach 1	3841	2yr	400.00	36.10	42.52		42.54	0.000105	0.99	402.79	116.04	0.09
Reach 1	3841	5yr	658.00	36.10	43.03		43.06	0.000192	1.42	463.02	122.03	0.13
Reach 1	3841	10yr	873.00	36.10	43.37		43.41	0.000278	1.72	506.36	132.21	0.16
Reach 1	3841	25yr	1200.00	36.10	44.05		44.11	0.000350	1.99	602.45	150.42	0.18
Reach 1	3841	50yr	1490.00	36.10	45.15		45.21	0.000249	1.92	777.26	173.85	0.15
Reach 1	3841	100yr	1800.00	36.10	46.16		46.22	0.000193	1.92	964.31	197.06	0.14
Reach 1	3841	200yr	2160.00	36.10	47.39		47.44	0.000146	1.90	1223.14	230.21	0.12
Reach 1	3841	500yr	2710.00	36.10	48.88		48.94	0.000118	1.93	1641.30	330.63	0.12
Reach 1	3824	2yr	400.00	36.03	42.52		42.53	0.000091	0.93	431.91	123.70	0.09
Reach 1	3824	5yr	658.00	36.03	43.03		43.05	0.000164	1.33	495.71	129.12	0.12
Reach 1	3824	10yr	873.00	36.03	43.37		43.41	0.000232	1.61	540.86	136.25	0.14
Reach 1	3824	25yr	1200.00	36.03	44.05		44.10	0.000292	1.88	639.39	152.51	0.16
Reach 1	3824	50yr	1490.00	36.03	45.15		45.21	0.000212	1.84	814.82	176.09	0.14
Reach 1	3824	100yr	1800.00	36.03	46.16		46.22	0.000169	1.85	1006.34	203.40	0.13
Reach 1	3824	200yr	2160.00	36.03	47.39		47.44	0.000131	1.84	1281.35	285.03	0.12
Reach 1	3824	500yr	2710.00	36.03	48.88		48.93	0.000105	1.86	1775.84	343.77	0.11
Reach 1	3806	2yr	400.00	35.94	42.52		42.53	0.000072	0.85	472.99	130.57	0.08
Reach 1	3806	5yr	658.00	35.94	43.03		43.05	0.000132	1.22	540.29	135.92	0.11
Reach 1	3806	10yr	873.00	35.94	43.37		43.40	0.000184	1.49	587.28	140.24	0.13
Reach 1	3806	25yr	1200.00	35.94	44.05		44.09	0.000229	1.74	687.82	152.29	0.14
Reach 1	3806	50yr	1490.00	35.94	45.15		45.20	0.000173	1.74	863.97	179.45	0.13
Reach 1	3806	100yr	1800.00	35.94	46.16		46.21	0.000143	1.76	1061.12	210.21	0.12
Reach 1	3806	200yr	2160.00	35.94	47.39		47.44	0.000113	1.76	1390.96	332.65	0.11
Reach 1	3806	500yr	2710.00	35.94	48.88		48.93	0.000092	1.78	1904.60	355.18	0.10
Reach 1	3775	2yr	400.00	35.85	42.52		42.53	0.000050	0.73	549.18	144.99	0.07
Reach 1	3775	5yr	658.00	35.85	43.03		43.04	0.000094	1.05	624.02	151.27	0.09
Reach 1	3775	10yr	873.00	35.85	43.37		43.39	0.000131	1.29	676.52	155.36	0.11
Reach 1	3775	25yr	1200.00	35.85	44.05		44.08	0.000156	1.53	782.97	157.87	0.12
Reach 1	3775	50yr	1490.00	35.85	45.16		45.19	0.000126	1.55	968.12	190.02	0.11
Reach 1	3775	100yr	1800.00	35.85	46.17		46.21	0.000107	1.59	1179.06	236.82	0.11
Reach 1	3775	200yr	2160.00	35.85	47.39		47.43	0.000087	1.60	1548.73	338.12	0.10
Reach 1	3775	500yr	2710.00	35.85	48.88		48.92	0.000073	1.64	2070.99	359.77	0.09
Reach 1	3750	2yr	400.00	35.84	42.52		42.53	0.000044	0.70	569.88	144.13	0.06
Reach 1	3750	5yr	658.00	35.84	43.02		43.04	0.000083	1.02	643.91	148.91	0.09
Reach 1	3750	10yr	873.00	35.84	43.37		43.39	0.000121	1.25	696.09	156.85	0.10
Reach 1	3750	25yr	1200.00	35.84	44.05		44.08	0.000150	1.49	804.91	164.25	0.12
Reach 1	3750	50yr	1490.00	35.84	45.15		45.19	0.000126	1.49	1004.31	203.78	0.11
Reach 1	3750	100yr	1800.00	35.84	46.17		46.20	0.000105	1.52	1230.16	268.15	0.10
Reach 1	3750	200yr	2160.00	35.84	47.39		47.43	0.000082	1.51	1620.81	333.83	0.10

Proposal No. 609435-126585

HEC-RAS Plan: PR25% _SSUB River: River 1 Reach: Reach 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach 1	3750	500yr	2710.00	35.84	48.89		48.92	0.000068	1.54	2143.57	363.21	0.09
Reach 1	3725	2yr	400.00	35.84	42.52		42.53	0.000040	0.68	590.71	146.80	0.06
Reach 1	3725	5yr	658.00	35.84	43.02		43.04	0.000075	0.99	665.28	149.84	0.08
Reach 1	3725	10yr	873.00	35.84	43.36		43.39	0.000107	1.22	717.07	153.85	0.10
Reach 1	3725	25yr	1200.00	35.84	44.04		44.08	0.000148	1.45	826.13	173.78	0.12
Reach 1	3725	50yr	1490.00	35.84	45.15		45.18	0.000127	1.44	1034.81	201.56	0.11
Reach 1	3725	100yr	1800.00	35.84	46.17		46.20	0.000102	1.45	1289.52	325.22	0.10
Reach 1	3725	200yr	2160.00	35.84	47.39		47.42	0.000078	1.43	1707.87	351.94	0.09
Reach 1	3725	500yr	2710.00	35.84	48.89		48.92	0.000063	1.45	2246.41	368.74	0.09
Reach 1	3698	2yr	400.00	35.81	42.52		42.53	0.000039	0.66	608.05	153.99	0.06
Reach 1	3698	5yr	658.00	35.81	43.02		43.04	0.000073	0.96	687.07	158.83	0.08
Reach 1	3698	10yr	873.00	35.81	43.36		43.38	0.000104	1.18	742.18	164.74	0.10
Reach 1	3698	25yr	1200.00	35.81	44.04		44.07	0.000128	1.40	856.78	170.24	0.11
Reach 1	3698	50yr	1490.00	35.81	45.15		45.18	0.000109	1.41	1063.41	218.52	0.10
Reach 1	3698	100yr	1800.00	35.81	46.16		46.20	0.000091	1.43	1352.11	343.82	0.10
Reach 1	3698	200yr	2160.00	35.81	47.39		47.42	0.000071	1.42	1786.86	363.79	0.09
Reach 1	3698	500yr	2710.00	35.81	48.89		48.92	0.000059	1.45	2341.76	378.45	0.08
Reach 1	3682	2yr	400.00	35.81	42.52		42.52	0.000038	0.64	621.64	158.86	0.06
Reach 1	3682	5yr	658.00	35.81	43.02		43.04	0.000071	0.94	702.91	164.29	0.08
Reach 1	3682	10yr	873.00	35.81	43.36		43.38	0.000099	1.15	759.80	168.36	0.10
Reach 1	3682	25yr	1200.00	35.81	44.04		44.07	0.000119	1.37	875.31	177.88	0.11
Reach 1	3682	50yr	1490.00	35.81	45.15		45.18	0.000099	1.40	1089.13	229.86	0.10
Reach 1	3682	100yr	1800.00	35.81	46.16		46.19	0.000085	1.43	1392.10	350.98	0.09
Reach 1	3682	200yr	2160.00	35.81	47.39		47.42	0.000067	1.42	1835.39	371.51	0.09
Reach 1	3682	500yr	2710.00	35.81	48.88		48.92	0.000057	1.45	2400.92	384.87	0.08
Reach 1	3654	2yr	400.00	35.88	42.52		42.52	0.000036	0.63	632.85	161.74	0.06
Reach 1	3654	5yr	658.00	35.88	43.02		43.03	0.000068	0.92	715.51	166.20	0.08
Reach 1	3654	10yr	873.00	35.88	43.36		43.38	0.000093	1.13	772.18	167.40	0.09
Reach 1	3654	25yr	1200.00	35.88	44.04		44.07	0.000114	1.35	888.66	178.95	0.10
Reach 1	3654	50yr	1490.00	35.88	45.15		45.18	0.000095	1.38	1115.11	242.33	0.10
Reach 1	3654	100yr	1800.00	35.88	46.16		46.19	0.000083	1.41	1414.87	349.59	0.09
Reach 1	3654	200yr	2160.00	35.88	47.39		47.42	0.000066	1.40	1867.66	376.50	0.09
Reach 1	3654	500yr	2710.00	35.88	48.88		48.91	0.000055	1.43	2440.61	389.93	0.08
Reach 1	3628	2yr	400.00	35.94	42.52		42.52	0.000030	0.61	654.49	153.88	0.05
Reach 1	3628	5yr	658.00	35.94	43.02		43.03	0.000059	0.90	732.83	159.39	0.07
Reach 1	3628	10yr	873.00	35.94	43.36		43.38	0.000085	1.11	787.73	164.54	0.09
Reach 1	3628	25yr	1200.00	35.94	44.04		44.06	0.000108	1.33	901.98	170.88	0.10
Reach 1	3628	50yr	1490.00	35.94	45.15		45.17	0.000094	1.35	1146.44	265.86	0.10
Reach 1	3628	100yr	1800.00	35.94	46.16		46.19	0.000086	1.37	1482.46	387.78	0.09
Reach 1	3628	200yr	2160.00	35.94	47.39		47.42	0.000067	1.34	1967.42	400.18	0.09
Reach 1	3628	500yr	2710.00	35.94	48.88		48.91	0.000054	1.35	2574.64	412.86	0.08
Reach 1	3600	2yr	400.00	36.00	42.52		42.52	0.000028	0.59	678.96	157.27	0.05
Reach 1	3600	5yr	658.00	36.00	43.02		43.03	0.000053	0.87	758.67	160.73	0.07
Reach 1	3600	10yr	873.00	36.00	43.36		43.37	0.000076	1.07	813.49	162.81	0.08
Reach 1	3600	25yr	1200.00	36.00	44.03		44.06	0.000098	1.30	925.69	174.84	0.10
Reach 1	3600	50yr	1490.00	36.00	45.14		45.17	0.000087	1.32	1195.70	282.93	0.09
Reach 1	3600	100yr	1800.00	36.00	46.16		46.19	0.000077	1.34	1519.33	356.45	0.09
Reach 1	3600	200yr	2160.00	36.00	47.39		47.41	0.000061	1.33	2019.57	420.44	0.08
Reach 1	3600	500yr	2710.00	36.00	48.88		48.91	0.000050	1.35	2656.83	432.15	0.08
Reach 1	3579	2yr	400.00	36.06	42.52		42.52	0.000025	0.57	705.09	162.37	0.05
Reach 1	3579	5yr	658.00	36.06	43.02		43.03	0.000049	0.84	787.31	165.62	0.07
Reach 1	3579	10yr	873.00	36.06	43.36		43.37	0.000069	1.03	844.87	185.46	0.08
Reach 1	3579	25yr	1200.00	36.06	44.03		44.06	0.000087	1.25	989.25	246.76	0.09
Reach 1	3579	50yr	1490.00	36.06	45.14		45.17	0.000077	1.27	1296.83	307.66	0.09
Reach 1	3579	100yr	1800.00	36.06	46.16		46.18	0.000068	1.29	1645.91	363.10	0.08
Reach 1	3579	200yr	2160.00	36.06	47.39		47.41	0.000055	1.29	2134.96	435.72	0.08
Reach 1	3579	500yr	2710.00	36.06	48.88		48.91	0.000046	1.32	2807.42	456.71	0.07
Reach 1	3557	2yr	400.00	36.09	42.52		42.52	0.000021	0.54	744.00	163.11	0.04
Reach 1	3557	5yr	658.00	36.09	43.02		43.03	0.000042	0.80	826.84	174.03	0.06
Reach 1	3557	10yr	873.00	36.09	43.36		43.37	0.000060	0.99	890.70	202.36	0.08
Reach 1	3557	25yr	1200.00	36.09	44.03		44.05	0.000077	1.20	1051.24	259.16	0.09
Reach 1	3557	50yr	1490.00	36.09	45.14		45.17	0.000066	1.22	1366.96	317.56	0.08
Reach 1	3557	100yr	1800.00	36.09	46.16		46.18	0.000058	1.26	1728.60	380.39	0.08
Reach 1	3557	200yr	2160.00	36.09	47.39		47.41	0.000048	1.26	2229.16	424.86	0.07
Reach 1	3557	500yr	2710.00	36.09	48.88		48.91	0.000042	1.31	2901.52	468.57	0.07
Reach 1	3535	2yr	400.00	36.06	42.52		42.52	0.000017	0.49	820.37	206.98	0.04
Reach 1	3535	5yr	658.00	36.06	43.02		43.03	0.000033	0.73	927.90	219.32	0.06
Reach 1	3535	10yr	873.00	36.06	43.36		43.37	0.000048	0.91	1009.57	260.08	0.07
Reach 1	3535	25yr	1200.00	36.06	44.03		44.05	0.000062	1.11	1199.43	294.89	0.08
Reach 1	3535	50yr	1490.00	36.06	45.14		45.16	0.000053	1.13	1548.19	338.82	0.08

Proposal No. 609435-126585

HEC-RAS Plan: PR25%_SSUB River: River 1 Reach: Reach 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach 1	3535	100yr	1800.00	36.06	46.16		46.18	0.000048	1.17	1924.09	390.09	0.07
Reach 1	3535	200yr	2160.00	36.06	47.39		47.41	0.000040	1.18	2429.60	439.87	0.07
Reach 1	3535	500yr	2710.00	36.06	48.88		48.91	0.000036	1.23	3139.57	495.77	0.07
Reach 1	3512	2yr	400.00	35.91	42.52		42.52	0.000015	0.47	881.04	228.17	0.04
Reach 1	3512	5yr	658.00	35.91	43.02		43.02	0.000029	0.70	1006.07	274.15	0.05
Reach 1	3512	10yr	873.00	35.91	43.36		43.37	0.000042	0.86	1100.66	284.52	0.06
Reach 1	3512	25yr	1200.00	35.91	44.03		44.05	0.000053	1.04	1300.22	309.65	0.07
Reach 1	3512	50yr	1490.00	35.91	45.14		45.16	0.000047	1.07	1660.58	340.62	0.07
Reach 1	3512	100yr	1800.00	35.91	46.16		46.18	0.000042	1.11	2046.53	405.40	0.07
Reach 1	3512	200yr	2160.00	35.91	47.39		47.41	0.000036	1.12	2573.70	450.23	0.06
Reach 1	3512	500yr	2710.00	35.91	48.88		48.90	0.000033	1.18	3294.52	511.87	0.06
Reach 1	3494	2yr	400.00	36.36	42.52		42.52	0.000016	0.48	873.81	234.27	0.04
Reach 1	3494	5yr	658.00	36.36	43.02		43.02	0.000032	0.71	995.46	252.43	0.06
Reach 1	3494	10yr	873.00	36.36	43.35		43.37	0.000045	0.88	1086.10	279.64	0.07
Reach 1	3494	25yr	1200.00	36.36	44.03		44.05	0.000058	1.06	1285.07	305.08	0.08
Reach 1	3494	50yr	1490.00	36.36	45.14		45.16	0.000052	1.08	1652.58	361.57	0.07
Reach 1	3494	100yr	1800.00	36.36	46.16		46.18	0.000046	1.10	2053.65	427.39	0.07
Reach 1	3494	200yr	2160.00	36.36	47.39		47.41	0.000039	1.10	2609.47	470.20	0.07
Reach 1	3494	500yr	2710.00	36.36	48.89		48.90	0.000034	1.13	3373.24	528.99	0.06
Reach 1	3479	2yr	400.00	36.75	42.52		42.52	0.000018	0.49	856.70	232.89	0.04
Reach 1	3479	5yr	658.00	36.75	43.02		43.02	0.000034	0.72	978.63	256.64	0.06
Reach 1	3479	10yr	873.00	36.75	43.35		43.37	0.000049	0.89	1067.92	272.36	0.07
Reach 1	3479	25yr	1200.00	36.75	44.03		44.05	0.000061	1.07	1265.58	306.36	0.08
Reach 1	3479	50yr	1490.00	36.75	45.14		45.16	0.000054	1.09	1629.32	359.01	0.07
Reach 1	3479	100yr	1800.00	36.75	46.16		46.18	0.000050	1.11	2032.35	440.70	0.07
Reach 1	3479	200yr	2160.00	36.75	47.39		47.41	0.000040	1.10	2610.67	505.56	0.07
Reach 1	3479	500yr	2710.00	36.75	48.88		48.90	0.000035	1.12	3405.68	546.05	0.06
Reach 1	3468	2yr	400.00	36.75	42.51		42.52	0.000019	0.50	842.73	239.65	0.04
Reach 1	3468	5yr	658.00	36.75	43.01		43.02	0.000037	0.73	969.15	261.75	0.06
Reach 1	3468	10yr	873.00	36.75	43.35		43.37	0.000052	0.90	1059.37	271.36	0.07
Reach 1	3468	25yr	1200.00	36.75	44.03		44.05	0.000064	1.08	1251.98	303.01	0.08
Reach 1	3468	50yr	1490.00	36.75	45.14		45.16	0.000055	1.10	1618.22	368.42	0.08
Reach 1	3468	100yr	1800.00	36.75	46.16		46.18	0.000051	1.11	2027.92	453.44	0.07
Reach 1	3468	200yr	2160.00	36.75	47.39		47.41	0.000041	1.10	2636.59	536.14	0.07
Reach 1	3468	500yr	2710.00	36.75	48.88		48.90	0.000035	1.11	3465.67	561.10	0.06
Reach 1	3460	2yr	400.00	36.72	42.51		42.52	0.000024	0.52	822.15	256.95	0.05
Reach 1	3460	5yr	658.00	36.72	43.01		43.02	0.000043	0.75	955.47	279.03	0.06
Reach 1	3460	10yr	873.00	36.72	43.35		43.36	0.000060	0.92	1051.19	292.18	0.07
Reach 1	3460	25yr	1200.00	36.72	44.03		44.05	0.000072	1.09	1255.24	312.70	0.08
Reach 1	3460	50yr	1490.00	36.72	45.14		45.16	0.000059	1.09	1640.87	383.61	0.08
Reach 1	3460	100yr	1800.00	36.72	46.16		46.18	0.000052	1.11	2059.87	472.62	0.07
Reach 1	3460	200yr	2160.00	36.72	47.39		47.41	0.000042	1.10	2698.65	562.36	0.07
Reach 1	3460	500yr	2710.00	36.72	48.88		48.90	0.000034	1.10	3547.73	571.46	0.06
Reach 1	3425	2yr	400.00	36.66	42.51		42.52	0.000056	0.66	662.22	263.21	0.07
Reach 1	3425	5yr	658.00	36.66	43.01		43.02	0.000093	0.92	799.00	285.80	0.09
Reach 1	3425	10yr	873.00	36.66	43.34		43.36	0.000122	1.11	900.09	314.07	0.10
Reach 1	3425	25yr	1200.00	36.66	44.02		44.04	0.000129	1.27	1119.84	345.01	0.11
Reach 1	3425	50yr	1490.00	36.66	45.13		45.16	0.000090	1.21	1534.51	389.77	0.09
Reach 1	3425	100yr	1800.00	36.66	46.15		46.17	0.000073	1.19	1948.33	456.39	0.09
Reach 1	3425	200yr	2160.00	36.66	47.39		47.40	0.000056	1.17	2606.05	570.61	0.08
Reach 1	3425	500yr	2710.00	36.66	48.88		48.90	0.000042	1.14	3467.13	578.96	0.07
Reach 1	3401	2yr	400.00	37.00	42.50		42.51	0.000086	0.89	526.18	240.93	0.08
Reach 1	3401	5yr	658.00	37.00	42.99		43.02	0.000144	1.25	655.00	280.16	0.11
Reach 1	3401	10yr	873.00	37.00	43.32		43.36	0.000188	1.50	750.34	296.95	0.13
Reach 1	3401	25yr	1200.00	37.00	44.00		44.04	0.000203	1.71	962.08	331.70	0.14
Reach 1	3401	50yr	1490.00	37.00	45.12		45.15	0.000141	1.62	1363.57	373.15	0.12
Reach 1	3401	100yr	1800.00	37.00	46.14		46.17	0.000113	1.59	1771.66	436.93	0.11
Reach 1	3401	200yr	2160.00	37.00	47.37		47.40	0.000086	1.54	2436.44	574.07	0.10
Reach 1	3401	500yr	2710.00	37.00	48.87		48.90	0.000064	1.47	3303.66	581.72	0.09
Reach 1	3396	2yr	400.00	36.49	42.49		42.51	0.000303	1.33	371.95	210.25	0.15
Reach 1	3396	5yr	658.00	36.49	42.97		43.01	0.000440	1.76	476.59	222.13	0.19
Reach 1	3396	10yr	873.00	36.49	43.29		43.35	0.000539	2.05	551.85	244.19	0.21
Reach 1	3396	25yr	1200.00	36.49	43.97		44.03	0.000517	2.23	734.23	303.11	0.21
Reach 1	3396	50yr	1490.00	36.49	45.10		45.15	0.000298	1.98	1116.37	360.69	0.16
Reach 1	3396	100yr	1800.00	36.49	46.13		46.17	0.000201	1.85	1507.12	411.43	0.14
Reach 1	3396	200yr	2160.00	36.49	47.36		47.40	0.000141	1.76	2161.38	578.11	0.12
Reach 1	3396	500yr	2710.00	36.49	48.87		48.90	0.000092	1.61	3036.40	584.85	0.10
Reach 1	3390	2yr	400.00	38.30	42.39		42.50	0.001546	2.95	209.62	152.78	0.34
Reach 1	3390	5yr	658.00	38.30	42.82		42.99	0.002247	3.80	279.07	173.93	0.41
Reach 1	3390	10yr	873.00	38.30	43.10		43.33	0.002794	4.37	332.14	196.49	0.46

Proposal No. 609435-126585

HEC-RAS Plan: PR25%_SSUB River: River 1 Reach: Reach 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach 1	3390	25yr	1200.00	38.30	43.80		44.01	0.002145	4.37	487.06	240.17	0.42
Reach 1	3390	50yr	1490.00	38.30	45.02		45.14	0.000944	3.50	819.26	323.03	0.29
Reach 1	3390	100yr	1800.00	38.30	46.07		46.16	0.000603	3.17	1199.86	379.46	0.24
Reach 1	3390	200yr	2160.00	38.30	47.32		47.39	0.000400	2.91	1838.76	595.40	0.20
Reach 1	3390	500yr	2710.00	38.30	48.85		48.89	0.000210	2.38	2759.01	604.57	0.15
Reach 1	3385	2yr	400.00	38.09	42.33	41.24	42.49	0.002380	3.62	193.61	153.05	0.41
Reach 1	3385	5yr	658.00	38.09	42.74	41.81	42.98	0.003376	4.59	260.15	166.25	0.50
Reach 1	3385	10yr	873.00	38.09	43.02	42.42	43.31	0.003978	5.20	307.07	172.01	0.55
Reach 1	3385	25yr	1200.00	38.09	43.74	42.77	44.00	0.003060	5.08	440.33	192.27	0.49
Reach 1	3385	50yr	1490.00	38.09	45.00	43.01	45.14	0.001397	3.94	703.40	230.45	0.34
Reach 1	3385	100yr	1800.00	38.09	46.04	43.22	46.16	0.000927	3.62	988.30	338.31	0.28
Reach 1	3385	200yr	2160.00	38.09	47.29	43.58	47.39	0.000674	3.52	1588.19	601.05	0.25
Reach 1	3385	500yr	2710.00	38.09	48.85	43.91	48.89	0.000303	2.62	2531.41	608.56	0.17
Reach 1	3381	Weir										
			Inl Struct									
Reach 1	3377	2yr	400.00	36.66	40.41	40.41	41.45	0.002977	8.21	53.68	38.40	0.97
Reach 1	3377	5yr	658.00	36.66	41.39	41.39	42.58	0.002660	8.96	109.05	83.83	0.90
Reach 1	3377	10yr	873.00	36.66	42.16	42.16	43.23	0.002184	8.79	208.76	150.87	0.80
Reach 1	3377	25yr	1200.00	36.66	43.12	42.81	43.95	0.001694	8.35	370.47	179.21	0.69
Reach 1	3377	50yr	1490.00	36.66	44.73	43.21	45.11	0.000756	6.15	674.24	197.85	0.46
Reach 1	3377	100yr	1800.00	36.66	45.81	43.56	46.13	0.000580	5.86	903.09	235.29	0.41
Reach 1	3377	200yr	2160.00	36.66	46.99	44.37	47.37	0.000592	6.22	1292.52	561.69	0.45
Reach 1	3377	500yr	2710.00	36.66	48.71		48.88	0.000244	4.71	2323.42	607.08	0.30
Reach 1	3376	2yr	400.00	36.66	39.59	39.36	40.45	0.002082	7.44	53.79	23.31	0.86
Reach 1	3376	5yr	658.00	36.66	40.58	40.22	41.69	0.002051	8.45	77.89	25.31	0.85
Reach 1	3376	10yr	873.00	36.66	41.30	40.86	42.57	0.001939	9.05	96.51	26.58	0.84
Reach 1	3376	25yr	1200.00	36.66	42.20	41.66	43.74	0.001843	9.96	120.49	26.77	0.83
Reach 1	3376	50yr	1490.00	36.66	42.94	42.28	44.69	0.001784	10.62	140.29	26.92	0.82
Reach 1	3376	100yr	1800.00	36.66	43.68	42.90	45.64	0.001734	11.22	160.40	27.07	0.81
Reach 1	3376	200yr	2160.00	36.66	44.49	43.58	46.67	0.001696	11.84	182.46	27.24	0.81
Reach 1	3376	500yr	2710.00	36.66	44.55	44.55	47.92	0.002609	14.74	183.89	27.25	1.00
Reach 1	3364	Bridge										
			Bridge									
Reach 1	3347	2yr	400.00	35.56	37.88	37.88	38.81	0.020156	7.73	51.74	27.82	1.00
Reach 1	3347	5yr	658.00	35.56	38.70	38.70	39.85	0.018897	8.62	76.35	33.15	1.00
Reach 1	3347	10yr	873.00	35.56	39.21	39.21	40.55	0.018062	9.30	93.88	34.87	1.00
Reach 1	3347	25yr	1200.00	35.56	40.22	39.87	41.54	0.012653	9.22	130.20	36.82	0.86
Reach 1	3347	50yr	1490.00	35.56	40.77	40.40	42.29	0.012585	9.90	150.54	37.64	0.87
Reach 1	3347	100yr	1800.00	35.56	40.92	40.92	42.98	0.016453	11.53	156.17	37.87	1.00
Reach 1	3347	200yr	2160.00	35.56	41.51	41.51	43.78	0.016120	12.07	178.92	39.51	1.00
Reach 1	3347	500yr	2710.00	35.56	42.33	42.33	44.86	0.015711	12.74	212.65	42.07	1.00
Reach 1	3345	2yr	400.00	35.46	37.82	37.82	38.72	0.020423	7.65	52.29	29.05	1.01
Reach 1	3345	5yr	658.00	35.46	38.57	38.57	39.74	0.018977	8.69	75.74	32.69	1.01
Reach 1	3345	10yr	873.00	35.46	39.08	39.08	40.46	0.018264	9.41	92.80	34.20	1.01
Reach 1	3345	25yr	1200.00	35.46	39.78	39.78	41.41	0.017250	10.24	117.13	35.95	1.00
Reach 1	3345	50yr	1490.00	35.46	40.33	40.33	42.16	0.016713	10.85	137.33	37.50	1.00
Reach 1	3345	100yr	1800.00	35.46	40.90	40.90	42.87	0.016336	11.28	159.53	40.37	1.00
Reach 1	3345	200yr	2160.00	35.46	41.49	41.49	43.62	0.015975	11.73	184.21	43.26	1.00
Reach 1	3345	500yr	2710.00	35.46	42.30	42.30	44.64	0.015530	12.25	221.23	47.67	1.00
Reach 1	3333	2yr	400.00	35.20	37.54	37.54	38.13	0.010952	6.69	92.35	82.23	0.86
Reach 1	3333	5yr	658.00	35.20	38.03	38.03	38.78	0.012014	7.90	133.29	85.31	0.92
Reach 1	3333	10yr	873.00	35.20	38.36	38.36	39.24	0.012826	8.73	161.20	87.28	0.97
Reach 1	3333	25yr	1200.00	35.20	38.79	38.79	39.84	0.013537	9.70	199.72	89.95	1.02
Reach 1	3333	50yr	1490.00	35.20	39.15	39.15	40.32	0.013762	10.35	232.08	92.18	1.04
Reach 1	3333	100yr	1800.00	35.20	39.48	39.48	40.78	0.014059	10.98	263.52	94.28	1.06
Reach 1	3333	200yr	2160.00	35.20	39.83	39.83	41.28	0.014446	11.66	296.92	96.44	1.09
Reach 1	3333	500yr	2710.00	35.20	40.36	40.36	41.96	0.014497	12.40	348.14	99.84	1.11
Reach 1	3322	2yr	400.00	34.68	36.84	36.84	37.28	0.012230	6.56	119.83	121.21	0.88
Reach 1	3322	5yr	658.00	34.68	37.20	37.20	37.79	0.014266	7.90	163.73	122.84	0.98
Reach 1	3322	10yr	873.00	34.68	37.48	37.48	38.14	0.014589	8.53	199.06	124.63	1.00
Reach 1	3322	25yr	1200.00	34.68	37.74	37.74	38.60	0.018178	9.95	231.08	127.77	1.13
Reach 1	3322	50yr	1490.00	34.68	38.01	38.01	38.99	0.018252	10.72	266.29	129.07	1.16
Reach 1	3322	100yr	1800.00	34.68	38.29	38.29	39.38	0.018074	11.39	302.70	131.61	1.17
Reach 1	3322	200yr	2160.00	34.68	38.56	38.56	39.80	0.018530	12.23	338.65	133.50	1.20
Reach 1	3322	500yr	2710.00	34.68	38.97	38.97	40.39	0.018440	13.22	394.16	136.80	1.22
Reach 1	3309	2yr	400.00	34.12	36.13		36.29	0.008665	4.03	147.19	166.78	0.70
Reach 1	3309	5yr	658.00	34.12	36.40		36.70	0.012253	5.56	193.86	176.67	0.86
Reach 1	3309	10yr	873.00	34.12	36.61		37.01	0.013644	6.45	232.84	186.61	0.93
Reach 1	3309	25yr	1200.00	34.12	36.92	36.58	37.43	0.014209	7.37	291.76	205.87	0.98
Reach 1	3309	50yr	1490.00	34.12	37.17	36.87	37.76	0.013749	7.93	346.46	222.89	0.98
Reach 1	3309	100yr	1800.00	34.12	37.42	37.16	38.08	0.013270	8.42	405.07	240.45	0.98

Proposal No. 609435-126585

HEC-RAS Plan: PR25%_SSUB River: River 1 Reach: Reach 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach 1	3309	200yr	2160.00	34.12	37.73	37.48	38.40	0.011709	8.60	479.73	247.39	0.94
Reach 1	3309	500yr	2710.00	34.12	38.14		38.84	0.010276	8.90	583.91	251.95	0.91
Reach 1	3299	2yr	400.00	34.21	36.11		36.20	0.004825	3.21	225.66	221.37	0.53
Reach 1	3299	5yr	658.00	34.21	36.43		36.56	0.005456	3.99	296.55	223.44	0.58
Reach 1	3299	10yr	873.00	34.21	36.69		36.85	0.005402	4.40	356.34	234.24	0.60
Reach 1	3299	25yr	1200.00	34.21	37.05		37.25	0.005192	4.91	442.10	242.83	0.60
Reach 1	3299	50yr	1490.00	34.21	37.33		37.57	0.005070	5.29	511.77	247.12	0.61
Reach 1	3299	100yr	1800.00	34.21	37.61		37.88	0.004972	5.65	581.43	251.08	0.62
Reach 1	3299	200yr	2160.00	34.21	37.90		38.20	0.004929	6.03	655.26	253.19	0.62
Reach 1	3299	500yr	2710.00	34.21	38.31		38.66	0.004906	6.57	757.99	254.67	0.64
Reach 1	3289	2yr	400.00	33.94	35.77	35.77	36.09	0.015238	5.34	133.14	211.55	0.92
Reach 1	3289	5yr	658.00	33.94	36.15		36.47	0.011080	5.57	215.01	216.10	0.83
Reach 1	3289	10yr	873.00	33.94	36.47		36.77	0.008710	5.61	285.28	232.52	0.76
Reach 1	3289	25yr	1200.00	33.94	36.85		37.18	0.007397	5.92	376.77	243.08	0.72
Reach 1	3289	50yr	1490.00	33.94	37.15		37.50	0.006819	6.21	449.47	249.29	0.71
Reach 1	3289	100yr	1800.00	33.94	37.43		37.81	0.006406	6.50	522.22	254.27	0.70
Reach 1	3289	200yr	2160.00	33.94	37.74		38.14	0.006092	6.80	599.10	256.66	0.70
Reach 1	3289	500yr	2710.00	33.94	38.15		38.60	0.005827	7.26	704.89	257.17	0.70
Reach 1	3279	2yr	400.00	34.14	35.82		35.88	0.003947	2.82	246.55	213.18	0.48
Reach 1	3279	5yr	658.00	34.14	36.25		36.34	0.003707	3.38	340.35	226.37	0.49
Reach 1	3279	10yr	873.00	34.14	36.54		36.66	0.003684	3.79	409.49	240.64	0.50
Reach 1	3279	25yr	1200.00	34.14	36.92		37.07	0.003710	4.32	502.24	248.13	0.52
Reach 1	3279	50yr	1490.00	34.14	37.22		37.39	0.003753	4.73	575.70	251.65	0.53
Reach 1	3279	100yr	1800.00	34.14	37.50		37.71	0.003790	5.11	648.40	254.91	0.54
Reach 1	3279	200yr	2160.00	34.14	37.80		38.04	0.003858	5.53	725.15	258.27	0.56
Reach 1	3279	500yr	2710.00	34.14	38.21		38.50	0.003950	6.08	832.32	262.14	0.58
Reach 1	3264	2yr	400.00	33.37	35.79		35.83	0.002131	2.35	299.55	228.51	0.36
Reach 1	3264	5yr	658.00	33.37	36.22		36.29	0.002332	2.96	402.00	237.17	0.39
Reach 1	3264	10yr	873.00	33.37	36.52		36.60	0.002493	3.40	472.20	241.09	0.42
Reach 1	3264	25yr	1200.00	33.37	36.90		37.01	0.002702	3.96	564.63	246.01	0.45
Reach 1	3264	50yr	1490.00	33.37	37.19		37.33	0.002856	4.40	637.46	249.76	0.47
Reach 1	3264	100yr	1800.00	33.37	37.48		37.65	0.002989	4.81	709.66	253.56	0.49
Reach 1	3264	200yr	2160.00	33.37	37.78		37.98	0.003138	5.25	785.92	257.37	0.51
Reach 1	3264	500yr	2710.00	33.37	38.19		38.44	0.003294	5.82	892.56	259.43	0.53
Reach 1	3226	2yr	400.00	32.70	35.72		35.77	0.001271	2.41	331.25	205.44	0.30
Reach 1	3226	5yr	658.00	32.70	36.14		36.21	0.001723	3.07	418.25	210.19	0.35
Reach 1	3226	10yr	873.00	32.70	36.42		36.52	0.002021	3.59	477.72	215.27	0.39
Reach 1	3226	25yr	1200.00	32.70	36.78		36.92	0.002408	4.26	556.58	225.69	0.43
Reach 1	3226	50yr	1490.00	32.70	37.06		37.23	0.002697	4.78	620.50	235.34	0.47
Reach 1	3226	100yr	1800.00	32.70	37.33		37.53	0.002973	5.29	685.86	252.46	0.50
Reach 1	3226	200yr	2160.00	32.70	37.61		37.85	0.003229	5.81	758.88	263.10	0.52
Reach 1	3226	500yr	2710.00	32.70	38.01		38.30	0.003494	6.45	864.51	273.14	0.55
Reach 1	3201	2yr	400.00	32.66	35.67		35.73	0.001464	2.99	322.02	225.52	0.33
Reach 1	3201	5yr	658.00	32.66	36.06		36.17	0.001997	3.85	417.01	249.08	0.39
Reach 1	3201	10yr	873.00	32.66	36.33		36.46	0.002365	4.44	485.26	258.45	0.44
Reach 1	3201	25yr	1200.00	32.66	36.68		36.85	0.002754	5.13	577.44	265.02	0.48
Reach 1	3201	50yr	1490.00	32.66	36.96		37.15	0.003029	5.65	651.08	270.50	0.51
Reach 1	3201	100yr	1800.00	32.66	37.23		37.45	0.003256	6.13	725.17	275.90	0.53
Reach 1	3201	200yr	2160.00	32.66	37.51		37.77	0.003502	6.65	803.97	282.20	0.56
Reach 1	3201	500yr	2710.00	32.66	37.91		38.21	0.003768	7.30	917.24	289.52	0.59
Reach 1	3177	2yr	400.00	32.54	35.62		35.69	0.002382	2.70	274.96	241.96	0.39
Reach 1	3177	5yr	658.00	32.54	36.01		36.11	0.002782	3.32	373.21	257.42	0.43
Reach 1	3177	10yr	873.00	32.54	36.28		36.39	0.003023	3.72	442.15	262.33	0.46
Reach 1	3177	25yr	1200.00	32.54	36.63		36.77	0.003302	4.22	534.73	269.80	0.49
Reach 1	3177	50yr	1490.00	32.54	36.90		37.07	0.003482	4.59	609.13	275.61	0.51
Reach 1	3177	100yr	1800.00	32.54	37.17		37.36	0.003612	4.93	684.07	281.17	0.53
Reach 1	3177	200yr	2160.00	32.54	37.45		37.67	0.003749	5.28	764.23	286.86	0.54
Reach 1	3177	500yr	2710.00	32.54	37.85		38.11	0.003814	5.77	881.07	305.46	0.56
Reach 1	3154	2yr	400.00	32.72	35.58		35.63	0.001969	2.42	302.18	243.54	0.35
Reach 1	3154	5yr	658.00	32.72	35.97		36.04	0.002417	3.06	396.29	250.06	0.40
Reach 1	3154	10yr	873.00	32.72	36.23		36.32	0.002712	3.50	461.63	254.94	0.43
Reach 1	3154	25yr	1200.00	32.72	36.56		36.69	0.003073	4.06	549.34	262.22	0.47
Reach 1	3154	50yr	1490.00	32.72	36.83		36.99	0.003320	4.47	620.03	268.14	0.50
Reach 1	3154	100yr	1800.00	32.72	37.10		37.28	0.003505	4.84	691.68	273.59	0.52
Reach 1	3154	200yr	2160.00	32.72	37.37		37.58	0.003671	5.21	768.27	277.76	0.54
Reach 1	3154	500yr	2710.00	32.72	37.77		38.01	0.003872	5.70	878.80	285.77	0.56
Reach 1	3129	2yr	400.00	32.91	35.54		35.58	0.001948	2.32	305.49	252.68	0.35
Reach 1	3129	5yr	658.00	32.91	35.91		35.98	0.002334	2.92	400.24	257.30	0.39
Reach 1	3129	10yr	873.00	32.91	36.16		36.26	0.002590	3.34	465.58	260.58	0.42
Reach 1	3129	25yr	1200.00	32.91	36.49		36.62	0.002935	3.89	553.01	268.51	0.46

Proposal No. 609435-126585

HEC-RAS Plan: PR25%_SSUB River: River 1 Reach: Reach 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach 1	3129	50yr	1490.00	32.91	36.75		36.91	0.003143	4.28	623.76	273.77	0.48
Reach 1	3129	100yr	1800.00	32.91	37.01		37.19	0.003411	4.71	694.31	285.00	0.51
Reach 1	3129	200yr	2160.00	32.91	37.28		37.49	0.003606	5.11	772.43	293.59	0.53
Reach 1	3129	500yr	2710.00	32.91	37.66		37.92	0.003773	5.60	888.43	304.97	0.55
Reach 1	3116	2yr	400.00	33.02	35.49		35.55	0.002678	2.69	274.83	254.81	0.41
Reach 1	3116	5yr	658.00	33.02	35.85		35.95	0.003005	3.29	368.66	261.07	0.45
Reach 1	3116	10yr	873.00	33.02	36.10		36.22	0.003240	3.70	433.70	265.50	0.47
Reach 1	3116	25yr	1200.00	33.02	36.42		36.57	0.003557	4.25	520.64	274.08	0.51
Reach 1	3116	50yr	1490.00	33.02	36.68		36.86	0.003741	4.63	591.88	280.75	0.53
Reach 1	3116	100yr	1800.00	33.02	36.93		37.14	0.003997	5.05	663.29	294.80	0.55
Reach 1	3116	200yr	2160.00	33.02	37.20		37.44	0.004081	5.39	744.52	301.01	0.56
Reach 1	3116	500yr	2710.00	33.02	37.59		37.87	0.004113	5.80	864.96	309.58	0.58
Reach 1	3099	2yr	400.00	33.13	35.43		35.50	0.002891	2.86	272.98	269.56	0.42
Reach 1	3099	5yr	658.00	33.13	35.79		35.89	0.003183	3.45	371.11	275.12	0.46
Reach 1	3099	10yr	873.00	33.13	36.03		36.16	0.003393	3.84	438.85	278.68	0.48
Reach 1	3099	25yr	1200.00	33.13	36.36		36.51	0.003654	4.36	529.63	292.45	0.51
Reach 1	3099	50yr	1490.00	33.13	36.60		36.79	0.003974	4.82	604.04	304.29	0.54
Reach 1	3099	100yr	1800.00	33.13	36.86		37.07	0.004093	5.16	681.95	311.48	0.56
Reach 1	3099	200yr	2160.00	33.13	37.13		37.36	0.004107	5.44	768.54	315.18	0.57
Reach 1	3099	500yr	2710.00	33.13	37.53		37.79	0.004072	5.76	895.79	320.77	0.57
Reach 1	3081	2yr	400.00	33.34	35.32		35.44	0.004444	3.48	229.04	274.59	0.52
Reach 1	3081	5yr	658.00	33.34	35.68		35.82	0.004524	4.03	330.02	290.03	0.55
Reach 1	3081	10yr	873.00	33.34	35.92		36.09	0.004571	4.39	401.76	296.68	0.56
Reach 1	3081	25yr	1200.00	33.34	36.24		36.44	0.004579	4.82	499.07	301.79	0.57
Reach 1	3081	50yr	1490.00	33.34	36.50		36.72	0.004587	5.14	577.26	308.27	0.58
Reach 1	3081	100yr	1800.00	33.34	36.75		36.99	0.004614	5.45	656.37	317.93	0.59
Reach 1	3081	200yr	2160.00	33.34	37.02		37.29	0.004693	5.79	743.36	325.74	0.61
Reach 1	3081	500yr	2710.00	33.34	37.43		37.71	0.004473	6.07	876.93	335.17	0.60
Reach 1	3068	2yr	400.00	33.41	35.27	34.83	35.38	0.004005	3.28	243.88	301.53	0.50
Reach 1	3068	5yr	658.00	33.41	35.63	35.11	35.76	0.004000	3.78	355.03	312.16	0.51
Reach 1	3068	10yr	873.00	33.41	35.88	35.32	36.02	0.004001	4.09	432.63	315.54	0.52
Reach 1	3068	25yr	1200.00	33.41	36.21	35.54	36.37	0.004004	4.49	536.62	319.49	0.54
Reach 1	3068	50yr	1490.00	33.41	36.47	35.73	36.65	0.004002	4.79	619.74	321.97	0.54
Reach 1	3068	100yr	1800.00	33.41	36.72	35.87	36.92	0.004000	5.07	702.24	324.98	0.55
Reach 1	3068	200yr	2160.00	33.41	37.00	36.03	37.21	0.004003	5.35	792.44	335.67	0.56
Reach 1	3068	500yr	2710.00	33.41	37.40	36.26	37.65	0.004001	5.77	930.29	354.94	0.57

HEC-RAS Plan: PR25%_No-Rise River: River 1 Reach: Reach 1 Profile: 100-yr

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach 1	3987	100-yr	705.00	36.81	43.13		43.17	0.000282	1.55	455.49	141.49	0.15
Reach 1	3944	100-yr	705.00	36.63	43.12		43.16	0.000262	1.56	453.24	132.10	0.15
Reach 1	3906	100-yr	705.00	36.44	43.11		43.15	0.000251	1.57	449.09	124.83	0.15
Reach 1	3863	100-yr	705.00	36.22	43.10		43.14	0.000244	1.59	442.59	117.65	0.14
Reach 1	3841	100-yr	705.00	36.10	43.10		43.13	0.000210	1.49	472.01	123.51	0.13
Reach 1	3824	100-yr	705.00	36.03	43.10		43.13	0.000179	1.40	505.21	130.18	0.12
Reach 1	3806	100-yr	705.00	35.94	43.10		43.12	0.000143	1.28	550.28	136.54	0.11
Reach 1	3775	100-yr	705.00	35.85	43.10		43.12	0.000103	1.11	635.17	152.17	0.10
Reach 1	3750	100-yr	705.00	35.84	43.10		43.12	0.000091	1.08	654.85	149.56	0.09
Reach 1	3725	100-yr	705.00	35.84	43.10		43.11	0.000082	1.04	676.28	150.70	0.09
Reach 1	3698	100-yr	705.00	35.81	43.10		43.11	0.000080	1.01	698.78	160.64	0.09
Reach 1	3682	100-yr	705.00	35.81	43.09		43.11	0.000077	0.99	714.94	165.46	0.08
Reach 1	3654	100-yr	705.00	35.88	43.09		43.11	0.000074	0.97	727.63	166.44	0.08
Reach 1	3628	100-yr	705.00	35.94	43.09		43.11	0.000065	0.95	744.46	160.30	0.08
Reach 1	3600	100-yr	705.00	36.00	43.09		43.10	0.000058	0.92	770.36	161.23	0.07
Reach 1	3579	100-yr	705.00	36.06	43.09		43.10	0.000053	0.88	799.34	165.87	0.07
Reach 1	3557	100-yr	705.00	36.09	43.09		43.10	0.000046	0.84	839.74	181.40	0.07
Reach 1	3535	100-yr	705.00	36.06	43.09		43.10	0.000036	0.78	944.09	228.63	0.06
Reach 1	3512	100-yr	705.00	35.91	43.09		43.10	0.000032	0.73	1026.03	275.54	0.06
Reach 1	3494	100-yr	705.00	36.36	43.09		43.10	0.000035	0.75	1013.91	259.28	0.06
Reach 1	3479	100-yr	705.00	36.75	43.09		43.10	0.000038	0.76	997.39	260.10	0.06
Reach 1	3468	100-yr	705.00	36.75	43.09		43.10	0.000040	0.77	988.20	264.55	0.06
Reach 1	3460	100-yr	705.00	36.72	43.09		43.10	0.000047	0.79	975.74	280.98	0.07
Reach 1	3425	100-yr	705.00	36.66	43.08		43.09	0.000100	0.97	819.88	294.88	0.09
Reach 1	3401	100-yr	705.00	37.00	43.06		43.09	0.000155	1.31	674.91	283.47	0.12
Reach 1	3396	100-yr	705.00	36.49	43.04		43.09	0.000465	1.84	491.99	224.64	0.19
Reach 1	3390	100-yr	705.00	38.30	42.88		43.07	0.002380	3.95	289.39	177.02	0.42
Reach 1	3385	100-yr	705.00	38.09	42.80	41.87	43.05	0.003556	4.75	269.81	167.45	0.51
Reach 1	3381 Weir		Inl Struct									
Reach 1	3377	100-yr	705.00	36.66	41.44	41.44	42.75	0.002905	9.42	113.42	95.28	0.93
Reach 1	3376	100-yr	705.00	36.66	40.92	40.39	41.95	0.001772	8.16	86.40	26.24	0.79
Reach 1	3364 Bridge		Bridge									
Reach 1	3347	100-yr	705.00	35.56	38.83	38.83	40.01	0.018635	8.74	80.71	33.96	1.00
Reach 1	3345	100-yr	705.00	35.46	38.70	38.70	39.91	0.018551	8.82	79.95	33.09	1.00
Reach 1	3333	100-yr	705.00	35.20	38.81		39.17	0.004551	5.65	201.64	90.09	0.59
Reach 1	3322	100-yr	705.00	34.68	38.97		39.07	0.001252	3.44	393.69	136.76	0.32
Reach 1	3309	100-yr	705.00	34.12	39.01		39.04	0.000262	1.68	804.23	254.57	0.15
Reach 1	3299	100-yr	705.00	34.21	39.02		39.03	0.000168	1.38	939.65	257.23	0.12
Reach 1	3289	100-yr	705.00	33.94	39.01		39.03	0.000167	1.43	928.97	260.23	0.12
Reach 1	3279	100-yr	705.00	34.14	39.02		39.03	0.000132	1.28	1045.06	269.36	0.11
Reach 1	3264	100-yr	705.00	33.37	39.02		39.03	0.000111	1.22	1108.18	264.59	0.10
Reach 1	3226	100-yr	705.00	32.70	39.01		39.02	0.000106	1.29	1162.34	309.54	0.10
Reach 1	3201	100-yr	705.00	32.66	39.01		39.02	0.000105	1.40	1255.98	316.60	0.10
Reach 1	3177	100-yr	705.00	32.54	39.01		39.02	0.000094	1.11	1246.76	327.14	0.09
Reach 1	3154	100-yr	705.00	32.72	39.01		39.01	0.000092	1.08	1270.59	330.23	0.09
Reach 1	3129	100-yr	705.00	32.91	39.00		39.01	0.000077	1.01	1321.13	342.12	0.08
Reach 1	3116	100-yr	705.00	33.02	39.00		39.01	0.000077	1.01	1327.81	352.71	0.08
Reach 1	3099	100-yr	705.00	33.13	39.00		39.01	0.000073	1.00	1396.59	377.95	0.08
Reach 1	3081	100-yr	705.00	33.34	39.00		39.01	0.000076	1.04	1439.40	407.69	0.08
Reach 1	3068	100-yr	705.00	33.41	39.00	35.16	39.01	0.000065	0.97	1531.08	413.71	0.08

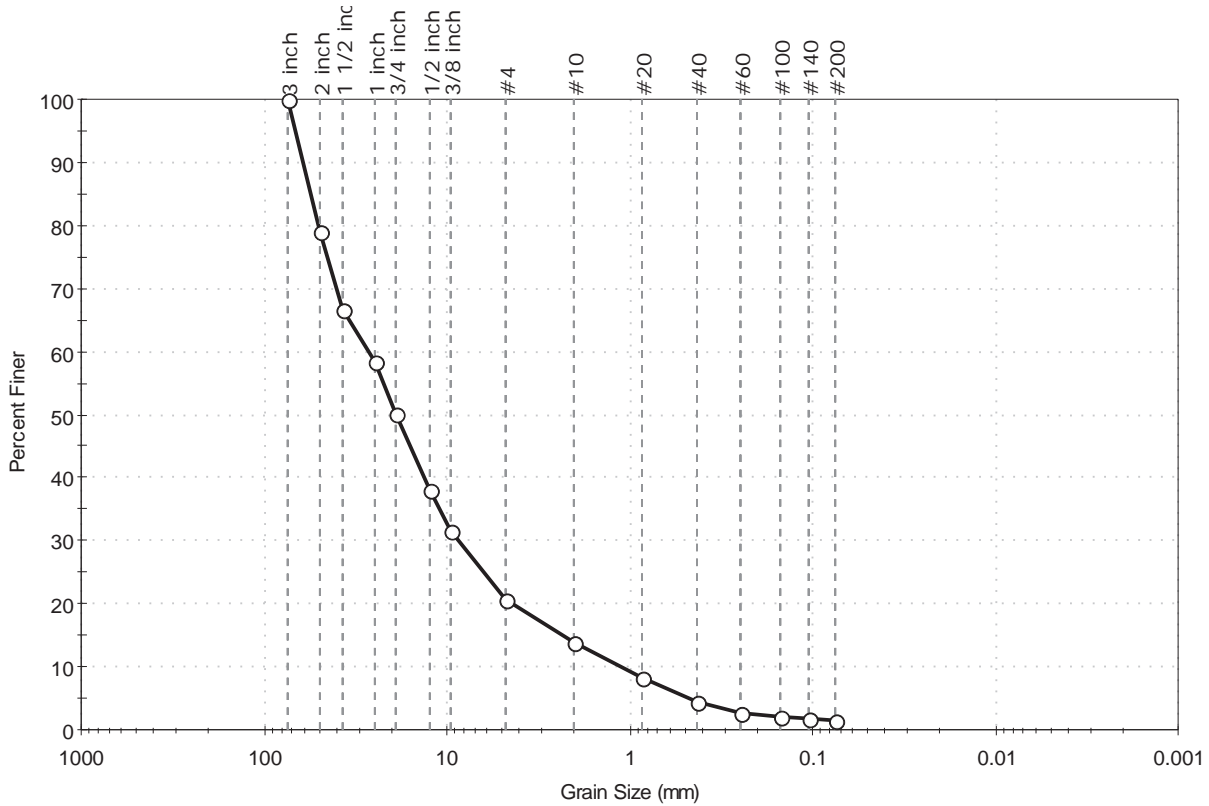
Appendix D. Scour and Countermeasure Design

1. Soil Sample Results
2. Scour Calculations
3. Scour Countermeasure Design



Client: AECOM	Project No: GTX-315281	
Project: Winnetuxet Bridge		
Location: Plympton, MA	Sample Type: bucket	Tested By: ckg
Boring ID: GRAB	Test Date: 04/15/22	Checked By: bfs
Sample ID: Stream Bed	Test Id: 663704	
Depth : 0-2		
Test Comment: ---		
Visual Description: Moist, dark brown gravel with sand		
Sample Comment: ---		

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	79.3	19.2	1.5

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
3 inch	75.00	100		
2 inch	50.00	79		
1 1/2 inch	37.50	67		
1 inch	25.00	58		
3/4 inch	19.00	50		
1/2 inch	12.50	38		
3/8 inch	9.50	32		
#4	4.75	21		
#10	2.00	14		
#20	0.85	8		
#40	0.42	4		
#60	0.25	3		
#100	0.15	2		
#140	0.11	2		
#200	0.075	1.5		

Coefficients

D ₈₅ = 56.1725 mm	D ₃₀ = 8.5382 mm
D ₆₀ = 27.1741 mm	D ₁₅ = 2.3171 mm
D ₅₀ = 18.8263 mm	D ₁₀ = 1.1038 mm
C _u = 24.619	C _c = 2.430

Classification

ASTM	Well-graded GRAVEL with Sand (GW)
AASHTO	Stone Fragments, Gravel and Sand (A-1-a (1))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR
 Sand/Gravel Hardness : HARD



Town: Plympton
 Bridge No.: P-14-001
 Winnetuxet Rd Over Winnetuxet River
 Project No.: 609435

Bridge Scour Check

Critical Velocity	EX	EX	PR-1	PR-1
$V_c = 11.17 Y^{1/6} D^{1/3}$ [ref: HEC-18, 5th Edition, April 2013, Equation (6.1)]	Design Flood (4%)	Check Flood (2%)	Design Flood (4%)	Check Flood (2%)
Average depth of flow upstream of the bridge (ft), $y_1 =$	5.24	5.96	4.60	5.57
D_{50} in mm	5.00	5.00	5.00	5.00
Patricle size for V_c (ft), $D =$	0.016404	0.016404	0.016404	0.016404
Critical velocity (ft/s), $V_c =$	3.74	3.82	3.66	3.78
Mean velocity (ft/s), $V =$	6.35	5.54	8.35	6.15
$V_c > V$ (Clear-Water)	No	No	No	No
$V_c < V$ (Live-Bed)	Yes	Yes	Yes	Yes
Bridge Scour Type	Live-Bed	Live-Bed	Live-Bed	Live-Bed

Contraction Scour at the Bridge

Live-Bed Contraction Scour at the Bridge	EX	EX	PR-1	PR-1
$Y_2 = [(Q_2/Q_1)^{6/7} (W_1/W_2)^{k_1}]Y_1$ [ref: HEC-18, 5th Edition, April 2013, Equation (6.2)]	Design Flood (4%)	Check Flood (2%)	Design Flood (4%)	Check Flood (2%)
	Channel	Channel	Channel	Channel
Flow in the u/s channel transporting sediment (ft ³ /s), $Q_1 =$	821.41	897.82	919.83	928.57
Bottom width of the u/s main channel that is transporting bed material (ft), $W_1 =$	24.71	27.22	23.98	27.11
Average depth in the upstream main channel (ft), $y_1 =$	5.24	5.96	4.60	5.57
Flow in the contracted channel (ft ³ /s), $Q_2 =$	1200.00	1490.00	1200.00	1490.00
Bottom width of main channel in contracted section less pier width(s),(ft), $W_2 =$	23.93	23.93	25.60	25.60
Existing depth in the contracted section before scour (ft), $y_o =$	4.27	4.94	4.08	4.72
Slope of Energy grade line, $S_0 =$	0.0038	0.0038	0.0028	0.0028
D_{50} bed material size (mm) =	5.00	5.00	5.00	5.00
Fall velocity of D_{50} bed material from Figure 6.8 in HEC-18 (m/s), $\omega =$	0.500	0.500	0.500	0.500
Shear velocity in the upstream section (ft/s), $V^* =$	0.80	0.85	0.64	0.71
Fall velocity ω (ft/s) =	1.64	1.64	1.64	1.64
$V^* / \omega =$	0.49	0.52	0.39	0.43
Exponent , $k_1 =$	0.59	0.64	0.59	0.59
Average depth in the contracted section (ft), $y_2 =$	7.39	9.99	5.56	8.64
Average contraction scour depth (ft), $y_s =$	3.12	5.05	1.48	3.92
Contraction Scour Depth at the Bridge	3.12	5.05	1.48	3.92



Town: Plympton
 Bridge No.: P-14-001
 Winnetuxet Rd Over Winnetuxet River
 Project No.: 609435

Abutment Scour

NCHRP 24-20 Abutment Scour Approach	EX	EX	PR-1	PR-1
$y_c = y_1 (q_{2c} / q_1)^{6/7}$ [ref: Live-bed abutment scour (ref: HEC-18 Equation 8.5)]	Design Flood (4%)	Check Flood (2%)	Design Flood (4%)	Check Flood (2%)
Scour location	Channel	Channel	Channel	Channel
D_{50} (ft)	0.0164	0.0164	0.0164	0.0164
Contraction scour calculation method used =	<i>Live-Bed</i>	<i>Live-Bed</i>	<i>Live-Bed</i>	<i>Live-Bed</i>
Total discharge upstream (cfs), Q_1 =	821.41	897.82	919.83	928.57
Width upstream (ft), W_1 =	24.71	27.22	23.98	27.11
Upstream flow depth (ft), y_1 =	5.24	5.96	4.60	5.57
Total discharge in the bridge opening (cfs), Q_2 =	1200.00	1490.00	1200.00	1490.00
Width of the bridge opening (ft), W_2 =	23.93	23.93	25.60	25.60
Flow depth in the contracted section (ft), y_2 =	4.27	4.94	4.08	4.72
Unit discharge in the constricted opening accounting for non-uniform flow distribution (ft^2/s), q_2 =	50.1	62.3	46.9	58.2
Upstream unit discharge (ft^2/s), q_1 , =	33.2	33.0	38.4	34.3
q_2 / q_1 =	1.51	1.89	1.22	1.70
Flow depth including live-bed or clear-water contraction scour (ft)	7.5	10.3	5.5	8.8
Amplification factor for live-bed conditions, α_A =	1.60	1.28	1.75	1.40
Amplification factor for clear-water conditions, α_B =				
Maximum flow depth resulting from abutment scour (ft), y_{max} =	11.9	13.1	9.6	12.3
Flow depth prior to scour (ft), Y_0 =	4.27	4.94	4.08	4.72
Abutment scour depth (ft), Y_s =	7.7	8.2	5.5	7.6
Abutment Scour Depth (ft) =	7.66	8.16	5.48	7.56



Town: Plympton
 Bridge No.: P-14-001
 Winnetuxet Rd Over Winnetuxet River
 Project No.: 609435

Riprap Sizing at Bridge Abutments for 2% Flood Event for all Proposed Alternatives

HEC-23 Volume II - Design Guideline 14 - Sizing Rock Riprap at Bridge Abutments

$$\frac{D_{50}}{y} = \left(\frac{K}{S_s - 1} \right) \left[\frac{V^2}{gy} \right] \quad \text{for Froude number} \leq 0.8 \quad \text{ref: Eq. 14.1}$$

$$\frac{D_{50}}{y} = \left(\frac{K}{S_s - 1} \right) \left[\frac{V^2}{gy} \right]^{0.14} \quad \text{for Froude number} > 0.8 \quad \text{ref: Eq. 14.2}$$

Determine Set Back Ratio

$d_{50} = 0.692(V_{des})^2 / (S_g - 1)2g$	ref: Eq. 11.1
Set back length (ft) =	0.00
Avg channel flow depth (ft) =	5.57
SBR =	0.00

SBR is < 5; hence, Velocity based on the contracted area through bridge

Determine Riprap Size (Eq. 14.1 or 14.2)

Type of Abutment =	Vertical
Riprap rock type (select Angular or Rounded) =	Angular
Average velocity in the contracted section (ft/s), V =	12.33
Specific gravity of the sediment, Sg =	2.65
Gravitational acceleration (ft/s ²), g =	32.2
Average flow depth in the contracted section (ft), y =	4.72
Froude Number	1.00
K	0.69
Median stone diameter D ₅₀ (ft) =	1.97
D ₅₀ in inches	23.7
Recommended D ₅₀ (inches) =	24.00
Recommended D ₅₀ (ft) =	2.0
Recommended D ₁₀₀ (inches) =	48.0
Recommended D ₁₀₀ (ft) =	4.00

Recommended Riprap Extents

Thalweg Elevation	35.30
Check Scour Flood Elevation	44.73
Y ₀	9.4
2Y ₀	18.9
Thickness of riprap (1.5* D ₅₀ or D ₁₀₀), inches	48
Thickness of riprap (1.5* D ₅₀ or D ₁₀₀), feet	4
Long term degradation depth, feet	0.00
Constraction scour depth, feet	3.92
Top of riprap elevation (Depth below thalweg), feet	31.4
Pressure flow condition	No
Min Extend of rip rap from toe into channel, feet	18.86

Appendix D: O&M Plan and LTPPP

- › Stormwater Management System Operation and Maintenance (O&M) Plan
- › Long-Term Pollution Prevention Plan (LTPPP)

Operation and Maintenance Plan | Long-Term Pollution Prevention Plan

Appendices

MassDOT Winnetuxet Road Over Winnetuxet River Bridge Plan

Stormwater Management System
Operation and Maintenance Plan and
Long-Term Pollution Prevention Plan
Plympton, MA

PREPARED FOR



10 Park Plaza
Boston, MA 02116

PREPARED BY



AECOM
250 Apollo Drive
Chelmsford, MA, 02144

12/20/2023

8

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 Winnetuxet Road Over the Winnetuxet River Bridge plan, located within the town of Plympton. In general, inspection and maintenance activities will be conducted consistent with the National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer System (MS4) and MassDOT's anticipated NPDES Transportation Separate Storm Sewer System (TS4) Permit.

This document has been prepared per the requirements of Massachusetts Department of Environmental Protection (MassDEP) Regulations 310 CMR 10.05 (6)(k)(9) and satisfies the requirements of Massachusetts Stormwater Standard 9.

8.1 Responsible Party

The Town of Plympton 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 the Plympton Department of Public Works located at 23 Palmer Road, Plympton MA, 02144, phone (781)-585-3703. The Plympton Highway Superintendent can be contacted at the number listed, or by emailing highway@plymptontown.org.

8.2 Inspection and Maintenance Measures and Record-Keeping

The stormwater management system covered by this O&M Plan consists of the following measures:

- Deep Sump Catch basin 1
- Deep Sump Catch basin 2

MassDOT uses a performance-based inspection and maintenance program for SCMs and catch basins. For SCMs, MassDOT's overall approach is to inspect SCMs, and based on the results of the inspections, perform maintenance to preserve functionality. For catch basins, MassDOT's overall approach is to 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

Winnetuxet Road over Winnetuxet River Bridge Plan

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	<ul style="list-style-type: none"> › Catch basins › Outlet control structures 	<ul style="list-style-type: none"> › Sediment accumulation › Trash/Debris accumulation › Signs of contamination › Frame and grate condition › Overall structure condition
Storm Discharge Points	<ul style="list-style-type: none"> › Outlets to Catch basins 	<ul style="list-style-type: none"> › Presence of flow › Signs of contaminated flow › Sediment accumulation › Level of erosion › Pipe condition › Scour protection condition › Overall structure condition

Inspection and maintenance records can be made available using the asset management system through request with the MassDOT District 5 Environmental Engineer. Records will be kept for at least three years. Representatives of the Town of Plympton’s Conservation Commission(s), MassDEP, and US EPA may obtain access to these records, upon request. Additionally, MassDOT will allow members and agents of MassDEP and the Conservation Commission(s) to enter and inspect the premises, upon request, to evaluate and ensure that the Operation and Maintenance Plan requirements for each SCM are being followed.

Project activity for stormwater management practices will only include the installation of two deep sump catch basins. These catch basins will be inspected and maintained on a yearly basis, or whenever necessary to maintain functionality standards.

8.3 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

Winnetuxet Road over Winnetuxet River Bridge Plan

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.

Project activity for stormwater management practices will only include the installation of two deep sump catch basins. These catch basins will be inspected and maintained on a yearly basis, or whenever necessary to maintain functionality standards. Since the only stormwater management practices that are being implemented are deep sump catch basins, no special measures are needed for erosion and sediment control.

8.4 O&M Budget

The town of Plympton spends around ten-thousand dollars to clean all catch basins within the town, and around ten-thousand dollars to street sweep the entire town once a year. The budget for the maintenance and inspection of these two new deep sump catch basins will therefore be factored into the existing town budget for street sweeping and catch basin maintenance.

<u>Cost Category</u>	<u>Cost</u>
Yearly Catch Basin Maintenance:	≤ \$10,000
Total Budget:	≤ \$10,000

9

Long-Term Pollution Prevention Plan

This Long-Term Pollution Prevention Plan (LTPPP) describes the approach for pollution prevention and related maintenance activities for the Winnetuxet Road Over the Winnetuxet River Bridge plan in the town of Plympton. 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),
- MassDOT’s anticipated NPDES Transportation Separate Storm Sewer System (TS4) Permit, and
- Measures outlined in MassDOT’s Stormwater Management Plan (SWMP).

This LTPPP satisfies the requirements related to pollution prevention under Massachusetts Stormwater Standards 4, 5, 6, and 10.

9.1 Practices for Long-Term Pollution Prevention

For the facilities covered, long-term pollution prevention includes the following measures.

- *Routine inspections and maintenance of deep sump catch basins*
- *Routine cleaning of deep sump catch basins*

Winnetuxet Road over Winnetuxet River Bridge Plan

9.1.1 Inspection and Maintenance of Stormwater Assets

The town of Plympton will conduct inspection and maintenance of drainage infrastructure and the two catchbasins in accordance with the O&M Plan, as described in Section 1. Repairs of the deep sump catch basins will be performed when deemed necessary by inspectors.

9.1.2 Cleaning of Deep Sump Catch Basins

The town of Plympton will conduct routine yearly cleanings of the deep sump catch basins leading up to the Winnetuxet Bridge. These cleanings will include the removal of any trash, debris, sediment, or pollutants that are within the catch basin sump.

9.1.3 Snow and Ice Management

Snow and Ice Management will be conducted consistent with the practices outlined in the MassDOT Snow and Ice Control Program Environmental Status and Planning Report (ESPR), formerly known as the Snow and Ice Control Generic Environmental Impact Report (GEIR).

In accordance with the Snow and Ice Control ESPR, no sand is used on MassDOT properties for snow and ice control. The exception to this rule is within reduced salt areas where high sodium levels have been found in drinking water sources. The project area is located above the Winnetuxet River and adjacent to the Winnetuxet Pond. There are no special measures to be taken aside from existing routine practices for roadways within reduced salt-areas.

9.1.4 Prohibition of Illicit Discharges

The MassDEP Stormwater Management Standard 10 prohibits illicit discharges to the stormwater management system. Illicit discharges are discharges that do not consist entirely of stormwater, except for certain specified non-stormwater discharges.

In accordance with the existing MS4 permit and anticipated TS4 permit requirements, examples of discharges from the following sources are not considered illicit discharges:

- > Firefighting activities*
- > Foundation drains
- > Flows from riparian habitats/wetlands
- > Potable water sources

Winnetuxet Road over Winnetuxet River Bridge Plan

- > Water line flushing
- > Footing drains
- > Landscape irrigation
- > Individual residential car washing
- > Uncontaminated groundwater
- > Rising groundwater
- > Diverted stream flows
- > 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 Winnetuxet Road over the Winnetuxet River Bridge plan. Should an interconnection to the stormwater management system be identified, the MassDOT PM will coordinate with the District Permits Engineer to confirm if the connections are authorized. For unauthorized connections, the MassDOT PM and/or MassDOT Environmental Services Section will investigate the connections and if they are determined to be illicit, the connections will be managed through the Town of Plympton and/or through other agencies.

9.1.5 Spill Prevention and Response

The project site stormwater management practices will not discharge to a public water supply such as a Zone I or II Wellhead Protection Area or a Zone A Surface Supply Water Protection Area. Therefore, no spill prevention and response plan was prepared .

Appendix E: Calculations

> TSS Calculations

Winnetuxet Road over Winnetuxet River Bridge Plan

Winnetuxet Road over Winnetuxet River Bridge Plan

Deep Sump Catch Basin 1:

Location: Winnetuxet Road Bridge over the Winnetuxet River

BMP ¹	C TSS Removal Rate ¹	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Deep Sump Catch Basin	0.25	1.00	0.25	0.75
	0.00	0.75	0.00	0.75
	0.00	0.75	0.00	0.75
	0.00	0.75	0.00	0.75
	0.00	0.75	0.00	0.75

Total TSS Removal = 25%

Separate Form Needs to be Completed for Each Outlet or BMP Train

TSS Removal Calculation Worksheet

Winnetuxet Road over Winnetuxet River Bridge Plan

Winnetuxet Road over the Winnetuxet River Bridge Replacement
Prepared By: AECOM
Date: 2/23/2024

Project:

Prepared By:

Date:

*Equals remaining load from previous BMP (E)
which enters the BMP

Winnetuxet Road over Winnetuxet River Bridge Plan

Deep Sump Catch Basin 2:

Location: Winnetuxet Road Bridge over the Winnetuxet River

B	C	D	E	F
BMP ¹	TSS Removal Rate ¹	Starting TSS Load*	Amount Removed (C*D)	Remaining Load (D-E)
Deep Sump Catch Basin	0.25	1.00	0.25	0.75
	0.00	0.75	0.00	0.75
	0.00	0.75	0.00	0.75
	0.00	0.75	0.00	0.75
	0.00	0.75	0.00	0.75

TSS Removal Calculation Worksheet

Total TSS Removal =

25%

Separate Form Needs to be Completed for Each Outlet or BMP Train

Winnetuxet Road over Winnetuxet River Bridge Plan

Winnetuxet Road over the Winnetuxet River Bridge Replacement
Prepared By: AECOM
Date: 2/23/2024

Project:

Prepared By:

Date:

*Equals remaining load from previous BMP (E)
which enters the BMP

Attachment F: Dam Safety Jurisdictional Determination/Permit Exemption



CHAPTER 253 PERMIT APPLICATIONS

1. COVER SHEET (check application being submitted)

PART A – JURISDICTIONAL DETERMINATION/PERMIT EXEMPTION APPLICATION
 (Submit Part A pages of form with narrative for minor dam maintenance)

PART B – FULL PERMIT APPLICATION AND DESIGN REPORT

Dam Name: Winnetuxet Road Pond Dam
Location (City or Town): Plympton, MA
Hazard Classification: Significant

Date: August 24, 2023
Dam ID Number: MA02465
Size Classification: Small

Owner(s): Town of Plympton, MA
Name: Plympton Town Clerk
Address: 5 Palmer Road, Plympton, MA 02367
Telephone: (781) 585-3220

E-mail: n/a

Any person(s), who proposes to construct, repair, materially alter, breach or remove a dam, pursuant to M.G.L. Chapter 253, as amended by Chapter 330 of the Acts of 2002, must file with the Commissioner a Chapter 253 Dam Safety Permit application (**Part B**). Minor maintenance-related work does not require a Chapter 253 Dam Safety Permit; however, the owner(s) must file for a determination / exemption for other than routine activities that may affect safety conditions using the **Part A** application. No work is to commence either before a determination is made by the Commissioner for minor work or before a permit is issued for major work. If the Commissioner determines that the proposed work falls within the jurisdiction of M.G.L. Chapter 253 the Owner(s) must apply for a permit using the **Part B** application. If an owner believes that the proposed work is major, they may submit the **Part B** application without prior submittal of Part A.

The application and notices shall be sent by certified mail to DCR, Office of Dam Safety, Permits. All permit applications must comply with design and construction criteria as specified in 302 CMR 10.00: Dam Safety Rules and Regulations effective November 4, 2005.

Certain dams and reservoirs as defined in 302 CMR 10.00 are excluded from filing. Also, the approval of the Commissioner shall not apply to small dams or embankments constructed for irrigation, detention, storage tanks, or other purposes that impounds less than 15 acre-feet, regardless of height and is not in excess of 6 feet in height, regardless of storage capacity provide that any discharge(s) shall not materially affect property. However, the Commissioner shall make the final determination by taking into consideration factors such as height, type of structure, condition of structure, volume of impoundment, extent of downstream development, and other factors deemed appropriate by the Commissioner.

Any action taken by the Commissioner in regard to this application does not release the owner(s) from the requirements of any other law or regulatory authority.

COMMONWEALTH OF MASSACHUSETTS - EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS
 Department of Conservation and Recreation
 180 Beaman Street
 West Boylston, MA 01583
 508-792-7423 508-792-7805 Fax
 www.mass.gov/orgs/departement-of-conservation-recreation

Maura Healey Governor	Rebecca Tepper, Secretary, Executive Office of Energy & Environmental Affairs
Kim Driscoll Lt. Governor	Brian Arrigo, Acting Commissioner Department of Conservation & Recreation

2. SIGNATURE SECTION PART A

The proposed work described in this application is believed to be minor maintenance by the undersigned. The proposed minor maintenance will be performed in a manner that will maintain or enhance the safety of the dam without changing the dam hazard classification or altering (other than to repair) the permitted features of the dam.

Applicant(s) Is Applicant also the Owner? Yes () No (X)

Name(s): The Massachusetts Department of Transportation
Street: 10 Park Plaza
City/Town: Boston State: MA Zip: 02116
Telephone: (617)-305-3580 Fax: n/a Email Address: courtnev.l.walker@dot.state.ma.us

Signature and Title _____ Date: _____

Owner(s) (complete only if the Applicant is not the Owner)

Name(s): Rob Furlotte, Highway Superintendent
Street: 23 Palmer Rd, PO Box 181
City/Town: Plympton State: MA Zip: 02367
Telephone: 781-585-3703 Fax: 781-242-3622 Email Address: highway@plymptontron.org

Signature and Title Rob Furlotte Superintendent Date: 8/29/23

Licensed professional civil engineer registered in Massachusetts (optional but recommended)

Name: Jeffrey DeInnocentis
Company: AECOM
Street: 250 Apollo Drive
City/Town: Chelmsford State: MA
Zip: 01824
Telephone: (978)-905-2178 Fax: (978)-905-2101 Email Address: jeffrey.deinnocentis@aecom.com

Signature: Jeffrey DeInnocentis Date: 8/25/23

Massachusetts Professional Engineer Stamp and License Number:



(PART A cont.)

3. CHECKLIST PART A

No application, either Part A or Part B, is required for routine maintenance (e.g. mowing of grass and brush clearing, painting, valve exercise or lubrication) or permitted water adjustments for pond maintenance and flood operation. Submit Part A form if in doubt about the need for DCR review of an activity.

Typical minor maintenance activities for which a Part A application is appropriate include, but are not limited to, the following items.

- | | |
|--|---|
| 1. Minor Earthwork/masonry maintenance and repair? | Yes(<input checked="" type="checkbox"/>) No(<input type="checkbox"/>) |
| 2. Riprap maintenance and repair? | Yes(<input checked="" type="checkbox"/>) No(<input type="checkbox"/>) |
| 3. Vegetation and tree maintenance?
(larger than brush, less 6" diameter) | Yes(<input type="checkbox"/>) No(<input checked="" type="checkbox"/>) |
| 4. Rodent damage control? | Yes(<input type="checkbox"/>) No(<input checked="" type="checkbox"/>) |
| 5. Traffic damage controls and erosion? | Yes(<input type="checkbox"/>) No(<input checked="" type="checkbox"/>) |
| 6. Mechanical maintenance to outlets? | Yes(<input type="checkbox"/>) No(<input checked="" type="checkbox"/>) |
| 7. Electrical maintenance? | Yes(<input type="checkbox"/>) No(<input checked="" type="checkbox"/>) |
| 8. Cleaning? | Yes(<input type="checkbox"/>) No(<input checked="" type="checkbox"/>) |
| 9. Concrete maintenance? | Yes(<input type="checkbox"/>) No(<input checked="" type="checkbox"/>) |
| 10. Metal component maintenance? | Yes(<input type="checkbox"/>) No(<input checked="" type="checkbox"/>) |
| 11. Other as specified: | Yes(<input type="checkbox"/>) No(<input checked="" type="checkbox"/>) |

4. NARRATIVE DESCRIPTION (attach to this form)

Describe the proposed minor maintenance in sufficient detail to provide a clear understanding of the proposed work. Describe all activities noted above and any work not covered by the checklist. Provide drawings, sketches and photographs showing the locations and features affected by the routine maintenance.

Narrative Description:

The Winnetuxet Road Bridge that spans over the Winnetuxet River was recently inspected, and rating reports were provided to the town. The inspection indicated that components of the structure were rated between poor and good, and noted specific deficiencies within the two-span structure. It was recommended that the bridge undergo repairs or a replacement in order to sufficiently meet bridge and roadway safety standards. The proposed project is a bridge replacement project involving replacing the small bridge that runs over the Winnetuxet River and an earthen dam. The bridge is also just a few feet downstream of a spillway that is owned and operated by the Town of Plympton and impounds the Winnetuxet Pond. The location of the proposed project site can be seen in the project locus within **Figure 1** below. The entire superstructure and certain substructures of the existing bridge are being removed or replaced along with the guardrails approaching the bridge from the northern and southern side of the roadway. The existing abutments will remain in place as they are connected to the retaining walls of the spillway. These existing abutments will be demolished down to the top elevation of the spillway and capped, with new abutments to be placed behind them in the roadway. Riprap a few feet down river from the spillway will be replaced, with less than 70 cubic yards of excavation and fill to take place. Existing pier columns located underneath the bridge will also be removed but will be cut to in order to avoid and sediment disturbance. The existing walls of the spillway will not be altered, although they are within a few feet of the proposed construction work to replace the bridge. As stated previously, the dam is earthen and the Winnetuxet Road runs over it. Alterations to the roadway and abutments will require minor earthmoving to cap old abutments and install new abutments behind the existing ones. This While no direct earthmoving repairs or maintenance to the dam are to take place, a small level of minor earthmoving to install new abutments will still be required.

All drawings and sketch plans that are proposed are included at the end of this document in **Attachment B**. Pictures of the Site, bridge, roadway, and spillway are all included and described within **Attachment A** below.

PART A – JURISDICTIONAL DETERMINATION/PERMIT EXEMPTION APPLICATION
(for routine maintenance)

Part A Instructions: If an exemption from Chapter 253 permit requirements is requested, provide the information described below:

1. Cover Sheet (page 1 of form) ✓
 2. Signature Section (page 3 of form) ✓
 3. Completed Checklist (page 4 of form) ✓
 4. Narrative Description with supporting drawings, sketches and photographs ✓
-

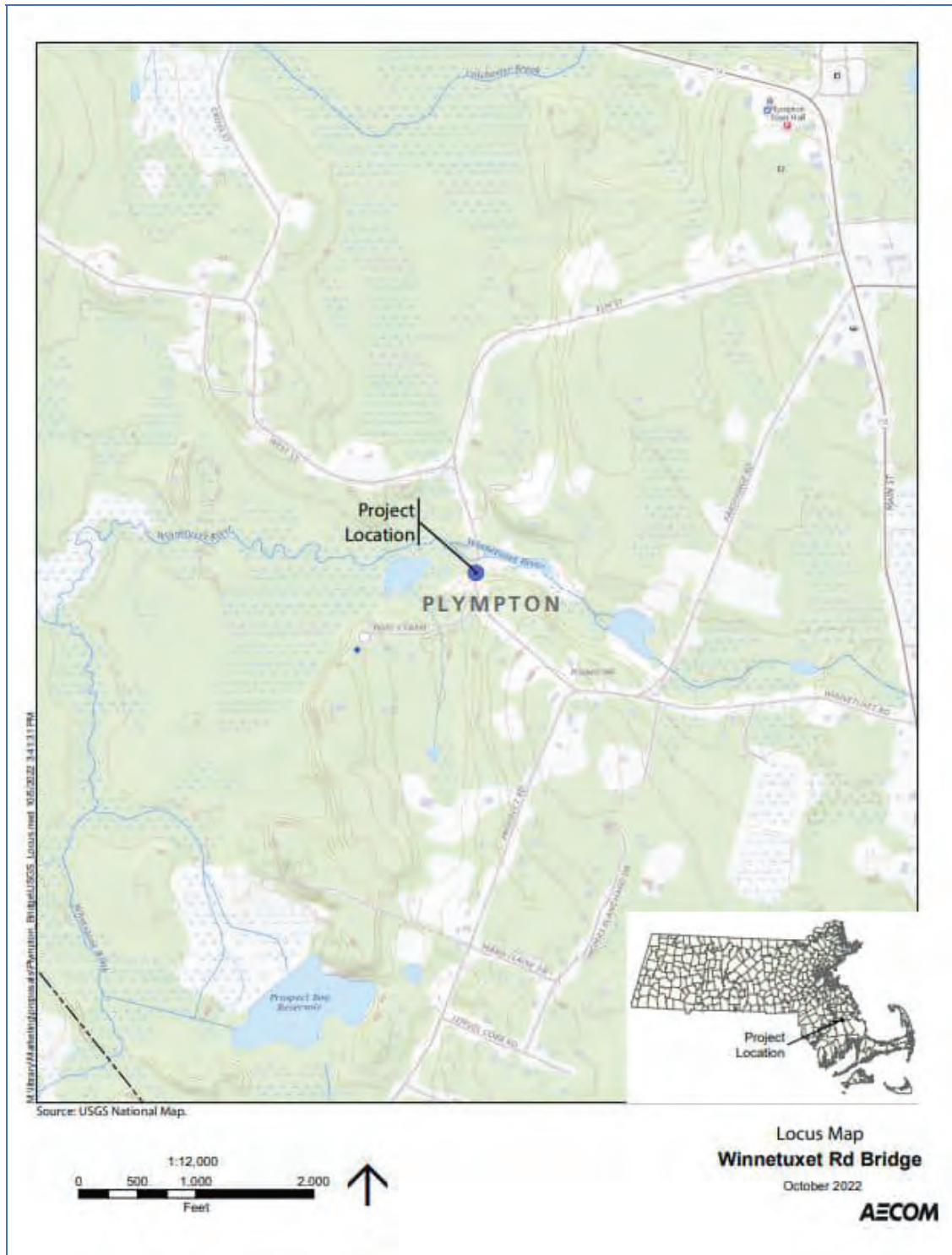






Figure 1: Winnetuxet Road Bridge Project Site Location

Attachment A: Site Photos



AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 1	Date: 4/20/21		
Description: Southern approach to the Winnetuxet Road bridge. Shows a view of the existing bridge and guardrails.			

AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 2	Date: 4/20/21		
Description: View from the Northern approach to the Winnetuxet Road bridge. The Winnetuxet Pond is on the right side of the bridge. The Winnetuxet River is split by water that flows over the spillway and under the bridge and a culvert just north of the project site. Shows a view of the deteriorating condition of existing guardrails.			

AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 3	Date: 4/20/21		
Description: Close up view of the Winnetuxet Road bridge. Deteriorated, non-standard side rail guards leading up to the bridge.			
AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 4	Date: 4/20/21		
Description: Side view of the Winnetuxet Bridge from the Northern entrance point. Winnetuxet River runs underneath from a controlled spillway on the east side of the bridge. Shows a view of the concrete retaining walls that are attached to the spillway.			

AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 5	Date: 4/20/21		
Description: Side view of the two-span timber bridge superstructure that will be replaced.			
AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 6	Date: 4/20/21		
Description: Underside view of the bridge from the western portion of the Winnetuxet river. The river spillway is visible at the back as well as the substructures that support the bridge. Shows a view of the spillway and the pier columns to be cut and removed.			

AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 7	Date: 4/20/21		
Description: Piers and stream bed under bridge. Shows a view of a portion of the rip rap to be removed and replaced.			
AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 8	Date: 4/20/21		
Description: Secondary underside view of the river spillway and substructures supporting the bridge above.			

AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 9	Date: 4/20/21		
Description: Underside view of the substructure wooden beams.			
AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 10	Date: 4/20/21		
Description: Underside view of the abutment that will remain to support the new bridge superstructure.			

AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 11	Date: 4/20/21		
Description: Underside view of the bridge from the eastern portion of the Winnetuxet river spillway.			

Attachment G: Environmental Specifications

ITEM 755.55**STREAMBED RESTORATION****LUMP SUM****DESCRIPTION**

Work performed under this item shall consist of removing, stockpiling, and replacing river bed material in the proposed bridge replacement and the downstream approach in the limits of work. The streambed restoration shall replicate the existing natural channel bed outside the work area in terms of material, roughness, shape, profile, and appearance. The ultimate product will, to the extent possible, replicate the function and appearance of the natural stream channel, as illustrated by photo-documentation herein (Figure A).

The Contractor shall coordinate with his/her 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 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 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 river bed. The following gradation was sampled from the streambed surface, which shall be used as a guide.

Stream Bed Material Gradation

Particle	Percent (%) Composition
Cobble	10-20%
Gravel	60-80%
Sand	15-25%
Silt & Clay	1-5%

Stream bed sediment samples were taken using a shovel, therefore, larger material such as cobble were not factored into the Stream Bed Material Gradation percentage calculation. Further onsite analysis by MassDOT and the Contractor will be needed to determine the percentage of larger sediment particles within the stream bed for inclusion in the naturalized streambed restoration material layer.

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

Related Items

Riprap Stone shall conform to the requirements of Item 983.1 and shall be paid for under that item.

CONSTRUCTION

Channel

The streambed material shall be reinstalled over riprap (MassDOT Item 983.522), as depicted on the plans, to an average thickness of 1 foot, with variations in thickness as required 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 erosion and turbidity controls in accordance with the environmental permits.

Completion

Massachusetts Department Of Transportation



Highway Division

Once all material has been placed in the stream channel and approved by the Geomorphologist and Resident Engineer, the Contractor shall remove the turbidity and erosion control measures 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 habitable by fish and other aquatic organisms 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.

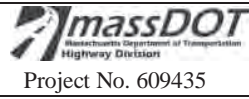
The Geomorphologist will be provided by MassDOT at no cost to the Contractor.

FIGURES

Figure A: Downstream of Bridge:



Massachusetts Department Of Transportation



Highway Division

Project No. 609435



ITEM 697.1**SILT SACK****EA****DESCRIPTION**

The work under this Item shall conform to the relevant provisions of Sections 227 and 670 of the Standard Specifications and the following:

The work shall include 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.

MATERIALS

Inlet protection shall be manufactured to fit the opening of the catch basin or drop inlet.

Inlet Protection shall be provided by one of the following manufactures or approved equal:

- Siltsack® manufactured by ACF Environmental, Inc.
- The BMP Store
- Reed & Graham, Inc. Geosynthetics.

CONSTRUCTION

The Contractor shall install an inlet protection device in each of the catch basins within the limit of work per the manufacturer's instructions prior to the start of construction activities and the preconstruction meeting with the Engineer and the Conservation Commission or its designee.

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.

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 dispose 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 Contractor's 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 debris accumulated in silt sacks shall be handled and disposed of as specified in Section 227 of the Standard Specifications.

The Contractor shall return the inlet protection device to each of the catch basins within the limit of work immediately following emptying. The Contractor shall remove the inlet protections

ITEM 697.1 (Continued)

device after construction activities are completed and approval has been given by the Conservation Commission or its representative that all disturbed areas are satisfactorily stabilized.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 697.1 will be measured and paid for at the Contract unit price per each, which price shall include all labor, equipment, materials, and incidental costs required to complete the work.

**ITEM 698.4 GEOTEXTILE FABRIC FOR PERMANENT SQUARE YARD
EROSION CONTROL**

DESCRIPTION

The work under these Items shall conform to the relevant provisions of Section 600 and the following:

The work shall include furnishing and installing geotextile fabrics and impermeable liners to the limits shown on the Plans or as directed by the Engineer.

SUBMITTALS

The Contractor shall provide the Engineer a certificate stating the name of the geotextile manufacturer, product name, style, chemical compositions of filaments or yarns and other pertinent information to fully describe the geotextile.

MATERIALS

Geotextile Fabric for Permanent Erosion Control shall be placed under Riprap as detailed on the Contract Drawing. The proposed geotextile fabric shall conform to the requirements of AASHTO-M-288, Table 6, Class 1 from Table 1, 15 to 50 percent in situ soil passing 0.075mm and to Section M9.50 of the Standard Specifications.

CONSTRUCTION

At locations of fabric installation, the subgrade shall first be graded and compacted. All rocks, vegetation, and other obstructions shall be removed before placement of fabric. The fabric shall be installed and fastened in place in conformance with the manufacturer's recommendations.

Geotextile fabric shall be rolled out flat and tight with no folds and not dragged into place. Adjacent strips of geotextile should overlap at least 2 feet. The geotextile should be secured in place at the overlaps with steel pins at least 18 inches long and spaced at 2 feet on center. The pins should be fitted with washers at least 1.5 inches in diameter.

No backfill material shall be dropped onto the geotextile from a height exceeding 3 feet.

METHOD OF MEASUREMENT

Geotextile geotechnical fabric for permanent erosion control will be measured for payment by the square yard installed complete in place. The area of geotextile used for overlapping shall not be included for measurement.

BASIS OF PAYMENT

Geotextile fabric for permanent erosion control will be paid for at the respective Contract unit prices per square yard, which price shall include all labor, materials, equipment and incidental costs required to complete the work.

ITEM 767.121**SEDIMENT CONTROL BARRIER****FOOT**

The work under this Item shall conform to the relevant provisions of Sections 751 and 767 of the Standard Specifications and the following:

This work shall include the furnishing and placement of a sediment control barrier for the purpose of slowing the velocity of and filtering suspended sediments from storm water flow. Control barrier shall be installed prior to disturbing upslope soil. Sediment barrier shall be used as perimeter barriers, to contain stockpile sediments, to break slope length, and to slow or prevent up gradient water from flowing into a work zone.

Sedimentation control shall be a minimum 12 inch diameter compost filter tubes.

With approval from the Engineer the following may be used to control sediments for small disturbed areas with minimal slope and slope length:

- 9 inch diameter compost filter tubes or fiber logs
- Trenched-in 12 inch diameter straw tubes/wattles
- Straw or haybales provided that runoff is in the form of sheet flow and not concentrated flows (i.e., channels, swales, gullies, etc.).

Where required, by the Engineer, silt fence shall be used in addition to compost filter tubes to contain sediments. Silt fence will be incidental to the item. Where haybales and silt fence are required by permits, silt fence shall be incidental to the item.

Maintenance of control barriers and removal of accumulated sediment shall be as specified below, as required by the Engineer, and shall conform to the requirements of relevant environmental permits.

Upon completion of work and stabilization of soil, sediment control barriers shall be dismantled and/or removed as specified below for the site context (naturalized or urban). Site shall be restored as specified for specific barrier used.

All non-biodegradable materials, including silt fence, twine, plastic netting, and photodegradable fabric, shall be removed and disposed off-site for all projects.

CONSTRUCTION

Location of sediment barrier shall be based on the site's contours and such that it provides maximum effectiveness. Barriers shall be staked, trenched and/or wedged as specified herein and shall be securely in contact with existing soil such that there is no flow beneath the barrier.

ITEM 767.121 (Continued)**Compost Filter Tube**

Material for the compost filter tube shall meet M1.06.0, except for the following: no 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.

Tubes for compost filters shall be a minimum of 12 inches in diameter. Tube material shall be a knitted mesh with 1/8 - 3/8" openings and made of 100% biodegradable materials (i.e., cotton, hemp or jute). Additional reinforcement tubes shall be used at the direction of the Engineer.

Stakes for anchoring shall be as shown on the plans and shall be a minimum of 1x1 inch diameter x 3 feet oak stakes or 2x2 inch diameter 3 foot pine stakes.

Tubes of compost may be filled on site or shipped. Tubes shall be placed, filled and staked in place as required to ensure stability against water flows. All tubes shall be tamped, but not trenched, to ensure good contact with soil.

In areas subject to sheet flow, rill erosion or concentrated flows, compost filter tube may require reinforcement with silt fencing as specified below. Silt fencing will be incidental to this item.

Compost tubes 9 inches in diameter may be used on flat surfaces where heavy flow is not expected and only upon approval of the Engineer. In these instances, tubes shall meet the requirements above.

Straw Bales

Straw bales shall conform to the requirements of the Standard Specifications and the following:

Bales should be a minimum size of 12 inch x 16 inch x 36 inches and shall be placed in a single row, lengthwise on the contour, with ends of adjacent bales tightly abutting one another.

The barrier shall be trenched and backfilled. The trench shall be excavated the width of the bale and the length of the proposed barrier to a minimum depth of 4 inches. After the bales are staked and chinked (filled by wedging) the excavated soil shall be backfilled against the barrier. Backfill soil shall conform to the ground level on the downhill side and shall be built up to 4 inches against the uphill side of the barrier.

Each bale should be securely anchored by at least two 1x1 inch diameter x 4 foot oak stakes or 2x2 inch diameter pine x 4 foot stakes driven through the bale. Stakes of other material of equivalent strength may be used if approved by the Engineer.

Straw bales shall be on upslope side of the silt fence unless specified otherwise by the Engineer.

ITEM 767.121 (Continued)**Straw Wattle**

Straw wattle shall be used only on flat surfaces where heavy flow is not expected and upon approval of the Engineer.

Straw wattle shall be a minimum of 12 inch in diameter and comprised of weed-free agricultural straw fibers encased in durable netting and shall have a density of 3 lb/foot.

Straw wattle shall be trenched in 3-5 inches deep and staked according to the manufacturer's recommendations. Tubes shall be staked every 5 feet, or if using 10 foot lengths, staking shall be a minimum of one stake on each end and one in the middle. Stakes shall be driven in at least 6 inches into the ground, stopping two inches above the tube or wattle. Ensure that the tube is securely tamped on the upstream side to prevent water flowing underneath the tube.

Stakes for anchoring shall be a minimum of 1x1 inch diameter x 3 foot oak stakes or 2x2 inch diameter x 3 foot pine stakes.

Silt Fence

Silt fence fabric shall be a minimum of 36" in width. Silt fence shall be trenched in 8 inches deep and 4 inches wide, or a V-trench on the upslope side of the fence line. The bottom 1 foot of fabric shall be placed in the trench, backfilled and compacted with earth or gravel.

Stakes shall be driven 16 inches into the ground on the down slope side of the trench. Spacing of stakes for silt fence may range from a minimum of 10 feet apart where low flow is expected to 3-4 feet apart where water may run over the top of the fence. Sagging fabric will require additional staking or other anchoring. Stakes shall be 2x2 inch diameter oak stakes.

Height of silt fence should be appropriate to the steepness and length of the slope and as specified by the manufacturer.

Turbidity Curtain

Turbidity curtain shall be placed in the river, downstream of work during excavation and filling operations. The curtain depth shall vary, with bottom of turbidity curtain extending to the bottom of the stream bed. The turbidity curtain shall be anchored at the bottom to maintain contact with the streambed. The top of the turbidity curtain shall include surface floats. Installation shall be per manufacturer's recommendation.

MAINTENANCE

Barriers shall be inspected after each rainfall and at least daily during prolonged rainfall. Contractor shall remove accumulated sediments when they reach one half the height of the barrier or sediment fence.

ITEM 767.121 (Continued)

The Contractor shall immediately correct all deficiencies, including, washouts, overtopping, clogging due to sediment, and erosion. The contractor shall review location of barriers in areas where construction activity causes drainage runoff so as to ensure that the barriers are properly located for effectiveness. Where deficiencies exist, such as overtopping or wash-out, additional staking or additional barriers shall be installed as required by the Engineer.

At specific locations, such as at gully points, steep slopes, or identified failure points in the sediment capture line, barriers shall be reinforced as required by the Engineer. Such reinforcing shall be incidental to the cost of this item and shall not exceed 10 percent of the overall length of barrier required for the project.

Barriers that are decomposing, cut, or otherwise compromised shall be repaired or replaced as directed by the Engineer. Repair and/or replacement shall be incidental to this item.

DISMANTLING & REMOVING

Barriers shall be dismantled and/or removed when construction work is complete and when site conditions are sufficiently stable to prevent surface erosion and after receiving permission to do so from the Engineer.

For all instances, all nonbiodegradable material, including photobiodegradable fabric, plastic netting, nylon twine, and silt fence shall be removed and disposed off-site by the Contractor regardless of site context.

For naturalized areas, biodegradable, natural fabric and material shall be left in place to decompose on-site unless required otherwise by the Engineer. Compost filter tubes may be left as they are with stakes removed. Hay bales shall be broken down and spread evenly. All nylon or nonbiodegradable twine shall be removed along with silt fence. Wooden stakes may be left on site, placed neatly and discretely.

In urban or residential locations where aesthetics is a concern the following shall apply:

Filter tube fabric shall be cut and removed, and compost shall be raked so as to blend evenly as a soil amendment or mulch and with no areas greater than 2 inches in depth on soil substrate.


Hay bales shall be removed and disposed off-site by the Contractor. Areas of trenching shall be raked smooth and disturbed soils stabilized with seed matching adjacent grasses with either a lawn or native grass mix. Silt fence, stakes and other debris shall be removed and disposed off-site. Site shall look neat and clean upon completion. Dismantling, removal and seeding shall be incidental to this item.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT


Item 767.121 will be measured and paid for at the Contract unit price per foot which price shall include all labor, equipment, materials, maintenance, dismantling, removal, restoration of site, silt fence if required, and incidental costs required to complete the work.

Attachment H: Site Photographs


AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 1	Date: 4/20/21		
Description: Southern approach to the Winnetuxet Road bridge			
AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 2	Date: 4/20/21		
Description: View from the Northern approach to the Winnetuxet Road bridge. The Winnetuxet Pond is on the right side of the bridge. The Winnetuxet River is split by water that flows over the spillway and under the bridge and a culvert just north of the project site.			


AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 3	Date: 4/20/21		
Description: Close up view of the Winnetuxet Road bridge. Deteriorated, non-standard side rail guards leading up to the bridge.			
AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 4	Date: 4/20/21		
Description: Side view of the Winnetuxet Bridge from the Northern entrance point. Winnetuxet River runs underneath from a controlled spillway on the east side of the bridge.			


AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 5	Date: 4/20/21		
Description: Side view of the two-span timber bridge superstructure that will be replaced.			
AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 6	Date: 4/20/21		
Description: Underside view of the bridge from the western portion of the Winnetuxet river. The river spillway is visible at the back as well as the substructures that support the bridge.			

AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 7	Date: 4/20/21		
Description: Piers and stream bed under bridge			

AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 8	Date: 4/20/21		
Description: Secondary underside view of the river spillway and substructures supporting the bridge above.			

AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 9	Date: 4/20/21		
Description: Underside view of the substructure wooden beams.			

AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 10	Date: 4/20/21		
Description: Underside view of the abutment that will remain to support the new bridge superstructure			

AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 11	Date: 4/20/21		
Description: Underside view of the bridge from the eastern portion of the Winnetuxet river spillway.			

Attachment I: Section 106 Cultural Resources Project Record



CULTURAL RESOURCES PROJECT RECORD

City/Town:	Plympton	Project #	609435	Date Cleared	2/2/2023
Project Name	Bridge P-14-001 replacement WINNETUXET ROAD OVER WINNETUXET RIVER	Date Filed	2/2/2023	Finding Under Review	<input type="checkbox"/>
Project Type:	Bridge Replacement	FHWA to MHC		Early Coord. Letter Sent:	<input checked="" type="checkbox"/>
Review:	Section 106 (PA)	Comment Received:	<input type="checkbox"/> MHC <input type="checkbox"/> LHC	Reviewer:	JMH
Finding:	Stip VB - No historic properties affected	Consultant			
Comments	PNF to ATHPO on Feb 2, 2023, no comments received. Per Corps permit, PNFs sent to ATHPO, MTHPO, NTHPO, and BUAR on August 31, 2023. PNF not sent to SHPO per 2013 Corps letter (in-house clearance form for this bridge replacement project included with Corps PNF documentation).				

Determination based on: Scope of Work Plans Inventory Site Visit Archaeological Survey
Attach appropriate documentation for checked items

Projects Requiring No Massachusetts SHPO Review

Programmatic Agreement, Appendix 1 (check all that apply) :

- | | |
|---|---|
| <input type="checkbox"/> 1) Interstate bridge or roadway projects | <input type="checkbox"/> 16) Bridge (less than 20' span) |
| <input type="checkbox"/> 2) Resurfacing, repair existing roadways | * <input type="checkbox"/> 17) Highway safety improvement |
| * <input type="checkbox"/> 3) Reconstruction on existing roadway | <input type="checkbox"/> 18) Drainage system element |
| * <input type="checkbox"/> 4) Roadway geometrics, intersections | * <input type="checkbox"/> 19) Traffic signal, safety improvement |
| * <input type="checkbox"/> 5) Curbs and sidewalks | * <input type="checkbox"/> 20) Intelligent Transportation System project |
| <input type="checkbox"/> 6) Pavement markings, rumble strips, etc | <input type="checkbox"/> 21) Rest area, maintenance facility |
| <input type="checkbox"/> 7) Curbs, sidewalks (MAAB, ADA) | * <input type="checkbox"/> 22) Bicycle, pedestrian lane, path or facility |
| * <input type="checkbox"/> 8) Removal of trees | <input type="checkbox"/> 23) Lighting system |
| <input type="checkbox"/> 9) Landscaping | <input type="checkbox"/> 24) Sign |
| <input type="checkbox"/> 10) Utilities | <input type="checkbox"/> 25) Hazardous waste |
| <input type="checkbox"/> 11) Railroad crossing | <input type="checkbox"/> 26) Highway fencing |
| <input type="checkbox"/> 12) Stream stabilization and restoration | <input type="checkbox"/> 27) Emergency repair |
| <input type="checkbox"/> 13) Wetland mitigation area | <input type="checkbox"/> 28) Erosion control |
| * <input type="checkbox"/> 14) Bridge (NR "Not Eligible" or "Conditionally Not Eligible") | <input type="checkbox"/> 29) Noise barrier |
| * <input type="checkbox"/> 15) Bridge (concrete slab post 1900, steel stringer) | * National Register eligibility evaluation required |

-OR-

No Historic Properties Affected

Programmatic Agreement Stipulation V.B. (check one):

- No NR listed or -eligible properties within Area of Potential Effect
 No effect on National Register listed or -eligible properties

Reviewer's Initials: JMH KJ



CULTURAL RESOURCES PROJECT RECORD

Summary of MassDOT Highway Division Finding (Appendix 1 and Section V.B. Projects only)

MassDOT proposes to expend federal funds to replace Bridge P-14-001 which carries Winnetuxet Road over the Winnetuxet River in Plympton. The project also includes repaving 120' of the Winnetuxet Road approaches. The existing structure is a two-span bridge with timber beam superstructure and a timber plank deck. The substructure consists of two stone abutments with wingwalls and a timber pile bent pier. The south abutment is obscured by a full-height concrete curtain wall connected to the concrete spillway immediately upstream of the bridge. The bridge measures 20'-10" out-to-out, accommodating a single 18'-10"-wide travel lane. A 12" diameter drainage pipe runs across the southern bridge approach and overhead wires run from south to north across the existing bridge.

The existing structure was originally built in 1923 and, according to the plans, a concrete abutment cap was placed on top of earlier mortared stone masonry abutments. In 1945 the timber pier next to the north abutment was removed and the timber pier located about halfway between the two abutments was replaced. Per the 2003 bridge rating report, a concrete facing was placed in front of the original mortared stone South Abutment in 1985. A new southwest wingwall was also added. Per the 2020 bridge rating report, deck and beams were replaced in 2002. The 2020 report also notes that the railings were replaced and two of the bent piles were encased in concrete in 2019.

A concrete spillway for the Winnetuxet River dam spans between the two bridge abutments. The dam consists of an earthen embankment measuring approximately 230' in length with a maximum height of 12'. The crest of the embankment is paved and carries Winnetuxet Road. The northerly embankment is approximately 200'-long. A primary concrete spillway is integral with the bridge's north and south abutment and an auxiliary box culvert spillway is located approximately 180' north of the bridge's north abutment. The primary spillway includes a broad crested weir with a sluiceway opening of 4.5'. The earthen dam is covered with vegetation, including large trees.

The planned improvements consist of replacement of the bridge with a single-span structure of the same width as existing. New abutments drilled shaft abutments will be constructed behind the existing abutments, with a new precast concrete cap seated on both the existing abutments and drilled shafts. The superstructure will consist of 15"-deep prestressed concrete deck beams. The deck will carry a single 18'-wide travel lane, with TL-2 glulam timber railings. No additional right of way will be required to accommodate the project work.

A review of MACRIS revealed no NR-listed properties or districts or inventoried areas, buildings, or structures in the vicinity of the project area. Kurt Jergensen, MassDOT Historic Bridge Specialist, reviewed the Bridge P-14-001 and determined it to be ineligible for listing in the National Register. The 1923 bridge structure has been altered several times since its construction, with substantial reconstruction efforts in 1945 and 2002. The bridge is a late example of the timber stringer type, with typical engineering features, lacking any known historical significance.

A review of the MHC's archaeological maps in MACRIS revealed one recorded site in the vicinity of the project area: PLM.HA.6 (Mill Site #6). The former grist mill / textile mill site is located approximately 0.02 miles northwesterly of the bridge and is part of a grouping of mills located along the Winnetuxet River in Plympton. The 1879 Walker Map shows a grist mill at this location. A site visit by the MassDOT Archaeologist on October 6, 2022 identified remains of the former mill located northwesterly of the project area along the river including stone retaining walls and a possible building foundation. It is the opinion of the MassDOT Archaeologist that low sensitivity can be ascribed to the project's direct area of potential effect based on the impacts of previous bridge, roadway, dam embankment, utility, and drainage construction. The mill site will not be impacted by the proposed project as the visible stone remains are located outside the project's direct APE and all project work will be confined to the existing right of way.

An early notification letter was forwarded to the Plympton Historical Commission on October 5, 2022. A copy was forwarded to the MHC. The project work is exempt from Mashpee THPO review under the conditions of the 2015 MOU with the tribe. A PNF was forwarded to the ATHPO on February 2, 2023.

Reviewer's Initials: _____

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: Bridge P-14-001 replacement (MassDOT #609435)
Location /Address: Winnetuxet Road over the Winnetuxet River
City/Town: Plympton
Project Proponent
Name: Massachusetts Department of Transportation
Address: 10 Park Plaza
City/Town/Zip/Telephon Boston, MA 02116

Agency license or funding for the project (list all licenses, permits, approvals, grants or other entitlements being sought from state and federal agencies).

<u>Agency Name</u>	<u>Type of License or funding (specify)</u>
FHWA	Federal Funding (lead federal agency)
Corps	Section 404 permit

Project Description (narrative):

MassDOT proposes to expend federal funds to replace Bridge P-14-001 which carries Winnetuxet Road over the Winnetuxet River in Plympton. The existing structure is a two-span bridge with timber beams and a timber plank deck. The substructure consists of two stone abutments (with a concrete facing on the south abutment only), a timber pier, and wingwalls. The bridge out-to-out width is 20'-10" with a curb-to-curb width of 18'-10" accommodating one travel lane. The project also includes repaving 120' of the Winnetuxet Road approaches. A 12" diameter drainage pipe runs across the southern bridge approach and overhead wires run from south to north across the existing bridge.

The existing structure was originally built in 1923 and, according to the plans, a concrete abutment cap was placed on top of the "present bridge seat." In 1945 the timber pier next to the north abutment was removed and the timber pier located about halfway between the two abutments was replaced. Per the 2003 bridge rating report, a concrete facing was placed in front of the original mortared stone South Abutment in 1985. A new southwest wingwall was also added. Per the 2020 bridge rating report, deck and beams were replaced in 2002. Also per the 2020 bridge rating report, the railings were replaced and two of the bent piles were repaired in 2019.

A concrete spillway for the Winnetuxet River dam spans between the two bridge abutments. The dam consists of an earthen embankment measuring approximately 230' in length with a maximum height of 12'. The crest of the embankment is paved and carries Winnetuxet Road. The right (north of primary spillway) embankment is approximately 200'-long, extending north from the north abutment. A primary concrete spillway is integral with the bridge's north and south abutment and an auxiliary box culvert spillway is located approximately 180' north of the bridge's north abutment. The primary spillway includes a broad crested weir with a sluiceway opening of 4.5'. The dam is covered with vegetation, including large trees.

The planned improvements consist of replacement of the bridge with three different single-span alternatives being considered. The first alternative (Alt. 1) consists of constructing new abutments behind the existing

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APPENDIX A (continued)

abutments with the substructure being a concrete cap on drilled shafts. The superstructure type for this alternative is 15”-deep prestressed concrete deck beams. The other two alternatives include concrete caps that cantilever over the existing abutments, founded on drilled shafts. The superstructure types for the two alternatives are 12”-deep prestressed concrete deck beams (Alt.2) and flitched beams (Alt.3). No additional right of way will be required to accommodate the project work.

Does the project include demolition? If so, specify nature of demolition and describe the building(s) which are proposed for demolition. ||

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.

Does the project include new construction? If so, describe (attach plans and elevations if necessary).

See plans

To the best of your knowledge, are any historic or archaeological properties known to exist within the project’s area of potential impact? If so, specify.

A review of MACRIS revealed no NR-listed properties or districts or inventoried areas, buildings, or structures in the vicinity of the project area. Kurt Jergensen, MassDOT Historic Bridge Specialist, reviewed the Bridge P-14-001 and determined it to be ineligible for listing in the National Register. The 1923 bridge structure is altered and lacks significant engineering and architectural features, and any known historical significance.

A review of the MHC’s archaeological maps in MACRIS revealed one recorded site in the vicinity of the project area: PLM.HA.6 (Mill Site #6). The former grist mill / textile mill site is located approximately 0.02 miles northwesterly of the bridge and is part of a grouping of mills located along the Winnetuxet River in Plympton. The 1879 Walker Map shows a grist mill at this location. A site visit by the MassDOT Archaeologist on October 6, 2022 identified remains of the former mill located northwesterly of the project area along the river including stone retaining walls and a possible building foundation. It is the opinion of the MassDOT Archaeologist that low sensitivity can be ascribed to the project’s direct area of potential effect based on the impacts of previous bridge, roadway, dam embankment, utility, and drainage construction. The mill site will not be impacted by the proposed project as the visible stone remains are located outside the project’s direct APE and all project work will be confined to the existing right of way.

What is the total acreage of the project area?

Woodland	_____	acres	Productive Resources:		
Wetland	_____	acres	Agriculture	_____	acres
Floodplain	_____	acres	Forestry	_____	acres
Open Space	_____	acres	Mining/Extraction	_____	acres
Developed	_____	acres	Total Project Acreage	_____	acres
				N/A	

What is the acreage of the proposed new construction? _____ acres

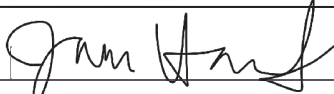
What is the present land use of the project area?
Wooded, rural area with low density residential development

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APPENDIX A (continued)

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.

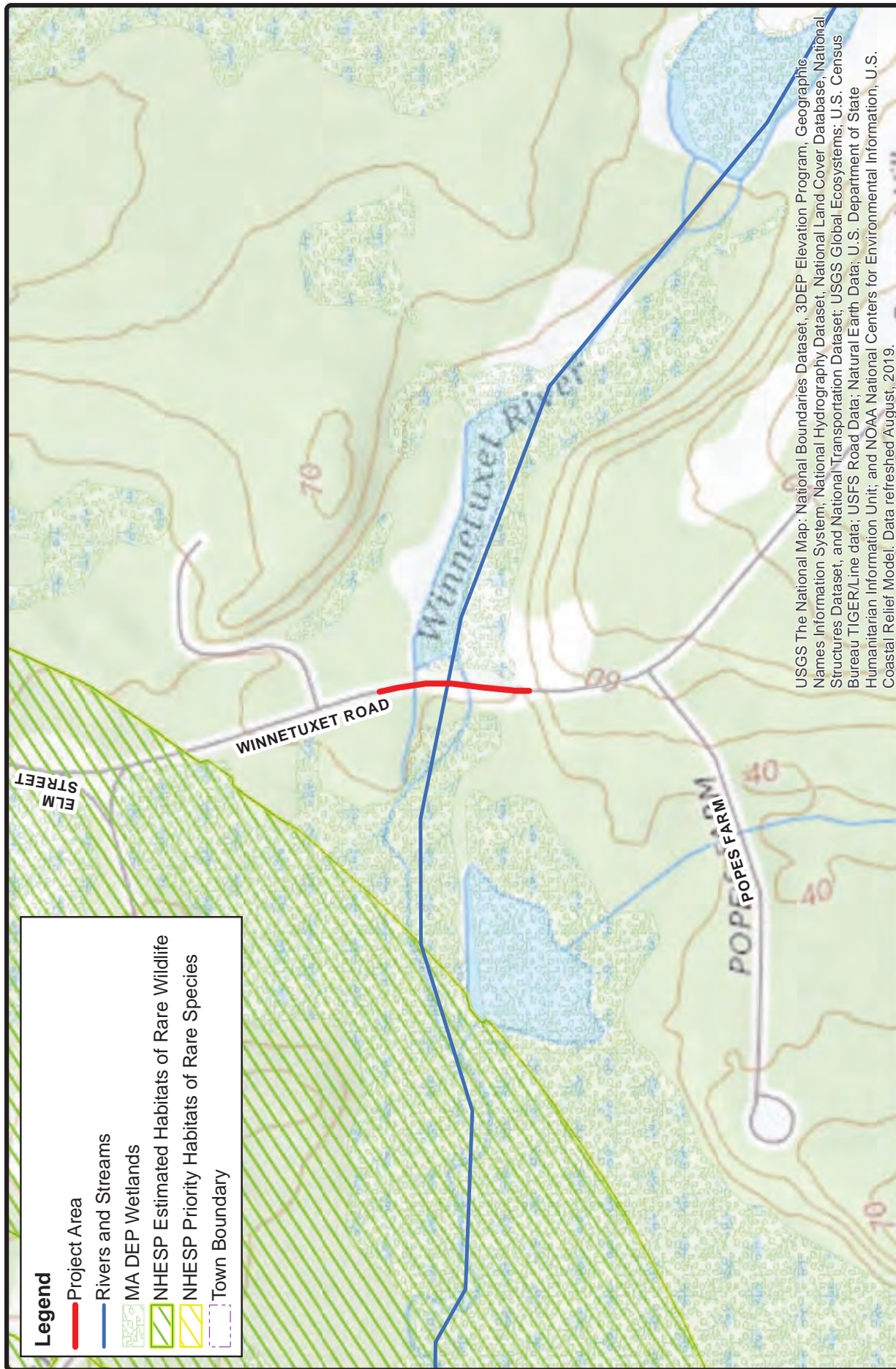
Signature of person submitting this form:		Date:	August 31, 2023
Name:	Jameson Harwood, Cultural Resources Supervisor		
Address:	MassDOT, 10 Park Plaza, Room 7130		
City/Town/Zip:	Boston, MA 02116		
Telephone:	Email: jameson.harwood@dot.state.ma.us		

REGULATORY AUTHORITY

950 CMR 71.00: M.G.L. c. 9, §§ 26-27C as amended by St. 1988, c. 254.

7/1/93

950 CMR - 276



Winnetuxet Rd (P-14-001) over Winnetuxet River
 Plympton, MA

0 150 300 Feet

Harwood, Jameson (DOT)

From: Harwood, Jameson (DOT)
Sent: Thursday, August 31, 2023 9:20 AM
To: Bettina Washington
Subject: MassDOT Project #609435 - Plympton Bridge P-14-001 notification
Attachments: 20230202 Plympton P-14-001 PNF (609435).pdf; 25% Plans.pdf

Dear Ms. Washington,

MassDOT is submitting information for the above-referenced project to the THPO to meet the Section 106 consultation requirements of FHWA (lead federal agency) and 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 Jameson.Harwood@state.ma.us

Thank you,
Jamie

Jameson M. Harwood, Cultural Resources Supervisor
Environmental Services Section
MassDOT – Highway Division
10 Park Plaza
Boston, MA 02116
508-542-6967 (cell)

Harwood, Jameson (DOT)

From: Microsoft Outlook
To: Bettina Washington
Sent: Thursday, August 31, 2023 9:20 AM
Subject: Relayed: MassDOT Project #609435 - Plympton Bridge P-14-001 notification

Delivery to these recipients or groups is complete, but no delivery notification was sent by the destination server:

[Bettina Washington \(thpo@wampanoagtribe-nsn.gov\)](mailto:thpo@wampanoagtribe-nsn.gov)

Subject: MassDOT Project #609435 - Plympton Bridge P-14-001 notification

Harwood, Jameson (DOT)

From: Harwood, Jameson (DOT)
Sent: Thursday, August 31, 2023 9:18 AM
To: Robinson, David S (EEA)
Subject: MassDOT Project #609435 - Plympton Bridge P-14-001 notification
Attachments: 20230202 Plympton P-14-001 PNF (609435).pdf; 25% Plans.pdf

Tracking:	Recipient	Delivery
	Robinson, David S (EEA)	Delivered: 8/31/2023 9:18 AM

David,

MassDOT is submitting information for the above-referenced project to the BUAR to meet the Section 106 consultation requirements of FHWA (lead federal agency) and 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 Lavalley, P.E., Chief Engineer, Massachusetts Department of Transportation, 10 Park Plaza, Boston, MA 02116-3973, Attn: Jameson Harwood.

You also may send comments, questions, or requests for more information by email to Jameson.Harwood@state.ma.us

Thank you,
Jamie

Jameson M. Harwood, Cultural Resources Supervisor
Environmental Services Section
MassDOT – Highway Division
10 Park Plaza
Boston, MA 02116
508-542-6967 (cell)

Harwood, Jameson (DOT)

From: Microsoft Outlook
To: Robinson, David S (EEA)
Sent: Thursday, August 31, 2023 9:18 AM
Subject: Delivered: MassDOT Project #609435 - Plympton Bridge P-14-001 notification

Your message has been delivered to the following recipients:

[Robinson, David S \(EEA\) \(David.S.Robinson@mass.gov\)](mailto:David.S.Robinson@mass.gov)

Subject: MassDOT Project #609435 - Plympton Bridge P-14-001 notification

Harwood, Jameson (DOT)

From: Harwood, Jameson (DOT)
Sent: Thursday, August 31, 2023 9:19 AM
To: David Weeden (David.Weeden@mwtribe-nsn.gov)
Subject: MassDOT Project #609435 - Plympton Bridge P-14-001 notification
Attachments: 20230202 Plympton P-14-001 PNF (609435).pdf; 25% Plans.pdf

David,

MassDOT is submitting information for the above-referenced project to the THPO to meet the Section 106 consultation requirements of FHWA (lead federal agency) and 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 Lavalley, P.E., Chief Engineer, Massachusetts Department of Transportation, 10 Park Plaza, Boston, MA 02116-3973, Attn: Jameson Harwood.

You also may send comments, questions, or requests for more information by email to Jameson.Harwood@state.ma.us

Thank you,
Jamie

Jameson M. Harwood, Cultural Resources Supervisor
Environmental Services Section
MassDOT – Highway Division
10 Park Plaza
Boston, MA 02116
508-542-6967 (cell)

Harwood, Jameson (DOT)

From: Microsoft Outlook
To: David Weeden (David.Weeden@mwtribe-nsn.gov)
Sent: Thursday, August 31, 2023 9:19 AM
Subject: Relayed: MassDOT Project #609435 - Plympton Bridge P-14-001 notification

Delivery to these recipients or groups is complete, but no delivery notification was sent by the destination server:

[David Weeden \(David.Weeden@mwtribe-nsn.gov\)](mailto:David.Weeden@mwtribe-nsn.gov) (David.Weeden@mwtribe-nsn.gov)

Subject: MassDOT Project #609435 - Plympton Bridge P-14-001 notification

Harwood, Jameson (DOT)

From: Harwood, Jameson (DOT)
Sent: Thursday, August 31, 2023 9:21 AM
To: Tashtesook@aol.com
Subject: MassDOT Project #609435 - Plympton Bridge P-14-001 notification
Attachments: 20230202 Plympton P-14-001 PNF (609435).pdf; 25% Plans.pdf

Dear Mr. Brown,

MassDOT is submitting information for the above-referenced project to the THPO to meet the Section 106 consultation requirements of FHWA (lead federal agency) and 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 Jameson.Harwood@state.ma.us

Thank you,
Jamie

Jameson M. Harwood, Cultural Resources Supervisor
Environmental Services Section
MassDOT – Highway Division
10 Park Plaza
Boston, MA 02116

Harwood, Jameson (DOT)

From: Microsoft Outlook
To: Tashtesook@aol.com
Sent: Thursday, August 31, 2023 9:21 AM
Subject: Relayed: MassDOT Project #609435 - Plympton Bridge P-14-001 notification

Delivery to these recipients or groups is complete, but no delivery notification was sent by the destination server:

[Tashtesook@aol.com \(Tashtesook@aol.com\)](mailto:Tashtesook@aol.com)

Subject: MassDOT Project #609435 - Plympton Bridge P-14-001 notification

From: [Harwood, Jameson \(DOT\)](#)
To: ["Bettina Washington"; Bettina Washington](#)
Subject: MassDOT Project #609435: Plympton, Bridge P-14-001
Date: Thursday, February 2, 2023 9:55:00 AM
Attachments: [20230202 Plympton P-14-001 PNF \(609435\).pdf](#)
[25% Plans.pdf](#)

Dear Ms. Washington,

MassDOT is submitting the enclosed project information to the Tribal Historic Preservation Officer to meet the Section 106 consultation requirements of the Federal Highway Administration. Please submit any written comments or concerns regarding historic or archaeological properties that may be affected by this project to Carrie Lavallee, P.E., Chief Engineer, Massachusetts Department of Transportation, 10 Park Plaza, Boston, MA 02116-3973, Attn: Jameson Harwood.

You also may send comments, questions, or requests for more information by email to Jameson.Harwood@state.ma.us.

Thank you,
Jamie

Jameson M. Harwood, Cultural Resources Supervisor
Environmental Services Section
MassDOT – Highway Division
10 Park Plaza
Boston, MA 02116

**Attachment J: National Oceanic and Atmospheric Administration Essential Fish Habitat
Form**

Appendix B. Verification Form

Federal Highway Administration (FHWA) or the applicable state Department of Transportation (state DOT) will email a signed version of this completed form, together with any project plans, maps, supporting analyses, etc., to NOAA’s National Marine Fisheries Service (NMFS), Greater Atlantic Regional Fisheries Office, Habitat Conservation Division (GARFO HCD) at NMFS.GAR.EFH.Consultation@noaa.gov, upon obtaining sufficient information. FHWA/state DOT must receive a response from GARFO HCD or wait at least 30 calendar days to proceed under the programmatic EFH consultation. FHWA will compile the information from the completed Verification Forms for the purposes of tracking and annual monitoring. FHWA/state DOT must include the completed Verification Form as part of a permit application with any other federal agency, such as U.S. Army Corps of Engineers or U.S. Coast Guard, to confirm that EFH consultation is complete.

Project Activity Type

1. Bridge repair, demolition, and replacement
2. Culvert repair and replacement
3. Docks, piers, and waterway access projects
4. Slope stabilization

Transportation Project Information

Project Name:	Winnetuxet Road Over Winnetuxet River Bridge Replacement	Project Number:	609435
Project Sponsor:	Massachusetts Department of Transportation	Contact Person:	Dave Paulson
Email:	david.j.paulson@state.ma.us	Phone:	857-262-3378
Latitude (e.g., 42.625884):	41.946760		
Longitude (e.g., -70.646114):	-70.825927		
City/Town, State:	Plympton, MA	Waterway:	Winnetuxet River
Project Description and Purpose:	A bridge replacement is proposed at Winnetuxet Road bridge, which runs over the Winnetuxet River. The purpose of the project is to upgrade the existing bridge condition to a satisfactory state, as the most recent bridge inspection identified structural deficiencies. A full superstructure bridge replacement is proposed. The existing bridge superstructure will be removed, as well as the pier below the bridge. The top of the existing		
Anticipated Project Start Date:	6/1/24	Anticipated Project End Date:	11/30/24
Total area of impact to EFH (in acres): Include locus map with area of impact.	0.10		
Area of impacts to sensitive habitats (in square feet):	No impacts to submerged aquatic vegetation (SAV) or oyster reefs allowed.		
Natural rocky habitat (e.g., bedrock, boulders, cobble, and/or gravel):	0		
Salt marsh:	0		
Areas containing shellfish (excluding oyster reefs):	0		
Intertidal mudflats:	0		
Area of impact to diadromous fish habitat:	384		

Potential Stressors Caused by the Activity (Check all that apply based on activity type)

- Underwater Noise
- Impingement/Entrainment and Entanglement
- Water Quality/Turbidity
- Habitat Alteration
- Vessel Traffic

EFH Conservation Recommendation Checklist

FHWA/state DOT will indicate how the project addresses each of the programmatic EFH conservation recommendations, by selecting the appropriate check box and providing a brief explanation where necessary. If the project is not in compliance with a particular programmatic EFH conservation recommendation and FHWA/state DOT has still determined that the effects of a project on EFH are not substantial and the project is otherwise consistent with the FHWA programmatic EFH consultation, provide justification below under the conservation recommendations that is not included.

Underwater Noise

Check here if the EFH conservation recommendations in this section are not applicable because the project will not create underwater noise as a stressor. Proceed to the next stressor.

1. Use a soft start each day of pile driving, after a break of 30 minutes or more, and if any increase in pile installation or removal intensity is required. Build up power slowly from a low energy start-up over a 20-minute period to warn fish to leave the vicinity. This buildup shall occur in uniform stages to provide a constant increase in output.

- Not met:
 - Not applicable, provide reasoning:
 - Project is unable to accommodate, provide justification:

- Met:
 - Shown on project plans
 - Included in description, other terms and conditions

2. Noise-generating work conducted in diadromous streams within the spring diadromous fish TOY restriction listed in Appendix D must be isolated behind sealed, dewatered cofferdams, to avoid impeding fish migration.

- Not met:
 - Not applicable, provide reasoning:
 - Project is unable to accommodate, provide justification:

- Met:
 - Shown on project plans
 - Included in description, other terms and conditions

Impingement/Entrainment and Entanglement

Check here if the EFH conservation recommendations in this section are not applicable because the project will not lead to impingement/entrainment and entanglement as a stressor. Proceed to the next stressor.

3. Turbidity control measures must be properly secured and monitored to ensure aquatic species are not entangled or trapped in the project area.

Not met:

Not applicable, provide reasoning:

Project is unable to accommodate, provide justification:

Met:

Shown on project plans

Included in description, other terms and conditions

4. Temporary intakes related to construction must be equipped with mesh size screening and approach velocity appropriate for the species and life stage anticipated. Per the NMFS Anadromous Salmonid Passage Facility Design manual, screen openings must not exceed 3/32 inch and screen approach velocity must be less than .25 feet per second (ft/sec).

- In New York, New Jersey, Delaware, Maryland, and Pennsylvania, 2 millimeter (mm) wedge wire screens must be used with a maximum intake velocity of 0.5 feet per second (ft/sec).

- In Virginia, a 1 mm wedge wire with a maximum intake velocity of 0.25 ft/sec).

Not met:

Not applicable, provide reasoning:

Project is unable to accommodate, provide justification:

Met:

Shown on project plans

Included in description, other terms and conditions

5. No new permanent surface water withdrawal, water intakes, or water diversions.

Not met:

Not applicable, provide reasoning:

Project is unable to accommodate, provide justification:

Met:

Shown on project plans

Included in description, other terms and conditions

Water Quality/Turbidity

Check here if the EFH conservation recommendations in this section are not applicable because the project will not negatively affect water quality or create turbidity. Proceed to the next stressor.

6. Install soil erosion, sediment, and turbidity controls and maintain them in effective operating condition during construction. Remove controls upon completion of work, after all exposed soil and other fills, as well as any work waterward of ordinary high water or the high tide line, are permanently stabilized.

Not met:

Not applicable, provide reasoning:

Project is unable to accommodate, provide justification:

Met:

Shown on project plans

Included in description, other terms and conditions

7. Install and remove any in-water soil erosion, sediment, and turbidity controls outside the TOY restrictions in Appendix D.

Not met:

Not applicable, provide reasoning:

Project is unable to accommodate, provide justification:

Met:

Shown on project plans

Included in description, other terms and conditions

8. Work that produces greater than minimal turbidity or sedimentation in diadromous streams or EFH must not be done during the TOY restriction(s) in Appendix D.

Not met:

Not applicable, provide reasoning: Will not produce greater than minimal turbidity/sedimentation

Project is unable to accommodate, provide justification:

Met:

Shown on project plans

Included in description, other terms and conditions

9. Prevent construction debris and sediment from entering aquatic areas and remove all construction debris and excess/deteriorated materials and dispose of in an upland area.

Not met:

Not applicable, provide reasoning:

Project is unable to accommodate, provide justification:

Met:

Shown on project plans

Included in description, other terms and conditions

10. Dredged and/or excavated materials, including any fine-grained materials removed from inside culverts, shall either be moved to an upland location and stabilized to prevent reentry into the waterway or disposed of at a previously approved disposal site.

Not met:

- Not applicable, provide reasoning: No material will be removed from culverts.
- Project is unable to accommodate, provide justification:

Met:

- Shown on project plans
- Included in description, other terms and conditions

11. Completely remove and do not reuse existing creosote piles that are affected by project activities and do not install new creosote piles.

Not met:

- Not applicable, provide reasoning: No creosote piles
- Project is unable to accommodate, provide justification:

Met:

- Shown on project plans
- Included in description, other terms and conditions

12. Coat any chemically or pressure treated piles (CCA, ACQ, etc.) with an impact-resistant, biologically inert substance. Coat the piles at the point of manufacture, not on site.

Not met:

- Not applicable, provide reasoning: No piles proposed for project
- Project is unable to accommodate, provide justification:

Met:

- Shown on project plans
- Included in description, other terms and conditions

13. Derelict, degraded, or abandoned piles, except for those inside of existing work footprints for piers, must be completely removed or cut and driven three feet below the surface.

Not met:

- Not applicable, provide reasoning: No piles at project site
- Project is unable to accommodate, provide justification:

Met:

- Shown on project plans
- Included in description, other terms and conditions

14. Ensure that raw concrete does not contact the water; wet pours of concrete must be confined within sealed forms until the concrete is set or pre-cast members installed.

Not met:

- Not applicable, provide reasoning:
- Project is unable to accommodate, provide justification:

- Met:
 - Shown on project plans
 - Included in description, other terms and conditions

Habitat Alteration

- Check here if the EFH conservation recommendations in this section are not applicable because the project will not cause habitat alteration. Proceed to the next stressor.

15. Remove temporary and/or obsolete structures and fills in their entirety. Use geotextile barriers prior to placement of temporary fill material to ensure complete removal.

- Not met:
 - Not applicable, provide reasoning:
 - Project is unable to accommodate, provide justification:

- Met:
 - Shown on project plans
 - Included in description, other terms and conditions

16. Install a riprap bedding layer (such as a gravel filter blanket or geotextile) prior to riprap placement to prevent underlying soils from washing through the riprap during high water.

- Not met:
 - Not applicable, provide reasoning:
 - Project is unable to accommodate, provide justification:

- Met:
 - Shown on project plans
 - Included in description, other terms and conditions

17. Return areas impacted by temporary activities, fills, or structures to pre-construction or better condition, including elevations and substrate, and replant with native species.

- Not met:
 - Not applicable, provide reasoning:
 - Project is unable to accommodate, provide justification:

- Met:
 - Shown on project plans
 - Included in description, other terms and conditions

18. Temporary monitoring devices shall be removed and the substrate restored to preconstruction elevations no later than 24 months from initial installation, or upon completion of data acquisition.

- Not met:
 - Not applicable, provide reasoning:
 - Project is unable to accommodate, provide justification:

- Met:
 - Shown on project plans
 - Included in description, other terms and conditions

19. Pipelines and cables that cross a waterway must not rest on the substrate. They may be attached to an overwater structure or be buried to allow an area to return to preexisting conditions.

- Not met:
 - Not applicable, provide reasoning:
 - Project is unable to accommodate, provide justification:

- Met:
 - Shown on project plans
 - Included in description, other terms and conditions

20. Any fill, including planting media and placement of any seed shellfish, spatted-shell, or cultch must be free of all non-native or invasive species and/or contaminants. An invasive species control plan must be part of the project if the transportation agency cannot guarantee this.

- Not met:
 - Not applicable, provide reasoning:
 - Project is unable to accommodate, provide justification:

- Met:
 - Shown on project plans
 - Included in description, other terms and conditions

21. Prevent dislodging of coir logs, mats, or native oyster shell.

- Not met:
 - Not applicable, provide reasoning: None at site
 - Project is unable to accommodate, provide justification:

- Met:
 - Shown on project plans
 - Included in description, other terms and conditions

22. Incorporate measures to increase the ambient light transmission under overwater structures.

- Not met:
 - Not applicable, provide reasoning:

- Project is unable to accommodate, provide justification:
- Met:
 - Shown on project plans
 - Included in description, other terms and conditions
- 23. The lowermost part of floating docks must be ≥ 18 inches above the substrate at all times, to avoid grounding and propeller scour and to provide adequate circulation and flushing.
- Not met:
 - Not applicable, provide reasoning: No floating docks
 - Project is unable to accommodate, provide justification:
- Met:
 - Shown on project plans
 - Included in description, other terms and conditions
- 24. Conduct and submit pre-dredge benthic biological surveys to determine benthic communities present and conduct post-dredge surveys to ensure targeted depths have been reached and to determine benthic recovery.
- Not met:
 - Not applicable, provide reasoning:
 - Project is unable to accommodate, provide justification:
Stream is not deep enough for pre-dredge benthic survey
- Met:
 - Shown on project plans
 - Included in description, other terms and conditions
- 25. Grain size of any sediment used as part of habitat restoration must be the same size or larger than the native material at the site.
- Not met:
 - Not applicable, provide reasoning:
 - Project is unable to accommodate, provide justification:
- Met:
 - Shown on project plans
 - Included in description, other terms and conditions
- 26. If rock relocation is necessary, move them to an area of equivalent depth and substrate.
- Not met:
 - Not applicable, provide reasoning:
 - Project is unable to accommodate, provide justification:
- Met:
 - Shown on project plans

Included in description, other terms and conditions

27. Incorporate natural habitats (e.g., living shorelines) and soft approaches (e.g., vegetative plantings and large woody debris) into the stabilization design in addition to or instead of hardened structures. See NOAA’s Guidance for Considering the Use of Living Shorelines for more information.

Not met:

Not applicable, provide reasoning: No stabilization designs

Project is unable to accommodate, provide justification:

Met:

Shown on project plans

Included in description, other terms and conditions

Sensitive Habitats (SAS, natural rocky habitats, intertidal areas, and areas containing shellfish)

28. Locate all temporary structures, construction, access, and dewatering actives outside of sensitive habitats.

Not met:

Not applicable, provide reasoning:

Project is unable to accommodate, provide justification:

Met:

Shown on project plans

Included in description, other terms and conditions

29. Prior to construction, identify and mark in the field any SAV at the project site. An SAV survey is required for activities adjacent to mapped or known SAV if a survey has not been conducted in three years.

Not met:

Not applicable, provide reasoning: No SAV

Project is unable to accommodate, provide justification:

Met:

Shown on project plans

Included in description, other terms and conditions

30. Provide compensatory mitigation for all permanent and temporary impacts to sensitive habitats. This could include a contribution to an existing in-lieu fee program. When impacts are unavoidable:

- conduct a biological survey to map the coverage of the sensitive habitats;
- develop a compensatory mitigation plan for biological resource losses, including success criteria, monitoring plan, and long-term maintenance plan;

- submit the results of the biological survey and the mitigation plan to GARFO HCD for review; and
- undertake compensatory mitigation prior to or concurrent with any impacts to sensitive habitat.

Not met:

- Not applicable, provide reasoning:
- Project is unable to accommodate, provide justification:

Met:

- Shown on project plans
- Included in description, other terms and conditions

31. Where construction requires heavy equipment operation in or across wetlands or mudflats, the equipment shall have low ground pressure (typically ≤ 3 pounds per square inch); be placed on construction timber mats that are adequate to support the equipment; or be operated on dry or frozen wetlands such that shear pressure does not cause subsidence of the wetlands immediately beneath equipment and upheaval of adjacent wetlands. Construction mats must not be dragged into position.

Not met:

- Not applicable, provide reasoning: No construction within or across wetlands
- Project is unable to accommodate, provide justification:

Met:

- Shown on project plans
- Included in description, other terms and conditions

32. Habitat restoration or mitigation projects must not result in a permanent conversion or loss of sensitive habitats.

Not met:

- Not applicable, provide reasoning:
- Project is unable to accommodate, provide justification:

Met:

- Shown on project plans
- Included in description, other terms and conditions

33. No dredging shall occur within:

- intertidal areas;
- 100 feet of SAV; or
- 25 feet of SAS, natural rocky habitats, or areas containing shellfish.

Not met:

- Not applicable, provide reasoning:
- Project is unable to accommodate, provide justification:

Met:

- Shown on project plans
- Included in description, other terms and conditions

34. The height of docks and piers must be at least four feet above salt marsh substrate and must be greater than or equal to the width of the deck, to minimize shading impacts. The height must be measured from the marsh substrate to the bottom of the longitudinal support beam.

Not met:

- Not applicable, provide reasoning: No salt marsh or salt marsh substrate
- Project is unable to accommodate, provide justification:

Met:

- Shown on project plans
- Included in description, other terms and conditions

35. Outlets must not discharge directly into sensitive habitats.

Not met:

- Not applicable, provide reasoning:
- Project is unable to accommodate, provide justification:

Met:

- Shown on project plans
- Included in description, other terms and conditions

Fish Passage/Migration Habitat

36. Design replacement crossings to provide diadromous and resident fish and aquatic organism passage. Structures must:

- provide sufficient water depth and maintain suitable water velocities during migration periods; and
- maintain or replicate natural stream channel and flow conditions.

Not met:

- Not applicable, provide reasoning:
- Project is unable to accommodate, provide justification:

Dam upstream will not be altered

Met:

- Shown on project plans
- Included in description, other terms and conditions

37. Incorporate climate change projections into the project design. Use the Intergovernmental Panel on Climate Change (IPCC) Representative Concentration Pathways (RCP) 8.5/high greenhouse gas emission scenario and RCP 4.5/intermediate greenhouse gas emission scenario (IPCC 2014) and the global mean and regional sea level rise projections for

intermediate-high and extreme scenarios referenced in Sweet *et al.* (2017) in design calculations for replacement structures.

Not met:

- Not applicable, provide reasoning: Waterway is a small inland river not subject to sea level rise
- Project is unable to accommodate, provide justification:

Met:

- Shown on project plans
- Included in description, other terms and conditions

38. Replaced or upgraded crossings must be “in kind” or go up in order of preference set out in NMFS’ Anadromous Salmonid Passage Facility Design:

- Road abandonment and reclamation or road realignment to avoid crossing the stream.
- Bridge or stream simulation spanning the stream flood plain, providing long-term dynamic channel stability, retention of existing spawning areas, maintenance of benthic invertebrate production, and minimized risk of failure. If a stream crossing is proposed in a segment of stream channel that includes a salmonid spawning area, only full-span stream simulation designs are acceptable.
- Embedded pipe culvert, bottomless arch designs or non-floodplain spanning stream simulation.
- Hydraulic design method, associated with more traditional culvert design approaches- limited to low stream gradients (0 to 1%) or for retrofits.
- Culvert designed with an external fishway (including roughened channels) for steeper slopes.
- Baffled culvert or internal weirs- to be used only for when other alternatives are infeasible.

Not met:

- Not applicable, provide reasoning: River not suitable for fish passage due to dam
- Project is unable to accommodate, provide justification:

Met:

- Shown on project plans
- Included in description, other terms and conditions

39. For activities that require soil erosion, sediment, and turbidity controls

- in non-tidal streams containing diadromous fish:
 - i. They must not encroach >25% of the stream width measured from ordinary high water during the diadromous TOY restriction; and
 - ii. They must maintain safe, timely, and effective downstream fish passage throughout the project.
- in tidal waters:
 - i. They must not encroach >50% of a tidal stream’s width as measured from mean high water.

- Not met:
 - Not applicable, provide reasoning:
 - Project is unable to accommodate, provide justification:
- Met:
 - Shown on project plans
 - Included in description, other terms and conditions

Vessel Traffic

Check here if the EFH conservation recommendations in this section are not applicable because the project will not use vessels.

40. Project vessels shall be operated in adequate water depths to avoid propeller scour and grounding at all tides. Shallow draft vessels will be used in shallow areas to maximize the navigational clearance between the vessel and the bottom substrate. Spuds may be used to elevate the vessel.

- Not met:
 - Not applicable, provide reasoning:
 - Project is unable to accommodate, provide justification:

- Met:
 - Shown on project plans
 - Included in description, other terms and conditions

41. Project vessels shall not be moored in or use spuds in SAV or be located in such a way that the vessel could shade SAV.

- Not met:
 - Not applicable, provide reasoning:
 - Project is unable to accommodate, provide justification:

- Met:
 - Shown on project plans
 - Included in description, other terms and conditions

NEW CLAUSE

Other Justification for Use of the Programmatic EFH Consultation

If the project is outside of the covered activities in the programmatic EFH consultation (i.e., is one of the actions described in the Excluded Activities list noted below) and FHWA/state DOT believes the effects are not any more significant and that the project should be eligible for programmatic EFH consultation, provide additional justification in the space below. FHWA/state DOT must provide appropriate rationale and GARFO HCD must review and approve it. The automatic concurrence period does not apply for transportation activities in this section that fall outside of the programmatic EFH consultation as described.

The project is not listed as an excluded activity.

The project is listed as an excluded activity.

Indicate the activity number from the list below (1 through 21):

Provide additional justification on why the activity should be eligible:

Activities that Require Individual Consultation

1. Any work (including anchoring) that results in impacts to:
 - existing or historically mapped submerged aquatic vegetation (SAV) beds or areas within 100 feet of existing or historically mapped SAV beds;
 - $\geq 1,000$ square feet of salt marsh, areas containing shellfish, and intertidal areas;
 - ≥ 100 square feet of natural rocky habitat (e.g., bedrock, boulders, cobble, and/or gravel);
2. Stream channelization.
3. Any temporary structures, construction access, and dewatering activities proposed to be in place for \geq two years.
4. Slip-lining or invert lining existing culverts.
5. Any permanent structures longer than 150 linear feet over salt marsh.
6. Construction of new or expansion of existing boating facilities¹⁷ or ferry terminals.
7. Independent pedestrian trails or bridges located directly adjacent to an existing crossing.
8. New or improvement dredging.
9. Any nearshore disposal or beach nourishment activities.
10. New fill/stabilization placed below mean low water in excess of 200 linear feet (lf).
11. Replacement or maintenance of:
 - sloped stabilization structures > 200 lf and waterward of the existing toe, or
 - vertical structures > 18 inches waterward of the existing face and > 200 lf.
12. In-water utility lines ≥ 100 lf installed by trench excavation, or ≥ 200 lf installed by jetplow, fluidization or other direct burial methods.
13. Thin layer deposition as a part of wetland restoration.
14. Placement of any seed shellfish, spatted-shell, or cultch in SAS.
15. Any exploratory trenching or other similar survey activities.
16. Airgun seismic activities.
17. Any new permanent surface water withdrawal, water intakes, or water diversions.
18. Any blasting or use of explosives that affects EFH or diadromous species habitats.
19. Construction of new bridges or culverts, where no crossing existed previously.
20. Any new or replacement causeways (raised roadways across waters or wetlands).
21. Any in-water work on dams, tide gates, or breakwaters.

FHWA’s Determination of Effects to Essential Fish Habitat and Signature

After reviewing the programmatic EFH conservation recommendations in Appendix A, FHWA/state DOT will select the appropriate determination:

- The activity is in compliance with all programmatic EFH conservation recommendations in the FHWA programmatic EFH consultation and adverse effects to EFH will not be substantial.
- The activity is not in compliance with all of the programmatic EFH conservation recommendations in the FHWA programmatic EFH consultation, however, the justification below demonstrates that the adverse effects to EFH are not substantial. This does not apply to EFH conservation recommendations that are not applicable to the project.

Use the electronic fillable fields to include the name and signature of the FHWA/state DOT preparing this Verification Form, along with the date.

David Paulson

David Paulson

FHWA/state DOT Name

Signature

2/14/24

Date

By providing your determination and signature, you are certifying that to the best of your knowledge the information provided in this form is accurate and based upon the best available scientific information. This form must be filled out and signed by FHWA or state DOT staff, as an officially designated non-federal representative. Do not lock the form when saving, as HCD will be unable to sign and finalize. Email this Verification Form as a fillable PDF to NMFS.GAR.EFH.Consultation@noaa.gov.

GARFO HCD Determination and Signature (To be filled out by NMFS)

After receiving the Verification Form, GARFO HCD will contact FHWA/state DOT with any concerns. HCD will email the completed form back to the FHWA/state DOT for record keeping.

- GARFO HCD concurs with FHWA’s determination that the proposed project is consistent with the programmatic EFH consultation (without the need for justification).
- GARFO HCD concurs with FHWA’s determination that the proposed project is consistent with the programmatic EFH consultation, with justification described above.
- GARFO HCD does not concur with FHWA’s determination that the project is consistent with the programmatic EFH consultation. FHWA/state DOT must conduct additional coordination with GARFO HCD and a separate individual EFH consultation may be required.

Kaitlyn Shaw

Kaitlyn Shaw

GARFO HCD Name

Signature

02/15/2024

Date



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Base map data supplied by MassGIS.
Date of photo: 2021



- Approximate Area of Work
- Parcel Line
- Delineated Wetlands
- Top of Inland Bank to Pond
- Top of Inland Bank to Stream
- Bordering Vegetated Wetland (BWV)

Environmental Constraints

Winnetuxet Road
Bridge Over Winnetuxet River
(Bridge No. P-14-001(Cen))
Plympton, MA





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Base map data supplied by MassGIS.
Date of photo: 2021




- Approximate Area of Work
- Parcel Line

Approximate Area of Work


Winnetuxet Road
Bridge Over Winnetuxet River
(Bridge No. P-14-001(Cen))
Plympton, MA





AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 1	Date: 4/20/21		
Description: Southern approach to the Winnetuxet Road bridge			
AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 2	Date: 4/20/21		
Description: View from the Northern approach to the Winnetuxet Road bridge. The Winnetuxet Pond is on the right side of the bridge. The Winnetuxet River is split by water that flows over the spillway and under the bridge and a culvert just north of the project site.			


AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 3	Date: 4/20/21		
Description: Close up view of the Winnetuxet Road bridge. Deteriorated, non-standard side rail guards leading up to the bridge.			
AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 4	Date: 4/20/21		
Description: Side view of the Winnetuxet Bridge from the Northern entrance point. Winnetuxet River runs underneath from a controlled spillway on the east side of the bridge.			


AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 5	Date: 4/20/21		
Description: Side view of the two-span timber bridge superstructure that will be replaced.			
AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 6	Date: 4/20/21		
Description: Underside view of the bridge from the western portion of the Winnetuxet river. The river spillway is visible at the back as well as the substructures that support the bridge.			

AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 7	Date: 4/20/21		
Description: Piers and stream bed under bridge			

AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 8	Date: 4/20/21		
Description: Secondary underside view of the river spillway and substructures supporting the bridge above.			

AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 9	Date: 4/20/21		
Description: Underside view of the substructure wooden beams.			

AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 10	Date: 4/20/21		
Description: Underside view of the abutment that will remain to support the new bridge superstructure			

AECOM		PHOTOGRAPHIC LOG	
Client Name: Massachusetts Department of Transportation		Site location: Winnetuxet Road over Winnetuxet River, Plympton Ma	Project No. 609435
Photo No. 11	Date: 4/20/21		
Description: Underside view of the bridge from the eastern portion of the Winnetuxet river spillway.			

Attachment K: Section 408 Compliance

From: DiRocco, Kevin J CIV USARMY CENAE (USA) <Kevin.J.Dirocco@usace.army.mil>
Sent: Friday, February 9, 2024 12:51 PM
To: Rickwood, Jonny
Cc: Maniccia, Paul M CIV USARMY CENAE (USA); Penta, Gregory R CIV USARMY CENAE (USA)
Subject: RE: Winnetuxet Road Pond Dam

This Message Is From an External Sender

This message came from outside your organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

[Report Suspicious](#)

Hi Jonny,

Thank you for reaching out. The Winnetuxet Road Pond Dam was not constructed by the US Army Corps of Engineers, so it is not subject to Section 408 review.

Please feel free to contact me directly in the future if you have any other projects you believe may require Section 408 review.

Thanks,
Kevin

Kevin DiRocco, P.E.
Levee Safety Program Manager
New England District
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742
Office: (978) 318-8396
Mobile: (978) 956-3269

From: Penta, Gregory R CIV USARMY CENAE (USA) <Gregory.R.Penta@usace.army.mil>
Sent: Friday, February 9, 2024 12:36 PM
To: Rickwood, Jonny <Jonny.Rickwood@aecom.com>
Cc: DiRocco, Kevin J CIV USARMY CENAE (USA) <Kevin.J.Dirocco@usace.army.mil>; Maniccia, Paul M CIV USARMY CENAE (USA) <Paul.M.Maniccia@usace.army.mil>
Subject: RE: Winnetuxet Road Pond Dam

Hi Jonny,

I'm cc'ing Kevin DiRocco, who is the levees and dams contact on our 408 webpage that you referenced (<https://www.nae.usace.army.mil/Missions/Section-408/>). He said he's the best person to contact and he's looking whether 408 permission is required.

Paul Maniccia, Regulatory Division, is the best person to contact if the work is in waters of the U.S. and requires authorization under Section 10 of the Rivers and Harbors Act or Section 404 of the Clean Water Act.

Thanks,
Greg

From: Rickwood, Jonny <Jonny.Rickwood@aecom.com>
Sent: Friday, February 9, 2024 12:19 PM
To: Maniccia, Paul M CIV USARMY CENAE (USA) <Paul.M.Maniccia@usace.army.mil>
Cc: Penta, Gregory R CIV USARMY CENAE (USA) <Gregory.R.Penta@usace.army.mil>
Subject: [Non-DoD Source] Re: Winnetuxet Road Pond Dam

Hi Paul,

I did check the District website, and reached out to Greg regarding this matter as he was listed as the Section 408 Regulatory Contact.

Greg- Should I reach out to Chris Hatfield instead? He is listed as the Section 408 Coordinator and Planning lead.

Best,
Jonny

Jonny Rickwood

Environmental Scientist

+1 (570)-290-3595

AECOM

250 Apollo Drive, Chelmsford MA, 01824

From: Maniccia, Paul M CIV USARMY CENAE (USA) <Paul.M.Maniccia@usace.army.mil>

Sent: Thursday, February 8, 2024 4:48 PM

To: Rickwood, Jonny <Jonny.Rickwood@aecom.com>

Subject: RE: Winnetuxet Road Pond Dam

I don't that as Regulatory does not administer the 408 program. Have you checked the District website for contacts and associated information?

<https://www.nae.usace.army.mil/Missions/Section-408/>

Paul Maniccia
Chief, Massachusetts Section
U.S. Army Corps of Engineers
New England District
Regulatory Division
978-318-8515
601-738-1163

From: Rickwood, Jonny <Jonny.Rickwood@aecom.com>

Sent: Thursday, February 8, 2024 12:04 PM

To: Penta, Gregory R CIV USARMY CENAE (USA) <Gregory.R.Penta@usace.army.mil>

Cc: Maniccia, Paul M CIV USARMY CENAE (USA) <Paul.M.Maniccia@usace.army.mil>

Subject: [Non-DoD Source] Re: Winnetuxet Road Pond Dam

Greg,

I appreciate the swift response!

Paul - Let me know if you need any additional details on the project or site.

Best,
Jonny

Jonny Rickwood

Environmental Scientist

+1 (570)-290-3595

AECOM

250 Apollo Drive, Chelmsford MA, 01824

From: Penta, Gregory R CIV USARMY CENAE (USA) <Gregory.R.Penta@usace.army.mil>

Sent: Wednesday, February 7, 2024 12:55 PM

To: Rickwood, Jonny <Jonny.Rickwood@aecom.com>

Cc: Maniccia, Paul M CIV USARMY CENAE (USA) <Paul.M.Maniccia@usace.army.mil>

Subject: RE: Winnetuxet Road Pond Dam

Hi Jonny,

I'm cc'ing Paul Maniccia, Massachusetts Section Chief, Regulatory Division. He'll get back to you.

Thanks,
Greg

Greg Penta || Technical Support Branch, Regulatory Division || U.S. Army Corps of Engineers, New England District || 696 Virginia Road || Concord, MA 01742-2751 || gregory.r.penta@usace.army.mil || (978) 318-8862

From: Rickwood, Jonny <Jonny.Rickwood@aecom.com>

Sent: Wednesday, February 7, 2024 12:44 PM

To: Penta, Gregory R CIV USARMY CENAE (USA) <Gregory.R.Penta@usace.army.mil>

Subject: [Non-DoD Source] Winnetuxet Road Pond Dam

Good afternoon Gregory,

My name is Jonny Rickwood, and I am an Environmental Scientist with AECOM. I was writing to you today to potentially get some insight on if a Section 408 is required for our project.

We are coordinating with MassDOT and the Town of Plympton MA on a project to replace the bridge that is over the spillway of the Winnetuxet Road Pond Dam. No work will be done on the dam, but the abutments that hold the bridge in place are to be demolished down to the spillway level and capped/attached to new abutments that will be placed behind the existing ones. The existing abutments are connected to the dam. We have already filed the necessary checklists for any Dam Safety Permitting work, but I wanted to reach out to see if you felt any of this work would warrant the need for a 408.

Jonny Rickwood

Environmental Scientist

+1 (570)-290-3595

AECOM

250 Apollo Drive, Chelmsford MA, 01824


Attachment L: Natural Heritage and Endangered Species Program Consultation

609435 - PLYMPTON-BRIDGE REPLACEMENT, P-14-001 (445), WINNETUXET ROAD OVER WINNETUXET RIVER


Project location

LOCATION:

AREA: 1.36 acres

 **DOWNLOAD SHAPE FILE**

EDIT LOCATION



Hana Isihara

MassDOT Highways Contracted Environmental Analyst

BSC Group Direct: (617) 896-4454

hana.i.isihara@dot.state.ma.us

I work flexibly and may send emails outside of working hours. I don't expect a response or action outside your working hours.

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DOCUMENT A00861

**MASSACHUSETTS DEPARTMENT OF
ENVIRONMENTAL PROTECTION**

WATER QUALITY CERTIFICATE &

TECHNICAL DEFICIENCY REVIEW REPORT

401 WQC APPLICATION No: 24-WW11-0029-APP

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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

May 13, 2024

Massachusetts Department of Transportation
Highway Division
10 Park Plaza
Boston, MA 02116
ATTN: Courtney Walker

RE: Section 401 Water Quality Certification
BRP WW 11, Minor Fill Project
Bridge Replacement over Winnetuxet River (P-14-001(445))
Plympton, Massachusetts

401 WQC Application Number: 24-WW11-0029-APP
USACE Application No. NAE-2024-00568

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 April 17, 2024. 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. P-14-001(445)) that carries Winnetuxet Road over the Winnetuxet River in Plympton, central timber pier removal, reconstructed roadway approach work, stormwater drainage improvements, and streambed restoration. The bridge superstructure is stated as needing replacement due to its poor condition and various structural deficiencies.

Existing Conditions

The existing bridge is a two-span, timber-deck structure that spans the primary spillway of a dam owned by the Town of Plympton. The bridge and dam have been in place since 1923. The waterbody, supported by the dam, is an impounded section of the Winnetuxet River known as Winnetuxet Pond. This spillway is one of two outlets that discharge and join back together further down gradient of the dam. The second spillway is a culvert to the north of the bridge, which is outside of the project limits.

This information is available in alternate format. Please contact Melixza Esenyie at 617-626-1282.
TTY# MassRelay Service 1-800-439-2370
MassDEP Website: www.mass.gov/dep

Printed on Recycled Paper

The bridge carries one lane in each direction with a total span of approximately 28 feet 8 inches and a deck width of approximately 20 feet. The bankfull width of the Winnetuxet River is 26 feet. The bridge substructure consists of two stone abutments, a timber pier (consisting of four timber piles), and wingwalls. An existing catch basin just south of the bridge collects stormwater and discharges to the riverbank from a degraded outfall in the southwest quadrant.

The Project is not located within any Critical Areas, Natural Heritage and Endangered Species Program Priority but is classified as an essential fish habitat for diadromous fish species (herring and eels) by NOAA. The project is located within the Federal Emergency Management Agency 1% annual chance of flooding zones.

Project Description

The Project will demolish the existing wood span which will be replaced with a new concrete deck span of the same length, width, and alignment. The center wood pile pier will be removed below the riverbed and the abutments and wingwalls will remain in place. These existing abutments will be partially demolished to a level just below the top of the existing spillway to allow for the construction of new abutment caps on the upslope side of the existing abutments. Approximately 120 linear feet of the roadway will be repaved including the bridge. Guard rails will be replaced, and one existing catch basin will be replaced with two deep sump catch basins.

LUW Impacts & Restoration

In total, 400 square feet (sf) of temporary LUW impacts are required for the Project. A total of 81 cubic yards (cy) of dredging in the Winnetuxet River is required for the installation of riprap scour protection and streambed restoration. A temporary cofferdam will be installed upstream of the bridge and water flow will be diverted to the northern culvert to create dry working conditions. The Project will not result in any impacts to BVW.

The streambed will be dredged down 6 feet from existing grade to add a 1-foot layer of crushed stone, 4-foot layer of riprap and topped with 1-foot of natural streambed material. This armoring of the streambed is to prevent future scour. The streambed will be restored under the supervision of an FGM.

Alternatives Analysis

Based on the location of the bridge over a spillway of a dam, total reconstruction was not considered. Total replacement would require dewatering of the entire Winnetuxet Pond and risk destabilizing the dam. Several alternative bridge types were considered, each of which would result in the same impacts to LUW for demolition and construction.

Stormwater Management Standards

The Project will not result in any increase in impervious surface. As such, peak discharge rates and groundwater recharge conditions will remain approximately the same. Through a complete evaluation, it was determined that structural Stormwater Control Measures (SCMs) to provide total suspended solids removal to the maximum extent practicable as a redevelopment project are not practicable within or adjacent to the Project limits. Installing SCMs on or adjacent to the dam could potentially compromise the structure. In addition, the steep slopes on each side of the roadway provide no feasible

area to install SCMs. Existing conditions will be improved by installing two deep sump catch basins to replace the existing single catch basin. The outfall from this existing system will also be repaired.

Stream Crossing Standards

The 28-foot 8-inch span between the abutments will be 1.1 times the 26-foot bankfull width of the Winnetuxet River. The location of the bridge on top of the dam makes widening the span impracticable. The stream crossing dimensions will not change due to the existing abutments being utilized for the new superstructure. However, the removal of the existing center pier a minimum of two feet below the riverbed will improve upon existing conditions and will increase the openness ratio to 6.57 feet, exceeding the Stream Crossing Standards optimum ratio.

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 Plympton-Halifax-Kingston Express on March 8, 2024. MassDEP received one comment letter during the public comment period pertaining to the regulations at 314 CMR 9.00 and construction methodology. This comment letter was addressed.

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:
 - Combined Application 401 Water Quality Certification (WQC) and 404 Pre-Construction Notification (PCN) MassDOT Winnetuxet Road Over Winnetuxet River Bridge Plan.

Prepared by AECOM on behalf of MassDOT, dated February 23, 2024, with cover letter and attachments. 401 WQC Application Number: 24-WW11-0029-APP.

- MassDOT Responses to MassDEP Administrative Completeness Technical Review. Prepared by AECOM on behalf of MassDOT. Winnetuxet Road Over Winnetuxet River Bridge. Dated April 2, 2024.

Pre-Construction

2. As specified in the application and Specification Item 755.55, 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. The name, contact information, and qualifications of the FGM shall be provided to MassDEP for approval with a copy to the Plympton Conservation Commission prior to the Pre-Construction Meeting. In the event of a conflict between the application and Specification 755.55, the commitment in the application shall apply. **(Submittal)**
3. Prior to the Pre-Construction Meeting, 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 work, 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.
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 erosion, sedimentation, and pollution prevention 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 approved CP/PP (defined herein as including the construction period SWPPP) 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 approved CP/PP. Verification of proof of completion training of the 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 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.
9. A minimum of 21 days prior to the start of work, MassDOT shall submit a Water Management Plan for review and approval. The Plan shall include proposed methods to manage construction-period water including but not limited to dewatering methods and locations, specifications for any water bypass systems, and dredge and debris material dewatering prior to shipment off site, as applicable. The plan shall meet requirements of the CP/PP and be specific to the Project. Dewatering and water bypasses shall be conducted under the supervision of the RE 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 BVWs 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.
12. A Flood Contingency Plan shall be submitted to MassDEP for review and approval that addresses areas that fall within the 1% annual chance of flooding zone within project limits. The Plan shall address the potential need for temporary relocation of construction and auxiliary equipment during flood events to designated upland locations above the Base Flood Elevation. The Plan shall be approved by MassDEP prior to any work within the 1% annual chance of flooding zone, including mobilization or storage of equipment and materials. **(Submittal)**
13. Final Construction Plans (the plans provided to the contractor) shall be submitted for review at least 30 days prior to the Pre-Construction Meeting. Once MassDEP provides written approval, the updated set of plans shall become the "Final Plan of Record." The Plan shall be prepared and signed by a Professional Engineer in the Commonwealth of Massachusetts and shall incorporate all revisions and additions to the original plans that have been approved as discussed herein, as well as any other changes from the permit plans in wetland jurisdictional areas. **(Submittal)**

14. A minimum of 21 days prior to the start of work, a Demolition Plan shall be submitted for review and approval describing how the existing bridge will be demolished and what measures will be taken to assure that demo material is properly contained and does not enter the Winnetuxet River. **(Submittal)**

Construction Period

15. No more than **400 sf** of permanent impacts to LUW shall occur. All work shall avoid unapproved impacts to BVW and LUW.
16. 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.
17. Copies of CP/PP Inspection and Maintenance Log Forms shall be submitted to MassDEP within 14 days upon request.
18. Inspection and maintenance of erosion and sediment controls in active work areas shall be the responsibility of both the Contractor and RE. The project team shall include an individual with at least three-years' experience with construction period erosion and sedimentation control. The RE shall be ultimately responsible for inspection and maintenance of site controls. The RE, and/or contractor shall immediately notify MassDEP and the Plympton Conservation Commission if any unauthorized discharges to BVWs or LUW occur.
19. 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.
20. Work within LUW shall be conducted in low or no-flow conditions to the extent practicable. Notice shall be provided to MassDEP and the Plympton Conservation Commission within 24 hours prior to the commencement of dewatering. Dewatering methods and location(s) shall be approved by the RE prior to use, 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.
21. 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 RE 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.
22. The RE shall monitor the National Weather Service forecast for updates, and upon issuance of a flood watch for the 1% annual chance of flooding zone, shall implement the flood contingency plan referenced in Condition 12.

23. 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. Stockpiles shall be located no less than 50 feet from BVWs, LUW, catch basins, or other drainage conveyances that discharge to BVWs or LUW. The CP/PP shall specify measures to implement this. Filter fabric stretched under storm drain inlet grates are not acceptable for this purpose.
24. 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.
25. Refueling, washing, and cleaning of vehicles and other construction equipment shall not take place within 50 feet of BVWs or LUW and any wash water shall be contained such that it does not drain toward BVWs or LUW. MassDEP shall explicitly approve in writing any deviation to this condition for oversized stationary vehicles.
26. The contractor shall have spill containment kits on site. In the event of a release of fuels and/or oils, the local fire department and MassDEP shall be notified.
27. A temporary shielding system shall be in place beneath the bridge structure prior to removal and concrete excavation to prevent debris from falling into the water below. If any debris accidentally enters Winnetuxet River, 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

28. The FGM shall oversee all LUW replication and restoration in accordance with the Water Quality Certificate application and MassDOT Specification Item 755.55 as applicable. Placement of streambed materials shall take place in no- or low-flow conditions. The Water Management 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. In the event of a conflict between the application and Specification 755.55, the commitment in the application shall apply.
29. A monitoring report shall be submitted by the FGM no later than 30 days following stream restoration. The report shall include an assessment of the stream restoration success, representative photos, and recommended corrective actions as needed. **(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 replication and 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 tyler.lewis@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; 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):

1. the 401 Certification Transmittal Number;
2. the complete name of the applicant and address of the project;
3. the complete name, address, and fax and telephone numbers of the party filing the request, and, if represented by counsel or other representative, the name, fax and telephone numbers, and address of the attorney;
4. if claiming to be a party aggrieved, the specific facts that demonstrate that the party satisfies the definition of "aggrieved person" found at 314 CMR 9.02;
5. a clear and concise statement that an adjudicatory hearing is being requested;
6. a clear and concise statement of (1) the facts which are grounds for the proceedings, (2) the objections to this Certificate, including specifically the manner in which it is alleged to be inconsistent with the MassDEP's Water Quality Regulations, 314 CMR 9.00, and (3) the relief sought through the adjudicatory hearing, including specifically the changes desired in the final written Certification; and
7. a statement that a copy of the request has been sent by certified mail or hand delivery to the applicant, the owner (if different from the applicant), the conservation commission of the city or town where the activity will occur, the Department of Conservation and Recreation (when the certificate concerns projects in Areas of Critical Environmental Concern), the public or private water supplier where the project is located (when the certificate concerns projects in Outstanding Resource Waters), and any other entity with responsibility for the resource where the project is located.

c.) Filing Fee and Address

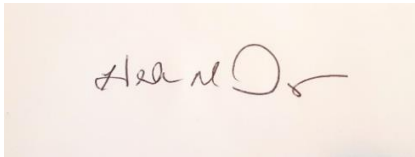
The hearing request along with a DEP Fee Transmittal Form and a valid check or money order payable to the Commonwealth of Massachusetts in the amount of one hundred dollars (\$100) must be mailed to:

Commonwealth of Massachusetts
Department of Environmental Protection
Commonwealth Master Lockbox
PO Box 4062
Boston, MA 02211

The request will be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver. The filing fee is not required if the appellant is a city or town (or municipal 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 Tyler Lewis at Heidi.davis@mass.gov and tyler.lewis@mass.gov.

Very truly yours,

A rectangular box containing a handwritten signature in dark ink. The signature appears to be "Heidi M. Davis" with a stylized flourish at the end.

Heidi M. Davis
Highway Unit Supervisor

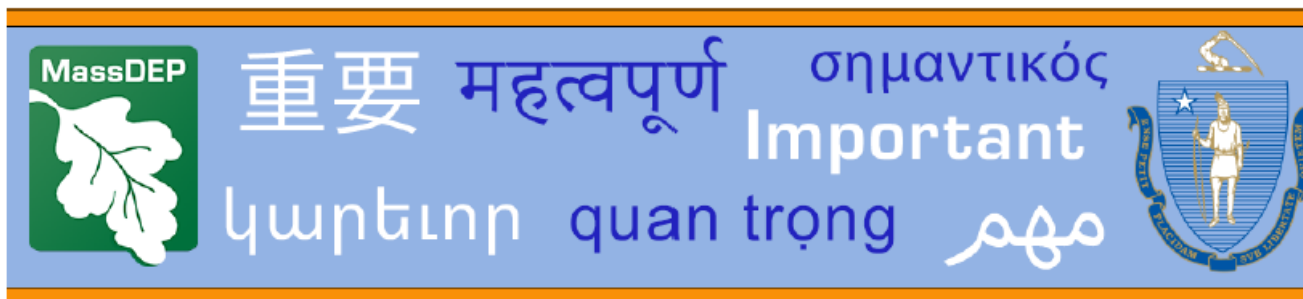
Ecc: DEP SERO – Maissoun Reda
MassDOT – Melissa Lenker
MassDOT – Kylie Abouzeid
MassDOT – Andrea Coates
USACE – Dan Vasconcelos
Mark Rothfuss – mark.rothfuss@assaabloy.com
Kevin Rafferty – shedtalk@hotmail.com
Plympton Conservation Commission – Brian Vasa - plymptonconcom@gmail.com
AECOM - Jonny Rickwood – jonny-rickwood@aecom.com

**ATTACHMENT A
 Bridge Replacement over Winnetuxet River (P-14-001 (445))
 Plympton, MA**

PRE-CONSTRUCTION SUBMITTAL CHECKLIST

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.

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 requirements	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	Verification of Erosion and Sedimentation Controls Training	Prior to work start		
9	Water Management Plan	21 days prior to work start		
12	Flood Contingency Plan	Prior to in water work		
13	Final Construction Plans	30 days prior to Pre-Construction Meeting		
14	Demolition Plan	21 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 Anviwònmanal MassDEP a nan nimewo telefòn ki endike anba a.

Việt Vietnamese

Tài liệu này và quan trọng và phải được dịch ngay. Nếu quý vị cần bản dịch của tài liệu này, vui lòng liên hệ với Giám Đốc Phòng Công Lý Môi Trường của MassDEP theo số điện thoại được liệt kê bên dưới.

ប្រទេសកម្ពុជា Khmer/Cambodian

ឯកសារនេះមានសារៈសំខាន់ ហើយកម្មវិធីត្រូវបានបកប្រែភ្លាមៗ។
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 telefoni menxionadu di baixo.

Contact Deneen Simpson 857-406-0738
Massachusetts Department of Environmental Protection
100 Cambridge Street 9th Floor Boston, MA 02114
TTY# MassRelay Service 1-800-439-2370 • <https://www.mass.gov/environmental-justice>
(Version revised 8.2.2023) 310 CMR 1.03(5)(a)

Русский Russian

Это чрезвычайно важный документ, и он должен быть немедленно переведен. Если вам нужен перевод этого документа, обратитесь к директору Департамента экологического правосудия MassDEP (MassDEP's Director of Environmental Justice) по телефону, указанному ниже.

العربية Arabic

هذه الوثيقة مهمة وتجب ترجمتها على الفور.

إذا كنت بحاجة إلى ترجمة هذه الوثيقة، فيرجى الاتصال بمدير العدالة البيئية في MassDEP على رقم الهاتف المذكور أدناه.

한국어 Korean

이 문서는 중대하므로 즉시 번역되어야 합니다. 본 문서 번역이 필요하신 경우, 매사추세츠 환경보호부의 "환경정의" 담당자 분께 문의하십시오. 전화번호는 아래와 같습니다.

հայերեն Armenian

Այս փաստաթուղթը կարևոր է, և պետք է անհապաղ թարգմանել այն:

Եթե Ձեզ անհրաժեշտ է թարգմանել այս փաստաթուղթը, դիմեք Մասաչուսեթսի շրջակա միջավայրի պահպանության նախարարության (MassDEP) Բնապահպանական հարցերով արդարադատության ղեկավարին (Director of Environmental Justice)՝ ստորև նշված հեռախոսահամարով

فارسی Farsi Persian

این نوشتار بسیار مهمی است و باید فوراً ترجمه شود. اگر نیاز به ترجمه این نوشتار دارید لطفاً با مدیر عدالت محیط زیستی MassDEP در شماره تلفن ذکر شده زیر تماس بگیرید.

Français French

Ce document est important et doit être traduit immédiatement. Si vous avez besoin d'une traduction de ce document, veuillez contacter le directeur de la justice environnementale du MassDEP au numéro de téléphone indiqué ci-dessous.

Deutsch German

Dieses Dokument ist wichtig und muss sofort übersetzt werden. Wenn Sie eine Übersetzung dieses Dokuments benötigen, wenden Sie sich bitte an MassDEP's Director of Environmental Justice (*Direktor für Umweltgerechtigkeit in Massachusetts*) unter der unten angegebenen Telefonnummer.

Ελληνική Greek

Το έγγραφο αυτό είναι πολύ σημαντικό και πρέπει να μεταφραστεί αμέσως. Αν χρειάζεστε μετάφραση του εγγράφου αυτού, παρακαλώ επικοινωνήστε με τον Διευθυντή του Τμήματος Περιβαλλοντικής Δικαιοσύνης της Μασαχουσέτης στον αριθμό τηλεφώνου που αναγράφεται παρακάτω

Italiano Italian

Questo documento è importante e deve essere tradotto immediatamente. Se hai bisogno di tradurre questo documento, contatta il Direttore della Giustizia Ambientale di MassDEP al numero di telefono sotto indicato.

Język Polski Polish

Ten dokument jest ważny i powinien zostać niezwłocznie przetłumaczony. Jeśli potrzebne jest tłumaczenie tego dokumentu, należy skontaktować się z dyrektorem ds. sprawiedliwości środowiskowej MassDEP pod numerem telefonu podanym poniżej.

हिन्दी Hindi

यह दस्तावेज महत्वपूर्ण है और इसका अनुवाद तुरंत किया जाना चाहिए। यदि आपको इस दस्तावेज का अनुवाद कराने की जरूरत है, तो कृपया नीचे दिए गए टेलीफोन नंबर पर MassDEP के पर्यावरणीय न्याय निदेशक से संपर्क करें।

Contact Deneen Simpson 857-406-0738

Massachusetts Department of Environmental Protection
100 Cambridge Street 9th Floor Boston, MA 02114

TTY# MassRelay Service 1-800-439-2370 • <https://www.mass.gov/environmental-justice>
(Version revised 8.2.2023) 310 CMR 1.03(5)(a)



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

March 22, 2024

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 Application No: 24-WW11-0029-APP

AT: Winnetuxet Road Bridge (Bridge No. P-14-001(445)) over the Winnetuxet River
Plympton, MA

Dear Mr. Joa:

MassDEP has completed its Administrative Review of the application for the above-referenced application and notes that the application still requires proof of public notice to be administratively complete.

MassDEP has completed its Technical Review of the application for the above-referenced application and is requesting that you submit the following additional information:

1. The application states that excavation plates will be cut off at or below grade after construction. MassDEP intends to condition the WQC requiring the full removal of these plates.
2. It is understood that the outfall to be replaced will remain at the same elevation; however, please evaluate raising the slope beneath the outfall to assist in reducing scour and erosion below the pipe.

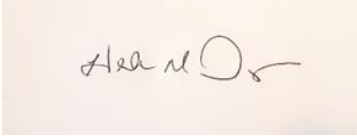
Upon receipt of all requested supplemental information, MassDEP has 30 calendar days in which to issue or deny a certification.

This information is available in alternate format. Please contact Melixza Esenyie at 617-626-1282.
TTY# MassRelay Service 1-800-439-2370
MassDEP Website: www.mass.gov/dep

Printed on Recycled Paper

Should you have any questions relative to this letter, please contact me at heidi.davis@mass.gov or Tyler Lewis at tyler.lewis@mass.gov.

Sincerely,

A rectangular area containing a handwritten signature in dark ink on a light-colored background. The signature appears to be "Heidi M. Davis" written in a cursive style.

Heidi M. Davis
Highway Unit Supervisor

Ecc: DEP-SERO – Maissoun Reda
USACE - Dan Vasconcelos
MassDOT – Michael Joa
Plympton Conservation Commission – Brian Vasa - plymptonconcom@gmail.com
AECOM - Jonny Rickwood – jonny-rickwood@aecom.com



AECOM
 250 Apollo Drive
 Chelmsford, MA 01824
 aecom.com

April 2, 2024

Massachusetts Department of
 Environmental Protection
 100 Cambridge Street Suite 900
 Boston, MA 02114

RE: 401 WATER QUALITY CERTIFICATION Administrative Completeness and Technical Deficiency Review 401 WQC Application No: 24-WW11-0029-APP

AT: Winnetuxet Road Bridge (Bridge No. P-14-001(445)) over the Winnetuxet River Plympton, MA

Dear Ms. Davis,

In response to the Administrative Completeness and Technical Deficiency Review letter for the 401 Water Quality Certification (401 WQC) application No: 24-WW11-0029-AP, AECOM has provided additional information for the Winnetuxet Road Bridge over Winnetuxet River project at the request of the Massachusetts Department of Environmental Protection (MassDEP).

The additional information requests from MassDEP and the responses are as follows:

1. The application states that excavation plates will be cut off at or below grade after construction. MassDEP intends to condition the WQC requiring the full removal of these plates.

Permanent Support of Excavation (SOE) plates are required in front of each existing abutment to facilitate excavation and riprap placement. Upon completion of riprap placement to finished grade, the SOE will remain in-place as there will be no feasible option to remove it. The SOE needs to be embedded below ground and below riprap to provide adequate support during excavation. Completely removing the plate from the streambed would disturb the riprap and could increase scour and erosion beneath the existing abutments. The equipment required to completely remove the SOE would also be too large to be used at the project site, as there is limited roadway and shoulder space to operate heavy machinery, as well as nearby aerial utilities.

In order to remove the SOE from the riverbed upon completion of riprap placement, the plates would need to be vibrated out of place. Vibration must be avoided for this project, to prevent any potential disturbances to the structural integrity of the riprap or abutments. Cutting the SOE at the rip rap line has been proposed and is discussed within the combined application. Once the SOE is cut, naturalized streambed material will overtop the rip rap and cut SOE.

- 2. It is understood that the outfall to be replaced will remain at the same elevation; however, please evaluate raising the slope beneath the outfall to assist in reducing scour and erosion below the pipe.**

The slope beneath the stormwater catch basin outfall is steep and would require a large amount of regrading in order to raise it. Regrading this area is anticipated to require grading within the adjacent bordering vegetated wetland (BVW W2 000 series) located downstream of the bridge. Due to the need to avoid temporary or permanent alteration within BVW W2 000, raising the slope beneath the outfall has been determined to be infeasible. The proposed project activity would place standard stone for pipe ends at the base of the stormwater catch basin outfall. The stones will be approximately 50-125 lbs in weight and will average approximately 2 cubic feet in volume. The stone will be placed on top of the existing material and will reduce the drop off of effluent by approximately 2 feet, thus reducing scour and erosion below the pipe.

We hope that MassDEP finds this supplemental information to be sufficient for the approval of the Winnetuxet Road Bridge over the Winnetuxet River project 401 WQC Application (No: 24-WW11-0029-APP).

Yours sincerely,

Jonathan Rickwood
Environmental Scientist
AECOM
email: Jonny.Rickwood@aecom.com

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DOCUMENT A00872

**FHWA, FRA & FTA INDIANA BAT & NORTHERN
LONG-EARED BAT (NLEB)
PROGRAMMATIC BIOLOGICAL OPINION –
NLAA CONCURRENCE VERIFICATION**

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United States Department of the Interior



FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To:

March 24, 2023

Project code: 2023-0059856

Project Name: 609435 - PLYMPTON- BRIDGE REPLACEMENT, P-14-001 (445),
WINNETUXET ROAD OVER WINNETUXET RIVER

Subject: Concurrence verification letter for the '609435 - PLYMPTON- BRIDGE REPLACEMENT, P-14-001 (445), WINNETUXET ROAD OVER WINNETUXET RIVER' project under the revised February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat.

To whom it may concern:

The U.S. Fish and Wildlife Service (Service) has received your request dated March 24, 2023 to verify that the **609435 - PLYMPTON- BRIDGE REPLACEMENT, P-14-001 (445), WINNETUXET ROAD OVER WINNETUXET RIVER** (Proposed Action) may rely on the concurrence provided in the February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat (PBO) to satisfy requirements under Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C 1531 *et seq.*).

Based on the information you provided (Project Description shown below), you have determined that the Proposed Action is within the scope and adheres to the criteria of the PBO, including the adoption of applicable avoidance and minimization measures, and may affect, but is not likely to adversely affect (NLAA) the endangered Indiana bat (*Myotis sodalis*) and/or the threatened Northern long-eared bat (*Myotis septentrionalis*). Consultation with the Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) is required.

The Service has 14 calendar days to notify the lead Federal action agency or designated non-federal representative if we determine that the Proposed Action does not meet the criteria for a NLAA determination under the PBO. If we do not notify the lead Federal action agency or designated non-federal representative within that timeframe, you may proceed with the Proposed Action under the terms of the NLAA concurrence provided in the PBO. This verification period allows Service Field Offices to apply local knowledge to implementation of the PBO, as we may

identify a small subset of actions having impacts that were unanticipated. In such instances, Service Field Offices may request additional information that is necessary to verify inclusion of the proposed action under the PBO.

For Proposed Actions that include bridge/culvert or structure removal, replacement, and/or maintenance activities: If your initial bridge/culvert or structure assessments failed to detect Indiana bats, but you later detect bats prior to, or during construction, please submit the Post Assessment Discovery of Bats at Bridge/Culvert or Structure Form (User Guide Appendix E) to this Service Office. In these instances, potential incidental take of Indiana bats may be exempted provided that the take is reported to the Service.

If the Proposed Action is modified, or new information reveals that it may affect the Indiana bat and/or Northern long-eared bat in a manner or to an extent not considered in the PBO, further review to conclude the requirements of ESA Section 7(a)(2) may be required. If the Proposed Action may affect any other federally-listed or proposed species, and/or any designated critical habitat, additional consultation between the lead Federal action agency and this Service Office is required. If the proposed action has the potential to take bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act may also be required. In either of these circumstances, please contact this Service Office.

The following species may occur in your project area and **are not** covered by this determination:

- Monarch Butterfly *Danaus plexippus* Candidate
- Plymouth Redbelly Turtle *Pseudemys rubriventris bangsi* Endangered

PROJECT DESCRIPTION

The following project name and description was collected in IPaC as part of the endangered species review process.

NAME

609435 - PLYMPTON- BRIDGE REPLACEMENT, P-14-001 (445), WINNETUXET ROAD OVER WINNETUXET RIVER

DESCRIPTION

609435 - PLYMPTON- BRIDGE REPLACEMENT, P-14-001 (445), WINNETUXET ROAD OVER WINNETUXET RIVER

Bridge replacement

Plymouth Redbelly Turtle: After consulting with the Massachusetts Natural Heritage and Endangered Species Program (NHESP), it was determined that there is no data to suggest the presence of habitat and/or individuals at this project location.

Monarch Butterfly: Candidate Species only, no conservation measures at this time.

DETERMINATION KEY RESULT

Based on your answers provided, this project(s) may affect, but is not likely to adversely affect the endangered Indiana bat and/or the threatened Northern long-eared bat, therefore, consultation with the U.S. Fish and Wildlife Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended 16 U.S.C. 1531 *et seq.*) is required. However, also based on your answers provided, this project may rely on the concurrence provided in the revised February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat.

QUALIFICATION INTERVIEW

1. Is the project within the range of the Indiana bat^[1]?

[1] See [Indiana bat species profile](#)

Automatically answered

No

2. Is the project within the range of the Northern long-eared bat^[1]?

[1] See [Northern long-eared bat species profile](#)

Automatically answered

Yes

3. Which Federal Agency is the lead for the action?

A) Federal Highway Administration (FHWA)

4. Are *all* project activities limited to non-construction^[1] activities only? (examples of non-construction activities include: bridge/abandoned structure assessments, surveys, planning and technical studies, property inspections, and property sales)

[1] Construction refers to activities involving ground disturbance, percussive noise, and/or lighting.

No

5. Does the project include *any* activities that are **greater than** 300 feet from existing road/rail surfaces^[1]?

[1] Road surface is defined as the actively used [e.g. motorized vehicles] driving surface and shoulders [may be pavement, gravel, etc.] and rail surface is defined as the edge of the actively used rail ballast.

No

6. Does the project include *any* activities **within** 0.5 miles of a known Indiana bat and/or NLEB hibernaculum^[1]?

[1] For the purpose of this consultation, a hibernaculum is a site, most often a cave or mine, where bats hibernate during the winter (see suitable habitat), but could also include bridges and structures if bats are found to be hibernating there during the winter.

No

7. Is the project located **within** a karst area?

No

8. Is there *any* suitable^[1] summer habitat for Indiana Bat or NLEB **within** the project action area^[2]? (includes any trees suitable for maternity, roosting, foraging, or travelling habitat)

[1] See the Service's [summer survey guidance](#) for our current definitions of suitable habitat.

[2] The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR Section 402.02). Further clarification is provided by the [User's Guide for the Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat](#).

Yes

9. Will the project remove *any* suitable summer habitat^[1] and/or remove/trim any existing trees **within** suitable summer habitat?

[1] See the Service's [summer survey guidance](#) for our current definitions of suitable habitat.

Yes

10. Will the project clear more than 20 acres of suitable habitat per 5-mile section of road/rail?

No

11. Have presence/probable absence (P/A) summer surveys^{[1][2]} been conducted^{[3][4]} **within** the suitable habitat located within your project action area?

[1] See the Service's [summer survey guidance](#) for our current definitions of suitable habitat.

[2] Presence/probable absence summer surveys conducted within the fall swarming/spring emergence home range of a documented Indiana bat hibernaculum (contact local Service Field Office for appropriate distance from hibernacula) that result in a negative finding requires additional consultation with the local Service Field Office to determine if clearing of forested habitat is appropriate and/or if seasonal clearing restrictions are needed to avoid and minimize potential adverse effects on fall swarming and spring emerging Indiana bats.

[3] For projects within the range of either the Indiana bat or NLEB in which suitable habitat is present, and no bat surveys have been conducted, the transportation agency will assume presence of the appropriate species. This assumption of presence should be based upon the presence of suitable habitat and the capability of bats to occupy it because of their mobility.

[4] Negative presence/probable absence survey results obtained using the [summer survey guidance](#) are valid for a minimum of two years from the completion of the survey unless new information (e.g., other nearby surveys) suggest otherwise.

Yes

SUBMITTED DOCUMENTS

- 609435_Plympton_MassDOT_AcousticSurvey_BridgeInspection.pdf <https://ipac.ecosphere.fws.gov/project/EIRSRD2IHNBSNP66PRNM333WSQ/projectDocuments/118859215>

12. Did the presence/probable absence (P/A) summer surveys detect Indiana bats and/or NLEB^[1]?

[1] P/A summer surveys conducted within the fall swarming/spring emergence home range of a documented Indiana bat hibernaculum (contact local Service Field Office for appropriate home range) that result in a negative finding requires additional consultation with the local Service Field Office to determine if clearing of forested habitat is appropriate and/or if seasonal clearing restrictions are needed to avoid and minimize potential adverse effects on fall swarming and spring emerging Indiana bats.

No

13. Were the P/A summer surveys conducted **within** the fall swarming/spring emergence range of a documented Indiana bat hibernaculum^[1]?

[1] Contact the local Service Field Office for appropriate distance from hibernacula.

No

14. Does the project include activities **within documented NLEB habitat**^{[1][2]}?

[1] Documented roosting or foraging habitat – for the purposes of this consultation, we are considering documented habitat as that where Indiana bats and/or NLEB have actually been captured and tracked using (1) radio telemetry to roosts; (2) radio telemetry triangulation/triangulation to estimate foraging areas; or (3) foraging areas with repeated use documented using acoustics. Documented roosting habitat is also considered as suitable summer habitat within 0.25 miles of documented roosts.)

[2] For the purposes of this key, we are considering documented corridors as that where Indiana bats and/or NLEB have actually been captured and tracked to using (1) radio telemetry; or (2) treed corridors located directly between documented roosting and foraging habitat.

No

15. Will the removal or trimming of habitat or trees occur **within** suitable but **undocumented NLEB** roosting/foraging habitat or travel corridors?

Yes

16. What time of year will the removal or trimming of habitat or trees **within** suitable but **undocumented NLEB** roosting/foraging habitat or travel corridors occur?

C) During both the active and inactive seasons

17. Will *any* tree trimming or removal occur **within** 100 feet of existing road/rail surfaces?

Yes

18. Will *any* tree trimming or removal occur **between** 100-300 feet of existing road/rail surfaces?

No

19. Are *all* trees that are being removed clearly demarcated?

Yes

20. Will the removal of habitat or the removal/trimming of trees involve the use of **temporary** lighting?

Yes

21. Will the removal of habitat or the removal/trimming of trees include installing new or replacing existing **permanent** lighting?

No

22. Does the project include wetland or stream protection activities associated with compensatory wetland mitigation?

No

23. Does the project include slash pile burning?

No

24. Does the project include *any* bridge removal, replacement, and/or maintenance activities (e.g., any bridge repair, retrofit, maintenance, and/or rehabilitation work)?

Yes

25. Is there *any* suitable habitat^[1] for Indiana bat or NLEB **within** 1,000 feet of the bridge? (includes any trees suitable for maternity, roosting, foraging, or travelling habitat)

[1] See the Service's current [summer survey guidance](#) for our current definitions of suitable habitat.

Yes

26. Has a bridge assessment^[1] been conducted **within** the last 24 months^[2] to determine if the bridge is being used by bats?

[1] See [User Guide Appendix D](#) for bridge/structure assessment guidance

[2] Assessments must be completed no more than 2 years prior to conducting any work below the deck surface on all bridges that meet the physical characteristics described in the Programmatic Consultation, regardless of whether assessments have been conducted in the past. Due to the transitory nature of bat use, a negative result in one year does not guarantee that bats will not use that bridge/structure in subsequent years.

Yes

SUBMITTED DOCUMENTS

- [609435_Plympton_MassDOT_AcousticSurvey_BridgeInspection.pdf](#) <https://ipac.ecosphere.fws.gov/project/EIRSRD2IHNBSNP66PRNM333WSQ/projectDocuments/118859215>

27. Did the bridge assessment detect *any* signs of Indiana bats and/or NLEBs roosting in/under the bridge (bats, guano, etc.)^[1]?

[1] If bridge assessment detects signs of *any* species of bats, coordination with the local FWS office is needed to identify potential threatened or endangered bat species. Additional studies may be undertaken to try to identify which bat species may be utilizing the bridge prior to allowing *any* work to proceed.

Note: There is a small chance bridge assessments for bat occupancy do not detect bats. Should a small number of bats be observed roosting on a bridge just prior to or during construction, such that take is likely to occur or does occur in the form of harassment, injury or death, the PBO requires the action agency to report the take. Report all unanticipated take within 2 working days of the incident to the USFWS. Construction activities may continue without delay provided the take is reported to the USFWS and is limited to 5 bats per project.

No

28. Will the bridge removal, replacement, and/or maintenance activities include installing new or replacing existing **permanent** lighting?

No

29. Does the project include the removal, replacement, and/or maintenance of *any* structure other than a bridge? (e.g., rest areas, offices, sheds, outbuildings, barns, parking garages, etc.)

No

30. Will the project involve the use of *any* **temporary** lighting in addition to the lighting already indicated for habitat removal (including the removal or trimming of trees), or bridge/structure removal, replacement or maintenance activities?

Yes

31. Is there *any* suitable habitat **within** 1,000 feet of the location(s) where **temporary** lighting (other than the lighting already indicated for habitat removal (including the removal or trimming of trees) or bridge/structure removal, replacement or maintenance activities) will be used?

Yes

32. Will the project install new or replace existing **permanent** lighting?

No

33. Does the project include percussives or other activities (**not including tree removal/trimming or bridge/structure work**) that will increase noise levels above existing traffic/background levels?

Yes

34. Will the activities that use percussives (**not including tree removal/trimming or bridge/structure work**) and/or increase noise levels above existing traffic/background levels be conducted *during* the active season^[1]?

[1] Coordinate with the local Service Field Office for appropriate dates.

Yes

35. Will *any* activities that use percussives (**not including tree removal/trimming or bridge/structure work**) and/or increase noise levels above existing traffic/background levels be conducted *during* the inactive season^[1]?

[1] Coordinate with the local Service Field Office for appropriate dates.

Yes

36. Are *all* project activities that are **not associated with** habitat removal, tree removal/trimming, bridge and/or structure activities, temporary or permanent lighting, or use of percussives, limited to actions that DO NOT cause any additional stressors to the bat species?

Examples: lining roadways, unlighted signage, rail road crossing signals, signal lighting, and minor road repair such as asphalt fill of potholes, etc.

Yes

37. Will the project raise the road profile **above the tree canopy**?

No

38. Are the project activities that use percussives (not including tree removal/trimming or bridge/structure work) consistent with a Not Likely to Adversely Affect determination in this key?

Automatically answered

Yes, because the activities are within 300 feet of the existing road/rail surface, greater than 0.5 miles from a hibernacula, and conducted during the active season within undocumented habitat.

39. Are the project activities that use percussives (not including tree removal/trimming or bridge/structure work) and/or increase noise levels above existing traffic/background levels consistent with a No Effect determination in this key?

Automatically answered

Yes, because the activities are within 300 feet of the existing road/rail surface, greater than 0.5 miles from a hibernacula, and conducted during the inactive season

40. Is the location of this project consistent with a Not Likely to Adversely Affect determination in this key?

Automatically answered

Yes, because no bats were detected during presence/probable absence surveys conducted during the summer survey season and outside of the fall swarming/spring emergence periods. Additionally, all activities were at least 0.5 miles from any hibernaculum.

41. Is the bridge removal, replacement, or maintenance activities portion of this project consistent with a No Effect determination in this key?

Automatically answered

Yes, because the bridge has been assessed using the criteria documented in the BA and no signs of bats were detected

42. **General AMM 1**

Will the project ensure *all* operators, employees, and contractors working in areas of known or presumed bat habitat are aware of *all* FHWA/FRA/FTA (Transportation Agencies) environmental commitments, including all applicable Avoidance and Minimization Measures?

Yes

PROJECT QUESTIONNAIRE

1. Have you made a No Effect determination for *all* other species indicated on the FWS IPaC generated species list?

Yes

2. Have you made a May Affect determination for *any* other species on the FWS IPaC generated species list?

N/A

3. How many acres^[1] of trees are proposed for removal between 0-100 feet of the existing road/rail surface?

[1] If described as number of trees, multiply by 0.09 to convert to acreage and enter that number.

0.1

4. Please describe the proposed bridge work:

The two-span timber bridge spans the primary spillway of a dam owned and controlled by the Town of Plympton. Both full bridge replacement and superstructure replacement are under consideration at this time. Work will include associated excavation, fill, grading, paving and miscellaneous items. Anticipated project limits are approximately 120 feet along Winnetuxet Road, with activity limited to within the Town layout to avoid right-of-way and environmental impacts.

5. Please state the timing of all proposed bridge work:

Fall 2023 - Fall 2025

6. Please enter the date of the bridge assessment:

June 1, 2022

AVOIDANCE AND MINIMIZATION MEASURES (AMMS)

This determination key result includes the commitment to implement the following Avoidance and Minimization Measures (AMMs):

GENERAL AMM 1

Ensure all operators, employees, and contractors working in areas of known or presumed bat habitat are aware of all FHWA/FRA/FTA (Transportation Agencies) environmental commitments, including all applicable AMMs.

DETERMINATION KEY DESCRIPTION: FHWA, FRA, FTA PROGRAMMATIC CONSULTATION FOR TRANSPORTATION PROJECTS AFFECTING NLEB OR INDIANA BAT

This key was last updated in IPaC on October 11, 2022. Keys are subject to periodic revision.

This decision key is intended for projects/activities funded or authorized by the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), and/or Federal Transit Administration (FTA), which may require consultation with the U.S. Fish and Wildlife Service (Service) under Section 7 of the Endangered Species Act (ESA) for the endangered **Indiana bat** (*Myotis sodalis*) and the threatened **Northern long-eared bat** (NLEB) (*Myotis septentrionalis*).

This decision key should only be used to verify project applicability with the Service's [February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects](#). The programmatic biological opinion covers limited transportation activities that may affect either bat species, and addresses situations that are both likely and not likely to adversely affect either bat species. This decision key will assist in identifying the effect of a specific project/activity and applicability of the programmatic consultation. The programmatic biological opinion is not intended to cover all types of transportation actions. Activities outside the scope of the programmatic biological opinion, or that may affect ESA-listed species other than the Indiana bat or NLEB, or any designated critical habitat, may require additional ESA Section 7 consultation.

IPAC USER CONTACT INFORMATION

Agency: Massachusetts Department of Transportation

Name: Hana Isihara

Address: 10 Park Plaza

City: Boston

State: MA

Zip: 02116

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LEAD AGENCY CONTACT INFORMATION

Lead Agency: Federal Highway Administration

DOCUMENT A00873

NORTHERN LONG-EARED BAT (NLEB)
SUMMER PRESENCE/ABSENCE SURVEY

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Engineers
 Environmental Scientists
 Software Developers
 Landscape Architects
 Planners
 Surveyors

www.bscgroup.com

November 2, 2022

Tim Dexter
 Fish & Wildlife Program Coordinator
 Massachusetts Department of Transportation – Highway Division
 Ten Park Plaza, Room 4260
 Boston, MA 02116-3973

Project	Northern Long-eared Bat (NLEB) Presence/Absence Survey
MassDOT Project #	609435
Town	Plympton, Massachusetts
Surveyor Name/Firm	Patrick Hutchinson/BSC Group
Detector Operation Dates	June 15-19, 2022
Survey Results	NLEB DETECTED BUT NOT CONFIRMED

Dear Tim,

This report contains the results of the Massachusetts Department of Transportation (MassDOT) northern long-eared bat (*Myotis septentrionalis*, hereafter NLEB) summer presence/absence survey performed for the bridge replacement project (MassDOT #609435; PLYMPTON-BRIDGE REPLACEMENT, P-14-001 (445), WINNETUXET ROAD OVER WINNETUXET RIVER) in Plympton, Massachusetts. Acoustic detectors deployed by BSC Group did detect the presence of NLEB. One (1) bat pass was initially classified as the federally threatened NLEB by analysis software but the analyst review could not confirm NLEB. Nine (9) bat passes were initially classified as the state endangered little brown bat (*Myotis lucifugus*) but the analyst reviewed calls and instead classified these calls as eastern small-footed bat, eastern red bat and *Myotis* genus. Two (2) bat passes were initially classified as the state endangered eastern small-footed bat (*Myotis leibeei*) and four (4) were confirmed as such during our qualitative assessment.

In addition, a bridge assessment was completed for the bridge along Winnetuxet Road, crossing over the Winnetuxet River, in Plympton, MA. No bats (dead or alive), staining, bat sounds, or distinct odors were observed for this bridge. There was no evidence to suggest that this bridge is used by bats. The results of this bridge assessment are available in Appendix F.

Sincerely,

Sincerely,



Sarah Barnum

Attachments: NLEB Survey Report for Plympton 609435

Massachusetts Department of Transportation
Northern Long-eared Bat Acoustic Survey Results
MassDOT Project # 609435 Plympton

November 2022



Prepared for:
Massachusetts Department of Transportation
10 Park Plaza
5th Floor / Room 5170
Boston, MA 02115

BSC Project No 89626.03

TABLE OF CONTENTS

1.0	SUMMARY	1
2.0	PROJECT OVERVIEW	1
3.0	METHODS	2
3.1	HABITAT ASSESSMENT.....	2
3.2	DETECTOR DEPLOYMENT.....	2
3.3	CALL ANALYSIS.....	2
4.0	RESULTS	2
4.1	OVERALL HABITAT ASSESSMENT.....	3
4.2	DEPLOYMENT DETAILS	3
	4.2.1 <i>Location 1 – PL-1</i>	5
	4.2.2 <i>Location 2 – PL-2</i>	5
4.3	SURVEY RESULTS	5
5.0	APPENDICES	8

LIST OF TABLES

Table 1.	Deployment Details, MassDOT NLEB Acoustic Survey Project #609435, Plympton.....	4
Table 2.	Acoustic Monitoring Equipment Settings.....	5
Table 4.	Acoustic Survey Results by Date, Site, and Species - Project #609435, Plympton	6

LIST OF APPENDICES (located at end of document)

APPENDIX A	FIGURES
APPENDIX B	WEATHER DATA
APPENDIX C	PHOTOS
APPENDIX D	RESUMES
APPENDIX E	QUALITATIVE REVIEW METHODS AND RESULTS
APPENDIX F	BRIDGE INSPECTION REPORT

1.0 SUMMARY

An ultrasonic acoustic survey was conducted to inventory the state-endangered and federally-threatened northern long-eared bat (NLEB; *Myotis septentrionalis*) and other state-listed bat species within the proposed limits of work for MassDOT bridge replacement Project 609435 in the Town of Plympton, MA. The survey followed 2022 US Fish and Wildlife Service Guidelines (2022 Guidelines) and was conducted from June 15th- June 19th, 2022. **The Kaleidoscope Pro software package did identify bat calls as belonging to or potentially belonging to NLEB at one location and a qualitative review was conducted for the NLEB as well as state listed little brown bat and small-footed bat.** Other bat species likely present at this project area, based on Kaleidoscope Pro results consisted of big brown bat (*Eptesicus fuscus*), eastern red bat (*Lasiurus borealis*), hoary bat (*Lasiurus cinereus*), silver-haired bat (*Lasionycteris noctivagans*), little brown bat (*Myotis lucifugus*) and eastern small-footed bat (*Myotis leibii*). A qualitative review confirmed the presence of the State-listed eastern small-footed bat.

2.0 PROJECT OVERVIEW

BSC Group, Inc. (BSC) conducted multiple acoustic presence/absence bat surveys for MassDOT during the 2022 survey season. The methods used for all surveys are summarized in Section 3.

Surveys were conducted because Projects are within the range of the federally threatened NLEB, which encompasses all of Massachusetts. The NLEB is a tree bat that roosts in tree cavities, rocky outcrops and human-made structures such as bridges and buildings during its April 15 - October 31 active season. The Projects have the potential to affect NLEB through tree trimming and/or clearing during the active roosting season, which could reduce roosting habitat or potentially cause direct mortality if an occupied roost tree is felled. Where NLEBs are determined to be present, these direct impacts can be avoided by conducting the work outside of the active season.

BSC's survey methods were consistent with the USFWS' 2022 Range-wide Indiana Bat Summer Survey Guidelines (2022 Guideline), which also explicitly include the NLEB and provide NLEB-specific guidance. Massachusetts is not within the known summer range of the Indiana bat (*Myotis sodalis*), the only other federally listed (endangered) species in the northeast region.

3.0 METHODS

The methods described below were followed for all BSC's 2022 surveys. Survey tasks were conducted by personnel trained and qualified to conduct their respective tasks. Staff resumes are in Appendix D.

3.1 HABITAT ASSESSMENT

Habitat suitability was generally assessed prior to deploying acoustic detectors by examining recent aerial photography (Google Earth™). Habitat suitability was confirmed in the field at each location where a detector was placed. Characteristics of the overall habitat within the Project area are described in Section 3.1.

3.2 DETECTOR DEPLOYMENT

BSC conducted the survey using Wildlife Acoustics SM4BAT-FS Full Spectrum Ultrasonic Bat Recorders and Wildlife Acoustics SMM-U2 Ultrasonic Microphones, which are factory built to be fully weatherized/waterproof, allowing them to be deployed in any weather conditions. The omnidirectional microphone was installed directed straight up to the sky in order record bats flying from any direction.

The Project 609435 project area was categorized as linear, as defined by the Guidelines, and required a minimum of four detector nights (one detector deployed for four nights or two detectors deployed for 2 night) of survey effort per kilometer of project length. The detector set-ups adhered to specifications detailed in the 2022 Guidelines. Detector locations were selected based on a combination of factors including access, minimal human disturbance, an open cone of detection for the microphones to sample, and apparent bat habitat quality (e.g., mature trees, snags, hollows and crevices, and wetland habitat). The microphones were deployed at a height of 3m.

To ensure that the detectors were functioning correctly during every survey period, settings were checked upon retrieval of the detector in a similar fashion as to when they were deployed: 1) the microphones were checked for proper recording of sounds and archiving of data onto the internal drive/USB; and 2) the program recording times and acoustic range were verified.

3.3 CALL ANALYSIS

Acoustic files were processed using Kaleidoscope Pro version 5.4.2 (KPro), which is a USFWS-approved automated bat call classification software package, which determines the probability (or "likelihood of presence p (probability) value") that each call recorded was made by a certain bat species. Probabilities < 0.05 are statistically interpreted to mean that a call belongs to that species. Calls identified as NLEB and state-listed small-footed and little brown bats had Presence P-Values of less than 0.05, and a qualitative review was conducted, as described in Appendix E.

4.0 RESULTS

Project #609435 located in the Town of Plympton, MA, has a total length of 0.24 km and may include tree clearing or trimming within the proposed limits of work. Four weather compliant detector nights were needed to meet the level of effort required by the 2022 Guidelines. Two

detectors were deployed for three weather compliant nights for a total of six qualifying detector nights. Detectors were left in place for five calendar nights to meet weather requirements and due to logistics.

4.1 OVERALL HABITAT ASSESSMENT

Maps of the location of Project #609435 are available in Appendix A. The dominant habitat features of the survey location are deciduous forest and the Winnetuxet River along the roadway of Winnetuxet Road. Details of the habitat at the detector locations are described in below.

4.2 DEPLOYMENT DETAILS

The surveys were conducted from June 15th- 19th, 2022. The detectors were programed to run from thirty (30) minutes before sunset to thirty (30) minutes after sunrise the following morning. The detectors were left in place for more nights than required by the 2022 Guidelines to meet weather requirements/for logistical reasons. A summary of the survey locations and recording night weather conditions are presented in Table 1, and specifications of the detectors and microphones used are summarized in Table 2.

Details of the hourly weather conditions from Plymouth Municipal Airport (KPYM), the NOAA weather reporting station nearest to the survey in the Town of Plymouth, MA, are presented in Appendix B for each of the survey nights.

Table 1. Deployment Details, MassDOT NLEB Acoustic Survey Project #609435, Plympton

Location	Deployment Date	Latitude	Longitude	Begin	End	Sunset	High Temp (Deg F)*	Low Temp (Deg F)*	Max Wind (mph)**	Weather*
PL-1	6/15/2022	41.946479	-70.826069	18:00	6:00	8:20	60	53	0	Fair
	6/16/2022			18:00	6:00	8:21	65	64	23	Cloudy
	6/17/2022			18:00	6:00	8:21	69	60	6	Fair
	6/18/2022			18:00	6:00	8:21	60	56	22	Overcast
	6/19/2022			18:00	6:00	8:21	53	51	0	Cloudy
PL-2	6/15/2022	41.946948	-70.825895	18:00	6:00	8:20	60	53	0	Fair
	6/16/2022			18:00	6:00	8:21	65	64	23	Cloudy
	6/17/2022			18:00	6:00	8:21	69	60	6	Fair
	6/18/2022			18:00	6:00	8:21	60	56	22	Overcast
	6/19/2022			18:00	6:00	8:21	53	51	0	Cloudy

*High temp, low temp, max wind speed, and weather within the first five after sunset. NOAA records values hourly, and this table summarizes conditions across those five values.

**NOAA reports wind speeds hourly; "Max Wind" is the highest speed reported over the first 5 hours after sunset.

Gray rows indicate detector nights for which data was unacceptable due to weather conditions.

Table 2. Acoustic Monitoring Equipment Settings

Wildlife Acoustics SM4BAT-FS Detector Setting	Specification	Wildlife Acoustics SMM-U2 Ultrasonic Microphone Specifications
Gain	12 dB	Waterproof enclosure, factory built
Sample Rate	256 HZ	Differential Output
Min. Duration	1.5 ms	Built-in High Pass Filter: 2-pole at 1KHz
Max. Duration	none	Low noise: Less than -110 dBfs/VHz at 10 – 190 kHz, at dB gain
Min. Triggering Frequency	16K Hz	Omnidirectional (cardioid response)
Triggering Level	12dB	
Trigger Window	2 s	
Max Length	4s	
Compression	none	

Detailed habitat descriptions for each detector location follow below. Photos of each detector set-up and surrounding habitat are presented in Appendix C.

4.2.1 Location 1 – PL-1

The detector was deployed within forested wetland/forest (upland) adjacent along the road shoulder of Winnetuxet Road. The microphone was installed directed straight up to the sky in order record bats flying from any direction. The dominant tree species in the survey area was Red Maple (*Acer rubrum*), Red oak (*Quercus rubra*) and White Pine (*Pinus strobus*). Average diameter at breast height (DBH) was 3-10” in DBH for Red Maple and White Oak and >10” in DBH for the White Pine. One 3-10” DBH snag was observed adjacent to the survey location.

4.2.2 Location 2 – PL-2

The detector was deployed within forested wetland/forest (upland) adjacent along the road shoulder of Winnetuxet Road. The microphone was installed directed straight up to the sky in order record bats flying from any direction. The dominant tree species in the survey area was Red Maple (*Acer rubrum*), Elm (*Ulmus spp.*) and White Oak (*Quercus alba*). Average diameter at breast height (DBH) for all species was 3-10”. One 10-17” DBH snag was observed adjacent to the survey location.

4.3 SURVEY RESULTS

Table 3 summarized the number of calls recorded by species and location. Blue cells denote calls with likelihood of presence values <0.05, as assigned by KPro. Values <0.05 indicate that the call was likely made by that species. KPro assigned p-values of < 0.05 to calls from seven species, consisting of big brown bat, eastern red bat, hoary bat, silver-haired bat, small footed bat, little brown bat and northern long-eared bat. **The Kaleidoscope Pro software package did identify bat calls as belonging to or potentially belonging to NLEB, little brown bat and small-footed bat. A qualitative review was conducted for the NLEB, little brown bat and small-footed bat and confirmed the presence of only the eastern small-footed bat.**

Table 4. Acoustic Survey Results by Date, Site, and Species - Project #609435, Plympton

Location	Detector Night	EPFU	LABO	LACI	LANO	MYLE	MYLU	MYSE	PESU
Number of Calls Recorded:									
PL-1	6/15/2022	44	7	12	8	0	0	0	0
	6/16/2022	193	36	42	67	0	1	0	1
	6/17/2022	127		15	21	0	0	0	1
	6/18/2022	26	1	11	5	2	3	0	0
	6/19/2022	9	2	4	1	0	1	0	0
PL-2	6/15/2022	74	5	10	10	0	0	1	0
	6/16/2022	169	28	50	68	0	1	0	0
	6/17/2022	27	0	1	1	0	0	0	0
	6/18/2022	85	6	15	2	0	2	0	0
	6/19/2022	23	3	2	0	0	1	0	0
Presence P-Values:									
PL-1	6/15/2022	0	0	0.0000368	1	1	1	1	1
	6/16/2022	0	0	0	0.0000837	1	1	1	1
	6/17/2022	0	1	0.0103817	0.9981439	1	1	1	0.1008785
	6/18/2022	0	0.2758034	0.0000027	1	0.0000085	0.0092504	1	1
	6/19/2022	0.0000003	0.0067148	0.0084451	1	1	0.5589497	1	1
PL-2	6/15/2022	0	0.0000001	0.0218915	1	1	1	0.0286066	1
	6/16/2022	0	0	0	0.000013	1	1	1	1
	6/17/2022	0	1	1	1	1	1	1	1
	6/18/2022	0	0.0000001	0.0003741	1	1	0.4961128	1	1
	6/19/2022	0	0.0003024	0.7681081	1	1	0.7043528	1	1

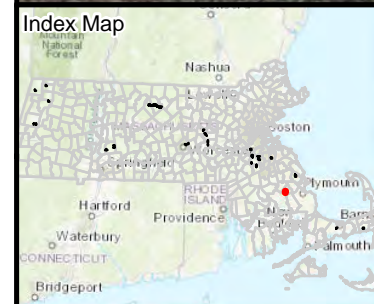
EPFU= Eptesicus fuscus, LABO= Lasiurus borealis, LACI= Lasiurus cinereus, LANO= Lasionycteris noctivagans, MYLE= Myotis leibii, MYLU= Myotis lucifugus, MYSE= Myotis septentrionalis, PESU= Perimyotis subflavus

Cells highlighted in gray indicate detector nights which did not meet weather standards.

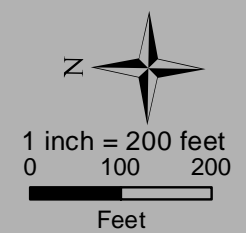
Cells highlighted in blue are calls/p-values considered by Kpro to be present.

5.0 APPENDICES

Appendix A. Figures



- Legend**
- 1 Kilometer Markers
 - Study Area
 - Town Boundary



2022 BAT SURVEY LOCATION MAP

Environmental Resources Map

Plympton, MA
Page 40 of 44

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



Appendix B. Weather Data

Date	Time	Temperature	Dew Point	Humidity	Wind	Wind Speed	Wind Gust	Pressure	Precip.	Condition
20-Jun	12:05 AM	41 °F	40 °F	96 %	CALM	0 mph	0 mph	29.99 in	0.0 in	Fog
19-Jun	8:52 PM	53 °F	48 °F	83 %	SW	3 mph	0 mph	29.80 in	0.0 in	Cloudy
19-Jun	9:52 PM	53 °F	49 °F	86 %	CALM	0 mph	0 mph	29.81 in	0.0 in	Cloudy
19-Jun	10:52 PM	53 °F	50 °F	89 %	CALM	0 mph	0 mph	29.83 in	0.0 in	Cloudy
19-Jun	11:52 PM	52 °F	50 °F	93 %	CALM	0 mph	0 mph	29.82 in	0.0 in	Cloudy
19-Jun	12:52 AM	56 °F	45 °F	67 %	NW	14 mph	21 mph	29.56 in	0.0 in	Cloudy
18-Jun	8:52 PM	60 °F	44 °F	55 %	WNW	10 mph	0 mph	29.55 in	0.0 in	Cloudy
18-Jun	9:52 PM	58 °F	43 °F	58 %	NW	13 mph	20 mph	29.56 in	0.0 in	Cloudy
18-Jun	10:52 PM	56 °F	44 °F	64 %	WNW	14 mph	22 mph	29.56 in	0.0 in	Cloudy
18-Jun	11:52 PM	56 °F	45 °F	67 %	NW	9 mph	0 mph	29.56 in	0.0 in	Cloudy
18-Jun	12:52 AM	60 °F	57 °F	90 %	CALM	0 mph	0 mph	29.37 in	0.0 in	Fair
17-Jun	8:52 PM	69 °F	64 °F	84 %	WSW	5 mph	0 mph	29.41 in	0.0 in	Fair
17-Jun	9:52 PM	67 °F	64 °F	90 %	WSW	5 mph	0 mph	29.42 in	0.0 in	Fair
17-Jun	10:52 PM	69 °F	63 °F	81 %	W	5 mph	0 mph	29.40 in	0.0 in	Fair
17-Jun	11:52 PM	66 °F	59 °F	78 %	NW	6 mph	0 mph	29.38 in	0.0 in	Fair
17-Jun	12:52 AM	66 °F	60 °F	81 %	SW	16 mph	24 mph	29.76 in	0.0 in	Cloudy
16-Jun	8:52 PM	64 °F	58 °F	80 %	SSW	10 mph	0 mph	29.87 in	0.0 in	Cloudy
16-Jun	9:52 PM	65 °F	60 °F	84 %	SSW	10 mph	0 mph	29.85 in	0.0 in	Cloudy
16-Jun	10:52 PM	65 °F	60 °F	84 %	S	12 mph	20 mph	29.80 in	0.0 in	Mostly Cloudy
16-Jun	11:52 PM	66 °F	60 °F	81 %	SSW	13 mph	23 mph	29.78 in	0.0 in	Cloudy
16-Jun	12:52 AM	53 °F	51 °F	93 %	CALM	0 mph	0 mph	30.03 in	0.0 in	Fair
15-Jun	8:52 PM	60 °F	54 °F	80 %	CALM	0 mph	0 mph	30.02 in	0.0 in	Fair
15-Jun	9:52 PM	58 °F	53 °F	84 %	CALM	0 mph	0 mph	30.03 in	0.0 in	Fair
15-Jun	10:52 PM	56 °F	53 °F	90 %	CALM	0 mph	0 mph	30.02 in	0.0 in	Fair
15-Jun	11:52 PM	55 °F	52 °F	89 %	CALM	0 mph	0 mph	30.03 in	0.0 in	Fair

Appendix C. Photos

MassDOT Project Number: 609435



Photo #1: Location 1. *Facing north.*



Photo #2: Location 1. *Facing south.*



Photo #3: Location 1. *Facing east.*



Photo #4: Location 1. *Facing west.*

MassDOT Project Number: 609435



Photo #5: Location 1. *Facing air.*

MassDOT Project Number: 609435



Photo #1: Location 2. *Facing north.*



Photo #2: Location 2. *Facing south.*



Photo #3: Location 2. *Facing east.*



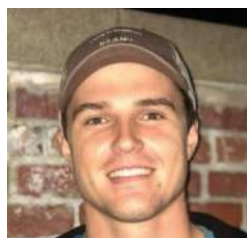
Photo #4: Location 2. *Facing west.*

MassDOT Project Number: 609435



Photo #5: Location 2. *Facing air.*

Appendix D. Resumes



Patrick Hutchinson

Ecological Scientist

YEARS OF EXPERIENCE

5

EDUCATION

BS, Environmental Science,
Climate Change and
Sustainability (Minor)
University of Massachusetts,
Lowell

CERTIFICATIONS

- OSHA 40 Hour HAZWOPER
- OSHA Construction Safety
and Health

AFFILIATIONS

- Association of State Wetland
Scientists

MEET PATRICK

Patrick's professional experience in ecological science has focused on marine, wetlands, and wildlife where he manages projects and people. He is experienced in environmental and regulatory compliance and has worked in accordance with and alongside utility clients, nonprofits, and state agencies.

PROJECT EXPERIENCE HIGHLIGHTS

National Grid, 315 & 303/327/3520 Line Refurbishment Project, Various Towns, MA and RI

Environmental Field Lead

Provided direct coordination between client and consultant for a multistate transmission line span refurbishment project. Patrick provided support and managed a team of monitors for construction monitoring, environmental compliance, and endangered species monitoring while working in accordance with MassWildlife's Natural Heritage and Endangered Species Program.

National Grid, A1B2 Transmission Line Wildlife Habitat Evaluations, MA

Ecological Scientist

In charge of collecting data that was vital to establishing wildlife boundaries and buffers for planned future work along the A1B2 transmission line. Worked alongside Certified Wildlife Biologists and Professional Wetland Scientists to ensure accurate data collection and wetland inventory during surveys.

PATRICK'S PASSION FOR PLANT AND ANIMAL CONSERVATION COMBINED WITH HIS SKILLS MANAGING PROJECTS PROVIDES GREAT VALUE TO CLIENTS.

Endangered Species Surveys, Various Towns, MA

Endangered Species Monitor

Responsible for using Advanced Telemetry Systems, meander surveys, and a turtle tracking dog to track and monitor wildlife throughout many different areas in Massachusetts. Project tasks included monitoring and surveying endangered species breeding habitat and nesting sites as well as gathering information to map areas of habitat for various clients.

Patrick Hutchinson

Massachusetts Department of Conservation and Recreation, Six Dams Removal Project, Various Towns, MA

Environmental Scientist

In charge of collecting sediment samples from six previously abandoned dams in six different Massachusetts towns that the Department of Conservation and Recreation retained ownership of. Patrick provided oversight of subcontractors gathering on-water data as well as sediment cores from the upstream side of the dams. Other project responsibilities included on-site processing and immediate analysis of the sediment cores as well as the preparation of the samples to be further analyzed in a laboratory.

United States Army Corps of Engineers, New Bedford Harbor Superfund Site, New Bedford, MA

Environmental Scientist

Worked under the supervision of the United States Army Corps of Engineers and the United States Environmental Protection Agency following a regimented field sampling plan approved for large-scale PCB remediation on a high-profile superfund site. Patrick was responsible for the oversight of subcontractors, intertidal sediment sampling, subtidal data gap oversight, and sediment processing. This project received the United States Army Corps of Engineers Contractor Performance Assessment Report (CPAR) Rating of Exceptional for work at New Bedford Harbor Superfund Site.

Acoustic Bat Surveys, Massachusetts Department of Transportation, MA

Ecological Scientist

Patrick was in charge of deploying acoustic recorders to collect ultrasonic data that identifies the presence of rare and endangered bat species at various locations in Massachusetts. Used Kaleidoscope Pro software and worked alongside a Bat Biologist and a Certified Wildlife Biologist to finalize species data that was collected. Assisted in reporting the finalized data from the surveys to be distributed to the client.

Assistant Harbormaster, Coastal Natural Resources Officer, and Endangered Species Officer

In charge of enforcing all state and local bylaws, responding to all emergency situations within jurisdiction, and ensuring visitor safety on both land and water. Developed monitoring programs for endangered species and provided oversight and management of endangered species monitors. Monitored and enforced the preservation of coastal ecosystems and sand dune restoration. Ensured sustainable harvesting of shellfish, fish, and waterfowl by monitoring all seasonal hunting and fishing licenses in accordance with state laws.

Abandoned Cranberry Bog Restoration, Jones River Watershed Association, Kingston, Massachusetts

Volunteer

Led a team of dedicated people to restore, revive, and harvest formerly abandoned organic cranberry bogs. Developed restoration plans for how to revive overgrown cranberry beds, water management, and sustainable harvesting. Developed a passion for sustainable agriculture while keeping the bogs completely organic.

PRIOR TO BSC, PATRICK CONTRIBUTED TO THE FOLLOWING PROJECTS:

Duxbury Harbormaster, Duxbury, Massachusetts

Rachel L. Toews

rtoews@bscgroup.com

1 Mercantile Street / Suite 610 / Worcester, MA 01608

Relevant Work Experience

Medical Laboratory Technologist

KBMO Diagnostics —Hopedale, MA (2017-2021) Perform RNA extraction and PCR amplification to determine whether a patient is positive or negative for Covid-19.

Conduct quality control of all new reagents, and maintain inventory for all total reagents.

Perform a high complexity enzyme-linked immunosorbent assay (ELISA) to test for food sensitivities, and report patient results when complete.

Record daily temperatures for laboratory, refrigerators, water bath, and freezers.

Perform various tasks, such as equipment maintenance, lyophilization, biohazard box assembly, and weekly lab schedule.

Wildlife Care Volunteer

Mass Audubon--Milton, MA (2016-2021) Ensure the safety and well being of all wildlife by providing a clean and hygienic environment, prepare specialized diets for each animal, maintain outdoor exhibits, help with animal enrichment activities, and weigh animals and record their weight. Received training in the handling of various species of birds and reptiles.

Cambodia Research Abroad

Bridgewater State University—Siem Reap, Cambodia (2013) Built light biosand water filtration systems in rural villages across Cambodia.

Tested light biosand filters for effective water filtration, prepared media, maintained laboratory notebook, took water samples, and tested samples for coliforms using aseptic technique.

Presented the findings at a national conference (NCUR).

Analytical Chemistry Laboratory Intern

Great Point Energy—Fall River, MA (2008-2009)

Assisted with daily experiments, accurately recorded laboratory data, made reagents, and maintained a clean working environment.

Education

B.S. in Biology (2015)

Bridgewater State University — Bridgewater, MA

Minor in Chemistry

Overall GPA: 3.21

Academic Involvement & Awards

Member: Biological National Honors Society, Beta Beta Beta.

Poster Presentation, “Influence of habitat on Ebony Jewelwing Damselflies, *Calopteryx maculata*, mating activity and movement in South Brook, Bridgewater, MA.”

National Conference of Undergraduate Research.

Lexington, KY. April, 2014.

Poster Presentation, “Testing the use of light biosand filters for effective water filtration in Siem Reap, Cambodia.”

National Conference of Undergraduate Research. La

Crosse, WI. April, 2013.

CASE Summer Science Academy

Acted as a panel judge for Bridgewater State University’s CASE Summer Science Academy Forensics Institute.

Bridgewater, MA. Summer, 2015

BSU Halloween Fright Night

Taught grade school children anatomy and physiology of the nervous system. Bridgewater State University. October, 2014.

Biology Club Member

Bridgewater State University. Volunteered at the annual 5k Water for Cambodia fundraiser. Fall 2011 – Spring 2014.

Rachel Toews

General Skills and Experience

Laboratory Skills (5 years)
Microsoft Office (14 years)
Data Entry (14 years)
Critical Thinking and Problem Solving (10 years)
Data Analysis and Reporting (3 years)

BSC Group Experience

**Acoustic Bat Surveys, Massachusetts Department of
Transportation, MA**

Ecological Scientist

Rachel was in charge of deploying acoustic recorders to collect ultrasonic data that identifies the presence of rare and endangered bat species at various locations in Massachusetts. Used Kaleidoscope Pro software and worked alongside a Bat Biologist and a Certified Wildlife Biologist to finalize species data that was collected. Assisted in reporting the finalized data from the surveys to be distributed to the client.

Donald Solick, MSc

Fort Collins, CO • (307) 286-0770 • dsolick@vesperbats.com • www.linkedin.com/in/donald-solick

Bat Biologist

Experienced bat biologist with 27-year track record of diverse research involving bats across North and Central America

- **15 years' experience classifying bat acoustic data for 100s of NABat and other surveys**
- **Extensive experience manually vetting calls of U.S. and Latin American bats**
- **Leads trainings and workshops on manual vetting of bat echolocation calls**
- **Proficient with Sonobat 4.4.5, Kaleidoscope Pro, and Anlook software.**
- **Published papers and presented research on acoustic monitoring and species ID**
- **Author of *Echolocation Calls of Central American Bats* (Pelagic Publishing)**

Professional Experience

Owner, Vesper Bat Detection Services | www.vesperbats.com 2020 - present

Launched a consulting firm specializing in acoustic monitoring and echolocation species classification of bats, professional training for manual vetting of echolocation calls, and public outreach. Contracts have included assessing the impact of artificial lights on bats for the National Park Service, manual vetting of bat calls for the Bureau of Land Management, and training consultants, students, government personnel, and enthusiasts how to manually vet bat echolocation calls.

Research Analyst, Oregon State University-Cascades 2021-present

Bat call analyst for the Northwestern BatHub, analyzing data collected at dozens of locations throughout the western United States for the North American Bat Monitoring program

Senior Field Research Specialist, Bat Conservation International 2021-present

Project Manager supervising dog-detection and human teams to search for bat carcasses at wind farms in Iowa, testing new methods of reducing bat fatalities and maximizing energy production

Research Biologist, Electric Power Research Institute 2021-present

Contract work to support bat research and development projects for the Endangered and Protected Species and Environmental Aspects of Wind programs, specifically working with industry members to reduce impact to bats with minimal power loss.

Permitted Bat Netting Crew Lead, SWCA Environmental Consultants 2021-present

Crew lead conducting mistnet surveys for threatened and endangered bat species in Minnesota.

'On-call' Bat Biologist, Atwell Consulting Group 2021-present

Contract work to assist Atwell as needed with bat expertise, including review and analysis of bat acoustic data for ongoing wind development projects.

Donald Solick, MSc

Resume p. 2 of 2 • (307) 286-0770 • donaldsolick@gmail.com • www.linkedin.com/in/donald-solick

Professional Experience, Continued

Research Biologist, Western EcoSystems Technology 2007 - 2020

Staff biologist with a leading provider of domestic and international environmental and statistical consulting services and contract research. Developed the bat acoustic monitoring program and coordinated hundreds of acoustic monitoring projects, primarily in the western United States including numerous projects in Colorado. Classified millions of bat acoustic data files to species or species group. Worked with clients and state wildlife agencies to collect and analyze NABat acoustic data at proposed wind energy facilities.

Seasonal Field Biologist, Various institutions, salaries, and hours 1995 - 2007

Served as a seasonal field biologist for a range of state and federal agencies, academic institutions, and nonprofits. Work included 15 projects that involved the capture and identification of numerous species of mammals, birds, fish, and insects for research studies and inventories; radio-tracking species to determine habitat and behavior; banding, nest-searching, and bird population surveys; evaluation of stream health; and investigation of canopy moss communities.

Instructor and Presenter Experience

Instructor and organizer, Neotropical Acoustic Survey Techniques workshops, Belize, 2018-2021

Instructor and organizer, Acoustic Identification of Eastern US Bat Species, 9 online classes, 2021

Invited speaker, 13th NWCC Wind Wildlife Research Conference, Minnesota, 2018.

Presenter and attendee, North American Society of Bat Research, various locations, 1999-2015.

Instructor, Bat Acoustic Data Analysis Methods, Midwest Bat Working Group, 2013.

Select Publications

Solick DI and CM Newman. 2021. [Oceanic records of North American bats and implications for offshore wind energy development in the United States](#). Ecology and Evolution doi.org/10.1002/ece3.8175.

Solick DI, D Pham, K Nasman, and K Bay. 2020. [Bat activity rates do not predict bat fatality rates at wind energy facilities](#). Acta Chiropterologica 22 (1): 135-146.

Solick DI, RMR Barclay, L Bishop-Boros, QR Hays, and CL Lausen. 2020. [Distributions of eastern and western red bats in western North America](#). Western North American Naturalist 80: 90-97.

Professional Development

Certified Wildlife Biologist, The Wildlife Society, 2021.

USFWS Endangered Species Recovery Permit TE234121, 2012-present.

Education

Master of Science, Ecology and Evolutionary Biology, University of Calgary

Bachelor of Science, Bachelor of Arts, Wildlife Biology, Environmental Studies, The Evergreen State College

Appendix E. Qualitative Review Methods and Results

BSC contracted Vesper Bat Detection Services to manually review bat acoustic data collected by BSC for MassDOT in 2022, to verify the presence of myotis species. Manual review was conducted by Don Solick (see Appendix D for resume). Vesper automatically classified the files collected for MassDOT using the North American bat classifier version 5.4.0 in Kaleidoscope Pro 5.4.8. Version 5.4.0 is one of the versions accepted by USFWS.

State-Listed Species: In addition to the NLEB calls evaluated as described below, Vesper reviewed voucher calls for the three other bat species listed in Massachusetts, eastern small-footed bat, little brown bat, and tricolor bat, to confirm their presence at stations where autclassification results indicated they were present. This review confirmed the presence of eastern small-footed bat at the P-14-001 Bridge Replacement Project location (MassDOT #609435) in Plympton, Massachusetts.

NLEB Results: Version 5.4.0 of the autclassifier yielded slightly more inclusive initial results for NLEB, as compared to BSC’s auto classification using version 5.4.2. However, none of the NLEB calls initially identified by version 5.4.0 were confirmed as NLEB by the manual review. Vesper evaluated the sixteen files across 11 stations autclassified as NLEB (Table 1) for call quality (i.e., minimum number of 5 search phase pulses, harmonics, low signal-to-noise ratio) and bandwidth, defined as the minimum frequency of a pulse subtracted from the maximum frequency of a pulse, in kilohertz (kHz). Northern long-eared bat calls have > 75 kHz in bandwidth when viewed in full-spectrum, distinguishing them from other *Myotis* species (Solick 2022; Szewczak 2022). Other characteristics of NLEBs include a) low fluctuation in minimum frequency across a call sequence, minimum slope > 200 octaves per second (OPS), characteristic frequency between 40-47 kHz (when viewed in zero-cross), and the presence of a ‘tail’ (i.e., downward, low-intensity ending to a pulse). Based on these characteristics, no calls were classified as NLEB (Table 1). Of the calls autclassified as NLEBs, six nights across six stations (CD4, DX3, HA1, HA3, QR2, WE2) met the MLE < 0.05 threshold. All 1,984 call files recorded on those nights were manually reviewed. None of these files met the NLEB criteria described above.

Table 1. Manual review of files autclassified as NLEB by Kaleidoscope Pro 5.4.0, with notes on call characteristics. Grey rows indicate locations which met the MLE <0.05 threshold. No calls were determined to be NLEB.

Station	Night	Time	KPro ID*	Manual ID*	Bandwidth (kHz)	Minimum slope (OPS)	Comment
BH2	7/20/2022	23:21:12	MYOSEP	MYOTIS	52	80	bandwidth < 75 kHz, minimum slope < 200 OPS
CD4	7/20/2022	22:18:18	MYOSEP	MYOTIS	46	150	bandwidth < 75 kHz, minimum slope < 200 OPS
CD4	7/23/2022	23:56:59	MYOSEP	MYOTIS	49	150	poor quality, few pulses; bandwidth < 75 kHz, minimum slope < 200 OPS

Table 1. Manual review of files autoclassified as NLEB by Kaleidoscope Pro 5.4.0, with notes on call characteristics. Grey rows indicate locations which met the MLE <0.05 threshold. No calls were determined to be NLEB.

DX3	6/16/2022	21:37:03	MYOSEP	MYOLUC	46	100	bandwidth < 75 kHz, minimum slope < 200 OPS
DX3	6/16/2022	23:52:28	MYOSEP	MYOTIS	29	150	poor quality, few pulses; bandwidth < 75 kHz, minimum slope < 200 OPS
GR5	6/23/2022	22:40:39	MYOSEP	MYOTIS	56	150	bandwidth < 75 kHz, minimum slope < 200 OPS
GR5	6/24/2022	4:01:23	MYOSEP	MYOTIS	50	150	bandwidth < 75 kHz, minimum slope < 200 OPS
GR6	6/27/2022	20:36:22	MYOSEP	LASBOR	50	60	bandwidth < 75 kHz, minimum slope < 200 OPS
HA1	6/28/2022	22:29:58	MYOSEP	MYOTIS	60	>200	minimum slope >200 OPS, but poor quality and bandwidth < 75 kHz,
HA1	6/28/2022	22:28:25	MYOSEP	MYOTIS	54	>200	minimum slope > 200 OPS, but bandwidth < 75 kHz and a few pulses ~150 OPS
HA3	6/30/2022	2:16:54	MYOSEP	MYOTIS	42	150	poor quality; bandwidth < 75 kHz, minimum slope < 200 OPS
QR2	7/11/2022	0:15:42	MYOSEP	MYOLUC	48	80	bandwidth < 75 kHz, minimum slope < 200 OPS
TE9	8/1/2022	21:58:15	MYOSEP	MYOLUC	50	100	poor quality, few pulses; bandwidth < 75 kHz, minimum slope < 200 OPS
WE1	7/14/2022	23:35:20	MYOSEP	MYOLUC	49	150	bandwidth < 75 kHz, minimum slope < 200 OPS
WE2	7/13/2022	2:20:26	MYOSEP	MYOLUC	40	120	bandwidth < 75 kHz, minimum slope < 200 OPS
WE2	7/13/2022	21:41:18	MYOSEP	MYOTIS	30	100	bandwidth < 75 kHz, minimum slope < 200 OPS

*LASBOR = eastern red bat; MYOLUC = little brown bat; MYOSEP = northern long-eared bat; MYOTIS = unknown *Myotis species*

LITERATURE CITED

- Solick, D. I. 2022. Bat Acoustic Species-Pair Matrix for Eastern U.S./Canada. Vesper Bat Detection Services, Colorado. Available from:
https://www.batacousticsurveys.com/files/ugd/a1e0ca_11eef19fd47e4d7cb3684692d88363c.pdf.
- Szewczak, J. 2022. Echolocation Call Characteristics of Western North American Bats. Humboldt State University, Arcata, California.

Appendix F. Bridge Inspection Report

JUNE 1, 2022

BAT BRIDGE ASSESSMENT

MassDOT Project Number – 609435 – Plympton, MA

A visual bridge inspection was conducted for the bridge along Winnetuxet Road, crossing over the Winnetuxet River, in Plympton, MA. Surveyors were able to assess the bridge for any visual or audible bat activity by means of access on either the East or West sides beneath the bridge. Surveyors were able to gain access to the top of the bridge to inspect the deck and guardrails as well.

The steep and tall sidewalls beneath the bridge didn't allow for easy access to be able to fully inspect the spaces between the concrete end walls and the wooden bridge deck or in the top corners of the bridge. Water from the Winnetuxet River periodically flows over a dam and under the bridge. No evidence of guano or staining on the walls or ground was observed but could have also been washed away from the incoming water. No bats were observed in the spaces between the walls, cracks in concrete, spaces between the wooden beams, or expansion joints. There did appear to be some debris, which may or may not have been guano, on the side of a wooden beam, but surveyors could not get close enough to accurately decide. No bats (dead or alive), staining, bat sounds, or distinct odors were observed for this bridge. This bridge does appear to provide a cave-like environment. There was not enough evidence to determine if this bridge is used by bats.

APPENDIX D: Bridge/Structure Bat Assessment Form

Bridge/Structure Bat Assessment Form Instructions

- This form will be completed to document bat occupancy or bat use of bridges, culverts, and other structures. This form shall be submitted to the appropriate personnel within the DOT and USFWS for recordkeeping (or uploaded into the Information, Planning, and Consultation (IPaC) Determination Key for use of the Programmatic Biological Opinion for Transportation Projects in the Range of the Indiana Bat and Northern Long-Eared Bat) prior to conducting: any activities below the deck surface either from the underside or from above the deck surface that bore down to the underside; any activities that could impact expansion joints; any activities involving deck removal on bridges; or any activities involving structure demolition for bridges, culverts, and/or other structures.
- Assessments must be completed within two (2) years of conducting any work (see the above bullet), regardless of whether assessments have been conducted in the past. Assessments must be completed in appropriate weather conditions, suitable for the assessor to observe common signs of bat use.
- Evidence of bat use may include visual observation (live and/or dead), presence of guano, presence of staining, audible observation, and/or odor observation. Presence of one or more indicators is sufficient evidence that bats may be using the bridge, culvert, and/or other structure.
- If bat use of a bridge, culvert, and/or other structure is noted, additional studies may be undertaken during bat active season to identify the specific bat species utilizing the structure, or protected bat species presence can be assumed, in order to comply with threatened and endangered species regulations. Bat active season dates, typically between April and November, vary regionally and by species, so assessors should consult with their local USFWS Field Office for more specific active season dates.
- For use of the Programmatic Biological Opinion for Transportation Projects in the Range of the Indiana Bat and Northern Long-Eared Bat – If the bridge/structure is 1,000 feet or more from suitable bat habitat¹ (e.g., an urban or agricultural area without suitable foraging habitat or corridors linking the bridge to suitable foraging habitat), check the appropriate box and fill out the table below. **No further assessment is required.**

Date & Time of Assessment	DOT Project #	Route/Facility Carried	County
Federal Structure ID	Structure Coordinates (latitude and longitude)	<input type="checkbox"/> This bridge/structure is 1,000 feet or more from suitable bat habitat ² Name: _____ Signature: _____	

- Any questions pertaining to assessments or this form should be directed to the local USFWS Field Office.

¹ Refer to the USFWS’s summer survey guidance for the definition of suitable habitat (<http://www.fws.gov/midwest/endangered/mammals/inba/inbasummersurveyguidance.html>).

² This condition is only for use of the Programmatic Biological Opinion for Transportation Projects in the Range of the Indiana Bat and Northern Long-Eared Bat

Bridge/Structure Bat Assessment Form








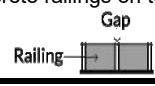


Date & Time of Assessment	DOT Project Number	Route/Facility Carried	County
Federal Structure ID	Structure Coordinates (latitude and longitude)	Structure Height (approximate)	Structure Length
Structure Type (check one)		Structure Material (check all that apply)	
<i>Bridge Construction Style</i>		<i>Deck Material</i>	<i>Beam Material</i> / <i>End/Back Wall Material</i>
<input type="checkbox"/> Cast-in-place 	<input type="checkbox"/> Pre-stressed Girder 	<input type="checkbox"/> Metal <input type="checkbox"/> Concrete <input type="checkbox"/> Timber <input type="checkbox"/> Open grid <input type="checkbox"/> Other:	<input type="checkbox"/> None <input type="checkbox"/> Concrete <input type="checkbox"/> Steel <input type="checkbox"/> Timber <input type="checkbox"/> Other:
<input type="checkbox"/> Flat Slab/Box 	<input type="checkbox"/> Steel I-beam 	Creosote Evidence Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/>	
<input type="checkbox"/> Truss 	<input type="checkbox"/> Covered 		
<input type="checkbox"/> Parallel Box Beam 	<input type="checkbox"/> Other:	Culvert Material <input type="checkbox"/> Metal <input type="checkbox"/> Concrete <input type="checkbox"/> Plastic <input type="checkbox"/> Stone/Masonry <input type="checkbox"/> Other:	
Culvert Type		Notes:	
<input type="checkbox"/> Box <input type="checkbox"/> Pipe/Round <input type="checkbox"/> Other:	Other Structure _____		
Crossings Traversed (check all that apply)		Surrounding Habitat (check all that apply)	
<input type="checkbox"/> Bare ground <input type="checkbox"/> Rip-rap <input type="checkbox"/> Flowing water <input type="checkbox"/> Standing water <input type="checkbox"/> Seasonal water	<input type="checkbox"/> Open vegetation <input type="checkbox"/> Closed vegetation <input type="checkbox"/> Railroad <input type="checkbox"/> Road/trail - Type: <input type="checkbox"/> Other:	<input type="checkbox"/> Agricultural <input type="checkbox"/> Commercial <input type="checkbox"/> Residential-urban <input type="checkbox"/> Residential-rural <input type="checkbox"/> Woodland/forested	<input type="checkbox"/> Grassland <input type="checkbox"/> Ranching <input type="checkbox"/> Riparian/wetland <input type="checkbox"/> Mixed use <input type="checkbox"/> Other:
Areas Assessed (check all that apply)			
Check all areas that apply. If an area is not present in the structure, check the "not present" box. Document all bat indicators observed during the assessment. Include the species present, if known, and provide photo documentation as indicated.			
Area (check if assessed)	Assessment Notes	Evidence of Bats (include photos if present)	
<input type="checkbox"/> All crevices and cracks: Bridges/culverts: rough surfaces or imperfections in concrete Other structures: soffits, rafters, attic areas	Not present	Visual - live # dead # Guano Staining	Audible <input type="checkbox"/> Species Odor Photos
<input type="checkbox"/> Concrete surfaces (open roosting on concrete)	Not present	Visual - live # dead # Guano Staining	Audible <input type="checkbox"/> Species Odor Photos
<input type="checkbox"/> Spaces between concrete end walls and the bridge deck	Not present	Visual - live # dead # Guano Staining	Audible <input type="checkbox"/> Species Odor Photos
<input type="checkbox"/> Crack between concrete railings on top of the bridge deck 	Not present	Visual - live # dead # Guano Staining	Audible <input type="checkbox"/> Species Odor Photos
<input type="checkbox"/> Vertical surfaces on concrete I-beams	Not present	Visual - live # dead # Guano Staining	Audible <input type="checkbox"/> Species Odor Photos
<input type="checkbox"/> Spaces between walls, ceiling joists	Not present	Visual - live # dead # Guano Staining	Audible <input type="checkbox"/> Species Odor Photos
<input type="checkbox"/> Weep holes, scupper drains, and inlets/pipes	Not present	Visual - live # dead # Guano Staining	Audible <input type="checkbox"/> Species Odor Photos
<input type="checkbox"/> All guiderails	Not present	Visual - live # dead # Guano Staining	Audible <input type="checkbox"/> Species Odor Photos
<input type="checkbox"/> All expansion joints	Not present	Visual - live # dead # Guano Staining	Audible <input type="checkbox"/> Species Odor Photos
Name:		Signature  	



Photo 1: View of the bridge along Winnetuxet Road over the Winnetuxet River in Plympton. *Facing northeast.*



Photo 2: View of the bridge deck and guardrails along Winnetuxet Road. Guardrails appeared to be too open to be suitable for bat use. *Facing south.*



Photo 3: View of the underside of the bridge along Winnetuxet Road in Plympton. No bats were observed in the spaces between the walls, cracks in concrete, spaces between the wooden beams, or expansion joints. *Facing north.*



Photo 4: View of the space between wooden beams along the bridge deck. Some debris was observed, which may or may not have been guano, on the side of a wooden beam, but surveyors could not get close enough to accurately decide. *Facing south.*

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DOCUMENT A00875

**POLICY DIRECTIVE P-22-001
AND
POLICY DIRECTIVE P-22-002**

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zoned property, schools, daycare facilities, playgrounds, parks, recreational areas, hospitals, elderly housing and convalescent facilities.

Temporary off-site storage of excavated soil from a MassDOT project is only permissible at a location approved and permitted by MassDOT. The temporary storage location should be located within the same municipality where the soil was excavated, where possible. Stockpiled soil must be securely covered, and appropriate measures must be taken to minimize fugitive dust and erosion.

Signs indicating the source of the soil, the date the soil was generated, and contact information must be erected and maintained until the stockpiled soils are transported to a disposal facility or reused on the project site.

Implementation Procedures

To ensure that off-site storage of excavated soils is managed properly on MassDOT projects, this policy requires the following:

1. Off-Site Stockpile Storage Locations

- a. The Contractor shall provide proposed off-site storage locations to the Engineer for approval at least 30 days prior to transporting soil off site. Off-site storage locations should be in the same municipality as the work site.
- b. The Contractor shall keep excavated soil on site until adequately characterized to the satisfaction of the Engineer.
- c. The Contractor shall provide notification of the approved off-site storage location to the local Board of Health and the Town Manager's/Mayor's Office at least 7-days prior to transporting soil off site.
- d. The Contractor shall provide the Engineer with at least 3-days' notice prior to transporting soil off site.
- e. For off-site storage locations on MassDOT property, the Contractor is required to obtain an Access Permit through the District Permits Office prior to storage of soil or other materials. MassDOT will issue these permits at no cost to the Contractor. Information to be submitted by the Contractor as part of the permit application shall include:
 - i. A description of material to be stored off-site, including available analytical data;
 - ii. A figure of the location with distances to residences and residential receptors; and
 - iii. Anticipated duration of temporary storage.
- f. Stockpile locations should not be within 500 feet of residential receptors (e.g., residential dwellings, residentially zoned property, schools, daycare facilities, playgrounds, parks, recreational areas, hospitals, elderly housing and convalescent facilities).
 - i. If the stockpile location must be within 500 feet of residential receptors, then soil must be less than RCS-1 (per 310 CMR 40.1600) and free of potentially hazardous or regulated items.

- g. For off-site storage locations on non-MassDOT property, the Contractor must notify the property owner(s) at least 7 days prior to transporting material.
- h. Exceptions to these rules will be reviewed by MassDOT and may be approved by the District Highway Director on a case-by-case basis.

2. Off-Site Stockpile Management

- a. The Contractor shall keep soil stockpiles on impermeable surfaces (e.g., asphalt or concrete) or on 10-mil polyethylene sheeting.
- b. The Contractor shall cover soil stockpiles with 10-mil polyethylene sheeting and surround with a berm made of hay bales, straw wattles, or similar.
 - i. Piles that are actively being worked on must be covered and re-secured at the end of the work shift.
- c. The Contractor shall label stockpiles with signs, including:
 - i. Location of origin (including any Release Tracking Numbers)
 - ii. Stockpile ID number (including MassDOT District office-assigned tracking ID, if different)
 - iii. Date of initial accumulation
 - iv. Applicable telephone numbers for the Contractor and MassDOT.
- d. The Contractor shall mitigate fugitive dust at storage locations under the direction of an appropriately trained/certified environmental professional.
- e. The Contractor shall remedy noncompliance with this policy within 48 hours.
- f. The Contractor shall remedy noncompliance with this policy on the SAME DAY for potentially hazardous material, as determined by the Engineer.
- g. The Contractor shall handle excavated soil according to federal, state, and local regulations.
- h. The Contractor shall use appropriate shipping documents for all movements of excavated soil on public roadways (e.g., Bill of Lading, Material Shipping Record, Manifest, Asbestos Waste Shipment Record, etc.).

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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

PLYMPTON

For: **Bridge Replacement, P-14-001 (445), Winnetuxet Road over Winnetuxet River**

COMMONWEALTH OF MASSACHUSETTS

LOCATION

The work referred to herein is in the Town of **PLYMPTON** in Plymouth 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:

Winnetuxet Road

Bridge P-14-001 (445)

Begin – Station 10+20.00 +/-

End –Station 12+35.00 +/-

The contract prices shall include the furnishing of all materials (except as otherwise herein specified), the performing of all the labor requisite or proper, the providing of all necessary machinery, tools, apparatus and other means of construction, the doing of all the abovementioned work in the manner set forth, described and shown in the specifications and on the drawings for the work, and in the form of contract, and the completion thereof within **322 CALENDAR DAYS** upon receipt of a Notice to Proceed, except that if the completion date falls between December 1 and March 15 then the same number of days beyond December 1st will be extended after March 15th.

The Work of this project is described by the following Items and quantities.

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Project # 609435		Contract # 126585		
Location : PLYMPTON				
Description : Bridge Replacement, P-14-001 (445), Winnetuxet Road over Winnetuxet River				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
100.	1	SCHEDULE OF OPERATIONS - FIXED PRICE \$10000 AT Ten Thousand Dollars LUMP SUM	\$10,000.00	\$10,000.00
102.	0.05	SELECTIVE CLEARING AND THINNING AT _____ PER ACRE		
102.2	1	TREE TRIMMING AT _____ LUMP SUM		
104.	1	TREE REMOVED - DIAMETER 24 INCHES AND OVER AT _____ EACH		
114.1	1	DEMOLITION OF SUPERSTRUCTURE OF BRIDGE NO. P-14-001 AT _____ LUMP SUM		
120.1	100	UNCLASSIFIED EXCAVATION AT _____ PER CUBIC YARD		
127.1	22	REINFORCED CONCRETE EXCAVATION AT _____ PER CUBIC YARD		
140.	130	BRIDGE EXCAVATION AT _____ PER CUBIC YARD		
141.1	10	TEST PIT FOR EXPLORATION AT _____ PER CUBIC YARD		

Project # 609435		Contract # 126585		
Location : PLYMPTON				
Description : Bridge Replacement, P-14-001 (445), Winnetuxet Road over Winnetuxet River				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
144.	35	CLASS B ROCK EXCAVATION AT _____ PER CUBIC YARD		
150.	60	ORDINARY BORROW AT _____ PER CUBIC YARD		
151.	80	GRAVEL BORROW AT _____ PER CUBIC YARD		
151.1	50	GRAVEL BORROW FOR BRIDGE FOUNDATION AT _____ PER CUBIC YARD		
151.2	5	GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES AT _____ PER CUBIC YARD		
156.	70	CRUSHED STONE AT _____ PER TON		
170.	230	FINE GRADING AND COMPACTING - SUBGRADE AREA AT _____ PER SQUARE YARD		
180.01	1	ENVIRONMENTAL HEALTH AND SAFETY PROGRAM AT _____ LUMP SUM		
180.02	24	PERSONAL PROTECTION LEVEL C UPGRADE AT _____ PER HOUR		

Project # 609435		Contract # 126585		
Location : PLYMPTON				
Description : Bridge Replacement, P-14-001 (445), Winnetuxet Road over Winnetuxet River				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
180.03	24	LICENSED SITE PROFESSIONAL SERVICES AT _____ PER HOUR		
181.11	306	DISPOSAL OF UNREGULATED SOIL AT _____ PER TON		
181.12	25	DISPOSAL OF REGULATED SOIL - IN-STATE FACILITY AT _____ PER TON		
181.13	25	DISPOSAL OF REGULATED SOIL - OUT-OF-STATE FACILITY AT _____ PER TON		
181.14	4	DISPOSAL OF HAZARDOUS WASTE AT _____ PER TON		
184.1	3	DISPOSAL OF TREATED WOOD PRODUCTS AT _____ PER TON		
191.	77	DRIVE SAMPLE BORING AT _____ PER FOOT		
191.11	20	CORE BORING AT _____ PER FOOT		
193.	1	MOBILIZATION AND DISMANTLING OF BORING EQUIPMENT AT _____ LUMP SUM		

Project # 609435		Contract # 126585		
Location : PLYMPTON				
Description : Bridge Replacement, P-14-001 (445), Winnetuxet Road over Winnetuxet River				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
194.01	100	BACKFILL BORINGS AT _____ PER FOOT		
201.	2	CATCH BASIN AT _____ EACH		
202.	1	MANHOLE AT _____ EACH		
221.	1	FRAME AND COVER AT _____ EACH		
222.1	2	FRAME AND GRATE - MASSDOT CASCADE TYPE AT _____ EACH		
223.2	1	FRAME AND GRATE (OR COVER) REMOVED AND DISCARDED AT _____ EACH		
227.31	10	REMOVAL OF DRAINAGE PIPE SEDIMENT AT _____ PER FOOT		
238.12	30	12 INCH DUCTILE IRON PIPE AT _____ PER FOOT		
258.	5	STONE FOR PIPE ENDS AT _____ PER SQUARE YARD		

Project # 609435		Contract # 126585		
Location : PLYMPTON				
Description : Bridge Replacement, P-14-001 (445), Winnetuxet Road over Winnetuxet River				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
402.	25	DENSE GRADED CRUSHED STONE FOR SUB-BASE AT _____ PER CUBIC YARD		
415.2	50	PAVEMENT FINE MILLING AT _____ PER SQUARE YARD		
440.	200	CALCIUM CHLORIDE FOR ROADWAY DUST CONTROL AT _____ PER POUND		
450.23	30	SUPERPAVE SURFACE COURSE - 12.5 (SSC - 12.5) AT _____ PER TON		
450.31	26	SUPERPAVE INTERMEDIATE COURSE - 12.5 (SIC -12.5) AT _____ PER TON		
450.42	38	SUPERPAVE BASE COURSE - 37.5 (SBC - 37.5) AT _____ PER TON		
450.601	6	SUPERPAVE BRIDGE SURFACE COURSE - 9.5 POLYMER (SSC-B - 9.5 - P) AT _____ PER TON		
450.701	6	SUPERPAVE BRIDGE PROTECTIVE COURSE - 9.5 POLYMER (SPC-B - 9.5 - P) AT _____ PER TON		
451.	1	HMA FOR PATCHING AT _____ PER TON		

Project # 609435		Contract # 126585		
Location : PLYMPTON				
Description : Bridge Replacement, P-14-001 (445), Winnetuxet Road over Winnetuxet River				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
452.	30	ASPHALT EMULSION FOR TACK COAT AT _____ PER GALLON		
453.	40	HMA JOINT ADHESIVE AT _____ PER FOOT		
470.	1	HOT MIX ASPHALT BERM AT _____ PER TON		
472.	2	TEMPORARY ASPHALT PATCHING AT _____ PER TON		
620.121	140	GUARDRAIL, STEEL-BACKED TIMBER, TL-2 (SINGLE FACED) AT _____ PER FOOT		
630.2	80	HIGHWAY GUARD REMOVED AND DISCARDED AT _____ PER FOOT		
657.	100	TEMPORARY FENCE AT _____ PER FOOT		
697.1	4	SILT SACK AT _____ EACH		
698.4	80	GEOTEXTILE FABRIC FOR PERMANENT EROSION CONTROL AT _____ PER SQUARE YARD		

Project # 609435		Contract # 126585		
Location : PLYMPTON				
Description : Bridge Replacement, P-14-001 (445), Winnetuxet Road over Winnetuxet River				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
702.	2	HOT MIX ASPHALT SIDEWALK OR DRIVEWAY AT _____ PER TON		
740.	10	ENGINEER'S FIELD OFFICE AND EQUIPMENT (TYPE A) AT _____ PER MONTH		
748.	1	MOBILIZATION AT _____ LUMP SUM		
751.	15	LOAM FOR ROADSIDES AT _____ PER CUBIC YARD		
756.	1	NPDES STORMWATER POLLUTION PREVENTION PLAN AT _____ LUMP SUM		
765.	95	SEEDING AT _____ PER SQUARE YARD		
767.121	200	SEDIMENT CONTROL BARRIER AT _____ PER FOOT		
769.	140	PAVEMENT MILLING MULCH UNDER GUARD RAIL AT _____ PER FOOT		
832.	30	WARNING-REGULATORY AND ROUTE MARKER - ALUMINUM PANEL (TYPE A) AT _____ PER SQUARE FOOT		

Project # 609435		Contract # 126585		
Location : PLYMPTON				
Description : Bridge Replacement, P-14-001 (445), Winnetuxet Road over Winnetuxet River				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
833.7	4	DELINEATION FOR GUARD RAIL TERMINI AT _____ EACH		
834.17	8	REFLECTORIZED FLEXIBLE DELINEATOR POST (AMBER) AT _____ EACH		
847.1	28	SIGN SUP (N/GUIDE)+RTE MKR W/1 BRKWAY POST ASSEMBLY - STEEL AT _____ EACH		
850.41	16	ROADWAY FLAGGER AT _____ PER HOUR		
852.	265	SAFETY SIGNING FOR TRAFFIC MANAGEMENT AT _____ PER SQUARE FOOT		
853.1	6	PORTABLE BREAKAWAY BARRICADE TYPE III AT _____ EACH		
853.2	32	TEMPORARY BARRIER (TL-2) AT _____ PER FOOT		
856.12	120	PORTABLE CHANGEABLE MESSAGE SIGN AT _____ PER DAY		
945.101	210	DRILLED SHAFT EXCAVATION 3.0 FOOT DIAMETER AT _____ PER FOOT		

Project # 609435		Contract # 126585		
Location : PLYMPTON				
Description : Bridge Replacement, P-14-001 (445), Winnetuxet Road over Winnetuxet River				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
945.301	20	OBSTRUCTION EXCAVATION 3.0 FOOT DIAMETER AT _____ PER FOOT		
945.501	210	DRILLED SHAFT 3.0 FOOT DIAMETER AT _____ PER FOOT		
945.601	135	PERMANENT CASING 3.0 FOOT DIAMETER AT _____ PER FOOT		
945.71	825	CROSS HOLE SONIC TESTING ACCESS PIPES AT _____ PER FOOT		
945.72	6	CROSS HOLE SONIC TEST AT _____ EACH		
945.81	1	OSTERBERG LOAD CELL AXIAL LOAD TEST AT _____ EACH		
952.	800	STEEL SHEETING AT _____ PER POUND		
983.1	140	RIPRAP AT _____ PER TON		
994.01	1	TEMPORARY PROTECTIVE SHIELDING BRIDGE NO. P-14-001 (CEN) AT _____ LUMP SUM		

Project # 609435		Contract # 126585		
Location : PLYMPTON				
Description : Bridge Replacement, P-14-001 (445), Winnetuxet Road over Winnetuxet River				
ITEM #	QUANTITY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE	AMOUNT
995.01	1	BRIDGE STRUCTURE, BRIDGE NO. BRIDGE NO. P-14-001 (445) AT _____ LUMP SUM		
Total Qty:		5,639.05		

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**DISADVANTAGED BUSINESS ENTERPRISES (DBE) PARTICIPATION
LETTER OF INTENT**

(To be completed by the DBE – Page 2 of 2)

DATE OF BID OPENING: _____

PROJECT NUMBER: 609435

FEDERAL AID PROJECT NUMBER: STP(BR-OFF)-003S(740)X

PROJECT LOCATION: PLYMPTON

PRIME BIDDER: _____

DBE COMPANY NAME: _____

<u>Item number</u> if applicable	<u>NAICS</u> <u>Code</u>	<u>Description of Activity</u> with notations such as Services, or Brokerage, Installation Only, Material Only, or Complete	<u>Quantity</u>	<u>Unit Price</u>	<u>Amount</u>
TOTAL AMOUNT:					

Please give full explanations, attach additional sheets if necessary.

I HEREBY VERIFY THAT _____ WILL SOLELY
(DBE company name)
PERFORM THE WORK, OR PROVIDE THE SERVICES OR MATERIALS, AS DESCRIBED ABOVE.

DBE AUTHORIZED SIGNATURE: _____

NAME AND TITLE (PRINT): _____

TELEPHONE NUMBER: _____ FAX NUMBER: _____

EMAIL ADDRESS: _____

DOCUMENT B00855

DBE JOINT CHECK ARRANGEMENT APPROVAL FORM

(to be submitted by Prime Contractor)

Contract No: 126585 **Project No.** 609435 **Federal Aid No.:** STP(BR-OFF)-003S(740)X

Location: PLYMPTON **Bid Opening Date:** _____

Project Description: Bridge Replacement, P-14-001 (445), Winnetuxet Road over Winnetuxet River

We have received the attached request for the use of a joint check arrangement from _____, a DBE on the above- referenced Contract and _____, a Material Supplier/Vendor for the subject Contract. The DBE has complied with the requirements of 49 CFR Part 26.55(c)(1). In particular, the DBE has:

- a written agreement with the material supplier/vendor;
- applied for credit with the subject material supplier and has supplied the vendor's response;
- shown that it will place all orders to the subject material supplier/vendor;
- made and retains all decision-making responsibilities concerning the materials; and
- provided a Joint Check Agreement that is acceptable to MassDOT;

As the Contractor for the Project, we agree to issue joint checks (made payable to the Material Supplier/Vendor and the DBE) for payment of sums due pursuant to invoices from the Supplier/Vendor and DBE.

Contractor:

Company Name

Signature
Duly Authorized

Printed Name

Date

Title

SubContractor:

Company Name

Signature –
Duly Authorized

Printed Name

Date

Title

*** END OF DOCUMENT ***

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DOCUMENT B00856

JOINT VENTURE AFFIDAVIT

(All Firms)

- All Information Requested By This Schedule Must Be Answered. Additional Sheets May Be Attached.
- If, there is any change in the information submitted, the Joint Venture parties must inform MassDOT Pre-Qualifications Office (and, if one of the companies is a DBE, the Director of Contract Compliance, Office of Civil Rights) *prior* to such change, in writing, either directly or through the Prime Contractor if the Joint Venture is a subcontractor.
- If the Joint Venture Entity will be the bidder on a prime Contract, it must bid and submit all required documents (insurance, worker’s compensation, bonds, etc.) in the name of the Joint Venture Entity.

I. Name of Joint Venture: _____

Type of Entity if applicable (Corp., LLC): _____ Filing State _____

Address of joint venture: _____

Phone No(s) for JV Entity: _____ E-mail: _____

Contact Person(s) _____

Tax ID/EIN of Joint Venture: _____ Vendor Code: _____

II. Identify each firm or party to the Joint Venture:

Name of Firm: _____

Address: _____

Phone : _____ E-mail: _____

Contact person(s) _____

Name of Firm: _____

Address: _____

Phone: _____ E-mail: _____

Contact Person(s) _____

III. Describe the role(s) of the each party to the Joint Venture:

- IV. Attach a copy of the Joint Venture Agreement.** The proposed Joint Venture Agreement should include specific details including, but not limited to: (1) the contributions of capital and equipment; (2) work items to be performed by each company’s forces, (3) work items to be performed under the supervision of any DBE Venturer; (4) the commitment of management, supervisory and operative personnel employed by the DBE to be dedicated to the performance of the Project; and (5) warranty, guaranty, and indemnification clauses.

V. Attach any applicable Corporate or LLC Votes, Authorizations, etc.

VI. Ownership of the Joint Venture:

A. What is the percentage(s) of each company's ownership in the Joint Venture?

ownership percentage(s): _____

ownership percentage(s): _____

B. Specify percentages for each of the following (provide narrative descriptions and other detail as applicable):

1. Sharing of profit and loss: _____

2. Capital contributions:

(a) Dollar amounts of initial contribution: _____

(b) Dollar amounts of anticipated on-going contributions: _____

(c) Contributions of equipment (specify types, quality and quantities of equipment to be provided by each firm): _____

4. Other applicable ownership interests, including ownership options or other agreements, which restrict or limit ownership and/or control:

5. Provide copies of all other written agreements between firms concerning bidding and operation of this Project or projects or contracts.

6. Identify all current contracts and contracts completed during the past two (2) years by either of the Joint Venture partners to this Joint Venture:

VII. Control of and Participation in the Joint Venture. Identify by name and firm those individuals who are, or will be, responsible for and have the authority to engage in the following management functions and policy decisions. (Indicate any limitations to their authority such as dollar limits and co-signatory requirements.):

A. Joint Venture check signing:

B. Authority to enter Contracts on behalf of the Joint Venture:

C. Signing, co-signing and/or collateralizing loans:

D. Acquisition of lines of credit:

E. Acquisition and indemnification of payment and performance bonds:

F. Negotiating and signing labor agreements:

G. Management of contract performance. *(Identify by name and firm only):*

1. Supervision of field operations: _____
2. Major purchases: _____
3. Estimating: _____
4. Engineering: _____

VIII. Financial Controls of Joint Venture:

A. Which firm and/or individual will be responsible for keeping the books of account?

B. Identify the "Managing Partner," if any, and describe the means and measure of their compensation:

C. What authority does each firm have to commit or obligate the other to insurance and bonding companies, financing institutions, suppliers, subcontractors, and/or other parties participating in the performance of this Contract or the work of this Project?

IX. Personnel of Joint Venture: State the approximate number of personnel (by trade) needed to perform the Joint Venture's work under this Contract. Indicate whether they will be employees of the majority firm, DBE firm, or the Joint Venture.

	Firm 1 (number)	Firm 2 (number)	Joint Venture (number)
Trade			
Professional			
Administrative/Clerical			
Unskilled Labor			

Will any personnel proposed for this Project be employees of the Joint Venture?: _____

If so, who: _____

A. Are any proposed Joint Venture employees currently employed by either firm?

Employed by Firm 1: _____ Employed by firm 2 _____

B. Identify by name and firm the individual who will be responsible for Joint Venture hiring: _____

X. Additional Information. Please state any material facts and additional information pertinent to the control and structure of this Joint Venture.

XI. AFFIDAVIT OF JOINT VENTURE PARTIES. The undersigned affirm that the foregoing statements and attached documents are correct and include all material information necessary to identify and explain the terms and operations of our Joint Venture and the intended participation of each firm in the undertaking. Further, the undersigned covenant and agree to provide to MassDOT current, complete and accurate information regarding actual Joint Venture work, payments, and any proposed changes to any provisions of the Joint Venture, or the nature, character of each party to the Joint Venture. We understand that any material misrepresentation will be grounds for terminating any Contract awarded and for initiating action under Federal or State laws concerning false statements.

Firm 1

Firm 2

Signature
Duly Authorized

Signature
Duly Authorized

Printed Name and Title

Printed Name and Title

Date

Date

*** END OF DOCUMENT ***