

COMMONWEALTH OF MASSACHUSETTS



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**CONTRACT DOCUMENTS  
AND SPECIAL PROVISIONS**

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|              |                |
|--------------|----------------|
| PROPOSAL NO. | 609250-129975  |
| P.V. =       | \$8,631,000.00 |
| PLANS        | YES            |

FOR

**Federal Aid Project No. STP-0034(025)X  
Intersection Improvements at Boston Road (Route 3A), Lexington Street  
and Glad Valley Road**

**in the Town of**

**BILLERICA**

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

This Proposal to be opened and read:

**TUESDAY, MAY 13, 2025 at 2:00 P.M.**

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DOCUMENT 00104

**NOTICE TO CONTRACTORS**

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

**TUESDAY, MAY 13, 2025 at 2:00 P.M.** \*\*

**BILLERICA**

**Federal Aid Project No. STP-0034(025)X**

**Intersection Improvements at Boston Road (Route 3A), Lexington Street  
and Glad Valley Road**

**\*\*Date Subject to Change**

PROJECT VALUE = \$8,631,000.00

Bidders must be pre-qualified by the Department in the HIGHWAY - 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](mailto:prequal.r109@dot.state.ma.us).

Proposal documents for official bidders are posted on [www.bidx.com](http://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](http://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](mailto:MassDOTBidDocuments@dot.state.ma.us).

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

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

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

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

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

**NOTICE TO CONTRACTORS** (Continued)

**PRICE ADJUSTMENTS**

This Contract contains price adjustments for hot mix asphalt and Portland cement mixtures, diesel fuel, and gasoline. For reference the base prices are as follows: liquid asphalt \$635.00 per ton, Portland cement \$425.53 per ton, diesel fuel \$2.759 per gallon, and gasoline \$2.346 per gallon, and Steel Base Price Index 357.4 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](http://WWW.COMMBUYS.COM).

BY: Monica G. Tibbits-Nutt, Secretary and CEO, MassDOT  
Jonathan L. Gulliver, Administrator, MassDOT Highway Division  
SATURDAY, APRIL 12, 2025

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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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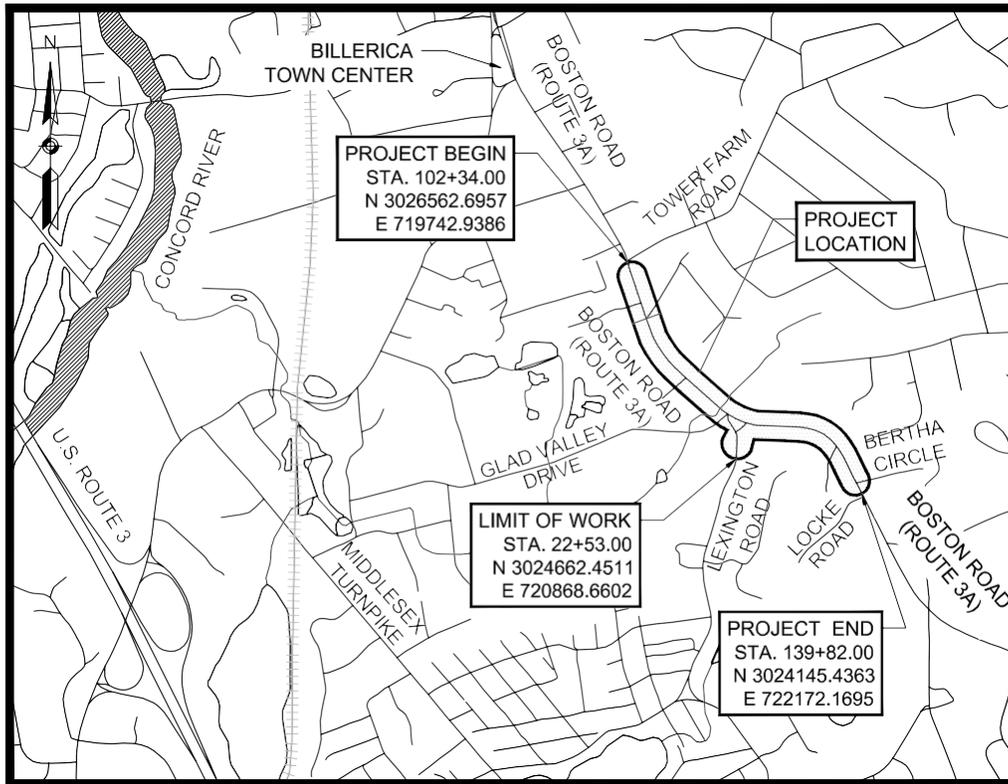
DOCUMENT 00331

**LOCUS MAP**

**BILLERICA**

**Federal Aid Project No. STP-0034(025)X**

**Intersection Improvements at Boston Road (Route 3A), Lexington Street  
and Glad Valley Road**



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

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

\_\_\_\_\_  
District Construction Engineer's Signature/Date

\_\_\_\_\_  
Resident Engineer's Signature/Date

\_\_\_\_\_  
Contractor's Signature Acknowledging Report/Date

Contractor Requests Meeting with the District: No  Yes  Date Meeting Held: \_\_\_\_\_

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

\_\_\_\_\_

\_\_\_\_\_



**CONTRACTOR PROJECT EVALUATION FORM (Continued)**

Date: \_\_\_\_\_ Contract Number: \_\_\_\_\_

**INFORMATION FOR DISTRICT HIGHWAY DIRECTORS RELATING TO PREQUALIFICATION**

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

**RECOMMENDATIONS FOR DEDUCTIONS FROM CONTRACTORS' ASSIGNED FACTOR**

*(Write Yes or No in space provided)*

I recommend a deduction for Contractor's unsatisfactory performance: \_\_\_\_\_

I recommend a deduction for project completed late: \_\_\_\_\_

Signed: \_\_\_\_\_

District Highway Director

EXPLANATION OF RATINGS 1 – 9: \_\_\_\_\_

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WORK NOT COMPLETED WITHIN SPECIFIED TIME: \_\_\_\_\_

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

*(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: 04-16-25

NOTICE OF AVAILABILITY

The STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES dated 2025, the SUPPLEMENTAL SPECIFICATIONS, the 1990 STANDARD DRAWINGS FOR SIGNS AND SUPPORTS; the 1968 STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING and the CONSTRUCTION STANDARD DETAILS are available online at <https://www.mass.gov/massdot-highway-division-manuals-and-publications>

SPECIAL PROVISIONS FOR RIGHT-TO-KNOW ACT REQUIREMENTS

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

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

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

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

ALTERNATIVE DISPUTE RESOLUTION

Forum, Choice of Law and Mediations:

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

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DOCUMENT 00715



## SUPPLEMENTAL SPECIFICATIONS

MARCH 31, 2025

The 2025 *Standard Specifications for Highways and Bridges* are amended by the following modifications, additions and deletions. These Supplemental Specifications prevail over those published in the Standard Specifications.

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

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

### DIVISION I

### GENERAL REQUIREMENTS AND COVENANTS

### SECTION 2.00: PROPOSAL REQUIREMENTS AND CONDITIONS

#### Subsection 2.09: Rejection of Proposals

Replace bullet (i) in the third paragraph with the following:

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

### SECTION 7.00: LEGAL RELATIONS AND RESPONSIBILITY TO PPUBLIC

#### Subsection 7.05: Insurance Requirements

Change the title of paragraph A to *Workers' Compensation Insurance*

#### Subsection 7.22: Labor, Lodging, Board, Maximum Hours of Employment, Weekly Payment, Keeping of Payroll Records.

In the second paragraph replace the word "workman" to "worker" and the word "workmen" to "workers".

Replace the third paragraph with the following:

Attention of Bidders is called to MGL Chapter 149, Section 148 requiring the weekly payment of employee wages.

### SECTION 9.00: MEASUREMENT AND PAYMENT

#### Subsection 9.03: Payment for Extra Work

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

- (2) Plus 13 percent of direct labor, for the estimated costs of Federal Insurance Contribution Act (FICA) including Medicare; Federal Unemployment Tax Act (FUTA); State Unemployment Tax Act (SUTA), which includes Unemployment Insurance, the Workforce Training Fund Program, Employer Medical Assistance Contribution, and COVID-19 Recovery Assessment; Earned Sick Time (EST) Law (940 CMR 33.00); and Paid Family and Medical Leave (PFML) Act (458 CMR 2.00);

or, as an alternative to the above 13 percent, the Contractor may elect to use actual rates for FICA, FUTA, SUTA, EST and PFML provided the actual rates are supported with verifiable documentation and shall be subject to review by MassDOT Audit Operations.

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

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



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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)**

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## 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    | <a href="https://www.mass.gov/disadvantaged-business-enterprise-goals-2019-2022">https://www.mass.gov/disadvantaged-business-enterprise-goals-2019-2022</a>               | MassDOT– Highway Div’n Page      |
| For copies of the Code of Federal Regulations | <a href="http://www.gpo.gov/fdsys/browse/collectionCfr.action?collectionCode=CFR">http://www.gpo.gov/fdsys/browse/collectionCfr.action?collectionCode=CFR</a>             | FDsys – US Gov’t Printing Office |
| For information about the U.S.DOT DBE Program | <a href="https://www.transportation.gov/civil-rights/disadvantaged-business-enterprise">https://www.transportation.gov/civil-rights/disadvantaged-business-enterprise</a> | 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 \_\_\_\_%  
(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.

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## 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 (3<sup>rd</sup>) 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](mailto: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](mailto: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.

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

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

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

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

this transaction originated may pursue available remedies, including suspension and/or debarment.

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

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

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

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

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

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

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily

excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment. 2 CFR 180.325.

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**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.

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

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## DOCUMENT 00813

## SPECIAL PROVISIONS

## PRICE ADJUSTMENTS FOR STRUCTURAL STEEL AND REINFORCING STEEL

April 16, 2025

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                                       | \$0.55 |
| 2          | ASTM A27 (AASHTO M103) Steel Castings, H-Pile Points & Pipe Pile Shoes (See Note below.)                      | \$0.77 |
| 3          | ASTM A668 / A668M (AASHTO M102) Steel Forgings  | \$0.77 |
| 4          | ASTM A108 (AASHTO M169) Steel Forgings for Shear Studs  | \$0.79 |
| 5          | ASTM A709/A709M Grade 36 / AASHTO M270M/M270 Grade 36 or 250 Structural Steel Plate                           | \$0.83 |
| 6          | ASTM A709/A709M Grade 36 / AASHTO M270M/M270 Grade 36 or 250 Structural Steel Shapes                          | \$0.78 |
| 7          | ASTM A709/A709M Grade 50 / AASHTO M270M/M270 Grade 50 or 345 Structural Steel Plate                           | \$0.83 |
| 8          | ASTM A709/A709M Grade 50 / AASHTO M270M/M270 Grade 50 or 345 Structural Steel Shapes                          | \$0.78 |
| 9          | ASTM A709/A709M Grade 50WT / AASHTO M270M/M270 Grade 50WT or 345WT Structural Steel Plate                     | \$0.86 |
| 10         | ASTM A709/A709M Grade 50WT / AASHTO M270M/M270 Grade 50WT or 345WT Structural Steel Shapes                    | \$0.79 |
| 11         | ASTM A709/A709M Grade 50W / AASHTO M270M/M270 Grade 50W 345W Structural Steel Plate                           | \$0.86 |
| 12         | ASTM A709/A709M Grade 50W / AASHTO M270M/M270 Grade 50W or 345W Structural Steel Shapes                       | \$0.79 |
| 13         | ASTM A709/A709M Grade HPS 50W / AASHTO M270M/M270 Grade HPS 50W or 345W Structural Steel Plate                | \$0.90 |
| 14         | ASTM A709/A709M Grade HPS 70W / AASHTO M270M/M270 Grade HPS 70W or 485W Structural Steel Plate                | \$0.97 |
| 15         | ASTM A514/A514M-05 Grade HPS 100W / AASHTO M270M/M270 Grade HPS 100W or 690W Structural Steel Plate           | \$1.48 |
| 16         | ASTM A992/A992M Grade 50S / AASHTO M270M/M270 Grade 50S or 345S Structural Steel Plate                        | \$0.86 |
| 17         | ASTM A992/A992M Grade 50S / AASHTO M270M/M270 Grade 50S or 345S Structural Steel Shapes                       | \$0.79 |
| 18         | ASTM A276 Type 316 Stainless Steel  | \$4.45 |
| 19         | ASTM A240 Type 316 Stainless Steel  | \$4.45 |
| 20         | ASTM A148 Grade 80/50 Steel Castings (See Note below.)  | \$1.53 |
| 21         | ASTM A53 Grade B Structural Steel Pipe  | \$0.97 |
| 22         | ASTM A500 Grades A, B, 36 & 50 Structural Steel Pipe  | \$0.97 |
| 23         | ASTM A252, Grades 240 (36 KSI) & 414 (60 KSI) Pipe Pile   | \$0.77 |
| 24         | ASTM 252, Grade 2 Permanent Steel Casing  | \$0.77 |
| 25         | ASTM A36 (AASHTO M183) for H-piles, steel supports and sign supports  | \$0.81 |
| 26         | ASTM A328 / A328M, Grade 50 (AASHTO M202) Steel Sheetpiling   | \$1.46 |
| 27         | ASTM A572 / A572M, Grade 50 Sheetpiling   | \$1.46 |
| 28         | ASTM A36/36M, Grade 50  | \$0.83 |
| 29         | ASTM A570, Grade 50   | \$0.81 |
| 30         | ASTM A572 (AASHTO M223), Grade 50 H-Piles   | \$0.83 |
| 31         | ASTM A1085 Grade A (50 KSI) Steel Hollow Structural Sections (HSS), heat-treated per ASTM A1085 Supplement S1 | \$0.97 |
| 32         | AREA 140 LB Rail and Track Accessories  | \$0.50 |

**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](http://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.

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DOCUMENT 00859

**CONTRACTOR/SUBCONTRACTOR CERTIFICATION FORM ‡**

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

\_\_\_\_\_ (Contractor) Date: \_\_\_\_\_

\_\_\_\_\_ (Subcontractor)  District Approved Subcontractor

Contract No: 609250 Project No. 609250 Federal Aid No.: STP-0034(025)X

Location: BILLERICA

Project Description: Intersection Improvements at Boston Road (Route 3A), Lexington Street and Glad Valley Road

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

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

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

**Document #**

- 00718 –Participation By Minority Or Women's Business Enterprises and SDVOBE†
- 00761 –Certification Regarding Debarment, Suspension, Ineligibility, and Voluntary Exclusion
- 00820 – MA Supplemental Equal Employment Opportunity, Non-Discrimination, and Affirmative Action Program
- 00821 – Electronic Reporting Requirements, Civil Rights Programs, and Certified Payroll
- 00859 – Contractor/Subcontractor Certification Form (this document)
- 00860 – MA Employment Laws
- 00861 – Applicable State Wage Rates in the Contract Proposal\*\*
- B00842 – MA Schedule of Participation By Minority or Women Business Enterprises (M/WBEs)†
- B00843 – MA Letter of Intent – M/WBEs†
  - \*\* Does not apply to Material Suppliers, unless performing work on-site
  - † Applies only if Subcontractor is a M/WBE; only include these forms for the particular M/WBE Entity
- B00844 - Schedule of Participation By SDVOBE
- B00845 - Letter of Intent – SDVOBE
- B00846 – M/WBE or SDVOBE Joint Check Arrangement Approval Form
- B00847 – Joint Venture Affidavit

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

**Document #**

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



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

\*Applicable only to Contracts or Subcontracts in excess of \$10,000

\*\*Does not apply to Material Suppliers, unless performing work on-site

† Applies only if Subcontractor is a DBE; only include these forms for the particular DBE Entity

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

(Print Name and Title)

(Authorized Signature)

**PART 2**

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

1. This company recognizes that if this is a Federal-Aid Project, then this Contract is covered by the equal employment opportunity laws administered and enforced by the United States Department of Labor (“USDOL”), Office of Federal Contract Compliance Programs (“OFCCP”). By signing below, we acknowledge that this company has certain reporting obligations to the OFCCP, as specified by 41 CFR Part 60-4.2.
2. This company further acknowledges that any contractor with fifty (50) or more employees on a Federal-aid Contract with a value of fifty-thousand (\$50,000) dollars or more must annually file an EEO-1 Report (SF 100) to the EEOC, Joint Reporting Committee, on or before September 30th, each year, as specified by 41 CFR Part 60-1.7a.
3. For more information regarding the federal reporting requirements, please contact the USDOL, OFCCP Regional Office, at 1-646-264-3170 or EEO-1, Joint Reporting Committee at 1-866-286-6440. 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 than two weeks 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  
**Contract Number:** 129975 **City/Town:** BILLERICA  
**Description of Work:** BILLERICA - Federal Aid Project No. STP-0034(025)X Intersection Improvements at Boston Road (Route 3A),  
Lexington Street and Glad Valley Road  
**Job Location:** At Boston Rd (Rte 3A) Lexington St & Glad ValleyRd

**Information about Prevailing Wage Schedules for Awarding Authorities and Contractors**

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

**Issue Date:** 04/11/2025

**Wage Request Number:** 20250411-040

| Classification   | Effective Date | Base Wage | Health  | Pension | Supplemental Unemployment | Total Rate |
|--|----------------|-----------|---------|---------|---------------------------|------------|
| <b>Construction</b>  |                |           |         |         |                           |            |
| (2 AXLE) DRIVER - EQUIPMENT<br><i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>                    | 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<br><i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>                    | 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<br><i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>                | 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<br><i>PILE DRIVER LOCAL 56 (ZONE 1)</i>                                  | 01/01/2024     | \$117.16  | \$10.08 | \$24.29 | \$0.00                    | \$151.53   |
| For apprentice rates see "Apprentice- PILE DRIVER"   |                |           |         |         |                           |            |
| AIR TRACK OPERATOR<br><i>LABORERS - ZONE 2</i>   | 12/01/2024     | \$39.70   | \$9.90  | \$18.36 | \$0.00                    | \$67.96    |
|  | 06/01/2025     | \$41.09   | \$9.90  | \$18.36 | \$0.00                    | \$69.35    |
|  | 12/01/2025     | \$42.47   | \$9.90  | \$18.36 | \$0.00                    | \$70.73    |
|  | 06/01/2026     | \$43.91   | \$9.90  | \$18.36 | \$0.00                    | \$72.17    |
|  | 12/01/2026     | \$45.35   | \$9.90  | \$18.36 | \$0.00                    | \$73.61    |
|  | 06/01/2027     | \$46.80   | \$9.90  | \$18.36 | \$0.00                    | \$75.06    |
|  | 12/01/2027     | \$48.25   | \$9.90  | \$18.36 | \$0.00                    | \$76.51    |
|  | 06/01/2028     | \$49.75   | \$9.90  | \$18.36 | \$0.00                    | \$78.01    |
|  | 12/01/2028     | \$51.25   | \$9.90  | \$18.36 | \$0.00                    | \$79.51    |
| For apprentice rates see "Apprentice- LABORER"   |                |           |         |         |                           |            |
| AIR TRACK OPERATOR (HEAVY & HIGHWAY)<br><i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>         | 12/01/2024     | \$39.70   | \$9.90  | \$18.46 | \$0.00                    | \$68.06    |
|  | 06/01/2025     | \$41.09   | \$9.90  | \$18.46 | \$0.00                    | \$69.45    |
|  | 12/01/2025     | \$42.47   | \$9.90  | \$18.46 | \$0.00                    | \$70.83    |
|  | 06/01/2026     | \$43.91   | \$9.90  | \$18.46 | \$0.00                    | \$72.27    |
|  | 12/01/2026     | \$45.35   | \$9.90  | \$18.46 | \$0.00                    | \$73.71    |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"                             |                |           |         |         |                           |            |
| ASBESTOS REMOVER - PIPE / MECH. EQUIPT.<br><i>HEAT &amp; FROST INSULATORS LOCAL 6 (BOSTON)</i> | 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<br><i>LABORERS - ZONE 2</i>   | 12/01/2024     | \$39.20   | \$9.90  | \$18.36 | \$0.00                    | \$67.46    |
|   | 06/01/2025     | \$40.59   | \$9.90  | \$18.36 | \$0.00                    | \$68.85    |
|   | 12/01/2025     | \$41.97   | \$9.90  | \$18.36 | \$0.00                    | \$70.23    |
|   | 06/01/2026     | \$43.41   | \$9.90  | \$18.36 | \$0.00                    | \$71.67    |
|   | 12/01/2026     | \$44.85   | \$9.90  | \$18.36 | \$0.00                    | \$73.11    |
|   | 06/01/2027     | \$46.30   | \$9.90  | \$18.36 | \$0.00                    | \$74.56    |
|   | 12/01/2027     | \$47.75   | \$9.90  | \$18.36 | \$0.00                    | \$76.01    |
|   | 06/01/2028     | \$49.25   | \$9.90  | \$18.36 | \$0.00                    | \$77.51    |
|   | 12/01/2028     | \$50.75   | \$9.90  | \$18.36 | \$0.00                    | \$79.01    |
| For apprentice rates see "Apprentice- LABORER"                                    |                |           |         |         |                           |            |
| ASPHALT RAKER (HEAVY & HIGHWAY)<br><i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i> | 12/01/2024     | \$39.20   | \$9.90  | \$18.46 | \$0.00                    | \$67.56    |
|   | 06/01/2025     | \$40.59   | \$9.90  | \$18.46 | \$0.00                    | \$68.95    |
|   | 12/01/2025     | \$41.97   | \$9.90  | \$18.46 | \$0.00                    | \$70.33    |
|   | 06/01/2026     | \$43.41   | \$9.90  | \$18.46 | \$0.00                    | \$71.77    |
|   | 12/01/2026     | \$44.85   | \$9.90  | \$18.46 | \$0.00                    | \$73.21    |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"                |                |           |         |         |                           |            |
| ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE<br><i>OPERATING ENGINEERS LOCAL 4</i>      | 12/01/2024     | \$57.03   | \$15.55 | \$16.50 | \$0.00                    | \$89.08    |
|   | 06/01/2025     | \$58.33   | \$15.55 | \$16.50 | \$0.00                    | \$90.38    |
|   | 12/01/2025     | \$59.78   | \$15.55 | \$16.50 | \$0.00                    | \$91.83    |
|   | 06/01/2026     | \$61.08   | \$15.55 | \$16.50 | \$0.00                    | \$93.13    |
|   | 12/01/2026     | \$62.53   | \$15.55 | \$16.50 | \$0.00                    | \$94.58    |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS"                        |                |           |         |         |                           |            |
| BACKHOE/FRONT-END LOADER<br><i>OPERATING ENGINEERS LOCAL 4</i>                    | 12/01/2024     | \$57.03   | \$15.55 | \$16.50 | \$0.00                    | \$89.08    |
|   | 06/01/2025     | \$58.33   | \$15.55 | \$16.50 | \$0.00                    | \$90.38    |
|   | 12/01/2025     | \$59.78   | \$15.55 | \$16.50 | \$0.00                    | \$91.83    |
|   | 06/01/2026     | \$61.08   | \$15.55 | \$16.50 | \$0.00                    | \$93.13    |
|   | 12/01/2026     | \$62.53   | \$15.55 | \$16.50 | \$0.00                    | \$94.58    |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS"                        |                |           |         |         |                           |            |
| BARCO-TYPE JUMPING TAMPER<br><i>LABORERS - ZONE 2</i>                             | 12/01/2024     | \$39.20   | \$9.90  | \$18.36 | \$0.00                    | \$67.46    |
|   | 06/01/2025     | \$40.59   | \$9.90  | \$18.36 | \$0.00                    | \$68.85    |
|   | 12/01/2025     | \$41.97   | \$9.90  | \$18.36 | \$0.00                    | \$70.23    |
|   | 06/01/2026     | \$43.41   | \$9.90  | \$18.36 | \$0.00                    | \$71.67    |
|   | 12/01/2026     | \$44.85   | \$9.90  | \$18.36 | \$0.00                    | \$73.11    |
|   | 06/01/2027     | \$46.30   | \$9.90  | \$18.36 | \$0.00                    | \$74.56    |
|   | 12/01/2027     | \$47.75   | \$9.90  | \$18.36 | \$0.00                    | \$76.01    |
|   | 06/01/2028     | \$49.25   | \$9.90  | \$18.36 | \$0.00                    | \$77.51    |
|   | 12/01/2028     | \$50.75   | \$9.90  | \$18.36 | \$0.00                    | \$79.01    |
| For apprentice rates see "Apprentice- LABORER"                                    |                |           |         |         |                           |            |

| Classification  | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|---|----------------|-----------|--------|---------|---------------------------|------------|
| BLOCK PAVER, RAMMER / CURB SETTER<br><i>LABORERS - ZONE 2</i>   | 12/01/2024     | \$39.70   | \$9.90 | \$18.36 | \$0.00                    | \$67.96    |
|   | 06/01/2025     | \$41.09   | \$9.90 | \$18.36 | \$0.00                    | \$69.35    |
|   | 12/01/2025     | \$42.47   | \$9.90 | \$18.36 | \$0.00                    | \$70.73    |
|   | 06/01/2026     | \$43.91   | \$9.90 | \$18.36 | \$0.00                    | \$72.17    |
|   | 12/01/2026     | \$45.35   | \$9.90 | \$18.36 | \$0.00                    | \$73.61    |
|   | 06/01/2027     | \$46.80   | \$9.90 | \$18.36 | \$0.00                    | \$75.06    |
|   | 12/01/2027     | \$48.25   | \$9.90 | \$18.36 | \$0.00                    | \$76.51    |
|   | 06/01/2028     | \$49.75   | \$9.90 | \$18.36 | \$0.00                    | \$78.01    |
|   | 12/01/2028     | \$51.25   | \$9.90 | \$18.36 | \$0.00                    | \$79.51    |
| For apprentice rates see "Apprentice- LABORER"  |                |           |        |         |                           |            |
| BLOCK PAVER, RAMMER / CURB SETTER (HEAVY & HIGHWAY)<br><i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i> | 12/01/2024     | \$39.70   | \$9.90 | \$18.46 | \$0.00                    | \$68.06    |
|   | 06/01/2025     | \$41.09   | \$9.90 | \$18.46 | \$0.00                    | \$69.45    |
|   | 12/01/2025     | \$42.47   | \$9.90 | \$18.46 | \$0.00                    | \$70.83    |
|   | 06/01/2026     | \$43.91   | \$9.90 | \$18.46 | \$0.00                    | \$72.27    |
|   | 12/01/2026     | \$45.35   | \$9.90 | \$18.46 | \$0.00                    | \$73.71    |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"                                    |                |           |        |         |                           |            |
| BOILER MAKER<br><i>BOILERMAKERS LOCAL 29</i>  | 01/01/2024     | \$48.12   | \$7.07 | \$20.60 | \$0.00                    | \$75.79    |

**Apprentice - BOILERMAKER - Local 29**

**Effective Date - 01/01/2024**

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

**Notes:**

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

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



| Classification  | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|---|----------------|-----------|--------|---------|---------------------------|------------|
| CARBIDE CORE DRILL OPERATOR<br><i>LABORERS - ZONE 2</i> | 12/01/2024     | \$39.20   | \$9.90 | \$18.36 | \$0.00                    | \$67.46    |
|   | 06/01/2025     | \$40.59   | \$9.90 | \$18.36 | \$0.00                    | \$68.85    |
|   | 12/01/2025     | \$41.97   | \$9.90 | \$18.36 | \$0.00                    | \$70.23    |
|   | 06/01/2026     | \$43.41   | \$9.90 | \$18.36 | \$0.00                    | \$71.67    |
|   | 12/01/2026     | \$44.85   | \$9.90 | \$18.36 | \$0.00                    | \$73.11    |
|   | 06/01/2027     | \$46.30   | \$9.90 | \$18.36 | \$0.00                    | \$74.56    |
|   | 12/01/2027     | \$47.75   | \$9.90 | \$18.36 | \$0.00                    | \$76.01    |
|   | 06/01/2028     | \$49.25   | \$9.90 | \$18.36 | \$0.00                    | \$77.51    |
|   | 12/01/2028     | \$50.75   | \$9.90 | \$18.36 | \$0.00                    | \$79.01    |

For apprentice rates see "Apprentice- LABORER"

|  |            |         |        |         |        |         |
|--|------------|---------|--------|---------|--------|---------|
| CARPENTER<br><i>CARPENTERS -ZONE 2 (Eastern Massachusetts)</i> | 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 - 03/01/2025**

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

**Effective Date - 09/01/2025**

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1    | 45      | \$22.89              | \$9.83 | \$1.73  | \$0.00                    | \$34.45    |
| 2    | 45      | \$22.89              | \$9.83 | \$1.73  | \$0.00                    | \$34.45    |
| 3    | 55      | \$27.98              | \$9.83 | \$3.40  | \$0.00                    | \$41.21    |
| 4    | 55      | \$27.98              | \$9.83 | \$3.40  | \$0.00                    | \$41.21    |
| 5    | 70      | \$35.61              | \$9.83 | \$16.51 | \$0.00                    | \$61.95    |
| 6    | 70      | \$35.61              | \$9.83 | \$16.51 | \$0.00                    | \$61.95    |
| 7    | 80      | \$40.70              | \$9.83 | \$18.24 | \$0.00                    | \$68.77    |
| 8    | 80      | \$40.70              | \$9.83 | \$18.24 | \$0.00                    | \$68.77    |

**Notes:**

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

|   |            |         |        |        |        |         |
|---|------------|---------|--------|--------|--------|---------|
| CARPENTER WOOD FRAME<br><i>CARPENTERS-ZONE 3 (Wood Frame)</i> | 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 |

**Classification**

All Aspects of New Wood Frame Work

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - CARPENTER (Wood Frame) - Zone 3**

**Effective Date - 10/01/2024**

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

**Effective Date - 10/01/2025**

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

**Notes:**

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

|   |            |         |         |         |        |         |
|---|------------|---------|---------|---------|--------|---------|
| CEMENT MASONRY/PLASTERING<br>BRICKLAYERS LOCAL 3 (LOWELL) | 07/01/2024 | \$49.19 | \$13.35 | \$24.21 | \$1.80 | \$88.55 |
|---|------------|---------|---------|---------|--------|---------|

|                       |                       |                  |               |                |                                  |                   |
|-----------------------|-----------------------|------------------|---------------|----------------|----------------------------------|-------------------|
| <b>Classification</b> | <b>Effective Date</b> | <b>Base Wage</b> | <b>Health</b> | <b>Pension</b> | <b>Supplemental Unemployment</b> | <b>Total Rate</b> |
|-----------------------|-----------------------|------------------|---------------|----------------|----------------------------------|-------------------|

**Apprentice - CEMENT MASONRY/PLASTERING - Lowell**

**Effective Date - 07/01/2024**

| Step | percent | Apprentice Base Wage | Health  | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1    | 50      | \$24.60              | \$13.35 | \$16.43 | \$0.00                    | \$54.38    |
| 2    | 60      | \$29.51              | \$13.35 | \$19.21 | \$1.80                    | \$63.87    |
| 3    | 65      | \$31.97              | \$13.35 | \$20.21 | \$1.80                    | \$67.33    |
| 4    | 70      | \$34.43              | \$13.35 | \$21.21 | \$1.80                    | \$70.79    |
| 5    | 75      | \$36.89              | \$13.35 | \$22.21 | \$1.80                    | \$74.25    |
| 6    | 80      | \$39.35              | \$13.35 | \$23.21 | \$1.80                    | \$77.71    |
| 7    | 90      | \$44.27              | \$13.35 | \$24.21 | \$1.80                    | \$83.63    |

**Notes:**

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

**Apprentice to Journeyworker Ratio:1:3**

|   |            |         |        |         |        |         |
|---|------------|---------|--------|---------|--------|---------|
| <b>CHAIN SAW OPERATOR</b><br><i>LABORERS - ZONE 2</i> | 12/01/2024 | \$39.20 | \$9.90 | \$18.36 | \$0.00 | \$67.46 |
|   | 06/01/2025 | \$40.59 | \$9.90 | \$18.36 | \$0.00 | \$68.85 |
|   | 12/01/2025 | \$41.97 | \$9.90 | \$18.36 | \$0.00 | \$70.23 |
|   | 06/01/2026 | \$43.41 | \$9.90 | \$18.36 | \$0.00 | \$71.67 |
|   | 12/01/2026 | \$44.85 | \$9.90 | \$18.36 | \$0.00 | \$73.11 |
|   | 06/01/2027 | \$46.30 | \$9.90 | \$18.36 | \$0.00 | \$74.56 |
|   | 12/01/2027 | \$47.75 | \$9.90 | \$18.36 | \$0.00 | \$76.01 |
|   | 06/01/2028 | \$49.25 | \$9.90 | \$18.36 | \$0.00 | \$77.51 |
|   | 12/01/2028 | \$50.75 | \$9.90 | \$18.36 | \$0.00 | \$79.01 |

For apprentice rates see "Apprentice- LABORER"

|  |            |         |         |         |        |         |
|--|------------|---------|---------|---------|--------|---------|
| <b>CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES</b><br><i>OPERATING ENGINEERS LOCAL 4</i> | 12/01/2024 | \$58.18 | \$15.55 | \$16.50 | \$0.00 | \$90.23 |
|  | 06/01/2025 | \$59.51 | \$15.55 | \$16.50 | \$0.00 | \$91.56 |
|  | 12/01/2025 | \$60.98 | \$15.55 | \$16.50 | \$0.00 | \$93.03 |
|  | 06/01/2026 | \$62.31 | \$15.55 | \$16.50 | \$0.00 | \$94.36 |
|  | 12/01/2026 | \$63.79 | \$15.55 | \$16.50 | \$0.00 | \$95.84 |

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

|  |            |         |         |         |        |         |
|--|------------|---------|---------|---------|--------|---------|
| <b>COMPRESSOR OPERATOR</b><br><i>OPERATING ENGINEERS LOCAL 4</i> | 12/01/2024 | \$36.67 | \$15.55 | \$16.50 | \$0.00 | \$68.72 |
|  | 06/01/2025 | \$37.52 | \$15.55 | \$16.50 | \$0.00 | \$69.57 |
|  | 12/01/2025 | \$38.47 | \$15.55 | \$16.50 | \$0.00 | \$70.52 |
|  | 06/01/2026 | \$39.33 | \$15.55 | \$16.50 | \$0.00 | \$71.38 |
|  | 12/01/2026 | \$40.28 | \$15.55 | \$16.50 | \$0.00 | \$72.33 |

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

|   |            |         |        |         |        |         |
|---|------------|---------|--------|---------|--------|---------|
| <b>DELEADER (BRIDGE)</b><br><i>PAINTERS LOCAL 35 - ZONE 2</i> | 01/01/2025 | \$58.46 | \$9.95 | \$23.95 | \$0.00 | \$92.36 |
|---|------------|---------|--------|---------|--------|---------|



| Classification   | Effective Date | Base Wage | Health  | Pension | Supplemental Unemployment | Total Rate |
|--|----------------|-----------|---------|---------|---------------------------|------------|
| For apprentice rates see "Apprentice- LABORER"   |                |           |         |         |                           |            |
| DEMO: CONCRETE CUTTER/SAWYER<br><i>LABORERS - ZONE 2</i>   | 12/02/2024     | \$47.25   | \$9.90  | \$18.90 | \$0.00                    | \$76.05    |
|  | 06/02/2025     | \$48.75   | \$9.90  | \$18.90 | \$0.00                    | \$77.55    |
|  | 12/01/2025     | \$50.25   | \$9.90  | \$18.90 | \$0.00                    | \$79.05    |
|  | 06/01/2026     | \$51.80   | \$9.90  | \$18.90 | \$0.00                    | \$80.60    |
|  | 12/07/2026     | \$53.30   | \$9.90  | \$18.90 | \$0.00                    | \$82.10    |
|  | 06/07/2027     | \$54.90   | \$9.90  | \$18.90 | \$0.00                    | \$83.70    |
|  | 12/06/2027     | \$56.50   | \$9.90  | \$18.90 | \$0.00                    | \$85.30    |
|  | 06/05/2028     | \$58.18   | \$9.90  | \$18.90 | \$0.00                    | \$86.98    |
|  | 12/04/2028     | \$59.85   | \$9.90  | \$18.90 | \$0.00                    | \$88.65    |
| For apprentice rates see "Apprentice- LABORER"   |                |           |         |         |                           |            |
| DEMO: JACKHAMMER OPERATOR<br><i>LABORERS - ZONE 2</i>  | 12/02/2024     | \$47.00   | \$9.90  | \$18.90 | \$0.00                    | \$75.80    |
|  | 06/02/2025     | \$48.50   | \$9.90  | \$18.90 | \$0.00                    | \$77.30    |
|  | 12/01/2025     | \$50.00   | \$9.90  | \$18.90 | \$0.00                    | \$78.80    |
|  | 06/01/2026     | \$51.55   | \$9.90  | \$18.90 | \$0.00                    | \$80.35    |
|  | 12/07/2026     | \$53.05   | \$9.90  | \$18.90 | \$0.00                    | \$81.85    |
|  | 06/07/2027     | \$54.65   | \$9.90  | \$18.90 | \$0.00                    | \$83.45    |
|  | 12/06/2027     | \$56.25   | \$9.90  | \$18.90 | \$0.00                    | \$85.05    |
|  | 06/05/2028     | \$57.93   | \$9.90  | \$18.90 | \$0.00                    | \$86.73    |
|  | 12/04/2028     | \$59.60   | \$9.90  | \$18.90 | \$0.00                    | \$88.40    |
| For apprentice rates see "Apprentice- LABORER"   |                |           |         |         |                           |            |
| DEMO: WRECKING LABORER<br><i>LABORERS - ZONE 2</i>   | 12/02/2024     | \$46.25   | \$9.90  | \$18.90 | \$0.00                    | \$75.05    |
|  | 06/02/2025     | \$47.75   | \$9.90  | \$18.90 | \$0.00                    | \$76.55    |
|  | 12/01/2025     | \$49.25   | \$9.90  | \$18.90 | \$0.00                    | \$78.05    |
|  | 06/01/2026     | \$50.80   | \$9.90  | \$18.90 | \$0.00                    | \$79.60    |
|  | 12/07/2026     | \$52.30   | \$9.90  | \$18.90 | \$0.00                    | \$81.10    |
|  | 06/07/2027     | \$53.90   | \$9.90  | \$18.90 | \$0.00                    | \$82.70    |
|  | 12/06/2027     | \$55.50   | \$9.90  | \$18.90 | \$0.00                    | \$84.30    |
|  | 06/05/2028     | \$57.18   | \$9.90  | \$18.90 | \$0.00                    | \$85.98    |
|  | 12/04/2028     | \$58.85   | \$9.90  | \$18.90 | \$0.00                    | \$87.65    |
| For apprentice rates see "Apprentice- LABORER"   |                |           |         |         |                           |            |
| DIRECTIONAL DRILL MACHINE OPERATOR<br><i>OPERATING ENGINEERS LOCAL 4</i>   | 12/01/2024     | \$56.40   | \$15.55 | \$16.50 | \$0.00                    | \$88.45    |
|  | 06/01/2025     | \$57.68   | \$15.55 | \$16.50 | \$0.00                    | \$89.73    |
|  | 12/01/2025     | \$59.12   | \$15.55 | \$16.50 | \$0.00                    | \$91.17    |
|  | 06/01/2026     | \$60.40   | \$15.55 | \$16.50 | \$0.00                    | \$92.45    |
|  | 12/01/2026     | \$61.84   | \$15.55 | \$16.50 | \$0.00                    | \$93.89    |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS"   |                |           |         |         |                           |            |
| DIVER<br><i>PILE DRIVER LOCAL 56 (ZONE 1)</i>  | 08/01/2024     | \$78.11   | \$10.08 | \$21.66 | \$0.00                    | \$109.85   |
| as of 8-1-24, Apprentices with diving licenses begin at second year.<br>% of Diver wage 70/80/90 2A \$69.83, 3A \$91.79,4A \$102.14 Total Rate     |                |           |         |         |                           |            |
| DIVER TENDER<br><i>PILE DRIVER LOCAL 56 (ZONE 1)</i>   | 08/01/2024     | \$55.79   | \$10.08 | \$24.29 | \$0.00                    | \$90.16    |
| as of 8-1-24, Apprentices with diving licenses begin at second year.<br>% of Piledriver wage 70/80/90 2A \$54.20, 3A \$73.93,4A \$82.05 Total Rate |                |           |         |         |                           |            |
| DIVER TENDER (EFFLUENT)<br><i>PILE DRIVER LOCAL 56 (ZONE 1)</i>  | 08/01/2024     | \$83.69   | \$10.08 | \$24.29 | \$0.00                    | \$118.06   |
| For apprentice rates see "Apprentice- PILE DRIVER"   |                |           |         |         |                           |            |

| Classification   | Effective Date | Base Wage | Health  | Pension | Supplemental Unemployment | Total Rate |
|--|----------------|-----------|---------|---------|---------------------------|------------|
| DIVER/SLURRY (EFFLUENT)<br><i>PILE DRIVER LOCAL 56 (ZONE 1)</i>          | 08/01/2024     | \$117.16  | \$10.08 | \$24.29 | \$0.00                    | \$151.53   |
| For apprentice rates see "Apprentice- PILE DRIVER"                       |                |           |         |         |                           |            |
| DRAWBRIDGE OPERATOR (Construction)<br><i>DRAWBRIDGE - SEIU LOCAL 888</i> | 07/01/2020     | \$26.77   | \$6.67  | \$3.93  | \$0.16                    | \$37.53    |
| ELECTRICIAN<br><i>ELECTRICIANS LOCAL 103</i>                             | 03/01/2025     | \$64.26   | \$13.00 | \$23.03 | \$0.00                    | \$100.29   |
|  | 09/01/2025     | \$66.17   | \$13.00 | \$23.09 | \$0.00                    | \$102.26   |
|  | 03/01/2026     | \$67.37   | \$13.00 | \$23.12 | \$0.00                    | \$103.49   |
|  | 09/01/2026     | \$69.28   | \$13.00 | \$23.18 | \$0.00                    | \$105.46   |
|  | 03/01/2027     | \$70.47   | \$13.00 | \$23.21 | \$0.00                    | \$106.68   |
|  | 09/01/2027     | \$72.39   | \$13.00 | \$23.27 | \$0.00                    | \$108.66   |
|  | 03/01/2028     | \$73.59   | \$13.00 | \$23.31 | \$0.00                    | \$109.90   |

**Apprentice - ELECTRICIAN - Local 103**

**Effective Date - 03/01/2025**

| Step | percent | Apprentice Base Wage | Health  | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1    | 40      | \$25.70              | \$13.00 | \$0.77  | \$0.00                    | \$39.47    |
| 2    | 40      | \$25.70              | \$13.00 | \$0.77  | \$0.00                    | \$39.47    |
| 3    | 45      | \$28.92              | \$13.00 | \$17.17 | \$0.00                    | \$59.09    |
| 4    | 45      | \$28.92              | \$13.00 | \$17.17 | \$0.00                    | \$59.09    |
| 5    | 50      | \$32.13              | \$13.00 | \$17.70 | \$0.00                    | \$62.83    |
| 6    | 55      | \$35.34              | \$13.00 | \$18.24 | \$0.00                    | \$66.58    |
| 7    | 60      | \$38.56              | \$13.00 | \$18.77 | \$0.00                    | \$70.33    |
| 8    | 65      | \$41.77              | \$13.00 | \$19.30 | \$0.00                    | \$74.07    |
| 9    | 70      | \$44.98              | \$13.00 | \$19.83 | \$0.00                    | \$77.81    |
| 10   | 75      | \$48.20              | \$13.00 | \$20.37 | \$0.00                    | \$81.57    |

**Effective Date - 09/01/2025**

| Step | percent | Apprentice Base Wage | Health  | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1    | 40      | \$26.47              | \$13.00 | \$0.79  | \$0.00                    | \$40.26    |
| 2    | 40      | \$26.47              | \$13.00 | \$0.79  | \$0.00                    | \$40.26    |
| 3    | 45      | \$29.78              | \$13.00 | \$17.19 | \$0.00                    | \$59.97    |
| 4    | 45      | \$29.78              | \$13.00 | \$17.19 | \$0.00                    | \$59.97    |
| 5    | 50      | \$33.09              | \$13.00 | \$17.73 | \$0.00                    | \$63.82    |
| 6    | 55      | \$36.39              | \$13.00 | \$18.27 | \$0.00                    | \$67.66    |
| 7    | 60      | \$39.70              | \$13.00 | \$18.80 | \$0.00                    | \$71.50    |
| 8    | 65      | \$43.01              | \$13.00 | \$19.34 | \$0.00                    | \$75.35    |
| 9    | 70      | \$46.32              | \$13.00 | \$19.87 | \$0.00                    | \$79.19    |
| 10   | 75      | \$49.63              | \$13.00 | \$20.41 | \$0.00                    | \$83.04    |

Notes :

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

|  |            |         |         |         |        |          |
|--|------------|---------|---------|---------|--------|----------|
| ELEVATOR CONSTRUCTOR<br><i>ELEVATOR CONSTRUCTORS LOCAL 4</i> | 01/01/2022 | \$65.62 | \$16.03 | \$20.21 | \$0.00 | \$101.86 |
|--|------------|---------|---------|---------|--------|----------|

|                       |                       |                  |               |                |                                  |                   |
|-----------------------|-----------------------|------------------|---------------|----------------|----------------------------------|-------------------|
| <b>Classification</b> | <b>Effective Date</b> | <b>Base Wage</b> | <b>Health</b> | <b>Pension</b> | <b>Supplemental Unemployment</b> | <b>Total Rate</b> |
|-----------------------|-----------------------|------------------|---------------|----------------|----------------------------------|-------------------|

**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<br><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)<br><i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i> | 12/01/2024 | \$39.20 | \$9.90 | \$18.46 | \$0.00 | \$67.56 |
|  | 06/01/2025 | \$40.59 | \$9.90 | \$18.46 | \$0.00 | \$68.95 |
|  | 12/01/2025 | \$41.97 | \$9.90 | \$18.46 | \$0.00 | \$70.33 |
|  | 06/01/2026 | \$43.41 | \$9.90 | \$18.46 | \$0.00 | \$71.77 |
|  | 12/01/2026 | \$44.85 | \$9.90 | \$18.46 | \$0.00 | \$73.21 |

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

|   |            |         |         |         |        |         |
|---|------------|---------|---------|---------|--------|---------|
| FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY<br><i>OPERATING ENGINEERS LOCAL 4</i> | 11/01/2024 | \$51.78 | \$15.30 | \$16.40 | \$0.00 | \$83.48 |
|   | 05/01/2025 | \$53.22 | \$15.30 | \$16.40 | \$0.00 | \$84.92 |
|   | 11/01/2025 | \$54.51 | \$15.30 | \$16.40 | \$0.00 | \$86.21 |
|   | 05/01/2026 | \$55.95 | \$15.30 | \$16.40 | \$0.00 | \$87.65 |
|   | 11/01/2026 | \$57.24 | \$15.30 | \$16.40 | \$0.00 | \$88.94 |
|   | 05/01/2027 | \$58.67 | \$15.30 | \$16.40 | \$0.00 | \$90.37 |

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

|   |            |         |         |         |        |         |
|---|------------|---------|---------|---------|--------|---------|
| FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY<br><i>OPERATING ENGINEERS LOCAL 4</i> | 11/01/2024 | \$53.37 | \$15.30 | \$16.40 | \$0.00 | \$85.07 |
|   | 05/01/2025 | \$54.82 | \$15.30 | \$16.40 | \$0.00 | \$86.52 |
|   | 11/01/2025 | \$56.12 | \$15.30 | \$16.40 | \$0.00 | \$87.82 |
|   | 05/01/2026 | \$57.57 | \$15.30 | \$16.40 | \$0.00 | \$89.27 |
|   | 11/01/2026 | \$58.87 | \$15.30 | \$16.40 | \$0.00 | \$90.57 |
|   | 05/01/2027 | \$60.32 | \$15.30 | \$16.40 | \$0.00 | \$92.02 |

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

|  |            |         |         |         |        |         |
|--|------------|---------|---------|---------|--------|---------|
| FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY<br><i>OPERATING ENGINEERS LOCAL 4</i> | 11/01/2024 | \$25.37 | \$15.30 | \$16.40 | \$0.00 | \$57.07 |
|  | 05/01/2025 | \$26.22 | \$15.30 | \$16.40 | \$0.00 | \$57.92 |
|  | 11/01/2025 | \$26.98 | \$15.30 | \$16.40 | \$0.00 | \$58.68 |
|  | 05/01/2026 | \$27.83 | \$15.30 | \$16.40 | \$0.00 | \$59.53 |
|  | 11/01/2026 | \$28.59 | \$15.30 | \$16.40 | \$0.00 | \$60.29 |
|  | 05/01/2027 | \$29.44 | \$15.30 | \$16.40 | \$0.00 | \$61.14 |

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

| Classification   | Effective Date | Base Wage | Health  | Pension | Supplemental Unemployment | Total Rate |
|--|----------------|-----------|---------|---------|---------------------------|------------|
| FIRE ALARM INSTALLER<br><i>ELECTRICIANS LOCAL 103</i>                                      | 03/01/2025     | \$64.26   | \$13.00 | \$23.03 | \$0.00                    | \$100.29   |
|  | 09/01/2025     | \$66.17   | \$13.00 | \$23.09 | \$0.00                    | \$102.26   |
|  | 03/01/2026     | \$67.37   | \$13.00 | \$23.12 | \$0.00                    | \$103.49   |
|  | 09/01/2026     | \$69.28   | \$13.00 | \$23.18 | \$0.00                    | \$105.46   |
|  | 03/01/2027     | \$70.47   | \$13.00 | \$23.21 | \$0.00                    | \$106.68   |
|  | 09/01/2027     | \$72.39   | \$13.00 | \$23.27 | \$0.00                    | \$108.66   |
|  | 03/01/2028     | \$73.59   | \$13.00 | \$23.31 | \$0.00                    | \$109.90   |
| For apprentice rates see "Apprentice- ELECTRICIAN"   |                |           |         |         |                           |            |
| FIRE ALARM REPAIR / MAINTENANCE<br><i>LOCAL 103</i><br>/ COMMISSIONING <i>ELECTRICIANS</i> | 03/01/2025     | \$51.41   | \$13.00 | \$20.90 | \$0.00                    | \$85.31    |
|  | 09/01/2025     | \$52.94   | \$13.00 | \$20.95 | \$0.00                    | \$86.89    |
|  | 03/01/2026     | \$53.90   | \$13.00 | \$20.98 | \$0.00                    | \$87.88    |
|  | 09/01/2026     | \$55.42   | \$13.00 | \$21.02 | \$0.00                    | \$89.44    |
|  | 03/01/2027     | \$56.38   | \$13.00 | \$21.05 | \$0.00                    | \$90.43    |
|  | 09/01/2027     | \$57.91   | \$13.00 | \$21.10 | \$0.00                    | \$92.01    |
|  | 03/01/2028     | \$58.87   | \$13.00 | \$21.13 | \$0.00                    | \$93.00    |
| For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"                       |                |           |         |         |                           |            |
| FIREMAN (ASST. ENGINEER)<br><i>OPERATING ENGINEERS LOCAL 4</i>                             | 12/01/2024     | \$45.96   | \$15.55 | \$16.50 | \$0.00                    | \$78.01    |
|  | 06/01/2025     | \$47.02   | \$15.55 | \$16.50 | \$0.00                    | \$79.07    |
|  | 12/01/2025     | \$48.19   | \$15.55 | \$16.50 | \$0.00                    | \$80.24    |
|  | 06/01/2026     | \$49.25   | \$15.55 | \$16.50 | \$0.00                    | \$81.30    |
|  | 12/01/2026     | \$50.43   | \$15.55 | \$16.50 | \$0.00                    | \$82.48    |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS"                                 |                |           |         |         |                           |            |
| FLAGGER & SIGNALER (HEAVY & HIGHWAY)<br><i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>     | 12/01/2024     | \$27.01   | \$9.90  | \$18.46 | \$0.00                    | \$55.37    |
|  | 06/01/2025     | \$28.09   | \$9.90  | \$18.46 | \$0.00                    | \$56.45    |
|  | 12/01/2025     | \$28.09   | \$9.90  | \$18.46 | \$0.00                    | \$56.45    |
|  | 06/01/2026     | \$29.21   | \$9.90  | \$18.46 | \$0.00                    | \$57.57    |
|  | 12/01/2026     | \$29.21   | \$9.90  | \$18.46 | \$0.00                    | \$57.57    |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"                         |                |           |         |         |                           |            |
| FLOORCOVERER<br><i>FLOORCOVERERS LOCAL 2168 ZONE 1</i>                                     | 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    |





|                       |                       |                  |               |                |                                  |                   |
|-----------------------|-----------------------|------------------|---------------|----------------|----------------------------------|-------------------|
| <b>Classification</b> | <b>Effective Date</b> | <b>Base Wage</b> | <b>Health</b> | <b>Pension</b> | <b>Supplemental Unemployment</b> | <b>Total Rate</b> |
|-----------------------|-----------------------|------------------|---------------|----------------|----------------------------------|-------------------|

**Apprentice - OPERATING ENGINEERS - Local 4**

**Effective Date - 12/01/2024**

| Step | percent | Apprentice Base Wage | Health  | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1    | 55      | \$31.37              | \$0.00  | \$0.00  | \$0.00                    | \$31.37    |
| 2    | 60      | \$34.22              | \$15.55 | \$16.50 | \$0.00                    | \$66.27    |
| 3    | 65      | \$37.07              | \$15.55 | \$16.50 | \$0.00                    | \$69.12    |
| 4    | 70      | \$39.92              | \$15.55 | \$16.50 | \$0.00                    | \$71.97    |
| 5    | 75      | \$42.77              | \$15.55 | \$16.50 | \$0.00                    | \$74.82    |
| 6    | 80      | \$45.62              | \$15.55 | \$16.50 | \$0.00                    | \$77.67    |
| 7    | 85      | \$48.48              | \$15.55 | \$16.50 | \$0.00                    | \$80.53    |
| 8    | 90      | \$51.33              | \$15.55 | \$16.50 | \$0.00                    | \$83.38    |

**Effective Date - 06/01/2025**

| Step | percent | Apprentice Base Wage | Health  | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1    | 55      | \$32.08              | \$0.00  | \$0.00  | \$0.00                    | \$32.08    |
| 2    | 60      | \$35.00              | \$15.55 | \$16.50 | \$0.00                    | \$67.05    |
| 3    | 65      | \$37.91              | \$15.55 | \$16.50 | \$0.00                    | \$69.96    |
| 4    | 70      | \$40.83              | \$15.55 | \$16.50 | \$0.00                    | \$72.88    |
| 5    | 75      | \$43.75              | \$15.55 | \$16.50 | \$0.00                    | \$75.80    |
| 6    | 80      | \$46.66              | \$15.55 | \$16.50 | \$0.00                    | \$78.71    |
| 7    | 85      | \$49.58              | \$15.55 | \$16.50 | \$0.00                    | \$81.63    |
| 8    | 90      | \$52.50              | \$15.55 | \$16.50 | \$0.00                    | \$84.55    |

**Notes:**

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

|   |            |         |         |         |        |          |
|---|------------|---------|---------|---------|--------|----------|
| HVAC (DUCTWORK)<br><i>SHEETMETAL WORKERS LOCAL 17 - A</i> | 02/01/2025 | \$59.13 | \$14.91 | \$28.27 | \$2.98 | \$105.29 |
|   | 08/01/2025 | \$60.98 | \$14.91 | \$28.27 | \$2.98 | \$107.14 |
|   | 02/01/2026 | \$62.93 | \$14.91 | \$28.27 | \$2.98 | \$109.09 |

For apprentice rates see "Apprentice- SHEET METAL WORKER"

|   |            |         |         |         |        |          |
|---|------------|---------|---------|---------|--------|----------|
| HVAC (ELECTRICAL CONTROLS)<br><i>ELECTRICIANS LOCAL 103</i> | 03/01/2025 | \$64.26 | \$13.00 | \$23.03 | \$0.00 | \$100.29 |
|   | 09/01/2025 | \$66.17 | \$13.00 | \$23.09 | \$0.00 | \$102.26 |
|   | 03/01/2026 | \$67.37 | \$13.00 | \$23.12 | \$0.00 | \$103.49 |
|   | 09/01/2026 | \$69.28 | \$13.00 | \$23.18 | \$0.00 | \$105.46 |
|   | 03/01/2027 | \$70.47 | \$13.00 | \$23.21 | \$0.00 | \$106.68 |
|   | 09/01/2027 | \$72.39 | \$13.00 | \$23.27 | \$0.00 | \$108.66 |
|   | 03/01/2028 | \$73.59 | \$13.00 | \$23.31 | \$0.00 | \$109.90 |

For apprentice rates see "Apprentice- ELECTRICIAN"

|  |            |         |         |         |        |          |
|--|------------|---------|---------|---------|--------|----------|
| HVAC (TESTING AND BALANCING - AIR)<br><i>SHEETMETAL WORKERS LOCAL 17 - A</i> | 02/01/2025 | \$59.13 | \$14.91 | \$28.27 | \$2.98 | \$105.29 |
|  | 08/01/2025 | \$60.98 | \$14.91 | \$28.27 | \$2.98 | \$107.14 |
|  | 02/01/2026 | \$62.93 | \$14.91 | \$28.27 | \$2.98 | \$109.09 |

For apprentice rates see "Apprentice- SHEET METAL WORKER"

|   |            |         |         |         |        |          |
|---|------------|---------|---------|---------|--------|----------|
| HVAC (TESTING AND BALANCING -WATER)<br><i>PIPEFITTERS LOCAL 537</i> | 03/01/2025 | \$68.88 | \$12.70 | \$21.80 | \$0.00 | \$103.38 |
|---|------------|---------|---------|---------|--------|----------|

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

| Classification   | Effective Date | Base Wage | Health  | Pension | Supplemental Unemployment | Total Rate |
|--|----------------|-----------|---------|---------|---------------------------|------------|
| HVAC MECHANIC<br><i>PIPEFITTERS LOCAL 537</i>  | 03/01/2025     | \$68.88   | \$12.70 | \$21.80 | \$0.00                    | \$103.38   |
| For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"            |                |           |         |         |                           |            |
| HYDRAULIC DRILLS<br><i>LABORERS - ZONE 2</i>   | 12/01/2024     | \$39.70   | \$9.90  | \$18.36 | \$0.00                    | \$67.96    |
|  | 06/01/2025     | \$41.09   | \$9.90  | \$18.36 | \$0.00                    | \$69.35    |
|  | 12/01/2025     | \$42.47   | \$9.90  | \$18.36 | \$0.00                    | \$70.73    |
|  | 06/01/2026     | \$43.91   | \$9.90  | \$18.36 | \$0.00                    | \$72.17    |
|  | 12/01/2026     | \$45.35   | \$9.90  | \$18.36 | \$0.00                    | \$73.61    |
|  | 06/01/2027     | \$46.80   | \$9.90  | \$18.36 | \$0.00                    | \$75.06    |
|  | 12/01/2027     | \$48.25   | \$9.90  | \$18.36 | \$0.00                    | \$76.51    |
|  | 06/01/2028     | \$49.75   | \$9.90  | \$18.36 | \$0.00                    | \$78.01    |
| For apprentice rates see "Apprentice- LABORER"                                       |                |           |         |         |                           |            |
| HYDRAULIC DRILLS (HEAVY & HIGHWAY)<br><i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i> | 12/01/2024     | \$39.70   | \$9.90  | \$18.46 | \$0.00                    | \$68.06    |
|  | 06/01/2025     | \$41.09   | \$9.90  | \$18.46 | \$0.00                    | \$69.45    |
|  | 12/01/2025     | \$42.47   | \$9.90  | \$18.46 | \$0.00                    | \$70.83    |
|  | 06/01/2026     | \$43.91   | \$9.90  | \$18.46 | \$0.00                    | \$72.27    |
|  | 12/01/2026     | \$45.35   | \$9.90  | \$18.46 | \$0.00                    | \$73.71    |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"                   |                |           |         |         |                           |            |
| INSULATOR (PIPES & TANKS)<br><i>HEAT &amp; FROST INSULATORS LOCAL 6 (BOSTON)</i>     | 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 - 09/01/2024**

| 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    |

**Effective Date - 09/01/2025**

| Step | percent | Apprentice Base Wage | Health  | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1    | 50      | \$30.17              | \$14.75 | \$14.32 | \$0.00                    | \$59.24    |
| 2    | 60      | \$36.20              | \$14.75 | \$15.37 | \$0.00                    | \$66.32    |
| 3    | 70      | \$42.24              | \$14.75 | \$16.43 | \$0.00                    | \$73.42    |
| 4    | 80      | \$48.27              | \$14.75 | \$17.49 | \$0.00                    | \$80.51    |

**Notes:**

Steps are 1 year

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

|   |            |         |        |         |        |         |
|---|------------|---------|--------|---------|--------|---------|
| IRONWORKER/WELDER<br><i>IRONWORKERS LOCAL 7 (LAWRENCE AREA)</i> | 03/16/2024 | \$49.56 | \$8.35 | \$26.70 | \$0.00 | \$84.61 |
|---|------------|---------|--------|---------|--------|---------|



**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - LABORER - Zone 2**

**Effective Date - 12/01/2024**

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1    | 60      | \$23.37              | \$9.90 | \$18.36 | \$0.00                    | \$51.63    |
| 2    | 70      | \$27.27              | \$9.90 | \$18.36 | \$0.00                    | \$55.53    |
| 3    | 80      | \$31.16              | \$9.90 | \$18.36 | \$0.00                    | \$59.42    |
| 4    | 90      | \$35.06              | \$9.90 | \$18.36 | \$0.00                    | \$63.32    |

**Effective Date - 06/01/2025**

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1    | 60      | \$24.20              | \$9.90 | \$18.36 | \$0.00                    | \$52.46    |
| 2    | 70      | \$28.24              | \$9.90 | \$18.36 | \$0.00                    | \$56.50    |
| 3    | 80      | \$32.27              | \$9.90 | \$18.36 | \$0.00                    | \$60.53    |
| 4    | 90      | \$36.31              | \$9.90 | \$18.36 | \$0.00                    | \$64.57    |

**Notes:**

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

|                                     |            |         |        |         |        |         |
|-------------------------------------|------------|---------|--------|---------|--------|---------|
| LABORER (HEAVY & HIGHWAY)           | 12/01/2024 | \$38.95 | \$9.90 | \$18.46 | \$0.00 | \$67.31 |
| LABORERS - ZONE 2 (HEAVY & HIGHWAY) | 06/01/2025 | \$40.34 | \$9.90 | \$18.46 | \$0.00 | \$68.70 |
|                                     | 12/01/2025 | \$41.72 | \$9.90 | \$18.46 | \$0.00 | \$70.08 |
|                                     | 06/01/2026 | \$43.16 | \$9.90 | \$18.46 | \$0.00 | \$71.52 |
|                                     | 12/01/2026 | \$44.60 | \$9.90 | \$18.46 | \$0.00 | \$72.96 |

**Apprentice - LABORER (Heavy & Highway) - Zone 2**

**Effective Date - 12/01/2024**

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1    | 60      | \$23.37              | \$9.90 | \$18.46 | \$0.00                    | \$51.73    |
| 2    | 70      | \$27.27              | \$9.90 | \$18.46 | \$0.00                    | \$55.63    |
| 3    | 80      | \$31.16              | \$9.90 | \$18.46 | \$0.00                    | \$59.52    |
| 4    | 90      | \$35.06              | \$9.90 | \$18.46 | \$0.00                    | \$63.42    |

**Effective Date - 06/01/2025**

| Step | percent | Apprentice Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|--------|---------|---------------------------|------------|
| 1    | 60      | \$24.20              | \$9.90 | \$18.46 | \$0.00                    | \$52.56    |
| 2    | 70      | \$28.24              | \$9.90 | \$18.46 | \$0.00                    | \$56.60    |
| 3    | 80      | \$32.27              | \$9.90 | \$18.46 | \$0.00                    | \$60.63    |
| 4    | 90      | \$36.31              | \$9.90 | \$18.46 | \$0.00                    | \$64.67    |

**Notes:**

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

| Classification  | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|---|----------------|-----------|--------|---------|---------------------------|------------|
| LABORER: CARPENTER TENDER<br><i>LABORERS - ZONE 2</i>                                     | 12/01/2024     | \$38.95   | \$9.90 | \$18.36 | \$0.00                    | \$67.21    |
|   | 06/01/2025     | \$40.34   | \$9.90 | \$18.36 | \$0.00                    | \$68.60    |
|   | 12/01/2025     | \$41.72   | \$9.90 | \$18.36 | \$0.00                    | \$69.98    |
|   | 06/01/2026     | \$43.16   | \$9.90 | \$18.36 | \$0.00                    | \$71.42    |
|   | 12/01/2026     | \$44.60   | \$9.90 | \$18.36 | \$0.00                    | \$72.86    |
|   | 06/01/2027     | \$46.05   | \$9.90 | \$18.36 | \$0.00                    | \$74.31    |
|   | 12/01/2027     | \$47.50   | \$9.90 | \$18.36 | \$0.00                    | \$75.76    |
|   | 06/01/2028     | \$49.00   | \$9.90 | \$18.36 | \$0.00                    | \$77.26    |
|   | 12/01/2028     | \$50.50   | \$9.90 | \$18.36 | \$0.00                    | \$78.76    |
| For apprentice rates see "Apprentice- LABORER"  |                |           |        |         |                           |            |
| LABORER: CEMENT FINISHER TENDER<br><i>LABORERS - ZONE 2</i>                               | 12/01/2024     | \$38.95   | \$9.90 | \$18.36 | \$0.00                    | \$67.21    |
|   | 06/01/2025     | \$40.34   | \$9.90 | \$18.36 | \$0.00                    | \$68.60    |
|   | 12/01/2025     | \$41.72   | \$9.90 | \$18.36 | \$0.00                    | \$69.98    |
|   | 06/01/2026     | \$43.16   | \$9.90 | \$18.36 | \$0.00                    | \$71.42    |
|   | 12/01/2026     | \$44.60   | \$9.90 | \$18.36 | \$0.00                    | \$72.86    |
|   | 06/01/2027     | \$46.05   | \$9.90 | \$18.36 | \$0.00                    | \$74.31    |
|   | 12/01/2027     | \$47.50   | \$9.90 | \$18.36 | \$0.00                    | \$75.76    |
|   | 06/01/2028     | \$49.00   | \$9.90 | \$18.36 | \$0.00                    | \$77.26    |
|   | 12/01/2028     | \$50.50   | \$9.90 | \$18.36 | \$0.00                    | \$78.76    |
| For apprentice rates see "Apprentice- LABORER"  |                |           |        |         |                           |            |
| LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER<br><i>LABORERS - ZONE 2</i>                     | 12/02/2024     | \$39.04   | \$9.90 | \$18.42 | \$0.00                    | \$67.36    |
|   | 06/02/2025     | \$40.43   | \$9.90 | \$18.42 | \$0.00                    | \$68.75    |
|   | 12/01/2025     | \$41.81   | \$9.90 | \$18.42 | \$0.00                    | \$70.13    |
|   | 06/01/2026     | \$43.25   | \$9.90 | \$18.42 | \$0.00                    | \$71.57    |
|   | 12/07/2026     | \$44.69   | \$9.90 | \$18.42 | \$0.00                    | \$73.01    |
|   | 06/07/2027     | \$46.14   | \$9.90 | \$18.42 | \$0.00                    | \$74.46    |
|   | 12/06/2027     | \$47.59   | \$9.90 | \$18.42 | \$0.00                    | \$75.91    |
|   | 06/05/2028     | \$49.09   | \$9.90 | \$18.42 | \$0.00                    | \$77.41    |
|   | 12/04/2028     | \$50.59   | \$9.90 | \$18.42 | \$0.00                    | \$78.91    |
| For apprentice rates see "Apprentice- LABORER"  |                |           |        |         |                           |            |
| LABORER: MASON TENDER<br><i>LABORERS - ZONE 2</i>   | 12/01/2024     | \$39.20   | \$9.90 | \$18.36 | \$0.00                    | \$67.46    |
|   | 06/01/2025     | \$40.59   | \$9.90 | \$18.36 | \$0.00                    | \$68.85    |
|   | 12/01/2025     | \$41.97   | \$9.90 | \$18.36 | \$0.00                    | \$70.23    |
|   | 06/01/2026     | \$43.41   | \$9.90 | \$18.36 | \$0.00                    | \$71.67    |
|   | 12/01/2026     | \$44.85   | \$9.90 | \$18.36 | \$0.00                    | \$73.11    |
|   | 06/01/2027     | \$46.30   | \$9.90 | \$18.36 | \$0.00                    | \$74.56    |
|   | 12/01/2027     | \$47.75   | \$9.90 | \$18.36 | \$0.00                    | \$76.01    |
|   | 06/01/2028     | \$49.25   | \$9.90 | \$18.36 | \$0.00                    | \$77.51    |
|   | 12/01/2028     | \$50.75   | \$9.90 | \$18.36 | \$0.00                    | \$79.01    |
| For apprentice rates see "Apprentice- LABORER"  |                |           |        |         |                           |            |
| LABORER: MASON TENDER (HEAVY & HIGHWAY)<br><i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i> | 12/01/2024     | \$39.20   | \$9.90 | \$18.46 | \$0.00                    | \$67.56    |
|   | 06/01/2025     | \$40.59   | \$9.90 | \$18.46 | \$0.00                    | \$68.95    |
|   | 12/01/2025     | \$41.97   | \$9.90 | \$18.46 | \$0.00                    | \$70.33    |
|   | 06/01/2026     | \$43.41   | \$9.90 | \$18.46 | \$0.00                    | \$71.77    |
|   | 12/01/2026     | \$44.85   | \$9.90 | \$18.46 | \$0.00                    | \$73.21    |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"                        |                |           |        |         |                           |            |

| Classification   | Effective Date | Base Wage | Health  | Pension | Supplemental Unemployment | Total Rate |
|--|----------------|-----------|---------|---------|---------------------------|------------|
| LABORER: MULTI-TRADE TENDER<br><i>LABORERS - ZONE 2</i>  | 12/01/2024     | \$38.95   | \$9.90  | \$18.36 | \$0.00                    | \$67.21    |
|  | 06/01/2025     | \$40.34   | \$9.90  | \$18.36 | \$0.00                    | \$68.60    |
|  | 12/01/2025     | \$41.72   | \$9.90  | \$18.36 | \$0.00                    | \$69.98    |
|  | 06/01/2026     | \$43.16   | \$9.90  | \$18.36 | \$0.00                    | \$71.42    |
|  | 12/01/2026     | \$44.60   | \$9.90  | \$18.36 | \$0.00                    | \$72.86    |
|  | 06/01/2027     | \$46.05   | \$9.90  | \$18.36 | \$0.00                    | \$74.31    |
|  | 12/01/2027     | \$47.50   | \$9.90  | \$18.36 | \$0.00                    | \$75.76    |
|  | 06/01/2028     | \$49.00   | \$9.90  | \$18.36 | \$0.00                    | \$77.26    |
|  | 12/01/2028     | \$50.50   | \$9.90  | \$18.36 | \$0.00                    | \$78.76    |
| For apprentice rates see "Apprentice- LABORER"   |                |           |         |         |                           |            |
| LABORER: TREE REMOVER<br><i>LABORERS - ZONE 2</i>  | 12/01/2024     | \$38.95   | \$9.90  | \$18.36 | \$0.00                    | \$67.21    |
|  | 06/01/2025     | \$40.34   | \$9.90  | \$18.36 | \$0.00                    | \$68.60    |
|  | 12/01/2025     | \$41.72   | \$9.90  | \$18.36 | \$0.00                    | \$69.98    |
|  | 06/01/2026     | \$43.16   | \$9.90  | \$18.36 | \$0.00                    | \$71.42    |
|  | 12/01/2026     | \$44.60   | \$9.90  | \$18.36 | \$0.00                    | \$72.86    |
|  | 06/01/2027     | \$46.05   | \$9.90  | \$18.36 | \$0.00                    | \$74.31    |
|  | 12/01/2027     | \$47.50   | \$9.90  | \$18.36 | \$0.00                    | \$75.76    |
|  | 06/01/2028     | \$49.00   | \$9.90  | \$18.36 | \$0.00                    | \$77.26    |
|  | 12/01/2028     | \$50.50   | \$9.90  | \$18.36 | \$0.00                    | \$78.76    |
| This classification applies to the removal of standing trees, and the trimming and removal of branches and limbs when related to public works construction or site clearance incidental to construction . For apprentice rates see "Apprentice- LABORER" |                |           |         |         |                           |            |
| LASER BEAM OPERATOR<br><i>LABORERS - ZONE 2</i>  | 12/01/2024     | \$39.20   | \$9.90  | \$18.36 | \$0.00                    | \$67.46    |
|  | 06/01/2025     | \$40.59   | \$9.90  | \$18.36 | \$0.00                    | \$68.85    |
|  | 12/01/2025     | \$41.97   | \$9.90  | \$18.36 | \$0.00                    | \$70.23    |
|  | 06/01/2026     | \$43.41   | \$9.90  | \$18.36 | \$0.00                    | \$71.67    |
|  | 12/01/2026     | \$44.85   | \$9.90  | \$18.36 | \$0.00                    | \$73.11    |
|  | 06/01/2027     | \$46.30   | \$9.90  | \$18.36 | \$0.00                    | \$74.56    |
|  | 12/01/2027     | \$47.75   | \$9.90  | \$18.36 | \$0.00                    | \$76.01    |
|  | 06/01/2028     | \$49.25   | \$9.90  | \$18.36 | \$0.00                    | \$77.51    |
|  | 12/01/2028     | \$50.75   | \$9.90  | \$18.36 | \$0.00                    | \$79.01    |
| For apprentice rates see "Apprentice- LABORER"   |                |           |         |         |                           |            |
| LASER BEAM OPERATOR (HEAVY & HIGHWAY)<br><i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>  | 12/01/2024     | \$39.20   | \$9.90  | \$18.46 | \$0.00                    | \$67.56    |
|  | 06/01/2025     | \$40.59   | \$9.90  | \$18.46 | \$0.00                    | \$68.95    |
|  | 12/01/2025     | \$41.97   | \$9.90  | \$18.46 | \$0.00                    | \$70.33    |
|  | 06/01/2026     | \$43.41   | \$9.90  | \$18.46 | \$0.00                    | \$71.77    |
|  | 12/01/2026     | \$44.85   | \$9.90  | \$18.46 | \$0.00                    | \$73.21    |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"   |                |           |         |         |                           |            |
| MARBLE & TILE FINISHERS<br><i>BRICKLAYERS LOCAL 3 - MARBLE &amp; TILE</i>  | 02/01/2025     | \$50.36   | \$11.49 | \$21.62 | \$0.00                    | \$83.47    |
|  | 08/01/2025     | \$52.08   | \$11.49 | \$21.62 | \$0.00                    | \$85.19    |
|  | 02/01/2026     | \$53.16   | \$11.49 | \$21.62 | \$0.00                    | \$86.27    |
|  | 08/01/2026     | \$54.92   | \$11.49 | \$21.62 | \$0.00                    | \$88.03    |
|  | 02/01/2027     | \$56.04   | \$11.49 | \$21.62 | \$0.00                    | \$89.15    |



|                       |                       |                  |               |                |                                  |                   |
|-----------------------|-----------------------|------------------|---------------|----------------|----------------------------------|-------------------|
| <b>Classification</b> | <b>Effective Date</b> | <b>Base Wage</b> | <b>Health</b> | <b>Pension</b> | <b>Supplemental Unemployment</b> | <b>Total Rate</b> |
|-----------------------|-----------------------|------------------|---------------|----------------|----------------------------------|-------------------|

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

**Effective Date - 02/01/2025**

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

**Effective Date - 08/01/2025**

| Step | percent | Apprentice Base Wage | Health  | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1    | 50      | \$33.99              | \$11.49 | \$23.56 | \$0.00                    | \$69.04    |
| 2    | 60      | \$40.78              | \$11.49 | \$23.56 | \$0.00                    | \$75.83    |
| 3    | 70      | \$47.58              | \$11.49 | \$23.56 | \$0.00                    | \$82.63    |
| 4    | 80      | \$54.38              | \$11.49 | \$23.56 | \$0.00                    | \$89.43    |
| 5    | 90      | \$61.17              | \$11.49 | \$23.56 | \$0.00                    | \$96.22    |

**Notes:**

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

|   |            |         |         |         |        |         |
|---|------------|---------|---------|---------|--------|---------|
| <b>MECH. SWEEPER OPERATOR (ON CONST. SITES)</b><br><i>OPERATING ENGINEERS LOCAL 4</i> | 12/01/2024 | \$56.40 | \$15.55 | \$16.50 | \$0.00 | \$88.45 |
|   | 06/01/2025 | \$57.68 | \$15.55 | \$16.50 | \$0.00 | \$89.73 |
|   | 12/01/2025 | \$59.12 | \$15.55 | \$16.50 | \$0.00 | \$91.17 |
|   | 06/01/2026 | \$60.40 | \$15.55 | \$16.50 | \$0.00 | \$92.45 |
|   | 12/01/2026 | \$61.84 | \$15.55 | \$16.50 | \$0.00 | \$93.89 |

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

|  |            |         |         |         |        |         |
|--|------------|---------|---------|---------|--------|---------|
| <b>MECHANICS MAINTENANCE</b><br><i>OPERATING ENGINEERS LOCAL 4</i> | 12/01/2024 | \$56.40 | \$15.55 | \$16.50 | \$0.00 | \$88.45 |
|  | 06/01/2025 | \$57.68 | \$15.55 | \$16.50 | \$0.00 | \$89.73 |
|  | 12/01/2025 | \$59.12 | \$15.55 | \$16.50 | \$0.00 | \$91.17 |
|  | 06/01/2026 | \$60.40 | \$15.55 | \$16.50 | \$0.00 | \$92.45 |
|  | 12/01/2026 | \$61.84 | \$15.55 | \$16.50 | \$0.00 | \$93.89 |

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

|  |            |         |         |         |        |         |
|--|------------|---------|---------|---------|--------|---------|
| <b>MILLWRIGHT (Zone 2)</b><br><i>MILLWRIGHTS LOCAL 1121 - Zone 2</i> | 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 |

|                       |                       |                  |               |                |                                  |                   |
|-----------------------|-----------------------|------------------|---------------|----------------|----------------------------------|-------------------|
| <b>Classification</b> | <b>Effective Date</b> | <b>Base Wage</b> | <b>Health</b> | <b>Pension</b> | <b>Supplemental Unemployment</b> | <b>Total Rate</b> |
|-----------------------|-----------------------|------------------|---------------|----------------|----------------------------------|-------------------|

**Apprentice - MILLWRIGHT - Local 1121 Zone 2**

**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    |

**Effective Date - 01/05/2026**

| Step | percent | Apprentice Base Wage | Health  | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1    | 55      | \$26.08              | \$10.08 | \$5.50  | \$0.00                    | \$41.66    |
| 2    | 65      | \$30.82              | \$10.08 | \$6.50  | \$0.00                    | \$47.40    |
| 3    | 75      | \$35.57              | \$10.08 | \$18.97 | \$0.00                    | \$64.62    |
| 4    | 85      | \$40.31              | \$10.08 | \$19.97 | \$0.00                    | \$70.36    |

**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**

|   |            |         |        |         |        |         |
|---|------------|---------|--------|---------|--------|---------|
| <b>MORTAR MIXER</b><br><i>LABORERS - ZONE 2</i> | 12/01/2024 | \$39.20 | \$9.90 | \$18.36 | \$0.00 | \$67.46 |
|   | 06/01/2025 | \$40.59 | \$9.90 | \$18.36 | \$0.00 | \$68.85 |
|   | 12/01/2025 | \$41.97 | \$9.90 | \$18.36 | \$0.00 | \$70.23 |
|   | 06/01/2026 | \$43.41 | \$9.90 | \$18.36 | \$0.00 | \$71.67 |
|   | 12/01/2026 | \$44.85 | \$9.90 | \$18.36 | \$0.00 | \$73.11 |
|   | 06/01/2027 | \$46.30 | \$9.90 | \$18.36 | \$0.00 | \$74.56 |
|   | 12/01/2027 | \$47.75 | \$9.90 | \$18.36 | \$0.00 | \$76.01 |
|   | 06/01/2028 | \$49.25 | \$9.90 | \$18.36 | \$0.00 | \$77.51 |
|   | 12/01/2028 | \$50.75 | \$9.90 | \$18.36 | \$0.00 | \$79.01 |

For apprentice rates see "Apprentice- LABORER"

|   |            |         |         |         |        |         |
|---|------------|---------|---------|---------|--------|---------|
| <b>OILER (OTHER THAN TRUCK CRANES,GRADALLS)</b><br><i>OPERATING ENGINEERS LOCAL 4</i> | 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"

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

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

| Classification  | Effective Date | Base Wage | Health  | Pension | Supplemental Unemployment | Total Rate |
|---|----------------|-----------|---------|---------|---------------------------|------------|
| OTHER POWER DRIVEN EQUIPMENT - CLASS II<br><i>OPERATING ENGINEERS LOCAL 4</i> | 12/01/2024     | \$56.40   | \$15.55 | \$16.50 | \$0.00                    | \$88.45    |
|   | 06/01/2025     | \$57.68   | \$15.55 | \$16.50 | \$0.00                    | \$89.73    |
|   | 12/01/2025     | \$59.12   | \$15.55 | \$16.50 | \$0.00                    | \$91.17    |
|   | 06/01/2026     | \$60.40   | \$15.55 | \$16.50 | \$0.00                    | \$92.45    |
|   | 12/01/2026     | \$61.84   | \$15.55 | \$16.50 | \$0.00                    | \$93.89    |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS"                    |                |           |         |         |                           |            |
| PAINTER (BRIDGES/TANKS)<br><i>PAINTERS LOCAL 35 - ZONE 2</i>                  | 01/01/2025     | \$58.46   | \$9.95  | \$23.95 | \$0.00                    | \$92.36    |

**Apprentice - PAINTER Local 35 - BRIDGES/TANKS**

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

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

**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**

| Classification   | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|--|----------------|-----------|--------|---------|---------------------------|------------|
| Painter (Spray or Sandblast, Repaint)<br><i>Painters Local 35 - Zone 2</i> | 01/01/2025     | \$47.42   | \$9.95 | \$23.95 | \$0.00                    | \$81.32    |

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

**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) *<br><i>Painters Local 35 - Zone 2</i> | 01/01/2025 | \$47.96 | \$9.95 | \$23.95 | \$0.00 | \$81.86 |
|---|------------|---------|--------|---------|--------|---------|

\* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used.

**Apprentice - PAINTER - Local 35 Zone 2 - BRUSH NEW**

**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)<br><i>Painters Local 35 - Zone 2</i> | 01/01/2025 | \$46.02 | \$9.95 | \$23.95 | \$0.00 | \$79.92 |
|---|------------|---------|--------|---------|--------|---------|

| Classification  | Effective Date | Base Wage            | Health | Pension | Supplemental Unemployment | Total Rate |
|---|----------------|----------------------|--------|---------|---------------------------|------------|
| <b>Apprentice - PAINTER Local 35 Zone 2 - BRUSH REPAINT</b> |                |                      |        |         |                           |            |
| <b>Effective Date - 01/01/2025</b>                          |                |                      |        |         |                           |            |
| 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)                          | 12/01/2024   | \$38.95 | \$9.90  | \$18.46 | \$0.00 | \$67.31 |
| LABORERS - ZONE 2 (HEAVY & HIGHWAY)                               | 06/01/2025   | \$40.34 | \$9.90  | \$18.46 | \$0.00 | \$68.70 |
|   | 12/01/2025   | \$41.72 | \$9.90  | \$18.46 | \$0.00 | \$70.08 |
|   | 06/01/2026   | \$43.16 | \$9.90  | \$18.46 | \$0.00 | \$71.52 |
|   | 12/01/2026   | \$44.60 | \$9.90  | \$18.46 | \$0.00 | \$72.96 |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway) |  |         |         |         |        |         |
| PANEL & PICKUP TRUCKS DRIVER                                      | 01/01/2025   | \$39.78 | \$15.57 | \$20.17 | \$0.00 | \$75.52 |
| TEAMSTERS JOINT COUNCIL NO. 10 ZONE B                             | 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 |
| PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK)                 | 08/01/2024   | \$55.79 | \$10.08 | \$24.29 | \$0.00 | \$90.16 |
| PILE DRIVER LOCAL 56 (ZONE 1)                                     | For apprentice rates see "Apprentice- PILE DRIVER" |         |         |         |        |         |
| PILE DRIVER   | 08/01/2024   | \$55.79 | \$10.08 | \$24.29 | \$0.00 | \$90.16 |
| PILE DRIVER LOCAL 56 (ZONE 1)                                     |  |         |         |         |        |         |



| Classification   | Effective Date | Base Wage | Health  | Pension | Supplemental Unemployment | Total Rate |
|--|----------------|-----------|---------|---------|---------------------------|------------|
| PLUMBERS & GASFITTERS<br><i>PLUMBERS &amp; GASFITTERS LOCAL 12</i> | 03/02/2025     | \$69.84   | \$14.32 | \$20.31 | \$0.00                    | \$104.47   |

**Apprentice - PLUMBER/GASFITTER - Local 12**

**Effective Date - 03/02/2025**

| Step | percent | Apprentice Base Wage | Health  | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1    | 35      | \$24.44              | \$14.32 | \$7.41  | \$0.00                    | \$46.17    |
| 2    | 40      | \$27.94              | \$14.32 | \$8.42  | \$0.00                    | \$50.68    |
| 3    | 55      | \$38.41              | \$14.32 | \$11.47 | \$0.00                    | \$64.20    |
| 4    | 65      | \$45.40              | \$14.32 | \$13.50 | \$0.00                    | \$73.22    |
| 5    | 75      | \$52.38              | \$14.32 | \$15.53 | \$0.00                    | \$82.23    |

**Notes:**

\*\* 1:2; 2:6; 3:10; 4:14; 5:19/Steps are 1 yr  
Step4 with lic\$76.49 tot.rate, Step5 with lic. \$85.32 tot. rate

**Apprentice to Journeyworker Ratio:\*\***

|  |            |         |         |         |        |          |
|--|------------|---------|---------|---------|--------|----------|
| PNEUMATIC CONTROLS (TEMP.)<br><i>PIPEFITTERS LOCAL 537</i> | 03/01/2025 | \$68.88 | \$12.70 | \$21.80 | \$0.00 | \$103.38 |
|--|------------|---------|---------|---------|--------|----------|

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

|   |            |         |        |         |        |         |
|---|------------|---------|--------|---------|--------|---------|
| PNEUMATIC DRILL/TOOL OPERATOR<br><i>LABORERS - ZONE 2</i> | 12/01/2024 | \$39.70 | \$9.90 | \$17.54 | \$0.00 | \$67.14 |
|   | 06/01/2025 | \$41.09 | \$9.90 | \$17.54 | \$0.00 | \$68.53 |
|   | 12/01/2025 | \$42.47 | \$9.90 | \$17.54 | \$0.00 | \$69.91 |
|   | 06/01/2026 | \$43.91 | \$9.90 | \$17.54 | \$0.00 | \$71.35 |
|   | 12/01/2026 | \$45.35 | \$9.90 | \$17.54 | \$0.00 | \$72.79 |
|   | 06/01/2027 | \$46.80 | \$9.90 | \$17.54 | \$0.00 | \$74.24 |
|   | 12/01/2027 | \$48.25 | \$9.90 | \$17.54 | \$0.00 | \$75.69 |
|   | 06/01/2028 | \$49.75 | \$9.90 | \$17.54 | \$0.00 | \$77.19 |
|   | 12/01/2028 | \$51.25 | \$9.90 | \$17.54 | \$0.00 | \$78.69 |

For apprentice rates see "Apprentice- LABORER"

|   |            |         |        |         |        |         |
|---|------------|---------|--------|---------|--------|---------|
| PNEUMATIC DRILL/TOOL OPERATOR (HEAVY & HIGHWAY)<br><i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i> | 12/01/2024 | \$39.20 | \$9.90 | \$18.46 | \$0.00 | \$67.56 |
|   | 06/01/2025 | \$40.59 | \$9.90 | \$18.46 | \$0.00 | \$68.95 |
|   | 12/01/2025 | \$41.97 | \$9.90 | \$18.46 | \$0.00 | \$70.33 |
|   | 06/01/2026 | \$43.41 | \$9.90 | \$18.46 | \$0.00 | \$71.77 |
|   | 12/01/2026 | \$44.85 | \$9.90 | \$18.46 | \$0.00 | \$73.21 |

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

|   |            |         |        |         |        |         |
|---|------------|---------|--------|---------|--------|---------|
| POWDERMAN & BLASTER<br><i>LABORERS - ZONE 2</i> | 12/01/2024 | \$39.95 | \$9.90 | \$18.36 | \$0.00 | \$68.21 |
|   | 06/01/2025 | \$41.34 | \$9.90 | \$18.36 | \$0.00 | \$69.60 |
|   | 12/01/2025 | \$42.72 | \$9.90 | \$18.36 | \$0.00 | \$70.98 |
|   | 06/01/2026 | \$44.16 | \$9.90 | \$18.36 | \$0.00 | \$72.42 |
|   | 12/01/2026 | \$45.60 | \$9.90 | \$18.36 | \$0.00 | \$73.86 |
|   | 06/01/2027 | \$47.05 | \$9.90 | \$18.36 | \$0.00 | \$75.31 |
|   | 12/01/2027 | \$48.50 | \$9.90 | \$18.36 | \$0.00 | \$76.76 |
|   | 06/01/2028 | \$50.00 | \$9.90 | \$18.36 | \$0.00 | \$78.26 |
|   | 12/01/2028 | \$51.50 | \$9.90 | \$18.36 | \$0.00 | \$79.76 |

For apprentice rates see "Apprentice- LABORER"

| Classification  | Effective Date | Base Wage | Health  | Pension | Supplemental Unemployment | Total Rate |
|---|----------------|-----------|---------|---------|---------------------------|------------|
| POWDERMAN & BLASTER (HEAVY & HIGHWAY)<br><i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i> | 12/01/2024     | \$39.95   | \$9.65  | \$18.46 | \$0.00                    | \$68.06    |
|   | 06/01/2025     | \$41.34   | \$9.65  | \$18.46 | \$0.00                    | \$69.45    |
|   | 12/01/2025     | \$42.72   | \$9.65  | \$18.46 | \$0.00                    | \$70.83    |
|   | 06/01/2026     | \$44.16   | \$9.65  | \$18.46 | \$0.00                    | \$72.27    |
|   | 12/01/2026     | \$45.60   | \$9.65  | \$18.46 | \$0.00                    | \$73.71    |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway)                       |                |           |         |         |                           |            |
| POWER SHOVEL/DERRICK/TRENCHING MACHINE<br><i>OPERATING ENGINEERS LOCAL 4</i>            | 12/01/2024     | \$57.03   | \$15.55 | \$16.50 | \$0.00                    | \$89.08    |
|   | 06/01/2025     | \$58.33   | \$15.55 | \$16.50 | \$0.00                    | \$90.38    |
|   | 12/01/2025     | \$59.78   | \$15.55 | \$16.50 | \$0.00                    | \$91.83    |
|   | 06/01/2026     | \$61.08   | \$15.55 | \$16.50 | \$0.00                    | \$93.13    |
|   | 12/01/2026     | \$62.53   | \$15.55 | \$16.50 | \$0.00                    | \$94.58    |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS"                              |                |           |         |         |                           |            |
| PUMP OPERATOR (CONCRETE)<br><i>OPERATING ENGINEERS LOCAL 4</i>                          | 12/01/2024     | \$56.40   | \$15.55 | \$16.50 | \$0.00                    | \$88.45    |
|   | 06/01/2025     | \$57.68   | \$15.55 | \$16.50 | \$0.00                    | \$89.73    |
|   | 12/01/2025     | \$59.12   | \$15.55 | \$16.50 | \$0.00                    | \$91.17    |
|   | 06/01/2026     | \$60.40   | \$15.55 | \$16.50 | \$0.00                    | \$92.45    |
|   | 12/01/2026     | \$61.84   | \$15.55 | \$16.50 | \$0.00                    | \$93.89    |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS"                              |                |           |         |         |                           |            |
| PUMP OPERATOR (DEWATERING, OTHER)<br><i>OPERATING ENGINEERS LOCAL 4</i>                 | 12/01/2024     | \$36.67   | \$15.55 | \$16.50 | \$0.00                    | \$68.72    |
|   | 06/01/2025     | \$37.52   | \$15.55 | \$16.50 | \$0.00                    | \$69.57    |
|   | 12/01/2025     | \$38.47   | \$15.55 | \$16.50 | \$0.00                    | \$70.52    |
|   | 06/01/2026     | \$39.33   | \$15.55 | \$16.50 | \$0.00                    | \$71.38    |
|   | 12/01/2026     | \$40.28   | \$15.55 | \$16.50 | \$0.00                    | \$72.33    |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS"                              |                |           |         |         |                           |            |
| READY-MIX CONCRETE DRIVER<br><i>TEAMSTERS 170 - J.G. MacLellan (Lowell)</i>             | 01/01/2025     | \$30.00   | \$11.57 | \$6.55  | \$0.00                    | \$48.12    |
|   | 05/01/2025     | \$30.50   | \$11.57 | \$6.65  | \$0.00                    | \$48.72    |
|   | 01/01/2026     | \$30.50   | \$11.97 | \$6.65  | \$0.00                    | \$49.12    |
| RECLAIMERS<br><i>OPERATING ENGINEERS LOCAL 4</i>  | 12/01/2024     | \$56.40   | \$15.55 | \$16.50 | \$0.00                    | \$88.45    |
|   | 06/01/2025     | \$57.68   | \$15.55 | \$16.50 | \$0.00                    | \$89.73    |
|   | 12/01/2025     | \$59.12   | \$15.55 | \$16.50 | \$0.00                    | \$91.17    |
|   | 06/01/2026     | \$60.40   | \$15.55 | \$16.50 | \$0.00                    | \$92.45    |
|   | 12/01/2026     | \$61.84   | \$15.55 | \$16.50 | \$0.00                    | \$93.89    |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS"                              |                |           |         |         |                           |            |
| RIDE-ON MOTORIZED BUGGY OPERATOR<br><i>LABORERS - ZONE 2</i>                            | 12/01/2024     | \$39.20   | \$9.90  | \$18.36 | \$0.00                    | \$67.46    |
|   | 06/01/2025     | \$40.59   | \$9.90  | \$18.36 | \$0.00                    | \$68.85    |
|   | 12/01/2025     | \$41.97   | \$9.90  | \$18.36 | \$0.00                    | \$70.23    |
|   | 06/01/2026     | \$43.41   | \$9.90  | \$18.36 | \$0.00                    | \$71.67    |
|   | 12/01/2026     | \$44.85   | \$9.90  | \$18.36 | \$0.00                    | \$73.11    |
|   | 06/01/2027     | \$46.30   | \$9.90  | \$18.36 | \$0.00                    | \$74.56    |
|   | 12/01/2027     | \$47.75   | \$9.90  | \$18.36 | \$0.00                    | \$76.01    |
|   | 06/01/2028     | \$49.25   | \$9.90  | \$18.36 | \$0.00                    | \$77.51    |
|   | 12/01/2028     | \$50.75   | \$9.90  | \$18.36 | \$0.00                    | \$79.01    |
| For apprentice rates see "Apprentice- LABORER"  |                |           |         |         |                           |            |

| Classification   | Effective Date | Base Wage | Health  | Pension | Supplemental Unemployment | Total Rate |
|--|----------------|-----------|---------|---------|---------------------------|------------|
| ROLLER/SPREADER/MULCHING MACHINE<br><i>OPERATING ENGINEERS LOCAL 4</i> | 12/01/2024     | \$56.40   | \$15.55 | \$16.50 | \$0.00                    | \$88.45    |
|  | 06/01/2025     | \$57.68   | \$15.55 | \$16.50 | \$0.00                    | \$89.73    |
|  | 12/01/2025     | \$59.12   | \$15.55 | \$16.50 | \$0.00                    | \$91.17    |
|  | 06/01/2026     | \$60.40   | \$15.55 | \$16.50 | \$0.00                    | \$92.45    |
|  | 12/01/2026     | \$61.84   | \$15.55 | \$16.50 | \$0.00                    | \$93.89    |

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

|  |            |         |         |         |        |         |
|--|------------|---------|---------|---------|--------|---------|
| ROOFER (Inc.Roofer Waterproofing &Roofer Damproofg)<br><i>ROOFERS LOCAL 33</i> | 02/01/2025 | \$52.03 | \$13.28 | \$21.70 | \$0.00 | \$87.01 |
|  | 08/01/2025 | \$53.53 | \$13.28 | \$21.70 | \$0.00 | \$88.51 |
|  | 02/01/2026 | \$54.78 | \$13.28 | \$21.70 | \$0.00 | \$89.76 |

**Apprentice - ROOFER - Local 33**

**Effective Date - 02/01/2025**

| Step | percent | Apprentice Base Wage | Health  | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1    | 50      | \$26.02              | \$13.28 | \$15.55 | \$0.00                    | \$54.85    |
| 2    | 60      | \$31.22              | \$13.28 | \$21.70 | \$0.00                    | \$66.20    |
| 3    | 65      | \$33.82              | \$13.28 | \$21.70 | \$0.00                    | \$68.80    |
| 4    | 75      | \$39.02              | \$13.28 | \$21.70 | \$0.00                    | \$74.00    |
| 5    | 85      | \$44.23              | \$13.28 | \$21.70 | \$0.00                    | \$79.21    |

**Effective Date - 08/01/2025**

| Step | percent | Apprentice Base Wage | Health  | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1    | 50      | \$26.77              | \$13.28 | \$15.55 | \$0.00                    | \$55.60    |
| 2    | 60      | \$32.12              | \$13.28 | \$21.70 | \$0.00                    | \$67.10    |
| 3    | 65      | \$34.79              | \$13.28 | \$21.70 | \$0.00                    | \$69.77    |
| 4    | 75      | \$40.15              | \$13.28 | \$21.70 | \$0.00                    | \$75.13    |
| 5    | 85      | \$45.50              | \$13.28 | \$21.70 | \$0.00                    | \$80.48    |

**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<br><i>ROOFERS LOCAL 33</i> | 02/01/2025 | \$52.28 | \$13.28 | \$21.70 | \$0.00 | \$87.26 |
|   | 08/01/2025 | \$53.78 | \$13.28 | \$21.70 | \$0.00 | \$88.76 |
|   | 02/01/2026 | \$55.03 | \$13.28 | \$21.70 | \$0.00 | \$90.01 |

For apprentice rates see "Apprentice- ROOFER"

|   |            |         |         |         |        |          |
|---|------------|---------|---------|---------|--------|----------|
| SHEETMETAL WORKER<br><i>SHEETMETAL WORKERS LOCAL 17 - A</i> | 02/01/2025 | \$59.13 | \$14.91 | \$28.27 | \$2.98 | \$105.29 |
|   | 08/01/2025 | \$60.98 | \$14.91 | \$28.27 | \$2.98 | \$107.14 |
|   | 02/01/2026 | \$62.93 | \$14.91 | \$28.27 | \$2.98 | \$109.09 |

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

**Apprentice - SHEET METAL WORKER - Local 17-A**

**Effective Date - 02/01/2025**

| Step | percent | Apprentice Base Wage | Health  | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1    | 42      | \$24.83              | \$14.91 | \$6.13  | \$0.00                    | \$45.87    |
| 2    | 42      | \$24.83              | \$14.91 | \$6.13  | \$0.00                    | \$45.87    |
| 3    | 47      | \$27.79              | \$14.91 | \$12.26 | \$1.62                    | \$56.58    |
| 4    | 47      | \$27.79              | \$14.91 | \$12.26 | \$1.62                    | \$56.58    |
| 5    | 52      | \$30.75              | \$14.91 | \$13.24 | \$1.74                    | \$60.64    |
| 6    | 52      | \$30.75              | \$14.91 | \$13.49 | \$1.75                    | \$60.90    |
| 7    | 60      | \$35.48              | \$14.91 | \$14.90 | \$1.93                    | \$67.22    |
| 8    | 65      | \$38.43              | \$14.91 | \$15.88 | \$2.04                    | \$71.26    |
| 9    | 75      | \$44.35              | \$14.91 | \$17.84 | \$2.28                    | \$79.38    |
| 10   | 85      | \$50.26              | \$14.91 | \$19.30 | \$2.49                    | \$86.96    |

**Effective Date - 08/01/2025**

| Step | percent | Apprentice Base Wage | Health  | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1    | 42      | \$25.61              | \$14.91 | \$6.13  | \$0.00                    | \$46.65    |
| 2    | 42      | \$25.61              | \$14.91 | \$6.13  | \$0.00                    | \$46.65    |
| 3    | 47      | \$28.66              | \$14.91 | \$12.26 | \$1.62                    | \$57.45    |
| 4    | 47      | \$28.66              | \$14.91 | \$12.26 | \$1.62                    | \$57.45    |
| 5    | 52      | \$31.71              | \$14.91 | \$13.24 | \$1.74                    | \$61.60    |
| 6    | 52      | \$31.71              | \$14.91 | \$13.49 | \$1.75                    | \$61.86    |
| 7    | 60      | \$36.59              | \$14.91 | \$14.90 | \$1.93                    | \$68.33    |
| 8    | 65      | \$39.64              | \$14.91 | \$15.88 | \$2.04                    | \$72.47    |
| 9    | 75      | \$45.74              | \$14.91 | \$17.84 | \$2.28                    | \$80.77    |
| 10   | 85      | \$51.83              | \$14.91 | \$19.30 | \$2.49                    | \$88.53    |

**Notes:**

Steps are 6 mos.

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

|  |            |         |         |         |        |         |
|--|------------|---------|---------|---------|--------|---------|
| SPECIALIZED EARTH MOVING EQUIP < 35 TONS | 01/01/2025 | \$40.24 | \$15.57 | \$20.17 | \$0.00 | \$75.98 |
| TEAMSTERS JOINT COUNCIL NO. 10 ZONE B    | 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<br><i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i> | 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<br><i>SPRINKLER FITTERS LOCAL 550 - (Section A) Zone 1</i>              | 03/01/2025     | \$72.14   | \$11.51 | \$23.80 | \$0.00                    | \$107.45   |

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

**Effective Date - 03/01/2025**

| Step | percent | Apprentice Base Wage | Health  | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1    | 35      | \$25.25              | \$11.51 | \$13.07 | \$0.00                    | \$49.83    |
| 2    | 40      | \$28.86              | \$11.51 | \$13.90 | \$0.00                    | \$54.27    |
| 3    | 45      | \$32.46              | \$11.51 | \$14.73 | \$0.00                    | \$58.70    |
| 4    | 50      | \$36.07              | \$11.51 | \$15.55 | \$0.00                    | \$63.13    |
| 5    | 55      | \$39.68              | \$11.51 | \$16.37 | \$0.00                    | \$67.56    |
| 6    | 60      | \$43.28              | \$11.51 | \$17.20 | \$0.00                    | \$71.99    |
| 7    | 65      | \$46.89              | \$11.51 | \$18.03 | \$0.00                    | \$76.43    |
| 8    | 70      | \$50.50              | \$11.51 | \$18.85 | \$0.00                    | \$80.86    |
| 9    | 75      | \$54.11              | \$11.51 | \$19.67 | \$0.00                    | \$85.29    |
| 10   | 80      | \$57.71              | \$11.51 | \$20.50 | \$0.00                    | \$89.72    |

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**

|   |            |         |         |         |        |         |
|---|------------|---------|---------|---------|--------|---------|
| STEAM BOILER OPERATOR<br><i>OPERATING ENGINEERS LOCAL 4</i> | 12/01/2024 | \$56.40 | \$15.55 | \$16.50 | \$0.00 | \$88.45 |
|   | 06/01/2025 | \$57.68 | \$15.55 | \$16.50 | \$0.00 | \$89.73 |
|   | 12/01/2025 | \$59.12 | \$15.55 | \$16.50 | \$0.00 | \$91.17 |
|   | 06/01/2026 | \$60.40 | \$15.55 | \$16.50 | \$0.00 | \$92.45 |
|   | 12/01/2026 | \$61.84 | \$15.55 | \$16.50 | \$0.00 | \$93.89 |

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

|  |            |         |         |         |        |         |
|--|------------|---------|---------|---------|--------|---------|
| TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN<br><i>OPERATING ENGINEERS LOCAL 4</i> | 12/01/2024 | \$56.40 | \$15.55 | \$16.50 | \$0.00 | \$88.45 |
|  | 06/01/2025 | \$57.68 | \$15.55 | \$16.50 | \$0.00 | \$89.73 |
|  | 12/01/2025 | \$59.12 | \$15.55 | \$16.50 | \$0.00 | \$91.17 |
|  | 06/01/2026 | \$60.40 | \$15.55 | \$16.50 | \$0.00 | \$92.45 |
|  | 12/01/2026 | \$61.84 | \$15.55 | \$16.50 | \$0.00 | \$93.89 |

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

| Classification  | Effective Date | Base Wage | Health  | Pension | Supplemental Unemployment | Total Rate |
|---|----------------|-----------|---------|---------|---------------------------|------------|
| TELECOMMUNICATION TECHNICIAN<br><i>ELECTRICIANS LOCAL 103</i> | 03/01/2025     | \$51.41   | \$13.00 | \$20.90 | \$0.00                    | \$85.31    |
|   | 09/01/2025     | \$52.94   | \$13.00 | \$20.95 | \$0.00                    | \$86.89    |
|   | 03/01/2026     | \$53.90   | \$13.00 | \$20.98 | \$0.00                    | \$87.88    |
|   | 09/01/2026     | \$55.42   | \$13.00 | \$21.02 | \$0.00                    | \$89.44    |
|   | 03/01/2027     | \$56.38   | \$13.00 | \$21.05 | \$0.00                    | \$90.43    |
|   | 09/01/2027     | \$57.91   | \$13.00 | \$21.10 | \$0.00                    | \$92.01    |
|   | 03/01/2028     | \$58.87   | \$13.00 | \$21.13 | \$0.00                    | \$93.00    |

**Apprentice - TELECOMMUNICATION TECHNICIAN - Local 103**

**Effective Date - 03/01/2025**

| Step | percent | Apprentice Base Wage | Health  | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1    | 45      | \$23.13              | \$13.00 | \$0.69  | \$0.00                    | \$36.82    |
| 2    | 45      | \$23.13              | \$13.00 | \$0.69  | \$0.00                    | \$36.82    |
| 3    | 50      | \$25.71              | \$13.00 | \$16.64 | \$0.00                    | \$55.35    |
| 4    | 50      | \$25.71              | \$13.00 | \$16.64 | \$0.00                    | \$55.35    |
| 5    | 55      | \$28.28              | \$13.00 | \$17.07 | \$0.00                    | \$58.35    |
| 6    | 60      | \$30.85              | \$13.00 | \$17.50 | \$0.00                    | \$61.35    |
| 7    | 65      | \$33.42              | \$13.00 | \$17.92 | \$0.00                    | \$64.34    |
| 8    | 70      | \$35.99              | \$13.00 | \$18.35 | \$0.00                    | \$67.34    |
| 9    | 75      | \$38.56              | \$13.00 | \$18.78 | \$0.00                    | \$70.34    |
| 10   | 80      | \$41.13              | \$13.00 | \$19.19 | \$0.00                    | \$73.32    |

**Effective Date - 09/01/2025**

| Step | percent | Apprentice Base Wage | Health  | Pension | Supplemental Unemployment | Total Rate |
|------|---------|----------------------|---------|---------|---------------------------|------------|
| 1    | 45      | \$23.82              | \$13.00 | \$0.71  | \$0.00                    | \$37.53    |
| 2    | 45      | \$23.82              | \$13.00 | \$0.71  | \$0.00                    | \$37.53    |
| 3    | 50      | \$26.47              | \$13.00 | \$16.66 | \$0.00                    | \$56.13    |
| 4    | 50      | \$26.47              | \$13.00 | \$16.66 | \$0.00                    | \$56.13    |
| 5    | 55      | \$29.12              | \$13.00 | \$17.09 | \$0.00                    | \$59.21    |
| 6    | 60      | \$31.76              | \$13.00 | \$17.52 | \$0.00                    | \$62.28    |
| 7    | 65      | \$34.41              | \$13.00 | \$17.95 | \$0.00                    | \$65.36    |
| 8    | 70      | \$37.06              | \$13.00 | \$18.38 | \$0.00                    | \$68.44    |
| 9    | 75      | \$39.71              | \$13.00 | \$18.81 | \$0.00                    | \$71.52    |
| 10   | 80      | \$42.35              | \$13.00 | \$19.23 | \$0.00                    | \$74.58    |

**Notes:**

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

|  |            |         |         |         |        |          |
|--|------------|---------|---------|---------|--------|----------|
| TERRAZZO FINISHERS<br><i>BRICKLAYERS LOCAL 3 - MARBLE &amp; TILE</i> | 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 |
|---|----------------|-----------|---------|---------|---------------------------|------------|
| TRAILERS FOR EARTH MOVING EQUIPMENT<br><i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i> | 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<br><i>LABORERS (COMPRESSED AIR)</i>                    | 12/01/2024     | \$58.43   | \$9.90  | \$19.50 | \$0.00                    | \$87.83    |
|   | 06/01/2025     | \$59.93   | \$9.90  | \$19.50 | \$0.00                    | \$89.33    |
|   | 12/01/2025     | \$61.43   | \$9.90  | \$19.50 | \$0.00                    | \$90.83    |
|   | 06/01/2026     | \$62.98   | \$9.90  | \$19.50 | \$0.00                    | \$92.38    |
|   | 12/01/2026     | \$64.48   | \$9.90  | \$19.50 | \$0.00                    | \$93.88    |
| For apprentice rates see "Apprentice- LABORER"                                      |                |           |         |         |                           |            |
| TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE)<br><i>LABORERS (COMPRESSED AIR)</i>       | 12/01/2024     | \$60.43   | \$9.90  | \$19.50 | \$0.00                    | \$89.83    |
|   | 06/01/2025     | \$61.93   | \$9.90  | \$19.50 | \$0.00                    | \$91.33    |
|   | 12/01/2025     | \$63.43   | \$9.90  | \$19.50 | \$0.00                    | \$92.83    |
|   | 06/01/2026     | \$64.98   | \$9.90  | \$19.50 | \$0.00                    | \$94.38    |
|   | 12/01/2026     | \$66.48   | \$9.90  | \$19.50 | \$0.00                    | \$95.88    |
| For apprentice rates see "Apprentice- LABORER"                                      |                |           |         |         |                           |            |
| TUNNEL WORK - FREE AIR<br><i>LABORERS (FREE AIR TUNNEL)</i>                         | 12/01/2024     | \$50.50   | \$9.90  | \$19.50 | \$0.00                    | \$79.90    |
|   | 06/01/2025     | \$52.00   | \$9.90  | \$19.50 | \$0.00                    | \$81.40    |
|   | 12/01/2025     | \$53.50   | \$9.90  | \$19.50 | \$0.00                    | \$82.90    |
|   | 06/01/2026     | \$55.05   | \$9.90  | \$19.50 | \$0.00                    | \$84.45    |
|   | 12/01/2026     | \$56.55   | \$9.90  | \$19.50 | \$0.00                    | \$85.95    |
| For apprentice rates see "Apprentice- LABORER"                                      |                |           |         |         |                           |            |
| TUNNEL WORK - FREE AIR (HAZ. WASTE)<br><i>LABORERS (FREE AIR TUNNEL)</i>            | 12/01/2024     | \$52.50   | \$9.90  | \$19.50 | \$0.00                    | \$81.90    |
|   | 06/01/2025     | \$54.00   | \$9.90  | \$19.50 | \$0.00                    | \$83.40    |
|   | 12/01/2025     | \$55.50   | \$9.90  | \$19.50 | \$0.00                    | \$84.90    |
|   | 06/01/2026     | \$57.05   | \$9.90  | \$19.50 | \$0.00                    | \$86.45    |
|   | 12/01/2026     | \$58.55   | \$9.90  | \$19.50 | \$0.00                    | \$87.95    |
| For apprentice rates see "Apprentice- LABORER"                                      |                |           |         |         |                           |            |
| VAC-HAUL<br><i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>                            | 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 |
|---|--|-----------|---------|---------|---------------------------|------------|
| WAGON DRILL OPERATOR<br><i>LABORERS - ZONE 2</i>  | 12/01/2024                                     | \$40.61   | \$9.65  | \$17.70 | \$0.00                    | \$67.96    |
|   | 06/01/2025                                     | \$42.00   | \$9.65  | \$17.70 | \$0.00                    | \$69.35    |
|   | 12/01/2025                                     | \$43.38   | \$9.65  | \$17.70 | \$0.00                    | \$70.73    |
|   | 06/01/2026                                     | \$44.82   | \$9.65  | \$17.70 | \$0.00                    | \$72.17    |
|   | 12/01/2026                                     | \$46.26   | \$9.65  | \$17.70 | \$0.00                    | \$73.61    |
|   | 06/01/2027                                     | \$47.71   | \$9.65  | \$17.70 | \$0.00                    | \$75.06    |
|   | 12/01/2027                                     | \$49.16   | \$9.65  | \$17.70 | \$0.00                    | \$76.51    |
|   | 06/01/2028                                     | \$50.66   | \$9.65  | \$17.70 | \$0.00                    | \$78.01    |
|   | 12/01/2028                                     | \$52.16   | \$9.65  | \$17.70 | \$0.00                    | \$79.51    |
| For apprentice rates see "Apprentice- LABORER"  |  |           |         |         |                           |            |
| WAGON DRILL OPERATOR (HEAVY & HIGHWAY)<br><i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>            | 12/01/2024                                     | \$39.20   | \$9.90  | \$18.46 | \$0.00                    | \$67.56    |
|   | 06/01/2025                                     | \$40.59   | \$9.90  | \$18.46 | \$0.00                    | \$68.95    |
|   | 12/01/2025                                     | \$41.97   | \$9.90  | \$18.46 | \$0.00                    | \$70.33    |
|   | 06/01/2026                                     | \$43.41   | \$9.90  | \$18.46 | \$0.00                    | \$71.77    |
|   | 12/01/2026                                     | \$44.85   | \$9.90  | \$18.46 | \$0.00                    | \$73.21    |
| For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"                                  |  |           |         |         |                           |            |
| WASTE WATER PUMP OPERATOR<br><i>OPERATING ENGINEERS LOCAL 4</i>                                     | 12/01/2024                                     | \$57.03   | \$15.55 | \$16.50 | \$0.00                    | \$89.08    |
|   | 06/01/2025                                     | \$58.33   | \$15.55 | \$16.50 | \$0.00                    | \$90.38    |
|   | 12/01/2025                                     | \$59.78   | \$15.55 | \$16.50 | \$0.00                    | \$91.83    |
|   | 06/01/2026                                     | \$61.08   | \$15.55 | \$16.50 | \$0.00                    | \$93.13    |
|   | 12/01/2026                                     | \$62.53   | \$15.55 | \$16.50 | \$0.00                    | \$94.58    |
| For apprentice rates see "Apprentice- OPERATING ENGINEERS"  |  |           |         |         |                           |            |
| WATER METER INSTALLER<br><i>PLUMBERS &amp; GASFITTERS LOCAL 12</i>                                  | 03/02/2025                                     | \$69.84   | \$14.32 | \$20.31 | \$0.00                    | \$104.47   |
| For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"                    |  |           |         |         |                           |            |
| <b>Outside Electrical - East</b>  |  |           |         |         |                           |            |
| CABLE TECHNICIAN (Power Zone)<br><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)<br><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<br><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)<br><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)<br><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" |           |         |         |                           |            |
| EQUIPMENT OPERATOR (Class B CDL)<br><i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>              | 08/30/2020                                     | \$37.09   | \$9.25  | \$10.87 | \$0.00                    | \$57.21    |
|   | For apprentice rates see "Apprentice- LINEMAN" |           |         |         |                           |            |
| GROUNDMAN<br><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" |           |         |         |                           |            |
| GROUNDMAN -Inexperienced (<2000 Hrs.)<br><i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>         | 08/30/2020                                     | \$22.25   | \$9.25  | \$1.82  | \$0.00                    | \$33.32    |
|   | For apprentice rates see "Apprentice- LINEMAN" |           |         |         |                           |            |

| Classification   | Effective Date | Base Wage | Health | Pension | Supplemental Unemployment | Total Rate |
|--|----------------|-----------|--------|---------|---------------------------|------------|
| JOURNEYMAN LINEMAN<br><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<br><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<br><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<br><i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i> | 02/04/2019 | \$28.93 | \$4.70 | \$3.14 | \$0.00 | \$36.77 |

**Additional Apprentice Information:**

All apprentices must be registered with the Division of Apprenticeship Training (DAS) in accordance with M.G.L. c. 23, §§ 11E-11L. Minimum wage rates for apprentices employed on public works projects are listed above as a percentage of the hourly prevailing wage rate established by the Commissioner under the provisions of M.G.L. c. 149, §§ 26-27D. Apprentice ratios are established by DAS pursuant to M.G.L. c. 23, §§ 11E-11L. Ratios are expressed as the allowable number of apprentices to journeymen or fraction thereof, unless otherwise specified. The ratios listed herein have been taken from relevant private collective bargaining agreements (CBAs) and are provided for illustrative purposes only. They have not been independently verified as being accurate or continuing to be accurate. Parties having questions regarding what ratio to use should contact DAS.

## 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,<br>MA Suffolk, NH Rockingham. |                        |
| 5403 Fall River- New Bedford MA, Bristol                                       | 1.6                    |
| 9243 Worcester-Fitchburg-Leominster, MA  | 1.6                    |
| 6323 Springfield-Chicopee-Holyoke MA-CT<br>MA Hampden, MA Hampshire            |                        |
| 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 00875  
TRAINEE SPECIAL PROVISIONS  
Revised October, 2016

THE REQUIRED NUMBER OF TRAINEES TO BE TRAINED UNDER THIS CONTRACT WILL BE **X**

The contractor shall provide on-the job training aimed at developing full journeyworkers in the type of trade of job classification involved.

In the event that a contractor subcontracts a portion of the contract work, the General Contractor shall determine how many, if any, of the trainees are to be trained by the subcontractor, provided, however, that the contractor shall retain the primary responsibility for meeting the training requirements imposed by this special provision. The contractor shall also insure that this training special provision is made applicable to such subcontract. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training.

The number of trainees shall be distributed among the work classifications on the basis of the contractor's needs and the availability of journeyworkers in the various classifications within a reasonable area of recruitment. Prior to commencing construction, the contractor shall submit to the Massachusetts Department Of Transportation (MassDOT) for approval the number of trainees to be trained in each selected classification and training program to be used. Furthermore, the contractor shall specify the starting time for training in each of the classifications. The contractor will be credited for each trainee employed on the contract work who is currently enrolled or becomes enrolled in an approved program and will be reimbursed for such trainees as provided hereinafter.

Training and upgrading of minorities and women toward journeyworker status is a primary objective of the Training Special Provision. Accordingly, the contractor shall make every effort to enroll minority and women trainees (e.g., by conducting systematic and direct recruitment through public and private sources likely to yield minority and women trainees) to the extent that such persons are available within a reasonable area of recruitment. The contractor will be responsible for demonstrating the steps that have been taken in pursuance thereof, prior to a determination as to whether the contractor is in compliance with this Training Special Provision. This training commitment is not intended, and shall not be used, to discriminate against any applicant for training.

No employee shall be trained under this Special Provision in any classification in which he or she has successfully completed a training course leading to journeyworker status or in which he or she has been employed as a journeyworker. The contractor should satisfy this requirement by including appropriate questions in the employee application or by other suitable means. Regardless of the method used the contractor's records should document the finding in each case.

The minimum length and type of training for each classification will be as established in the training program selected by the contractor and approved by the Massachusetts Department Of Transportation and the Federal Highway Administration. The Massachusetts Department Of Transportation and the Federal Highway Administration shall approve a program if it is reasonably calculated to meet the equal employment opportunity obligations of the contractor and to qualify the average trainee for journeyworker status in the classification concerned by the end of the training period. Furthermore, apprenticeship programs registered with the U.S. Department of Labor, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau and training programs approved but not necessarily sponsored by the U.S. Department of Labor, Manpower Administration, Bureau of Apprenticeship and Training shall also be considered acceptable provided it is being administered in a manner consistent with the equal employment obligations of Federal-aid highway construction contracts. Approval or acceptance of a training program shall be obtained from the State prior to commencing work on the classification covered by the program. It is the intention of these provisions that training is to be provided in the construction crafts rather than clerk-typist or secretarial-type positions. Training is permissible in lower level management positions such as office engineers, estimators, timekeepers, etc. where the training is oriented toward construction applications. Training in the laborer classification may be permitted provided that significant and meaningful training is provided and approved by the Federal Highway Administration division office. Some offsite training is permissible as long as the training is an integral part of an approved training program and does not comprise a significant part of the overall training.

**Reimbursement**

Under these Training Special Provisions, reimbursement will be as follows:

The Contractor will only be reimbursed 80 cents for each hour of on the job training as specified in the approved Training Program.

The Contractor is advised and encouraged that it may train additional persons in excess of the number specified and will be reimbursed as stated above. Reimbursement will be made even though the contractor receives additional training program funds from other sources, provided such other source does not specifically prohibit the contractor from receiving other reimbursement.

If less than full training specified in the approved training programs is provided, payment to the contractor will be made at a rate of 80 cents for each hour of training completed under this contract. However, no payment shall be made to the contractor if either the failure to provide the required training, or the failure to hire the trainee as a journeyworker, is caused by the contractor and evidences a lack of good faith on the part of the contractor in meeting the requirements of this Training Special Provision.

**Payment**

Trainees will be paid:

1. Percentage (%) of the journeyworker's rate as provided in the existing programs approved by the Department of Labor or Transportation as of September 15, 1970.
2. For journeyworker programs submitted by the Contractor and approved by Massachusetts Department Of Transportation and the Federal Highway Administration at least 60 percent of the appropriate minimum journeyworker's rate specified in the contract for the first half of the training period, 75 percent for the third quarter if the training period, and 90 percent for the last quarter of the training period.
3. For skilled laborer programs, the minimum starting wage rate of unskilled laborer. At the conclusion of training, he or she will be paid the minimum wage rate of the Classification for programs submitted by the Contractor and approved by the Massachusetts Department Of Transportation and the Federal Highway Administration.
4. For the purposes of meeting the legal requirements of State Prevailing Wage Law, please be advised that no person may be paid the Apprentice wage rate as listed on a MA Prevailing Wage Rates schedule, unless that person and program is registered with the Department of Labor Standards/Division of Apprentice Standards (DLS/DAS). Any person or program not registered with DLS/DAS, regardless of whether or not they are registered with any other federal, state, local, or private entity must be paid the journeyworker's rate for the trade.

The contractor shall provide each trainee with a certification showing the type and length of training satisfactorily complete.

The contractor will provide for the maintenance of records and furnish periodic reports documenting his performance under this Training Special Provision.

Form FHWA-1409, Federal-aid Highway Construction Contracting Semi Annual Training Report, shall be submitted as per instructions on the Form.

\*\*\* 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: MA20250021 03/21/2025

Superseded General Decision Number: MA20240021

State: Massachusetts

Construction Type: Highway

County: Middlesex 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).

|                               |                            |
|-------------------------------|----------------------------|
| If the contract is entered    | . Executive Order 14026    |
|                               |                            |
| into on or after January 30,  | generally applies to the   |
|                               |                            |
| 2022, or the contract is      | contract.                  |
|                               |                            |
| renewed or extended (e.g., an | . The contractor must pay  |
|                               |                            |
| option is exercised) on or    | all covered workers at     |
|                               |                            |
| after January 30, 2022:       | least \$17.75 per hour (or |
|                               |                            |
|                               | the applicable wage rate   |
|                               |                            |
|                               | listed on this wage        |
|                               |                            |
|                               | determination, if it is    |
|                               |                            |
|                               | higher) for all hours      |
|                               |                            |



|                     |                  |
|---------------------|------------------|
| Modification Number | Publication Date |
| 0                   | 01/03/2025       |
| 1                   | 03/21/2025       |

\* ELEC0103-007 03/01/2025

|                  |          |         |
|------------------|----------|---------|
|                  | Rates    | Fringes |
| ELECTRICIAN..... | \$ 64.26 | 36.99   |

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ENGI0004-026 12/01/2024

|                          |          |         |
|--------------------------|----------|---------|
|                          | Rates    | Fringes |
| POWER EQUIPMENT OPERATOR |          |         |
| Group 1.....             | \$ 57.03 | 33.20   |
| Group 2.....             | \$ 56.40 | 33.20   |

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; Gradall; Loader; Paver (Asphalt, Aggregate, and Concrete)  
 Group 2: Bulldozer; Grader/Blade; Milling Machine; Roller

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IRON0007-031 03/16/2024

|   |          |         |
|---|----------|---------|
|   | Rates    | Fringes |
| IRONWORKER (ORNAMENTAL, REINFORCING, AND STRUCTURAL)..... | \$ 54.68 | 36.48   |

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LABO0039-002 06/01/2018

|  | Rates    | Fringes |
|--|----------|---------|
| LABORER  |          |         |
| Asphalt, Includes Raker,<br>Shoveler, Spreader and<br>Distributor..... | \$ 33.50 | 22.92   |
| Landscape.....   | \$ 33.25 | 22.92   |

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PAIN0035-023 07/01/2024

|                      | Rates    | Fringes |
|----------------------|----------|---------|
| PAINTER (Steel)..... | \$ 56.76 | 36.00   |

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SUMA2014-011 01/11/2017

|   | Rates    | Fringes |
|---|----------|---------|
| CARPENTER, Includes Form Work....                     | \$ 47.93 | 19.46   |
| CEMENT MASON/CONCRETE FINISHER...                     | \$ 56.70 | 21.08   |
| LABORER: Common or General.....                       | \$ 36.58 | 19.40   |
| LABORER: Concrete Saw (Hand<br>Held/Walk Behind)..... | \$ 41.78 | 18.37   |
| LABORER: Guardrail<br>Installation.....               | \$ 37.70 | 15.37   |
| OPERATOR: Crane.....                                  | \$ 57.61 | 0.00    |
| OPERATOR: Forklift.....                               | \$ 64.67 | 0.00    |
| OPERATOR: Mechanic.....                               | \$ 48.14 | 17.02   |
| OPERATOR: Piledriver.....                             | \$ 44.46 | 16.94   |
| OPERATOR: Post Driver<br>(Guardrail/Fences).....      | \$ 41.49 | 23.07   |

|   |          |       |
|---|----------|-------|
| PAINTER: Spray (Linestriping).....  | \$ 40.87 | 13.86 |
| PILEDRIVERMAN.....  | \$ 45.65 | 23.33 |
| TRAFFIC CONTROL: Flagger.....   | \$ 23.00 | 20.44 |
| TRAFFIC CONTROL:<br>Laborer-Cones/<br>Barricades/Barrels -<br>Setter/Mover/Sweeper..... | \$ 44.49 | 12.41 |
| TRUCK DRIVER: Concrete Truck.....   | \$ 33.69 | 15.79 |
| TRUCK DRIVER: Dump Truck.....   | \$ 38.92 | 9.73  |
| TRUCK DRIVER: Flatbed Truck.....  | \$ 48.53 | 0.00  |

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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)).

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

#### Union Rate Identifiers

A four-letter identifier beginning with characters other than "SU", "UAVG", ?SA?, or ?SC? denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union

whose collectively bargained rate prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates in the collective bargaining agreement (CBA) governing the classification.

#### Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE: UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

#### Survey Rate Identifiers

The ""SU"" identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

?SU? wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

#### State Adopted Rate Identifiers

The ""SA"" identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications

and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

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#### WAGE DETERMINATION APPEALS PROCESS

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

- a) a survey underlying a wage determination
- b) an existing published wage determination
- c) an initial WHD letter setting forth a position on a wage determination matter
- d) an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to [davisbaconinfo@dol.gov](mailto:davisbaconinfo@dol.gov) or by mail to:

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

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations.

Requests can be submitted via email to [BCWD-Office@dol.gov](mailto:BCWD-Office@dol.gov)  
or  
by mail to:

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

2) If an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7).

Requests for review and reconsideration can be submitted via email to [dba.reconsideration@dol.gov](mailto:dba.reconsideration@dol.gov) or by mail to:

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

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

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

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

END OF GENERAL DECISION"

DOCUMENT A00801

**SPECIAL PROVISIONS**

**BILLERICA**

**Federal Aid Project No. STP-0034(025)X  
Intersection Improvements at Boston Road (Route 3A), Lexington Street  
and Glad Valley Road**

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**

The work consists of but is not limited to bicycle, pedestrian, roadway and traffic improvements along a section of Boston Road (Route 3A), from Tower Farm Road southerly to Locke Road, in the Town of Billerica. The work primarily consists of full depth roadway reconstruction, widening, pavement fine milling and overlay, sidewalk reconstruction, curb ramps, installation of new granite curb, stormwater improvements, signs and pavement markings, street lighting, all temporary traffic control, and other various items to complete the improvements. The work also includes modifying the cross-section of the roadway to incorporate on-road buffered bicycle lanes, installing new traffic signals at the intersections of Glad Valley Drive and Lexington Road, and removal of a small section of connector roadway between Lexington Street and Glad Valley Road. The work also includes town water main upgrade within project limits and other incidental items included in the contract documents.

All work under this Contract shall be done in conformance with the *2025 Standard Specifications for Highways and Bridges*, the *Supplemental Specifications* contained in this book, the *Construction Standard Details* in effect as of March 12, 2025, the *1990 Standard Drawings for Signs and Supports*, the *2015 Overhead Signal Structure and Foundation Standard Drawings*, the *2009 Manual on Uniform Traffic Control Devices (MUTCD) with Revisions 1, 2, and 3* and the *November 2022 Massachusetts Amendments to the MUTCD*, the *1968 Standard Drawings for Traffic Signals and Highway Lighting*, the latest edition of *The American Standard for Nursery Stock*, the Plans and these Special Provisions.

## **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.

#### **Paragraph 4**

Asbestos Liability Insurance shall be obtained for this project. The Contractor and the Massachusetts Department of Transportation 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](mailto:massdotSpecifications@dot.state.ma.us) The MassDOT project file number and municipality is to be placed in the subject line.

## **PUBLIC PARTICIPATION**

The Contractor shall support MassDOT by preparing documents, presentations, and assisting in updating the Project website required for communicating Project information to the public.

The Contractor will be required to hold a public information meeting (PIM) thirty (30) days prior to the commencement of construction activities and major traffic phase changes. The PIM shall be coordinated with MassDOT and shall specifically address traffic management, upcoming construction activities and other issues as needed.

This effort shall be coordinated with MassDOT's Construction Project Manager. The Contractor responsibilities shall include:

- Preparing meeting notices
- Attending Public Meetings
- Preparing graphics and other visual aids for presentation at Public Meetings
- Providing construction photographs and video footage of Project activities for posting on the Project website immediately after completion of milestones (such as completion of substructure, superstructure erection, Phase I construction, etc.)
- Advisories
- Traffic updates and alerts
- Prepare detour maps of each detour route for use on the website and distribution to media, stakeholder groups, etc.

The Contractor shall have no claim for additional costs or delays associated with attending these PIMs. Contractor shall at a minimum be responsible for attending the PIMs, providing presentation materials/updates as they relate to construction schedule, traffic impacts (including detours), abutter impacts, and answering any questions from the Public as they relate to the Contractor's planned operations.

The public participation effort will be coordinated with MassDOT's Construction Project Manager and MassDOT Communications and all standard protocols, Title VI of the Civil Rights Act of 1964, and guidance in the MassDOT Public Participation Plan will be followed.

## **BUILD AMERICA BUY AMERICA PREFERENCE**

On Federally-aid projects the Buy America (23.CFR § 635.410) and Build America, Buy America Act. requires the following,

- (1) all iron and steel used in the project are produced in the United States--this means all manufacturing processes, from the initial melting stage through the application of coatings, must occur in the United States. Foreign steel and iron can be used if the cost of the materials does not exceed 0.1% of the total Contract cost or \$2,500, whichever is greater. The action of applying a coating to a covered material (i.e., steel and iron) is deemed a manufacturing process subject to Buy America. Coating includes epoxy coating, galvanizing, painting and any other coating that protects or enhances the value of a material subject to requirements of Build America, Buy America. Steel used for temporary support of excavation, including H piles, soldier piles, and sheeting when the steel is required to be left in place is subject to requirements of Build America, Buy America. Temporary steel, shall remain in place when it falls within the influence zone of the soil supporting any structure or railroad tracks.
- (2) all manufactured products used in the project are produced in the United States—this means the manufactured product was manufactured in the United States and
- (3) all construction materials are manufactured in the United States—this means that all manufacturing processes for the construction material occurred in the United States. “Construction materials” includes an article, material, or supply—other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives—that is or consists primarily of:
  - non-ferrous metals,
  - plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables),
  - glass (including optic glass),
  - lumber; or
  - drywall.

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

All articles, materials, and supplies should be classified as an iron or steel product, a manufactured product, or another product as specified by law or in 2 CFR part 184 (such other products specified by law or in 2 CFR part 184 include “excluded materials” and “construction materials”); an article, material, or supply must not be considered to fall into multiple categories.

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

## **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.

## **SHOP DRAWING SUBMITTAL** (Supplementing Subsection 5.02)

The following is a list of items and materials that require shop drawing approval for traffic items. Also see special provisions for these items and any additional items.

### **Traffic Control Equipment**

- Traffic Signal equipment (catalog cuts)
- Detector splices (catalog cuts)
- Mast Arm design calculations
- Mast Arm hanger assemblies (catalog cuts)
- Emergency Preemption equipment (catalog cuts)
- Rectangular Rapid Flashing Beacon (RRFB) (catalog cuts)

All shop drawing related calculations shall be stamped by a Professional Engineer registered in Massachusetts. Above requirement will be applicable for submission of catalog cuts.

## **BIDDERS LIST**

Pursuant to the provisions of 49 CFR 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.

## **WORK SCHEDULE**

(Supplementing Subsection 8.02)

Except as noted below, work on this project is restricted to 7:30 AM to 4:00 PM, eight-hour day, five-day week with the Prime Contractor and all Subcontractors working on the same shift.

Minimum of one lane in each direction along Boston Road shall be maintain during the hours of 7:00-9:00 AM and 4:00-6:00 PM. Work shall be permitted in areas outside of travel lanes and off the roadway during these periods.

Night work will be allowed for milling and paving operations with prior approval and must be scheduled at least 48 hours in advance to facilitate abutter notifications.

No work shall be done on this contract on Saturdays, Sundays, or Holidays. Work will not be allowed the day before or the day after a long weekend which involves a Holiday without prior approval by the Engineer.

## **PROTECTION OF HISTORIC PROPERTIES**

The Contractor is hereby alerted that Billerica Historical District Commission (BHDC) installed historical sign (STA 123+04 RT) in the existing median between Glad Valley Drive and Lexington Road.

Prior to construction, the Contractor shall coordinate with BHDC regarding the relocation of the sign (Item 874.45) in the proposed median area.

Any damage to the existing sign or structures shall be repaired by the Contractor at his or her own expense.

### **CONCURRENT WORK BY OTHERS WITHIN PROJECT LIMITS**

The Contractor's attention is directed to Project Utilities Coordination (PUC) form and the significant amount of utility relocation/installation work on this Project. Close coordination is required with all utility companies during this Project. The Contractor may work concurrently with the utility companies but must provide them sufficient space to operate unimpeded. The Contractor is required to coordinate his activities with all work by others within and adjacent to the Project limits.

No separate payment will be made for this, but all costs in connection therewith shall be included in the Contract.

### **MATERIALS FOR MAST ARMS**

All materials for traffic signal mast arms shall be steel. The use of aluminum will not be allowed. Mast arms shall be conforming to M8.18.4, B. Steel and as described under Subsection.

### **MATERIALS REMOVED AND STACKED**

*(Supplementing Subsections 580.64, 630.63)*

Materials directed to be removed and stacked which are the property of the Town of Billerica, shall be removed and stacked by the contractor and transported to the town yard at 250 Boston Road in Billerica by the town forces. All materials shall be neatly stacked as directed by the Town of Billerica highway and/or water/sewer superintendents. In addition, all materials stacked shall be signed for by said superintendents.

If the Town of Billerica highway and/or water/sewer superintendents and the Engineer determines that any part of the materials to be stacked are unsuitable for re-use by the Town of Billerica, the Department, or if other owners decide to abandon part or all of their materials, such materials shall become the property of the Contractor and he shall dispose of them away from the site without any additional compensation, but all cost in connection therewith shall be included in the Contract items..

## **ENVIRONMENTAL PERMITTING**

An Order of Conditions has been obtained from the Billerica Conservation Commission under the Wetlands Protection Act for proposed work in and around wetland resource areas. Authorization under Section 404 of the Clean Water Act has been obtained from the US Army Corps of Engineers. If field conditions and/or Contractor-proposed erection, demolition, storage, or other procedures not originally allowed by existing environmental permits 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 either amended or obtained allowing such work. The Contractor must notify the District 4 Highway Director and Resident Engineer in writing at least 60 days prior to desired commencement of the proposed activity. All environmental submittals, including any contact with Local, State, or Federal environmental agencies, must be coordinated with the District 4 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 modify or obtain the environmental permits.

## **ENVIRONMENTAL CONTROLS**

The Order of Conditions has been included in Document A00861.

Payment for work required by the Order of Conditions, unless otherwise provided for, shall be considered incidental to other items, and no additional payment shall be made for this work.

## **MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION FILE NUMBER SIGN**

This project is subject to Massachusetts General Laws, Chapter 131, Section 40 as amended. Signs shall be in accordance with the latest MassDOT Construction Standards. All costs for the manufacture, erection, maintenance, moving, and removal of the signs shall be absorbed by the contractor with no additional compensation other than the contract unit prices.

For this project the Massachusetts Department of Environmental Protection File Number is **109-1551**.

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## **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 and amended March 31, 2023.

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 USFWS No Effect Consistency Letter (see **Document A00870**), whereby it was determined that this Project will have “No Effect” to the NLEB. Therefore, the project has completed Section 7 consultation through the Endangered Species Act, and no AMMs apply to the project.

If the project scope changes (i.e., tree clearing, bridge work), additional review is required by the MassDOT Highway Division’s Environmental Services Section. Contact MassDOT Environmental Services - Wildlife & Endangered Species Unit Supervisor (David Paulson, [david.j.paulson@dot.state.ma.us](mailto:david.j.paulson@dot.state.ma.us), 857-262-3378).

## **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.

## **CURBING AT BACK OF SIDEWALK**

All proposed granite curb at back of sidewalk shall follow construction standard detail E106.3.0 and the Construction Details plan. There shall be a 6” cement concrete block in front and in back of the proposed granite curb at back of sidewalk. The concrete blocks shall be considered incidental to the Granite Curb item and no additional compensation shall be made for the material and labor for it to be installed complete in place.

## **DEWATERING**

The Contractor's attention is directed to construction operations which may occur in wetland areas, streams, culverts at brooks and/or surface or subsurface areas where surface water or groundwater may exist or accumulate. All dewatering and related work shall be conducted in such a manner as to prevent siltation or contamination of any adjacent resource area. Pumping discharge shall not be allowed to enter directly or indirectly into any wetland resource area without prior treatment (filter bags, silt sacks, settling basins, etc.) The Contractor shall include under each pertinent item all labor, materials and equipment necessary to dewater the affected areas for proper installation of the respective items. No additional compensation will be made for dewatering but shall be considered incidental and included in the price for each respective item.

## **SHEETING AND SHORING**

The Contractor is advised that construction operations may require support of excavation and dewatering for the installation of drainage structures; pipes; protection of existing buildings; existing structures and utilities, etc. The Contractor shall submit his/her proposed means and methods of providing support of excavation, including design calculations, and dewatering stamped by a Massachusetts Registered Professional Structural Engineer to the Engineer for review and approval. No separate payment will be made for support of excavation and all labor, materials and equipment necessary to furnish, install, maintain and remove any support of excavation, as required for the safe and proper performance of the work, including stamped design calculations and plans, shall be considered incidental to the Item to which it pertains.

## **STEEL PLATES IN CONSTRUCTION ZONES**

At the end of each working day where trenches in areas of public travel are covered with steel plates, (Ref. subsection 7.09), each edge of such plates shall either be beveled or protected by a slope of 2 feet horizontally to 1 inch vertically. Any temporary patching material may be used to construct the ramps. The cost of steel plates, necessary patching materials, and their maintenance and removal, will be considered incidental to the item involved with no separate payment.

## **NOTIFICATION OF FUNDING SOURCES FOR WORK TO BE PAID BY OTHERS**

This contract has an agreement with the town of **BILLERICA**; whereas when the construction costs for the contract scope exceed the total participating contract bid price by more than ten percent (10%), the **City** shall be responsible for the amount over 110% of the total participating contract bid price.

This contract contains work that shall be paid by the **Town of Billerica**. The said **Town** shall be responsible for construction costs associated with a Non-Participating Agreement with MassDOT.

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## **NOTIFICATION OF FUNDING SOURCES FOR WORK TO BE PAID BY OTHERS**

This Contract contains work that shall be paid by the Town of Billerica. The said Town shall be responsible for construction costs associated with a Non-Participating Agreement with MassDOT.

In addition, this Contract has an agreement with the Town of Billerica, whereas when the construction costs for the contract scope exceed the total participating contract bid price by more than ten percent (10%), the City/Town shall be responsible for the amount over 110% of the total participating contract bid price.

## **NOTICE TO OWNERS OF UTILITIES**

(Supplementing Subsection 7.13)

Written notice shall be given by the Contractor to all public service corporations or municipal and State officials owning or having charge of publicly or privately owned utilities of his intention to commence operations affecting such utilities at least one (1) week in advance of the commencement of such operations. The Contractor shall, at the same time, file a copy of such notice with the Engineer. The Contractor shall ensure that all affected utilities / agencies are notified.

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

<https://www.mass.gov/info-details/utility-contacts-by-district-and-municipality>

Select District 4

Select the Town (Billerica), and then locate the utility

Town officials are shown at website <http://www.mass.gov>

Print “Cities and Towns” in the Search box, then Select Massachusetts **Cities and Towns** link, then select alphabetically the required Town.

The following is the name and addresses of the agency which may be affected and must be notified. Completeness is not guaranteed by the Department. The Contractor shall assure that all affected agencies are notified.

### **BILERICA - POLE DATA**

Municipality – BILLERICA

Pole Responsibility – NATIONAL GRID

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

District Utility/Constructability Engineer

|           |          |             |              |                             |
|-----------|----------|-------------|--------------|-----------------------------|
| County    | District | Contact     | Phone        | Email                       |
| Middlesex | 4        | Ray Stinson | 857-368-4135 | Ray.Stinson@dot.state.ma.us |

**Utility Data**

|                        |              |         |       |     |           |            |
|------------------------|--------------|---------|-------|-----|-----------|------------|
| Electric               |              |         |       |     |           |            |
| Company                | Address      | City    | State | Zip | Updated   |            |
| National Grid Electric | 40 Sylvan Rd | Waltham | MA    |     | 8/23/2024 | 3:07:13 PM |

|             |              |           |                              |
|-------------|--------------|-----------|------------------------------|
| Contact     | Office       | Extension | Email                        |
| Casey Silva | 617-429-7797 |           | casey.silva@nationalgrid.com |

|               |             |         |       |       |            |
|---------------|-------------|---------|-------|-------|------------|
| Gas           |             |         |       |       |            |
| Company       | Address     | City    | State | Zip   | Updated    |
| National Grid | 170 Data Dr | Waltham | MA    | 02451 | 12/19/2023 |

|               |              |           |                                |
|---------------|--------------|-----------|--------------------------------|
| Contact       | Office       | Extension | Email                          |
| Melissa Owens | 781-907-2845 |           | Melissa.Owens@nationalgrid.com |

|                        |                 |         |       |       |           |
|------------------------|-----------------|---------|-------|-------|-----------|
| Company                | Address         | City    | State | Zip   | Updated   |
| Tennessee Gas Pipeline | 8 Anngina Drive | Enfield | CT    | 06082 | 8/17/2010 |

|         |            |              |           |                                       |
|---------|------------|--------------|-----------|---------------------------------------|
| Company | Contact    | Office       | Extension | Email                                 |
|         | David Wood | 860-763-6005 |           | KMEncroachmentsNorth@kindermorgan.com |

|           |                          |         |       |       |           |
|-----------|--------------------------|---------|-------|-------|-----------|
| Telephone |                          |         |       |       |           |
| Company   | Address                  | City    | State | Zip   | Updated   |
| Verizon   | 385 Myles Standish Blvd. | Taunton | MA    | 02780 | 11/8/2013 |

|              |              |           |                            |
|--------------|--------------|-----------|----------------------------|
| Contact      | Office       | Extension | Email                      |
| Karen Mealey | 774-409-3160 |           | karen.m.mealey@verizon.com |

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

Water

| Company       | Address                    | City      | State                          | Zip   | Updated   |
|---------------|----------------------------|-----------|--------------------------------|-------|-----------|
| Billerica DPW | 365 Boston Road - Room G11 | Billerica | MA                             | 01821 | 7/26/2010 |
| Contact       | Office                     | Extension | Email                          |       |           |
| Todd Melanson | 978-671-0957               |           | tmelanson@town.billerica.ma.us |       |           |

Sewer

| Company       | Address                    | City      | State                       | Zip   | Updated   |
|---------------|----------------------------|-----------|-----------------------------|-------|-----------|
| Billerica DPW | 365 Boston Road - Room G11 | Billerica | MA                          | 01821 | 9/20/2024 |
| Contact       | Office                     | Extension | Email                       |       |           |
| Nick Evans    | 978-671-0956               |           | nevans@town.billerica.ma.us |       |           |

Cable

| Company                   | Address                 | City       | State                             | Zip   | Updated |
|---------------------------|-------------------------|------------|-----------------------------------|-------|---------|
| Comcast Cable Corporation | PO Box 6505, 5 Omni Way | Chelmsford | MA                                | 01824 | 8/2018  |
| Contact                   | Office                  | Extension  | Email                             |       |         |
| Wendy Brown               | 978-848-5163            |            | Wendy_Brown@comcast.com 4/22/2024 |       |         |

| Company   | Address                  | City       | State | Zip   | Updated |
|---|--------------------------|------------|-------|-------|---------|
| AT&T / Teleport Communications America, c/o Siena Engineering Group | 50 Mall Road - Suite 203 | Burlington | MA    | 01803 | 15/2014 |

| Contact      | Office       | Extension | Email  |  |  |
|--------------|--------------|-----------|--|--|--|
| Erica Hudson | 781-221-8400 | 7041      | erica.hudson@sienaengineeringgroup.com 7/18/2023 |  |  |

| Company    | Address             | City       | State | Zip   | Updated |
|------------|---------------------|------------|-------|-------|---------|
| FirstLight | 359 Corporate Drive | Portsmouth | NH    | 03801 | 6/2017  |

| Contact      | Office | Extension | Email                            |  |  |
|--------------|--------|-----------|----------------------------------|--|--|
| Keith Mellor |        |           | kmellor@firstlight.net 4/19/2023 |  |  |

| Company      | Address           | City       | State | Zip   | Updated   |
|--------------|-------------------|------------|-------|-------|-----------|
| Crown Castle | 80 Central Street | Boxborough | MA    | 01719 | 1/18/2018 |

| Contact      | Office       | Extension | Email                                  |  |  |
|--------------|--------------|-----------|--|--|--|
| Mark Bonanno | 508 616 7818 |           | mark.bonanno@crowncastle.com 4/19/2023 |  |  |

| Company   | Address               | City      | State | Zip   | Updated   |
|-----------|-----------------------|-----------|-------|-------|-----------|
| Lightpath | 100 Quannapowitt Pkwy | Wakefield | MA    | 01880 | 4/19/2023 |

| Contact         | Office       | Extension | Email  |  |  |
|-----------------|--------------|-----------|--|--|--|
| Jeff Harrington | 617-999-5371 |           | jeff.harrington@lightpathfiber.com 4/19/2023 |  |  |

**NOTICE TO OWNERS OF UTILITIES (Continued)****Fire Alarm**

| Company              | Address       | City      | State | Zip   | Updated   |
|----------------------|---------------|-----------|-------|-------|-----------|
| Billerica Fire Alarm | 8 Good Street | Billerica | MA    | 01821 | 6/21/2013 |

| Contact           | Office       | Extension | Email                         |
|-------------------|--------------|-----------|-------------------------------|
| Joseph Bukoiemski | 978 671 0941 |           | jbukoiemski@billericafire.com |

**DPW**

| Company                    | Address                  | City      | State | Zip   | Updated  |
|----------------------------|--------------------------|-----------|-------|-------|----------|
| Billerica Town<br>Engineer | 365 Boston Road-Room 609 | Billerica | MA    | 01821 | 7/8/2015 |

| Contact       | Office       | Extension | Email                        |
|---------------|--------------|-----------|------------------------------|
| Kelley Conway | 978-671-1300 |           | kconway@town.billerica.ma.us |

**Other**

| Company              | Address      | City     | State | Zip   | Updated   |
|----------------------|--------------|----------|-------|-------|-----------|
| MCI-Verizon Business | P.O. Box 600 | Charlton | MA    | 01507 | 2/22/2017 |

| Contact          | Office       | Extension | Email                        |
|------------------|--------------|-----------|------------------------------|
| Stephen Parretti | 508-248-1305 |           | stephen.parretti@verizon.com |

| Company    | Address      | City      | State | Zip   | Updated   |
|------------|--------------|-----------|-------|-------|-----------|
| Zayo Group | 2 Royce Lane | Westfield | MA    | 01886 | 12/8/2020 |

| Contact       | Office       | Extension | Email                  |
|---------------|--------------|-----------|------------------------|
| Richard Moran | 978-844-7525 |           | richard.moran@zayo.com |

| Company                  | Address           | City    | State | Zip   | Updated    |
|--------------------------|-------------------|---------|-------|-------|------------|
| Raytheon<br>Technologies | 870 Winter Street | Waltham | MA    | 02451 | 10/18/2022 |

| Contact    | Office | Extension | Email         |
|------------|--------|-----------|---------------|
| Doug Flynn |        |           | flynn@rtx.com |

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

| Company                        | Address            | City        | State                                 | Zip   | Updated    |
|--------------------------------|--------------------|-------------|---------------------------------------|-------|------------|
| Verizon Wireless<br>Small Cell | 20 Alexander Drive | Wallingford | CT                                    | 06492 | 10/27/2022 |
| Contact                        | Office             | Extension   | Email                                 |       |            |
| Liz Glidden                    |                    |             | elizabeth.glidden@verizonwireless.com |       | 10/24/2022 |

| Company                              | Address              | City      | State             | Zip   | Updated  |
|--------------------------------------|----------------------|-----------|-------------------|-------|----------|
| Lowell Regional Transit<br>Authority | 115 Thorndike Street | Lowell    | MA                | 01852 | 2/8/2022 |
| Contact                              | Office               | Extension | Email             |       |          |
| David Bradley                        | 978-458-0164 x-205   |           | lowellrta@aol.com |       |          |
| George Anastas                       | 978-452-6161 x-203   |           | ganastas@lrta.com |       |          |

The Contractor will cooperate fully with all utility companies private or public, and will notify all such companies at least twenty-four hours prior to excavating in the vicinity of any utility. It is understood that the Contractor has considered in his bid the existence of the various utilities and that no additional compensation will be allowed for any delays, inconvenience, or damage sustained by him due to any interference by said utilities.

The Contractor shall coordinate his/her work with the work required to be performed by any private utility owner for this project. No additional compensation or time extensions shall be allowed for delays as a result of work required to be performed by a private utility owner.

If a utility pole needs to be held by the utility in order to sustain them securely in place during placement of drainage structures, pipe, mast arms, etc., the Contractor will be solely responsible for all costs charged by the utility owner for this service. All costs in connection shall be included in the unit prices for the various items.

**NATIONAL GRID EMERGENCY TELEPHONE NUMBERS****GAS:**

Emergency: 1-800-233-5325

New Service: 1- 877-696-4743

Customer Support: 1-800-732-3400

**ELECTRIC:**

Outage/ Emergency: 1-800-465-1212

New Service: 1-800-375-7405

Customer Support: 1-800-322-3223

## **PERMITS AND LICENSES** (Supplementing Subsection 7.03)

Before any electrical connections are made the Contractor shall submit copies of the current licenses of all electricians who will perform the electrical work along with a copy of the master electrician's license. Within ten (10) days after Notice to Proceed, the Contractor shall submit a list of the Journeyman Electricians (MA license) who will perform the electrical work in this contract, along with copies of each Journeyman Electrician's current Massachusetts license.

The contractor is responsible for obtain all permits from Town for the electrical work and inspection of completed work.

## **MATERIAL OPTIONS**

The Contractor shall inform the Engineer of his option prior to the installation of the material. Once the option is designated, all material for the option item(s) shall remain the same throughout the job.

| <u>OPTIONS</u>     |   |             |
|--------------------|---|-------------|
| <u>Item Number</u> | <u>Item Description</u>                 | <u>Unit</u> |
| 234.12             | 12 Inch Drainage Pipe-Option            | Foot        |
| 234.15             | 15 Inch Drainage Pipe – Option          | Foot        |
| 234.18             | 18 Inch Drainage Pipe – Option          | Foot        |
| 234.24             | 24 Inch Drainage Pipe – Option          | Foot        |
|                    | <u>Pipe Options</u>                     |             |
|                    | Reinforced Concrete Pipe                |             |
|                    | Corrugated Plastic (Polyethylene) Pipe  |             |
|                    | Corrugated Plastic (Polypropylene) Pipe |             |

## **LOW PROFILE CASTINGS**

The use of low-profile drainage castings (4" frame) is being requested by the town of Billerica at four locations on Boston Road (Route 3A) as part of the subject project. The approval for low-profile drainage castings has been received from the District Highway Director.

Vacuum test pits shall be performed at the locations where low-profile castings are proposed to be used prior to installation and results provided to MassDOT. If a test pit reveals that an 8-inch standard casting can be used due to the watermain being deeper or in a different location as shown on the plans, then the standard 8-inch casting shall be used. The low-profile drainage castings will only be allowed in the four locations as shown on the plans. Any other utility conflicts will need to be resolved without the use of low-profile castings.

Low-profile drainage casting frames shall be fully compatible with Hook Lock Cascade Grates (MassDOT Std. Drawings E 201.7.0 and E 201.7.1) and shall be in full accordance with the MassDOT Standard Specifications, except for height and weight. Low profile drainage castings shall be from a manufacturer on MassDOT's Qualified Construction Materials List. Low-profile castings will be paid for under Item 222.1 with no additional compensation.

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**DRAINAGE** (Supplementing Subsection 7.13)

It shall be the Contractor's responsibility to maintain proper drainage at all times in the areas under construction until the final system is put into use.

If the roadway is to be left at intermediate course over the winter months, only catch basins at low points and those structures identified by the Engineer shall be adjusted to intermediate course grade. Winter pavement grade adjustment of these structures will be paid for under Item 220. Concrete collars will not be necessary for temporary grades.

Before placement of top course material begins, utility structures shall be adjusted to final grade. Utility structures shall be exposed above intermediate course or milled surface grade for not more than 48 hours before placement of surface course material will be required.

Temporary patching material for the ramps shall meet the requirements of Section 472 Hot Mix Asphalt for Miscellaneous Work. The cost of necessary patching materials, and their maintenance and removal, will be considered incidental to the item involved, with no separate payment.

All new pipes and structures within the limits of this contract shall be left in a clean and operable condition at the completion of the work.

It is the responsibility of the Contractor to provide electronic as-built drainage plans indicating all changes made during construction. The plans shall indicate the location of pipes and structures retained, removed, and installed, including invert information. No additional compensation shall be made for the preparation and submittal of as-built drainage plans.

**WATER MAIN**

There is an existing 16 inch Concrete Cylinder Transmission Water Main located along Boston Road within the project limits. The Contractor shall pay special attention while working close to the main and implement provisions acceptable to the Town of Billerica, as necessary, to prevent damage to the main, without additional compensation. The isolated locations of this pipe has been verified by vacuum test by Town and results have been provided in the plan set.

Any test pits or proposed underground infrastructure within 5 feet horizontally or within 2 ft vertically to the main shall be coordinated with Town of Billerica. The vacuum/hydro excavation item shall be used for test pits near the water main as directed by the Engineer.

The water main upgrade from Tuffts Lane to Locke Road (end of the project limit) is part of this contract. The Contractor shall coordinate with Town of Billerica water department before installing related items.

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### **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. The Contractor is responsible for identifying a suitable stockpile location.

### **EQUIVALENT SINGLE AXLE LOADS (ESALS)**

The estimated traffic level to be used for SUPERPAVE HMA mixture designs for this contract, expressed in Equivalent Single Axle Loads (ESALs) for the design travel lane over a 20-year period, is 0.3-10.0 Million 18-kip (80-kn) ESALs.

### **TRUCK SAFETY DEVICES**

(Supplementing Subsection 7.04: Motor Vehicles)

All motor vehicles subject to section 7 of chapter 90 to be operated under this Contract shall be equipped with safety devices as provided therein and in 540 CMR 4.00.

By December 31, 2025, the contractor shall certify to the Registry of Motor Vehicles, in a manner prescribed by the Registrar, that all applicable vehicles are equipped with Lateral Protective Devices, Convex Mirrors, Cross Over Mirror(s) and Back Up Cameras in accordance with the requirements of 540 CMR 4.00.

The Contractor shall provide evidence satisfactory to the Department to demonstrate compliance with the above certification requirement for all applicable vehicles operated under this contract by the Contractor and its subcontractors and vendors in a manner set forth by the Department. Thereafter, the Contractor shall have an affirmative obligation to continue to provide such evidence of compliance on an ongoing basis and no later than 7 days after certification with the Registry of Motor Vehicles of any additional vehicles operated under this contract by the Contractor and its subcontractors and vendors.

Non-compliance with respect to a vehicle that is subject to 540 CMR 4.00 may subject the Contractor to statutory fines as established in M.G.L. c. 90, § 7 and/or contractual remedies up to and including termination of the contract.

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## **VALUE ENGINEERING CHANGE PROPOSAL**

This Subsection defines the conditions and requirements which apply to Value Engineering Change Proposals (“VECPs”). The purpose of this provision is to encourage the Contractor to propose changes in certain project requirements that will maintain the project’s functional requirements at a savings in contract time, contract price, or both. The net savings obtained by using a VECP that meets the conditions and requirements set forth here will be shared by the Contractor and MassDOT.

VECP’s under this provision are to be initiated, developed and submitted to MassDOT by the Contractor. The VECP must show the contemplated changes to the Drawings, Specifications and other requirements in the Contract. When a VECP submitted pursuant to this section is fully accepted by MassDOT, the VECP will be implemented by the Contractor and paid using the current cost and resource loaded schedule. Contractor shall demonstrate that the VECP is equal to, or better than, the original design or material; that there is an interest in public safety within the VECP; that there is a life-cycle cost benefit; and/or that end users will benefit from the shortened schedule. VECPs shall be consistent with the MassHighway/MassDOT Standard Specifications for Highways and Bridges and other applicable reference documents and directives. Any proposed deviation from these documents will need to be clearly identified in the VECP Proposal Documents, and must be approved by MassDOT’s Chief Engineer before accepting this VECP.

- A. In order to be considered for MassDOT review each VECP shall:
1. Be clearly labeled pursuant to this Subsection;
  2. Yield a net savings at least two hundred and fifty thousand (250,000.00) Dollars and/or a net saving of contract completion duration of at least three (3) months;
  3. The proposed changes to contract items must:
    - a. maintain the specified items’ required functions (service life, reliability);
    - b. meet applicable safety regulations and codes;
    - c. material substitutions must be in accordance with DOT prequalified/preapproved products and must be tested in accordance with standard material specs/testing methods ( and considering all relevant environmental, load, and other relevant factors);
    - d. show economy of operation, ease of maintenance, ease of construction, and necessary standardized features and appearance; and
  4. Shall not require an extension of Contract Time or Contract Milestones, with the exception of cases when there are anticipated significant cost saving.

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**VALUE ENGINEERING CHANGE PROPOSAL** (Continued)

The thresholds above are considered to be a general guideline. MassDOT will consider VECPs outside of these thresholds if a significant benefit is demonstrated. Additionally, notwithstanding this VECP process, MassDOT will consider minor revisions in the form of a Contract Modification.

Further, any VECP submitted shall be in sufficient detail to clearly define the proposed change. The Contractor's failure to provide information of the type, detail and in a format to facilitate the MassDOT's review, may be grounds for rejection of the VECP. Additionally, the Contractor will not be entitled to any equitable adjustment or increased Time, due to any aspect of any of the proposed VECP including permitting, right of way, utility coordination or delayed responses by MassDOT. If, after the progression of the work associated with the executed Contract Modification for the VECP, any additional costs are realized by the Contractor or any of the sub-consultants, sub-contractors, or suppliers, the Contractor shall be obligated to pay for any and all costs.

- B. The following initial items shall be provided by the Contractor for MassDOT's review. *Items 1-6 need to be submitted prior to the start of MassDOT's review of the VECP and item 7 is an important consideration for the pricing of the VECP and the timeline of the proposed VECP schedule.*
1. ***VECP Description:*** A description of the difference between the existing and the proposed Contract requirements, and the comparative advantages and disadvantages of each;
  2. ***VECP Change Listing:*** A listing of the Contract requirements that will need to be changed, modified, or reviewed as well as the proposed Contract document changes in the Instructions to Bidders, Contract, Standard Specifications, General Requirements and Special Provisions required by the VECP.
  3. ***Construction Schedule Update:*** Any changes in the Contract Time(s) or Contract Milestone(s), that will result from acceptance of the VECP, shall be accompanied by a contemporaneous schedule analysis (*i.e., the Contractor's baseline schedule submission, all past/required monthly schedule updates, a detailed assessment of all past delays, and a resource loaded Critical Path Method schedule as specified in Section 8.0 / Subsection 8.02 of this Contract*) of the projected Work that remains including the proposed VECP related schedule changes (*inclusive of the timeline to review accept the VECP and the timeline for implementing the design changes*) in the remaining work. This shall be submitted in the form of a Proposal Schedule until the VECP has been formally accepted. Note: All of this information is to be updated, recertified, and formally accepted by MassDOT before final acceptance of this this VECP is issued.

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**VALUE ENGINEERING CHANGE PROPOSAL** (Continued)

4. ***Date for MassDOT's Acceptance:*** A statement that clearly justifies the date by which the VECP must be accepted to obtain the maximum price reduction, noting any effect upon the Contract Time(s) and/or Contract Milestone(s). This statement must include a narrative that demonstrates the most recent construction schedule has been utilized to justify that proposed acceptance date (*e.g. "in order to start to fabricate critical materials, authorization must be provided to work on the shop drawings by no later than [date]"*). The Contractor should allow for at least sixty (60) to ninety (90) days for acceptance by MassDOT once all of the VECP documentation has been provided. Acceptance shall mean that MassDOT has received a finalized and executed contract modification. However, this is a proposed Contract change.

The Contractor is fully obligated to progress the Work of the original Contract and MassDOT is not liable for any delays or costs that may occur in the review phase of any VECP proposal.

5. ***Cost and Savings Estimates:*** A detailed estimate of the anticipated net savings, calculated as follows:
- a. ***Original Scope:*** Isolate the cost of performing the original contract construction activities, in accordance with the original Contract Documents, as originally bid by the Contractor, that are anticipated to be superseded by the VECP. *This cost is to include any original contract scope that is anticipated to be altered or eliminated by the VECP such as, shop drawing preparation, inspection work, testing, maintenance of traffic, or any other original contract costs, that have yet to have been performed at the time of this VECP submission.*
  - b. ***New VECP Scope:*** Calculate the cost of performing the comparable construction activities associated with the VECP.
  - c. ***Contractor's Engineer & Inspection:*** Calculate the cost of engineering, inspection, and design work by the Contractor's Engineer/Designer. This should be a realistic estimate of the costs of any required engineering, design and review work by the Contractor's Engineer.
  - d. ***MassDOT's Costs:*** MassDOT's estimate of costs to perform engineering/design reviews, cost estimate reviews, schedule reviews, and any other administrative costs to review and recommend implementation of the proposed VECP. (*including all anticipated increased costs to MassDOT on other Contracts and all anticipated follow-on increased costs to MassDOT, if any*) as provided by MassDOT. MassDOT's estimated costs must be included the VECP calculation and will be provided by MassDOT in support of the VECP evaluation process.
  - e. ***Other Costs:*** Estimated costs associated with any revisions to other project related costs, such as Environmental Permits or Right of Way acquisitions, including other agency or municipality costs, as provided by MassDOT.

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**VALUE ENGINEERING CHANGE PROPOSAL** (Continued)Net Savings:

**The net savings to be split between MassDOT and the Contractor shall be calculated using the items above as follows:  $a - (b+c+d+e) = \text{net savings}$**

6. *The Contractor shall also provide:*

- a. A proposed Change Order, which explains and justifies any required Equitable Adjustment in the Contract Price.
- b. The Contractor's actual costs expended for developing the VECP as of the date of the VECP submission;

7. ***Design Changes and Drawings:*** The costs that are outlined above should be inclusive of the following design and engineering responsibilities.

- a. Design changes shall be prepared and stamped by the Contractor's professional designer and/or engineer. In addition, in the development of the VECP; the Contractor is responsible for anticipating and managing all aspects associated with any VECP design work that must be performed by a licensed Engineer.
- b. The Contractor's engineer must analyze and stamp all components of any aspect of the project that has been redesigned, changed, or altered as a result of this VECP.
- c. The Contractor's engineer shall provide all calculations and supporting design/engineering documentation that was utilized to develop the changes and stamped drawings. These will be used by MassDOT's Designer-of-Record to review the VECP changes. The Contractor is limited to selecting only those engineer's that have been pre-qualified by MassDOT's A&E Board.
- d. MassDOT's Designer-of-Record will review and respond to all completed design submissions related to this VECP within thirty (30) calendar days, unless determined to be a non-critical path item.
- e. MassDOT will be responsible for estimating and managing MassDOT's Designer-of-Record during the VECP review and implementation. Should any significant conflicts arise, between the Contractor's Engineer and MassDOT's Designer-of-Record, the DOT and the Contractor will work expeditiously to resolve the conflict. Should this type of conflict continue for greater than five (5) days, the Contractor is to bear all financial and time related impacts of such delay and must seek to resolve the design conflict, in an acceptable manner to MassDOT. The resolution of this conflict will be funded at the Contractor's expense – exclusive of the net saving that was agreed to at the execution of the contract modification for this VECP.
- f. The Contractor's Engineer may also be required to inspect the construction work. The Contractor is to include such anticipated inspection costs in the initial VECP.

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**VALUE ENGINEERING CHANGE PROPOSAL** (Continued)

- g. MassDOT's Designer of Record will remain the Designer-of-Record for the entire Project. Any costs incurred in the use of MassDOT's Designer-of-Record by MassDOT or Contractor associated with the review of a VECP are to be included in the calculated net savings.
- C. Approval of the VECP shall not occur until a Contract Modification, incorporating the VECP, is issued by MassDOT and properly executed by the Contractor. MassDOT may accept or reject part or all of any VECP at any time prior to an executed Contract Modification for the applicable VECP. The decision of MassDOT, concerning acceptance or rejection of any VECP, shall be final and shall not be subject to dispute resolution.

It is expected that several weeks may go by before the final VECP documentation has been executed with a Contract Modification. Therefore, MassDOT intends to make certain that the initial cost estimate information has not changed before entering into a Contract Modification. As the VECP evaluation process is finalized, and prior to the signed Contract Modification for the VECP, the Contractor and MassDOT must re-certify the current status of the originally proposed cost and/or schedule savings.

Until a contract modification is issued and schedule and cost/savings re-certification is complete and accepted by MassDOT, the Contractor shall remain obligated to perform the Work in accordance with the terms and conditions of the original Contract Documents.

Upon completion of the work associated with the VECP, MassDOT may require verification that the VECP savings has been achieved.

- D. VECPs will be processed (distributed, reviewed, commented upon, accepted or rejected) expeditiously (pursuant to M.G.L. c. 30, § 39R); however, as this is an elective modification to the contract, MassDOT shall not be liable for any delay or cost in the review and acceptance of the VECP. During the review of the VECP, the Contractor remains obligated to progress the original Contract scope, and schedule, as planned; until a Contract Modification, accepting the Contractor re-certified VECP, has been executed by MassDOT.

The Contractor has the right to withdraw part, or all of any VECP, prior to acceptance by MassDOT. Such withdrawal shall be made in writing to the Engineer. The Contractor shall state the period of time, from the date of the initial VECP submittal, that the VECP shall remain valid and feasible. Revision of this validity and feasibility period shall be allowed only by mutual agreement of the Contractor and the Engineer in writing.

If the Contractor desires to withdraw the proposal prior to the expiration of this period for non-technical reason, MassDOT reserves the right to recover all actual costs that have been incurred to MassDOT.

**VALUE ENGINEERING CHANGE PROPOSAL** (Continued)

If the Contractor withdraws the VEC Proposal, MassDOT reserves the right to proceed with the VECP or any portion of the VECP as a normal change and the Contractor waives any right it may have had to share in net savings thereunder.

For purposes of this provision, expiration of the time established by the Contractor for approval shall be considered as withdrawal by the Contractor if MassDOT requests an extension of that time and the Contractor does not provide a written extension.

- E. With regard to unknown conditions or sub-surface work, in general, the expectation is that the Contractor and MassDOT will strive to gain enough knowledge about the risks in order to provide a forward-priced Change Proposal. Therefore, any costs to fully evaluate the proposal, such as additional borings and/or test pits, must be considered in the cost evaluation of whether the VECP is worth pursuing. However, if it is impractical to gather conclusive exploratory information, before the VECP is executed, MassDOT may consider provisions in the VECP that clearly identifies the risk sharing (cost and time) related specifically to the unknown/sub-surface conditions. If these VECP provisions are acceptable to MassDOT they are to include supplemental language to provide a determination of the final savings/cost, and time impacts, no later than 45 days after the sub-surface work is completed. All other aspects of the VECP, unrelated to these Provisions, will be binding upon execution of the VECP.

**2026 FIFA WORLD CUP – BOSTON, MASSACHUSETTS**

The 2026 FIFA World Cup will be held at Gillette Stadium in Foxborough and related events will be held throughout the region. Matches and Fan Fest activities are scheduled from June 11, 2026 through July 19, 2026. MassDOT will impose work restrictions as necessary to minimize traffic impacts during FIFA events when the Contractor's operations could impact vehicular traffic, particularly on interstate highways and major arterials throughout the region and local roads near the event site. No additional compensation will be allowed for work restrictions except as determined under Subsection 8.10

## **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.

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**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.

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**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.

**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.

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**SECTION 722**  
**CONSTRUCTION SCHEDULING**  
**DESCRIPTION**

**722.20 General**

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

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

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

**Type A –**

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

**Type B –**

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

**Type C –**

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

**SECTION 722** (Continued)**Type D -**

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

**EQUIPMENT, PERSONNEL****722.40 General****A. Software Requirements**

The Contractor shall use Primavera P6 computer scheduling software.

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

**B. Scheduler Requirements**

The Scheduler shall be approved by the Engineer.

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

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

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

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

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**SECTION 722** (Continued)

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

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

**B. Schedule Reviews by the Department****1. Baseline Schedule Reviews**

The Engineer will respond to the Baseline Schedule Submission within thirty (30) Calendar Days of receipt providing comments, questions and/or disposition that either accepts the schedule or requires revision and resubmittal. Rejected Baseline Schedules shall be resubmitted within fifteen (15) Calendar Days after receipt of the Engineer's comments.

**2. Contract Progress Schedule / Monthly Update Reviews / Recovery Schedules**

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

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

**722.61 Schedule Content and Preparation Requirements**

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

**A. LOGIC**

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

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

**SECTION 722** (Continued)**B. ACTIVITIES**

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

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

**SECTION 722** (Continued)

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

**C. EARLY AND LATE DATES**

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

**D. DURATIONS**

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

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**SECTION 722** (Continued)

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

**E. MATERIALS ON HAND**

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

**F. ACTIVITY DESCRIPTIONS**

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

**G. ACTIVITY IDENTIFICATION NUMBERS**

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

**H. ACTIVITY CODES**

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

**I. CALENDARS**

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

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

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

**SECTION 722** (Continued)

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

**J. FLOAT**

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

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

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

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

**SECTION 722** (Continued)**L. NOT TO BE USED IN THE CONTRACTOR'S CPM SCHEDULE**

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

**722.62 Submittal Requirements**

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

Each monthly Contract Progress Schedule submittal shall be uniquely identified.

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

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

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

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

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

**A. Narratives**

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

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

**SECTION 722** (Continued)

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

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**SECTION 722** (Continued)**B. CPM Bar Charts**

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

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

**C. Detailed Activity Schedule Comparisons**

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

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

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

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

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

**E. Resource Graphs (Type A only)**

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

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**SECTION 722** (Continued)**F. Projected Spending Reports**

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

**722.63. Progress Schedule Requirements****A. Baseline Schedule**

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

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

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

**B. Interim Progress-Only Schedule Submissions**

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

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**SECTION 722** (Continued)**C. Contract Progress Schedules / Monthly Updates**

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

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

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

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

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

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

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**SECTION 722** (Continued)**D. Short-Term Construction Schedule**

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

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

**722.64 Impacted Schedule Requirements****A. Notice of Delay**

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

**B. Time Entitlement Analysis**

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

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

**SECTION 722** (Continued)

TEAs shall be submitted:

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

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

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

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

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

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

**C. Recovery Schedules**

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

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

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

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**SECTION 722** (Continued)**D. Proposal Schedules**

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

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

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

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

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

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

**E. Disputes**

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

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

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**SECTION 722** (Continued)**722.65 Schedule Type D Requirements**

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

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

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

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

**A. Bar Chart Schedule**

A Bar Chart that shall include the following:

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

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

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**SECTION 722** (Continued)**B. Short-Term Construction Schedule**

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

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

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

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

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

**SECTION 722** (Continued)**COMPENSATION****722.80 Method of Measurement****Schedule of Operations (Type A, B and C)**

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

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

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

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

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

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

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

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

**Schedule of Operations (Type D)**

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

**SECTION 722** (Continued)

**722.81 Basis of Payment**

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

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

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

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

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

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

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

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

**722.82 Payment Items**

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

**ITEM 101.****CLEARING AND GRUBBING****ACRE**

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

All trees, stumps, shrubs, and brush between the existing edge of the roadway and proposed top or bottom of slope or tree clearing & grubbing limits as shown on the plans shall be removed under Item 101.

Also include all tree clearing for utility pole relocation and overhead wire clearance as shown on the plans.

Grind stumps near walls, buildings, fences, etc. before removing to avoid any damage. Tree removal shall include the removal of all stumps.

The work also includes removal off all trees, stumps, shrubs, and brush in median between Lexington Road and Glad Valley Drive under this item.

Trees called out to be removed outside the clearing and grubbing limit, as shown on the plans, will be paid for under Item 103. or 104. except tree or shrub less than 9 inches in diameter. Anything less than 9 inches will be paid under Clearing and Grubbing, excavation or borrow pay items (typical).

No tree including trees in clear & grub area shall be removed prior to approval of the Engineer and the Town of Billerica. The removal of all trees shall be coordinated with the Town of Billerica prior to removal.

The method of disposal of all materials shall be per subsection 101.63 of the Standard Specifications and shall be approved by the Engineer. All methods of disposal shall be accomplished in accordance with all applicable Federal, State and local ordinances. Burning on-site will not be permitted.

Method of Measurement and Basis of payment shall be in accordance with Subsection 101.80, and 101.81 and the following:

All trees, tree stumps, regardless of size, that fall within an area to be cleared and grubbed will not be measured separately for payment.

Item 101. will be paid for at the contract unit price per acre, which price shall include all labor, materials, equipment, services of a certified arborist, the removal of all trees, stump, any previously fallen trees, and brush Undergrowth, within the designated area as shown on the plan, and incidental costs required to complete work

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

The work under this item shall conform to the relevant provisions of Subsection 101 of the Standard Specifications and the following.

The work consists of removing all dead, dying, broken and certain other limbs and branches as described hereinafter and the removal of all stubs of limbs and branches from all designated trees located within the limits work in this contract and the satisfactory disposal of all such removed debris. Also include coordination and trimming of trees for propose utility pole, overhead wires and guy wires for relocated utilities for the project.

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 work under this item will be performed or supervised by the Massachusetts Certified Arborist.

Contractor shall be required to provide a crew, consisting of a bucket truck with operator and grounds man 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.

**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 these Items shall be incidental to this item.

Incidental to this item, the Contractor shall provide to the Engineer 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 office for the length of the Contract.

**DESCRIPTION OF WORK**

**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.

**ITEM 102.2 (Continued)**

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 directed 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 branches extending directly below a street luminaire as to limit the light reaching the street or path/sidewalk surfaces shall be removed and all branches shall be cut back to afford a minimum of 5 foot clearance on all sides of the luminaire. The path/sidewalk surface shall be considered as the area from the edge of the roadway surface to the edge of the path/sidewalk surface farthest from the roadway.

Recognized tree surgery practices direct that all limbs and branches which require removal and all stubs regardless of age be cut NEARLY flush, either to a union with the next larger sound limb, or branch, or NEARLY flush to the trunk of the tree.

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 will be paid for at the Contract unit price per Lump Sum, which price shall include all labor, materials, equipment, apparatus, tools, submittals, and incidental costs required to complete the work.

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**ITEM 102.511    TREE PROTECTION – ARMORING AND PRUNING                      EACH**

The work under this item shall conform to the relevant provisions of Sections 771 of the Standard Specifications and the following:

Tree protection – armoring and pruning shall be used for instances where construction activity (the use of heavy equipment), comes within proximity to potentially damage tree trunk(s) or limbs.

The work shall include the furnishing and installing of temporary tree trunk protection, minor limb pruning, or removal of lower tree limbs to prevent injury to the tree from construction equipment and activities; as shown on the Drawings; and/or as required by the Engineer.

**REFERENCES**

If requested, the Contractor shall provide to the Engineer one copy of the latest edition of the American National Standards Institute (ANSI) A300 Standard Practices for Tree, Shrub, and Other Woody Plant Maintenance: Part 1-Pruning and Part 5-Construction Management Standard. Provision of reference shall be incidental to this item.

**MATERIALS**

Trunk armoring shall be such that it prevents damage to the trunk from construction equipment. Material used for trunk armoring or mounting shall be such that installation and removal shall not damage the trunk.

Acceptable trunk armoring materials shall include two by four (2x4) wood cladding, mounted with wire or metal strapping, or when duration of construction activities is less than three months, slotted corrugated plastic pipe, mounted with duct tape. Eight (8) once untreated burlap shall be used to wrap the tree trunk prior to installation of cladding.

Alternative armoring methods or materials may be acceptable if approved by the Engineer.

The height of tree trunk cladding shall be measured from the base of the tree (including root flare) to the bottom of the first branch, or to a height of eight (8) feet, or as may be required by the Engineer.

**METHODS OF WORK**

Prior to construction activities, the Engineer, Contractor, and the Arborist (if item is included in the contract), shall review trees noted on the Drawings to be protected. Final decision and selection of trees to be armored and/or pruned shall be per the Engineer.

Care shall be taken to avoid damage to the bark during installation and removal of armoring. Trunk armoring shall be maintained such that it is effective for as long as required or replaced when materials are found to be damaged or ineffective, as determined by the Engineer. Replacement, if required, shall be incidental to the work. Armoring shall be removed immediately upon completion of work activities adjacent to the protected tree(s).

**ITEM 102.511 (Continued)**

Pruning of limbs shall conform to the techniques and standards of the most recent ANSI A300 standards.

**DAMAGES OR LOSS**

If trees designated for protection under this item are damaged, including root damage from unapproved trespassing onto the root zone, the Contractor shall, at his own expense, secure the services of an Arborist, described in Item 102.55. The Arborist shall be approved by MassDOT.

If, based on the recommendation of the Arborist, the Engineer determines that damages can be remedied by corrective measures, such as repairing trunk or limb injury; soil compaction remediation; pruning; soil injection fertilization; and/or watering; the damage shall be repaired as soon as possible, within the appropriate season for such work and according to industry standards.

If, based on the recommendation of the Arborist, the Engineer determines that damages are irreparable, or that the damages are such that the tree is sufficiently compromised to pose a future safety hazard, the tree shall be removed. Tree removal shall include cleanup of all wood, grinding of the stump to a depth sufficient to plant a replacement tree or plant, removal of all chips from the stump site, and filling the resulting hole with topsoil. Such tree removal(s), grinding, debris removal, and topsoil filling, shall be at the Contractor's expense.

Tree removal from improper or inadequate tree protection shall result in the Engineer assessing the Contractor monetary damages consistent with industry standards for assessed value and/or replacement.

**METHOD OF MEASUREMENT AND BASIS OF PAYMENT**

Item 102.511 will be measured and paid at the contract unit price per EACH tree to be armored and pruned. This will include full compensation for all labor, equipment, materials, and incidentals for the satisfactory completion of the work and the subsequent removal and satisfactory disposal of the protective materials upon completion of the contract or as required by the Engineer.

Payment for work under this item will be scheduled as follows:

- 40% of the value shall be paid upon installation of trunk armoring and completion of pruning work, if required.
- 60% of the value shall be paid at the end of construction operations that would potentially damage the tree and after protection materials have been removed and properly disposed of by the Contractor. In the event of repairable damages, payment shall be made after the completion of remediation measures.

**ITEM 102.511 (Continued)**

No separate payment will be made for costs of remedial actions, including Arborist services, tree removal, but all costs in connection therewith shall be included in the Contract unit price bid.

Tree damages assessed, due to lack of or improper tree and plant protective measures being taken, shall be deducted from the contract price of the work.

**ITEM 102.521****TREE AND PLANT PROTECTION FENCE****FOOT**

The work under this Item shall conform to the relevant provisions of Sections 644 and 771 of the Standard Specifications and the following:

Work under this item shall consist of furnishing, installing, and maintaining tree and plant protection fence(s) in a vertical and taut position; removing and resetting fencing as may be required; and final removal of protection fence(s) at the completion of construction activities, or as otherwise required by the Engineer.

The purpose of the fencing is to signify a construction work-free zone and physical barrier, thereby preventing damage to tree roots, tree trunks, soil, and all other vegetation within this delineated Tree and Plant Protection Zone (TPPZ), as shown on the Drawings, as required by the Engineer, and as described herein.

Protection shall be for the duration of the construction activities unless otherwise required by the Engineer.

**MATERIALS**

Tree and plant protection fence(s) shall provide a minimum forty-eight (48) inch tall barrier, that remains vertical and taut. The Fence shall be orange plastic safety fence (recommended where high visibility is necessary), or wooden snow fencing, or other approved material. Posts and anchoring materials shall be incidental to the work.

Per requirements of the Engineer, additional posts, deeper post depths, and/or additional attachments shall be used if the fabric or fence sags, leans or otherwise is not providing visible or physical protection to the TPPZ.

**REFERENCES**

If requested, the Contractor shall provide to the Engineer one copy of the American National Standards Institute (ANSI) A300 Standard Practices for Tree, Shrub, and Other Woody Plant Maintenance Part 1, Pruning and Part 5, Construction Management Standard. Provision of reference shall be incidental to this item.

**ESTABLISHMENT OF THE TPPZ**

Fencing shall be used to delineate and establish the TPPZ, adjacent to construction areas, staging areas, stockpile areas, as shown on the Drawings, and/or as required by the Engineer.

Fencing shall be located as close to the work zone limit and as far from tree trunk(s) and plants as possible to maximize the area to be protected. Fence shall run parallel and adjacent to construction activity to create a barrier between the work zone and the root zone or designated limit of plants and soils to be protected.

**ITEM 102.521 (Continued)**

When construction activities surround (or have the potential to surround) trees or plants to be protected, a circular enclosure shall be used. In these instances, the TPPZ limit shall be the drip line of each tree or as close as possible to the drip line, and/or as shown on the Drawings. The drip line is defined as the outermost limit of tree canopy.

The Contractor shall not engage in any construction activity within the TPPZ without the approval of the Engineer. Activities may include operating, moving, or storing equipment, supplies, or materials; and locating temporary facilities, including trailers or portable toilets. Accessing or traversing the TPPZ shall not be permitted.

**METHOD OF WORK**

TPPZ fencing shall be installed prior to any construction work or staging activities. Fence(s) shall be repositioned where and as necessary for optimum tree and plant protection. Repositioning shall be incidental to this item. TPPZ fencing shall not be moved without prior approval by the Engineer.

The TPPZ shall be protected at all times from compaction of the soil; damage of any kind to trunks, bark, branches, leaves, and roots of all plants; and contamination of the soil with construction materials, debris, silt, fuels, oils, and any chemicals substance.

After construction activities are completed, or when required by the Engineer, fencing, stakes, and other anchoring materials, if any, shall be removed and disposed off-site by the Contractor.

**REQUIRED WORK WITHIN THE TPPZ**

In the event that grading, trenching, utility work, or storage is unavoidable within the TPPZ, the Engineer shall be notified. Measures may be required for tree protection and preservation, including air spading; the use of six (6) inch depth of wood chips or approved matting for root protection; pruning of branches; and/or trunk protection. These protection measures shall be paid under applicable contract items.

Landscaping work specified within the TPPZ shall be accomplished by hand tools. Where handwork is not feasible, with permission of the Engineer, work shall be conducted with the smallest mechanized equipment necessary.

**TREE AND PLANT INJURY OR LOSS**

If the TPPZ is encroached by construction activity without approval, at the discretion of the Engineer, the Contractor may be required to provide a more durable barrier (e.g., Jersey Barriers, chain link fence (if not already in use) to secure the area. Costs of furnishing and installing additional or more durable barrier(s) shall be borne by the Contractor.

In such cases of encroachment, soils shall be considered compacted and tree root injury will be assumed. Action shall be taken as specified below.

**ITEM 102.521 (Continued)**

In the event that trees designated for protection under this item are injured, including root injury from unapproved trespassing onto the root zone, the Contractor shall, at his own expense, secure the services of an Arborist, described under Item 102.55. The Arborist shall be approved by MassDOT.

In the event of spills, compaction or injury, the Contractor shall take corrective action immediately using methods approved by the Engineer, in coordination with the Arborist.

If, based on the recommendations of the Arborist, the Engineer determines that injuries can be remedied by corrective measures, such as repairing trunk or limb injury, soil compaction remediation, pruning, and/or watering; the injury shall be repaired as soon as possible, within the appropriate season for such work, and according to industry standards.

If, based on the recommendations of the Arborist, the Engineer determines that injuries are irreparable, or that the injuries are such that the tree is sufficiently compromised to pose a future safety hazard, the tree shall be removed. Tree removal shall include cleanup of all wood, grinding of the stump to a depth sufficient to plant a replacement tree or plant, removal of all chips from the stump site, and filling the resulting hole with topsoil. Such tree removal(s), grinding, debris removal, and filling, shall be at the Contractor's expense.

Tree removal from improper or inadequate protection of the TPPZ shall result in the Engineer assessing the Contractor monetary damages consistent with industry standards for assessed value and/or replacement.

Shrubs removals from improper or inadequate protection of the TPPZ shall be replaced with plants of similar species and equal size or the largest size plants reasonably available. The Engineer shall approve the size, quality, and quantity of the replacement plant(s). Each replacement shall include a minimum of one year of watering and establishment care, specified under Section 771.

**METHOD OF MEASUREMENT AND BASIS OF PAYMENT**

Tree and Plant Protection Fence will be measured by the FOOT, complete in place, by the length along the top of the fence.

Tree and plant protection fence will be paid for under the contract unit price per FOOT, complete in place and shall include all materials, labor, and equipment required to furnish, install, anchor, maintain, and remove the fence upon completion, as described herein. Posts, temporary footings, anchoring and removal upon completion, shall be incidental to this item.

No separate payment will be made for costs of remedial actions, including addition of more durable barriers, Arborist services, tree or plant removal, shrub replacement and establishment, but all costs in connection therewith shall be included in the Contract unit price bid.

Tree damages assessed, due to lack of or improper tree and plant protective measures being taken, shall be deducted from the contract price of the work.

**ITEM 102.521 (Continued)**

Payment for work under this item will be scheduled as follows:

- Forty (40) percent of the value payment will be made upon installation of fencing.
- Sixty (60) percent of the value payment will be made when fencing materials have been maintained to function as specified, for the intended duration, and removed and disposed off-site at the completion of protection measure requirement.

**ITEM 102.55****ARBORIST****HOUR****DESCRIPTION**

The work under this Item is for the services of a Certified Arborist. Arborist shall be an International Society of Arboriculture (ISA) Certified Arborist or a Massachusetts Certified Arborist. The Arborist shall have at least 10 years of experience in tree care, including tree protection during construction, and shall demonstrate a familiarity with the American National Standards Institute (ANSI) A300 Standard Practices for Tree, Shrub, and Other Woody Plant Maintenance Part 1 Pruning, Part 5 Construction Management Standards, and Part 9 Tree Risk Assessment.

The Arborist's general responsibilities include protecting high priority trees within and adjacent to the project limits, stating areas, and access routes; recommending removal of diseased, damaged or otherwise unhealthy trees that pose a potential safety hazard; evaluating effects of construction on future health of trees close to proposed work; and recommending and/or overseeing tree work and care.

The Arborist for this item shall not be from the same company as the company responsible for selective clearing or tree removal work.

For projects with multiple phases, projects where construction activities (work or stockpiling) shifts, or when otherwise directed by the Engineer, the Arborist shall re-evaluate conditions and provide follow-up recommendations.

**SUBMITTALS**

- Contractor shall submit to the Engineer for approval by MassDOT Landscape Design the qualifications and experience of the Arborist. Submittal shall include copy of current certification and a resume summarizing specific construction experience (including relevant MassDOT projects) for a minimum of five projects.
- Arborist's Report documenting recommendations shall be submitted to the Engineer and an electronic copy forwarded to MassDOT Landscape Design Section. Report shall include the following:

**SCOPE OF WORK**

The Arborist shall be responsible for the following tasks:

- Initial Evaluation and Report
  - recommend and prioritize trees that require removal as appropriate to contract scope, project limits, and project intent;
  - review and modify, if necessary, tree protection measures shown on the drawings
  - review and mark limits of protective fencing for trees and groups of trees to be retained;
  - review and recommend protection measures for high priority trees;
  - submit a marked-up Construction Plan that briefly notes recommendations and decisions made in the field.
  - submit a corresponding report including photo documentation;

**ITEM 102.55** (Continued)

- Oversight
  - direct or execute pruning of branches and/or roots, air spading, and/or other tree care operations
- Special Care
  - oversee tree pruning for health and aesthetics

**METHODS**

Prior to any work, the Arborist shall walk the site with the Contractor, the Engineer, the Town Tree Warden, and, if specified, the MassDOT Landscape Architect, to review trees, limits of construction activities, and other concerns. Where required for proper assessment of tree impacts, limits of work shall be staked or otherwise marked in the field prior to the site walk.

Trees to be removed shall be painted or otherwise marked.

Trees to be retained shall be marked such that it does not mar or damage the tree and such that marker is not easily removed. As applicable to the work and scope of the project, trees designated for removal or to be retained shall be noted on the plan and/or in the arborist's report and photographed.

Trees designated to remain that are damaged or removed by construction activities shall be noted and photographed for inclusion in inspection reports submitted to the Engineer.

**MEASUREMENT AND BASIS OF PAYMENT**

Item 102.55 will be measured for payment by the Hour of time spent onsite.

Item 102.55 will be paid at the contract unit price per hour upon submittal and acceptance of Reports described above.

**ITEM 141.11****TEST PIT FOR EXPLORATION -  
VACUUM EXCAVATION****DAY**

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

This item shall be used for test pits required to locate the concrete 16" water main transmission line within the project limits and any other test pits as deemed necessary by the Engineer.

The work shall also include providing a survey crew to survey the top of the water mains and reporting the results of the test pit.

The Contractor shall provide truck mounted vacuum(hydro) excavation equipment whose purpose is to perform exploratory test pits and other delicate soil removal and excavations. The equipment shall come with experienced operators with a minimum of 5 years' experience operating such equipment around sensitive utilities.

The contractor shall sawcut and remove any pavement or concrete sidewalk surfaces. Once the excavation is complete, the contractor shall utilize the excavated material, when deemed suitable for reuse by the Engineer, to backfill the test hole or gravel borrow shall be used as a backfill material.

The Contractor shall provide a plan to the Engineer showing the horizontal location of the test pit, the water main size, elevation of the top of pipe, as well as the depth to pipe from ground.

Any excess material shall become the property of the Contractor and removed from the site. If additional material is needed, Gravel Borrow shall be provided to top off the excavation and paid for under Item 151.

**METHOD OF MEASUREMENT**

Item 141.11 will be measured for payment by the day based on 8 hours per day. The measurement will be made in minimum half day increment if the vacuum excavation not require for full day. No time will be measured for travel time to the site and any setup or equipment preparation or maintenance.

Time shall only include actual time to sawcut HMA, excavation, survey and backfill. No time will be included under this item for temporary pavement patch.

**BASIS OF PAYMENT**

Item 141.11 will be paid for at the Contract unit price per day, which price shall include all labor, materials, equipment, sawcutting, and incidental costs required to complete the work.

Pavement shall be repaired using Item 472 Temporary Asphalt Patching.

**ITEM 180.01 ENVIRONMENTAL HEALTH AND SAFETY PROGRAM LUMP SUM**

The work shall consist of ensuring the health and safety of the Contractor's employees and subcontracting personnel, the Engineer, their representatives, the environment, and public welfare from any on-site chemical contamination present in air, soil, water and sediment.

The Contractor shall prepare and implement a site-specific Environmental Health and Safety Plan (EHASP) which has been approved and stamped by a Certified Industrial Hygienist (CIH) and includes the preparer's name and work experience. The EHASP shall include appropriate components required by OSHA Standard 29 CFR 1910.120(b) and the Massachusetts Contingency plan (MCP) 310 CMR 40.0018 and must comply with all applicable state and federal laws, regulations, standards and guidelines, and provide a degree of protection and training appropriate for implementation on the project. The EHASP shall be a dynamic document with provision for change to reflect new information, new practices or procedures, changing site environmental conditions or other situations which may affect site workers and the public. The EHASP shall be developed and implemented independently from the standard construction HASP required to work on all MassDOT construction projects.

Health and safety procedures provided by the Contractor shall comply with all the appropriate regulations that address employee working conditions, including but not limited to standards established by OSHA and National Institute for Occupational Safety and Health (NIOSH). Equipment used for the purpose of health and safety shall be approved by and meet pertinent standards and specifications of the appropriate regulatory agencies.

A copy of the most up-to-date version of the EHASP shall be maintained on-site at all times by the Contractor. The on-site copy shall contain the signature of the Engineer and each on-site employee of the MassDOT, Contractor, and Subcontractors involved with on-site activities. The employee's signature on the EHASP shall be deemed prima facie evidence that the employee has read and understands the plan. Updated copies of signature sheets shall be submitted to the Engineer.

The EHASP shall specify a Contractor Site Safety and Health Officer responsible for implementation of the EHASP and to oversee all construction activities, including handling, storage, sampling and transport, which require contact with or exposure to potentially hazardous materials.

The level of protection, required to ensure the health and safety of on-site personnel will be stipulated in the EHASP. The Site Safety and Health Officer shall implement the EHASP based on changing site and weather conditions, type of operation or activity, chemical compounds identified on-site, concentration of the chemicals, air monitoring data, physical state of the hazardous materials, potential duration of exposure to hazardous materials, dexterity required to perform work, decontamination procedures, necessary personnel and type of equipment to be utilized.

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)**

**METHOD OF MEASUREMENT AND BASIS OF PAYMENT**

Preparation and implementation of the Environmental Health and Safety Program, including the monitoring, protection and storage of all contaminated materials, as well as subsequent modifications to the EHASP, will be measured and paid for at the Lump Sum Bid 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.

Personal Protection Level C Upgrade will be measured and paid only upon upgrade to Level C and will be at the contract unit price, per hour, per worker, required in Level C personal protection. No payment will be made to the Contractor to provide Level D PPE.

**ITEM 180.03****LICENSED SITE PROFESSIONAL SERVICES****HOUR**

Within limited areas of the project site, media (i.e. soils, sediments, surface water and/or groundwater) requiring evaluation and/or management under the Massachusetts Contingency Plan (MCP) may be encountered. A Licensed Site Professional (LSP) shall be required to provide the services necessary to comply with the requirements of the MCP. These services may include a site walk, field screening, sampling, analysis and characterization of potentially contaminated media, preparation and implementation of Immediate Response Action (IRA) Plans, Utility-Related Abatement Measure (URAM) and Release Abatement Measure (RAM) Plans, Imminent Hazard Evaluations, status reports, transmittal forms, release notification forms, risk assessments, completion statements, and related documents required pursuant to the MCP. LSP services shall also be necessary to temporarily move material generated on the project to an off-site storage location.

The name and qualifications of the LSP and all environmental technicians to be assigned to the project shall be submitted to the Engineer for approval at least four weeks prior to initial site activities. The LSP shall have a current, valid license issued by the Massachusetts Board of Registration of Hazardous Waste Site Cleanup Professionals. The LSP shall have significant experience in the oversight of MCP activities at active construction sites. Qualification packages for the LSP and each technician shall include a resume, all recent work assignments with responsibilities identified (previous 5 years), and applicable training and certifications. A list of all Notices of Noncompliance, Notice of Audit Findings and Enforcement Orders issued by the Massachusetts Department of Environmental Protection (DEP) shall be submitted for all work assignments listed for the LSP and environmental technicians. Upon approval of the LSP Qualifications, the LSP will be designated as the LSP of Record unless MassDOT designates in writing otherwise. The LSP of Record will serve as the primary point of contact for all hazardous material matters on the project.

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

The Engineer shall be contacted immediately when observations or any field screening results verify contamination requiring further analysis, and/or enhanced management of suspect media. Any enhanced management of contaminated soil to ensure proper stockpiling and storage is incidental to the LSP Services item. The LSP shall evaluate the need for confirmatory sampling prior to backfill in areas where contaminated material has been excavated and disposed off-site for compliance with applicable regulatory requirements. The Engineer shall approve the locations of the testing sites prior to the sampling.

**ITEM 180.03 (Continued)**

Contaminated media shall be handled in accordance with all applicable state and federal statutes, regulations, and policies. The LSP shall adequately evaluate contaminated media for compliance with the requirements of the MCP and Department Policies.

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

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

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

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

The LSP shall coordinate all activities involving both MassDOT and the DEP through the Engineer. Any notification of release shall be approved by the Engineer before submittal to the DEP, except if an imminent hazard condition exists as defined in 309 CMR 4.03(4)(b).

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**ITEM 180.03 (Continued)****LABORATORY TESTING IN SUPPORT OF LSP SERVICES**

Laboratory testing provides for analytical testing in support of LSP services related to maintaining MCP compliance, such as delineating the extent and type of contamination present. Sampling and testing for disposal purposes are not included and are incidental to Items 181.11-181.14.

In order to maintain compliance with the MCP and Department Policies or other regulatory requirements, the LSP shall request approval from the Engineer to obtain samples from various locations and depths within the project area and to perform laboratory analyses on those samples. No sampling shall be conducted without prior approval from the Engineer. The samples shall be delivered to a DEP-certified laboratory using proper chain-of-custody documentation for analyses which, depending upon site conditions and suspected and/or identified contaminants of concern, may include, but are not limited to, metals, polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, polycyclic aromatic hydrocarbons (PAHs), extractable petroleum hydrocarbons (EPHs) and volatile petroleum hydrocarbons (VPHs). Subsequent testing, depending upon initial results, may be required for Toxicity Characteristic Leaching Procedure (TCLP) analyses (EPA Method 1311) for metals.

**METHOD OF MEASUREMENT AND BASIS OF PAYMENT**

LSP Services for work under this item will be measured per person, per hour of service provided by LSP, Environmental Technicians and other approved personnel. Travel time shall not be included in the billable hours.

The quantity and type of laboratory tests must be approved by the Engineer beforehand. The Contractor will be reimbursed upon satisfactory written evidence of payment. The Contractor may be required to obtain cost estimates from three DEP certified laboratories for the Engineer to choose the service provider.

LSP Services will be paid at the Contractor bid price for each hour, or fraction thereof, spent to perform the work as described above. The bid price shall be a blended rate that includes the cost of the LSP, environmental technicians and other personnel, the performance of all work tasks and field screening, including required equipment, materials and instrumentation, and production of all documentation described above. All requests for payment must be accompanied by the following information: the names of the personnel associated with the work charged under LSP Services, dates and hours worked, work conducted, including, where appropriate, locations as identified on the construction plans, and a copy of the field diary for the dates submitted.

**ITEM 180.03 (Continued)**

Laboratory testing will be reimbursed upon receipt of paid invoices for testing approved by the Engineer.

This item is for LSP work for compliance with the MCP and Department Policies. LSP hours and any laboratory testing related to off-site disposal of excess soil and sediment is incidental to Items 181.11-181.14 (including, but not limited to, disposal characterization, disposal package preparation, landfill acceptance, shipment paperwork preparation, field screening, and tracking).

|                           |   |                   |
|---------------------------|---|-------------------|
| <b><u>ITEM 181.11</u></b> | <b><u>DISPOSAL OF UNREGULATED SOIL</u></b>                      | <b><u>TON</u></b> |
| <b><u>ITEM 181.12</u></b> | <b><u>DISPOSAL OF REGULATED SOIL -IN-STATE FACILITY</u></b>     | <b><u>TON</u></b> |
| <b><u>ITEM 181.13</u></b> | <b><u>DISPOSAL OF REGULATED SOIL -OUT-OF-STATE FACILITY</u></b> | <b><u>TON</u></b> |
| <b><u>ITEM 181.14</u></b> | <b><u>DISPOSAL OF HAZARDOUS WASTE</u></b>                       | <b><u>TON</u></b> |

The work under these Items shall include the transportation and disposal of contaminated material excavated, or excavated and stockpiled. It shall also include the cost of any additional laboratory analyses required by a particular disposal facility beyond the standard disposal test set.

Excavation of existing subsurface materials may include the excavation of contaminated soils. The Contractor shall be responsible for the proper coordination of characterization, transport and disposal, recycling or reuse of contaminated soils. Disposal, recycling or reuse will be referred to as “disposal” for the purposes of this specification. However, regardless of the use of the term herein, there will be no compensation under these items for reuse within the project limits. The Contractor will be responsible for coordinating the activities necessary for characterization, transport and disposal of contaminated soils. Such coordination will include the Engineer and his/her designee overseeing management of contaminated materials. Contaminated soils must be disposed of in a manner appropriate for the soil classification as described below and in accordance with the applicable laws of local, state and federal authorities. The Contractor shall be responsible for identifying disposal facility (ies) licensed to accept the class of contaminated soils to be managed and assure that the facility can accept the anticipated volume of soil contemplated by the project. The Contractor shall be responsible for hiring a Licensed Site Professional (LSP) and all ancillary professional services including laboratories as needed for this work. The Contractor will be responsible for obtaining all permits, approvals, manifests, waste profiles, Bills of Lading, etc. subject to the approval of the Engineer prior to the removal of the contaminated soil from the site. The Contractor and LSP shall prepare and submit to the Engineer for approval all documents required under the Massachusetts Contingency Plan (MCP) and related laws and environmental regulations to conduct characterization, transport, and disposal of contaminated materials.

#### CLASSES OF CONTAMINATED SOILS

The Contractor and its LSP shall determine if soil excavated or soil to be excavated is unregulated soil or contaminated soil as defined in this section. Such materials shall be given a designation for purposes of reuse or disposal based on the criteria of the MCP. Soils and sediments which are not suitable for reuse will be given a designation for purposes of off-site disposal based on the characterization data and disposal facility license requirements. The Classes of Contaminated Soils are defined as follows:

**ITEMS 181.11 through 181.14 (Continued)**

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 through 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 through 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.

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**ITEMS 181.11 through 181.14 (Continued)****REGULATORY REQUIREMENTS**

The Contractor shall be responsible for adhering to regulations, specifications and recognized standard practices related to contaminated material handling during excavation and disposal activities. MassDOT shall not be responsible at any time for the Contractor's violation of pertinent State or Federal regulations or endangerment of laborers and others. The Contractor shall comply with all rules, regulations, laws, permits and ordinances of all authorities having jurisdiction including, but not limited to, Massachusetts DEP, the U.S. Environmental Protection Agency (EPA), Federal Department of Transportation (DOT), Massachusetts Water Resources Authority (MWRA), the Commonwealth of Massachusetts and other applicable local, state and federal agencies governing the disposal of contaminated soils.

All labor, materials, equipment and services necessary to make the work comply with such regulations shall be provided by the Contractor without additional cost to MassDOT. Whenever there is a conflict or overlap within the regulations, the most stringent provisions shall apply. The Contractor shall reimburse MassDOT for all costs it incurs, including damages 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 baseplan to record this information.

The Sampling Results will be presented in tabular format. Each sample will be identified by appropriate identification matching the sample identification shown on the Chain of Custody Record. The sample must also be identified by location (e.g. grid number or stockpile number). For each sample, the following information must be listed: the classification (unregulated, regulated, etc.), proposed disposal option for the stockpile or unit of material represented, and, all analytical results.

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**ITEMS 181.11 through 181.14 (Continued)**

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.

**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.

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**ITEMS 181.11 through 181.14 (Continued)**

All soils, sediments and demolition debris must be tracked from the point of excavation to stockpiling to onsite treatment/processing operations to off-site disposal or onsite reuse as applicable.

**Demolition Debris:**

Demolition debris must be tracked if the debris is stockpiled at a location other than the point of origin or if treatment or material processing is conducted. Identification of locations will be based on the station-offset of the location. The tracking table will identify date and point of generation, any field screening such as PID or dust monitoring, visual observations/comments, quantity, and stockpile ID/processing operation location. For each unit of material tracked, the table will also track reuse of the material on-site, providing reuse date, location of reuse as defined by start and end station, width of reuse location by offset, the fill elevation range, quantity, and finish grade for said location. For demolition debris which is not reused on site, the table will also track disposal of the material as defined by disposal date, quantity and disposal facility. The table must provide a reference to any analytical data generated for the material.

**Soil/Sediment:**

Soil excavation will be identified based on the station-offset of the excavation location limits. The tracking table will identify date and point of generation, any field screening such as PID or dust monitoring, visual observations, quantity, and stockpile number/location. For each unit of material tracked, the table will also track reuse of the material on-site and disposal of the material off-site using the same categories identified for demolition debris above.

**Method Of Measurement 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 all of 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 any and all costs for approvals, permits, fees and taxes, additional testing/characterization required by the facility beyond the standard disposal test set, decontamination procedures, transportation and disposal.

ITEM 181.12 Measurement for Disposal of Regulated Soil – In-State Facility shall be under the Contract Unit Price by the weight in tons of contaminated materials removed from the site and transported to and disposed of at an approved in-state facility, and includes any and all costs for approvals, permits, fees and taxes, testing/characterization required by the facility beyond the standard disposal test set, decontamination procedures, transportation and disposal.

**ITEMS 181.11 through 181.14 (Continued)**

ITEM 181.13 Measurement for Disposal of Regulated Soil - Out-of-State Facility shall be under the Contract Unit Price by the weight in tons of contaminated materials removed from the site and transported to and disposed of at an approved out-of-state facility, and includes any and all costs for approvals, permits, fees and taxes, testing/characterization required by the facility beyond the standard disposal test set, decontamination procedures, transportation and disposal.

ITEM 181.14 Measurement for Disposal of Hazardous Waste shall be under the Contract Unit Price by the weight in tons of hazardous waste removed from the site and transported to and disposed of at the licensed hazardous waste facility, and includes any and all costs for approvals, permits, fees and taxes, testing/characterization required by the facility beyond the standard disposal test set, decontamination procedures, transportation and disposal.

**ITEM 182.1****INSPECTION AND TESTING FOR ASBESTOS****LUMP SUM**

The work shall include the inspecting and testing of all materials suspected of containing asbestos. When any demolition is required to enable the inspection and testing of the suspected material it will be considered incidental to this Item and the Contractor must perform all asbestos handling and testing in accordance with the regulations stated below.

Dust suppression in the form of light water sprays, foams, dust suppressants and calcium chloride will be implemented as required to control dusting during any disturbance of asbestos suspected material. Alternatively, intrusive activities may be reduced or curtailed under high wind or heavy rain conditions, which in the opinion of the Health and Safety Plan (HASP) may pose a safety hazard to the workers.

The Contractor shall employ the services of a Massachusetts licensed "Asbestos Inspector" to inspect the material to determine whether or not "ITEM 182.2 REMOVAL OF ASBESTOS" is required. Should the asbestos inspector determine laboratory testing is required, a state certified laboratory shall be used to perform all necessary tests.

**REGULATIONS**

U.S. Department of Labor, Occupational Safety and Health Administration, (OSHA) including but not limited to:

- 29 CFR 1910 Section 1001 and 29 CFR 1926 Section 58 Occupational exposure to Asbestos, Tremolite, Anthophyllite and Actinolite, Final Rule
- 29 CFR 1910 Section 134 Respiration Protection
- 29 CFR 1926 Construction Industry
- 29 CFR 1910 Section 2 Access to Employee Exposure and Medical Records
- 29 CFR 1910 Section 1200 Hazard Communication
- 29 CFR 1910 Section 145 Specifications for Accident Prevention Signs and Tags

U.S. Environmental Protection Agency, (EPA) including but not limited to:

- 40 CFR 762, CPTS 62044, FRL 2843-9, Federal Register Vol. 50 no.134, July 12, 1985 p.28530 - 28540 Asbestos Abatement Projects Rule
- 40 CFR 61 Subpart A Regulation for Asbestos
- 40 CFR 61 Subpart M (Revised Subpart B) National Emission Standard for Asbestos

**ITEM 182.1** (Continued)

U.S. Department of Transportation 49 CFR 172 and 173

Massachusetts Department of Labor Standards Regulations, (DLS) including but not limited to:

454 CMR 28.00 Removal, Containment and Encapsulation of Asbestos

Massachusetts Department of Environmental Protection (DEP) including but not limited to (supplementing subsection 7.01):

310 CMR 7.00, Section 7.09 Odor and Dust, Section 7.10 Noise, Section 7.15 Air Pollution Control Regulations

310 CMR 18.00 and 19.00 Solid Waste Regulations

Massachusetts Division of Industrial Safety 45 CMR 10.00

Local Requirements including but not limited to those of Health Departments, Fire Departments and Inspection Services Departments

Wherever there is a conflict or overlap of the above references, the most stringent provision shall apply.

**BASIS OF PAYMENT**

Item 182.1 will be paid for at the Contract unit price per Lump Sum, which price shall include all labor, materials, tools, equipment, and all incidental costs required to complete the work as described and as required by the Engineer.

No separate payment will be made for the protection of general public, private property, the proper inspecting and testing of the material, but all costs in connection therewith shall be included in the Contract unit price bid.

**ITEM 182.2****REMOVAL OF ASBESTOS****FOOT**

The work shall include the removal and satisfactory disposal of existing asbestos. The Contractor's attention is directed to the fact that existing asbestos shall be inspected and tested prior to removal, to determine if special removal and disposal is required. The Contractor shall follow all the rules and regulations stated in "ITEM 182.1 INSPECTION AND TESTING FOR ASBESTOS". If asbestos is present, the Contractor shall follow all the rules and regulations stated in the section "REMOVAL AND DISPOSAL OF ASBESTOS CONTAINING MATERIALS", under this item. The Contractor should notify and coordinate his/her efforts with the proper utility accordingly.

**REMOVAL AND DISPOSAL OF ASBESTOS CONTAINING MATERIALS**

This section specifies the requirements for the handling and removal of asbestos containing material. The Contractor must perform all asbestos handling and removal work in accordance with these specifications and the following additional requirements.

U.S. Department of Labor, Occupational Safety and Health Administration, (OSHA) including but not limited to:

29 CFR 1910 Section 1001 and 29 CFR 1926 Section 58  
Occupational exposure to Asbestos, Tremolite,  
Anthophyllite and Actinolite, Final Rule  
29 CFR 1910 Section 134 Respiration Protection  
29 CFR 1926 Construction Industry  
29 CFR 1910 Section 2 Access to Employee Exposure  
and Medical Records  
29 CFR 1910 Section 1200 Hazard Communication  
29 CFR 1910 Section 145 Specifications for Accident  
Prevention Signs and Tags

U.S. Environmental Protection Agency, (EPA) including but not limited to:

40 CFR 762, CPTS 62044, FRL 2843-9, Federal Register Vol. 50 no.134,  
July 12, 1985 p.28530 - 28540 Asbestos Abatement Projects Rule  
40 CFR 61 Subpart A Regulation for Asbestos  
40 CFR 61 Subpart M (Revised Subpart B) National Emission  
Standard for Asbestos

**ITEM 182.2** (Continued)

U.S. Department of Transportation 49 CFR 172 and 173

Massachusetts Department of Labor Standards, (DLS) including but not limited to:

454 CMR 28.00 Removal, Containment and  
Encapsulation of Asbestos

Massachusetts Department of Environmental Protection (DEP) including but not limited to  
(supplementing subsection 7.01):

310 CMR 7.00, Section 7.09 Odor and Dust, Section 7.10  
Noise, Section 7.15 Air Pollution Control Regulations  
310 CMR 18.00 and 19.00 Solid Waste Regulations

Massachusetts Division of Industrial Safety 45 CMR 10.00

Local Requirements including but not limited to those of Health Departments, Fire Departments  
and Inspection Services Departments

Wherever there is a conflict or overlap of the above references, the most stringent provision shall  
apply.

All asbestos material shall be removed and properly disposed of by a contractor or subcontractor  
with a current Massachusetts Abatement Contractors License issued by the Department of Labor  
Standards. Work shall be supervised by a competent person as required by OSHA in 29 CFR  
1926 to ensure regulatory compliance. This person must have completed a course at an EPA  
Training Center or equivalent course in asbestos abatement procedures, have had a minimum of  
four years on-the-job training and meet any additional requirements set forth in 29 CFR 1926 for  
a Competent Person. This person must also be certified by the Commonwealth as an Asbestos  
Supervisor and Asbestos Project Designer as required by 454 CMR 28.00.

Asbestos removal work shall be coordinated with all other work under the contract and shall be  
completed prior to performing any activities which could disturb the asbestos material or  
produce airborne asbestos fibers.

Dust suppression in the form of light water sprays, foams, dust suppressants and calcium  
chloride will be implemented as required to control dusting during trenching and excavation.  
Alternatively, intrusive activities may be reduced or curtailed under high wind or heavy rain  
conditions, which in the opinion of the Health and Safety Plan (HASP) may pose a safety hazard  
to the workers.

**ITEM 182.2** (Continued)**NOTIFICATION AND PERMITS**

The Contractor shall prepare a formal pre-notification form at least ten (10) days prior to the start of asbestos removal work. This form must be submitted to the appropriate Regional Office of the Massachusetts Department of Environmental Protection and to the U.S. Environmental Protection Agency Region I Air and Hazardous Material Division. A copy of the submitted forms must be provided to the Engineer and kept at the work site.

Prior to starting any work, the Contractor shall also obtain any required asbestos removal permit(s) from the city/town. A copy of the permit(s) must be provided to the Engineer and posted at the work site.

The Contractor shall also obtain and pay all other applicable asbestos waste transportation and disposal permits, licenses and fees.

**STANDARD OPERATING PROCEDURES**

The standard operating procedure shall ensure the following:

1. Proper site security including posting of warning signs and restricting access to prevent unauthorized entry into the work spaces.
2. Proper protective clothing and respiratory protection prior to entering the work spaces.
3. Safe work practices including provisions for communications; exclusion of eating, drinking, smoking, or use of procedures or equipment that would in any way reduce the effectiveness of respiratory protection or other engineering controls.
4. Proper exit practices from the work space through the showering and decontamination facilities.
5. Removing asbestos containing material in ways that minimize release of fibers.
6. Packing, labeling, loading, transporting and disposing of contaminated material in a way that minimizes or prevents exposure and contamination.
7. Emergency evacuation of personnel, for medical or safety (fire and smoke) so that exposure will be minimized.
8. Safety from accidents in the work space, especially from electrical shocks, slippery surfaces and entanglements in loose hoses and equipment.
9. Provisions for effective supervision and OSHA - specified personnel air monitoring for exposure during work.

**ITEM 182.2** (Continued)**REQUIRED SUBMITTALS**

The Contractor shall submit to the Engineer the following listed items at least ten (10) calendar days prior to the start of asbestos work. No asbestos removal work activities shall commence until these items are reviewed by the Engineer, unless otherwise waived. Submittals shall be clearly labeled and in sufficient detail to enable the Engineer to form an opinion as to its conformity to the specifications.

1. Name, experience and DLS certification of proposed Supervisors and Foreman responsible for asbestos work.
2. Summary of workforce by disciplines and a notarized statement documenting that all proposed workers, by name, have received all required medical exams and have been properly trained and certified for asbestos removal work, respirator use and appropriate Massachusetts DLS, EPA and OSHA standards.
3. Notarized statement that workers are physically fit and able to wear and use the type of respiratory protection proposed for the project. Notarized certification signed by an officer of the abatement contracting firm that exposure measurements, medical surveillance and worker training records are being kept in conformance with 29 CFR 1926.
4. Written plan of action and standard operating procedures (HASP) to include: location and layout of decontamination areas; sequencing of asbestos work; detailed schedule of work activities by date and interface with other project activities which affect work performance; methods used to assure safety and security; worker protection and exposure monitoring; contingency and emergency evacuation procedures; detailed description of methods to be employed to control pollution; waste handling procedures.
5. Written respiratory protection program specifying level of protection intended for each operation required by the project and details of daily inspection and maintenance elements.
6. Copies of the U.S. EPA, State and local asbestos removal pre-notification forms. If applicable, lists and copies of all permits, licenses, or manifests which will be applied for and used.
7. Name, location and applicable approval certificates for primary and secondary landfill for disposal of asbestos-containing or asbestos contaminated waste. Name, address and licenses number(s) of hauler permitted to transport waste. (Submit copies of completed manifests upon disposal).

The Contractor must provide copies of daily inspection and record logs upon request of the Engineer, at any time during project. This information will include but is not limited to work area entry data, respirator inspections and maintenance, HEPA-exhaust inspections and maintenance and other work applicable activities or reports of accidents or unusual events.

**ITEM 182.2** (Continued)

**METHOD OF MEASUREMENT**

ITEM 182.2 will be measured for payment by the FOOT for the complete removal and disposal of the asbestos containing material.

**BASIS OF PAYMENT**

Item 182.2 will be paid for at the Contract unit price per FOOT, which price shall include all labor, materials, tools, equipment, and all incidental costs required to complete the work specified above and as required by the Engineer.

No separate payment will be made for the protection of general public, private property, the proper inspecting and testing of the material, but all costs in connection therewith shall be included in the Contract unit price bid.

**ITEM 184.1**

**DISPOSAL OF TREATED WOOD PRODUCTS**

**TON**

(Rev 08/09/2016)

Work under this item shall include the transportation and disposal of all treated existing wood product including timber curb, and railroad ties as directed by the Engineer.

It is anticipated that old railroad ties buried along the Boston Road could be encounter during excavation of fulldepth construction or utility excavation. They can be disposed off under this item.

The timber components of the existing structure are suspected to be treated with creosote, pentachlorophenol and/or CCA. This item shall include all costs for sampling, laboratory testing, loading, transportation and disposal of the treated wood. The Contractor is required to submit disposal manifests 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.

**METHOD OF MEASUREMENT AND BASIS OF PAYMENT**

Measurement and payment will be by the weight, in tons, of treated timber transported and accepted at a licensed facility. The work shall be considered full compensation for all labor, tools, equipment, materials, testing, loading, transportation, approvals, and permits necessary for the completion of the work.

|                           |   |                    |
|---------------------------|---|--------------------|
| <b><u>ITEM 201.</u></b>   | <b><u>CATCH BASIN</u></b>               | <b><u>EACH</u></b> |
| <b><u>ITEM 202.</u></b>   | <b><u>MANHOLE</u></b>                   | <b><u>EACH</u></b> |
| <b><u>ITEM 202.15</u></b> | <b><u>MANHOLE – 5 FOOT DIAMETER</u></b> | <b><u>EACH</u></b> |
| <b><u>ITEM 204.11</u></b> | <b><u>GUTTER INLET – SPECIAL</u></b>    | <b><u>EACH</u></b> |

The work to be done under these Items shall conform to the relevant provisions of Subsection 201 of the Standard Specifications, and the following:

Item 201. will be constructed as shown in MassDOT Standard Drawing E 201.4.0 with 4 foot sump (deep sump), unless otherwise noted on the plans.

Item 202.15 will be constructed as shown in MassDOT Standard Drawing E 202.4.0 with the exception that the inside diameter shall be five feet.

Item 204.11 will be constructed as shown on the detail provided in the construction drawings.

Flat top sections shall be substituted for conical sections in areas of low cover. Flat top structures shall have a minimum 28 day compressive strength of 4000 psi, reinforced for AASHTO H-20 loading with ASTM A 615 Grade 60 steel. No additional payment will be made for flat top structures.

Alternate eccentric cone sections or flat top sections with offset openings shall be used in areas where drainage structures are in close proximity to existing underground utilities, as shown on the plans or as directed by the Engineer. Alternate eccentric cone sections or flat top sections with offset opening shall also be used where drainage manholes are proposed in travel lanes and shall be oriented to locate covers outside wheel paths to the extent practical. No additional payment will be made for eccentric cones or flat top structures with offset openings.

Frames shall be set using clay brick (3 courses allowed for) in a full mortar bed. Cement brick will not be allowed. Clay brick manufacturer shall be listed on MassDOT's Qualified Construction Materials List. Cement brick will not be allowed.

Concrete collars for new structures shall be High Early Strength cement concrete. The Contractor shall submit a mix design for High Early Strength concrete to the Engineer for approval. The dimensions of the concrete collars shall be as shown on MassDOT Construction Standard Drawing E 202.9.0. Concrete collars shall be incidental to the item of work to which they pertain.

The concrete collars shall be placed up to a height that allows for the placement of a minimum of 3 inches of Hot Mix Asphalt above the collar.

Catch basins, manholes, and gutter inlets shall be placed on 6" crushed stone (M2.01.1) foundation as directed by the Engineer.

Connections to existing pipe shall be included in the cost of the catch basins or manholes. If existing pipe is to be abandoned, end of existing pipe shall be plugged as specified in Subsection 270.62.

**ITEMS 201., 202., 202.15 & 204.11 ( Continued)**

**METHOD OF MEASUREMENT**

Item 201., Item 202., Item 202.15, and Item 204.11 will be measured for payment by the Each regardless of depth installed, complete in place.

**BASIS OF PAYMENT**

Item 201., Item 202., Item 202.15, and Item 204.11 will be paid for at the respective Contract unit prices per Each, which price shall be full compensation for labor, materials, equipment, tools, sawcut, excavation, High Early Strength cement concrete, and all incidental costs required to complete the work.

If necessary to obtain a satisfactory foundation for the drainage structure, excavation shall be deeper than normally required for crushed stone bedding and will be measured for payment under Item 142, Class B Trench Excavation.

The crushed stone foundation shall be paid for under Item 156.

Masonry plugs shall be paid for under Item 227.4.

**ITEM 220.6**  
**ITEM 220.8****SANITARY STRUCTURE REBUILT**  
**SANITARY STRUCTURE REMODELED****FOOT**  
**EACH**

Work under these Items shall conform to the relevant provisions of Subsection 220 and the following:

These items will be applicable to all types of municipal structures, including sanitary structures, where existing castings are to remain.

Clay brick shall be used in setting frames. The use of cement concrete brick will not be allowed. Castings shall be set to line and grade and provided with a concrete collar. Collars shall be constructed of 4,000 psi or high early strength (H.E.S.) as directed by the Engineer. No additional compensation for concrete collars shall be allowed. Concrete collars shall be brought to a height that will allow placement of minimum 3 inch the specified pavement wearing surface over the collar. Concrete collars shall be tacked coated with RS-1 Asphaltic Emulsion prior to the placement of pavement.

All dirt and debris caused by the Contractor shall be cleaned by the Contractor at his own expense.

**METHOD OF MEASUREMENT**

Item 220.6 will be measured for payment by foot, of sanitary structure rebuild. Structures specified to be rebuilt on the plans will be measured vertically to the nearest 1/10 of a foot, from the bottom of rebuilt masonry to the bottom of the casting..

Item 220.8 will be measured for payment by the Each, sanitary structure remodeled.

**BASIS OF PAYMENT**

Item 220.6 will be paid for at the contract unit price per foot, which price shall include all labor, tools, materials, equipment, saw cuts, concrete collar, setting/resetting the frame and cover to line and grade and all incidental costs required to rebuilt structure.

Items 220.8 will be paid for at the contract unit price per EACH, which price shall include all labor, tools, materials, equipment, saw cuts, concrete collar, setting/resetting the frame and cover to line and grade and all incidental costs required to complete the work.

**ITEM 224.010**  
**ITEM 224.012**

**10 INCH HOOD**  
**12 INCH HOOD**

**EACH**  
**EACH**

Work under these items shall conform to the relevant provisions of Subsections 201 of the Standard Specifications and the following:

The work under these items includes the furnishing and installation of non-metallic hoods to be installed in catch basins to prevent oil and floating debris from being discharged from the stormwater management system. Devices shall be The Eliminator (Ground Water Resource (617)-773-1128); Snout (BMP Inc. (800)-504-8008); SKUNK (Upstream Technologies (651)-237-5123); or approved equal. The specified size of the hood is based on the outlet pipe size.

### **CONSTRUCTION**

Hoods shall be installed in retained existing and proposed catch basins within the project limits and as directed by the Engineer. Hoods shall be securely attached to the outlet pipe or structure wall to form a watertight seal and shall be installed in full accordance with the recommendations of the manufacturer.

### **METHOD OF MEASUREMENT**

Items 224.010 and 224.012 will be measured for payment by each, hood furnished and installed, complete in place.

### **BASIS OF PAYMENT**

Items 224.010 and 224.012 will be paid for at the Contract unit prices per each, which prices shall include all labor, materials, equipment and incidental costs required to complete the work.

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**ITEM 271.1**                    **DRAINAGE PIPE REMOVED AND DISCARDED**                    **FOOT**

This work under this Item shall conform to the relevant provisions of Subsection 270 of the Standard Specifications and the following.

The work under this item shall include all labor, materials and equipment necessary to remove and discard the existing pipes. The work shall consist of the removal of existing drain pipe (regardless of size) where noted on the plans, and as directed by the Engineer. Where existing pipe is located within the same trench as new pipe, the removal and discarding of the existing pipe will be considered incidental to the installation of the new pipe. The work includes all excavation, shoring, and bracing. A trench shall be excavated and the pipe cut and removed. The remaining open pipe ends shall be plugged watertight. All materials excavated from the trench, when deemed suitable for reuse by the Engineer, shall be placed in 6 inch loose lift depths and compacted to not less than 95 percent of the maximum dry density of the material. If additional material is needed to backfill the trench it shall meet the requirements for Gravel Borrow. All unused and unsuitable material shall be disposed of off-site.

**METHOD OF MEASUREMENT**

Item 271.1, Drainage Pipe removed and discarded, except for pipe located in the same trench as new pipe, will be measured in place by the foot of pipe removed and discarded off the project.

**BASIS OF PAYMENT**

Item 271.1 Drainage Pipe Removed and Discarded, will be paid for at the contract unit price per Foot, which price shall include all labor, materials, equipment, excavation, sawcutting, removal of pipes, disposal of unsuitable material, and incidental costs required to complete the work.

If in situ material is unsatisfactory for backfill, as determined by the Engineer, the backfill gravel borrow will be paid for under Item 151. Gravel Borrow type b.

Masonry plug will be paid for under Item 227.4

Existing drainage pipe, other than RCP, where called out to be abandoned in the roadway will be filled in with controlled low-strength material (CLSM) – mechanical excavatable and will be paid for under Item 160.2.

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|                           |   |                     |
|---------------------------|---|---------------------|
| <b><u>ITEM 302.06</u></b> | <b><u>6-INCH DUCTILE IRON WATER PIPE (RUBBER GASKET)</u></b>  | <b><u>FOOT</u></b>  |
| <b><u>ITEM 302.08</u></b> | <b><u>8-INCH DUCTILE IRON WATER PIPE (RUBBER GASKET)</u></b>  | <b><u>FOOT</u></b>  |
| <b><u>ITEM 302.10</u></b> | <b><u>10-INCH DUCTILE IRON WATER PIPE (RUBBER GASKET)</u></b> | <b><u>FOOT</u></b>  |
| <b><u>ITEM 302.12</u></b> | <b><u>12-INCH DUCTILE IRON WATER PIPE (RUBBER GASKET)</u></b> | <b><u>FOOT</u></b>  |
| <b><u>ITEM 309.</u></b>   | <b><u>DUCTILE IRON FITTINGS FOR WATER PIPE</u></b>            | <b><u>POUND</u></b> |

The work under these items shall conform to the relevant provisions of Subsection 301 of the Standard Specifications and the following:

The work under these items shall include furnishing and installation of ductile iron water pipe in the locations depicted on the drawings.

### **SUBMITTALS**

- Piping layouts in full detail.
- Location and type of backup block or device to prevent separation.
- Schedules of all pipe, fittings, special castings, couplings, expansion joints, restrained joints and other appurtenances.
- Detailed disinfection plan consistent with AWWA C651.
- Catalog cuts of joints, couplings, harnesses, expansion joints, restrained joints gaskets, fasteners and other accessories.
- Sworn certificates of shop tests showing compliance with appropriate standard.
- Brochures and technical data of coatings and linings and proposed method of application.
- Shop drawings of Insulation and Jacketing, including joints and connections, adhesives, and accessories.

### **QUALITY ASSURANCE**

Pipe and fittings to be inspected and tested at the foundry as required according to ANSI Standards.

Owner reserves the right to inspect/or test by independent service at manufacturer's plant or elsewhere at his own expense.

Owner reserves the right to perform visual and hammer tests prior to installation.

### **DELIVERY, STORAGE AND HANDLING**

Deliver materials undamaged and factory new.

Store materials in accordance with manufacturers recommendations.

Handle with suitable slings, spreader bars, and equipment required to prevent damage.

**ITEMS 302.06, 302.08, 302.10, 302.12 & 309. (Continued)**

**PRODUCTS**

**DUCTILE IRON PIPE**

Designed in accordance with AWWA/ANSI C150/ A21.50.

Ductile iron pipe used for water mains shall be double thickness cement lined Class 52 as indicated on the Drawings.

Pipe For Use With Couplings - As specified above except that the ends shall be plain (without bells or beads) cast or machined at right angles to the axis.

**FITTINGS**

General

Push-on or mechanical-joint fittings shall be all-bell fittings unless otherwise indicated or specified.

In accordance with AWWA/ANSI C110/A21.10.

Fittings 12-inches in diameter and less shall be pressure Class 350.

Nuts and Bolts

Ductile Iron or Cor-10 steel T bolts and nuts or approved equal.

Nonstandard Fittings

Fittings having nonstandard dimensions and cast especially for this project shall be of acceptable design. Manufactured to meet the requirements of these specifications and shall have the same diameter and thickness as standard fittings, but their laying lengths and types of ends shall be determined by their positions in the pipelines and by the particular piping to which they connect.

**ADAPTERS**

Where it is necessary to joint pipes of different type, furnish and install the necessary adapters unless solid sleeves are indicated on the drawings or permitted. Adapters shall have ends, conforming to the above specifications for the appropriate type of joint, to receive the adjoining pipe. Adapters joining two classes of pipe may be of the lighter class provided that the annular space in bell-and-spigot type joints will be sufficient for proper jointing.

**JOINTS**

Push-On Mechanical

In accordance with AWWA/ANSI C111/A21.11.

The plain end of push-on pipe shall be factory machined to a true circle and chamfered to facilitate fitting the gasket.

Push-on and mechanical-joint pipe and fittings shall be provided with sufficient quantities of accessories conforming to AWWA/ANSI C111/A21.11.

**ITEMS 302.06, 302.08, 302.10, 302.12 & 309. (Continued)****Restrained**

Location of restrained joints shall be based on Thrust Restrain Design for Ductile Iron Pipe (Second Edition), published by Ductile Iron Pipe Research Association. Restraining glands will be required on all fittings.

Pipe, fittings and appurtenances for restrained joints shall be in accordance with AWWA/ANSI C110/A21.10 for full body fittings. Only restraining glands which impact multiple wedging action against the pipe increasing its pressure as the pipe pressure increases will be allowed. Flexibility of the joint shall be maintained after burial. Glands shall be manufactured of ductile iron conforming to ASTM A536. Twist off nuts shall be used to insure proper actuating of the restraining device.

Mechanical joint restraint shall have a working pressure rating of at least 250 psi.

Midspan restraint shall be ductile iron product no. 1110SDB rated for 300 psi manufactured by EBAA Iron, Inc., Eastland, Texas or approved equal.

Restraining glands will be required on all fitting and anywhere else specifically called out on the Contract Drawings.

**Gaskets**

Gaskets shall be of a composition suitable for exposure to the product which the pipe is intended.

**COUPLINGS****Flexible Connections.**

Where flexible connections in the piping are specified or indicated on the drawings, they shall be obtained by the use of sleeve-type couplings or mechanical-joint pipe and/or fittings as herein specified.

**Sleeve Type Couplings**

Pressure rating at least equal to that of the pipeline in which they are to be installed.

For sizes 2 1/2 to 16-inch diameter, up to 350 psi working pressure: Provide style Alpha Restrained Joint Extended Range Coupling, by Romac Industries, Inc, Bothell, Washington, or be acceptable equivalent products.

For sizes greater than 16-inch diameter, up to 150 psi working pressure: Provide style 411, with 10-inch long sleeve minimum, Steel Coupling by Smith Blair, Inc., Texarkana, Texas, or be acceptable equivalent products.

Nuts and Bolts to be stainless steel, unless noted otherwise.

Provided with gaskets of a composition suitable for exposure to the liquid within the pipe. Provide with fusion bonded epoxy finish. Conform to requirements of AWWA C219.

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**ITEMS 302.06, 302.08, 302.10, 302.12 & 309. (Continued)****Solid Sleeve Couplings**

Solid sleeve couplings and accessories shall be of a pressure rating at least equal to that of the pipeline in which they are to be installed. Couplings shall be ductile iron with gaskets of a composition suitable for exposure to the liquid within the pipe.

**ACCESSORIES****Tapped Connections**

Tapped connections in pipe and fittings shall be made in such manner as to provide a watertight joint and adequate strength against pullout. The maximum size of taps in pipe or fittings without bosses shall not exceed the listed size in the appropriate table of the Appendix to the above-mentioned ANS A21.51 based on 3 full threads for cast iron and 2 full threads for ductile iron.

Where the size of the connections exceeds that given above for the pipe in question, a boss shall be provided on the pipe barrel, the tap shall be made in the flat part of the intersection of the run and branch of a tee or cross, or the connection shall be made by means of a tapped tee, branch fitting and tapped plug or reducing flange, or tapping tee and tapping valve, all as indicated or permitted by the Engineer.

All drilling and tapping of cast-iron pipe shall be done normal to the longitudinal axis of the pipe; fitting shall be drilled and tapped similarly, as appropriate. Drilling and tapping shall be done only by skilled mechanics. Tools shall be adapted to the work and in good condition so as to produce good, clean-cut threads of the correct size, pitch, and taper.

**SOCKET PIPE CLAMPS, TIE RODS AND BRIDLES**

Where indicated or necessary to prevent joints or sleeve couplings from pulling apart under pressure, suitable pipe clamps, tie rods or bridles shall be provided. Bridles and tie rods shall be at least 3/4 in. diameter except where they replace flange bolts of smaller size, in which case they shall be fitted with a nut on each side of the pair of flanges. The socket clamps, tie rods or bridles shall be coated with an approved bituminous paint after assembly or if necessary, prior to assembly.

**POLYETHYLENE ENCASEMENT**

In accordance with AWWA C105.

**INSULATION**

Water pipe Insulation shall be required where cover over the top of the proposed ductile iron water main is less than 4 feet or the vertical separation between the proposed ductile iron water main and existing or proposed drainpipe is less than 1 foot.

**ITEMS 302.06, 302.08, 302.10, 302.12 & 309. (Continued)**

Manufacturers

Owens Corning  
CPR Upjohn  
Tricon Piping Systems  
Asphalt Mastic, Pittsburgh-Corning PC 300 or Approved Equal

Materials

Insulation

Rigid cellular foam urethane, Type 1, Grade 2, Class 1.  
Density: 1.8 to 2.2 lb./cu. ft. in accordance with ASTM D1622.  
Dimensional Stability: 4%.  
Thermal conductivity in accordance with ASTM C 518 at 75 degrees F.  
Initial: 0.14 BTU-in/hr/sq. ft./deg. F.  
Design: .14 to .16 BTU-in/hr/sq. ft./deg. F.  
Aged: .18 BTU-in/hr/sq. ft./deg. F.  
Compressive strength: 25 psi with 10% deflection in accordance with ASTM D1621 at 74 degrees F.  
Temperature range: -250 degrees F. to +250 degrees F.  
Thickness: 2 inches minimum.  
Seamless utilizing spray on application.

Protective Jacket

Fiberglass reinforced polyester.  
1/8-inch thick.  
Flexural Strength: 40,000 psi.  
Tensile strength: 33,000 psi.  
Izod impact: 27,000 ft.lb/in.

Adhesives

Compatible with materials to which applied.  
Suitable for a temperature range of -250 degrees F. to +250 degrees F.

**FINISHES**

Lining

Inside of pipe and fittings shall be coated with double thickness cement lining and bituminous seal coat conforming to AWWA/ANSI C104/A21.4.

Coating

Outside of pipe and fitting shall be coated with the standard bituminous coating conforming to AWWA/ANSI C151/A21.51.

**CONSTRUCTION METHODS**

Pipe and Fittings

Every care shall be taken in handling and laying pipe and fittings to avoid damaging the pipe, scratching or marring machined surfaces, and abrasion of the pipe coatings.

**ITEMS 302.06, 302.08, 302.10, 302.12 & 309. (Continued)**

Any fitting showing a crack and any pipe or fitting which has received a severe blow that may have caused an incipient fracture, even though no such fracture can be seen, shall be marked as rejected and removed at once from the Work.

In any pipe showing a distinct crack and in which it is believed there is no incipient fracture beyond the limits of the visible crack, the cracked portions, if so approved, may be cut off by and at the expense of the Contractor before the pipe is laid so that the pipe used is perfectly sound. The cut shall be made in the sound barrel at a point at least 12-inches from the visible limits of the crack.

**CUTTING**

## Pipe

Except as otherwise approved, all cutting shall be done with a machine having rolling wheel cutters, knives, or saws adapted to the purpose. Hammer and chisel or so-called wheel span cutters shall not be used to cut pipe. All cut ends shall be examined for possible cracks caused by cutting.

Cut ends to be used with push-on joints shall be carefully chamfered to prevent cutting the gasket when the pipe is laid or installed. Surface repair methods shall meet the requirements of the applicable surface repair items.

**INSTALLATION**

## Pipe and Fittings

No defective pipe or fittings shall be laid or placed in the piping, and any piece discovered to be defective after having been laid or placed shall be removed and replaced by a sound and satisfactory piece.

Each pipe and fitting shall be cleared of all debris, dirt, etc., before being laid and shall be kept clean until accepted in the complete work.

Pipe and fittings shall be laid accurately to the lines and grades indicated on the drawings or required. Care shall be taken to ensure a good alignment both horizontally and vertically.

Pipe shall have a firm bearing along its entire length. No pipe or fitting shall be permanently supported on saddles, blocking, or stones.

The deflection of alignment at a joint shall not exceed the appropriate permissible deflection as specified in the tabulation titled PIPE DEFLECTION ALLOWANCES.

**ITEMS 302.06, 302.08, 302.10, 302.12 & 309. (Continued)**

## PIPE DEFLECTION ALLOWANCES

| Maximum permissible deflection, in.* |               |                  |
|--------------------------------------|---------------|------------------|
| Size of pipe, in.                    | push-on joint | Mechanical joint |
| 4                                    | 19            | 31               |
| 6                                    | 19            | 27               |
| 8                                    | 19            | 20               |
| 10                                   | 19            | 20               |
| 12                                   | 19            | 20               |

When mechanical joint, push-on joint or similar pipe is laid, the bell of the pipe shall be cleaned of excess tar or other obstructions and wiped out before the cleaned and prepared spigot of the next pipe is inserted into it. The new pipe shall be shoved firmly into place until properly seated and held securely until the joint has been completed.

**Temporary Plugs**

At all times when pipe laying is not actually in progress, the open ends of pipe shall be closed by temporary watertight plugs or by other approved means. If water is in the trench when work is resumed, the plug shall not be removed until all danger of water entering the pipe has passed.

**Appurtenances**

Valves, fittings, and appurtenances shall be set and jointed as indicated on the drawings.

**ASSEMBLING****Push-On Joints**

Make up by inserting the gasket into the groove of the bell and applying a thin film of special nontoxic gasket lubricant uniformly over the inner surface of the gasket which will be in contact with the spigot end of the pipe.

The chamfered end of the plain pipe shall be inserted into the gasket and then forced past it until it seats against the bottom of the socket.

**Bolted Joints**

Before the pieces are assembled, rust-preventive coatings shall be removed from machined surfaces. Pipe ends, sockets, sleeves, housings, and gaskets shall be thoroughly cleaned, and all burrs and other defects shall be carefully smoothed.

**ITEMS 302.06, 302.08, 302.10, 302.12 & 309. (Continued)**
**Mechanical Joints**

Surfaces against which the gasket will come in contact shall be thoroughly brushed with a wire brush prior to assembly of the joint. The gasket shall be cleaned. The gasket, bell, and spigot shall be lubricated by being washed with soapy water.

The gland and gasket, in that order, shall be slipped over the spigot, and the spigot shall be inserted into the bell until it is correctly seated.

The gasket shall then be seated evenly in the bell at all points, centering the spigot, and the gland shall be pressed firmly against the gasket.

After all bolts have been inserted and the nuts have been made up finger tight, diametrically opposite nuts shall be progressively and uniformly tightened all around the joint to the proper tension, preferably by means of a torque wrench.

The correct range of torque as indicated by a torque wrench and the length wrench (if not a torque wrench) used by an average man to produce such range of torque, shall not exceed the values specified in the tabulation titled TORQUE RANGE VALUES.

TORQUE RANGE VALUES

| Nominal pipe size | Bolt diameter | Range of torque | Length of wrench |
|-------------------|---------------|-----------------|------------------|
| <u>in.</u>        | <u>in.</u>    | <u>ft.-lb.</u>  | <u>in.</u>       |
| 3                 | 5/8           | 40-60           | 8                |
| 4 thru<br>24      | 3/4           | 60-90           | 10               |
| 30, 36            | 1             | 70-100          | 12               |

If the effective sealing of the joint is not attained at the maximum torque indicated above, the joint shall be disassembled and thoroughly cleaned, then reassembled. Bolts shall not be overstressed to tighten a leaking joint.

**Restrained Joints**

Install in accordance with manufacturers written instructions. Do not exceed manufacturer's permissible pipe deflection allowance.

**Sleeve-Type Couplings**

Prior to the installation of sleeve-type couplings, the pipe ends shall be cleaned thoroughly for a distance of 8-inches. Soapy water may be used as a gasket lubricant.

A follower and gasket, in that order, shall be slipped over each pipe to a distance of about 6-inches from the end, and the middle ring shall be placed on the already laid pipe end until it is properly centered over the joint.

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**ITEMS 302.06, 302.08, 302.10, 302.12 & 309. (Continued)**

The other pipe end shall be inserted into the middle ring and brought to proper position in relation to the pipe already laid. The gaskets and followers shall then be pressed evenly and firmly into the middle ring flares. After the bolts have been inserted and all nuts have been made up finger tight, diametrically opposite nuts shall be progressively and uniformly tightened all around the joint, preferably by use of a torque wrench of the appropriate size and torque for the bolts. The correct torque as indicated by a torque wrench shall not exceed the manufacturers recommended values. After assembly and inspection and before being backfield, all exterior surfaces of buried sleeve-type couplings, including the middle and follower rings, bolts, and nuts, shall be thoroughly coated with an approved heavy-bodied bituminous mastic. Care shall be taken, and appropriate devices used to ensure that the undersides, as well as the more readily accessible parts, are well coated.

**POLYETHYLENE ENCASEMENT**

When required, install in accordance with AWWA C105.

**INSULATION**

Place factory insulated pipe sections as directed by the engineer. Pipe joint field closures shall be installed after the pipe is tested and approved. Make field closures with resin and reinforcement identical to protective jacket. Minimum seal lap to be 3-inches. Apply 2 coats of asphalt mastic with 10-10 mesh, or equivalent at all exposed edges of insulation.

**SOCKET PIPE CLAMPS, TIE RODS AND BRIDLES**

Where indicated or necessary to prevent joints or sleeve couplings from pulling apart under pressure, suitable pipe clamps, tie rods or bridles shall be provided. Bridles and tie rods shall be at least 3/4 in. diameter except where they replace flange bolts of smaller size, in which case they shall be fitted with a nut on each side of the pair of flanges. The socket clamps, tie rods or bridles shall be coated with an approved bituminous paint after assembly or if necessary, prior to assembly.

**PIPING SUPPORT (THRUST BLOCK)**

Where necessary, bends, tees, and other fittings in pipelines buried in the ground may be backed up with 3000 psi concrete placed against undisturbed earth where firm support can be obtained. If the soil does not provide firm support, then restraining devices shall be provided.

**CLEANING**

Prior to the pressure and leakage tests, thoroughly clean piping of all dirt, dust, oil, grease and other foreign material. This work shall be done with care to avoid damage to linings and coatings.

**ITEMS 302.06, 302.08, 302.10, 302.12 & 309. (Continued)****TESTING**

Except as otherwise directed, pipelines shall be given combined pressure and leakage tests in sections of approved length. Provide 24 hour notice to Engineer for all testing. The Contractor shall make arrangements for procuring water for testing and be responsible for all associated fees.

Furnish and install suitable temporary testing plugs or caps; all necessary pressure pumps, pipe connections, meters, gages, relief valves, other necessary equipment; and all labor required.

Subject to approval and provided that the tests are made within a reasonable time considering the progress of the project, and the need to put the section into service, the Contractor may make the tests when he desires.

However, pipelines to be embedded in concrete shall be tested prior to placing of the concrete and exposed piping shall be tested prior to field painting.

Unless it has already been done, the section of pipe to be tested shall be filled with water of approved quality, and all air shall be expelled from the pipe. If hydrants or blow offs are not available at high points for releasing air the Contractor shall make the necessary excavations, install the corporation stops and whips and backfill as required. After completion of the tests, if directed by the Engineer, remove corporations and plug said holes.

The section under test shall be maintained full of water for a period of 24 hours prior to the combined pressure and leakage test being applied.

The pressure and leakage test shall consist of first raising the water pressure (based on the elevation of the lowest point of the section under test and corrected to the gage location) to a pressure in pounds per square inch numerically equal to the pressure rating of the pipe but not to exceed 200 psi. Do not apply this pressure to items of equipment known to be incapable of withstanding such pressure.

If the Contractor cannot achieve the specified pressure and maintain it for a period of two hours with no additional pumping, the section shall be considered as having failed to pass the test. Allowable leakage over the two hour period shall be calculated per AWWA C-600 as summarized in the following table.

**ITEMS 302.06, 302.08, 302.10, 302.12 & 309. (Continued)**

Hydrostatic Testing Allowance per 1,000 ft. of Pipe  
(Loss in U.S. Gallons Following a 2 Hour Test)

| Avg. Pipe Press. (psi) | Nominal Pipe Diameter |       |        |        |        |        |
|------------------------|-----------------------|-------|--------|--------|--------|--------|
|                        | 6 in.                 | 8 in. | 12 in. | 16 in. | 24 in. | 36 in. |
| 150                    | 1.10                  | 1.48  | 2.20   | 2.94   | 4.42   | 6.61   |
| 175                    | 1.18                  | 1.60  | 1.38   | 3.18   | 4.76   | 7.16   |
| 200                    | 1.28                  | 1.70  | 2.56   | 3.40   | 5.10   | 7.64   |

If the section fails to pass the pressure and leakage test, the Contractor shall do everything necessary to locate, uncover, and repair or replace the defective pipe, fitting, or joint, all at his own expense and without extension of time for completion of the work. Additional tests and repairs shall be made until the section passes the specified test and is considered acceptable by the Engineer.

If, in the judgment of the Engineer, it is impracticable to follow the foregoing procedure exactly for any reason, modifications in the procedure may be made as required and approved by the Engineer, but in any event the Contractor shall be fully responsible for the ultimate tightness of the line within the above leakage and pressure requirement.

All testing to be witnessed by the Engineer.

**DISINFECTING AND FLUSHING**

At no time is there to be a physical connection between the existing distribution system and the newly installed water mains, until final approval is given by the Owner and Engineer. The complete pressure testing, flushing, and disinfection process must be completed before final approval is given, and the Contractor is allowed to make any permanent connections to the existing water distribution system.

The Contractor shall utilize a separate, temporary piping system, conforming to the requirements of Item 346.6 "6 Inch Temporary Bypass", for flushing, filling, testing and chlorination of various sized water mains. The temporary piping system shall consist of corporation stops or valves on the supply line and the main to be filled. A reduced pressure zone device (relief valve between two check valves) shall be installed in the temporary piping system to ensure that no water is allowed to return to the supply line. Fire hydrants may not be used for sampling points but may be utilized as a feed source if properly flushed and the above temporary piping system installed. Main line valves SHALL NOT be utilized to fill, flush, test or chlorinate water mains unless authorized and supervised by the Engineer.

The Contractor shall disinfect the lines carrying potable water.

Furnish all equipment and materials necessary to do the work of disinfecting and perform the work in accordance with the procedure outlined in the AWWA Standard C651 except as otherwise specified herein.

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**ITEMS 302.06, 302.08, 302.10, 302.12 & 309. (Continued)**

The dosage shall be such as to produce a chlorine concentration of not less than 10 PPM (mg/l) after a contact time of not less than 24 hours.

After treatment, the main shall be flushed with clean water until the residual chlorine content does not exceed system the background chlorine concentration.

Before disposing of the water used in disinfecting and flushing water mains thoroughly, neutralize it through the application of a reducing agent, as referenced in AWWA C651.

Dispose of the water used in disinfecting and flushing in an approved manner.

Connection at cut ins shall be swabbed with 50 PPM solution of chlorine at locations when above methods are not possible.

Bacteriological sampling and testing shall be done in accordance with AWWA C651 for each main and each branch. In addition to (2) consecutive samples for total coliform, two consecutive samples shall also be analyzed for heterotrophic plate count (HPC). Sampling shall be accomplished with sterile bottles treated with sodium thiosulfate, as required by Standard Methods. No hose or fire hydrants shall be used in collection of samples. A corporation stop installed on the main, with a removable copper tube gooseneck assembly, is the recommended method.

Testing shall be done by a laboratory approved by the Engineer, in accordance with Standard Methods, and shall show the absence of coliform organisms. A standard plate count may be required at the option of the Engineer.

In the event that positive reports of contamination are received (either from samples taken by the contractor or the Owner), the Contractor shall flush and re-chlorinate the mains as many times as necessary until satisfactory results and approval by Owner and Engineer are obtained.

**CONNECTION TO EXISTING WATER MAINS**

In general, connection to existing water mains will not be allowed prior to the new water main successfully passing pressure and bacteria tests that can be verified with written confirmation. Any exception to this requirement will be at the sole discretion of the Engineer and/or Owner.

**AS-BUILT DRAWINGS**

The work under this heading shall also include the development of As-Built plans in electronic format (AutoCAD 2020 or later). The AutoCAD file shall conform to the current version of the MassGIS Standard for digital Plan Submission to Municipalities. The plan shall include a minimum of three (3) tie dimensions and depth to all pipe bends, tees, gates, caps, plugs, hydrants, connection points, curb stops, and corporation cocks. The plan shall also indicate size and location of thrust blocks. Plans shall be submitted in both hard copy and electronic format (AutoCAD 2020 and PDF) to the Town of Billerica, Department of Public Works.

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**ITEMS 302.06, 302.08, 302.10, 302.12 & 309. (Continued)****METHOD OF MEASUREMENT**

Items 302.06, 302.08, 302.10, and 302.12 will be measured for payment by the foot along the horizontal projection of the centerline of the completed water main, the lengths of valves and fittings not being deducted.

Item 309. will be measured for payment by the number of pounds, of fittings furnished and installed as directed and approved by the Engineer.

**BASIS OF PAYMENT**

Items 302.06, 302.08, 302.10, and 302.12 will be paid for at the respective contract unit prices per Foot, which prices shall include all labor, materials, equipment, submittals, as-built drawings and incidental costs required to complete the work.

The unit prices for items 302.06, 302.08, 302.10, and 302.12 will constitute full compensation for furnishing and installing the water main for sizes and classes specified including furnishing and installing water main associated with hydrant installation for the respective quantities as above determined. The unit prices for items 302.06, 302.08, 302.10, and 302.12 will constitute full compensation for furnishing and installing polyethylene wrap and water main insulation as required and directed by the engineer. The unit prices for items 302.06, 302.08, 302.10 and 302.12 will also include full compensation for furnishing and installing utility marking tape associated with the work and providing as-built drawings.

The unit prices for items 302.06, 302.08, 302.10, and 302.12 will include installation of restrained joints and thrust blocks for pipe as required and directed by the Engineer. The unit prices will include saw cutting existing pavement, removal and disposal of excavated bituminous concrete, excavation (excluding Class B Trench Excavation or Rock Excavation) and backfill, designing and constructing earth support, dewatering and drainage, disposal of excess material, cutting, removing, dewatering and disposing of existing water mains and fittings of all sizes where necessary, laying and jointing pipe, furnishing and installing crushed stone bedding.

The unit prices for items 302.06, 302.08, 302.10, and 302.12 will also include cost for pressure testing, chlorination, flushing, sampling, and analysis performed by separate independent and qualified companies and laboratories, connections to the existing water mains (including sleeve and solid sleeve couplings), and all work incidental thereto, and all work not specifically included for payment under other items.

The unit prices for items 302.06, 302.08, 302.10, and 302.12 will include a reasonable number of delays encountered for shutdowns of existing water mains required to prosecute the work. The unit price for these Items will include a maximum allowance of one week to locate and repair any detected leaks in the water main. Beyond this period, the Contractor will pay for all additional required engineering, inspection and police detail expenses until such leaks are fully repaired.

**ITEMS 302.06, 302.08, 302.10, 302.12 & 309. (Continued)**

Item 309. will not include weight of glands, bolts, nuts, gaskets, or accessories. The unit price for Item 309. will be full compensation for furnishing and installing the new fittings with cement lining, glands, bolts, nuts, gaskets, accessories, thrust blocking, and all work required for, or incidental to the satisfactory completion of the Item for which payment is not provided. Any fittings used for the Contractor's convenience shall be at his own expense. If a different fitting must be used in lieu of the fitting shown on the Drawings, payment shall be made of the basis of the difference in weights in accordance with Item 309.

Gravel borrow for backfill for water pipe shall be used if the in-situ backfill material is not suitable and as directed by the Engineer. Gravel borrow for backfill will be paid for under Item 151.2.

The unit prices for items 302.06, 302.08, 302.10, and 302.12 will include compensation for removal, handling and disposal of any existing water main encountered in the trench to be abandoned.

**ITEM 316.2**

**CUT AND CAP EXISTING WATER MAIN**

**EACH**

The work performed under this item shall conform to the relevant provisions of Subsection 301 and the following.

This Item covers any conflict with proposed utilities, the abandoned or active water main regardless of size shall be cut and capped under this item.

Caps shall be manufactured by A.Y. McDonald Mfg. Co., Dubuque, IA; Mueller Co., Decatur, IL; Red Hed Mfg. Co., Boston, MA; or an approved equivalent.

The Contractor shall cut and cap water mains to be abandoned or remain active as indicated on the drawings.

The two active water main locations to be cut and capped are shown on sheet 51 located in the vicinity of the intersection of Boston Road and Bear Hill Road.

**METHOD OF MEASUREMENT**

Item 316.2 will be measured for payment by Each cap installed, regardless of size installed, complete in place.

**BASIS OF PAYMENT**

Item 316.2 will be paid for at the contract unit price per Each which unit price shall include full compensation for the cutting and capping the existing water mains to be abandoned or remain active, ensuring that all necessary valves are closed, excavation, dewatering, backfilling, installation of thrust blocks or thrust restraint for water main to remain active against the water main to be abandoned, roadway and sidewalk restoration and incidental costs required to complete the work. The unit price shall also include all work required for this Item that is not specifically included for payment under other items.

**ITEM 346.6****6 INCH TEMPORARY BYPASS****FOOT****GENERAL**

The work under this Item shall conform to the relevant provisions of Subsection 301 of the Standard Specifications, and the following:

**1.1 SUMMARY**

The work shall include furnishing, installing, disinfecting, maintaining, and remove potable water bypass pipe, connections, laterals, and services required to adequately serve water customers. The work shall also include excavation and backfilling, constructing ramps and/or burying piping at driveways and other access ways, replacement of temporary and permanent pavement, restoration of public and private property.

**1.2 SYSTEM DESCRIPTION****A. Design requirements**

1. Review the Town of Billerica's water plans, available at the office of the Department of Public Works, to determine the extent of the by-pass, especially where dead ends and division gates may require bypass piping. No additional payment shall be considered for the extension of bypass to feed services fed from dead ended pipe or pipe where flow is interrupted by a division gate. This may or may not be noted on the plan. In either case the Contractor is responsible for determining the locations of all dead ends and all locations which require bypass piping.
2. Coordinate with the Town of Billerica Water Department as required to obtain approval and/or necessary permits required to perform the work under this contract.
3. The number of temporary hydrants to be installed within the bypass piping system shall be equal to or greater than the number of hydrants existing within that system.
4. Provide temporary services for the customers whose permanent service line is:
  - Out of service due to the main pipe to which it is connected to is being replaced.
  - Out of service due to the main pipe to which it is connected to is being served only by the main being rehabilitated or replaced, including dead end pipes and pipes ending at division gates.
  - Out of service for any other reason in connection with work under this contract.
5. The bypass shall not be less than the sizes indicated in these specifications and in any case not less than 2-inch diameter. All temporary hydrants must be feed by either an in-service hydrant or a direct connection to an underground water main with 6-inch temporary bypass piping.
6. Water for the temporary connection shall be from Owner's nearest available hydrants remaining in service.

**ITEM 346.6 (Continued)****B. Performance Requirements**

The pipe and appurtenances utilized for temporary connections shall be suitable for potable water transmission and distribution and be capable of withstanding a service pressure of 150 psi.

Have readily available sufficient additional quantity of bypass pipe, connections, lateral and service material of suitable sizes to replace or supplement the temporary facilities in the event these prove inadequate in any way.

**1.3 SUBMITTALS**

- A. Proposed layout plan and operations schedule for installing and removing temporary bypass, connections, services, valves, and temporary hydrant locations.
- B. Details of the installation, operation, maintenance, testing, disinfection, and removal of temporary facilities including bypass, connections, laterals, customer services and customer connections and temporary fire hydrants.
- C. List of materials with sizes for temporary bypass, connections, and services.
- D. Submit and obtain approval from the Engineer, for the temporary by-pass system prior to start of construction.

The Contractor is advised additional review by the local public agency may be required and he should schedule his submittals to avoid any delays in the Work.

**1.4 QUALITY ASSURANCE**

- A. The Engineer's permission will be required for bypass pipelines, connections, services, and laterals to be laid across streets.
- B. The Engineer's permission will be required to remove permanent customer services, laterals, and water mains from normal services and to return these to normal service.
- C. Safety
  - 1. The proposed temporary connections shall be capable of preventing contamination of contiguous potable water distribution system and services.
  - 2. Coordinate and cooperate with the Owner's water utility and fire department to maintain water distribution and fire protection capability.
  - 3. Ensure that all precautions have been taken for public safety considerations.
  - 4. The Contractor's attention is directed to requirements within the Specifications regarding water supply for Contractor's operations.
  - 5. The Contractor's attention is directed to requirements of the *Traffic Management Plans and Detail Drawings*.

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**ITEM 346.6 (Continued)****PRODUCTS****1.5 MATERIALS**

- A. All pipes, fittings, hoses, connections, and valves suitable for potable water services shall be capable of supplying a service pressure of a minimum of 150 psi and have prior approval of the Engineer.
  - 1. Piping and fittings shall be steel.
  - 2. All hose must be NSF approved.

**PART 2 EXECUTION****2.1 EXAMINATION**

- A. Fire service lines
  - 1. The Contract Drawings provide the size and location of most known fire service pipes on the main streets impacted by the construction. The Contractor shall become familiar with the existing water systems and be responsible for the adequate temporary feed of all fire service lines. Boston Road within the limits of the Work is an active construction zone, however. Existing information depicted on plans may have been altered by the construction and is not guaranteed.
  - 2. Coordinate the connection/disconnection of fire service piping with the buildings fire service contractor.

**2.2 PREPARATION**

- A. Obtain all street opening permits required by the Town and or State if applicable.
- B. Notify the Owner, the Owner's water utility and the fire department 48 hours in advance of the time of connecting and disconnecting temporary and permanent facilities so that representatives of the Owner's water utility and fire department may be present at installation or removal of permanent and temporary connections and to permit the Owner to inform customers and users as the Owner deems necessary.
  - 1. Assist in distribution of all customer notices.

**2.3 OPERATION OF EXISTING VALVES**

- A. In accordance with the requirements of Town of Billerica Water Department

**2.4 INSTALLATION**

- A. Furnish, install, maintain, and later remove devices necessary to ensure public safety as required and as approved.
- B. Excavation and backfill in accordance with Subsection 140.
- C. Do not operate the Owner's valves, stops and hydrants without the Owner's prior approval.
- D. Temporary bypass, connections, laterals, and customer services shall not be installed across streets except as permitted and approved by the Engineer.

**ITEM 346.6 (Continued)**

- E. Water main laterals that are to remain in service shall be connected to the temporary bypass.
- F. Work on existing water mains to be in accordance with items 302.6 through 302.12.
- G. Bypass piping shall be looped at all times from at least 2 separate sources with adequate supply.
- H. The bypass shall be laid out of the traveled way in a manner as to protect the bypass piping from damage. Whenever possible the temporary bypass shall be laid in the gutter unless otherwise directed by the Engineer.
- I. Where bypass has received prior approval to cross streets and street intersections, it must be valved on both sides and should be laid in a trench with temporary pavement placed over it except as permitted otherwise, by the Engineer.
- J. Where the bypass crosses driveways and similar access ways to properties, suitable ramp shall be constructed of cold bituminous patch to allow driving and passing over the pipe except where the Engineer requires bypass to be laid in a trench with temporary pavement placed over it. All 6-inch bypass crossing driveways, handicap ramps and similar access ways shall be buried to a minimum depth of 3-inch or as directed by the Engineer.
- K. The bypass shall have shut off valves approximately every 400 feet.
- L. During freezing, stormy, and inclement weather, no work shall be done except work incidental to temporary connections or as directed by the Engineer.
- M. Backflow devices shall be installed at all feed hydrants.

**2.5 HYDRANTS**

- A. Keep existing fire hydrants in service and make appropriate connections to the bypass or install and maintain temporary fire hydrants adjacent to each existing fire hydrant affected by work until the existing fire hydrants are restored to services. All hydrants temporarily out of service shall be bagged and the contractor shall notify the Town of Billerica Fire Department of all out of service hydrants.
- B. At locations where hydrants are out of service due to work under this contract, the Contractor shall provide temporary hydrants. A hydrant being used to feed temporary hydrants must be fed by a 4-inch or larger bypass pipe including whip connections.
- C. Provide each temporary fire hydrant with individual valve control.
- D. The temporary fire hydrants which the bypass is connected to for the temporary water supply shall be flushed satisfactorily prior to making connections to prevent stagnant or discolored water from entering the bypass.
- E. The existing hydrants which the bypass is connected to for the temporary water supply shall be flushed satisfactorily prior to making connections to prevent stagnant or discolored water from entering bypass. A separate valved connection from the steamer/pumper nozzle (4-inch) must be supplied for fire service.

**ITEM 346.6 (Continued)****2.6 TEMPORARY SERVICE CONNECTIONS**

- A. Furnish, install, maintain, and later remove the temporary service connections from the bypass to each building and service required to be supplied by the water main to be removed from service.
- B. Temporary connections shall be laid out of the traveled and access ways where possible.
- C. Temporary service connections shall be ramped or installed in a trench where directed and approved by Engineer.
- D. Temporary service connections shall be of equal size or larger than the permanent service connections.
- E. Install and maintain pressure regulators for temporary services where necessary.
- F. The installation and removal of temporary service connections and back cleaning of permanent services shall take place only at times when the work can be observed by the Engineer and other representatives of the Owner.
- G. Coordinate and cooperate with the service user and the Owner's water utility and fire department to assure the minimum disturbance to the user's fire protection system and other special and automated use.
- H. The temporary service connections shall be made to the user's service line at the sill cock or other convenient and reasonable point or where acceptable to Engineer.
- I. Temporary "wye" fittings are to be installed for homeowners' usage.

**2.7 TESTING**

- A. The temporary connections shall be tested to be shown to be of sufficient pressure and without leaks as demonstrated to the Engineer.
- B. If the bypass proves inadequate for the temporary service, the Contractor shall replace or supplement the bypass as appropriate to provide adequate temporary service, including replacement with a larger diameter bypass, as approved by the Engineer.

**2.8 DISENFECTION AND FLUSHING PIPELINES**

- A. Disinfect temporary facilities prior to use to Owner and Engineers satisfaction in accordance with Subsection 301 and items 302.6 through 302.12.
- B. Demonstrate that all valves are operational prior to activation and there is an adequate supply of on site replacement material.

**2.9 MAINTENANCE**

- A. Providing labor, materials, and equipment on a twenty-four (24) hour stand-by status to maintain continuous water service to all water costumers (connected to the temporary potable water bypass) at no additional cost to the Owner. Any service interruptions, whether caused by defective piping, pipe jointing or other components; physical damage by vehicles; vandalism; frost action; or other unforeseen reasons, shall be immediately corrected and repaired so as to restore the temporary service to all water customers as soon as possible.
  - 1. Provide the Owner contact information for 24/7 service.

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**ITEM 346.6 (Continued)****2.10 RESTORATION**

- A. After water mains are returned to service, the Contractor shall remove all temporary facilities not required for remaining work and restore and clean up affected areas.

**METHOD OF MEASUREMENT**

Item 346.6 will be measured for payment by the foot, along the horizontal projection of the centerline of the completed and operational temporary bypass pipe, the lengths of valves, fittings and temporary hydrants not being deducted.

**BASIS OF PAYMENT**

Items 346.6 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.

The unit price for item 346.6 will constitute full compensation for furnishing temporary bypass plans and any corrections necessary for plan approval, furnishing all piping, fittings, valves, labor, equipment and materials to install, maintain and remove an approved temporary potable water bypass system that adequately and temporarily serves all water customers with domestic and fire service lines, complete, including connections to existing hydrants for feed and connections to individual house water services (no temporary house service piping will be measured for payment under this Item), wye fittings at sill cocks, check valves and pressure reducing valves as required, disinfection and testing, temporary fire protection (hydrants), testing of fire sprinklers systems for pressure readings before and after installation of by-pass, coordination of pressure test with the buildings fire alarm company, saw cutting pavement, excavation and backfilling; furnishing, installing and disposal of cold patch material for ramping; and all work not specifically included for payment under other items.

The unit price for item 346.6 will also include the installation and connection to any existing below ground water mains or services, including furnishing and installing tapping sleeves and valves, couplings, required to be installed and removed or left-in-place, excavation, and backfilling.

The unit price for item 346.6 will constitute full compensation for any below street grade crossings, driveway crossing and handicap ramps including sawcutting, excavation, backfill, gravel base course, trench width temporary pavement (where applicable), trench width binder course, and permanent trench width pavement (where applicable).

The unit price for item 346.6 will include all costs associated with flushing of the newly connected service to properties, coordination with property owners, removing of existing meter and flushing of the newly connected service line.

The unit price for item 346.6 will also constitute full compensation for reconnecting water mains interrupted for the bypass system. Unit price shall include furnishing and installing new sections of pipe and couplings required to connect to existing.

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|                          |   |                    |
|--------------------------|---|--------------------|
| <b><u>ITEM 347.1</u></b> | <b><u>1 INCH COPPER TUBING TYPE K</u></b> | <b><u>FOOT</u></b> |
| <b><u>ITEM 347.2</u></b> | <b><u>2 INCH COPPER TUBING TYPE K</u></b> | <b><u>FOOT</u></b> |

The work under these items shall conform to the relevant provisions of Subsection 301 of the Standard Specifications, details shown on the plans, and the following:

The work shall include all necessary and incidental work required for furnishing and installing new water service and appurtenances.

The old service pipes as identified in the contract documents will be replaced from water main to new or existing curb stop. The Contractor shall notify the Town of Billerica Public Works Department seven business days prior to commencing work on these items.

Service to abutting properties shall not interrupt for more than two hours. The abutters shall be informed of the service cutoff 48 hours in advance.

Copper tubing shall be new Type K annealed copper tubing meeting the requirement of Federal Specification WW-T 7996, conforming to ASTM specifications B-75, B-88, B-68 as they apply to Type K copper tubing and meeting the requirement of AWWA C800.

#### **SUBMITTALS**

Immediately, upon receipt of the Notice to Proceed, submit catalog cuts, shop drawings and a list of material to be furnished by the pipe manufacturer intended to be utilized on this project. Also, include information on the local representative for each manufacturer if product is sold through a distributor.

#### **METHOD OF MEASUREMENT**

Items 347.1 and 347.2 will be measured for payment by the foot, along the horizontal projection of the centerline of the completed new water service, the lengths of valves and fittings not being deducted.

#### **BASIS OF PAYMENT**

Items 347.1 and 347.2 will be paid for at the respective Contract unit prices per foot, complete in place, which prices shall include all labor, material, tools, equipment and incidental costs required for furnishing and installing new water service pipe and appurtenances including fittings and adapters, concrete block, insulation, removing and resetting existing materials in the same or new locations, removal and disposal or abandonment of the existing water service piping and appurtenances, excavation to the depth required and backfill trench in accordance with these specifications and as shown on the contract plans, and the testing of the modified water line, complete in place.

Any test pits which may be required by the Engineer will be paid for under Item 141.1 Test Pit for Exploration.

Class B Rock will be measured and paid for under Item 144.

|                           |   |                    |
|---------------------------|---|--------------------|
| <b><u>ITEM 352.06</u></b> | <b><u>6 INCH GATE AND GATE BOX REMOVED AND DISPOSED</u></b> | <b><u>EACH</u></b> |
| <b><u>ITEM 352.08</u></b> | <b><u>8 INCH GATE AND GATE BOX REMOVED AND DISPOSED</u></b> | <b><u>EACH</u></b> |
| <b><u>ITEM 359.1</u></b>  | <b><u>GATE BOX REMOVED AND DISPOSED</u></b>                 | <b><u>EACH</u></b> |
| <b><u>ITEM 377.1</u></b>  | <b><u>HYDRANT ASSEMBLY REMOVED AND DISPOSED</u></b>         | <b><u>FOOT</u></b> |
| <b><u>ITEM 381.4</u></b>  | <b><u>SERVICE BOX REMOVED AND DISPOSED</u></b>              | <b><u>EACH</u></b> |

The work under these items shall conform to the relevant provisions of Subsection 301 of the Standard Specifications, and the following:

## **PART 1 GENERAL**

### **SUMMARY**

The work shall include:

- Abandonment of existing water distribution pipe.
- Removal & disposal of existing valves.
- Removal & disposal of existing valve boxes.
- Removal & disposal of existing service boxes.
- Removal & disposal of existing hydrants assemblies.

### **QUALITY ASSURANCE**

Use adequate numbers of skilled workmen who are trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and methods required for proper performance of the work in this section.

Use equipment of adequate size, capacity, and quantity to accomplish the work of this Section in a safe timely manner.

Comply with the directions of the Engineer and the requirements of governmental agencies having jurisdiction.

### **PRODUCTS**

#### **MATERIALS**

Ordinary borrow shall meet the requirements of in Section M1.01.0 of MassDOT Highway Division Standard and Supplemental Specifications

Gravel borrow shall meet the requirements of in Section M1.03.0 of MassDOT Highway Division Standard and Supplemental Specifications

Sand borrow shall meet the requirements of in Section M1.04.0 of MassDOT Highway Division Standard and Supplemental Specifications

### **EXECUTION**

#### **GENERAL**

Removal of existing hydrants, valves, valve boxes and service boxes shall be performed only after the existing water main has been deactivated.

Surface repair methods shall meet the requirements of the applicable surface repair items.

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**ITEMS 352.06, 352.08, 359.1, 377.1 & 381.4 (Continued)****ABANDONING WATER MAINS**

The deactivation of the water mains shall be done upon completion of:

- Installation and successful testing of the new bypass system including all hydrants and appurtenances.
- Removal and reconnection of all buildings from the existing pipelines to the new bypass system.
- Approval for the deactivation of the water mains by the Engineer or Owner.
- The end of the pipe to be abandoned shall be sealed with a mechanical joint cap and restrained, payment for cutting and capping of the existing water main shall be paid for under item 316.2.

**REMOVAL OF VALVES, VALVE BOXES & SERVICE BOXES**

After the existing water main to be abandoned in place has been capped, remove the top sections of all valve boxes. After the existing valve box is removed, the existing valves shall be turned counterclockwise and left in the open position. Backfill fill in holes with ordinary borrow or sand borrow, compact, and restore surfaces as required.

After the existing water main has been deactivated, and the buildings water service has been properly connected to the bypass water system, remove the water service pipe within the limits identified on the plans, and remove the top section of all service boxes as indicated on the plans or directed by the engineer. Existing curb stops shall be left in the open position. Backfill fill in holes with ordinary borrow or sand borrow, compact, and restore surfaces to their original condition.

As designated by the plans or by the engineer, completely remove existing water main valves. Backfill fill in holes with ordinary or sand borrow, compact, and restore surfaces as required.

**REMOVAL OF HYDRANTS ASSEMBLIES**

Removal of hydrant assemblies shall be done upon the deactivation of the existing water main and the activation of the new bypass system. Carefully dig up the hydrant from the ground and remove all hydrant branch piping, fittings, and valves from the hydrant tee to the hydrant as designated by the plans or by the engineer. Backfill holes with ordinary borrow or sand borrow, compact, and restore surfaces as required.

**DISPOSAL OF HYDRANTS, VALVES, PIPING & VALVE BOXES**

All hydrants, valves, fittings, piping and valve boxes shall be disposed of by the Contractor at no additional cost to the Owner.

**ITEMS 352.06, 352.08, 359.1, 377.1 & 381.4 (Continued)**

**METHOD OF MEASUREMENT**

Items 352.06 and 352.08 will be measured for payment by Each, a count of the number of 6-inch and 8-inch gate valves and boxes removed from the existing water main and disposed.

Item 359.1 will be measured for payment by Each, a count of the number of gate boxes removed from the existing water main and disposed.

Item 377.1 will be measured for payment by Foot, measured along the horizontal projection of the centerline of the hydrant lateral from the center of the hydrant tee to the center of the hydrant, the length of valves and fittings will not be deducted.

Item 381.4 will be measured for payment by Each, a count of the number of service boxes removed from the existing water service lines and disposed.

**BASIS OF PAYMENT**

Items 352.06, 352.08, and 381.4 will be paid for at the respective Contract unit prices per Each, which price shall include all labor, materials, equipment, removal, disposal, excavation, backfill, surface restoration, and all incidental costs required to complete the work.

Item 359.1 will be paid for at the Contract unit price per Each, which price shall include all labor, materials, equipment, removal, disposal, excavation, backfill, surface restoration, and all incidental costs required to complete the work.

Items 377.1 will be paid for at the Contract unit price per Foot, which price shall include all labor, material, equipment and incidental costs required to complete the work. The unit for item 377.1 will be full compensation for the cost of removing and disposing (or handling and transporting, as directed) hydrants, hydrant gates, and hydrant gate boxes complete as specified, and detailed, including, excavation, removing all hydrant branch piping and fittings, backfilling, and all incidentals not specifically included for payment under other items.

**ITEM 390.01**      **IRRIGATION SYSTEM REMOVED AND RESET**      **FOOT**

Where a sprinkler system is encountered during the construction, the piping system and sprinkler heads will be removed and reset at new locations or modified as directed by the Engineer. The exact locations will be determined by the Engineer in the field to the satisfaction of the owner.

Some of the possible locations of Sprinkler Systems:  
STA 110+50 to STA 113+00 RT (#493 Boston Road)  
Other locations to be verified in the field

Existing sprinkler system impacted due to the construction as identified on the plan or encountered during construction operations shall be carefully removed and reset on the property as directed by the Engineer. The work also includes disconnecting existing system with coordination with owner.

All sprinkler heads and pipes etc. shall be removed carefully. The Contractor will be held responsible for any damage done during the removal and resetting of these items and shall replace or repair the damaged item as directed by the Engineer at his own expense.

Sprinkler heads and the pipes shall be relocated to new locations or eliminated as determined by the Engineer. All necessary piping shall be provided and installed by the Contractor.

The irrigation system to be R&R may not be out of service for more than two weeks (except October thru April). Any temporary work required to keep system in service will be considered incidental to this pay item.

**METHOD OF MEASUREMENT**

Item 390.01 will be measured for payment by the Foot, of irrigation tubing removed and reset in place in its final position.

**BASIS OF PAYMENT**

Item 390.01 will be paid for at the contract unit bid price per Foot, which price shall include all labor, material, equipment, excavation, backfill, soil restoration, sprinkler irrigation tubing, sprinkler heads, testing, and all incidental costs required to complete the work.

**ITEM 470.21**      **HOT MIX ASPHALT BERM, TYPE A – MODIFIED**      **FOOT**

Work under this item shall conform to the relevant provisions of Subsection 470 of the Standard Specifications and the following:

Hot Mix Asphalt Berm, Type A — Modified, shall be constructed by means of an approved extrusion machine in at the locations shown on the Plans. Hot Mix Asphalt Berm Type A – Modified shall be constructed in conformance with Hot Mix Asphalt Berm Type A as shown in Construction Standard Detail E 106.1.0 except that the berm shall be 12 inches wide instead of 24 inches and the slope shall be 1:6 instead of 1:12.

**METHOD OF MEASUREMENT**

Item 470.21, Hot Mix Asphalt Berm, Type A — Modified, will be measured for payment by the Foot, complete and in place. Measurements will be taken along the lowest exposed edge of berm..

**BASIS OF PAYMENT**

Item 470.21 will be paid for at the contract unit price bid per Foot, complete in place, which price shall include all labor, materials, tools, and equipment and all incidental costs required to complete the work.

**ITEM 504.2**

**GRANITE CURB TYPE VA4 – SPLAYED END**

**EACH**

Work under this Item shall conform to the relevant provisions of Subsection 501 of the Standard Specifications and the following:

The work shall include furnishing and installing granite curb type VA4- Splayed end.

Splayed Granite Curb shall have a beveled, mountable edge as shown on the drawings and shall be used in straight curb applications and curved radii of 10 feet or greater.

Splayed Granite Curb shall be used between granite curb type VA4 and HMA berm or curb or with sloped granite edging as directed by the Engineer. Typical length of the Splayed Granite Curb shall be 6 feet.

The curb shall be set at the line and grade required as shown on the plans.

**METHOD OF MEASUREMENT**

Item 504.2 will be measured for payment by the each, furnished and installed Splayed Granite Curb complete in place.

**BASIS OF PAYMENT**

Item 504.2 will be paid for at the Contract Unit Prices bid per each, which price shall include all labor, material, equipment, sawcutting, excavation, concrete support, compacted gravel borrow bedding and backfill, and incidental costs required to complete the work.

**ITEM 692.1**

**STONE REMOVED AND STACKED**

**CUBIC YARD**

The work shall include removing and stacking stone on owner's property as directed by the owner. The Contractor shall notify the owner before starting any work. The work shall include removal of individual stones scattered within limit of work as shown on plan or as directed by the Engineer. If any area after removal of stone need filling, it shall be with suitable material as directed by the Engineer.

**METHOD OF MEASUREMENT**

Item 692.1 will be measured for payment by Cubic Yard, of the stone removed and staked. Measurements will be taken in the final position.

**BASIS OF PAYMENT**

Item 692.1 will be paid for at the Contract unit price per Cubic Yard, which price shall include all labor, material, equipment, backfill, and all incidental costs required to complete the work..

**ITEM 697.1****SILT SACK****EACH**

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 gutter inlets within the project limits and as directed by the 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 directed by the Engineer.

Silt sacks shall remain in place until the placement of the pavement overlay or top course and the graded areas have become permanently stabilized by vegetative growth. All materials used for the filter fabric will become the property of the Contractor and shall be removed from the site.

The Contractor shall inspect the condition of silt sacks after each rainstorm and during major rain events. Silt sacks shall be cleaned periodically to remove and dispose of accumulated debris as required at no additional cost. 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.

All curb openings shall be blocked to prevent stormwater from bypassing the device.

All silt, sediment, and debris accumulated in silt sacks shall be handled and disposed of as specified in Section 227 of the Standard Specifications. Under no condition shall silt and sediment from the insert be deposited on site and used in construction.

**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 bid.

**ITEM 698.4**

**GEOTEXTILE FABRIC  
FOR PERMANENT EROSION CONTROL**

**SQUARE YARD**

The work under this item shall conform to all relevant provisions of Subsection 670 of the Standard Specifications and the following:

The work under this Item shall consist of furnishing and installing geotextile fabric as shown on the plans or as required by the Engineer.

Geotextile Fabric for Permanent Erosion Control shall conform to requirements of AASHTO M 288 and shall be listed on MassDOT's Qualified Construction Materials List. Geotextile for Permanent Erosion Control shall be used under stone for pipe ends, sediment forebay paving, and modified rock fill. If geotextile requires anchor pins they shall be included under this item.

Geotextile Fabric shall be approved by the Engineer.

The geotextile shall be placed in intimate contact with the soil without wrinkles or folds, and it shall be anchored on a smooth graded surface approved by the Engineer. The geotextile shall be placed in such a manner that placement of the overlaying materials will not excessively stretch so as to tear the geotextile.

Adjacent geotextile sheets shall be jointed by either sewing or overlapping. Overlapped seams at roll ends shall be a minimum of 1 foot except if placed under water. In such instances the overlap shall be a minimum of 3 feet. Overlaps of adjacent rolls shall be a minimum of 1 foot in all instances.

**METHOD OF MEASUREMENT**

Item 698.4 will be measured for payment by Square Yard, area of geotextile in place. The Overlap will not be measured for payment.

**BASIS OF PAYMENT**

Item 698.4 will be paid for at the contract unit price per square yard, which price shall include all labor, tools, materials, fabric, sewing, vertical edges, overlapping, and incidental costs required to complete the work.

**ITEM 706.3**

**CONCRETE PAVER WALK  
REMOVED AND RELAID**

**SQUARE YARD**

Work under this item shall conform to the relevant provisions of Subsection 701 of the Standard Specifications, and the following:

Walkway to be regraded shall have their existing pavers removed and cleaned of the jointing material. Any pavers broken or damaged during this work shall be replaced by the Contractor to match existing in color, texture and thickness. The extent of the removal shall be determined by the Engineer. The walkway shall match the proposed back of sidewalk grades, driveways shall match existing driveway grades, and shall be sloped smoothly and evenly without dips or distinct breaks when relaid.

The existing bedding shall be cleaned of all debris and properly prepared for the addition of more bedding as required for the regrading. The bedding shall match existing.

Paver Walk to be removed and relaid shall conform to AAB and ADA rules and regulations.

**METHOD OF MEASUREMENT**

Item 706.3 will be measured for payment by the square yard, of concrete paver walk removed and relaid complete in place..

**AND BASIS OF PAYMENT**

Item 706.3 will be paid for at the contract unit price per square yard, which price shall include all labor, tools, materials, replacing broken pavers, disposal or stacking of excess pavers, removing, cleaning and relaying them, for furnishing and placing the bedding and jointing materials including the concrete base, necessary excavation, sawcutting, and incidental costs required to complete the work

Concrete base thickness shall be similar to existing and will be paid for under Item 701.

**ITEM 707.11**

**METAL BENCH**

**EACH**

The work shall include furnishing and installing metal benches at the location shown on the plans and as specified herein.

Bench shall be 6 foot steel bench with a standard gray/titanium color powdercoat finish. Bench shall have horizontal strap seat and back with end arms.

Acceptable models and manufacturer's shall be,  
Model Scarborough as manufactured by Landscape Forms, Kalamazoo, MI., 1-800-430-6209.  
Model Bench #160 as manufactured by Dumor Inc., Mifflintown, PA., 1-800-598-4018.  
Model CB5WBE-5 as supplied by Beldon, Naperville, IL., 1-800-323-5664.  
Or approved equal.

Install bench on concrete pad as shown on the plans per manufacturer's recommendations or as directed by the Engineer. Contractor shall provide expansion anchor bolts that are sized to be embedded into the concrete pad. Concrete shall be core drilled, bolts installed, and any gaps shall be filled with non-shrink grout.

Benches shall be installed to maximize sidewalk width and shall not block access to buildings, bus stops, etc. In no case shall they be installed to jeopardize clear sidewalk width required by ADA. Locations shall be as shown on the plans and finalized in the field with the Engineer

All stored materials and items must be protected from weather, careless handling, and vandalism. Suitable touch-up material shall be applied to immediately repair any damage or scratches that may occur.

**METHOD OF MEASUREMENT**

Item 707.11 will be measured for payment by Each, metal bench furnished and installed.

**BASIS OF PAYMENT**

Item 707.11 will be paid for at the Contract Unit Price per Each, which price shall include all labor, tools, materials, concrete pad, mounting hardware, non-shrink grout, core drilling, and incidental costs required to complete the work

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**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 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 capable of allow video calling and recording:  |
| Video camera         | shall be High Definition 1080p widescreen capable video calling and recording with built in microphone. The microphone system shall capture natural audio while filtering out background noise.   |
| Audio                | shall be stereo multimedia speaker system delivering premium sound.   |
| OS:                  | Latest Windows Professional with all security updates   |
| Web Browser:         | Latest Internet Explorer with all security updates  |
| Applications:        | Latest MS Office Professional with all security updates<br>Latest Adobe Acrobat Professional with all security updates<br>Latest Autodesk AutoCAD LT<br>Antivirus software with all current security updates maintained through the life of the contract. |
| Monitors:            | Two 27" LED with Full HD resolution.<br>Max. resolution 1920 x 1080   |
| Flash drives:        | 2 (two) - 128GB USB 3.0   |
| Internet access:     | High Speed (min. 24 mbps) internet access with wireless router.   |

**ITEM 740.** (Continued)

The Multifunction Printer System shall meet the following minimum criteria or better:

Color laser printer, fax, scanner, email and copier all in one with the following minimum capabilities:

- Estimated volume 8,000 pages per month
- LCD touch panel display
- 50 page reversing automatic document feeder
- 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.

Compensation for this work will be made at the contract unit price per month which price includes full compensation for all services and equipment, and incidentals necessary to provide equipment, maintenance, insurance as specified and as directed by the Engineer.

**ITEM 751.8****LOAMY SAND BORROW****CUBIC YARD**

The work under this Item shall conform to the relevant provisions of Subsection 751 of the Standard Specifications and the following:

The purpose of this item is to provide a relatively low organic, free draining material as seed bed for Wetland Seed Riparian Mix in the infiltration basin other areas designated on the Plans. Unless otherwise specified on the drawings, the depth shall be 4 inches installed.

At least 30 days prior to ordering, the Contractor shall submit a one gallon sample of the loamy sand borrow and soil test results to the Engineer. Soil testing of the loamy sand shall include a Routine Soil Analysis that includes pH, Buffer pH, Extractable Nutrients, Extractable Aluminum and Lead etc. Additional soil testing shall include Soil Organic Matter and Soil Texture (USDA Textural Classification) which includes particle size analysis and grain size distribution.

No material shall be ordered until submitted soil samples and soil testing results have been approved by the Engineer. Delivered materials shall match approved materials.

**Loamy Sand Borrow**

Loamy sand borrow (from off-site) shall be a "Loamy Sand Borrow" determined by mechanical analysis and based on the USDA Classification System. It shall be of uniform composition without mixture of subsoil. It shall be free of stones, lumps, plants and their roots, debris, or other deleterious material.

All loam used in the work of this Item shall be tested and approved for use by the Engineer prior to being spread. The Contractor shall provide the laboratory with representative soil samples for testing and shall have the test reports sent directly to the Engineer.

Loamy Sand shall be 85-90% sand on the upper limit or 70-85% sand on the lower limit (25% or more very coarse, coarse, and medium sand plus less than 50% of any other single grade of sand. The percentage of silt plus 1.5 times the percentage of clay will never be less than 15 on the upper limit and the percentage of silt plus 2 times the percentage of clay will not exceed 30 on the lower limit. Organic matter shall be 3-8% and pH shall be between 6.5 and 7.8. Loamy sand shall have the following grain size distribution:

| <b>Size</b> | <b>Percent Passing</b> |
|-------------|------------------------|
| 3/4"        | 100                    |
| 3/8"        | 95-100                 |
| No. 4       | 95-100                 |
| No. 10      | 80-90                  |
| No. 40      | 30-35                  |
| No. 60      | 15-18                  |
| No. 140     | 8-15                   |

Prior to placement of loamy sand borrow; the sub-surface shall be free of stones larger than 2 inches.

**ITEM 751.8 (Continued)**

Loamy sand borrow shall be spread to a depth of four (4) inches under Restoration seeding areas in swales. Loamy sand borrow shall then be prepared by scarifying and raking. All large stiff clumps, brush, litter, stones over one (1) inch in diameter, etc. shall be removed. The loamy sand borrow shall be raked and all depressions shall be refilled and re-graded until a uniform finish is achieved.

**METHOD OF MEASUREMENT**

Item 751.8 will be measured for payment by Cubic Yard, of Loamy sand borrow in place measured after compaction to the depth specified on the plans or as directed, and there shall be no additional compensation to account for such loss as may be due to settlement, shrinkage and penetration into the underlying material.

**BASIS OF PAYMENT**

Item 751.8 will be paid for at the Contract Unit Price bid per Cubic Yard based on a depth of 4 inches after compaction. This unit price shall include all labor, tools, materials, preparing surfaces; furnishing, placing, raking, shaping and compacting loamy sand borrow and incidental costs required to complete the work

**ITEM 755.45****WETLAND RESTORATION****SQUARE YARD****DESCRIPTION**

The work under this item shall conform to the relevant provisions of Subsections 120, 751, 765, 767, and 771 of the Standard Specifications and the following:

The work under this item shall include all labor and furnishing of materials to complete the work specified herein to protect and restore existing inland wetland areas that will be temporarily impacted as shown on the drawings and as required by the Engineer.

Inland Wetland Replication work shall be as specified and compensated under that item. Tidal wetland mitigation shall be as specified under the appropriate item for tidal wetlands.

Restoration Area shall be constructed to meet the requirements of all associated permits and certifications, including relevant performance standards of the Massachusetts Wetlands Protection Act (MGL C. 131, s40), Section 401 Water Quality Certification, and Section 404, U.S. Army Corps of Engineers General Permit.

All work shall be in coordination with an approved Wetland Specialist. Wetland Specialist qualifications and requirements shall be per Item 755.75, Wetland Specialist.

**SUBMITTALS – DOCUMENTS**

Survey: To establish or confirm pre-construction baseline elevation of temporarily impacted area(s), a survey shall be submitted to the Engineer prior to any fill or other land disturbance.

Request for Conditional Acceptance: As specified below, a letter requesting Conditional Acceptance of the work and the site conditions shall be submitted to the Engineer.

Request for Final Acceptance: As specified below, a letter requesting Final Acceptance of the work and the site conditions shall be submitted to the Engineer.

Request for Certificate of Compliance (Partial or Full): If applicable, request for a Certificate of Compliance shall be submitted to the Engineer for distribution to appropriate regulatory agencies as specified below.

Monitoring Reports: Reports shall be submitted to the Engineer as specified below. Reports shall be compensated under Item 755.761 Wetland and Construction Monitoring Reports.

**ITEM 755.45 (Continued)****ASSOCIATED ITEMS AND MATERIALS****Seed Mix**

Required submittals include:

- Certificate of Materials from the supplier shall be submitted and approved 30 days prior to ordering seed. Seed species listed on the certificate shall include ecotype region (i.e., *Asclepias incarnata*, PA Ecotype).
- Seed tag from the bag of seed used shall be submitted to the Engineer at the time of seeding. Seed tag shall include ecotype region and species, guaranteed percentages of purity, weed content and germination of the seed, and the net weight. Seed tag shall match the Certificate of Materials, include the name of the supplier, and date material was sent.
- Bill of lading or a notarized Certificate of Compliance from the Supplier serving as proof of purchase shall be submitted if requested by the Engineer. Document shall include date of sale, quantity, lot number, and address of Supplier. This shall match the seed tag. Notary shall not work for either the contractor or seed supplier.

Seed mix shall be as listed under Item 765.555 Wetland Seed – Part Shade Mixture.

**Fertilizers** shall not be used.

**Water**

The Contractor shall provide water and all equipment required at no extra cost. Water shall be suitable for irrigation and free from ingredients harmful to plants and wildlife. Water from the adjacent water bodies or waterways shall not be utilized. It is the Contractor's responsibility to correct injury or damage due to the lack of water, too much water, or use of contaminated water.

**CONSTRUCTION METHODS & SEQUENCE****Site Protection Prior to Impacts**

Prior to any land work, as part of the initial site-walk, the Wetland Specialist shall photo-document the site and provide a summary report of existing conditions as outlined under Item 755.75 Wetland Specialist.

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**ITEM 755.45 (Continued)****Restoration Upon Completion of Roadway Construction Work****Sediment Barriers**

If required for sediment control during Restoration work (i.e, tilling is required to restore soil), sediment barriers shall be installed along the downslope perimeter of the Restoration Area beginning and ending in the surrounding upland so that no disturbed soil can enter adjacent wetlands or waters. Sediment barriers shall be in place and approved by the Engineer prior to any soil disturbance. No work shall take place outside the barriers.

**Removal of Fill and Grading**

If required, grades shall be restored to pre-construction elevations as shown in the baseline survey or as required by the Engineer and Wetland Specialist to restore hydrologic functions. Final elevations shall be approved by the Engineer prior to soil preparation and seeding. Grading shall be incidental to this item.

Following approval of grading to elevations required, soil shall be prepared and seeded as follows.

**Soil Scarification**

Compacted soil shall be scarified with equipment approved by the Engineer. Upon approval of soil scarification, the area shall be seeded with mulch as specified below. Seeding shall immediately follow soil preparation.

**Seeding with Mulch**

Upon approval of prepared soil, area shall be seeded. Seeding may be hand broadcast with straw mulch applied or hydroseeded per the Standard Specifications and per the manufacturer's directions. Hydromulch shall be straw or wood fiber only and shall be per the manufacturer's recommendations.

Seed tags shall be submitted at time of seeding.

**Planting**

Planting shall conform to SECTION 771 PLANTING TREES, SHRUBS AND GROUNDCOVER of the Division I Standard Specifications and as amended below.

Planting Season is May 15-June 15 and September 1-November 1 unless otherwise specified in applicable permit conditions.

Restoration Area shall be planted in the dry. Plants shall be placed according to the planting details and within the range of target elevations and at the spacing shown on the Plans or, if spacing is not indicated on the Plans, at the direction of the Wetland Specialist or the MassDOT Landscape Architect. Unless otherwise noted on the Plans, final plant locations shall be determined on site and located with regard to expected hydrology, plant growth characteristics, habitat desired, and water protection.

**ITEM 755.45 (Continued)**

Plant material shall be installed as soon as possible after delivery. Plants stored on-site prior to installation shall be stored in the shade and watered twice daily up until time of installation. Plants showing signs of stress or compromised health may be rejected by the Engineer and shall be replaced at the Contractor's expense.

Plants shall be watered as necessary to maintain healthy establishment. Plants that fail by September 1 after spring planting or by June 1 after fall planting shall be replaced at the Contractor's expense.

Plant material shall be furnished and installed as indicated including all labor, materials, plants, equipment, incidentals, re-setting of plants (frost heaves, etc), irrigation, re-planting and clean up.

If previously approved species are not available at the time of planting, the MassDOT Landscape Architect will propose substitutions relative to species, size, and quantities. Substitutions shall then be approved by the regulating authority if necessary. Provisions shall be made for a growth warranty as described below or as required by permits.

**PLANT AND SEED ESTABLISHMENT**

*Plants* shall be watered as necessary to maintain healthy establishment. Plants that fail by September 1 after spring planting or by May 15 after fall planting shall be replaced within the immediate or next planting period and at the Contractor's expense.

*Seeding* that fails to established according to the conditions of acceptance below shall be over-seeded as required by the Engineer. Washouts and channels shall be repaired and stabilized prior to overseeding. Excessive weed growth shall be pulled out by the roots or, with approval from the Engineer, cut prior to over-seeding. Soil repair and weed control are incidental to this item.

**CONDITIONAL ACCEPTANCE OF WORK**

Conditional Acceptance shall indicate approval of the wetland restoration work and agreement that work has been done according to plan or modified as approved.

Upon completion of construction, the Contractor shall submit a Request for Conditional Acceptance that includes a brief narrative from the Wetland Specialist (if applicable to project) demonstrating that the wetland restoration work was done according to plans (or how modified) and meets required permit conditions (if applicable). The narrative shall include, photo-documentation of pre-construction conditions as well as soil work, planting, and seeding. Seed tags shall be submitted as part of the Request for Conditional Acceptance.

**ITEM 755.45 (Continued)**

Upon receipt of a Request for Conditional Acceptance, the Engineer, the Wetland Specialist, and regulatory representative (if required) shall assess the Restoration Area and the surrounding areas. At a minimum, the following conditions shall be included in the narrative and reviewed as part of the on-site assessment of whether:

- The target elevations have been restored per the survey or adjusted per the Engineer. Areas that are too high or too low should be identified along with suggested corrective measures.
- Soil compaction has been mitigated.
- Soils are stabilized and there is no sediment in the wetland and no channeling of slopes.
- Hydrology meets performance standards and has been adequately restored.
- Specified seed mix has been seeded and seeded species in the wetland and adjacent upland show signs of good germination and healthy growth.
- Planted woody and herbaceous species (if included) meet specifications and are establishing well.
- There are no invasive plants visible in the restored wetland area.
- Silt fence and non-biodegradable sediment barrier materials have been removed.

Upon approval that the work meets the above conditions, MassDOT will issue a letter of Conditional Acceptance. If the Wetland Restoration work is not approved, MassDOT will issue a rejection letter requiring corrective actions. Work not approved shall be addressed by the Contractor at no extra cost.

Erosion of adjacent slopes or the flow of sediments into the wetland between Conditional and Final Acceptance shall be immediately addressed by the Contractor.

**FINAL ACCEPTANCE OF WORK**

Following one full growing season, the Contractor shall submit a Request for Final Acceptance. Submittal shall include a brief narrative of conditions. Upon receiving the Request, the Engineer, Wetland Specialist and regulatory representative (if required) shall assess the Restoration Area. Final Acceptance will initiate the start of the Monitoring Period (if required).

The following conditions shall be inspected and approved for acceptance and payment:

- Hydrology is functioning as intended.
- The desired seeded species are establishing well and cover 100 percent of the restoration area, excluding areas of open water, large boulders or planned bare soil.
- No sediments have entered the wetland.
- Adjacent slopes are stabilized with desirable vegetation.
- Planted woody and herbaceous species (if included) meet specifications and are establishing well.
- There are no visible invasive plants.

**ITEM 755.45 (Continued)**

If the restoration work is not approved, MassDOT will issue a rejection letter requiring corrective action. All costs associated with corrective measures and plant replacement shall be incidental to this item with no additional compensation. Work not approved shall be addressed by the Contractor at no extra cost.

**MONITORING REPORTS FOR REGULATORY COMPLIANCE**

Post wetland construction Monitoring Reports shall be completed and submitted by the Wetland Specialist as specified and compensated under Item 755.761 Wetland and Construction Monitoring Reports.

Generally, the following conditions shall be met upon each inspection:

- Hydrology is functioning as intended, relative to the preexisting condition of the restored wetland.
- Seeded species are establishing well and cover 100 percent of the area, excluding areas of open water areas or planned bare soil.
- No sediments have entered into wetland.
- Adjacent slopes are stabilized with desirable vegetation.
- All planted species (if included) are living and establishing well.
- There are no visible invasive plants.

If, at the end of the required monitoring period (2 years), the requirements have not been met and success of the wetland replication area has not been achieved as determined by the Monitoring Reports, the Contractor shall provide corrective measures. All costs associated with corrective measures and plant replacement shall be incidental to this item with no additional compensation.

**METHOD OF MEASUREMENT AND BASIS OF PAYMENT**

Item 755.45 will be paid for at the Contract unit price per Square Yard, which price shall include all labor, materials, compost and amendments, seed, mulch, equipment, submittals, maintenance, grading, and incidental costs necessary to complete the work as required.

Payment shall be as follows:

- 50% upon completion of soil preparation and seeding
- 25% upon Conditional Acceptance
- 25% upon Final Acceptance or approval of the Engineer

Sediment Control Barrier will be paid under Item 767.121

Wetland Specialist will be paid under Item 755.75.

Wetlands Monitoring Reports for follow-up monitoring will be paid under Item 755.761

**ITEM 755.75**

**WETLAND SPECIALIST**

**HOUR**

Work under this Item shall be for services of a Wetland Scientist, Wetland Ecologist, Restoration Ecologist, or other professional with similar qualifications hereafter referred to as the “Wetland Specialist.”

“Wetland Mitigation” shall be used herein for applicable wetland work. For this project, applicable wetland work is for: **Item 755.45 Wetland Restoration (restoration after temporary impacts).**

The Wetland Specialist shall demonstrate knowledge and expertise to coordinate and oversee all work associated with the Wetland Mitigation as defined herein, as shown on the Plans, as required by permits, and as specified under the relevant Wetland Mitigation items. The Wetland Specialist shall also serve as the Environmental Monitor, in accordance with Special Condition 38 of the Order of Conditions.

Regulatory monitoring reports following Final Acceptance of the wetland restoration and construction monitoring reports shall be per Item 755.761, Wetland and Construction Monitoring Reports.

For all onsite work, the Wetland Specialist shall sign in and sign out with the Engineer.

The Wetland Specialist shall not be from the same company as the company responsible for performing construction activities or planting, seeding, and/or maintaining the wetland.

**QUALIFICATIONS**

The Wetland Specialist shall have a minimum of five (5) years of experience with construction and monitoring of wetland mitigation areas similar in size, type, and complexity to the contract mitigation. When required by permits, ten (10) years of experience may be required. The Wetland Specialist shall be thoroughly versed in the Commonwealth of Massachusetts Wetlands Protection Act (MGL C.131, s.40), U.S. Army Corps of Engineers New England District Compensatory Mitigation Guidance, and all other relevant regulations of the Massachusetts Department of Environmental Protection and the U.S. Army Corps of Engineers New England District.

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**ITEM 755.75 (Continued)****SUBMITTALS - QUALIFICATIONS**

Within sixty (60) days following the Notice to Proceed, the Contractor shall provide proof of qualifications for the Wetland Specialist to the Engineer, Conservation Commission (Commission) and/or the Director of Environmental Affairs (Director) for approval. Submittals shall include, but not be limited to, the following:

- Resume of the individual on-site implementing the wetland specialist work. If the Wetland Specialist changes over the course of the project, the new individual shall submit resume and qualifications for approval 30 days prior to doing any work on-site.
- Resume of any personnel working on-site in place of the Wetland Specialist. Individual shall be approved prior to work on-site.
- Narrative describing the company, its expertise, technical qualifications and experience with wetland construction.
- At least three (3) references from prior work of a similar nature completed in the last five (5) years and by the individuals who will perform the work. Provide contact information for each reference including address, phone number and email.
- A summary of each reference project including nature of the work, project size, dates, and period of construction and monitoring, methodologies used, and summary of success (or not) in terms of meeting performance objectives. Summary shall include a minimum of one before and one after photo for each project.

**SUBMITTALS – DOCUMENTATION AND REPORTS****Wetland and Buffer Zone Construction Oversight**

Wetland Specialist shall provide documentation of pre-existing conditions and wetland and Buffer Zone construction as specified below and as part of fulfilling the Scope of Work described below. Documentation shall include photos that are clear and legible. Photos are incidental to this item.

- ***Site Walk Prior to Disturbance and Construction of Wetlands and Buffer Zone:*** Provide brief assessment with photos, including documentation of the existing wetlands and Buffer Zone to be impacted (both permanent and temporary), proposed wetland replication area, and reference/model wetland areas (typically an adjacent undisturbed wetland or the existing wetland to be impacted). Photos of existing wetlands that will be temporarily impacted shall include a view from at least 3 angles.
- ***Excavation and Grading:*** Documentation shall include minimum of two photos of the excavated wetland and two photos after final grading prior to planting and seeding. For restoration areas, photos shall show soil preparation (i.e, tilling and grading), if applicable. For work in Buffer Zone, provide assessment of final grading.
- ***Planting and Seeding:*** Provide assessment and photos of vegetation and stabilization upon completion of planting and seeding work.

Wetland and Buffer Zone construction documentation and reports shall be submitted with Request for Conditional Acceptance and for the Order of Conditions and other regulatory permits as required.

## **ITEM 755.75 (Continued)**

### **Acceptance of Work & Regulatory Compliance**

The Wetland Specialist shall submit the following documents if and as specified herein and under Item the relevant Wetland Mitigation items:

- Request for Conditional Acceptance.
- Request for Certificate of Compliance (Partial or Full) when applicable.
- Request for Final Acceptance.

### **SCOPE OF WORK**

In the event of discrepancies with the applicable permits, the Wetland Specialist shall submit a Request for Information (RFI) to the Engineer.

### **General**

The Wetland Specialist shall be responsible for the following:

- Review and have a comprehensive knowledge of the environmental permits relevant to the specific mitigation work being done so as to ensure compliance throughout the duration of the contract.
- Review Stormwater Pollution Prevention Plan (SWPPP) and make recommendations, if necessary, to protect wetland resource areas and Buffer Zone.
- Identify and inform the Contractor and Engineer of unique site conditions which may require adjustments to the schedule, design, or construction methods. For example, wildlife nesting, illegal dumping, or rare species.
- Identify and inform the Contractor and Engineer of any sediment or erosion control problems observed within wetland resource areas and Buffer Zone.
- Advise so as to avoid impacts to adjacent areas and regulated wetland resources.
- Participate in necessary meetings, including the Pre-construction meeting, as required by permits and when requested by the Engineer.
- Monitor compliance with the Order of Conditions, while on-site during other required inspections, and report and non-compliance to the Commission.
- Review the As-Built plan associated with the stormwater management system and overall work within wetland resource area and Buffer Zone.

**ITEM 755.75 (Continued)****Inspections & Construction Oversight**

The Wetland Specialist shall be responsible for, but not limited to, the following:

- Pre-Construction Site Walk
  - Following surveying, flagging, and staking of all relevant boundaries and elevations by the Contractor, the Wetland Specialist shall walk the site with the Engineer and the Contractor to review existing and proposed conditions, recommend changes if necessary, and approve the following: location and boundaries of the Mitigation Area, target elevations and grades, location of tree protection associated with the Mitigation Area, and final layout and limits of clearing for access route.
  - Select and mark snags, logs, and woody material to be retained for placement in the Wetland Mitigation, as appropriate.
  - Note invasive plants in and adjacent to Wetland Mitigation.
  - Provide summary report if and as specified under Wetland Mitigation items.
- Excavation, Soil Placement, Grading for Replication Areas
  - Approve excavated depth and grading for appropriate wetland hydrology, subsoil preparation, and finished grade of placed wetland soil.
  - Adjust grades as required and approve microtopography. If grades need to be adjusted, submit an RFI to the Engineer.
  - If requested by the Engineer, the Wetland Specialist shall inspect stockpiled wetland soil for moisture content and signs of undesirable weeds.
- Re-vegetation of Mitigation Area
  - Placement of woody material to be re-used.
  - Verify seed used complies with specifications and site conditions, determine limits for wetland seeding based on elevations, approve seeding and mulching methods, and collect seed tags to submit with Request for Conditional Acceptance.
  - Review planting methods (if applicable) prior to installation and oversee layout of wetland plants.
- Conduct periodic inspections of construction activities within wetland resource areas and Buffer Zone during stormwater/drainage installation and dewatering activities. Inspections shall be limited to confirming that operations are being conducted in accordance with contract documents and industry standard construction practices. Continuous monitoring will not be permitted, unless directed by the Engineer.
- Periodically inspect installed erosion and sedimentation controls and oversee any emergency placement of controls.
- Provide weekly to bi-weekly monitoring reports/memorandums to the Engineer, Commission, and Contractor during the time(s) when work is being conducted within wetland resource areas, including the Buffer Zone, or as directed by the Commission/Director. Said reports/memorandums shall include photographic documentation of on-going work activities and shall summarize work completed, any problems that arise in the Commission's jurisdiction, corrective measures made in the field, and any additional corrective measures needed.

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**ITEM 755.75 (Continued)****Conditional Acceptance**

Upon completion of construction of the wetland, as part of the Request for Conditional Acceptance, the Wetland Specialist shall provide a brief narrative demonstrating that the wetland construction work was done according to plans (or how modified) and meets the conditions required for acceptance as specified under the Wetland Mitigation items. Submittal shall include a report and photo documentation of pre-construction conditions, construction work, seeding, planting, and other work as specified under the Wetland Mitigation items. Photos of completed Wetland Restoration areas shall include the same views as the pre-construction reference photos.

Upon receipt of a Request for Conditional Acceptance, the Engineer, the Wetland Specialist and regulatory representative (if required) shall assess the Wetland Mitigation and surrounding area to ensure that it meets the conditions specified under the Wetland Mitigation items.

Upon approval, MassDOT will issue a letter of Conditional Acceptance. If the Wetland Mitigation work is not approved, MassDOT will issue a rejection letter requiring corrective action. The Wetland Specialist shall recommend corrective actions.

**Request for Certificate of Compliance**

If required, a Request for Certificate of Compliance shall be prepared and submitted to Engineer immediately following Conditional Acceptance. Request shall be as specified under Item 755.45.

**Request for Final Acceptance**

Following one full growing season, the Wetland Specialist shall provide a brief narrative of the status of the Wetland Mitigation to be submitted with the Request for Final Acceptance.

Upon receipt of the Request, the Engineer, the Wetland Specialist and regulatory representative (if required) shall assess the Wetland Mitigation and surrounding area to ensure that it meets the conditions specified under the relevant Wetland Mitigation items.

If the Wetland Mitigation is not approved, MassDOT will issue a rejection letter requiring corrective action. The Wetland Specialist shall recommend corrective actions.

**METHOD OF MEASUREMENT**

Item 755.75 Wetland Specialist shall be measured per hour for on-site service provided by the Wetland Specialist.

Work shall include all inspections, photos, submittals, and associated tasks for construction and restoration oversight, narratives for Conditional and Final Acceptance, Request for Certificate of Compliance (Partial or Full) if required, documentation required for permits, and all other work specified above. Payment shall not include travel time, or time spent off-site on reports or document review. Decimal Pay Limits will be 0.25 hours.

**ITEM 755.75 (Continued)**

**BASIS OF PAYMENT**

Item 755.75 Wetland Specialist shall be paid at the Contractor bid price for each hour, or fraction thereof, spent on-site to perform the work as described above. Reports and photo documentation are required for payment.

Construction monitoring reports and post wetland construction reports shall be per Item 755.761, Wetland and Construction Monitoring Reports. Review of the SWPPP and As-built shall be considered incidental to this item.

No payment shall be made for additional site inspections required due to non-compliance with the Order of Conditions, but shall be provided by the Contractor without additional compensation.

**ITEM 755.761****WETLAND AND CONSTRUCTION  
MONITORING REPORTS****LUMP SUM**

Work under this item shall be for the submittal of Wetland and Construction Monitoring Reports during work within wetland resource areas and Buffer Zone and following the completion of wetland construction. Work shall include all inspections, photos, and other work required to complete those reports as specified herein. `

“Wetland Mitigation” shall be used herein for applicable wetland work, whether Wetland Replication (creation of a new wetland) and/or Wetland Restoration (restoration after temporary impacts).

The Contractor shall retain the services of a Wetland Scientist, Wetland Ecologist, Restoration Ecologist, or other professional with similar qualifications, hereafter referred to as the “Wetland Specialist,” to complete the Wetland and Construction Monitoring reports. Wetland Specialist shall meet requirements specified under Item 755.75 Wetland Specialist.

All on-site Wetland Specialist services required to complete construction monitoring within wetland resource and Buffer Zone, and the construction and revegetation of the wetland replication, including preparation and submission of monitoring reports during construction, shall be per Item 755.75 Wetland Specialist.

**SCOPE OF WORK****Construction Monitoring Reports**

Inspections and reports shall be performed to ensure compliance with the Order of Conditions as detailed in Special Condition 38 of the Order of Conditions.

**Post-Construction Wetland Monitoring Reports**

Final Acceptance of the wetland construction work as specified under item 755.45 Wetland Restoration shall initiate the beginning of the Monitoring Period.

Inspections and reports shall be performed to ensure compliance with mitigation requirements defined under the relevant Wetland Mitigation items and with all applicable environmental permits. Monitoring reports shall cover the following:

- Identification of all plant species present
- Percent cover for each plant species and overall percent surface area cover by indigenous wetland plant species for replication area and upland
- Description of the viability, health, and vigor of installed plants as well as volunteer plant species within the replication areas
- Description of remedial measures taken to ensure criteria are met
- Depth to apparent water table and/or depth of surface inundation, both as measured from the soil surface and data loggers, as appropriate.

**ITEM 755.761 (Continued)**

- A conclusion regarding the success of the wetland mitigation area relative to the performance standards at 310 CMR 10.55(4)(b) (unless varied), the design plans, and performance criteria established by MADEP in the variance conditions (when applicable), and the reference wetland.
- Recommendation for a corrective plan of action if needed.

Reports shall be submitted to the Engineer as a digital copy in Portable Document Format (PDF) unless otherwise requested. Hard copies shall be provided as requested by the Engineer. All reports shall be marked with the applicable permit numbers and identifying information as required in the permits. Reports shall include photo documentation of the wetland/s being monitored and shall include a minimum of 3 views from different orientations. Views shall be labeled.

Spring Reports, when required, shall be submitted to the Engineer by July 1 for dispersal to the appropriate permitting agencies.

End of Year Reports (which may serve as the Fall Report) shall be based on inspections that occur prior to October 15<sup>th</sup>. Reports shall be submitted to the Engineer no later than November 1 of each year.

Monitoring Reports shall be as follows for 2 years as required per Conservation Commission order of conditions.

**BASIS OF PAYMENT AND METHOD OF MEASUREMENT**

Item 755.761 Wetland and Construction Monitoring Reports shall be at the Contract unit price per Lump Sum and shall include all labor, materials, equipment, and all incidental costs required to complete the work. Lump Sum will be paid in equal installments of the Lump Sum divided by the number of reports submitted. Payment shall be upon submittal and acceptance of each report, based on the following schedule:

**Construction Monitoring Reports**

52 Reports

No payment shall be made for additional reports required due to non-compliance with the Order of Conditions, but shall be provided by the Contractor without additional compensation.

**Post-Construction Wetland Monitoring Reports**

Year 1 = 2 Reports

Year 2 = 2 Reports

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**ITEM 756. NPDES STORM WATER POLLUTION PREVENTION PLAN LUMP SUM**

This Item addresses the preparation and implementation of a Storm Water Pollution Prevention Plan required by the National Pollutant Discharge Elimination System (NPDES) and applicable Construction General Permit (CGP) issued by the U.S. Environmental Protection Agency (EPA).

Pursuant to the Federal Clean Water Act, construction activities which disturb one acre or more are required to apply to the EPA for coverage under the NPDES General Permit for Storm Water Discharges from Construction Activities. The Contractor shall be fully responsible for compliance with the most recently issued CGP and any subsequent revisions. Should a fine or damages be assessed against it, or MassDOT, as a result of a local, state, or federal enforcement action due to non-compliance with the CGP, the Contractor shall take full responsibility.

The NPDES CGP requires the submission of a Notice of Intent (NOI) to the EPA prior to the start of construction (defined as any activity which disturbs land, including clearing and grubbing). There is a fourteen (14) day review period commencing from the date on which EPA enters the Notice into their database. Based on the review of the NOI, EPA may require additional information, including but not limited to, the submission of the Storm Water Pollution Prevention Plan (SWPPP) for review. Work may not commence on the project until final authorization has been granted by EPA. Any additional time required by EPA for review of submittals will not constitute a basis for claim of delay.

In addition, if the project discharges to an Outstanding Resource Water, vernal pool, or is within a coastal ACEC as identified by the Massachusetts Department of Environmental Protection (DEP), a separate notification to DEP is required. DEP may also require submission of the Storm Water Pollution Prevention Plan for review and approval. Filing fees associated with the notification to DEP and, if required, the SWPPP filing to DEP shall be paid by the Contractor.

The CGP also requires the preparation and implementation of a SWPPP in accordance with the afore-mentioned statutes and regulations. The Plan will include the CGP conditions and detailed descriptions of controls of erosion and sedimentation to be implemented during construction. The contractor shall prepare the SWPPP and update it as necessary. The Contractor shall submit the Plan to the Engineer for approval at least four (4) weeks prior to any site activities. It is the responsibility of the Contractor to comply with the CGP conditions and the conditions of any state Wetlands Protection Act Order, Water Quality Certification, Corps of Engineers Section 404 Permit and other environmental permits applicable to the project and to include in the SWPPP the methods and means necessary to comply with applicable conditions of said permits.

It is the responsibility of the Contractor to complete the SWPPP in accordance with the EPA CGP, provide all information required, and obtain any and all certifications as required by the CGP. Any amendments to the SWPPP required by site conditions, schedule changes, revised work, regulations, construction methodologies, and the like are the responsibility of the Contractor. Amendments will require the approval of the Engineer prior to implementation.

**ITEM 756. (Continued)**

In addition to the CGP requirements for inspections, MassDOT requires inspection of all erosion controls and site conditions on a weekly basis. Inspections are also required at portions of sites that discharge to sediment or nutrient impaired or high quality waters per the CGP when each incidence of rainfall exceeding 0.25 inches in twenty-four hours or after snowmelt discharge from a storm event that produces 3.25 inches or more of snow within twenty-four hours occurs. The CGP requires that inspections be performed by a qualified individual as outlined in the CGP. MassDOT requires proof of completion of a 4 hour minimum sedimentation and erosion control training class current to the latest CGP. This individual can be, but not limited to, someone that is either a certified inspector, certified professional, or certified storm water inspector. The documentation shall be included as an appendix in the SWPPP. The inspector's qualifications shall be submitted to the Engineer for approval prior to beginning any work. This individual shall be on-site during construction to perform these inspections. In addition, if the Engineer determines at any time that the inspector's performance is inadequate, the Contractor shall provide an alternate inspector. Written weekly inspection forms, storm event inspection forms, and Monthly Summary Reports must be completed and provided to the Engineer. Monthly Summary Reports must include a summary of construction activities undertaken during the reporting period, general site conditions, erosion control maintenance and corrective actions taken, the anticipated schedule of construction activities for the next reporting period, any SWPPP amendments, and representative photographs.

The Contractor is responsible for preparation of the Plan, all SWPPP certifications, inspections, reports and any and all corrective actions necessary to comply with the provisions of the CGP. The Standard Specifications require adequate erosion control for the duration of the Contract. All control measures must be properly selected, installed, and maintained in accordance with manufacturer specifications and good engineering practices. If periodic inspections or other information indicates a control has been used inappropriately or is no longer adequate, it is the responsibility of the Contractor to replace or modify the control for site conditions at no additional cost to the Department. Contractor must maintain all control measures and other protective measures in effective operating conditions and shall consider replacement of erosion controls for each construction season.

The work under this item shall also include the preparation, submission and implementation of a Flood Contingency Plan. The plan shall address the potential need for the temporary relocation of construction and auxiliary equipment situated within the 1% annual chance of flooding zone to designated upland locations above the Base Flood Elevation during flood events. The Flood Contingency Plan shall address any additional MassDEP-required information requirements, as applicable. The Flood Contingency Plan shall be submitted to the Engineer for review and approval at the same time as the SWPPP.

This Item addresses acceptable completion of the SWPPP, any revisions/amendments required during construction, preparation of monthly reports and Flood Contingency Plan. In addition, any erosion controls beyond those specified in bid items which are selected by the

**ITEM 756. (Continued)**

Contractor to facilitate and/or address the Contractor's schedule, methods and prosecution of the work shall be considered incidental to this item.

The CGP provides specific requirements for temporary and final stabilization. This shall be incorporated into the project schedule. The permit defines specific deadline requirements for Initial Stabilization ("immediately", i.e., no later than the end of the next work day following the day when earth-disturbing activities have temporarily or permanently ceased) and for Complete Stabilization Activities (no later than 14 calendar days after the initiation of stabilization). Stabilization criteria for vegetative and non-vegetative measures are provided in the CGP.

The CGP requires the submission of a Notice of Termination (NOT) from all operators when final stabilization has been achieved, as well as removal and proper disposal of all construction materials, waste and waste handling devices, removal of all equipment and construction vehicles, removal of all temporary stormwater controls, etc. Approval of final stabilization by the Engineer and confirmation of submission of the NOT will be required prior to submission of the Resident Engineer's Final Estimate. The permittee shall use EPA's website to prepare and submit the NOT.

**BASIS OF PAYMENT**

Item 756 will be paid for at the Contract unit price Lump Sum, which price shall include all labor, materials, equipment, SWPPP & Flood Contingency Plan preparation, revisions/addenda during construction, monthly reports, filing fees, and all incidental costs required to complete the work.

Payment of 50% of the Lump Sum price of this item will be made upon acceptance of the NPDES Stormwater Pollution Prevention Plan & Flood Contingency Plan.

Payment of 40% of the Lump Sum price of this item will be paid in equal monthly installments distributed across the time remaining in the accepted baseline schedule until substantial completion.

The remaining 10% of the Lump Sum price of this Item will be paid following accepted submission of a Notice of Termination (NOT) when final stabilization has been achieved.

**ITEM 765. 415****NATIVE SHORT GRASSLAND MIX****POUND**

Work under this item shall consist of furnishing the mix(es) specified below in the required quantity.

**SUBMITTALS**

- 1) Pre-Verification of Seed Availability. Within 30 days after the Notice to Proceed, the Contractor shall submit to the Engineer the supplier's verification of availability of seed species in the required quantities and for the anticipated date of seeding. Verification shall be on the supplier's letterhead and notarized by the supplier's notary. Species not expected to be available should be noted and substitutions recommended.
- 2) Final Verification of Seed Availability. No earlier than 21 days prior to ordering, the Contractor shall submit to the Engineer the supplier's verification of availability of seed species and in the required quantities. Verification shall be on the supplier's letterhead and notarized by the supplier's notary. A copy of this submittal shall be forwarded to the MassDOT Landscape Design Section. Substitutions or changes in the mix at this time must be approved by MassDOT Landscape Design Section.
- 3) Seed Worksheet provided herein shall be submitted to the Engineer prior to ordering seed to determine the number of pounds of Pure Live Seed required.
- 4) Seed Tags. The contractor shall submit original seed tags from each bag of seed used on the project or ensure that each tag is photo documented by the Engineer while on the unopened bag.

Number of tags submitted must correspond to number of bags delivered.

Species listed on the seed tag shall match the Final Verification of Seed Availability (Submittal #2) unless approved otherwise. Tag must include: variety and species name; lot number; purity; percentage of inert matter; percentage of weeds, noxious seeds, and other crop seeds; germination, dormant or hard seed; total viability; origin of seed; germination test date, net weight, and name and address of seller. The origin of seed must be listed on the seed tag for all species in the mix to provide verification of original (generation 0) seed source. The smallest known geographic area (township, county, ecotype region, etc.) shall be listed. Ecotypes and cultivars shall be as close to Massachusetts as possible and appropriate to the site conditions.

A copy of this submittal shall be forwarded to the MassDOT Landscape Design Section.

- 5) Verification of Seed Delivery. Prior to payment, contractor shall submit the Seed Delivery Verification form contained within the contract or the Supplier's Verification on company letterhead or a bill of lading. Supplier verification must include all information requested on the Verification form within this contract. The bill of lading must include variety and species name, lot number, net weight shipped, date of sale, invoice, project or seeding location, and name and address of Supplier. All information must be filled in and complete for acceptance. Information must match the seed tags and quantity of seed used on the job. A copy of this submittal shall be forwarded to the MassDOT Landscape Design Section

**ITEM 765.415 (Continued)**

- 6) Seed Sample. If requested or if seed is from a previously opened bag, the contractor may be asked to submit to the Engineer a sample of seed from the seed bag (1-2 cups) at the time of seeding.

**SEEDING SEASON**

The appropriate seeding seasons are:

Spring: April 1 - May 15

Fall: October 1 - December 1 for dormant seeding

**PERMANENT SEED MIX(ES)****Calculating Pure Live Seed (PLS)**

Quantities specified are PURE LIVE SEED. Greater quantities of ordered seed may be required to achieve actual specified seeding rates.

Pure Live Seed (PLS) is defined as a percentage calculated by multiplying the percent of pure seed by the percent of viable seed (total germination, hard seed, and dormant seed). For example:

If a seed label indicates 90% purity, 78% germination, 10% hard seed, and 2% dormancy, it is calculated to be  $90\% \times [78 + 10 + 2]\% = 81\%$  PLS.

Therefore, each pound of PLS would need  $1 \text{ pound} / 0.81 = 1.2$  pounds of seed with a 90% purity and 90% total germination

**Seed Mix(es)** shall be as specified below. Ecotypes and cultivars shall be as close to Massachusetts as possible and appropriate to the site conditions.

Seed in the **Short Grassland Mix Area** shall conform the Standard Specifications as amended by the 2010 Standard Special Provisions, SUBSECTION M6, ROADSIDE DEVELOPMENT MATERIALS and as amended herein. The following seed mix shall be used in the area indicated on the drawings. Submittals for approval must list actual percentages.

**ITEM 765.415 (Continued)**

| BOTANICAL NAME                               | COMMON NAME                   | % PLS by Weight |
|--|-------------------------------|-----------------|
| Grass  |                               |                 |
| <i>Schizachyrium scoparium 'Albany Pine'</i> | Little Bluestem 'Albany Pine' | 57%             |
| <i>Elymus virginicus</i>                     | Virginia Wildrye              | 27%             |
| <i>Festuca rubra</i>                         | Creeping Red Fescue           | 9%              |
| <i>Agrostis perennans</i>                    | Upland Bentgrass              | 1.2%            |
| <i>Dichanthelium clandestinum 'Tioga'</i>    | Deertongue grass 'Tioga'      | 1%              |
| <i>Eragrostis spectabilis 'RI Ecotype'</i>   | Purple Lovegrass 'RI Ecotype' | 1%              |
| Herb/Forb                                    |                               |                 |
| <i>Chamaecrista fasciculata</i>              | Partridge Pea                 | 2.3%            |
| <i>Penstemon digitalis</i>                   | Beard-tounge                  | 0.5%            |
| <i>Solidago nemoralis</i>                    | Grey Goldenrod                | 0.3%            |
| <i>Aster pilosus</i>                         | Heath Aster                   | 0.1%            |
| <i>Pycnanthemum tenuifolium</i>              | Slender Mountain Mint         | 0.1%            |
| <i>Oenothera fruticose var. fruticose</i>    | Sundrops                      | 0.1%            |
| <i>Achillea millefolium</i>                  | Common Yarrow                 | 0.1%            |
| <i>Aster lateriflorus</i>                    | Calico Aster                  | 0.1%            |
| <i>Solidago bicolor</i>                      | White Goldenrod               | 0.1%            |
| <i>Aster laevis NY Ecotype</i>               | Smooth Aster NY Ecotype       | 0.1%            |
|  | Total:                        | 100%            |

**Application Rate**

**Short Grassland Mix:** 15 lbs/acre PLS. No cover crop shall be applied.

Any species substitutions shall be with a species having similar characteristics and function. Substitutions must be approved by MassDOT Landscape Design Section per the documentation submittal process.

**50% Increase Adjustment for Field Conditions**

Seeding under the following conditions requires a 50% increase in the permanent mix at the time of construction:

- Seeding out of season  
OR
- Seeding after Compost Blanket has been applied (unless already increased for out of season).

**ITEM 765.415** (Continued)

**METHOD OF MEASUREMENT AND BASIS OF PAYMENT**

**Short Grassland Mix** will be measured for payment by the pound of Pure Live Seed delivered and complete in place.

**Short Grassland Mix** will be paid at the contract unit price per pound of Pure Live Seed delivered upon approval of all Seed Submittal Documentation. Overseeding required to correct poor germination or establishment shall be incidental to the item.

Application and care of native seed mix will be paid for separately under Item 735.635 Native Seeding and Establishment.

**ITEM 765.415 (Continued)**

***NATIVE SEED WORKSHEET***

Project Description: \_\_\_\_\_ Project No: \_\_\_\_\_

Contractor: \_\_\_\_\_ Contract No: \_\_\_\_\_

Seed Mix Number & Description: \_\_\_\_\_

**Contractor: Complete Prior To Ordering**

Pounds of Seed Required Per Contract:

\_\_\_\_\_ lbs./acre for \_\_\_\_\_ Acre(s) OR \_\_\_\_\_ SY

Additional 50% increase if required (out of season or seeding over compost blanket):

\_\_\_\_\_ **lbs. Total Seed Required**

Calculated Quantity for Pure Live Seed (PLS<sup>1</sup>):

\_\_\_\_\_ **Total Pounds PLS**

**Engineer: Verification at Time of Application**

Number pounds delivered to site<sup>2</sup>: \_\_\_\_\_ Date(s): \_\_\_\_\_

Actual Seed Bag Tag/s Received or photo documented by Engineer: \_\_\_\_\_

<sup>1</sup> PLS=% pure seed x % viable seed (total germination, hard seed, and dormant seed).

<sup>2</sup>Quantity delivered should match pounds **Total Pounds PLS** and **Verification of Seed Delivery**. Pounds should be shown on each Seed Tag.

**ITEM 765.415 (Continued)**

**SUPPLIER VERIFICATION OF SEED DELIVERY FOR MASSDOT PROJECTS**

Date \_\_\_\_\_

We hereby certify that (*Seed Supplier*): \_\_\_\_\_

Furnished to (*Contractor*): \_\_\_\_\_

For use on: (*Project Description*) \_\_\_\_\_

Project #: \_\_\_\_\_ Contract #: \_\_\_\_\_

Pounds of Pure Live Seed: \_\_\_\_\_

Of Mix (*Description*): \_\_\_\_\_

Lot Number \_\_\_\_\_

The material was delivered on (*Date*) \_\_\_\_\_.

The labels and contents meet all State and Federal regulations. The mixture consists of the following species, including cultivars (as applicable) and ecotype region, and at the following percentages (may be attached separately):

Name (print): \_\_\_\_\_ Title: \_\_\_\_\_

Supplier: \_\_\_\_\_

Signature and Seal: \_\_\_\_\_

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**ITEM 765.555                      WETLAND SEED – PART SHADE MIX                      SQUARE YARD**

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The work under this item shall conform to the relevant provisions of Subsection 765 of the Standard Specifications and the following:

The work shall consist of planting and establishing a stand of grass in the areas shown on the plans or as required by the Engineer. For the purposes of these specifications, the term “grass” shall apply to all the forbs, grasses, sedges, and rushes included in the materials.

All seeding shall be done by a company having a minimum of five years of experience with native grass establishment. Prior to beginning work, the seeding Contractor shall furnish proof of qualifications to the Engineer for approval. Proof of qualifications includes, if requested, providing documentation (photos and contacts) to demonstrate knowledge and expertise with native seeding and proof of having completed successful native seeding projects.

Seeding shall be done within 48 hours of placement of loam and final grading. Mulch for seed shall be Compost Topdressing or hydromulch as specified below, and shall be incidental to this item.

**SEEDING SEASON**

Seeding seasons shall be April 1 through May 15 and October 1 through December 1 for dormant seeding. *Seeding that occurs outside of these periods, shall be increased by 50%.*

**MATERIALS****Seed****Samples and Submittals**

- 7) Certificate of Materials. 60 days prior to ordering, the Contractor shall submit to the Engineer the manufacturer or supplier’s notarized Certificate of Materials. This document shall not be used as proof of purchase, proof of material delivered, or proof of material seeded, but simply to verify supplier availability of seed listed on the date certified. The species listed shall match those specified on the plans or herein, however, cultivars may vary due to availability. Substantial substitutions or changes in the mix from that specified on the plans or herein shall be approved by the Engineer.
- 8) Seed Tag Certification. All seed lots have a seed analysis tag as required by State and Federal law. The contractor shall submit seed tags for each bag of seed used on the project site or ensure that each tag is photo documented by the Engineer. Number of tags shall match number of bags sent by the supplier to meet rate of Pure Live Seed specified on the plans. Tag must include: kind and variety of seed; lot number; origin of seed; net weight; % purity; germination; dormant seed; germination test date; inert matter; weed, noxious and other crop seed; and name and address of company responsible for the analysis. Seeding may be considered unacceptable for payment if no tags are submitted.

**ITEM 765.555 (Continued)**

- 9) Certificate of Compliance. Prior to payment, contractor shall submit a bill of lading or a signed, dated and notarized Certificate of Compliance from the Supplier that serves as proof of purchase. This document shall include kind and variety of seed, lot number, net weight shipped, date of sale, invoice number under which seed was purchased, and name and address of Supplier or Manufacturer. All information must be included on the notarized form, including lot number and net weight shipped for specified job. This information shall match Seed Tag Certification and quantity of seed applied on the job. Seeding may be considered unacceptable for payment if information is incomplete.
- 10) Seed Sample. Contractor may be asked, prior to seeding, to submit a seed sample for testing.

Quantities specified are Pure Live Seed (PLS). Greater quantities of ordered seed may be required to achieve actual specified seeding rates. Pure Live Seed is defined as the fraction of pure seed species within the mix that, by standard seed testing practices, will germinate. This is determined by multiplying the percent of seed purity by the percent of seed germination.

Seed mix shall be a custom blend as shown on the plans or shall be as specified below. Seed cultivars shall be those that are as regional to New England or the local ecotype as possible. Any species substitutions shall be with a species having similar characteristics and native to New England. Substantial changes in the mix shall be approved by the Engineer.

**Mix 765.555 Wetland Mix – Part Shade Mix**

|       | <u>Botanical Name</u> | <u>Common Name</u>    | <u>% PLS By Weight</u> |
|-------|-----------------------|-----------------------|------------------------|
| Grass |                       |                       |                        |
|       | Poa palustris         | Fowl Bluegrass        | 25.00%                 |
|       | Elymus riparius       | Riverbank Wild Rye    | 19.00%                 |
|       | Carex lurida          | Shallow Sedge         | 17.00%                 |
|       | Carex vulpinoidea     | Fox Sedge             | 10.00%                 |
|       | Cinna arundinacea     | Sweet Woodreed        | 5.00%                  |
|       | Sparganium eurycarpum | Giant Bur Reed Eco PA | 4.00%                  |
|       | Carex scoparia        | Broom sedge           | 4.00%                  |
|       | Carex lupulina        | Hop Sedge             | 4.00%                  |
|       | Scirpus polyphyllus   | Many Leaved Bulrush   | 3.00%                  |
|       | Juncus effusus        | Soft Rush             | 2.50%                  |
|       | Carex intumescens     | Bladder Sedge         | 2.00%                  |
|       | Sparganium americanum | Burrweed              | 2.00%                  |
|       | Scirpus cyperinus     | Woolgrass             | 1.00%                  |
|       | Carex crinita         | Fringed Sedge         | 1.00%                  |
|       | Juncus tenuis         | Path Rush             | <u>0.50%</u>           |
|       |                       |                       | 100.00%                |

**ITEM 765.555 (Continued)****Seeding Rate:**

Species ecotype shall be as native to New England region as possible. Apply this mix at 20 lbs PLS/acre.

**Fertilizer**

No fertilizers shall be applied.

**Water**

Water, including hose and all other watering equipment required for the work, shall be furnished by the Contractor to the site at no additional cost. Water shall be suitable for irrigation and free from ingredients harmful to plant life. All plants injured or work damaged due to the lack of water or the use of too much water shall be the Contractor's responsibility to correct.

**Mulch**

Mulch for seeding and topdressing shall be incidental to this item. Mulch shall be:

- Compost Topdressing meeting the material and submittal requirements of Item 751.72, Compost Topdressing and as specified below under Seeding and Mulching.  
*OR*
- Hydromulch per the manufacturer's recommendation. Mulch for hydroseeding shall be wood fiber only.

**CONSTRUCTION****Surface Preparation**

Soil preparation and seeding shall occur only when the bed is in a friable condition, not muddy or hard. Bare soils shall be raked to remove large stiff clods, lumps, brush, roots, stumps, litter and other foreign matter. Ruts and depressions shall be filled with additional loam or compost and the soil shall be re-graded to a smooth and even finish corresponding to the required grades.

When seeding over existing or compacted soil, surface will be prepared by raking or tracking to a depth of 2 inches prior to seeding and prior to Compost Topdressing (when applicable).

Surface preparation shall be compensated for under Item 751. Loam Borrow.

Surface preparation shall be approved by the Engineer prior to seeding.

**ITEM 765.555 (Continued)**

**Seeding over Various Substrates**

Loam: Seeding shall occur within 48 hours of site preparation to prevent loss of topsoil. Seeding shall be hydroseeding or broadcast as specified below.

Compost Topdressing: Compost Topdressing shall be applied as specified under that item. Seed should be broadcast at the same time as compost application to ensure a thin cover of compost over seed. *When seeding is done after application of Compost Topsoil the rate shall be increased by 50% and area shall be hydromulched.*

Compost Mulch over Modified Rock: Compost Mulch shall be applied as specified under that item and shall be such that only the voids in the rock are filled so that seed has an organic substrate for germination. Seed shall be broadcast after compost application. No hydromulch is required.

**Seeding Methods**

No seeding or surface preparation work shall be done if soils are muddy or dry and compacted.

Broadcast Seeding: Seed shall be broadcast spread using a cyclone or whirlwind seeder or hand broadcast. Small or light-seeded species such as bluestem may be mixed with approved filler (e.g., sawdust, rice, kitty litter, or clean damp sand) to achieve an even distribution. Broadcast seeding shall be undertaken in two separate passes at ninety degrees to each other. One-half the seeding rate shall be applied in each direction.

To ensure seed to soil contact with broadcasting of seed, seed shall be tracked or rolled with a weighted roller.

All broadcast seeding shall be followed by hydromulching unless seeding is done as part of Compost Topdressing and as specified above.

Hydroseeding shall include hydromulch.

Hydromulching shall be per the Standard Specifications and per the manufacturer's directions.

After seeding and mulching, water seeded areas to moisten soil to a depth of at least 2 inches.

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**ITEM 765.555 (Continued)****Seed and Grass Care**

During Germination: Contractor shall care for seeded areas as determined necessary by the Engineer. Care may include irrigation and weed control as necessary for germination.

During Establishment: Following germination of seeded species, the contractor shall maintain the stand of grasses to ensure healthy growth. Work shall include mowing or weed-whacking for weed control, irrigation if necessary, and monitoring for invasive plants.

Watering shall provide uniform coverage without eroding soil or grassed surfaces. Treatment of invasive plants shall be per the direction of the Engineer.

The Contractor shall provide all labor, equipment, materials, and water required for establishment. Contractor shall water all seeded areas as necessary to a depth of 2 inches or greater.

**Over-seeding**

If there are areas of bare ground greater than 2-3 feet in diameter, these areas shall be over-seeded with the specified mix. Over-seeding application rates and methods shall be the same as those listed above. After seeding, areas shall be mulched with straw mulch or ¼ - ½ inch Compost Topsoil and watered with a fine mist to moisten soil to a depth of at least 2 inches.

Areas that are invaded by weeds shall be mowed as low as possible and over-seeded as directed. Soil that is compacted shall be raked or roughened prior to over-seeding. Following over-seeding, soil shall be lightly tamped to ensure seed to soil contact.

Over-seeding and mulch for over-seeding shall be incidental to this item.

**ESTABLISHMENT**

*Native upland grasses and forbs will not look like turf grass.* Many of the native grasses are bunch type grasses and will not form a uniform growth or have a sod-type appearance. However, seeded area shall show general uniform growth of the seeded species throughout the area. Areas with significant gaps of bare soil, generally greater than 2-3 feet in diameter, will require over-seeding.

A well-established stand of grasses at the end of one full growing season (June-September), as determined by the Engineer, will be required for acceptance. At least 80-90 percent of the grass established shall be the seeded species and any invasive or aggressive weeds (mugwort, ragweed, or knapweed) shall have been cut or otherwise managed.

**ITEM 765.555 (Continued)**

**METHOD OF MEASUREMENT AND BASIS OF PAYMENT**

Item 765.555 will be measured for payment by the square yard after one full growing season (June-September) has elapsed between seed application and inspection and upon approval of establishment by the Engineer.

Items 765.555 will be paid for at the Contract unit price per Square Yard upon receipt of required submittals as specified above and upon approval of established stand of grass as specified above.

This price shall include seeding, rolling to ensure seed-to-soil contact, care during germination and establishment, irrigation, mulching, over-seeding, labor, materials, equipment, photo documentation, and all incidental costs required to complete the work. Site preparation, including raking, tilling, removal of debris and stones, and other work to the prepare site for seeding shall be compensated for under Item 751, Loam Borrow.

**ITEM 765.635      NATIVE SEEDING AND ESTABLISHMENT      SQUARE YARD**

Work shall conform to the relevant provisions of Subsections 765 and 767 of the Standard Specifications and the following:

The work under this item shall consist of seeding, mowing, and other care to establish a stand of grass in the areas shown on the plans or as required by the Engineer. For the purposes of these specifications, the term “grass” shall apply to all the forbs, grasses, sedges, and rushes included in the materials.

**QUALIFICATIONS**

Seeding shall be done by a company having a minimum of five years of experience with native seed establishment. Prior to beginning work, the seeding Contractor shall furnish proof of qualifications to the Engineer for approval. Proof of qualifications shall include providing documentation (photos and contacts) to demonstrate knowledge and expertise with native seeding and establishment and proof of having completed successful native seeding projects.

**SEEDING SEASON**

Seeding seasons for native mixes is April 1 - May 15 and October 1 - December 1 for dormant seeding. Written approval must be obtained for seeding outside the seeding season and, if approved, the permanent seed rate shall be increased by 50%.

Seeding season for cover crops shall be grain oats January 1 – July 31 and grain rye August 1 – December 1.

**MATERIAL AND SUBMITTALS**

**Seed Mixes and Submittals** shall be per the item(s) for permanent and annual (cover crop) seed mixes.

**Compost Blanket**, if used, shall meet the material and submittal requirements for that item.

**Hydromulch** shall be wood fiber or straw applied per the Standard Specifications and at the rates specified below and per the manufacturer.

A certified statement shall be furnished, prior to start of work, to the Engineer by the Contractor as to the number of pounds of hydromulch, tackifier, and seed, per 100 gallons of water and as applicable to products used. This statement should also specify the number of square yards of seeding that can be covered with the solution specified above.

**Fertilizer**

No fertilizers shall be applied.

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**ITEM 765.635 (Continued)****Water**

Water, including hose and all other watering equipment required for the work, shall be furnished by the Contractor to the site at no additional cost. Water shall be suitable for irrigation and free from ingredients harmful to plant life. All plants injured or work damaged due to the lack of water or the use of too much water shall be the Contractor's responsibility to correct.

**SEEDING**

Hand broadcast method shall be used for all areas smaller than half an acre and when specified on the plans for areas over half an acre.

Seeding shall occur within 72 hours of placement of loam and final grading or the Contractor shall propose a reasonable, alternative schedule that shall be approved by the Engineer.

**Surface Preparation**

No seeding or soil preparation shall be done if soils are muddy or dry and compacted. Bare soils shall be raked to remove large stiff clods, lumps, brush, roots, stumps, litter and other foreign matter. Ruts and depressions shall be filled with additional loam or compost and the soil shall be re-graded to a relatively smooth finish corresponding to the required grades.

When seeding over existing or compacted soil or soil that has sat bare for more than 30 days, surface will be prepared by tilling or raking to a minimum depth of 2 inches prior to seeding and prior to Compost Blanket application (when applied).

Surface preparation shall be compensated for under for loam placement or topsoil rehandled and spread as appropriate to the project.

Jute or coir mesh, when specified in the contract, shall be placed after seeding and per the Standard Specifications and the manufacturer's instruction.

Surface preparation shall be approved by the Engineer prior to seeding.

**Seeding over Various Substrates**

Loam: Seeding shall occur within 72 hours of loam placement to prevent loss of topsoil. Seed shall be manually broadcast for areas less than half an acre (each area, not cumulative area) and when specified on the plans. Broadcasting shall be immediately followed by hydromulching as specified below. When not specified on the plans, larger areas may be hydroseeded as specified below.

Compost Blanket: Compost Blanket shall be applied as specified under that item. Seed should be hand broadcast at the same time as compost application to ensure a thin cover of compost over seed.

**ITEM 765.635 (Continued)**

When seeding is done after application of Compost Blanket the rate shall be increased by 50%. If the Compost Blanket is applied after December 1, seed shall be broadcast or hydroseeding over the compost in the Spring and the rate increased by 50% specified under Seed Application.

Compost Mulch over Modified Rock: Compost Mulch and seed shall be applied as specified under that item. No hydromulch is required.

**Cover Crop**

Cover crop shall be used when seeding out of season, when specified with the permanent native seed mix under that item, and as required to prevent erosion until the permanent seed establishes.

A cover crop should not be used with a steep slope mix or other permanent mix which already contains either cereal rye or oats in the composition of the mix. A cover crop is not necessary for wetland seeding and is not typically necessary for soil stabilization when seeding in conjunction with a compost blanket application.

**Seed Application**

All seed shall be mulched as specified herein.

Seed application shall be by broadcast seeding or by hydroseeding as described below.

**Broadcast Seeding**

Seed shall be broadcast spread using a cyclone or whirlwind seeder or hand broadcast. Small or light-seeded species such as bluestem may be mixed with approved filler to achieve an even distribution. Seed shall not be broadcast when wind velocities are greater than 15 mph.

Broadcast seeding shall be undertaken in two separate passes at ninety degrees to each other. One-half the seeding rate shall be applied in each direction (horizontally and vertically). To ensure seed to soil contact with broadcasting of seed, seeding shall be followed by rolling or tracking with equipment approved by the Engineer.

Broadcast seed shall be mulched with weed-free straw mulch unless seeding is done as part of Compost Blanket in which case it shall be as specified above under seeding with Compost Blanket application. Hydromulching shall be as specified under Hydromulching.

**Hydroseeding and Hydromulching**

Hydroseed and mulching shall be per the manufacturer's directions and as follows.

Hydroseeding shall only be used for sites over half an acre in size or with permission of the Engineer.

**ITEM 765.635 (Continued)**

Tank and hoses shall be cleaned from all previous hydroseeding and hydromulching projects. Seed shall be mixed into the slurry immediately before application and slurry applied within 30 minutes after seeds have been placed in the tank. Once seed has been placed in the tank, tank shall be agitated only enough to mix the seeds and keep slurry from separating.

A 2-step process shall be used for seeding in conjunction with hydromulch. Seed shall be applied with 500 lbs/acre of hydromulch in the first pass. A second pass with 1,000 lbs/ acre of hydromulch shall be applied in a second pass. Each pass shall be applied in a different direction.

Once the seed has been added to the tank mixture a one-hour time limit is set for spreading the mixture on the soil. Once the one hour has passed the excess mixture must be discarded.

For broadcast seeding, hydromulch shall be applied immediately following seeding at a rate of 1,000 lbs/acre. Tank shall be cleaned from any previous hydroseeding.

**CARE DURING GERMINATION AND ESTABLISHMENT**

Contractor shall care for seeded areas as necessary for successful germination. Care will include watering and weed control as necessary to achieve establishment of the specified seeded species after one growing season as specified below.

The contractor shall maintain the stand of grasses to ensure healthy growth of the seeded species. Work shall include mowing or weed-whacking for weed control, watering if necessary, and removal of invasive plants.

Watering shall be sufficient to achieve soil moisture to a depth of 2 inches or more and such moisture is uniform. Method of watering shall not erode or damage soil or grassed surfaces.

General Weed Control: Unless otherwise directed, mowing shall be as specified under Mowing for Weed Control for seed establishment. Weeds shall be mowed prior to weeds setting seed (by the end of July unless otherwise approved).

Control of Invasive and Aggressive Weeds: Invasive and aggressive weeds, including but not limited to mugwort, ragweed, knapweed, foxtail, crabgrass, and chicory must be cut or treated prior to going to seed. Herbicide treatment must be coordinated with MassDOT. Undesired species (such as chicory) introduced due to use of incorrect seed mix shall be removed at the Contractor's expense.

**MOWING FOR WEED CONTROL**

Mowing for weed control shall be completed after weeds have sprouted and show leaf and bud growth, but prior to setting seed, generally between July 7<sup>th</sup> and August 1<sup>st</sup>, unless directed otherwise by the MassDOT Landscape Architect and the Engineer.

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**ITEM 765.635 (Continued)**

Mowing height shall be as needed for weed control, generally to a height of 8 inches and not below 4 inches, unless directed otherwise. Mowing shall be with a brush hog mower or string trimmer other approved equipment. Conventional lawn mowers which cannot achieve the appropriate cut shall not be used.

Contractor shall give 48-hour notice prior to mowing work. Mowing shall only occur in dry sunny weather. Litter pickup should occur prior to mowing in all areas. If required, cut grass shall be raked and removed. Litter pickup and raking and removal of grass shall be incidental to the work.

Mowing equipment shall be approved by the Engineer prior to work.

**OVER-SEEDING**

Areas of bare ground greater than 2-3 feet in diameter shall be over-seeded with the specified mix during the appropriate season for seeding. Where required for overseeding mowing shall be as close to the soil as possible. Soil that is compacted shall be raked or otherwise roughened prior to over-seeding.

Over-seeding rates and methods shall those specified above under Materials and Methods. Following over-seeding, soil shall be lightly tamped to ensure seed to soil contact and areas shall be mulched with straw mulch and watered with a fine mist to moisten soil to a depth of at least 2 inches.

Over-seeding, mulch, watering, and all work for over-seeding shall be incidental.

**DETERMINING SATISFACTORY GRASS ESTABLISHMENT**

A well-established stand of the specified seeded species as determined by the Engineer and the MassDOT Landscape Architect will be required for Final Acceptance. The expectation is that an acceptable number and variety of the desired permanent seeded species (not the cover crop) will be visible. Generally:

- A minimum of 75% coverage by the specified permanent seeded species after one growing season. Of that percentage, generally, depending on the mix species:
  - At least 3 types of the permanent seeded grass species shall be visible.
  - At least 3 species of wildflowers shall be visible.
- There will be no significant gaps or bare soil (generally 2-3 feet in diameter or greater).
- There will be no more than 25% coverage by weed species.
- All soil shall be stabilized and there shall be no channeling or erosion.
- There will be no invasive or aggressive species within the stand at the time of acceptance.
- There shall be no evidence of seed from non-native mixes (i.e., clover) due to failure to clean the hydroseeding tank or using incorrect mix.

Invasive and aggressive weeds (such as mugwort, ragweed, knapweed, and chicory) must be cut or treated prior to going to seed for Interim Acceptance. Herbicide treatment must be coordinated with MassDOT.

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**ITEM 765.635 (Continued)**

A warm-season grass mix with perennials will not have uniform growth. A uniform stand of grass may indicate use of an incorrect mix.

**ACCEPTANCE OF SEEDING AND ESTABLISHMENT WORK**

Conditional Acceptance shall be based on proper application of seed as specified herein.

Interim Acceptance of Care. Seeding will be inspected by mid-July to assess germination and Establishment conditions as described above. When necessary for Interim Acceptance, areas shall be mowed prior to weed species producing seed and as specified above under Weed Control. ***Areas requiring weed control that are not mowed prior to weed seed dispersal will not be approved for Interim Acceptance.*** Seeding that shows good germination and is determined by the Engineer and Landscape Architect to not require weed control at time of inspection shall be accepted for Interim Acceptance payment.

Final Acceptance of Establishment shall be given upon satisfactory Establishment as described above.

If the seeded area fails to meet the requirements of Establishment by the end of the growing season, contractor shall propose and implement remediations and site shall be inspected during the following growing season after July 1st. All remediation shall be at the contractor's expense.

**METHOD OF MEASUREMENT AND BASIS OF PAYMENT**

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

Native Seeding and Establishment will be paid at the Contract unit price by the square yard upon Conditional, Interim, and Final Acceptances as described above. This price shall include all submittals, seeding, rolling to ensure seed-to-soil contact, weed control other than mowing, water, over-seeding, labor, materials, equipment, and all incidental costs required to complete the work of establishing a satisfactory stand of grass.

Native seed and cover crop mixes shall be compensated under the respective items.

Site preparation, including raking, tilling, removal of debris and stones, and other work to the prepare site for seeding shall be compensated under loam placement or topsoil rehandled and spread as relevant to the project. If used, Compost Blanket shall be compensated under the respective item.

Mowing for weed control will be incidental to this item.

Schedule of payment shall be as follows:

30% upon Conditional Acceptance

20% upon Interim Acceptance of Care, except this amount will be reduced to zero and final payment will be reduced accordingly when areas requiring weed control are not mowed as specified in the Interim Acceptance criteria.

50% upon Final Acceptance of Establishment

**ITEM 767.121****SEDIMENT CONTROL BARRIER****FOOT**

The work under this item shall conform to the relevant provisions of Subsections 670, 751 and 767 of the Standard Specifications and shall include the furnishing and placement of a sediment control barrier. Sediment control barrier shall be installed prior to disturbing upslope soil.

The purpose of the sediment control barrier is to slow runoff velocity and filter suspended sediments from storm water flow. Sediment barrier may be used to contain stockpile sediments, to break slope length, and to slow or prevent upgradient water or water off road surfaces from flowing into a work zone. Contractor shall be responsible for ensuring that barriers fulfill the intent of adequately controlling siltation and runoff.

Twelve-inch diameter (after installation) compost filter tubes with biodegradable natural fabric (i.e., cotton, jute, burlap) are intended to be the primary sedimentation control barrier.

For small areas of disturbance with minimal slope and slope length, the Engineer may approve the following sediment control methods:

- 9-inch compost filter tubes
- Straw bales which shall be trenched

No straw wattles may be used. Additional compost filter tubes (adding depth or height) shall be used at specific locations of concentrated flow such as at gully points, steep slopes, or identified failure points in the sediment capture line.

When required by permits, additional sediment barrier shall be stored on-site for emergency use and replacement for the duration of the contract.

Where shown on the plans or when required by permits, silt fence shall be used in addition to compost filter tubes and straw bales and shall be incidental to the item.

Sediment control barriers shall be installed in the approximate location as shown on the plans and as required so that no excavated or disturbed soil can enter mitigation areas or adjacent wetlands or waterways. Barriers shall be in place prior to excavation work. No work shall take place outside the barriers.

**MATERIALS AND CONSTRUCTION**

Prior to initial placement of barriers, the Contractor and the Engineer shall review locations specified on the plans and adjust placement to ensure that the placement will provide maximum effectiveness.

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.

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**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)****Silt Fence**

Materials and Installation shall be per Section 670.40 and 670.60 of the Standard Specifications and the following:

Silt fence shall only be used if shown on the plans or when specified by Orders of Condition or other permit requirements.

When used with compost filter tubes, the tube shall be placed on a minimum of 8 inches of folded fabric on the upslope side of the fence. Fabric does not need to be trenched.

When used with straw bales, an 8-inch deep and 4-inch wide trench or V-trench shall be dug on the upslope side of the fence line. One foot of fabric shall be placed in the bottom of the trench followed by backfilling with compacted earth or gravel. Stakes shall be on the down slope side of the trench and shall be spaced such that the fence remains vertical and effective.

Width of fabric shall be sufficient to provide a 36-inch high barrier after fabric is folded or trenched. Sagging fabric will require additional staking or other anchoring.

**MAINTENANCE**

Maintenance of the sediment control barrier shall be per Section 670.60 of the Standard Specifications or per the Stormwater Pollution Prevention Plan (SWPPP), whichever is more restrictive.

The contractor shall inspect the sediment barrier in accordance with relevant permits. At a minimum, barriers shall be inspected at least once every 7 calendar days and after a rain event resulting in 0.25 inches or more of rainfall. Contractor shall be responsible for ensuring that an effective barrier is in place and working effectively for all phases of the Contract.

Barriers that decompose such that they no longer provide the function required shall be repaired or replaced as directed. If the resulting berm of compost within the fabric tube is sufficiently intact and continues to provide effective water and sediment control, barrier does not necessarily require replacement.

**ITEM 767.121 (Continued)****DISMANTLING & REMOVING**

Barriers shall be dismantled and/or removed, as required, when construction work is complete and upslope areas have been permanently stabilized and after receiving permission to do so from the Engineer.

Regardless of site context, nonbiodegradable material and components of the sediment barriers, including photo-biodegradable fabric, plastic netting, nylon twine, and silt fence, shall be removed and disposed off-site by the Contractor.

For naturalized areas, biodegradable, natural fabric and material may be left in place to decompose on-site. In urban, residential, or other locations where aesthetics is a concern, the following shall apply:

- Compost filter tube fabric shall be cut and removed, and compost shall be raked to blend evenly (as would be done with a soil amendment or mulch). No more than a 2-inch depth shall be left on soil substrate.
- Straw bales shall be removed and disposed off-site by the Contractor. Areas of trenching shall be raked smooth and disturbed soils stabilized with a seed mix matching adjacent seeding or existing grasses (i.e., lawn or native grass mix).
- Silt fence, stakes, and other debris shall be removed and disposed off-site. Site shall be restored to a neat and clean condition.

**METHOD OF MEASUREMENT 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.

Silt fence, when used in conjunction with compost filter tubes or straw bales, will be incidental to this item.

Additional barrier, such as double or triple stacking of compost filter tubes, will be paid for per foot of tube installed.

Barriers that have been driven over or otherwise damaged by construction activities shall be repaired or replaced as directed by the Engineer at the Contractor's expense.

|                     |   |             |
|---------------------|---|-------------|
| <u>ITEM 772.337</u> | <u>CEDAR – RED 7-8 FEET</u>                         | <u>EACH</u> |
| <u>ITEM 772.377</u> | <u>MAPLE - RED 2-2.5 INCH CALIPER</u>               | <u>EACH</u> |
| <u>ITEM 777.262</u> | <u>OAK – NORTHERN RED 2-2.5 INCH CALIPER</u>        | <u>EACH</u> |
| <u>ITEM 777.328</u> | <u>OAK – WHITE 2-2.5 INCH CALIPER</u>               | <u>EACH</u> |
| <u>ITEM 781.301</u> | <u>HORNBEAM – FRANS FONTAINE 2-2.5 INCH CALIPER</u> | <u>EACH</u> |
| <u>ITEM 783.044</u> | <u>SERVICEBERRY – AUTUMN BRILLIANCE 7-8 FOOT</u>    | <u>EACH</u> |
| <u>ITEM 787.082</u> | <u>RHODO – ROSEBAY 2-2.5 FEET / #3</u>              | <u>EACH</u> |
| <u>ITEM 789.901</u> | <u>CHOKEBERRY – BLACK – VIKING 2-3 FOOT / #3</u>    | <u>EACH</u> |
| <u>ITEM 794.737</u> | <u>SUMMERSWEET SHRUB 3-4 FEET / #3</u>              | <u>EACH</u> |

The work under these items shall conform to the relevant provisions of Subsection 771 of the Standard Specifications and the following:

Plant locations shown on the plans are schematic. Prior to ordering plants, the Landscape Architect shall be contacted to review plant locations.

Final plant locations shall be approved by the Landscape Architect prior to planting. Plants not shown on the plans shall be field located by the Landscape Architect.

### WATERING

Watering during the one-year warranty period shall be with equipment that meets the following requirements:

Irrigation shall be sufficient to provide one inch of water per week during the growing season. The volume of water shall be equivalent to approximately 625 gallons of water per 1000 square feet of planted area. Water for both trees and shrubs in plantings beds shall be applied to root balls and to surrounding soil such that all soil in the planting bed is moistened.

### Watering

Watering shall be per the Supplement Standard Specification dated June 15, 2012:

All plants shall be watered during planting and all plants shall be watered at least twice each week during weeks where the average daily temperature exceeds 55 degrees (F) and when precipitation is less than 1 inch, as determined by local National Weather Service data. Watering shall be sufficient to provide moist soil to a depth of 6 inches, as determined by the Engineer. If soil is sufficiently moist, as determined by the Engineer, the required watering may be reduced.

Trees will require a minimum of 10 gallons of water each, and shrubs a minimum of 5 gallons per plant per watering.

Trees or shrubs planted after October 15 shall be thoroughly watered at the time of planting, after which subsequent watering will not be required until following season. The Contractor shall maintain a watering log for all plants installed on the project, indicating dates of watering and weather events. Log shall be submitted for final payment.

Log shall be per the form provided by MassDOT and shall be submitted to the Engineer, with a copy forwarded to the Town.

**ITEMS 772.337 through 794.737 (Continued)**

Weeding

All planting beds shall be kept free of weeds and neatly maintained throughout the one-year warranty period.

**METHOD OF MEASUREMENT AND BASIS OF PAYMENT**

Items 772.337, 772.377, 777.262, 777.328, 781.301, 783.044, 787.082, 789.901, and 794.737, will be measured and paid per Subsections 771.80 and 771.81, respectively.

**ITEM 815.2      TRAFFIC CONTROL SIGNAL LOCATION NO. 2      LUMP SUM****ITEM 816.01 TRAFFIC SIGNAL RECONSTRUCTION LOCATION NO. 1 LUMP SUM**

Work under these Items shall conform to the relevant provision of Section 800 of the Standard Specifications and the following:

The work consists of furnishing and installing traffic control signal equipment complete and ready for operation, as shown on the plans, for the following locations:

- Location 1: Boston Road (Route 3A) at Tower Farm Road/Walgreen's Driveway
- Location 2: Boston Road (Route 3A) at Glad Valley Drive and Lexington Road

Work at Location 1 is limited to the installation of pedestrian housings, accessible pedestrian push buttons with signs and saddles, pedestrian signal heads, traffic loop, wire and cables, pull boxes, equipment grounding and bonding, electrical connections, and providing all incidental materials necessary for operating and controlling the traffic control signals, as shown on the plans and specified.

Work at Location 2 includes the furnishing and installing of traffic control signal equipment, including controller, cabinet and foundation with concrete pad, vehicle and pedestrian housings, backplates, accessible pedestrian push buttons with signs and saddles, red, amber, and green LED signals, posts and bases, mast arms, signal post foundations, vehicle detection, saw cuts, wire and cables, pull boxes, equipment grounding and bonding, electrical connections, service connections, and providing all incidental materials necessary for operating and controlling the traffic control signals, as shown on the plans and specified.

National Grid will furnish connection and power at Location 2 shown on the Contract Drawings. National Grid will connect and disconnect power as required. No work shall be done in manholes or on power poles without a representative of National Grid being present. The Contractor will be responsible for coordinating the National Grid Work Order number.

It shall also be the Contractor's responsibility to pay all charges to National Grid for performing this work. No direct reimbursement will be made under this payment to the Contractor for payments made to National Grid, it being understood that full compensation for any payment made by the Contractor to the utility company will be included in the contract unit prices bid.

A list of required major traffic signal system items is included on the plans. All equipment installed shall be listed on MassDOT's "Qualified Traffic Control Equipment List".

The Contractor shall deliver to the Engineer a certificate of compliance with the manufacturer for all materials purchased from the manufacturer.

The Contractor shall request written approval from the Engineer before the placement of any concrete for foundations of mast arms, signal posts and cabinets.

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**ITEMS 815.2 & 816.01 (Continued)**

The top of the concrete base for the control cabinet shall be 18 inches above grade. The top of all other foundations not in sidewalk or paved areas shall be a minimum of 2 inches above grade. The top of mast arm foundations in sidewalk areas shall be located flush with finish grade.

**Flashing Operation**

Changes from automatic flashing to stop-and-go operation and from stop-and-go to automatic flashing operation shall occur as set forth in Sections 4D.28 through 4D.31 of the MUTCD.

**Local Traffic Signal Controllers and Cabinets**

The controller, malfunction management unit, detector amplifiers, bus interface units, and all other ancillary traffic signal control components included in the traffic control cabinet shall comply with the National Electrical Manufacturers Association (NEMA) Standard No. TS 2.

**Traffic Controller Assemblies**

The controllers and cabinet assemblies shall be supplied in an 8-phase, TS 2 Type 1 configuration.

Controller cabinet foundations shall not obstruct a sidewalk or crosswalk so that passage by physically-challenged persons is impaired. Anchor bolts shall be internal to the cabinet.

**TS 2 Type 1 Controllers and Cabinet Assemblies:** Controllers shall conform to Subsection 3, Controller Units of NEMA No. TS 2, Traffic Controller Assemblies. Controllers shall utilize an input/output interface conforming to Subsection 3.3.1 of the NEMA TS 2 Standard for all input/output functions with the backpanel terminals and facilities, the malfunction management unit, detector rack assemblies, and auxiliary devices.

The TS 2 Type 1 cabinet shall meet the requirements of Configuration 3 as defined in Table 5.3.1-1, "Type 2 Configurations" of the NEMA TS 2 Standard. The cabinet shall be fabricated of sheet aluminum to Size 6 dimensions as specified in Table 7.3-1 of the NEMA TS 2 Standards. The cabinet shall have a brushed aluminum finish.

The cabinet shall also be wired with a normally closed switch connected to a user defined input to the controller for remote monitoring of the control cabinets' door open status.

The following requirements are applicable to each signalized location and are designed for effective use of a laptop computer in conjunction with traffic signal controllers. These requirements are also designed to permit all engineers, electricians and technicians (including those who are disabled but ambulatory) to work in the cabinet in a safe, effective and comfortable manner. To this extent, the following meets applicable ADA requirements.

**ITEMS 815.2 & 816.01 (Continued)**

1. Adjust the control cabinet height by use of a cabinet extender, adjust the placement of cabinet shelves, adjust the height of the cabinet foundation or provide any combination of these three items so that the top of the LCD or other visual display window of both the local controller and the master controller is no more than 48" above finished grade in front of the cabinet. The top of the cabinet door opening shall be at least 5'8" above finished grade. Any technical provision, plan detail, standard specification or standard drawing to the contrary shall not apply to the extent that it may conflict with this viewing height requirement.
2. Furnish and install one slide-out/slide-in shelf or swing-out/swing-in shelf appropriate for the size and load of a laptop computer. This moveable shelf shall support the bottom of the laptop computer at a height between 3'-4" and 3'-8" above finished grade in front of the cabinet.
3. Furnish and install a paved pad in front of the control cabinet. This pad shall be of cement concrete, built in accordance with the sidewalk specification applicable to this project, approximately level, approximately 1" above the surrounding unpaved surface, or at even grade with the adjacent surface if paved. This pad shall abut the front of the cabinet, project at least 1' to each side of the cabinet and at least 3' in front. No pad is required if the front of the cabinet immediately abuts an existing or proposed paved sidewalk or other paved surface.
4. Both the firmware and software version in each timer unit shall be the same throughout the project, and shall be the latest version available on the market. In addition, the contractor shall promptly furnish to the owner and install all upgraded versions of both firmware and software through the last day of the inspection period, guarantee period or warranty period, whichever date is later.
5. The contractor shall furnish one cable with each new timer unit to connect a controller timing mechanism to a laptop computer. This cable shall have a termination at one end to match the controller. It shall have a termination on the other end to match the type of serial port found on laptop computers, usually DB9. This cable shall be wired to provide serial RS232C communication between the controller and the computer.
6. Payment for the work described above shall be deemed to be incidental to and included in the prices bid for various items of traffic signal work, and no additional payment shall be made for the work described above.

**Controllers**

The local traffic controller shall be capable of being operated in the full-actuated mode, in the free mode, and as semi-actuated in the coordinated mode. The controllers shall be keyboard entry, menu-driven unit mounted in eight-phase cabinets. The controller units shall meet all applicable requirements of the (N.E.M.A.) Standard Publication No. TS-2, Type 1, the Department's 1988 Standard Specifications and include the following as minimum requirements for the "Keyboard Entry Controller Unit."

**ITEMS 815.2 & 816.01 (Continued)**

- a. The Keyboard Entry Controller Unit must be type-tested and approved by the Department.
- b. The controller shall have hard-wire interconnect capability and internal time base coordination logic. The coordination control shall have the capabilities to operate as described under Sub-section 815.41 of the Standard Specifications.
- c. The controller shall have a data transfer/printer port for data transfer to another controller, printer, or laptop PC computer. A port shall be provided for uploading or downloading controller operating parameters from a laptop PC computer.
- d. The controller shall have a security code function.
- e. The controller unit shall have internal fire preemption control capabilities.
- f. The phase or phases selected for "call to non actuated" (C.N.A.) modes shall be determined as needed by keyboard entries.

The Contractor's attention is directed to Table 2, Required Signal Light Switching Assemblies, Section 815.41 of the Standard Specifications. The Contractor shall furnish the appropriate type and number of load switches and place unutilized load switches in the control cabinet for future use. Load relays shall be easily replaced using a screwdriver. Component relays requiring soldering are not acceptable.

In addition to the convenience outlet as described under Subsection 815.41, a lamp with an on/off switch shall be installed in the controller cabinet.

**Bus Interface Units**

The Bus Interface Unit (BIU) shall comply with Section 8 of the NEMA TS 2 Standard. The BIU shall be fully interchangeable with any other manufacturer's unit and interchangeable in a NEMA TS 2 Type 1 cabinet assembly.

The BIU shall perform the interface function between Port 1 at the controller unit, the malfunction management unit, loop detector rack assembly, and the backpanel terminal and facilities.

As a minimum, two LED indicators shall be provided on the BIU front panel. One indicator shall serve a dual use; as a power on indication and as a diagnostic indicator for proper operation of the device. The second indicator shall serve as a transmit indicator illuminating each time data is transmitted.

NOTE WELL: The contractor shall supply one additional spare BIU in each controller cabinet.

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**ITEMS 815.2 & 816.01 (Continued)****TS2 Cabinet Power Supply**

A separate power supply shall be supplied and installed in each of the TS 2 cabinets. The unit shall be AC line powered and provide regulated DC power, unregulated AC power, a line frequency reference for the bus interface units, load switches, and other auxiliary cabinet equipment, as required. As a minimum, the power supply shall meet all requirements of Section 5.3.5 of the NEMA TS 2 Standard.

The power supply shall be either shelf mounted or wall mounted utilizing key hole slots for ease of replacement or installed as part of the rack assembly.

The unit shall contain four LED indicators on the front panel to indicate the four outputs; + 12 VDC +/- 1 VDC @ 2.0 amps, + 24 VDC +/- 2 VDC @ 2.0 amps, 12 VAC @ 250 milliamps, and 60 Hz line frequency reference. A test point terminal shall also be located on the units front panel for + 24VDC and logic ground testing.

**Malfunction Management Unit**

The malfunction management unit (MMU) shall comply with Section 4 of the NEMA TS 2 standard. The MMU shall be capable of operating as either a Type 16 with 16 channels (8 vehicle, 4 pedestrian, 4 overlap) or a Type 12 with 12 channels (8 vehicle, 4 overlap). The MMU's supplied shall be configured to operate as Type 16 units. The MMU shall be capable of supporting flashing yellow arrow operation.

The MMU's in either the Type 16 or Type 12 configuration shall be capable of operating in a NEMA TS 2 Type 1 cabinet or a NEMA TS 1 cabinet without loss of functionality.

**Load Switches**

Load switches shall comply with Subsection 6.2 of the NEMA TS 2 Standard. All load switches shall utilize optically isolated encapsulated modular solid-state relays. Discrete components on circuit boards are not acceptable.

Load switch indicator lights shall be LED-type and wired on the input side of the device.

Note: The controller cabinet assembly shall be initially supplied with a full complement of load switches to accommodate each available position of the backpanel.

**Flasher**

Flashers shall comply with Subsection 6.3 of the NEMA TS 2 Standard and be equipped with two output indicator lights which will show flashing power out to the cabinet assembly.

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**ITEMS 815.2 & 816.01 (Continued)****Flash Transfer Relays**

Flash transfer relays shall comply with Subsection 6.4 of the NEMA TS 2 Standard.

The field electrical loading for flash operation shall be wired through the transfer relays such that the load on the 2-circuit flasher is as balanced as possible within the limitations of the signal phasing.

Note: The controller cabinet assembly shall be initially supplied with a full complement of flash transfer relays to accommodate each available position of the backpanel.

**Testing of Grounding System**

The Contractor shall perform testing of the equipment grounding system in the presence of the Engineer in accordance with the Standard Specifications. A ground rod shall be installed in each controller cabinet.

**Vehicle and Bicycle Loop Detectors – Location 1 (ITEM 816.01)**

Wire loop detectors shall be installed in the roadway pavement for vehicle and bicycle detection at locations shown on the plans.

The detector lead-in cables shall be labeled, with the street name, phase, detector number and terminal numbers, both in the controller unit and in the pull box containing the detector lead-in splice. This labeling and attachment shall be of durable materials such as brass or plastic, attached by wire or plastic ties. Adhesive attachment of the label shall not be acceptable.

Loop wire shall be encased in a protected plastic tubing of PVC or polyethylene plastic, IMSA 51-5, 6 mm outside diameter, and the wire may have cross-linked polyethylene insulation or it may have THHN/THWN insulation.

The heat source for soldering shall be electrical, not exceeding 30W capacity.

Splicing insulator shall be an approved re-enterable body splice kit with a non-hardening silicone gel sealing compound compatible with the wire insulation.

**Splice and Connection**

Splicing and connection shall be made in the pull box nearest the roadway loop sensor but not exceeding four loops per pull box. All loops included in a detector group as shown on the plans shall be spliced in a single pull box. Each lead and lead-in connector shall be stripped back and spliced using a pressure type wire connector applied with a crimping tool. Multiple loop sensors shall be identified as detailed on the plans.

**ITEMS 815.2 & 816.01 (Continued)**

Lead-in splicing shall be staggered to prevent contact with each other. Each crimped splice shall be soldered and insulated. The insulation material shall be heat-shrunked polyolefin. The shielded lead-in cable outer jacket and shield shall be stripped back sufficiently to ensure that the shield cannot come into contact with the spliced conductors. Splice hangers shall be provided in each pull box.

Follow the instructions of the kit manufacturer for this procedure when installing the re-enterable splice kit. The above splice shall be done on the day of the loop wire installation to prevent the entrance of any moisture into the plastic tubing.

The lead-in conductors shall be connected to the appropriate terminals in the controller cabinet, by using crimped and soldered terminal ends. The heat source for soldering shall be electrical not exceeding 30W capacity.

**Testing of Loops**

The following test procedure shall be performed in the presence of the Engineer before and after the loop sensor is sealed in the pavement as detailed below. The cost of equipment, labor, and materials to perform such testing and similar re-testing following repairs, replacement, or adjustment of any detector within the project area shall be included in the price bid for the traffic control signal items.

After installation of wire loop sensors in the roadway and installation of shielded lead-in connecting the loop sensors to the controller cabinet, each loop sensor and lead-in combination shall be tested (at the controller cabinet) for proper installation. The resistance from lead to lead of the same loop shall not exceed three (3) ohms per 100 feet as measured by a high quality meter suitable for measurements of low resistance in the range of 1 to 6 ohms.

A megohm meter test at 500 volts DC shall be made between the two leads of a loop/lead-in combination temporarily spliced together, but otherwise disconnected from all terminals, and the shield drain wire and the earth ground connection. These resistances shall be at least one hundred (100) megohms.

A megohm meter test at 500 volts DC shall be made between lead-in shield and the earth ground rod. This resistance shall be at least one hundred (100) megohms.

The meter used for these tests shall be checked for calibration each day of use by using a resistor block of  $\pm 5\%$  resistors simulating loads of 1 megohm, 20 megohm and 100 megohms. The observed meter reading shall be  $\pm 10\%$  of the nominal resistor load.

If any loop sensor and lead-in combination fails to pass any one of the four (4) tests, it shall be repaired and then re-tested on two occasions at least two (2) weeks apart, and then shall pass on each re-test occasion. If the loop sensor lead-in combination does not pass all these re-tests, a new loop sensor and/or lead-in shall be installed, and shall pass these tests, at no additional cost.

**ITEMS 815.2 & 816.01 (Continued)**

After the above tests have been satisfactorily completed, all loop sensor/shielded lead-in inductances shall be measured and a written report of the results shall be filed with the Engineer and a copy stored with the "box prints" at the intersection.

**Video Detection System – Location 2 (ITEM 815.2)**

The system shall also provide full motion video output showing zones highlighted during detection for fine-tuning. All hardware and software within the traffic signal cabinet shall be NEMA TS-2 compliant.

At the location shown on the plans, the Contractor shall supply and install a Video Detection System. A 9-inch (minimum) video monitor shall be provided for each of the locations for video detection diagnostic purposes. The major components of the Video Detection System are further described as follows:

- A. Prior to installation of the Video Detection System a detailed site survey shall be conducted by a factory trained and certified representative. The site survey shall ensure that the design of the camera, camera location, camera optics, and video/data interconnect is appropriate for the application.
- B. The supplier of the Video Detection System shall supervise the installation and testing of the Video Detection System and computer software. A factory certified representative from the supplier shall be on site during installation.
- C. The Video Detection System shall provide one National Television Standards Committee (NTSC) color composite video output.
- D. The Video Detection System shall provide a minimum of 20 detection zones. The system shall provide flexible, user configurable detection zone placement at any orientation within the field of view of the Video Detection System Camera. It shall be possible to overlap detection zones. It shall be possible to configure the Video Detection System to provide detection signals to the traffic signal controller which are comprised of Boolean combinations of detection zones.
- E. The Video Detection System shall provide failsafe operation whereby it places continuous vehicle calls to the traffic signal controller on all detection zones in the event it senses unacceptable video from the Video Detection System Camera.
- F. The Video Detection System shall include a configuring device and/or a Windows based computer software that provides for configuring the Video Detection System, viewing real time video, and updating the flash memory of the Video Detection System with updated application software.
- G. The Video Detection System shall provide count and presence detection performance with at least 96% accuracy under normal (day and night) conditions.

**ITEMS 815.2 & 816.01 (Continued)**

- H. The Video Detection System shall utilize FLASH memory to store the resident application software.
- I. The Video Detection System shall be comprised of a Video Detection System Camera, Video Detection System Cable, and Video Detection System Hardware.
- J. Video Detection System Cameras
- 1) The Video Detection System Camera shall operate without degradation over a temperature range of -34 to 60 degrees Celsius at a relative humidity of 10% to 90% condensing.
  - 2) The Video Detection System Cameras shall be housed in a water resistant, dust proof NEMA-4 housing. The housing shall include a rear connector for connection of the Video Detection System Cable. The housing shall be field rotatable to allow for proper alignment between the camera and the traveled road surface.
  - 3) The Video Detection System Cameras shall have a heater to prevent the formation of ice and condensation in cold weather and allow the camera to operate correctly while exposed to precipitation and direct sunlight.
  - 4) The Video Detection System Cameras shall have a sunshield to protect the lens from direct sunlight and direct precipitation exposure.
  - 5) The Video Detection System Cameras shall provide useable video and resolvable features in the video image when those features have luminance levels as low as 0.1 lux at night, and as high as 10,000 lux during the day. The Video Detection System Camera shall contain an automatic gain control (AGC) to provide a satisfactory image over the full range of light levels.
- K. Video Detection System Cable
- 1) The Video Detection System Cable shall interconnect the Video Detection System Camera with the Video Detection System Hardware in the traffic signal control cabinet.
  - 2) The Video Detection System Cable shall meet the design requirements of the Video Detection System Camera manufacturer, and shall be designed and manufactured specifically for the Video Detection System Camera supplied.
  - 3) The Video Detection System Cable shall be capable of withstanding the rigors of outdoor environments, including all combinations of precipitation, heat and cold from -34 to 74 degrees Celsius, and direct exposure to sunlight without exhibiting any signs of deterioration over time.
  - 4) The Video Detection System Cable shall be installed with a suitable drip loop to prevent the entrance of water into the housing.

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**ITEMS 815.2 & 816.01 (Continued)****L. Video Detection System Hardware**

- 1) The Video Detection System Hardware shall operate without degradation over a temperature range of -34 to 74 degrees Celsius at a relative humidity of 10% to 90% condensing.
- 2) The Video Detection System Hardware shall include interface device(s) which shall be installed in the traffic control cabinet.
- 3) The interface device(s) shall be used to terminate the traffic controller cabinet end of the Video Detection System Cable.
  - a) The interface device(s) shall contain transient suppression devices for all signals transported on the Video Detection System Cable, including but not limited to video, data, and power.
    - The surge protector shall be electrically connected to the cabinet ground rod.
    - Surge protectors should have peak surge current protection of at least 10K amperes with a response time of less than 5 nanoseconds. The protector complies when a lab report from an independent test laboratory stating the product passes this specification is submitted with the shop drawings.
    - Units should be pre-approved or unconditionally warrantied for at least 10 years and certified to comply with the product's published specifications by an independent laboratory.
  - b) The interface device(s) shall contain a switch or shut-off mechanism that shall allow the user to turn off AC service to all components of the Video Detection System.
  - c) The interface device(s) shall contain a connector for interfacing to a configuring device and/or a Windows based computer in the field for the purpose of configuring the Video Detection System, viewing real time video, and for updating the flash memory of the Video Detection System with updated application software.
- 4) The Video Detection System Hardware shall include all necessary cables for interconnection to the traffic signal controller, AC power service, a modem for transport of NTSC video to the traffic operations center, and a configuring device and/or a Windows based computer in the field.

**Software**

All computer system, controller, conflict monitor, and amplifier software shall be supplied with the latest available revision. Any software upgrades released by the manufacturer shall be supplied at no charge to the owner for a period of five years after acceptance of the work.

**Data Base Programming**

Each programmable local hardware component (controller, malfunction management unit, and detector amplifier) shall be initially programmed by the Contractor based on information contained on the plans. Three (3) sets of hard copy programming per device shall be supplied and stored in each controller cabinet.

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## **ITEMS 815.2 & 816.01 (Continued)**

### **Labels**

All time settings, switches, harnesses, relays, terminals, and fuses shall be clearly and permanently labeled.

### **Surge Suppression for Traffic Signal Equipment**

Wherever electronic traffic signal equipment is located (cabinets, cameras, etc.), each input & output should be surge protected except traffic signal outputs. Signal outputs from load switches do not need surge suppression since the load switches act as surge suppressors.

The surge protector must be electrically connected to the nearest grounded metal structure or nearest ground rod.

Surge protection for power service shall conform to the current NEMA TS-2 standard except surge capacity shall be 80 kA. The product complies when a lab report from an independent test laboratory stating the product passes the current NEMA TS-2(5.4.2.4) specification (with the additional surge capacity of 80 kA) is submitted with the shop drawings.

Surge protection for all video, loop, pedestrian button, and pre-emption connections should have peak surge current protection of at least 10K amperes with a response time of less than 5 nanoseconds. The product complies when a lab report from an independent test laboratory stating the product passes this specification is submitted with the shop drawings.

Units should be unconditionally warranted for at least 10 years.

### **Equipment Finish and Color**

All traffic signal equipment, including, but not limited to, signal posts, bases, signal heads, visors (outside), mast arms, doors, pushbutton saddles, controller cabinet, service meter socket boxes, hardware, strapping, and rigid mounting brackets for signals and signs, shall be the color **Gloss Black**. This includes the metal strapping used to secure equipment to the mast arm and shaft. The inside of visors shall also be **Flat Black**. The interior of controller cabinets shall be the color white. The Contractor shall submit to the Engineer, Design Engineer (BETA Group), and Town of Billerica for approval, four (4) paint chips and sample finishes on steel of the intended color prior to any work being done under this heading.

Signal heads, doors, visors, mounting brackets, and hardware supplied direct from the manufacturer in the color stipulated above may be acceptable provided it meets or exceeds the finish process for the material indicated below:

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**ITEMS 815.2 & 816.01 (Continued)****1. Steel Equipment***Galvanizing*

All bolts, screws, nuts, rods, and washers shall be galvanized in accordance with AASHTO M232 and the Standard Specifications. The hardened machine screws may be electroplate galvanized. Stainless steel studs, bolts, screws, nuts, straps, and washers shall not be galvanized. Galvanized hardware need not be painted; however, the ends of bolts, nuts, and washers shall be painted in the field according to section "Touch-up and Repairs." Immediately prior to galvanizing, the steel shall be immersed in a bath of zinc ammonium chloride. The dry kettle galvanizing process shall be used.

All steel components, other than above, shall be galvanized after fabrication in accordance with AASHTO M111. The galvanizing bath shall contain nickel (0.05% to 0.09% by weight) in accordance with Subsection 960.61 of the Standard Specifications.

Galvanized members requiring shop assembly shall be welded and drilled prior to galvanizing.

*Coating over Galvanized Steel*

Prior to painting, the applicator shall ensure that all components are smooth and without sharp protrusions that would present an injury hazard to pedestrians. Also, the fabricator shall ensure that all welds shall be thoroughly cleaned in accordance with good practice and according to AWD D1.5 and ASTM A123-89a and shall have a suitable surface to accept the galvanizing.

In preparation for the two coat painting system, the surface shall be blast cleaned in accordance with the requirements of SSPC-SP-7 "Brush-Off Blast Cleaning" or other method producing equivalent results and uniform profile, to achieve a 1.0 to 1.5 mils anchor profile as indicated by a Keane Tator Profile Comparator or similar device. The creation of the anchor profile shall be performed prior to the formation of "white rust" on the galvanized surface. Following blast cleaning, the zinc coating thickness shall be measured to verify that the coating thickness is in accordance with AASHTO M111.

A two coat painting system shall be applied by the Galvanizer in his own facility within twelve hours of galvanizing the steel components. If the two coat painting system cannot be applied by the Galvanizer within twelve hours of galvanizing, the Galvanizer shall bake the steel components at 375 degrees for two hours prior to SSPC-SP-7 "Brush-Off Blast Cleaning".

The prime coat material shall be a polyamide epoxy applied to minimum dry film thickness of 4.0 to 6.0 mils and force cured as given below for the finish coat.

The finish coat material shall be a two component, catalyzed aliphatic urethane applied by airless spray to a minimum dry film thickness of 4.0 mils.

**ITEMS 815.2 & 816.01 (Continued)**

The color shall be **Gloss Black**, as specified above. The fabricator shall submit to the Engineer for approval, paint chips of the intended color prior to any work being done under this heading.

All finish coat material shall be applied under conditions within the following tolerances:

- A. Air Temperature: 10°C min., 32°C max.
- B. Surface Temperature: 10°C min., 38°C max.
- C. Surface temperature must be at least 5°F above the dew point.

The finish coat shall be cured in a booth capable of maintaining 65°C for 2-4 hours.

*Touch-up and Repairs*

Should any damage occur to the galvanized coating during shipping or handling at the job site, the Contractor shall repair and touch-up any damaged areas to the satisfaction of the Engineer and the following:

Touch-up of galvanizing before the finish coat is applied shall be accomplished by applying galvanizing repair paint in accordance with Section M7.04.11. The dry film thickness of the applied repair paint shall not be less than 4.0 mils. Applications shall be in accordance with the manufacturer's instructions.

Field touch-up procedures shall conform to the recommendations of the Galvanizer. Touch-up of the finish coat shall be by applying a coating of a two-part urethane, as supplied by the Galvanizer, to achieve a dry film thickness of at least 4.0 mils. Prior to the application of the paint, remove all damaged coatings down to a solidly adhered coating and apply galvanizing repair paint as primer. Allow the primer to dry for at least 4 hours prior to top coating.

The Contractor shall also use the touch-up paint material and procedures to paint the galvanized hardware used in field erection that has not been finish coated previously.

**ITEMS 815.2 & 816.01 (Continued)**

## 2. Aluminum Equipment

All aluminum equipment called for shall have a powder coat finish **Gloss Black** in color. The coating shall be a polyester-TGIC (triglycidyl isocyanurate) resin system conforming to the following:

| Quality               | Test   | Limits   |
|-----------------------|--|--|
| Abrasion              | Taber abraser CS-10, 1000 gram load, 1000 cycles, ASTM D4060           | 100 mg. maximum weight loss  |
| Adhesion              | ASTM D 3359<br>Initial<br>1000 hours                                   | 5A<br>5A   |
| Gloss                 | ASTM D 523<br>15°C - 600 hours<br>15°C - 1000 hours                    | 82% retention<br>90% retention (washed)  |
| Hardness              | ASTM D 3363  | 2H - No Gouge  |
| Impact                | ASTM D 2794 Direct   | Pass 6.59 Nm   |
| Salt Spray Resistance | ASTM B 177<br>ASTM D 1654<br>1000 hours unscribed<br>400 hours scribed | Table 2-10<br>Table 1-10   |
| Weather Resistance    | ASTM G 23, 1000 hours, 18 min. waterspray, 102 min. light              | No film failure  |
| Color                 | Gloss Black  |  |
| Identify              | Infrared fingerprint   | Match  |
| Flexibility           | 180° bend; 13mm dia., mandrel within 10 seconds                        | No breaks, flaking or cracks. Tested with a Q-panel with 2 mils or less of coating |
| Humidity              | ASTM D 2247, 1000 hours  | No blister or film failure   |
| Thickness             |  | 4 mils± 1 mils   |
| Mar Resistance        |  | Good   |

A Certificate of Compliance of the powder coating system is required for the Engineer's approval.

**Mast Arm Structures**

Mast arm structures at Location 2 shall be galvanized steel and shall conform to the provisions of M8.18.1. Mast arm structures shall be fabricated by the suppliers approved by MassDOT. Mast arm structures shall be monolever type. All signal heads and signs on the mast arms shall be fixed mounted. Shoe type bases shall be used.

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**ITEMS 815.2 & 816.01 (Continued)**

Design shall be in accordance with AASHTO, "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals." 6th edition with interims for a wind speed of 110 mph. AASHTO breakaway requirements shall not apply. Shop drawings and wind load calculations shall be submitted and stamped by a professional engineer registered in the Commonwealth of Massachusetts.

**Fabrication**

The Fabricator shall be certified to AISC Fabricator Certified Quality Program. Proof of this certification will be required to ensure that the fabricator has the personnel, organization, experience, procedures, knowledge, equipment, capability and commitment to fabricate quality traffic pole structures.

**Welding**

All welding shall be in accordance with the American Welding Society (AWS) D1.1 Structural Welding Code. Tackers and welders shall be qualified in accordance with the code. Tube longitudinal seam welds shall be free of cracks and excessive undercut, performed with automatic processes, and shall be visually inspected. Longitudinal welds suspected to contain defects shall be particle inspected. All circumferential butt-welded tube splices are to be non-destructively tested.

**Material Certifications**

All structural steel materials are manufactured in the United States of America, and comply with the American Society for Testing and Materials (ASTM) specifications. Mill certifications are supplied as proof of compliance with the specifications.

**Calculations**

Calculations and detailed drawings shall be prepared and stamped by a professional engineer, registered in the Commonwealth of Massachusetts and shall demonstrate compliance with the AASHTO specifications. They shall include stress analysis on the mast arm, luminaire arm, pole, base plate, and anchor bolts. Maximum loads and stresses shall be determined for the most critical wind direction.

**Pole Shaft**

The pole shall be fabricated from coil or plate conforming to the requirements of Section M8.18.1 of the Standard Specifications. The pole shall be round in cross-section and has a constant linear taper of 0.14 in/ft and have 16 evenly spaced sharp vertical flutes. The shaft shall be one piece and contain no circumferential welded splices, and shall be a single ply (no laminated tubes). The pole shaft diameter and steel gauge shall be as required to satisfy AASHTO Standards. Each pole shall be provided with an end cap secured in place with set screws.

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**ITEMS 815.2 & 816.01 (Continued)****Signal Mast Arm**

The mast arm shall be a “mounting plate” style with an uptilt as detailed in the contract documents and shall conform to the requirements of Section M8.18.1 of the Standard Specifications. The arm shall be round in cross-section and have a constant linear taper of 0.14 in/ft. All mast arms shall be manufactured and shipped in one piece with no circumferential welded splices and shall be of a single ply (no laminated tubes). Each arm is provided with a cast end cap secured in place with set screws.

**Base Plate**

Base plates shall conform to the requirements of Section M8.18.1 of the Standard Specifications. Plates shall be integrally welded to the tubes with a telescopic joint or a full penetration weld joint with a backing ring.

**Anchor Bolts**

Anchor bolts shall conform to the requirements of Section M8.01.5 of the Standard Specifications.

**Experience / Warranties**

The pole manufacturer shall have been in the business of manufacturing traffic signal post products for the municipal street lighting market for a minimum of ten (10) years. The manufacturer(s) of the steel pole shaft assembly and cast aluminum base shall warrant that they will repair and replace product that fails due to structural defect or faulty workmanship within 5 years from date of shipment. Paint systems shall be warranted for a period of five years against peeling, cracking or excessive fading.

**Traffic Signal Posts and Bases**

All traffic signal posts at Location 2 shall be galvanized steel, painted gloss black. Bases for posts shall be of the octagonal pedestal type, painted gloss black.

**Mast Arm Foundations**

Mast arm foundations shall be a concrete cored foundation as shown on the Standard Drawings for Overhead Signal Structures and Foundations dated December 2015. The design of the foundation depth is detailed on the Traffic Signal Plan **Sheet 69**.

Subsurface mast arm borings have been provided in Document A00880 for all designed foundations.

The lower portions of all foundations shall be placed directly against undisturbed earth. No forms or reinforcing for foundations shall be set nor shall concrete be placed until the excavation has been inspected by the Engineer and his approval to proceed has been given.

The top of all foundations in sidewalk areas shall be located flush with finish grade. The top of each mast arm foundation shall not be exposed in the sidewalk.

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**ITEMS 815.2 & 816.01 (Continued)**

In the case where mast arm foundations have to be altered from the standard drawings by unexpected circumstances, shop drawings for the altered foundations shall be prepared and stamped by a professional engineer in the Commonwealth of Massachusetts and submitted to the design engineer for review and approval.

**Pedestrian Signal Heads**

All pedestrian signal heads shall be mounted so that there is a minimum of 24 inches between any part of the housing or visor and the outer face of the curb. All pedestrian signal heads shall be aluminum, painted black.

Pedestrian signals shall be an approved single section 16 inch Light Emitting Diode (LED) type pedestrian signal head capable of displaying international symbols ("Hand/Person Walking" indications) as per the MUTCD with a countdown display.

**Backplates**

Backplates shall be aluminum non-louvered with a 5 inch border width and a 3 inch yellow retroreflective border. Only backplates that are listed in the latest MassDOT "Qualified Traffic Control Equipment List" will be used on this project.

**Vehicle Signal Heads**

All proposed vehicle signal heads shall be aluminum and painted flat black. When, in judgment of the Engineer, the visibility of existing or proposed signal faces will be obstructed by trees and other vegetation, the contractor shall clear the obstructions for proper sight distance. Any clearing necessary shall be done within the State, County, or Town layout, as directed by the Engineer.

**LED Vehicle and Pedestrian Signal Modules**

All signal and pedestrian displays shall be equipped with LED signal modules. All red, amber, green, and pedestrian signal housings with the exception of optically programmed and fiber optic housings and shall conform to the following where applicable:

- ITE's Vehicle Traffic Control Signal Heads – Light Emitting Diode (LED) Arrow Traffic Signal Supplement, Dated July 1, 2007
- ITE's Vehicle Traffic Control Signal Heads – Light Emitting Diode (LED) Circular Signal Supplement, Dated June 27, 2005.
- ITE's Pedestrian and Countdown Signal Modules Compliant to PTCSI - Part 2 Light Emitting Diode (LED), Dated, February 2011
- On the MassDOT Traffic Signal Approved Equipment List

For an LED module to be installed on this project, the LED module shall have approval from the MassDOT Traffic Control Products Approved Equipment Committee and be included on the Traffic Control Products List prior to the date of this proposal

**ITEMS 815.2 & 816.01 (Continued)**

To prevent the LED module warranty from being voided, the connecting leads on the module shall not be cut. The original LED module leads shall be connected to the signal head terminal block as continuous wire without splices.

The LED signal module will be replaced or repaired by the manufacturer if it exhibits one of the following:

- A failure due to workmanship or material defects within the first 60 months of field operation.
- A greater than 40 percent light output degradation or a fall below the minimum intensity levels (as defined by the latest ITE performance specifications) within the first 36 months of field operation

**Pedestrian Pushbutton with Sign and Saddle**

Pedestrian pushbutton controls shall be raised from or flush with their housings and shall be a minimum of 2 inches in the smallest direction. The force required to activate the controls shall be no greater than 5 pounds.

Pedestrian pushbuttons shall be an accessible pedestrian type in accordance with Section 4E.09 of the 2009 MUTCD and shall include a red LED confirmation light, locator tone, vibrotactile pushbutton, audible message capability and an instructional panel. Pushbuttons shall be located according to the plans and in conformance with Fig 4E-4 of the 2009 MUTCD, with arrow pointed parallel to the crosswalk being controlled. If two crosswalks, oriented in different directions, end at or near the same location, the positioning of pedestrian pushbuttons and/or legends on the pedestrian pushbutton signs shall clearly indicate which crosswalk signal is actuated by each pedestrian pushbutton. Pushbuttons shall be separated by a minimum 10 foot distance per MUTCD Fig 4E-3. Attention is brought to pushbuttons at Location 1 that shall be mounted on the same post as existing pushbuttons. Spoken messages for the proposed and existing pushbuttons on these posts shall be required. The contractor shall provide the Engineer with these spoken messages as part of the traffic signal equipment shop drawings for approval.

Mounting height shall be approximately 42 inches above the finish grade, but not more than 48 inches, in accordance with section 4E.08 of the MUTCD.

**Wiring and Service Connections**

Traffic signal cable shall be of Type 2, #14 AWG stranded, 10-conductor minimum meeting the requirements of IMSA Specification 20-1, except for mast arm and /or span wire traffic signal cable, which shall be Type 2, #14 AWG stranded, 5-conductor minimum meeting the requirements of IMSA Specification 19-1. All systems shall have a minimum of one (1) 10-conductor cable for each vehicle phase, overlap phase, and pedestrian phase for controller outputs to field wiring required by the timing and sequence plan. A minimum of a five (5) spare conductors shall be provided in the base of each signal post and mast arm. Openings, where cables enter the base of a cabinet, shall be sealed with an approved elastic sealing compound. The open ends of conduits entering or leaving mast arms, posts, and pull boxes shall also be sealed with the approved elastic sealing compound.

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**ITEMS 815.2 & 816.01 (Continued)**

The work for service connections shall consist of furnishing and installing all materials and equipment to deliver power to the traffic signals and related electrical systems.

**Optical Emergency Preemption System**

The work consists of furnishing and installing optical traffic signal preemption systems ready for operation, as described herein and shown on the plans. Included in the work is the furnishing and installing of traffic signal preemption unit and related equipment, optical detection equipment and all necessary connections to the traffic signal controller. The emergency preemption system equipment shall be included in the latest version of the MassDOT Qualified Traffic Control Equipment List and shall be compatible with the Town of Billerica's emergency preemption system.

The emergency preemption system shall consist of a data-encoded phase selector to be installed within the existing control cabinet. This unit will serve to validate, identify, classify, and record the signal from the optical detectors located on support structures at the intersection. Upon receiving a valid signal from the detector, the phase selector shall generate a preempt call to the controller initiating a preemption operation as shown on the plans.

The phase selector shall be a rack-mounted plug-in two channel, dual priority device. Programming the phase selector shall be via a PC-based computer utilizing unit specific software. One copy of software on a disk shall be supplied and licensed to the Town as part of this contract. A hard copy of final programming data shall be left in the control cabinet. The Contractor shall supply a complete set of interface cables for phase selector to laptop connection.

Emergency vehicles equipped with optical energy emitters transmit optical energy impulses to optical detectors mounted at the intersection. When optical energy impulses are received at the intersection, control of the signals shall transfer from the local controller to show a selected display shown on the plans to assist the vehicle through the intersection without conflict. After the vehicle has passed through the intersection, control of the signals shall then return to the local controller which shall restore the appropriate timings that were in effect prior to preemption.

**1. General Operation and Description of Work**

The following description of work specifies the responsibilities involved in the installation of optical preemption equipment.

The Contractor is required to supply material and labor (required or shown) for the complete installation of optical preemption equipment at the specified location in this project. Intersection preemption equipment required includes optical detectors, phase selectors, card rack, preemption indicator lights, cable, interfacing of preemption equipment to the local controller, making electrical connections, and all required incidentals.

**ITEMS 815.2 & 816.01 (Continued)**

The following are the operational requirements of the optical preemption system:

- Operating sequence, as specified, shall be initiated when detector receives optical energy of the required repetition rate from an emitter.
- Detector shall transform the optical energy signals into electrical signals and transmit the electrical signal to the phase selector for processing.
- Phase selector shall cause the local controller to show a selected display identical to one of the color interval displays normally available in the controller which will assist the emergency vehicles through the intersection without conflict.
- Phase selector shall allow the controller to release from hold and resume normal operation after optical energy signals are lost provided the desired green display has already been obtained.

Detector cable for optical preemption equipment shall meet specifications of the system manufacturer.

**2. Installation**

The preemption equipment manufacturer shall be responsible for preemption system design and documentation.

Preemption System Design and documentation shall include the following:

- Provide the installing agency with locations for detector installation. Suggested detector locations are shown on the plans and may be changed to improve the operation. Notice shall be given to the Engineer prior to any change.
- Provide the controller manufacturer, Engineer, and owner with electrical diagrams.

The installer shall install the equipment consistent with the preemption equipment manufacturer's recommended installation procedures and electrical diagrams in a neat and workmanlike manner.

The preemption equipment manufacturer shall be responsible for operational checkout of the specified preemption functions prior to final acceptance and approval by MassDOT.

Operating checkout includes the following:

- Verifying that the preemption system is properly installed as per the preemption manufacturer's recommendations and the electrical diagrams as provided by the preemption equipment manufacturer.
- Verifying that the priority system timing and range are properly set. Preemption equipment warranties are put into effect.
- Instructing the vehicle drivers or their representative(s) in the operation of the preemption system.

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**ITEMS 815.2 & 816.01 (Continued)****3. Warranty**

All components of the preemption system specified herein shall be warranted by the manufacturer to be free of defects in materials and workmanship for a period of two years from the date of delivery or one year from the date of installation, whichever occurs first.

The Contractor shall repair or replace, free of charge to the Town of Billerica or MassDOT, any part that fails in any manner during the warranty period, and 12 (twelve) months after final acceptance of the project by the Owner.

**Preemption Indicator Light**

A preemption indicator light shall be provided and mounted as shown on the plans. It shall be located in a position where it may be visible from all preemption approaches to each intersection. The light shall be weather tight and consist of a clear (white) strobe which shall be illuminated whenever the controller is in the emergency preemption phase. The indicator light shall meet ITE, NEMA, IMSA, and MassDOT standards.

**Fine Tuning, Testing and Adjustment Period**

After the Contractor has finished installing the controller and all other associated signal equipment to operate as specified in the contract documents, the fine tuning, adjusting and testing period shall begin. During this period, the Contractor, under the direction of the Engineer, will make necessary adjustments and tests to insure safe and efficient operation of the equipment. This completion date has taken this testing period into consideration. No request for final acceptance will be considered until successful completion of the testing period.

**Guarantee After Final Acceptance**

The Contractor shall diagnose (trouble-shoot) the system and, at his own expenses replace any part of the traffic signal control equipment found to be defective in workmanship, material or manner of functioning within six months from date of final acceptance of all the installations under this Contract. This requirement does not affect the one-year warranty period on equipment specified in Subsection 815.20 of the Standard Specifications.

Upon the date of acceptance of the project by MassDOT, the Contractor shall turn over all guarantees and warranties to MassDOT, where applicable.

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**ITEMS 815.2 & 816.01 (Continued)****Record Traffic Signal Layout Plans**

It is the responsibility of the Contractor to provide electronic Record traffic signal layout plans indicating all changes made during construction. The plans shall indicate the location of traffic signal equipment retained, removed and reset, and installed, including detectors, signal posts, mast arms and/or strain poles, pedestrian and vehicular signal heads, controller cabinets, conduit, pull boxes and service connections. The plans shall also indicate the final field timing and sequence, major items list, power-pole number, and meter number. Electronic Record plans shall be provided in accordance with MassDOT signal inventory standards, including electronic picture files, one for each approach to the signal.

**Miscellaneous Requirements**

The actuated controller shall have capability to preempt to a preselected phase by external command. The Contractor's attention is drawn to the requirements of Subsection 813.60C, Splicing, relative to four optional methods of splicing in signal bases, Subsection 813.40C, Ground Electrodes, relative to Requirement 1 - Connection to a Water Piping System, and Subsection 813.61, Equipment Grounding.

All anchor bolts and bolts for holding hand hole and access covers shall be greased at the time of installation.

All proposed conduit shall be 3 inch Type NM, plastic conduit unless otherwise specified. 3 inch conduit shall be paid for under Item 804.3 and shall not be included in the lump sum bid price for Item 815.2 or 816.01.

The Contractor shall make all necessary arrangements with the electric company for the service connections or for any main power cut off when necessary, and bear all charges incurred thereby.

**METHOD OF MEASUREMENT**

Traffic Control Signals, Traffic Signal Controllers, mast arm foundation, loop detector, and all accessories shall be measured for payment as a lump sum unit.

All additional materials and labor required to complete all of the above items as specified shall be considered as incidental to the construction and be included in Items 815.2 and 816.01.

**BASIS OF PAYMENT**

Item 815.2 and Item 816.01 will be paid for at the respective Contract unit prices Lump Sum, which price shall include all labor, materials, equipment, excavation and backfill, mast arm foundations, traffic signal post foundations, wire loops, service connections, charges therefore, and all incidental costs required to complete the work.

The 3 inch electrical conduit, Type NM Plastic (UL) will be paid for under Item 804.3.

Pull and junction boxes and electrical handhole will be paid for under various contract items.

**ITEM 823.71**      **HIGHWAY LIGHTING POLE AND LUMINAIRE**      **EACH**  
**REMOVED AND STACKED**

The work under this Item shall conform to the relevant provisions of Subsection 820 of the Standard Specifications and the following:

The Contractor shall notify the owner before starting any work. The work shall include disconnecting the wiring at breaker or suitable secure inside box, removing the light pole and foundation, backfilling with suitable material. The Contractor shall maintain live connection to the other existing light fixtures that are not impacted by the construction.

The contractor shall remove light post and stack as directed by the owner. If the owner determines that the material is not suitable for reuse, then the Contractor shall dispose of the material at no additional cost.

**METHOD OF MEASUREMENT**

Item 823.71 will be measured for payment by Each, highway lightning pole and luminaire removed and stacked.

**BASIS OF PAYMENT**

Item 823.71 will be paid for at the Contract Unit Price per Each, which price shall include all labor, tools, materials, and incidental costs required to complete the work.

**ITEM 823.73**            **COBRA HEAD LIGHT REMOVED AND RESET**            **EACH**

The work under this item shall conform to the relevant provision of Subsection 820 of Standard Specifications and the following:

Contractor shall remove and reset existing cobra head light from existing pole to relocated utility pole to maintain existing lighting in the area.

The extra light not require on the utility pole shall be removed and stacked and coordinate with Town for pickup with no additional payment from Item 823.73.

Contractor shall coordinate with Town of Billerica and National Grid and obtain work order from the utility company prior to relocation.

**METHOD OF MEASUREMENT**

Item 823.73 will be measured for payment by Each, cobra head removed and reset.

**BASIS OF PAYMENT**

Item 823.73 will be paid for at the contract unit price per Each, which price shall include all labor, materials, equipment, tools, and incidental costs required to complete the work.

Contractor is responsible for all charges and fees assessed by National Grid.

**ITEM 824.211****RECTANGULAR RAPID  
FLASHING BEACON (AC POWER)****LUMP SUM**

The work under this item shall conform to the relevant provision of Subsection 825 of the Standard Specifications, the Plans, and the following:

**DESCRIPTION**

The work shall include furnishing and installing an AC-powered, pedestrian actuated, rectangular rapid flashing beacon (RRFB) systems at the location shown in the plans. RRFBs are intended to provide supplemental warning to approaching vehicles of the potential for pedestrians to be crossing in an adjacent crosswalk.

Locations of the RRFB are to be as follows:

- Boston Road Sta. 108+84

**MATERIALS**

RRFB system at Boston Road Sta. 108+84 shall, at a minimum, consist of the following items, which shall be included in the lump sum bid:

- (2) 15' traffic signal posts, pedestals and foundations;
- (2) ADA pushbutton systems;
- (4) dual rectangular yellow LED beacons in NEMA enclosures;
- (2) 9"x12" R10-25 (PUSH BUTTON TO TURN ON WARNING LIGHTS) signs;
- (4) 30"x30" W11-12 (Pedestrian Warning) signs;
- (2) 24"x12" W16-7pR and (2) 24"x12" W16-7pL (Diagonal Downward Arrow) signs;
- (2) NEMA Type 3R or higher enclosures to house:
  - Electrical components, including wiring and solid-state circuit boards;
  - On-board user interface;
  - Frequency hopping spread spectrum (or other alternate FCC approved) wireless activation unit with a minimum 150' range; and
- All mounting and supporting hardware and wiring necessary to complete a working system.
- Overhead service connection to listed utility pole.

RRFB controller and LED beacons, ADA pushbutton systems, and traffic signal posts and pedestals shall be listed on the Qualified Traffic Control Equipment List. Pedestals shall be cast iron.

The light intensity of the LED beacons during daytime conditions shall meet the minimum specifications for Class 1 yellow peak luminous intensity in the Society of Automotive Engineers (SAE) Standard J595 (Directional Flashing Optical Warning Devices for Authorized Emergency, Maintenance, and Service Vehicles) dated January, 2005. An automatic signal dimming device shall be included to reduce the brilliance of the LED beacons during nighttime conditions.

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**ITEM 824.211 (Continued)**

A pilot light shall be integrated into the housing of the dual rectangular yellow LED beacons, facing pedestrians in the crosswalk, to provide confirmation that the RRFB is in operation.

All signs shall be MUTCD-compliant. R10-25 signs shall have a black border and legend on a white background. W11-2, W16-7PR, and W16-7PL signs shall have a black border and legend on a fluorescent yellow background. All sign sheeting materials shall be per Subsection 828.41.

R10-25 signs may be integrated into the APS pushbutton system as a single unit or mounted separately on Type A aluminum.

W11-2, W16-7PR, and W16-7PL signs shall be Type A aluminum per Subsection 828.42.

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

**EQUIPMENT FINISH AND COLOR**

All traffic signal equipment, including, but not limited to, signal posts, bases, pushbutton saddles, hardware, strapping, and rigid mounting brackets for signals and signs, shall be the color **Gloss Black**. (See Item 815.2 for finish and color specifications)

**POSTS AND BASES**

All 15-foot traffic signal posts shall be galvanized steel, non-ornamental, painted gloss black. Bases for non-ornamental posts shall be of the octagonal pedestal type, painted gloss black.

**FUNCTIONAL REQUIREMENTS**

The RRFB system shall remain dark until pedestrian actuation.

Upon actuation, all LED beacons shall activate and flash in a rapidly flashing sequence. Each sequence shall last 800 milliseconds and there shall be 75 sequences per minute. The sequence shall be the same for each pair of LED beacons in an enclosure and shall be as follows:

1. The RRFB indication on the left-hand side shall be illuminated for approximately 50 milliseconds.
2. Both RRFB indications shall be dark for approximately 50 milliseconds.
3. The RRFB indication on the right-hand side shall be illuminated for approximately 50 milliseconds.
4. Both RRFB indications shall be dark for approximately 50 milliseconds.
5. The RRFB indication on the left-hand side shall be illuminated for approximately 50 milliseconds.
6. Both RRFB indications shall be dark for approximately 50 milliseconds.
7. The RRFB indication on the right-hand side shall be illuminated for approximately 50 milliseconds.

**ITEM 824.211 (Continued)**

8. Both RRFB indications shall be dark for approximately 50 milliseconds.
9. Both RRFB indications shall be illuminated for approximately 50 milliseconds.
10. Both RRFB indications shall be dark for approximately 50 milliseconds.
11. Both RRFB indications shall be illuminated for approximately 50 milliseconds.
12. Both RRFB indications 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 between 5 and 30 flashes per second.

All RRFBs within the system shall commence and cease operation simultaneously.

The length of the flashing cycle upon actuation and the minimum allowable time between actuations shall be per the plans. These settings shall be user-programmable through the on-board user interface. No-fee wireless (Wi-Fi, Bluetooth®, etc.) may be used as an alternative programming method.

Each APS pushbutton shall have a tactile arrow and locator tone. The tactile arrow shall be oriented to point in the direction of the crosswalk. The locator tone shall have a duration of 0.15 seconds or less and shall repeat at 1-second intervals. The locator tone shall be set 2 to 5 dBA above ambient sound, shall automatically adjust intensity, but cap at a maximum volume of 100 dBA. The tone shall be audible whenever the LED modules are not active.

Upon activation of the LED modules, a speech message shall state, "Yellow lights are flashing." This message shall be stated twice. No vibrotactile or percussive indications shall be used.

If a pushbutton is pressed before the minimum time between actuation intervals is met, a speech message shall state, "Wait," and the locator tone shall resume until the LED modules activate.

**CONSTRUCTION METHODS**

No work shall commence until the shop drawings are approved.

Layout and design of the RRFB system shall conform to the plans. Post mounted signal cabinet and meter post shall be installed in a location to provide unobstructed access to the sidewalk and level landing.

Conduit installations shall be per Subsection 801.60.

Pull box installations shall be per Subsection 801.61.

Foundation installations shall be per Subsection 801.62. The top of the foundation shall be ¼" to 1" proud of the sidewalk and chamfered at 45 degrees. Gaps between the sidewalk and foundation shall be no larger than ¼" and grouted with preformed joint filler.

**ITEM 824.211 (Continued)**

Equipment grounding shall be per Subsections 813.61 and 813.62.

Service connection shall be per Subsection 813.63. Contractor shall be required to pay all costs associated with the utility connection until final acceptance of the system. Upon acceptance, the contractor shall notify the Town of Billerica in writing with the account number and meter number in order to transfer payment of the account.

The Contractor shall diagnose and replace any part of the pedestrian activated warning system that is found to be defective in workmanship, material, or manner of functioning within six months of final acceptance by the Engineer. This requirement does not supersede the one-year warranty period on materials specified in Subsection 815.20.

**BASIS OF PAYMENT**

Item 824.211 will be paid for at the Contract unit price Lump Sum, which price shall include all labor, materials, equipment, service connections, and all incidental costs required to complete the work.

Conduit and pull boxes will be paid for separately under their respective pay items.

**ITEM 852.11**  
**ITEM 852.12****TEMPORARY PEDESTRIAN BARRICADE**  
**TEMPORARY PEDESTRIAN CURB RAMP****FOOT**  
**EACH****DESCRIPTION**

Work under these items consist of furnishing, deploying, maintaining in proper operating conditions, and removing temporary pedestrian barricades and temporary pedestrian ramps as part of a Temporary Pedestrian Access Route (TPAR) in order to guide pedestrians around a fully- or partially-closed sidewalk. These devices are intended to prevent pedestrians from entering the work area and to prevent pedestrians from inadvertently entering the vehicle travel lane by providing visual and physical separation between each space.

**MATERIALS**

The Temporary Pedestrian Barricade shall have a continuous bottom rail or edge no more than two (2) inches above the ground and eight (8) inches in height (minimum) to accommodate cane users, have a smooth and continuous hand railing along the top edge no less than 32 inches above the ground and not obstruct or project into the pedestrian path of travel. Barricade walls shall be nearly vertical and generally within the same plane.

If exposed to traffic, Temporary Pedestrian Barricades shall be crashworthy.

The Temporary Pedestrian Curb Ramp shall provide a 48 inch minimum width, with a firm, stable, and non-slip surface. Protective edging with a two (2) inch minimum height shall be installed when the curb ramp or landing platform has a vertical drop of six (6) inches or greater.

The Temporary Pedestrian Curb Ramp walkway and landing area surface shall be of a solid, continuous, contrasting color abutting up to the existing sidewalk.

If a Temporary Pedestrian Curb Ramp leads to a crosswalk, a detectable warning pad must be used at the base of the ramp; if it leads to a protected path that does not conflict with vehicular traffic then a detectable pad shall not be used.

**CONSTRUCTION METHODS**

The Temporary Pedestrian Barricade shall be placed in an area that will provide pedestrians with a TPAR on a smooth, continuous hard surface for its entirety. The geometry and alignment of the facility shall meet the applicable requirements of the “Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities” and the Massachusetts Architectural Access Board.

The recommended width of the TPAR is 60 inches, but if constraints exist a minimum clear width of 48 inches shall be provided along its entirety. If a 60 inch width cannot be accommodated in full, a 60 inch by 60 inch passing space shall be provided every 200 feet or less along the TPAR.

Turning areas shall be 60 inches by 60 inches minimum.

**ITEMS 852.11 & 852.12 (Continued)**

Lateral joints between any surfaces shall not exceed 0.5 inches. Lateral edges may be vertical up to 0.25 inches high and shall be beveled at 1V:2H between 0.25 inches and 0.5 inches.

The TPAR shall be kept clear of debris, snow, and ice and the Temporary Pedestrian Barricades and Temporary Pedestrian Curb Ramps shall not obstruct drainage.

Removal and/or resetting of Temporary Pedestrian Barricades and Temporary Pedestrian Curb Ramps shall be considered incidental.

**METHOD OF MEASUREMENT**

Temporary Pedestrian Barricade will be measured by the foot, in place.

Temporary Pedestrian Curb Ramp will be measured by Each complete in place.

**BASIS OF PAYMENT**

Payment for Temporary Pedestrian Barricades will be made at the contract price per foot installed in place, including all incidental items. This price shall include the cost of furnishing, installing, resetting, removal, and maintaining in good working condition.

Payment for Temporary Pedestrian Curb Ramps will be made at the contract price per each unit installed in place, including all incidental items. This price shall include the cost of furnishing, installing, resetting, removal, and maintaining in good working condition.

**ITEM 853.8                      TEMPORARY ILLUMINATION FOR WORK ZONE                      DAY**

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

The work under this Item shall include the deployment and maintaining in proper operating condition a LED balloon diffuser lighting system. These portable light towers shall be used throughout the project area for temporary work zone lighting. The use of unshielded high wattage flood lights shall not be permitted.

These towers shall be used, relocated and adjusted to meet the criteria in Section 850 of the Standard Specifications and the following:

The Contractor shall illuminate the following work zone areas:

- Change in direction (i.e., work zone entrances and exits, crossovers, etc.)
- Tapered areas
- Actual area where the construction is being performed

| Task Classifications  | Illumination Level | Average Minimum Maintained Illuminance |
|---|--------------------|--|
| All work operations areas, setup of lane or road closures, lane closure tapers, and flagging stations, such as:<br>Excavation (all types), Embankment Fill and Compaction, Reworking Shoulders, Asphalt Pavement Rolling, Subgrade, Stabilization and Construction, Base Course Rolling, Sweeping, Cleaning and Landscaping.  | Level I            | 5 foot-candles                         |
| Areas on or around construction equipment; asphalt paving, milling, and concrete placement and/or removal, such as,<br>Milling, Removal of Pavement, Asphalt Paving and Resurfacing, Concrete Pavement, Waterproofing and Sealing, Sidewalk Construction, Base Course Grading and Shaping, Surface Treatment, Bridge Decks, Drainage Structures and Drainage Piping, Other Concrete Structures, Barrier Wall and Traffic Separators, Guardrails and Fencing, Striping and Pavement Markings, Repair of Concrete Pavement, Highway Signs, Hole Filling and Repair of Guardrails and Fencing. | Level II           | 10 foot-candles                        |
| Pavement or structural crack/ pothole filling; joint repair, pavement patching and/or repairs, installation of signal/electrical/mechanical equipment, such as,<br>Traffic Signals, Highway Lighting Systems and Crack Filling  | Level III          | 20 foot-candles                        |

TABLE 1  
TASK CLASSIFICATIONS AND ILLUMINATION LEVELS

**ITEM 853.8 (Continued)**

Light measurement shall be based on the illuminance method and the lighting levels shall be based on the classification of construction activity that is taking place. At no time shall the light level be below 5 fc and the uniformity shall not exceed 6:1. Task Classifications and recommended illumination levels is shown in Table 1.

A detailed work zone lighting plan shall be submitted to MassDOT for approval before any work has commenced. Said plan shall include photometrics that detail the light levels that are to be provided. Photometrics shall include the following: calculated illuminance, uniformity, and glare avoidance verification throughout the work zone as well as the active travel lanes. The lighting plan shall be submitted with all supporting calculations, catalog cut sheets and supporting documentation.

Any potential glare from the lighting system should be considered from each direction and on all approaching roadways and opposing lanes of traffic. Glare from the illumination system should be minimized as much as possible for both workers and motorists in adjacent active travel lanes. If necessary, the Contractor shall provide supplemental hardware, such as, visors, louvers, shields, glare screen and barrier to reduce glare in adjacent active travel lanes.

The plan shall show the layout for each work area including the number, location, spacing of all fixed and/or mobile structures, description of illumination equipment that is proposed to be used on this project, and mounting details for mobile lights attached to construction equipment. Plan shall be designed by a professional engineer that is registered and licensed by the Commonwealth of Massachusetts and shall be submitted to the Engineer for approval prior to any nighttime work operations within the State Highway Right of Way.

The Contractor shall allow MassDOT up to 30 calendar days for review and comment.

**METHOD OF MEASUREMENT AND BASIS OF PAYMENT**

Item 853.8 will be measured and paid for at the contract unit price per DAY. The cost shall include all labor, materials, equipment, tools and all incidentals required for the design and installation of the work zone lighting system. This shall include, but not be limited to lighting plan preparation, wiring connections, equipment relocations, and include all material and labor incidental for a complete, functional and operational work zone illumination system.

The price of this item shall include the material and labor necessary to install any supplemental hardware required to reduce glare on all adjacent active travel lanes.

The per day price shall be full compensation for all “Temporary Illumination for Work Zone” regardless of the number of concurrent work areas, amount of equipment concurrently in use or the durations of or changes of the work shifts per day.

Installation and modifying the existing set-up shall be incidental to Item 853.8.



**ITEM 859.1 (Continued)**

**BASIS OF PAYMENT**

Reflectorized Drums with Sequential Flashing Warning Lights will be paid for at the contract unit price per day, which shall include full compensation for furnishing, positioning, repositioning, and removing the group of ten (10) drums as directed by the Engineer.

|                            |   |                    |
|----------------------------|---|--------------------|
| <b><u>ITEM 868.106</u></b> | <b><u>6 INCH DURABLE RECESSED WET<br/>REFLECTIVE WHITE LINE (THERMOPLASTIC)</u></b>   | <b><u>FOOT</u></b> |
| <b><u>ITEM 868.112</u></b> | <b><u>12 INCH DURABLE RECESSED WET<br/>REFLECTIVE WHITE LINE (THERMOPLASTIC)</u></b>  | <b><u>FOOT</u></b> |
| <b><u>ITEM 869.106</u></b> | <b><u>6 INCH DURABLE RECESSED WET<br/>REFLECTIVE YELLOW LINE (THERMOPLASTIC)</u></b>  | <b><u>FOOT</u></b> |
| <b><u>ITEM 869.112</u></b> | <b><u>12 INCH DURABLE RECESSED WET<br/>REFLECTIVE YELLOW LINE (THERMOPLASTIC)</u></b> | <b><u>FOOT</u></b> |

The work under these items shall conform to the relevant provisions of Subsection 860 of the Standard Specifications and the following:

Work shall consist of grooving a slot in the pavement surface and the furnishing and installation of liquid thermoplastic wet reflective pavement markings, liquid two-part polyurea wet reflective pavement markings, liquid two-part epoxy wet reflective pavement markings, and preformed wet reflective pavement markings. As work incidental to these items, the Contractor or pavement marking Material Supplier(s) shall measure the performance of the pavement markings upon installation, six months following installation, and one year following installation.

#### Construction Methods for Installation of Groove

Contractor shall refer to 3MTM Information Folder 5.18 Grooving Applications and the following:

Prior to cutting out the grooves for all recessed lines, the Contractor shall use a chalk line or other suitable method to layout the proposed pavement markings on the surface course so that the Engineer can inspect the locations. Once the Engineer has inspected and approved the proposed striping layout, the grooves for the proposed pavement markings may be cut. No pavement grooving shall be done without the prior approval of the Engineer.

Groove position shall be a minimum of 4 inches from the edge of the pavement marking to any longitudinal pavement joints. The groove shall not be installed on bridge joints, at drainage structures, or in other areas identified by the Engineer. The groove shall not be installed continuously for intermittent pavement markings, but only where markings are to be applied.

The use of gang stacked diamond cutting blades to grind a smooth square slot is required for producing all grooves. The spacers between blade cuts shall be such that there will be less than a 10 mil rise in the finished groove between the blades. The acceptability of the surface texture will be determined by the Engineer and/or Material Supplier's Technical Representative.

The diamond grinder shall have an articulating head so that the slots are installed correctly on grades and super elevated sections.

Grooves that are ground deeper or wider than the specified allowable limits shall be repaired according to the Department's approved repair procedure at no additional cost to the Department. Grooves that are ground too shallow or narrow shall be reground to the specification limits at no additional cost to the Department. Slots that are ground out of alignment shall be cut out and patched using an approved method and approved materials.

**ITEMS 868.106, 868.112, 869.106 & 869.112 (Continued)**

The Contractor shall grind the groove to the correct depth, width, and length as specified and in proper alignment. Grooves shall be 1 inch  $\pm$  ¼ inch wider than the pavement marking material. Groove depth shall be per the Material Supplier's specification for liquid thermoplastic application, 80 mils  $\pm$  5 mils for polyurea or epoxy liquid pavement markings application, and 150 mils  $\pm$  5 mils for preformed material application, unless otherwise approved by the Engineer. Depth shall be consistent across the full width of the groove. Depth plates shall be provided by the Contractor to the Engineer to assure that desired groove depth is achieved.

Grooves shall be clean, dry and free of laitance, oil, dirt, grease, paint or other foreign contaminants. Shrouds and a vacuum apparatus shall be included as part of the grinder to remove larger pieces of pavement that are ground out. If water is used to clean the groove or the grooving process takes place during rainfall, a minimum of 24 hours of dry time is required prior to the placement of pavement markings.

A Technical Representative from the Material Supplier(s) shall be present for the first grooving operation shift to provide quality assurance/quality control.

After the depth, width, length, and surface condition has been approved by the Engineer, an air lance shall be used to remove fine particles from the groove. Air compressors shall initially be blown out away from the application area to prevent compressor condensation build-up from entering the groove. The Contractor shall prevent traffic from traversing the grooves and re-clean grooves, as necessary, prior to application of pavement markings at no additional cost to the Department.

All grooves must be given final approval by the Engineer prior to the placement of pavement marking material.

**Construction Methods for Installation of Liquid Pavement Markings**

Application of liquid pavement markings and reflective elements shall be per the Material Supplier(s)'s specifications in order to meet the minimum initial retroreflectance levels described herein.

The minimum uniform wet thickness for all applied polyurea and epoxy applications shall be 20 mils, unless otherwise approved by the Engineer.

The uniform wet thickness of applied thermoplastic pavement markings shall be 120 mils  $\pm$  5 mils.

A Technical Representative from the Material Supplier shall be present for the first liquid pavement marking installation shift for each liquid binder type to provide quality assurance/quality control.

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**ITEMS 868.106, 868.112, 869.106 & 869.112 (Continued)****Construction Methods for Installation of Preformed Pavement Markings**

Application of the preformed pavement markings shall conform to Section III Application Guidelines of 3MTM Information Folder 5.18 Grooving Applications, unless otherwise instructed by the Engineer.

A primer application shall be applied prior to the installation of all preformed pavement markings per the Manufacturer's Specification. This work shall be considered incidental to the cost of the item.

A Technical Representative from the Material Supplier shall be present for the first preformed pavement marking installation shift to provide quality assurance/quality control.

**Materials**

For thermoplastic applications, the Contractor shall use one of the following products, or approved equivalent:

1. 3M™ All Weather Thermoplastic;
2. Ennis-Flint Pavemark®;
3. Franklin Paint™ 22% Melt Down Thermoplastic; or
4. Swarco SWARCOTHERM.

For polyurea applications, the Contractor shall use one of the following products, or approved equivalent:

1. 3MTM Liquid Pavement Marking Series 5000;
2. Ennis-Flint HPS®-5; or
3. Epoplex GLOMARC® 90.

For epoxy applications, the Contractor shall use one of the following products, or approved equivalent:

1. Ennis-Flint HPS®-4;
2. Epoplex GLOMARC® 60; or
3. Swarco 1180 Series.

Material certifications shall be provided to the Engineer prior to installation.

## **ITEMS 868.106, 868.112, 869.106 & 869.112 (Continued)**

### **Pavement Marking Retroreflectivity Performance**

Incidental to the cost of these items, the Contractor or Material Supplier shall perform retroreflectance readings and provide the results to the Department. The measurement and sampling procedures contained in ASTM D7585 (Standard Practice for Evaluating Retroreflective Pavement Markings Using Portable Hand-Operated Instruments) using the Referee Evaluation Protocol found in section 6.4 shall be followed. The following tests shall be performed during the measurement and sampling process:

1. ASTM E1710 (Standard Test Method for Measurement of Retroreflective Pavement Marking Materials with CEN-Prescribed Geometry Using a Portable Retroreflectometer);
2. ASTM E2177 (Standard Test Method for Measuring the Coefficient of Retroreflected Luminance (RL) of Pavement Markings in a Standard Condition of Wetness); and
3. ASTM E2832 (Standard Test Method for Measuring the Coefficient of Retroreflected Luminance of Pavement Markings in a Standard Condition of Continuous Wetting (RL-2)).

All measuring equipment shall be properly calibrated prior to the implementation of any temporary traffic controls that are required.

Retroreflectance readings shall be taken at the following three times:

1. Initial (between 7 and 30 days from date of application);
2. 6 Month (182 days,  $\pm$  14 days from initial application); and
3. 1 Year (365 days,  $\pm$  14 days from initial application).

The cost of temporary traffic control setups for the Initial readings shall be considered incidental to the cost of item. The Department will provide temporary traffic control setups for the 6 Month and 1 Year readings at no cost to the Contractor or Material Supplier.

The average Initial retroreflectance readings shall exceed the following minimum values for all pavement marking materials installed under these items:

|                             | White Markings             | Yellow Markings            |
|-----------------------------|----------------------------|----------------------------|
| Observation Angle           | 1.05°                      | 1.05°                      |
| Entrance Angle              | 88.8°                      | 88.8°                      |
| ASTM E1710 (Dry)            | 475 mcd/lux/m <sup>2</sup> | 375 mcd/lux/m <sup>2</sup> |
| ASTM E2177 (Wet Recovery)   | 475 mcd/lux/m <sup>2</sup> | 375 mcd/lux/m <sup>2</sup> |
| ASTM E2832 (Wet Continuous) | 150 mcd/lux/m <sup>2</sup> | 125 mcd/lux/m <sup>2</sup> |

**ITEMS 868.106, 868.112, 869.106 & 869.112 (Continued)**

Pavement markings with measured average initial retroreflectance readings that do not meet the specified minimum values using the procedures outlined in subsection 6.4.5 of ASTM D7585 shall be removed by an approved method and reapplied at no cost to the Department, unless otherwise approved by the Engineer.

Readings taken at the 6 Month and 1 Year intervals are for MassDOT Highway Division informational purposes only. Average readings that fall below the specified minimum values will not require additional testing or pavement marking removal and reinstallation.

Retroreflectance readings shall be summarized and include the following information: date & time of reading, highway location (including direction) of each test, material type tested, ASTM test method, pavement marking color, date of initial material application, air and pavement temperature during application, initial material application thickness, depth of groove, and any other pertinent information. Results for all readings shall be provided within 10 business days of testing to the Engineer, with a second copy sent to:

State Traffic Engineer  
Attention: Pavement Marking Retroreflectivity Testing  
10 Park Plaza, Room 7210  
Boston, MA 02116

**METHOD OF MEASUREMENT**

Markings are to be paid for on the actual length of lines applied under the various items of the Contract.

**BASIS OF PAYMENT**

Payment for work under these items will be made at the contract price per foot for lines completely installed in place, including all incidental items. Applied lines are to be paid for on the actual length of lines applied. This price shall include the cost of furnishing and maintaining in good working condition of all traffic management devices.

**ITEM 874.45**      **MISCELLANEOUS SIGNS REMOVED AND RESET**      **EACH**

The work under this item shall conform to the relevant provision of Subsections 828 and 840 of the Standard Specifications and the following:

The work shall include removing and resetting existing informational, guide, and directional sign panels on ground-mounted supports at the current or new locations as indicated on the plans. The work will also include the restoration to original condition, of any natural features disturbed in any way or manner by the operation.

**CONSTRUCTION METHODS**

Sign panels to be removed and reset shall be cleaned before being remounted on new or existing sign supports.

Work shall include the dismantling, removal, transporting, storing and resetting of existing traffic signs at the locations shown on the plans. The Contractor shall completely remove the sign and post and reset said sign and post at the new location. If existing sign and/or post are not suitable for reuse as determined by the Engineer, the contractor shall provide new sign and/or post under items 832. and/or 847.1 respectively. New attachment hardware shall be furnished as necessary to replace any missing or unusable existing hardware.

Existing sign and/or post damaged or lost by the Contractor's operations shall be replaced in-kind by the Contractor at no additional compensation

The Contractor shall backfill with compacted gravel all holes resulting from the removal of the existing signs and their foundations and restore the area to match existing conditions of adjacent areas.

**METHOD OF MEASUREMENT**

Item 874.45 will be measured for payment by the each, sign and post reset in its final position, complete in place.

**ITEM 874.45 (Continued)**

**BASIS OF PAYMENT**

Item 874.45 will be paid for at the Contract unit price per each, which price shall include all labor, materials, equipment and incidental costs required to complete the work, including dismantling, excavating and removing, loading, transporting, and resetting of the signs and their supports; gravel backfill; and concrete foundations where required.

Replacement of sign panels and supports that have been determined to be unsuitable for reuse shall be paid for under the appropriate contract bid items. No payment shall be made for any sign panels or sign supports that have been damaged by the Contractor's operation.

**ITEM 874.51 MISCELLANEOUS SIGNS REMOVED AND DISCARDED EACH**

Work under this item shall include the dismantling, removal, transportation and discarding of the existing roadside signs shown on the plans and removal and disposal of the sign supports and their foundations.

The existing signs shall not be removed until the new signs and structures replacing them are ready for traffic or until the Engineer shall permit.

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

**METHOD OF MEASUREMENT**

Item 874.51 will be measured for payment by the each sign and support removed and discarded.

**BASIS OF PAYMENT**

Item 874.51 will be paid for at the Contract unit price per each, which price shall include all labor, materials, equipment and all incidental costs required for dismantling, loading, transporting, and discarding of the signs as designated above, the excavating and disposal of the existing foundation and supports of the sign, and the supplying and placing of compacted gravel backfill where foundations and posts are removed and restoration of surface.

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**ITEM 874.7 MISCELLANEOUS SIGNS REMOVED AND STACKED EACH**

The work under this item shall conform to the relevant provision of Subsections 828 and 840 of the Standard Specifications and the following:

Work to be completed under this item shall include the dismantling, removal, transporting, and stacking as indicated on the plans or as directed by the Engineer, including the removal and disposal of existing sign supports and foundations.

The Contractor shall exercise particular care in the dismantling, removal, transporting, and resetting of the existing signs designated on the plans to be reset or stacked. Any sign panel damaged through carelessness or lack of protection by the Contractor shall be replaced at the Contractor's expense.

The existing signs shall not be removed until the new signs and structures replacing them are ready for installation or until the Engineer shall permit.

Existing foundations shall be excavated (including Class "B" Rock) to a depth of at least six inches below grade and the resulting hole shall be backfilled with compacted gravel and the surface restored to match existing conditions of adjacent areas. Existing foundations within the proposed roadway areas shall be excavated (including Class "B" Rock) to a depth of at least three feet below grade and the resulting hole shall be backfilled with compacted gravel and the surface restored to match existing conditions of adjacent areas.

Signs to be removed and stacked shall be stacked on site and the Contractor shall coordinate with the Town to schedule pick-up time and location.

**METHOD OF MEASUREMENT**

Item 874.7 will be measured for payment by the each, sign and support removed and stacked.

**BASIS OF PAYMENT**

Item 874.7 will be paid for at the contract unit price per each, which price shall provide full compensation for dismantling, loading, transporting and stacking of signs; the excavating and disposal of the existing supports and foundations, of the same; the supplying and placing of compacted gravel backfill where foundations and posts are removed; and surface restoration.

No separate payments will be made for any excavation, including Class "B" Rock Excavation, gravel backfill, compaction, and surface restoration. All costs for excavation, backfill, compaction, restoration, and any incidental work shall be included in the bid price for Item 874.7.

DOCUMENT A00802

# **DETAIL SHEETS**

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THE COMMONWEALTH OF MASSACHUSETTS  
MassDOT - HIGHWAY DIVISION  
TEN PARK PLAZA, BOSTON, MA

**PRELIMINARY ESTIMATE OF QUANTITIES - DETAIL SHEETS**

TOWN BILLERICA, MA YEAR Federal Fiscal Year 2024  
TYPE OF ROAD Boston Road (Route 3a)  
PROJECT Intersection Improvements  
STA.: 102+34.00 TO 139+82.00

|                           |                 |                               |                    |
|---------------------------|-----------------|-------------------------------|--------------------|
| Unclassified Excavation   | <u>6,500 CY</u> | Gravel Borrow                 | <u>4,850 CY</u>    |
| Class A Trench Excavation | <u>50 CY</u>    | Gravel Borrow for Backfilling |                    |
| Class B Rock Excavation.  | <u>200 CY</u>   | Structures and Pipes          | <u>.....700 CY</u> |
| Class B Trench Excavation | <u>1600 CY</u>  |                               |                    |

**PROPOSED SURFACES:**

**PROPOSED FULL DEPTH CONSTRUCTION >4' AND BOX WIDENING** **Area = 57,170 SF**

Surface Course: Boston Road (2-1/4") / Side Streets (1-3/4")

**SURFACE COURSE:** Superpave Surface Course 12.5 (SSC-12.5) Over Asphalt Emulsion for Tack Coat Over

**INTERMEDIATE COURSE:** 2-1/4" Superpave Intermediate Course 19.0 (SIC-19.0) Over Asphalt Emulsion for Tack Coat Over

**BASE COURSE:** 4-1/2" Superpave Base Course 37.5 (SBC-37.5) over

**SUB-BASE:** 4" Dense Graded Crushed Stone for Sub-base Over  
8" Gravel Borrow, Type B (Min)

**PROPOSED FULL DEPTH CONSTRUCTION ≤ 4' WIDE** **Area = 2,110 SF**

Boston Road (2-1/4") / Side Streets (1-3/4")

**SURFACE COURSE:** Superpave Surface Course 12.5 (SSC-12.5) Over Asphalt Emulsion for Tack Coat Over

**INTERMEDIATE COURSE:** 2-1/4" Superpave Intermediate Course 19.0 (SIC-19.0) Over Asphalt Emulsion for Tack Coat Over

**BASE COURSE:** 6" HES Cement Concrete Base Course Over

**SUB BASE:** 8" Gravel Borrow, Type B (Min)

**PROPOSED PAVEMENT FINE MILLING AND OVERLAY**

**Area = 135,859 SF**

Boston Road (2-1/4") / Side Streets (1-3/4")

**SURFACE COURSE:** Superpave Surface Course 12.5 (SSC-12.5) Over Asphalt Emulsion for Tack Coat Over

**PAVEMENT MILLING:** 1-3/4" - 2-1/4" Pavement Fine Milling

**LEVELING COURSE:** Superpave Intermediate Course 19.5 (SIC-19.5) Compacted 1.5 Inch Max. Layers

**CEMENT CONCRETE SIDEWALK, PEDESTRIAN CURB RAMPS, AND SHARED USE PATH**

**Area = 33,800 SF**

**SURFACE:** 4" Cement Concrete Walk Surface  
4000 psi, 3/4", 610 Air Entrained over

**FOUNDATION:** 8" Gravel Borrow, Type B

**CEMENT CONCRETE DRIVEWAYS**

**Area = 10,850 SF**

**SURFACE:** 6" Cement Concrete Walk Surface  
4000 psi, 3/4", 610 Air Entrained over

**FOUNDATION:** 8" Gravel Borrow, Type B

**HMA DRIVEWAYS**

**Area = 12,600 SF**

**SURFACE** 1-1/2" Superpave Surface Course 9.5 (SSC-9.5) Over  
2-1/2" Superpave Surface Course 12.5 (SSC-12.5) Over

**FOUNDATION** 8" Gravel Borrow, Type B

**ITEM 101. CLEARING AND GRUBBING**

|             | <u>STA</u> | <u>to</u> | <u>STA</u> | <u>LT/RT</u> |
|-------------|------------|-----------|------------|--------------|
| Boston Road | 103+56     |           | 103+78     | LT           |
|             | 105+10     |           | 105+43     | LT           |
|             | 112+77     |           | 113+21     | LT           |
|             | 113+40     |           | 113+97     | LT           |
|             | 120+51     |           | 122+14     | LT           |
|             | 125+99     |           | 127+53     | RT           |
|             | 132+79     |           | 133+90     | RT           |
|             | 136+41     |           | 137+92     | LT           |
|             | 118+25     |           | 118+45     | LT           |

**ITEM 102.2 TREE TRIMMING**

|                 | <u>STA</u> | <u>to</u> | <u>STA</u> | <u>LT/RT</u> | <u>DESC.</u> |
|-----------------|------------|-----------|------------|--------------|--------------|
| Boston Road     | 103+59     |           | 104+41     | RT           |              |
|                 | 107+88     |           | 108+05     | RT           | Hedges       |
|                 | 108+82     |           | 109+01     | RT           |              |
|                 | 111+93     |           | 112+35     | LT           |              |
|                 | 113+40     |           | 113+97     | LT           |              |
|                 | 113+99     |           | 114+32     | RT           |              |
|                 | 114+59     |           | 116+23     | LT           |              |
|                 | 116+47     |           | 116+91     | LT           | Hedges       |
|                 | 120+35     |           | 121+47     | LT           |              |
|                 | 121+61     |           | 122+68     | LT           |              |
|                 | 123+80     |           | 125+70     | RT           |              |
|                 | 126+54     |           |            | LT           |              |
|                 | 128+05     |           | 128+85     | RT           |              |
|                 | 131+79     |           | 133+90     | RT           |              |
| Lexington Rd    | 20+55      |           | 21+22      | LT           |              |
| Glad Valley Dr. | 11+17      |           | 11+36      | LT           |              |

**ITEM 102.511 TREE PROTECTION – ARMORING AND PRUNING**

| <u>LOCATION</u> | <u>STA.</u> | <u>OFFSET</u> | <u>LT/RT</u> | <u>DESC.</u>  |
|-----------------|-------------|---------------|--------------|---------------|
| LEXINGTON RD    | 21+36       | 24.64         | RT           | TWIN (8"-10") |
|                 | 21+37       | 27.54         | RT           | 20"           |
|                 | 21+54       | 30.14         | LT           | 6"            |
| BOSTON RD       | 134+32      | 32.66         | LT           | TWIN (11")    |
|                 | 127+85      | 33.73         | LT           | 16"           |

**ITEM 102.521****TREE AND PLANT PROTECTION FENCE**

| <u>LOCATION</u>   | <u>STA</u> | <u>to</u> | <u>STA</u> | <u>LT/RT</u> |
|-------------------|------------|-----------|------------|--------------|
| BOSTON RD         | 103+60     |           | 103+79     | RT           |
|                   | 104+04     |           | 104+19     | RT           |
|                   | 104+23     |           | 104+39     | RT           |
|                   | 108+87     |           | 109+00     | RT           |
|                   | 111+22     |           | 111+39     | RT           |
|                   | 111+57     |           | 111+73     | RT           |
|                   | 113+99     |           | 114+25     | RT           |
|                   | 114+53     |           | 114+68     | RT           |
|                   | 122+30     |           | 122+97     | RT           |
|                   | 125+98     |           | 127+41     | RT           |
|                   | 126+43     |           | 126+58     | LT           |
| Glad Valley Drive | 10+98      |           | 11+51      | LT           |

**ITEM 103.****TREE REMOVED – DIAMETER UNDER 24 INCHES**

| <u>LOCATION</u> | <u>STA</u> | <u>LT/RT</u> | <u>DIAMETER</u> |
|-----------------|------------|--------------|-----------------|
| BOSTON RD       | 125+04     | LT           | 15"             |
|                 | 124+17     | RT           | 15"             |
|                 | 133+61     | LT           | 15"             |
|                 | 133+90     | LT           | 14"             |
|                 | 135+13     | LT           | 10"             |
|                 | 135+54     | LT           | 10"             |
|                 | 122+98     | LT           | 20" TWIN        |
|                 | 122+87     | LT           |                 |
| LEXINGTON<br>RD | 21+53      | RT           | 12"             |
|                 | 21+55      | RT           | 13"             |
|                 | 21+62      | RT           | 16"             |

**ITEM 104.****TREE REMOVED – DIAMETER 24 INCHES AND OVER**

| <u>LOCATION</u> | <u>STA</u> | <u>LT/RT</u> | <u>DIAMETER</u> |
|-----------------|------------|--------------|-----------------|
| BOSTON RD       | 110+50     | LT           | 30"             |
| LEXINGTON RD    | 20+97      | RT           | 24"             |

**ITEM 105.**                    **STUMP REMOVED**

| <u>LOCATION</u> | <u>STA</u> | <u>LT/RT</u> | <u>DIAMETER</u> |
|-----------------|------------|--------------|-----------------|
| BOSTON RD       | 122+78     | RT           | 24"             |
|                 | 121+89     | RT           | 30"             |
| LEXINGTON<br>RD | 20+40      | LT           | 34"             |
|                 | 21+72      | RT           | 19"             |
|                 | 21+81      | RT           | 30"             |
|                 |            |              |                 |

**ITEM 141.1**                    **TEST PIT FOR EXPLORATION**

| <u>LOCATION</u> | <u>STA.</u> | <u>OFFSET</u> | <u>LT/RT</u>                 | <u>DESC.</u>                                  |
|-----------------|-------------|---------------|------------------------------|---|
| BOSTON<br>RD    | 103+65      | 26            | LT                           | Test Pit to Evaluate Gutter Inlet<br>Location |
|                 | 103+60      | 26            | LT                           | Test Pit to Verify Telephone and<br>Sewer     |
|                 | 106+07      | 24            | LT                           | Test Pit to Evaluate Gutter Inlet<br>Location |
|                 | 106+12      | 26            | LT                           | Test Pit to Verify Telephone                  |
|                 | 108+10      |               | RT                           | Test Pit to Verify Water                      |
|                 | 108+37      | 26            | LT                           | Test Pit to Verify Telephone                  |
|                 | 109+50      |               | RT                           | Test Pit to Verify Water                      |
|                 | 109+82      | 19            | RT                           | Test Pit to Verify Sewer                      |
|                 | 109+69      | 25.5          | LT                           | Test Pit to Verify Telephone                  |
|                 | 110+05      | 27            | LT                           | Test Pit to Verify Telephone and<br>Sewer     |
|                 | 111+54      | 24            | LT                           | Test Pit to Verify Gas                        |
|                 | 113+00      |               | RT                           | Test Pit to Verify Water                      |
|                 | 113+40      |               | RT                           | Test Pit to Verify Water                      |
|                 | 115+50      | 10            | RT                           | Test Pit to Verify Drain Crossing             |
|                 | 119+75      | 10            | LT                           | Test Pit to Verify Gas                        |
|                 | 120+50      | 8             | RT                           | Test Pit to Verify Cable                      |
|                 | 121+05      |               | RT                           | Test Pit to Verify Telephone                  |
|                 | 121+82      |               | RT                           | Test Pit to Verify Telephone                  |
|                 | 122+62      | 8             | LT                           | Test Pit to Verify Telephone                  |
|                 | 123+25      |               | RT                           | Test Pitto Verify Water                       |
| 127+00          | 7           | RT            | Test Pit to Verify Water     |   |
| 129+00          |             |               | Test Pit to Verify Water     |   |
| 131+10          |             |               | Test Pit to Verify Water     |   |
| 132+50          |             |               | Test Pit to Verify Water     |   |
| 132+90          | 19          | RT            | Test Pit to Verify Telephone |   |
| 134+25          |             |               | Test Pit to Verify Water     |   |

**ITEM 141.1(Continued)**

|                   |              |                                      |
|-------------------|--------------|--------------------------------------|
| 134+75            |              | Test Pit to Verify Water             |
| Tufts Lane        |              | Test Pit to Verify Water             |
| Glad Valley Drive | Sta 10+45 LT | Test Pit to Verify Tel/Fiber Line    |
| Lexington Road    | Sta 21+50 LT | Test Pit to Verify Water             |
| Bertha Circle     |              | Test Pit to Verify Water             |
| Locke Road        |              | Test Pit to Verify Water & Telephone |

**ITEM 141.11 TEST PIT FOR EXPLORATION – VACUUM EXCAVATION**

To locate water main location and other utilities in locations shown below and as directed by the Engineer.

| <u>LOCATION</u> | <u>STA.</u> | <u>LT/RT</u> |
|-----------------|-------------|--------------|
| BOSTON RD       | 112+98.82   | LT           |
| BOSTON RD       | 118+18.02   | LT           |
| BOSTON RD       | 118+49.91   | LT           |
| BOSTON RD       | 123+88.11   | LT           |

**ITEM 146. DRAINAGE STRUCTURE REMOVED**

| <u>LOCATION</u> | <u>TYPE</u>  | <u>STA</u> | <u>LT/RT</u> |
|-----------------|--------------|------------|--------------|
| BOSTON RD       | CB           | 106+18     | RT           |
|                 | CB           | 108+45     | LT           |
|                 |              | 109+68     | LT           |
|                 | DMH          | 113+20     | LT           |
|                 | CB           | 115+41     | RT           |
|                 |              | 124+00     | RT           |
|                 |              | 124+10     | RT           |
|                 | CB           | 126+95     | RT           |
|                 | CB           | 130+10     | RT           |
|                 | CB           | 131+20     | RT           |
|                 | LEXINGTON RD |            | 20+40        |

**ITEM 160.2**                    **CONTROLLED LOW-STRENGTH MATERIAL – MECHANICAL EXCAVATABLE (101-300 PSI)**

Used for Traffic conduit in roadway, to abandon VC Drainage Pipes, and for water main work as directed by the Engineer.

Abandon VC Drainage Pipe Locations

| <u>STA. TO</u> | <u>STA.</u> |
|----------------|-------------|
| 115+70         | 118+15      |
| 113+75         | 115+70      |
| 125+05         | 126+25      |
| 126+25         | 126+95      |
| 126+97         | 130+10      |
| 130+12         | 131+27      |

**ITEM 182.2**                    **REMOVAL OF ASBESTOS**

| <u>LOCATION</u> | <u>STA.</u> | <u>LT/RT</u> | <u>DESC.</u>      |
|-----------------|-------------|--------------|-------------------|
| BOSTON RD       | 133+73      | RT           | AC PIPE BY CIT-27 |

**ITEM 184.1**                    **DISPOSAL OF TREATED WOOD PRODUCTS**

| <u>LOCATION</u> | <u>STA. TO</u> | <u>STA.</u> | <u>LT/RT</u> |
|-----------------|----------------|-------------|--------------|
| BOSTON RD       | 117+30.5       | 117+91.5    | LT           |
|                 | 117+99.5       | 118+15.2    | LT           |
|                 | 130+55         | 131+10      | LT           |

**ITEM 202.15**                    **MANHOLE – 5 FOOT DIAMETER**

| <u>LOCATION</u>        | <u>STRC. NO.</u> | <u>STA.</u> | <u>LT/RT</u> |
|------------------------|------------------|-------------|--------------|
| BOSTON                 |                  |             |              |
| RD                     | DMH-4            | 118+25      | LT           |
|                        | DMH-11           | 121+79      | LT           |
|                        | DMH-14           | 122+03      | RT           |
| Contingency for CIT-8* |                  | 122+14      | RT           |

\*Contingency for CIT-8 in the case that the existing structure’s structural integrity is compromised with the installation of the new pipe.

**ITEM 220.2                      DRAINAGE STRUCTURE REBUILT**

For any existing drainage structure encountered to be damaged or in need of reconstruction during installation of proposed drainage pipe and structures, as directed by the Engineer.

**ITEM 220.6                      SANITARY STRUCTURE REBUILT**

For any existing sanitary structure encountered to be damaged or in need of reconstruction during installation of proposed drainage pipe and structures, as directed by the Engineer.

**ITEM 220.7                      SANITARY STRUCTURE ADJUSTED**

| <u>LOCATION</u> | <u>STA.</u>     | <u>LT/RT</u> | <u>TYPE</u> |
|-----------------|-----------------|--------------|-------------|
| BOSTON RD       | 105+09          | LT           | SMH         |
|                 | 106+73          | LT           | SMH         |
|                 | 106+73          | RT           | SMH         |
|                 | 108+13          | LT           | SMH         |
|                 | 109+68          | LT           | SMH         |
|                 | 112+40          | LT           | SMH         |
|                 | 114+35          | LT           | SMH         |
|                 | 115+73          | LT           | SMH         |
|                 | 116+57          | LT           | SMH         |
|                 | 121+66          | RT           | SMH         |
|                 | 125+13          | LT           | SMH         |
|                 | 126+78          | LT           | SMH         |
|                 | 129+57          | RT           | SMH         |
|                 | 132+09          | LT           | SMH         |
|                 | 133+93          | LT           | SMH         |
|                 | 136+40          | LT           | SMH         |
|                 | 138+10          | LT           | SMH         |
|                 | LEXINGTON<br>RD | 21+24        | RT          |

**ITEM 220.8                      SANITARY STRUCTURE REMODELED**

| <u>LOCATION</u> | <u>STA</u> | <u>LT/RT</u> | <u>TYPE</u> |
|-----------------|------------|--------------|-------------|
| BOSTON RD       | 116+58     | RT           | SMH         |
|                 | 119+05     | RT           | SMH         |
|                 | 122+00     | RT           | SMH         |
|                 | 122+00     | LT           | SMH         |
|                 | 123+62     | LT           | SMH         |

**ITEM 222.1                      FRAME AND GRATE – MASSDOT CASCADE TYPE**

Locations shown for 4” Grates:

| <u>LOCATION</u> | <u>STA.</u> | <u>LT/RT</u> |
|-----------------|-------------|--------------|
| BOSTON RD       | 112+98.82   | LT           |
| BOSTON RD       | 118+18.02   | LT           |
| BOSTON RD       | 118+49.91   | LT           |
| BOSTON RD       | 123+88.11   | LT           |

**ITEM 227.4                      MASONRY PLUG**

| <u>LOCATION</u> | <u>STA</u> | <u>LT/RT</u> | <u>DIAMETER</u> |
|-----------------|------------|--------------|-----------------|
| BOSTON ROAD     | 113+75     | LT           | 12              |
|                 | 115+61     | LT           | 12              |
|                 | 115+61     | LT           | 12              |
|                 | 115+69     | LT           | 12              |
|                 | 115+73     | LT           | 12              |
|                 | 118+10     | LT           | 12              |
|                 | 122+75     | LT           | 8               |
|                 | 125+05     | RT           | 12              |
|                 | 126+25     | RT           | 12              |
|                 | 126+28     | RT           | 12              |
|                 | 126+93     | RT           | 12              |
|                 | 126+95     | RT           | 12              |
|                 | 126+95     | RT           | 12              |
|                 | 126+98     | RT           | 12              |
|                 | 128+95     | RT           | 12              |
|                 | 128+95     | RT           | 12              |
|                 | 130+07     | RT           | 12              |
|                 | 130+13     | RT           | 12              |
| 131+26          | RT         | 12           |                 |
| 131+30          | RT         | 12           |                 |
| 133+75          | RT         | 12           |                 |
| LEXINGTON ROAD  | 21+53      | LT           | 10              |

**ITEM 252.12                      12 INCH CORRUGATED PLASTIC PIPE**

| <u>LOCATION</u> | <u>STRC. NO.</u> | <u>TO</u> | <u>STRC. NO.</u> |
|-----------------|------------------|-----------|------------------|
| BOSTON RD       | GICI-9           |           | EX-CB-12         |
|                 | EX-DMH-2         | 108+52    | DMH-108          |
|                 | EX-CB-5          |           | DMH-113          |

**ITEM 302.06**                      **6 INCH DUCTILE IRON WATER PTPE (RUBBER GASKET)**

| <u>LOCATION</u> | <u>STA</u> | <u>LT/RT</u> |
|-----------------|------------|--------------|
| BOSTON          |            |              |
| ROAD            | 107+21     | RT           |
|                 | 112+00     | RT           |
|                 | 117+18     | RT           |
|                 | 121+75     | LT           |
|                 | 126+67     | RT           |
|                 | 131+19     | RT           |
|                 | 134+40     | RT           |
|                 | Tufts      |              |
|                 | Lane       |              |
|                 | 113+40     | RT           |
|                 | Bertha     |              |
|                 | Circle     |              |

**ITEM 347.1**                      **1 INCH COPPER TUBING TYPE K**

All services that are old iron need to be replaced with copper. There are very old services that may break during construction. Replace all services from main to curb stop. Services that are being replaced, which are not directly impacted by this project will be considered non-participating.

**ITEM 347.2**                      **2 INCH COPPER TUBING TYPE K**

All services that are old iron need to be replaced with copper. There are very old services that may break during construction. Replace all services from main to curb stop.

**ITEM 376.**                      **HYDRANT**

| <u>LOCATION</u> | <u>STA</u>    | <u>LT/RT</u> |
|-----------------|---------------|--------------|
| BOSTON          |               |              |
| ROAD            | 107+21        | RT           |
|                 | 112+00        | RT           |
|                 | 117+18        | RT           |
|                 | 121+75        | LT           |
|                 | 126+67        | RT           |
|                 | 131+19        | RT           |
|                 | 134+40        | RT           |
|                 | Tufts Lane    |              |
|                 | 113+40        | RT           |
|                 | Bertha Circle | RT           |

**ITEM 377.1**

**HYDRANT ASSEMBLY REMOVED AND DISPOSED**

| <u>LOCATION</u> | <u>STA</u> | <u>LT/RT</u> |
|-----------------|------------|--------------|
| BOSTON          |            |              |
| ROAD            | 108+95     | RT           |
|                 | 115+33     | RT           |
|                 | 121+90     | RT           |
|                 | 131+20     | LT           |
|                 | 134+39     | RT           |

**ITEM 390.01**

**IRRIGATION SYSTEM REMOVED AND RESET**

| <u>LOCATION</u>                | <u>STA. TO</u> | <u>STA.</u> | <u>LT/RT</u> |
|--------------------------------|----------------|-------------|--------------|
| Stoneham Bank #493 Boston Road | 110+50         | 113+00      | RT           |

Other locations to be verified in the field

**ITEM 451.**

**HMA FOR PATCHING**

Permanent patching of utility trenches (drainage, water main, and conduit) crossing mill & overlay area in roadway, 6" wide trench on top of cement concrete curb setting in mill & overlay areas, and other miscellaneous hand work throughout the project.

**ITEM 472.**

**TEMPORARY ASPHALT PATCHING**

Temporary patching of utility trenches (drainage, water main, and conduit) crossing full depth pavement area in roadway, utility poles, for the temporary ramps, and other miscellaneous work throughout the project.

**ITEM 482.5.                    SAWCUTTING ASPHALT PAVEMENT FOR BOX WIDENING**

| <u>LOCATION</u> | <u>STA.</u><br><u>TO</u> | <u>STA.</u> | <u>LT/RT</u> |
|-----------------|--------------------------|-------------|--------------|
| BOSTON RD       | 102+39                   | 107+55      | LT           |
|                 | 109+36                   | 126+91      | LT           |
|                 | 129+25                   | 138+34      | LT           |
|                 | 103+37                   | 106+56      | RT           |
|                 | 107+00                   | 128+35      | RT           |
| LEXINGTON RD    | 21+63                    | 22+53       | LT           |
| GLAD VALLEY     |                          |             |              |
| DR              | 10+97                    | 11+37       | LT           |
|                 | 10+97                    | 11+50       | RT           |

**ITEM 502.                    GRANITE CURB TYPE VA2 – STRAIGHT**

| <u>LOCATION</u> | <u>STA. TO</u> | <u>STA.</u> | <u>LT/RT</u> |
|-----------------|----------------|-------------|--------------|
| BOSTON RD       | 125+34.9       | 125+71.8    | RT           |
|                 | 125+91.9       | 126+16.2    | RT           |
| LEXINGTON RD    | 20+99.6        | 21+36.9     | LT           |
|                 | 21+17.8        | 21+93.3     | RT           |

**ITEM 502.1                    GRANITE CURB TYPE VA2 - CURVED**

| <u>LOCATION</u> | <u>STA. TO</u> | <u>LT/RT</u> |
|-----------------|----------------|--------------|
| BOSTON RD       | 125+67.9       | RT           |
|                 | 125+96.8       | RT           |
| LEXINGTON RD    | 20+99.8        | LT           |

**ITEM 504.2****GRANITE CURB TYPE VA4 - SPLAYED END**

| <u>LOCATION</u> | <u>STA</u> | <u>LT/RT</u> |
|-----------------|------------|--------------|
| Boston Rd       | 122+66.1   | RT           |
|                 | 124+01.8   | RT           |
|                 | 128+76.0   | RT           |
| Glad Valley Dr  | 11+43.9    | RT           |
|                 | 11+44.1    | LT           |
| Lexington Rd    | 20+57.7    | RT           |
|                 | 20+66.41   | LT           |
|                 | 22+47.0    | LT           |

**ITEM 570.2****HOT MIX ASPHALT CURB TYPE 2**

| <u>LOCATION</u> | <u>STA. TO</u> | <u>STA.</u> | <u>LT/RT</u> |
|-----------------|----------------|-------------|--------------|
| BOSTON RD       | 108+33.6       | 108+38.35   | RT           |
|                 | 109+53.6       | 105+56.0    | RT           |
|                 | 116+91.9       | 116+93.7    | LT           |
|                 | 117+31.2       | 117+32.8    | LT           |
|                 | 132+87         | 132+89      | LT           |
|                 | 134+60         | 134+65      | LT           |
|                 | 135+78         | 135+82      | LT           |
|                 | 136+14         | 136+18      | LT           |
|                 | 138+30         | 138+37      | LT           |
|                 | 138+69         | 138+74      | LT           |

**ITEM 580.****CURB REMOVED AND RESET**

Contingency

**ITEM 620.13****GUARDRAIL, TL-3 (SINGLE FACED)**

| <u>LOCATION</u> | <u>STATION TO</u> | <u>STATION</u> | <u>LT/RT</u> |
|-----------------|-------------------|----------------|--------------|
| BOSTON RD       | 120+33.5          | 122+79.5       | LT           |
|                 | 136+56.           | 137+88.        | LT           |

**ITEM 627.1**                      **TRAILING ANCHORAGE**

| <u>LOCATION</u> | <u>STATION</u> | <u>LT/RT</u> |
|-----------------|----------------|--------------|
| BOSTON RD       | 122+79.5       | LT           |
|                 | 136+46         | LT           |

**ITEM 627.83**                      **GUARDRAIL TANGENT END TREATMENT, TL-3**

| <u>LOCATION</u> | <u>STATION</u> | <u>LT/RT</u> |
|-----------------|----------------|--------------|
| BOSTON RD       | 120+33.5       | LT           |
|                 | 138+13         | LT           |

**ITEM 630.2**                      **HIGHWAY GUARD REMOVED AND DISCARDED**

| <u>LOCATION</u> | <u>STA. TO</u> | <u>STA.</u> | <u>LT/RT</u> |
|-----------------|----------------|-------------|--------------|
| BOSTON RD       | 120+32         | 121+31      | LT           |
|                 | 136+46.5       | 138+10.5    | LT           |

**ITEM 690.1.**                      **STONE MASONRY WALL REMOVED AND REBUILT DRY**

| <u>LOCATION</u>   | <u>STATION</u> | <u>TO</u><br><u>STATION</u> | <u>LT/RT</u> |
|-------------------|----------------|-----------------------------|--------------|
| #2 LEXINGTON ROAD | 20+91.5        | 20+97.8                     | LT           |

**ITEM 691.**                      **BALANCE STONE WALL REMOVED AND REBUILT**

| <u>LOCATION</u> | <u>STATION</u> | <u>TO</u><br><u>STATION</u> | <u>LT/RT</u> |
|-----------------|----------------|-----------------------------|--------------|
| BOSTON RD       | 104+55         | 105+08                      | LT           |
|                 | 124+51         | 126+32                      | LT           |

**ITEM 692.1**                      **STONE REMOVED AND STACKED**

| <u>LOCATION</u> | <u>STATION</u> | <u>TO</u><br><u>STATION</u> | <u>LT/RT</u> |
|-----------------|----------------|-----------------------------|--------------|
| BOSTON RD       | 119+75.0       | 119+90.0                    | RT           |

**ITEM 706.3**                    **CONCRETE PAVER WALK REMOVED AND RELAID**

| <u>LOCATION</u> | <u>STATION</u> | <u>LT/RT</u> |
|-----------------|----------------|--------------|
| BOSTON<br>ROAD  | 105+26         | RT           |

**ITEM 710.3**                    **BOUND – LETTERED GRANITE**

| <u>LOCATION</u> | <u>STATION</u> | <u>LT/RT</u> |
|-----------------|----------------|--------------|
| BOSTON RD       | 102+42.1       | LT           |
|                 | 102+59.6       | LT           |
|                 | 107+49.3       | LT           |
|                 | 122+74.5       | LT           |

**ITEM 710.4**                    **BOUND – PLAIN GRANITE**

| <u>LOCATION</u> | <u>STATION</u> | <u>LT/RT</u> |
|-----------------|----------------|--------------|
| LEXINGTON<br>RD | 21+63.7        | LT           |
|                 | 21.62.6        | LT           |

**ITEM 711.**                    **BOUND REMOVED AND RESET**

| <u>LOCATION</u>   | <u>STATION</u> | <u>LT/RT</u> |
|-------------------|----------------|--------------|
| LEXINGTON<br>ROAD | 20+92.6        | LT           |

**ITEM 715.**                    **RURAL MAIL BOX REMOVED AND RESET**

| <u>LOCATION</u>   | <u>STATION</u> | <u>LT/RT</u> |
|-------------------|----------------|--------------|
| BOSTON RD         | 114+03         | RT           |
|                   | 115+97         | RT(3 EA)     |
|                   | 119+41         | LT           |
|                   | 119+85         | RT           |
|                   | 126+00         | RT           |
|                   | 137+28         | RT           |
|                   | 138+50         | RT           |
| GLAD VALLEY<br>DR | 10+94          | LT           |
| LEXINGTON RD      | 21+55          | RT           |

**ITEM 767.121****SEDIMENT CONTROL BARRIER**

| <u>LOCATION</u>                 | <u>STATION</u> | <u>TO STATION</u> | <u>LT/RT</u> |
|---------------------------------|----------------|-------------------|--------------|
| BOSTON RD                       | 114+26         | 116+93            | LT           |
|                                 | 117+31         | 118+99            | LT           |
|                                 | 119+37         | 121+12            | LT           |
|                                 | 120+81         | 123+51            | LT           |
| BOSTON RD TO<br>GLAD VALLEY DR. | 120+08         | 11+51             | RT           |

**ITEM 767.6****AGED PINE BARK MULCH**

| <u>LOCATION</u> | <u>STATION</u> | <u>TO STATION</u> | <u>LT/RT</u> |
|-----------------|----------------|-------------------|--------------|
| Boston Rd       | 102+39         | 103+26            | RT           |
|                 | 103+32         | 105+24            | RT           |
|                 | 105+91         | 106+42            | LT           |
|                 | 106+07         | 106+49            | RT           |
|                 | 106+84         | 108+38            | RT           |
|                 | 109+70         | 110+66            | LT           |
|                 | 111+22         | 111+39            | RT           |
|                 | 111+56         | 111+75            | RT           |
|                 | 116+67         | 116+89            | RT           |
|                 | 119+70         | 119+96            | RT           |
|                 | 127+41         | 128+82            | LT           |
|                 | 132+85         | 134+36            | LT           |
|                 | 134+58         | 135+82            | LT           |
| Tufts Ln        | 30+90          | 109+13            | LT           |

**ITEM 769.****PAVEMENT MILLING MULCH UNDER GUARD RAIL**

| <u>LOCATION</u>          | <u>STATION</u> | <u>TO STATION</u> | <u>LT/RT</u> |
|--------------------------|----------------|-------------------|--------------|
| BOSTON RD                | 120+34         | 122+80            | LT           |
|                          | 136+56         | 137+88            | LT           |
| TANGENT END<br>TREATMENT | 120+33.5       | -                 | LT           |
| TRAILING<br>ANCHORAGE    | 122+79.5       | -                 | LT           |
| TRAILING<br>ANCHORAGE    | 136+46         | -                 | LT           |
| TANGENT END<br>TREATMENT | 138+13         | -                 | LT           |

**ITEM 804.3****3 INCH ELECTRICAL CONDUIT TYPE NM - PLASTIC -(UL)**STRCSTRC TO

|              |          |          |
|--------------|----------|----------|
| <u>LOC 1</u> | EX PB    | EHH-1    |
|              | EHH-1    | PB-1     |
|              | PB-1     | PB-2     |
| <u>LOC 2</u> | EHH-3    | SIG POST |
|              | EHH-3    | SIG POST |
|              | EHH-3    | SIG POST |
|              | EHH-3    | EHH-4    |
|              | EHH-4    | SIG POST |
|              | EHH-4    | MA-3     |
|              | EHH-4    | EHH-2    |
|              | SIG CAB  | UP       |
|              | SIG CAB  | EHH-2    |
|              | EHH-2    | PB-7     |
|              | PB-7     | PB-6     |
|              | PB-6     | MA-2     |
|              | PB-6     | PB-5     |
|              | PB-5     | MA-1     |
|              | PB-5     | SIG POST |
|              | PB-7     | PB-9     |
|              | PB-9     | MA-4     |
|              | PB-9     | PB-10    |
|              | PB-10    | MA-5     |
|              | PB-10    | SIG POST |
|              | EHH-2    | PB-8     |
| PB-8         | SIG POST |          |
| PB-8         | PB-11    |          |
| PB-11        | SIG POST |          |

**ITEM 804.3 (Continued)**

|                 |          |          |
|-----------------|----------|----------|
|                 | PB-11    | PB-12    |
|                 | PB-12    | SIG POST |
|                 | PB-12    | MA-6     |
| <u>RRFB LOC</u> | SIG POST | UP       |
| <u>1</u>        |          |          |
|                 | SIG POST | PB-3     |
|                 | PB-3     | PB-4     |
|                 | PB-4     | SIG POST |

**ITEM 811.31**      **PULL BOX 12 X 12 INCHES - SD2.031**

| <u>LOCATION</u>   | <u>STRC.</u> | <u>STA.</u> | <u>OFFSET</u> | <u>LT/RT</u> |
|-------------------|--------------|-------------|---------------|--------------|
| <u>LOC 1</u>      | PB-1         | 103+40.1    | 30'±          | LT           |
|                   | PB-2         | 104+76.1    | 28'±          | LT           |
| <u>LOC 2</u>      | PB-5         | 121+42.0    | 34'±          | LT           |
|                   | PB-6         | 121+80.5    | 34'±          | LT           |
|                   | PB-7         | 122+10.1    | 34'±          | LT           |
|                   | PB-8         | 122+93.5    | 36'±          | RT           |
|                   | PB-9         | 122+96.2    | 34'±          | LT           |
|                   | PB-10        | 123+29.7    | 34'±          | LT           |
|                   | PB-11        | 123+71.4    | 41'±          | RT           |
|                   | PB-12        | 123+82.8    | 33'±          | RT           |
| <u>RRFB LOC 1</u> | PB-3         | 108+94.4    | 24'±          | LT           |
|                   | PB-4         | 108+94.1    | 24'±          | RT           |

**ITEM 823.71**      **HIGHWAY LIGHTING POLE AND LUMINAIRE  
REMOVED AND STACKED**

| <u>LOCATION</u> | <u>STATION</u> | <u>LT/RT</u> |
|-----------------|----------------|--------------|
| 520 Boston Rd   | 104+29         | LT           |

**ITEM 823.73**                      **COBRA HEAD LIGHT REMOVED AND RESET**

| <u>LOCATION</u> | <u>EX POLE #</u> | <u>STA</u> | <u>PROP POLE#</u> | <u>STA</u>       |
|-----------------|------------------|------------|-------------------|------------------|
| Boston Rd       | #10/198          | 108+04     | #99               | 109+03           |
|                 | #209             | 119+16     | #209              | 119+14           |
|                 | #212             | 122+27     | #212              | 121+81           |
|                 | #10/215          | 124+58     | #10/215           | 124+49           |
|                 | #218             | 127+81     | #218              | 127+81           |
| Lexington Rd    | # None           | 21+07      | #213              | 122+93 Boston Rd |
| Glad Valley Dr  | #659/1           | 11+80      | #659/1            | 11+80            |

**ITEM 841.1**                      **SUPPORTS FOR GUIDE SIGN (D6 W/ D8-5 INCH TUBULAR POST) STEEL**

| <u>LOCATION</u> | <u>STATION</u> | <u>LT/RT</u> |
|-----------------|----------------|--------------|
| BOSTON RD       | 101+63         | RT           |

**ITEM 874.45**                      **MISCELLANEOUS SIGNS REMOVED AND RESET**

| <u>LOCATION</u> | <u>STATION</u> | <u>LT/RT</u> |
|-----------------|----------------|--------------|
| BOSTON RD       | 102+58         | RT           |
|                 | 112+82         | LT           |
|                 | 122+26         | RT           |
|                 | 123+04         | RT           |
|                 | 140+10         | RT           |
|                 | 140+10         | RT           |

**ITEM 874.51****MISCELLANEOUS SIGNS REMOVED AND DISCARDED**

| <u>LOCATION</u> | <u>STATION</u> | <u>LT/RT</u> |
|-----------------|----------------|--------------|
| BOSTON RD       | 102+75         | RT           |
|                 | 102+93         | LT           |
|                 | 105+09         | LT           |
|                 | 105+13         | RT           |
|                 | 105+39         | LT           |
|                 | 106+42         | RT           |
|                 | 106+92         | RT           |
|                 | 108+51         | LT           |
|                 | 113+64         | RT           |
|                 | 116+81         | RT           |
|                 | 116+82         | LT           |
|                 | 117+74         | LT           |
|                 | 118+05         | RT           |
|                 | 121+40         | RT           |
|                 | 121+41         | RT           |
|                 | 121+55         | LT           |
|                 | 121+75         | RT           |
|                 | 122+13         | RT           |
|                 | 122+28         | RT           |
|                 | 123+27         | RT           |
|                 | 123+67         | RT           |
|                 | 123+88         | RT           |
|                 | 124+23         | LT           |
|                 | 124+87         | RT           |
|                 | 126+88         | LT           |
|                 | 126+91         | RT           |
|                 | 128+18         | LT           |
| TUFTS LN        | 30+91          | LT           |
|                 | 30+97          | LT           |

**ITEM 874.7****MISCELLANEOUS SIGNS REMOVED AND STACKED**

| <u>LOCATION</u> | <u>STATION</u> | <u>LT/RT</u> |
|-----------------|----------------|--------------|
| BOSTON RD       | 108+51         | LT           |
|                 | 110+03         | RT           |
|                 | 123+67         | RT           |
|                 | 126+88         | LT           |

**ITEM 901.**

**4000 PSI, 1.5 IN., 565 CEMENT CONCRETE**

Headwall HW-1 (STA 121+54 LT BOSTON ROAD)

Headwall HW-3 (STA 118+52 LT BOSTON ROAD)

Encased drain pipe beneath GI-21

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DOCUMENT A00808

# **PROJECT UTILITY COORDINATION FORM**

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**Project Utilities Coordination (PUC) Form**

CONTACTS AND GENERAL UTILITY INFORMATION

2025 02 18

Revision Date:

|   |  |  |  |
|---|--|--|--|
| <b>City/Town:</b><br>Billerica  | <b>Project File #:</b><br>609250   | <b>PUC Completed by:</b><br>Ray.stinson@dot.state.ma.us                | <b>Utility Pole Set:</b><br>Ngrid/Vz   |
| <b>Roadway</b><br>Intersection Improvements @ Rte. 3A (Boston Rd), Lexington St., and Glad Valley Rd. | <b>Asst. Dist Const /Dist Utility Reimb. Eng</b><br>Jeffrey.Lavallee@dot.state.ma.us 781 570 1997<br>Amanda.Klemm@dot.state.ma.us/781-570-1154 | <b>Mass DOT PM:</b><br>Kimberley.Sloan@dot.state.ma.us<br>857-368-9328 | <b>Scheduled Ad Date:</b><br>4/12/2025 |
| <b>Consultant:</b><br>Municipality Consultant - BETA Group, Inc.                                      | <b>Contact:</b><br>Darshan Jhaveri<br>Karen Leung<br>Sean Doctor   | <b>Office #</b><br>(781) 255-1982                                      | <b>Cell #</b><br>(978) 828-2093        |
|   |  | <b>Total Poles Relocated:</b><br>19                                    |  |
|   |  | 2/18/2025<br>PRINTED   |  |
| <b>Email</b><br>DJhaveri@BETA-inc.com<br>kleung@beta-inc.com<br>sdoctor@beta-inc.com                  |  |  |  |

| Utility Company           | Contact  | Office #   | Cell #   | Email   | Scope, Budget, Duration Submitted |    | Reimbursement |           |       | Potential for District Initiated Early Relocation * |    | Utilities On Bridge/Structure |    | Utilities Underground (UG) /Aerial (OH) |    |
|---------------------------|--|--|--|---|-----------------------------------|----|---------------|-----------|-------|---|----|-------------------------------|----|---|----|
|                           |  |  |  |   | Yes                               | No | Agreement     | Non-Reimb | Notes | YES   | NO | YES                           | NO | UG                                      | OH |
| National Grid (Elec)      | Casey Silva<br>Peter Walsh                             | x<br>(508) 817-6694                                | (617) 429-7797<br>x                                | Casey.Silva@nationalgrid.com<br>Pwalsh@TRCSolutions.com<br>Rejackson@trcsolutions.com       | x                                 |    | x             |           |       |   | x  |                               | x  |   | x  |
| Crown Castle              | Mark Bonanno<br>Mark Vegnani                           | (508) 616-7818<br>x                                | 617828-1415<br>x                                   | mark.bonanno@crowncastle.com<br>Mark.Vegnani@crowncastle.com                                | x                                 |    | x             |           |       |   | x  |                               | x  |   | x  |
| Cobra Heads               | Kelley Conway  | (978) 671-1300                                     |  | kconway@town.billerica.ma.us  |                                   | x  |               | x         |       |   | x  |                               | x  |   | x  |
| Fire Alarm & Billerica IT | Joseph Bukoiemski<br>Edward Joy<br>Will Brown          | (978)-671-0941<br>(978) 479-1297<br>?              | (978) 505-1486                                     | jbukoiemski@billericafire.com<br>edward_joy@hotmail.com<br>wbrown@wavequidefiber.com        | x                                 |    | x             |           |       |   | x  |                               | x  | x                                       | x  |
| First Light               | Heather Araujo<br>Donny Pelletier                      | (207) 432-2045<br>x                                | (978) 302-9334<br>x                                | haraujo@firstlight.net<br>First.Light_MAG@firstlight.net<br>dpeletier@firstlight.net        |                                   |    |               |           |       |   | x  |                               | x  |   | x  |
| MC/VZ Bs                  | Stephen Parretti<br>Tremain Fernandes                  | (508) 248-1305<br>(508) 248-1309                   | (508) 892-3381<br>(617) 953-9575                   | stephen.parretti@verizonbusiness.com<br>tremain.f.fernandes@one.verizon.com                 | x                                 |    | x             |           |       |   | x  |                               | x  | x                                       | x  |
| Comcast                   | Wendy Brown<br>Gene Looney<br>Timothy Broderick        | (603) 541-1082<br>(617) 981-0391<br>(978) 825-2274 | (978) 399-5871<br>(617) 279-1888<br>(617) 279-1797 | Wendy.Brown@comcast.com<br>Eugene.Looney@cable.comcast.com<br>Timothy.Broderick@comcast.com | x                                 |    | x             |           |       |   | x  |                               | x  | x                                       | x  |
| Verizon                   | Paul Diamantopoulos<br>Stacey Manseau<br>George Kotoch | (508) 245-5522<br>(978) 339-5812<br>(978) 339-5816 | (978) 382-2855<br>(978) 501-3967<br>(351) 226-9065 | paul.e.diamantopoulos@verizon.com<br>smanseau@pike.com<br>gkotoch@pike.com                  | x                                 |    | x             |           |       |   | x  |                               | x  | x                                       | x  |
| National Grid (Gas)       | Melissa Owens<br>Deepa Gangadhar                       | (781) 907-2845<br>(781) 249-4505                   | (617) 592-7850<br>x                                | Melissa.Owens@nationalgrid.com<br>deepa.gangadhar@nationalgrid.com                          | x                                 |    | x             |           |       |   | x  |                               | x  |   | x  |
| Zayo                      | Richard Moran<br>Christopher Cremers                   | (781) 844-7525<br>(860) 933-9123                   | (978) 844-7525<br>x                                | richard.moran@zayo.com<br>christopher.cremers@zayo.com                                      |                                   |    |               | x         |       |   | x  |                               | x  |   | x  |

**For Contact Info Only**

|                     |                                 |  |  |   |  |  |   |   |   |  |   |  |   |  |   |   |
|---------------------|---------------------------------|--|--|---|--|--|---|---|---|--|---|--|---|--|---|---|
| LRTA BUS            | David Bradley<br>George Anastas | (978) 458-0164 x205<br>(978) 452-6161 x203 |  | d.bradley@lrita.com<br>ganastas@lrita.com |  |  | x |   | x |  |   |  |   |  |   |   |
| Billerica DPW WATER | Patrick Kalmes                  | (978) 671-0957                             |  | pkalmes@town.billerica.ma.us              |  |  |   | x |   |  | x |  | x |  | x |   |
| Billerica DPW SEWER | Jeff Kalmes                     | (978) 671-0956                             |  | jkalmes@town.billerica.ma.us              |  |  |   |   |   |  | x |  | x |  | x |   |
| Billerica Engineer  | Kelley Conway                   | (978) 671-1300                             |  | kconway@town.billerica.ma.us              |  |  |   |   |   |  |   |  |   |  | x | x |

**No Facilities**

|                       |                                   |                    |                |   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------|-----------------------------------|--------------------|----------------|---|--|--|--|--|--|--|--|--|--|--|--|--|
| NGrid Transmission    | Steven Towle                      | (781) 907-2263     |                | Steven.Towle@nationalgrid.com                         |  |  |  |  |  |  |  |  |  |  |  |  |
| Light Path            | Jeff Harrington                   |                    | (617) 999-5371 | jeff.harrington@lightpathfiber.com                    |  |  |  |  |  |  |  |  |  |  |  |  |
| MBTA                  | Christine Bresnahan               | (617) 222-3361     |                | cbresnahan@mbta.com                                   |  |  |  |  |  |  |  |  |  |  |  |  |
| CSX                   | Michael Sliper                    | (978) 663-1077     |                | Michael.Sliper@csx.com                                |  |  |  |  |  |  |  |  |  |  |  |  |
| AT&T                  | Erica Hudson                      | 781-221-8400-x7041 |                | erica.hudson@att.net                                  |  |  |  |  |  |  |  |  |  |  |  |  |
| Raytheon Tech MC/VzBs | Douglas Flynn<br>Stephen Parretti | (978) 436-8554     | (781) 603-5812 | flynn@rtx.com<br>stephen.parretti@verizonbusiness.com |  |  |  |  |  |  |  |  |  |  |  |  |
| Vz Wireless           | Liz Glidden                       |                    |                | lizglidden@verizonwireless.com                        |  |  |  |  |  |  |  |  |  |  |  |  |
| Tennessee Gas         | David Wood                        | (860) 763-6005     | (413) 530-7117 | dwood@tennesseegas.com                                |  |  |  |  |  |  |  |  |  |  |  |  |

**Utility Relocation Notes for MassDOT Contractor**

Unless otherwise noted by Contract, the MassDOT Contractor is to provide the District Construction Office with 7 Calendar Days advance notification in order to validate the current progress and provide the required 30 Days advance notice-to-proceed for the first Utility - and each subsequent Utility. These advance notifications are to be identified in the Contractor's Schedules (Pre-Con preparation, Baseline, Subnets, and Updated/Monthly Schedules) as specified in Subsection 8.02 (for DBB Contracts) and/or Section 9 (of DB Contracts). Note: The durations included below do not include these lead-times. See Additional 'Important Basis notes for Contractor' - on last PUC Form page.

Additional notes:

**Suggested Sequence of Relocation (Based on Consultant proposed construction staging)**

The sequence as detailed on the following pages is based on the consultants proposed staging plan. This information was compiled through meetings that included all of the utilities listed below along with the designer and the Town of Billerica. 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  |

609250 Billerica : Intersection Improvements  
 @ Rte. 3A (Boston Rd), Lexington St., and  
 Glad Valley Rd.

2/18/2025  
 PRINTED



| RESPONSIBLE PARTY<br>C = Contractor<br>U = Utility Co.                           | DESCRIPTION - Utility Relocation Phases, Tasks and Activities   | Estimated Duration (Work Days) by Utilities<br>(Lead time not included) | Concurrent / Exclusive Utility Work  |  |  |  | Access Restraint & Limitations of Operations Notes |                                     |
|--|---|---|--|--|--|--|--|-------------------------------------|
|  |   |   | Exclusive Utility on site<br>Utility working with no other Utilities in vicinity | Concurrent Utilities<br>Utility working with other Utilities on site | Contractor Off-Site<br>No Contractor physical construction operations on-site while Utility is | Contractor Concurrent<br>Contractor and Utility are working on-site - but NOT in the same vicinity | Should an AR be considered for the Contractor ?    | Potential Access Restraint (Yes/No) |
| Stage 1<br>Pre Phase A   | Enabling' work by the Contractor GENERALLY the contractor will want to go first with Water and Drainage, but Utilities(gas and Tel, etc.) may be in conflict with Proposed work and Contractor must schedule those utilities in sequence. - Underground utilities. Call in dig safe. Contractor shall perform early test pits to determine invert grades of proposed Water DMH, 24" RCP, Headwalls, drainage, culverts, Electric Services, Gas Main Relays, Tel and MCI underground work. Contractor will set the schedule and allow utilities into the lane closure to expedite the work. Utility Force Account durations are based full access to site and one mobilization. Provide gas and other utilities a proposed path so that no relays are required. Contractor shall coordinate Utility crews into traffic Controls and Lane Closures and coordinate for temp/perm HMA trench work and share Police details where possible. Contractor to confirm utilities are set extra deep for Prop gas in island areas. (Note Controlled Density Fill and Concrete Patching may be required when cutting through Base course.   |   |  |  |  |  |  |                                     |
| <b>UTILITY OPERATIONS - Water/Drainage/ Signal/Telephone/Gas relocations/MCI</b> |   |   |  |  |  |  |  |                                     |
| Task: a1   | <b>Utility Co. Contractor = Test Pits</b>   |   |  |  |  |  |  |                                     |
|  | u Water, Drainage, Electrical Services, Traffic Signal, RRFB  |   |  |  |  |  |  |                                     |
|  | u NGrid Gas - As directed   |   |  |  |  |  |  |                                     |
|  | u Verizon Tel As Directed   |   |  |  |  |  |  |                                     |
|  | u MCI Cable As Directed   |   |  |  |  |  |  |                                     |
|  | <b>Sub-Total</b>  | <b>0</b>  |  |  |  |  |  |                                     |
| Stage : 1<br>Phase : A   | Enabling' work by the Contractor - Coordinate survey of Curb, Prop. Poles, and Back of SW/Prop Line. Call in Dig safe and town to paint ug utilities, utility walk with all Utilities, Contractor to coordinate with utilities on limits of clearing and grubbing/ tree trimming(Contractor Tree work must be done with Contractor who is Line Clearance Qualified by NGrid), Contractor to call in Work Request(WRR) for Disconnect/Reconnect to NG for the cobra head Street lighting R&R on Utility poles and service connections for signals that are being replaced & pay all fees. Contractor to test pit over Sewer services, Water Services, Traffic Signal Conduit etc. - Not normally marked by Municipal/State. Coordinate with DURE, & RE to provide advance notice to Utilities for advanced work( i.e. Gas to move before drainage.)for material purchases not listed below in work duration.<br><br>Any construction activities near existing sewer main should be identified as soon as possible and test pitting asap done to confirm proposed design is acceptable. Any utility pole relocations should be coordinated to avoid any poles remaining in the street when moving curb and or a new proposed street configuration - it is anticipated that curb moves happen first to avoid any UPL's in street during construction. Water main construction anticipated without utility relocations, contractor to coordinate test pits, and verify all crossings. |   |  |  |  |  |  |                                     |
| <b>UTILITY OPERATIONS - Utility Pole and OHW Relocations</b>                     |   |   |  |  |  |  |  |                                     |
| Task: 1  | <b>Utility Co. National Grid Electric</b>   |   |  |  |  |  |  |                                     |
|  | New Services required for New Signal (MassDOT) and RRFB(Billerica), Service Disconnect/Reconnect require at Street Light (approx7) that are to be rem and reset on UP that are being relocated. Long lead time required for New Services and Disconnect Recon- (assume 120 days)- Note: Please Share WO# for New Services with NGrid Distribution Casey Silva so the Force Account will provide secondary pigtails at the new ULT Poles.  | 0   |  | x  |  |  |  |                                     |
|  | ** MATERIAL SUPPLY CHAIN DELAYS ** An initial lead time (90 days) for the first utility to begin relocations  | 3   |  | x  |  |  | N  |                                     |
|  | u UPL 194 - confirm removal of existing stone will not cause instability. Coordinate w/ Ngrid to get their opinion before wall R&R  | 4   | x  |  |  |  | N  |                                     |
|  | u UPL 199 - Grade cut needs to happen before pole is installed or grade stake telling pole owner to bury pole deeper if cut happening after pole install  | 4   | x  |  |  |  | N  |                                     |
|  | u UPL's REM: 10/198(R&R street light), #1, 4X, 11, 11A ( 21+00 right on Lexington St.)  | 4   | x  |  |  |  | N  |                                     |
|  | u UPL's R&R: 208-1, 209, 10/210 (locate existing sewer in field, to avoid impact to sewer during pole installation), 211+212+212X (ensure TL2 clearance), 213 (ensure 8" water is abandoned) + 10/214 (pole has to move before curb is moved or run the risk pole in street), 10/215, 216, 10/217+218 (confirm final grading here before pole is set)   | 4   | x  |  |  |  | N  |                                     |
|  | u UPL's PROP: 208 (upgrade), 208-1, 211-1 (ensure TL2 clearance), 659/1, 2/1 (need grade stake with final pole install depth, check cut depth), 3 (upgrade)   | 5   | x  |  |  |  | N  |                                     |
|  | u Electric Overhead   | 24  | x  |  |  |  | N  |                                     |
|  | u Load break Equipment  | 5   | x  |  |  |  | N  |                                     |
|  | u Services  | 10  | x  |  |  |  | N  |                                     |
|  | <b>Sub-Total</b>  | <b>60</b>   |  |  |  |  |  |                                     |
| Task: 2  | <b>Utility Co. Crowncastle</b>  |   |  |  |  |  |  |                                     |
|  | D Notify Crowncastle well in advance of secondaries as Crowncastle is in the NG Electrical Space.   |   |  |  |  |  |  |                                     |
|  | u Relocate OHW's on 9 UPL's   | 3   | x  |  |  |  | N  |                                     |
|  | u Adjust slack and add in as needed   | 1   | x  |  |  |  | N  |                                     |
|  | <b>Sub-Total</b>  | <b>4</b>  |  |  |  |  |  |                                     |

| Task    | C = Contractor<br>U = Utility Co. | RESPONSIBLE PARTY | DESCRIPTION - Utility Relocation Phases, Tasks and Activities   | Estimated Duration (Work Days) by Utilities<br>(Lead time not included) | Concurrent / Exclusive Utility Work  |  |   |  | Access Restraint & Limitations of Operations Notes |                        |
|---------|-----------------------------------|-------------------|---|---|--|--|---|--|--|------------------------|
|         |                                   |                   |   |   | Contractor note: In planning and executing the work, the Access Restraints listed in the Special Provisions, takes precedence over the checklist in these 4 columns. |  |   |  | Should an AR be considered for the Contractor ?    |                        |
|         |                                   |                   |   |   | Exclusive Utility on site<br>Utility working with no other Utilities in vicinity   | Concurrent Utilities<br>Utility working with other Utilities on site | Contractor Off-Site<br>No Contractor physical construction operations on-site (w/able, utility is | Contractor Concurrent<br>Contractor and Utility are working on-site - but NOT in the same vicinity | Potential Access Restraint (Yes/No)                | Reason/Note (optional) |
| Task: 3 |                                   |                   | <b>Utility Co. Street Lighting - Billerica - Contract Item</b>  |   |  |  |   |  |  |                        |
|         | C                                 |                   | Call in disconnect/ reconnect for secondary service - Call this in well in advance, allow 120 day to be sure the WO# is approved, and share WO# with distribution in advance so pigtails are cut in for the new lighting - Share WO# with NG Casey and NG Contractor  |   |  |  |   |  |  |                        |
|         | C                                 | NG                | NGrid installs secondaries, and cuts in pig tails, and disconnects old light, Contractor R&R the Street light to new pole, NGrid reconnects the light   | 1   | x  |  |   |  | ** DUCE EST *                                      |                        |
|         | C                                 |                   | Coordinate to ensure not all lights are out at once, and ensure any existing lights are in working order before/after R&R   |   |  |  |   |  |  |                        |
|         | C                                 |                   | Call in new service Req WO# for Signal and RRFB - Call this in well in advance 120 day to be sure the WO# is share with distribution in advance and pigtails are cut in for the Signal, RRFB risers Share WO# with NG Casey and NG Contractor   |   |  |  |   |  |  |                        |
|         |                                   |                   | <b>Sub-Total</b>  | <b>1</b>  |  |  |   |  |  |                        |
| Task: 4 |                                   |                   | <b>Utility Co. Fire Alarm and ITS</b>   |   |  |  |   |  |  |                        |
|         | U                                 |                   | Delash existing OHW from Comcast  | 10  | x  |  |   |  |  |                        |
|         | U                                 |                   | Install new fiber cable and slack loops on new poles  |   | x  |  |   |  |  |                        |
|         |                                   |                   | <b>Sub-Total</b>  | <b>10</b>   |  |  |   |  |  |                        |
| Task: 5 |                                   |                   | <b>Utility Co. First Light</b>  |   |  |  |   |  |  |                        |
|         | MDOT                              |                   | Provide 4 week notice to First Light to splice over ???   |   |  |  |   |  |  |                        |
|         | U                                 |                   | Relocate OHW's - 12 UP's  | 5   | x  |  |   |  | DUCE ESTIMATE                                      |                        |
|         | U                                 |                   | Adjust slack and add in as needed   | 5   | x  |  |   |  |  |                        |
|         |                                   |                   | <b>Sub-Total</b>  | <b>10</b>   |  |  |   |  |  |                        |
| Task: 6 |                                   |                   | <b>Utility Co. MCI Vz Bus</b>   |   |  |  |   |  |  |                        |
|         | MDOT                              |                   | Provide 4 week notice to MCI to start project   |   |  |  |   |  |  |                        |
|         | U                                 |                   | Engineering and permitting for Rt.3A and Lexington St   | 15  | x  |  |   |  |  |                        |
|         | U                                 |                   | Install new 288 fiber cable and slack loops on new poles  | 10  | x  |  |   |  |  |                        |
|         | U                                 |                   | Splice new fiber into splice points   | 4   | x  |  |   |  |  |                        |
|         | U                                 |                   | Remove existing fiber in project corridor   | 2   | x  |  |   |  |  |                        |
|         |                                   |                   | <b>Sub-Total</b>  | <b>31</b>   |  |  |   |  |  |                        |
| Task: 7 |                                   |                   | <b>Utility Co. Comcast</b>  |   |  |  |   |  |  |                        |
|         | U                                 |                   | Transfer existing coax to new poles where applicable. Otherwise, build new strand and coax and cutover where necessary. Police details throughout   | 40  | x  |  |   |  |  |                        |
|         | U                                 |                   | Delash 4 fiber bundles on Boston Rd from Pole 192 to Pole 200. Delash 3 fiber bundles from Pole 209 on Boston Rd to Pole 5 on Glad Valley Drive.  | 5   | x  |  |   |  |  |                        |
|         | U                                 |                   | Relash 4 fiber bundles on Boston Road from Pole 192 to Pole 200 on Boston Road  | 1.5   | x  |  |   |  |  |                        |
|         | U                                 |                   | Relash 3 fiber bundles from Pole 209 on Boston Road to Pole 5 on Glad Valley Drive.   | 1.5   | x  |  |   |  |  |                        |
|         |                                   |                   | <b>Sub-Total</b>  | <b>48</b>   |  |  |   |  |  |                        |
| Task: 8 |                                   |                   | <b>Utility Co. Verizon ( 23 UP, R&amp;R Conduit Risers, Rem SEI Pad, and Conduit back to VZ TMH once cables have been removed)</b>  |   |  |  |   |  |  |                        |
|         | U                                 |                   | Place guys/ anchors, suspension strand, place aerial cables, join cables, trim out riser/ aerial cables, remove aerial cables.  | 88  | x  |  |   |  |  |                        |
|         | U                                 |                   | Remove anchors  | 2   | x  |  |   |  |  |                        |
|         | U                                 |                   | UNG conduit from R&R cabinet to existing TMH  | 10  | x  |  |   |  |  |                        |
|         | U                                 |                   | TMH chimney remodel - down 8"   | 2   | x  |  |   |  |  |                        |
|         | U                                 |                   | Vz contractor to coordinate removal of SAI pad and conduit  | 2   | x  |  |   |  |  |                        |
|         | U                                 |                   | Remove 18 poles   | 24  | x  |  |   |  |  |                        |
|         |                                   |                   | <b>Sub-Total</b>  | <b>128</b>  |  |  |   |  |  |                        |
|         |                                   |                   | <b>OHW and Pole Relocations Sub-Total</b>   | <b>292</b>  |  |  |   |  |  |                        |
|         |                                   |                   | Enabling' work by the Contractor - Call in WO# for signal OH service connection. Confirm if temp signal needed during traffic control signal installation. Consider advance work for Prop CB & DMH CB near Prop UP, Prop Mast Arm foundations that should be done prior to pole moves, Relocation of existing signal services to UPs being relocated. I.e. Signal and Street lighting, and Police Cameras(if applicable) need a Ngrid Work Req # and this puts the Contractor in the Utility Pole Relocation schedule.                          |   |  |  |   |  |  |                        |
| Task: 9 |                                   |                   | <b>UTILITY OPERATIONS - Signal Installation, Reconstruction, Rapid Flashing Beacon</b>  |   |  |  |   |  |  |                        |
|         |                                   |                   | <b>Traffic control signal location No. 1, No. 2, RRFB @ 108+84</b>  |   |  |  |   |  |  |                        |
|         | C                                 |                   | <b>Glad Valley Drive and Lexington Rd - Signal Installation:</b> This work will require a WO# from Ngrid Electric for an overhead service connection and advanced notice - Contractor to pay all fees for Ngrid Electric to install pigtails and connect cable to secondary pole line and meter. Contractor to install riser, sweeps, ug conduit and cable in accordance with Ngrid Electric Standards and approved WO #. (Ngrid Electric New Service request will confirm if this pole is acceptable for the new overhead Service Connection.) |   |  |  |   |  |  |                        |
|         | C                                 |                   | <b>Tower Farm Road and Walmart Entrance - Reconstruction:</b> Ensure any electrical work that needs a WO# is called in for any service connect or disconnect - Contractor to pay all fees for Ngrid Electric.   |   |  |  |   |  |  |                        |
|         | C                                 |                   | <b>RRFB's @ 108+84:</b> Request an Ngrid electric WO# for electrical riser on pole# 198.  |   |  |  |   |  |  |                        |
|         | U                                 |                   | <b>NGrid is paid by Contractor From Contract Item:</b> NG Connects/Disconnects as directed.   | 5   | x  |  |   |  | * DUCE ESTIMATE*                                   |                        |
|         |                                   |                   | <b>Sub-Total</b>  | <b>0</b>  |  |  |   |  |  |                        |

| 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 |                        |
|-------------------|---|--|-------------------------------------|----------------------|---------------------|-----------------------|--|------------------------|
|                   |   |  | Exclude Utility on site             | Concurrent Utilities | Concurrent Off-Site | Concurrent Contractor | Potential Access Restraint                         | Reason/Note (optional) |
| C = Contractor    | Enabling work by the contractor - Underground utilities. Call in dig safe. Contractor shall perform early test pits to determine invert grades of proposed drainage, culverts, etc. and direct gas to go in a location under proposed drainage, and in other locations as necessary to show proposed work shown on the plans does not encroach on the NGrid gas lines. Contractor shall coordinate NGrid crews into traffic Controls and Lane Closures for Pipe Installation, also coordinate for FD HMA trench work and share Police details where possible. |  |                                     |                      |                     |                       |  |                        |
|                   | <b>UTILITY OPERATIONS - Gas Relocations</b>   |  |                                     |                      |                     |                       |  |                        |
|                   | <b>Utility Co. National Grid Gas</b>  |  |                                     |                      |                     |                       |  |                        |
| Task 10           | u 111-50 - left 6" PL Gas relocation -  | 5  |                                     |                      |                     |                       |  |                        |
|                   | u 111-50 - left 6" PL Gas relocation -  | 10   |                                     |                      |                     |                       |  |                        |
|                   | u 130-450 - left 6" PL Gas relocation -   | 10   |                                     |                      |                     |                       |  |                        |
|                   | u 123+25 on Rt. 3A down to Lexington street 2 1/2x25 right - 6" relocation  | 10   |                                     |                      |                     |                       |  |                        |
|                   | c 138+00 left - proposed guardrail installation. Hand digging required for guardrail post for existing 4" gas main in area.   | 40   |                                     |                      |                     |                       |  |                        |
|                   | <b>Sub-Total</b>  | <b>40</b>  |                                     |                      |                     |                       |  |                        |
|                   | Enabling work by the contractor - Roadway milling, full depth, sidewalk and shared use path construction. Coordinate with utilities to adjust structures in advance of full depth construction, milling and paving. Set grades for all structures to be adjusted. Final paving and line stripping coordination.   |  |                                     |                      |                     |                       |  |                        |
|                   | <b>UTILITY OPERATIONS - Structure Adjustments</b>   |  |                                     |                      |                     |                       |  |                        |
|                   | <b>Utility Co. All Utilities</b>  |  |                                     |                      |                     |                       |  |                        |
| Task 11           | u Ngrid Gas Adjustments   | 3  |                                     |                      |                     |                       |  |                        |
|                   | u Verizon Adjustments   | 3  |                                     |                      |                     |                       |  |                        |
|                   | u Comcast Adjustments   | 3  |                                     |                      |                     |                       |  |                        |
|                   | u ZAYO, and MCI Adjustments   | 3  |                                     |                      |                     |                       |  |                        |
|                   | C Adj - sewer MH's, CB's, street lighting HH's, MassDOT owned structures  | 12   |                                     |                      |                     |                       |  |                        |
|                   | <b>Sub-Total</b>  | <b>12</b>  |                                     |                      |                     |                       |  |                        |

**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 NTP's 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. Any costs associated with these tasks are deemed to be incidental to the project.
- 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.

PROJECT NAME: Boston Road (Route 3A) at Lexington & Glad Valley, Billerica  
 PROJECT NUMBER: 609250  
 PREPARED BY: BETA GROUP  
 REVISION DATE: 02/29/2024 (PS&E Utility Plan)  
 OFFSETS MEASURED TO: CENTER OF POLE

Notes:

| Plan Sheet #       | Station   | Offset (FEET) | Existing              |                     |                             |                           |             | Proposed By Designer |               |              |             |     | Misc Info / Comments |  |   |
|--------------------|-----------|---------------|-----------------------|---------------------|-----------------------------|---------------------------|-------------|----------------------|---------------|--------------|-------------|-----|----------------------|--|---|
|                    |           |               | RET/ R&R / PROP / REM | Pole Identification | Distance to New Pole (FEET) | Offset to New Pole (FEET) | Streetlight | Station              | Offset (FEET) | Easting      | Northing    | Cut | Fill                 |  |   |
| <b>BOSTON ROAD</b> |           |               |                       |                     |                             |                           |             |                      |               |              |             |     |                      |  |   |
| 37                 | 102+67.58 | 31.07         | LT                    | MECO 192            |                             |                           |             |                      |               |              |             |     |                      |  | Existing Street Light; Existing Riser (1)   |
| 37                 | 103+75.67 | 30.16         | LT                    | 193                 |                             |                           |             |                      |               |              |             |     |                      |  |   |
| 37, 38             | 104+88.29 | 29.70         | LT                    | 194                 |                             |                           |             |                      |               |              |             |     |                      |  | Existing Street Light; Existing Transformer   |
| 38                 | 106+01.12 | 28.49         | LT                    | 195                 |                             |                           |             |                      |               |              |             |     |                      |  |   |
| 38                 | 106+88.99 | 25.97         | LT                    | 196                 |                             |                           |             |                      |               |              |             |     |                      |  | One (1) proposed 10' SW guy; Remove existing 6' guy   |
| 38                 | 108+04.09 | 21.66         | RT                    | 10/198              |                             |                           |             | 0.5                  |               |              |             |     |                      |  | Remove Pole; Remove empty Riser; Relocate existing street light to UP#99                                      |
| 38                 | 108+51.54 | 27.19         | LT                    | 198                 |                             |                           |             |                      |               |              |             |     |                      |  | Existing Street Light; Flood Light; Street Sign   |
| 38, 39             | 109+02.73 | 22.86         | RT                    | 99                  |                             |                           |             | 0.5                  |               |              |             |     |                      |  | Retain existing 8' guy; Existing Risers (3); Add Streetlight from UP#10/198                                   |
| 39                 | 109+91.90 | 23.13         | LT                    | 199                 | 13.88                       | 3.37                      | 110+05.78   | 26.50                | LT            | 3025836.6248 | 719996.2116 | 1   |                      |  | One (1) proposed 12' guy and two (2) proposed 20' guys; Existing Flood Light                                  |
| 39                 | 110+02.66 | 22.78         | RT                    | 10/200              |                             |                           |             |                      |               |              |             |     |                      |  | Retain existing 10' and 20' guys; Existing bus sign   |
| 39                 | 110+97.38 | 23.50         | RT                    | 201                 |                             |                           |             |                      |               |              |             |     |                      |  | Existing transformer; Existing street light   |
| 39                 | 111+92.23 | 25.43         | RT                    | 202                 |                             |                           |             |                      |               |              |             |     |                      |  | Retain existing 10' guy; Three (3) Transformers; Two (2) Riser  |
| 39                 | 112+87.86 | 26.53         | RT                    | 203                 |                             |                           |             |                      |               |              |             |     |                      |  | Retain existing 10' guy; Three (3) Risers   |
| 39                 | 113+83.01 | 26.49         | RT                    | 204                 |                             |                           |             |                      |               |              |             |     |                      |  | Proposed 10' SW guy; Existing street light  |
| 39, 40             | 114+80.50 | 25.94         | RT                    | 10/205              |                             |                           |             |                      |               |              |             |     |                      |  | Proposed 10' SW guy; Two (2) Mailboxes  |
| 40                 | 115+90.08 | 23.10         | RT                    | 206                 |                             |                           |             |                      |               |              |             |     |                      |  | Existing transformer; Existing flood light  |
| 40                 | 116+81.38 | 42.51         | LT                    | 10-207/1            |                             |                           |             |                      |               |              |             |     |                      |  | Existing flood light  |
| 40                 | 117+03.32 | 24.10         | RT                    | 207                 |                             |                           |             |                      |               |              |             |     |                      |  | Existing Street Light; Flood Light; Transformer   |
| 40                 | 118+07.01 | 25.45         | RT                    | 208                 |                             |                           | 118+07.01   | 25.45                | RT            | 3025207.2110 | 720474.8874 | 1   |                      |  | Upgrade existing pole   |
|                    |           |               |                       | 208-1               |                             |                           | 118+08.25   | 28.73                | LT            | 3025246.4802 | 720512.2586 | 1   |                      |  | Proposed guy pole with 10' guy  |
| 40                 | 119+16.66 | 24.03         | RT                    | 209                 | -2.18                       | 3.11                      | 119+14.48   | 27.14                | RT            | 3025133.1732 | 720551.7191 | 1   |                      |  | Proposed 20' guy; Existing Street Light   |
| 40, 41             | 120+18.03 | 23.16         | RT                    | 10/210              | 5.10                        | 4.11                      | 120+23.13   | 27.27                | RT            | 3025058.8982 | 720631.0098 | 1   |                      |  | Proposed 10' guy  |
| 41                 | 121+07.25 | 21.75         | RT                    | 211                 | -8.13                       | 5.38                      | 120+99.12   | 27.13                | RT            | 3025006.8142 | 720687.9772 | 1   |                      |  | Remove existing guy wire; Relocate Pole   |
| 41                 |           |               |                       | 211-1               |                             |                           | 121+06.31   | 39.40                | LT            | 3025053.0170 | 720736.3769 | 1   |                      |  | Proposed guy pole with 10' SW guy   |
| 41                 | 121+76.04 | 59.36         | RT                    | 1                   |                             |                           |             |                      |               |              |             |     |                      |  | Remove Pole; Relocate Existing Street Sign  |
| 41                 | 122+27.86 | 20.83         | RT                    | 212                 | -46.81                      | 26.54                     | 121+81.05   | 47.37                | RT            | 3024938.6445 | 720744.7235 | 1   |                      |  | Proposed 12' guy; Existing Street Light; Street Sign; Relocate existing risers; Prop Traffic Signal Riser     |
| 41                 | 122+45.04 | 40.67         | LT                    | 212X                | -28.83                      | -0.30                     | 122+16.21   | 40.37                | LT            | 3024994.1271 | 720821.3023 | 1   |                      |  | Two (2) proposed 20' guys; Relocate Existing Risers   |
| 41                 | 122+74.26 | 20.34         | RT                    | 213                 | 21.03                       | 34.24                     | 122+95.29   | 54.58                | RT            | 3024873.2335 | 720848.6528 | 1   |                      |  | Proposed 10' guy; Remove existing guy; Existing Riser (1); Add Street Light From; UP @21+04 LT Lexington Road |
| 41                 | 123+66.50 | 25.40         | RT                    | 10/214              | 24.45                       | 18.27                     | 123+90.95   | 43.67                | RT            | 3024848.5122 | 720948.8192 | 1   |                      |  | Proposed 12' guy; Existing Street Sign and Bus Sign   |
| 41                 | 123+80.25 | 35.48         | LT                    | 4X                  |                             |                           |             |                      |               |              |             |     |                      |  | Remove pole and guy   |
| 41                 | 124+58.10 | 25.00         | RT                    | 10/215              | -9.17                       | 7.54                      | 124+48.93   | 32.54                | RT            | 3024845.0592 | 721010.9263 | 1   |                      |  | Remove existing 20' guy; Existing Street Light; Relocate Existing Riser (1)                                   |
| 41, 42             | 125+63.81 | 22.19         | RT                    | 216                 | -0.36                       | 5.69                      | 125+63.45   | 27.88                | RT            | 3024836.4773 | 721130.0797 | 1   |                      |  | Proposed 10' guy; Relocate Existing Riser (1)   |
| 42                 | 126+77.27 | 22.08         | RT                    | 10/217              | 0.44                        | 4.54                      | 126+77.71   | 26.62                | RT            | 3024834.9574 | 721244.3945 | 1   |                      |  | Existing Transformer  |
| 42                 | 127+81.44 | 24.06         | RT                    | 218                 | 0.00                        | 2.18                      | 127+81.44   | 26.24                | RT            | 3024833.5838 | 721348.3496 | 1   |                      |  | Existing Street Light; Sign   |
| 42                 | 128+82.49 | 26.05         | RT                    | 219                 |                             |                           |             |                      |               |              |             |     |                      |  | Existing Transformer  |

PROJECT NAME: Boston Road (Route 3A) at Lexington & Glad Valley, Billerica  
 PROJECT NUMBER: 609250  
 PREPARED BY: BETA GROUP  
 REVISION DATE: 02/29/2024 (PS&E Utility Plan)  
 OFFSETS MEASURED TO: CENTER OF POLE

Notes:

| Plan Sheet #             | Station   | Offset (FEET) | Existing            |                       |                             |                           |             | Proposed By Designer |               |             |           |     | Misc Info / Comments |  |  |
|--------------------------|-----------|---------------|---------------------|-----------------------|-----------------------------|---------------------------|-------------|----------------------|---------------|-------------|-----------|-----|----------------------|--|--|
|                          |           |               | Pole Identification | RET/ R&R / PROP / REM | Distance to New Pole (FEET) | Offset to New Pole (FEET) | Streetlight | Station              | Offset (FEET) | Easting     | Northing  | Cut | Fill                 |  |  |
| 42                       | 128+90.93 | 107.46        | LT                  | RET                   |                             |                           |             |                      |               |             |           |     |                      |  | Existing Four (4) Risers, Push Brace   |
| 42, 43                   | 129+94.62 | 28.74         | RT                  | RET                   |                             |                           |             |                      |               |             |           |     |                      |  | Existing Push Brace  |
| 42, 43                   | 130+75.56 | 27.61         | RT                  | RET                   |                             |                           |             |                      |               |             |           |     |                      |  | Existing Street Light, Transformer, Push Brace                                       |
| 43                       | 131+19.70 | 60.43         | LT                  | RET                   |                             |                           |             |                      |               |             |           |     |                      |  |  |
| 43                       | 131+84.82 | 29.49         | RT                  | RET                   |                             |                           |             |                      |               |             |           |     |                      |  | Existing Three (3) Transformer   |
| 43                       | 132+04.98 | 44.02         | LT                  | RET                   |                             |                           |             |                      |               |             |           |     |                      |  | Existing Guy   |
| 43                       | 132+60.53 | 60.63         | LT                  | RET                   |                             |                           |             |                      |               |             |           |     |                      |  | Existing Flood Light, Three (3) Phase Termination, Four (4) Ducts                    |
| 43                       | 132+64.63 | 29.81         | RT                  | RET                   |                             |                           |             |                      |               |             |           |     |                      |  | Existing Push Brace  |
| 43                       | 133+53.88 | 30.57         | RT                  | RET                   |                             |                           |             |                      |               |             |           |     |                      |  | Existing Transformer, Push Brace   |
| 43                       | 134+55.62 | 34.08         | RT                  | RET                   |                             |                           |             |                      |               |             |           |     |                      |  | Existing Street Light, Push Brace  |
| 43, 44                   | 135+36.15 | 56.18         | LT                  | RET                   |                             |                           |             |                      |               |             |           |     |                      |  | Existing Two (2) Flood Lights, Guy   |
| 43, 44                   | 135+42.05 | 28.80         | RT                  | RET                   |                             |                           |             |                      |               |             |           |     |                      |  | Existing Push Brace  |
| 43, 44                   | 136+40.08 | 28.09         | RT                  | RET                   |                             |                           |             |                      |               |             |           |     |                      |  |  |
| 44                       | 137+38.24 | 27.37         | RT                  | RET                   |                             |                           |             |                      |               |             |           |     |                      |  | Existing Street Light, Transformer, Risers   |
| 44                       | 137+83.40 | 24.75         | LT                  | R&R                   | 29.15                       | 8.86                      | 138+12.46   | LT                   | 3024312.4403  | 722128.3952 | 1         |     |                      |  |  |
| 44                       | 138+46.39 | 27.83         | RT                  | RET                   |                             |                           |             |                      |               |             |           |     |                      |  |  |
| 44                       | 139+31.33 | 24.46         | LT                  | RET                   |                             |                           |             |                      |               |             |           |     |                      |  | Existing Transformer   |
| 44                       | 139+63.79 | 28.76         | RT                  | RET                   |                             |                           |             |                      |               |             |           |     |                      |  |  |
| 44                       | 140+57.52 | 28.23         | LT                  | RET                   |                             |                           |             |                      |               |             |           |     |                      |  |  |
| 44                       | 140+80.49 | 29.32         | RT                  | RET                   |                             |                           |             |                      |               |             |           |     |                      |  |  |
| <b>INNIS DRIVE</b>       |           |               |                     |                       |                             |                           |             |                      |               |             |           |     |                      |  |  |
| 32                       | 106+83.27 | 103.24        | RT                  | RET                   |                             |                           |             |                      |               |             |           |     |                      |  | Existing Transformers (2)  |
| <b>TUFTS LANE</b>        |           |               |                     |                       |                             |                           |             |                      |               |             |           |     |                      |  |  |
| 32                       | 10+97.33  | 16.49         | LT                  | RET                   |                             |                           |             |                      |               |             |           |     |                      |  | Existing Riser (1)   |
| 32                       | 11+14.22  | 13.85         | RT                  | RET                   |                             |                           |             |                      |               |             |           |     |                      |  | Existing Street Light  |
| <b>GLAD VALLEY DRIVE</b> |           |               |                     |                       |                             |                           |             |                      |               |             |           |     |                      |  |  |
| 35                       | 11+80.97  | 18.16         | LT                  | PROP                  | -0.22                       | -0.62                     | 11+80.75    | LT                   | 3024855.0147  | 720629.2936 | 1         |     |                      |  | Upgrade existing pole. Existing Guy Wire; Existing Street Light                      |
| <b>LEXINGTON ROAD</b>    |           |               |                     |                       |                             |                           |             |                      |               |             |           |     |                      |  |  |
| 35                       | 20+85.18  | 14.36         | RT                  | REM                   |                             |                           |             |                      |               |             |           |     |                      |  | Remove Pole  |
| 35                       | 21+05.51  | 21.41         | LT                  | REM                   |                             | 0.5                       |             |                      |               |             |           |     |                      |  | Remove pole; Relocate Existing Street Light to UP#213                                |
| 35                       | 22+15.46  | 19.88         | LT                  | PROP                  | 0.00                        | 0.02                      | 22+15.46    | LT                   | 3024700.2975  | 720888.0360 | 1         |     |                      |  | Upgrade Existing Pole, Proposed 20' Guy, Proposed 15' Guy; Remove existing guy wires |
| 35                       | 22+21.59  | 31.29         | RT                  | RET                   |                             |                           |             |                      |               |             |           |     |                      |  |  |
| 35                       | 23+31.39  | 17.97         | RT                  | PROP                  | -0.01                       | 0.00                      | 23+31.38    | LT                   | 3024583.7650  | 720886.9610 | 1         |     |                      |  | Upgrade Existing Pole  |
| <b>Totals</b>            |           |               |                     |                       |                             |                           |             |                      |               |             | <b>19</b> |     | <b>7.0</b>           |  |  |

DOCUMENT A00810

# **MassDOT Herbicide Use Report**

# MassDOT Herbicide Use Report

Date Submitted:

Use multiple sheets for multiple application techniques or sites as needed.

**Contractor Performing Work:**  **Project or Contract No:**

**Town/s:**  **Associated Route:**

**Project Description:**

**MDAR ALERT\*:**

**Treatment Description:**  **Area Treated (as applicable)**  
**Acres:**  **Sq Yds:**  **Miles:**

**Weeds Targeted:**  **Gallons Formula Used:**

**Application Method:**  **Date/Time Began:**

**Date/Time End:**

**Product Used:**

|   |   |   |
|---|---|---|
| Name: _____<br>EPA Reg. No: _____<br>% Active Ingredient<br>Dry: _____<br>Liquid: _____<br>Formulation (dilution rate): _____ | Name: _____<br>EPA Reg. No: _____<br>% Active Ingredient<br>Dry: _____<br>Liquid: _____<br>Formulation (dilution rate): _____ | Name: _____<br>EPA Reg. No: _____<br>% Active Ingredient<br>Dry: _____<br>Liquid: _____<br>Formulation (dilution rate): _____ |
|---|---|---|

**Additional products used (surfactants, etc.) or other information:**

**Applicators:**

**License Numbers:**

\* Please note:  
 EDRR Species (MAM, Hogweed, Pepperweed, Kudzu, etc.)  
 Tree of Heaven 1) stands of >20 trees; 2) >5 trees near nursery, landscape company, or highway rest area where trucks stop

Upon completion, please submit form to MassDOT District Engineer and Landscape Design Section in Boston office.

DOCUMENT A00811

**WATERING LOG**  
**for**  
**MassDOT Plantings**

# Watering Log for MassDOT Plantings

**Project Description:**

**Contract No.:**

**Plant Locations/s:**

**Project No.:**

**(Attach planting plan/s as necessary)**

**Notes:**

| Separate logs shall be kept to track areas or plants with different watering schedules.<br>Trees shall receive a minimum of 10 gallons with each watering and shrubs a minimum of 5 gallons.<br>Provide note that if watering is not performed as scheduled due to rain. Record date of rainfall and amount. |  |  |  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Date Watered   |  |  |  |  |  |  |  |  |  |  |  |  |
| Landscape Contractor Initial   |  |  |  |  |  |  |  |  |  |  |  |  |
| Prime Contractor Initial   |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Date Watered   |  |  |  |  |  |  |  |  |  |  |  |  |
| Landscape Contractor Initial   |  |  |  |  |  |  |  |  |  |  |  |  |
| Prime Contractor Initial   |  |  |  |  |  |  |  |  |  |  |  |  |

Each week, following watering, Log shall be submitted to the MassDOT Engineer.  
6/15/2018

DOCUMENT A00820

**Massachusetts Department of Transportation  
Conditions of Custody**

REQUEST FOR RELEASE OF MASSDOT AUTOCAD FILES FORM

(Only to be used following award of contract)

City/Town: BILLERICA Project File Number: 609250

Contract Number: 129975

Project Description: Intersection Improvements at Boston Road (Route 3A), Lexington Street and Glad Valley Road

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](mailto: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 A00831

**ARMY CORPS OF ENGINEERS**

**SELF-VERIFICATION NOTIFICATION (SVN)**

**AND**

**PERMIT**

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**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](mailto:cenae-r-ma-sv@usace.army.mil). The email subject line shall contain the following: GP #, SVN, City/Town, and date submitted.

**(ITEMS 1 THRU 3 TO BE FILLED BY USACE)**

|                    |                      |                  |
|--------------------|----------------------|------------------|
| 1. APPLICATION NO. | 2. FIELD OFFICE CODE | 3. DATE RECEIVED |
|--------------------|----------------------|------------------|

**APPLICANT AND AGENT INFORMATION**

|   |   |
|---|---|
| <b>4. APPLICANT'S NAME</b><br>First -                      Middle -                      Last -<br>Company -<br>E-mail Address -            | <b>7. AGENT'S ADDRESS:</b><br>First -                      Middle -                      Last -<br>Company -<br>E-mail Address -        |
| <b>5. APPLICANT'S ADDRESS:</b><br>Address-<br>City -                      State -                      Zip -                      Country - | <b>8. AGENT'S ADDRESS:</b><br>Address-<br>City -                      State -                      Zip -                      Country - |
| <b>6. APPLICANT'S PHONE NOs. w/AREA CODE</b><br>a. Residence                      b. Business                      c. Fax                   | <b>9. AGENTS PHONE NOs. w/AREA CODE</b><br>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)<br>Latitude: °N                      Longitude: °W | 14. PROJECT STREET ADDRESS (if applicable)<br>Address<br>City -                      State -                      Zip - |

**ACTIVITY TYPE, PROJECT IMPACTS, AVOIDANCE & MINIMIZATION**

| <b>15. GENERAL PERMIT ACTIVITIES (CHECK ALL THAT APPLY)</b><br><br>1 _____ 6 _____ 11 _____ 16 _____ 21 _____<br>2 _____ 7 _____ 12 _____ 17 _____ 22 _____<br>3 _____ 8 _____ 13 _____ 18 _____ 23 _____<br>4 _____ 9 _____ 14 _____ 19 _____ 24 _____<br>5 _____ 10 _____ 15 _____ 20 _____ 25 _____ | <b>16. SUMMARY OF PROJECT IMPACTS (see instructions)</b><br><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> </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: | OOO 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.

*Kelly Conway*  
SIGNATURE OF APPLICANT

*12-19-23*  
DATE

SIGNATURE OF AGENT

DATE

24. SIGNATURES *(see instructions)*

I hereby certify that the information in this Self-Verification Notification is complete and accurate. As the applicant or their duly authorized agent, I certify the activity was completed in accordance with the terms and conditions of the GP. This includes all applicable terms, general conditions, and activity-specific GP criteria. I agree to allow the duly authorized representatives of the Corps of Engineers Regulatory Program and other regulatory or advisory agencies to enter upon the premises of the project site at reasonable times to evaluate inspect and photograph site conditions. This consent to enter the property is superior to, takes precedence over, and waives any communication to the contrary. For example, if the property is posted as "no trespassing" this consent specifically supersedes and waives that prohibition and grants permission to enter the property despite such posting.

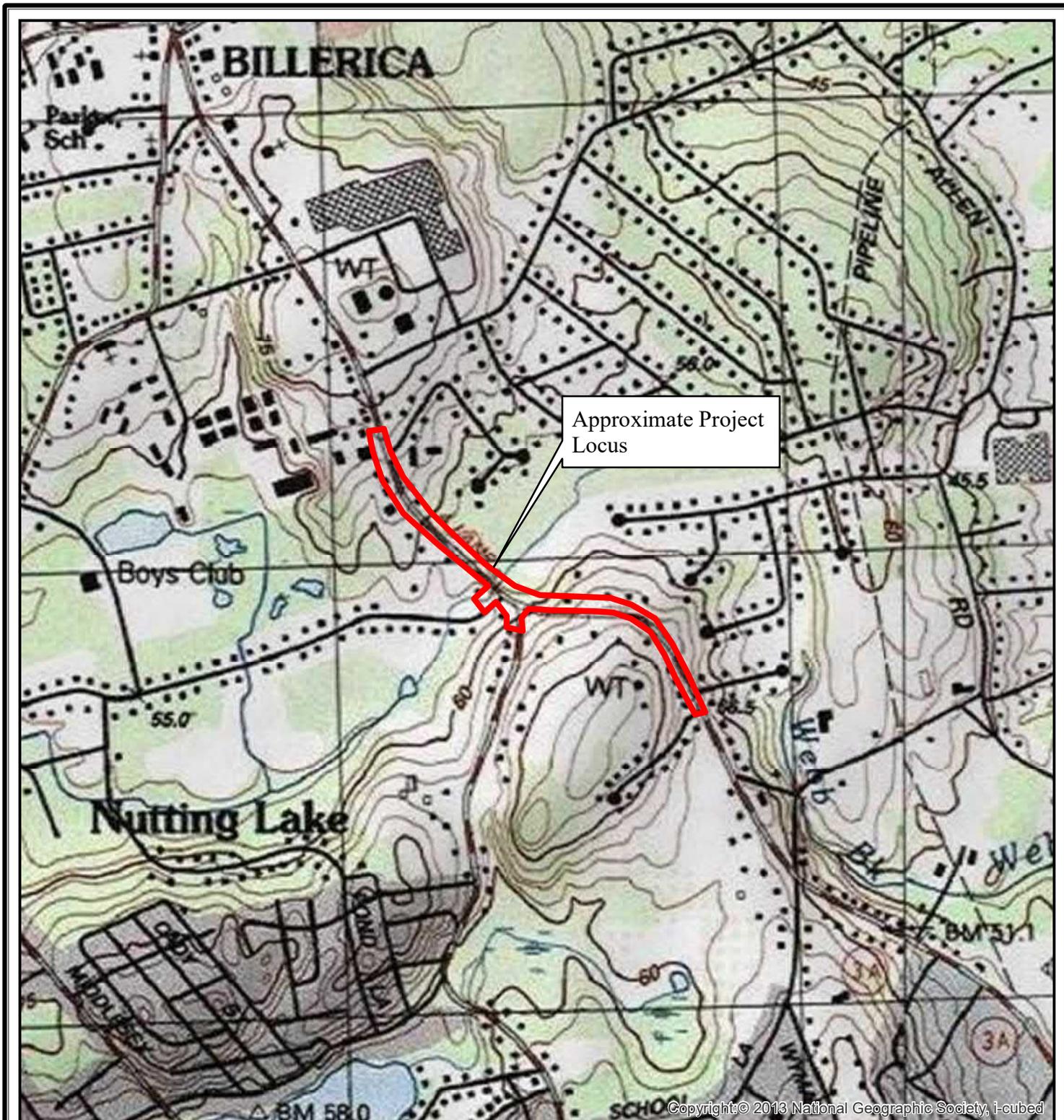
*Kelly Conway*  
SIGNATURE OF APPLICANT

*12-19-23*  
DATE

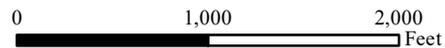
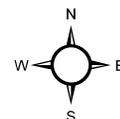
SIGNATURE OF AGENT

DATE

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.



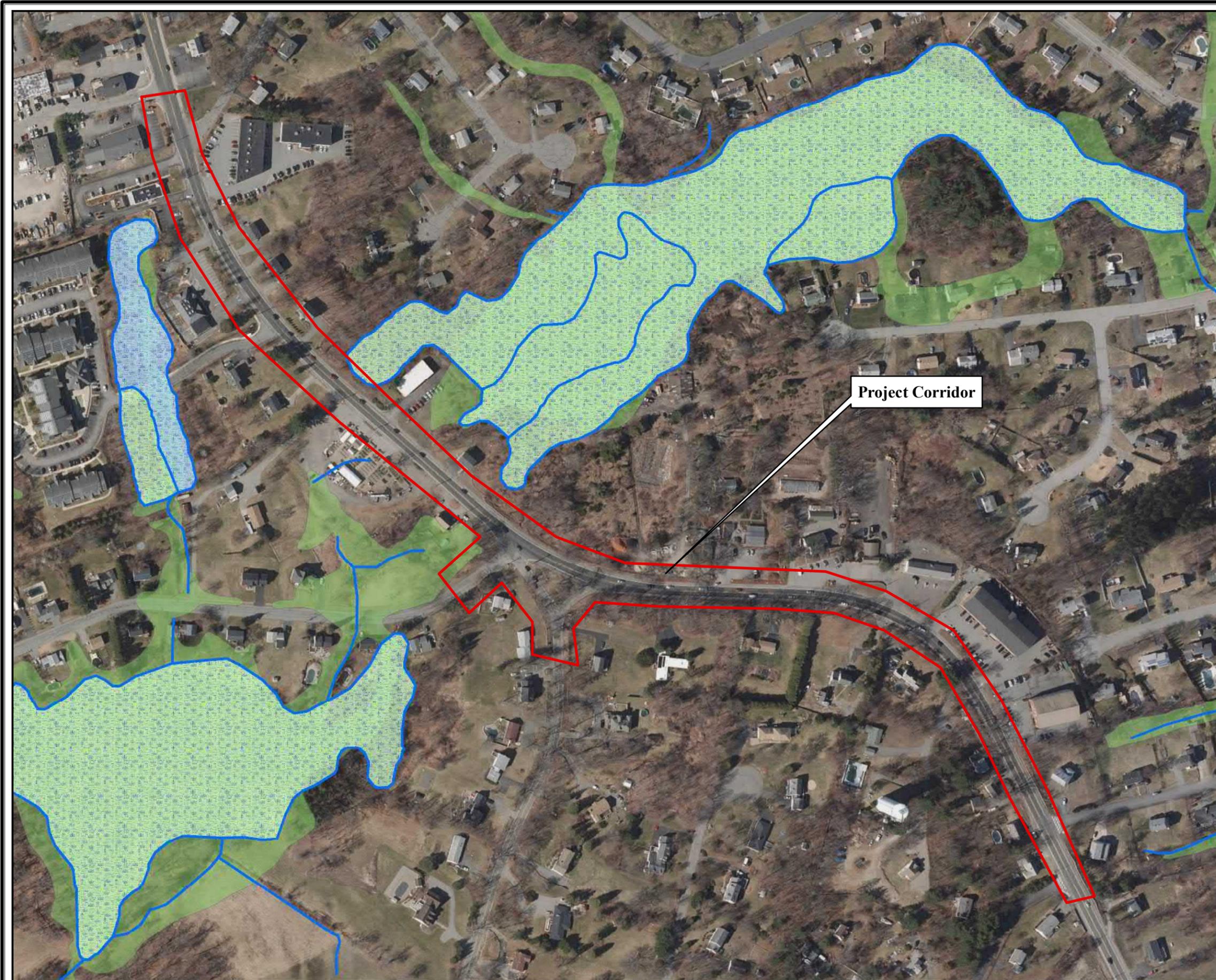
**Figure 1**  
**Site Locus**  
**Boston Road, MA Route 3A**  
**Billerica, MA**



1 inch = 1,000 feet

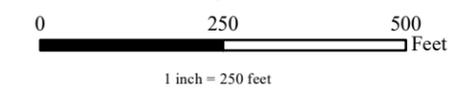
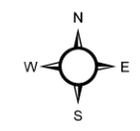
Data Source: USGS Topographic Map

**Figure 2**  
**Environmental Resources**  
**Boston Road at Lexington Road**  
**Billerica, MA**



**Environmental Resources Legend**

- MassDEP Hydrologic Feature
- Marsh/Bog
- Wooded marsh
- Open Water
- DFW Coldwater Fisheries
- NHESP Potential Vernal Pool
- ★ NHESP Certified Vernal Pool
- NHESP Priority Habitat of Rare Species
- NHESP Estimated Habitats of Rare Wildlife
- NFHL 100 Year Flood Zone
- Area of Critical Environmental Concern (ACEC)
- Zone A
- Zone B
- Zone C
- MassDEP IWPA
- MassDEP Zone I
- MassDEP Zone II
- Outstanding Resource Water
- DFW Coldwater Fisheries
- Green Engineering Flood Plain



Data Source: MassGIS USGS Color Ortho Imagery (2014), MassDEP Wetlands (1:12000) (2009), NHESP Potential Vernal Pools (2000), NHESP Certified Vernal Pools, NHESP Priority Habitats of Rare Species (2008), NHESP Estimated Habitats of Rare Species (2008), Areas of Critical Environmental Concern (2009), FEMA National Flood Hazard Layer (2014).



**Photo 1**



View of the B1/B2 Bank series stream from flag B1-103—facing south

**Photo 2**



Typical view interior of the WF1 series wetland between flags WF1-100 and WF1-134—facing northeast

**PHOTOGRAPHIC DOCUMENTATION**

Boston Road/MA Route 3A

Billerica, Massachusetts

Photographs Documented July 25, 2023

**Photo 3**



Typical view interior of the WF1 series wetland between WF1-200 and WF1-205—facing northeast

**Photo 4**



View of hydric soils observed within the WF1 series wetland

**PHOTOGRAPHIC DOCUMENTATION**

Boston Road/MA Route 3A

Billerica, Massachusetts

Photographs Documented July 25, 2023

**Photo 5**



View of dense sensitive fern (*Onoclea sensibilis*) within the WF2 series wetland—facing east

**Photo 6**



View of the northern extent of the WF3 series wetland at flag WF3-116—facing west

**PHOTOGRAPHIC DOCUMENTATION**

Boston Road/MA Route 3A

Billerica, Massachusetts

Photographs Documented July 25, 2023

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](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](mailto: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](mailto: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](mailto: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](mailto: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 authorized<sup>1</sup>, currently serviceable structure, or fill, or of any currently serviceable structure or fill authorized by 33 CFR 330.3 (activities occurring before certain dates), provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification. Minor deviations in the structure's configuration or filled area, including those due to changes in materials, construction technique requirements of other regulatory agencies, or current construction codes or safety standards that are necessary to make the repair, rehabilitation, or replacement are authorized. This GP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to conduct the activities above. Maintenance dredging and beach nourishment are not eligible under GP 2 (see GP 7). Stream crossing modifications (including sliplining), replacements or extensions are not eligible under GP 2 (see GPs 6, 17, 23). See GP 25 Emergency Situations for expedited review of emergency activities.

**Not authorized under GP 2 (IP required):** (a) Permanent impacts in >1 acre in non-tidal waters and/or wetlands; or (b) Permanent impacts >1/2 acre in tidal waters; >1000 SF in saltmarsh, mud flats, riffle and pool complexes, or non-tidal vegetated shallows; or >100 SF in tidal vegetated shallows; or (c) Temporary impacts >1 acre in tidal waters; >5000 SF in saltmarsh, mud flats, riffle and pool complexes, or non-tidal vegetated shallows; or >1000 SF in vegetated shallows; (d) New stream channelization or stream relocation projects (e.g., those in response to storm or flood events).

**Self-Verification Eligible**

Maintenance activities that meet all of the following terms:

1. In non-tidal waters, the combined permanent and temporary impacts extending beyond the original footprint are ≤5,000 SF<sup>2</sup> 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.

<sup>1</sup> 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).

<sup>2</sup> 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.

|  |   |
|--|---|
| <p>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.</p> <p>7. Work to previously approved tide gates not affecting upstream tidal resource areas.</p>   | <p>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.</p> <p>6. Activities on USACE properties &amp; USACE-controlled easements.</p> <p>7. Activities that do not require an IP. Activities that do not require a PCN or an IP may be SV eligible.</p> |
| <p>Notes:</p> <ol style="list-style-type: none"><li>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.</li><li>2. See GC 22 for information on temporary construction mats.</li></ol> |   |

**GP 3. MOORINGS (Authority: §10)**

New moorings and mooring fields; the relocation of previously authorized moorings; expansions, boundary reconfigurations or modifications of previously authorized mooring fields; and maintenance and replacement of moorings.

**Not authorized under GP 3 (IP required):** (a) Moorings or mooring fields converted to or associated with a new boating facility<sup>1</sup>; or (b) Moorings in a USACE Federal Navigation Anchorage or USACE Federal Navigation Channel, except municipal-operated mooring fields.

**Self-Verification Eligible**

1. New or relocated moorings that meet all the following terms:
  - a. Authorized by a local harbormaster/municipality under MGL Chapter 91 §10A; and
  - b. No interference with navigation; and
  - c. Single boat, single-point and non-commercial; and
  - d. Not associated with a boating facility, and
  - e. Neither placed within nor impact tidal vegetated shallows (e.g., eelgrass); and
  - f. Not located within a USACE Federal navigation project (FNP) or the FNP buffer zone.
2. Existing, authorized moorings are converted from traditional moorings to low impact mooring technology (see note below) and/or helical anchors.
3. Maintenance and replacement of moorings authorized by the USACE.

**Pre-Construction Notification Required**

1. New mooring fields; or expansions, boundary reconfigurations or modifications of existing, authorized mooring fields.
2. Moorings located such that they, and/or vessels docked or moored at them, are within the buffer zone of the horizontal limits of a Federal Anchorage. The buffer zone is equal to 3 times the authorized depth of that channel (see GC 15).
3. New individual moorings located in saltmarsh, mudflats, natural rocky habitat, and tidal vegetated shallows. Locating moorings these areas should be avoided to the maximum extent practicable. If these areas cannot be avoided, plans should show conservation mooring or low-impact mooring systems that prevent mooring chains from resting or dragging on the bottom substrate at all tides, where practicable. USACE may require a survey in areas previously mapped as containing eelgrass or within 100 ft. of existing eelgrass beds to document presence or absence of eelgrass and to determine the appropriate type and amount of compensatory mitigation for impacts to eelgrass.
4. Replacement moorings located in tidal vegetated shallows.
5. Moorings that are not SV eligible and do not require an IP.

**Notes:**

1. Low impact mooring systems, including conservation moorings, are encouraged to minimize impacts of chain scouring from conventional moorings during the tidal cycle.
2. An SVN submittal to USACE is not required for work authorized under SV #2-3 above.

<sup>1</sup> 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 out hauls, 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  $\leq 600$  SF combined; and (ii) Non-tidal navigable waters of the U.S. total  $\leq 600$  SF combined; and
  - b. Piers are  $\leq 4$  feet wide and  $\geq 6$  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  $\geq 24$  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  $\geq 25$  feet from previously mapped or existing vegetated shallows, or riparian property line extensions; (ii) Extend  $\leq 25\%$  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  $\leq 12$ -inch diameter timber piles. Installation of  $\geq 12$ -inch diameter piles of any material type when installed in the dry.
2. Fenders and similar structures.

**Pre-Construction Notification Required**

1. Shore out hauls.
2. Expansions, modifications, or new reconfiguration zones at any authorized boating facility.
3. New, expansions, reconfigurations, reconfiguration zones, or modifications of structures that provide public, community or government recreational uses such as boating, fishing, swimming, access, etc.
4. Installation of steel piles, including steel sheet piles, that cannot be done in the dry and where NOAA-ESA listed species are mapped as present.
5. Located within the buffer zone of the horizontal limits of an FNP (GC 15).
6. Miscellaneous structures.
7. Impacts in tidal vegetated shallows.
8. Structures that are not SV eligible and do not require an IP.

**Notes:**

1. See GC 19 regarding pile driving and pile removal in navigable waters and
2. See GC 20 regarding time of year restrictions in tidal waters.
3. Boating facilities are facilities that provide for a fee, rent, or sell mooring space, such as marinas, yacht clubs, boat clubs, boat yards, town facilities, dockominiums, etc. Pile supported structures with no discharges of dredged or fill material are not regulated by USACE in non-navigable waters.
4. A SVN submittal to USACE is not required for SV #2 above.

**GP 5. BOAT RAMPS AND MARINE RAILWAYS (Authorities: §10 and §404)**

Activities required for the construction of boat ramps and marine railways, including excavation and fill.

**Not authorized under GP 5 (IP required):** (a) Permanent impacts that are >1 acre in non-tidal waters of the U.S., >½ acre in tidal waters; >1000 SF in saltmarsh, mud flats, riffle and pool complexes, or non-tidal vegetated shallows; or >100 SF in tidal vegetated shallows; (b) Temporary impacts in tidal waters that are >1 acre; >5000 SF in saltmarsh, mud flats, or riffle and pool complexes; or >1000 SF in vegetated shallows<sup>1</sup>; 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 pipelines<sup>1</sup>, outfall or intake structures<sup>2</sup>, 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.<sup>3</sup>

**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.

<sup>1</sup> See the definitions of a “utility line” and “oil or natural gas pipeline” in Section VII.

<sup>2</sup> Outfall structures must be in compliance with regulations issued under the National Pollutant Discharge Elimination System Program (Section 402 of the Clean Water Act).

<sup>3</sup> Temporary impacts shall comply with all GCs, including GC 32 Utility Line Installation and Removal.

**GP 7. DREDGING (Authority: §10), DISPOSAL OF DREDGED MATERIAL (Authorities: §10, §404), BEACH NOURISHMENT (Authorities: §10 & §404), ROCK REMOVAL (Authority: §10) AND ROCK RELOCATION (Authorities: §10 & §404)**

New, improvement and maintenance dredging (see notes below) including: (a) Disposal of dredged material at a confined aquatic disposal cell, beach nourishment location, near shore site, or ocean disposal site selected under Section 404 of the Clean Water Act pursuant to the 404(b)(1) Guidelines, provided the dredged material meets the requirements for such disposal; (b) Beach nourishment not associated with dredging; and (c) Rock removal and relocation for navigation.

**Not authorized under GP 7 (IP required):** (a) Dredging where ocean disposal is required for the disposal of dredged material (Section 103); New dredging >½ acre; ≥10,000 CY; >1000 SF permanent impacts to intertidal areas, saltmarsh, mud flats, riffle and pool complexes, or non-tidal vegetated shallows; or >100 SF permanent impacts to tidal vegetated shallows; (b) Maintenance or improvement dredging and/or disposal with >1 acre of impacts to intertidal areas, saltmarsh, mudflats, riffle and pool complexes, or non-tidal vegetated shallows; (c) New dredging where the primary purpose is sand mining for beach nourishment; (d) Beach scraping; (e) Boulder removal and relocation for navigation >½ acre; or (f) Blasting.

**Self-Verification Eligible**

1. Maintenance dredging of previously dredged areas, with upland disposal, that meet all of the following terms:
  - a. Dredged area ≤1/2 acre; and
  - b. Activities comply with GC 20, TOY Restrictions. The time-of-year restriction(s) stated in Appendix B of the MA Division of Marine Fisheries (DMF) Technical Report TR-47<sup>1</sup> 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.

<sup>1</sup> 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  $\leq 5,000$  SF.
  - b. Combined permanent and temporary impacts that are  $\leq 1,000$  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  $>1/2$  acre.

**Self-Verification Eligible**

1. In non-tidal waters, the combined permanent and temporary impacts are (a)  $\leq 1/2$  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  $\leq 1/2$  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)  $\leq 5,000$  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 SHORELINES<sup>1</sup> (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  $\geq 1000$  feet in length along the bank ( $\geq 2000$  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  $\leq 100$  LF for each bank ( $\leq 200$  LF for both banks).
2. Combined permanent and temporary impacts  $\leq 5,000$  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.

<sup>1</sup> 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)**

Activities<sup>1</sup> 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.

<sup>1</sup> 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 situation<sup>1</sup>, 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).

<sup>1</sup> 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](http://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](http://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](http://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](http://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  $\geq 1$  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](https://www.habitat.noaa.gov/application/efhmapper/oa2_efh_hapc.pdf)). If an activity is located within EFH, the PCN application must contain:

1. A description of the action located in EFH.
2. An analysis of the potential adverse effects of the action on EFH and the managed Species.
3. Conclusions regarding the effects of the action on EFH.
4. Proposed mitigation, if applicable (refer to the mitigation thresholds located in Section V).

c. Federal agencies shall follow their own procedures for complying with the EFH requirements of the Magnuson-Stevens Fishery Conservation and Management Act. For activities requiring a PCN, the applicant is responsible for furnishing documentation that demonstrates consultation for EFH has been completed.

d. For PCN activities, no work may commence until EFH consultation as required by the Magnuson-Stevens Act has been completed.

**12. National Lands.** Activities that impinge upon the value of any National Wildlife Refuge, National Forest, National Marine Sanctuary, National Historic Landmarks or any other area administered by the National Park Service, U. S. Fish and Wildlife Service (USFWS) or U.S. Forest Service (USFS) require a PCN or Individual Permit. Federal land managers seeking authorization for activities located in the above listed National Lands may proceed under SV, unless a PCN is required elsewhere in this document.

**13. Wild and Scenic Rivers.** The following activities in designated river or study river segments in the National Wild and Scenic River (WSR) System require a PCN unless the Federal agency with direct management responsibility for such river, in Massachusetts this is generally the National Park Service, has determined in writing to the proponent that the proposed work will not adversely affect the WSR designation or study status:

- a. Activities that occur in WSR segments, in and 0.25 miles up or downstream of WSR segments, or in tributaries within 0.25 miles of WSR segments;
- b. Activities that occur in wetlands within 0.25 miles of WSR segments;
- c. Activities that have the potential to alter free-flowing characteristics in WSR segments.

No GP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.

As of May 10, 2023, affected rivers in Massachusetts include: the Taunton River (40 miles), Sudbury River (16.6 miles), Assabet River (4.4 miles), Concord River (8 miles), Nashua River (27 miles), Squannacook River (16.3 miles), Nissitissit River (4.7 miles), and the Westfield River, including West Branch, Middle Branch, Gendale Brook, East Branch, Drowned Land Brook, Center Brook, Windsor Jambs Brook, Shaker Mill Brook, Depot Brook, Savery Brook, Watson Brook, Center Pond Brook (78.1 miles). The most up to date list of designated and study rivers and their descriptions may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service). Information on these rivers is also available at: <http://www.rivers.gov/>.

#### **14. Historic Properties**

- a. For all SV and PCN applications, permittees shall follow the guidance set forth in Appendix A, Guidance for NHPA Section 106 Compliance in Massachusetts.
- b. No undertaking authorized by these GPs shall cause effects<sup>1</sup> (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)<sup>2</sup>, 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.

<sup>1</sup> 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.

<sup>2</sup> See the NAE Regulatory website, National Register of Historic Places link here: <https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/>.

- c. Many historic properties are not listed on the NRHP and may require identification and evaluation by qualified historic preservation and/or archaeological consultants. The State Historic Preservation Officer (SHPO), Massachusetts Board of Underwater Archaeological Resources (BUAR), local historical societies, certified local governments, general public, and NRHP may also be able to assist with locating information on:
- i. Previously identified historic properties; and
  - ii. Areas with potential for the presence of historic properties.
- d. **Discovery of Previously Unknown Remains and Artifacts:** If any previously unidentified human remains, cultural deposits, or artifacts are discovered while accomplishing the activity authorized by this permit, you must immediately notify the USACE of what you have found, and to the maximum extent practicable, cease work and avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The USACE will initiate the Federal, State and tribal coordination required to determine if the items or remains warrant a recovery effort and/or if the site is eligible for listing in the National Register of Historic Places.
- e. **Section 110k:** Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C. § 306113) prevents the USACE from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106, has intentionally significantly adversely effected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the USACE, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the USACE is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties effected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or effects historic properties on tribal lands or effects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.
- f. **Underwater Archaeological Resources:** Under Massachusetts General Law Ch. 6, s.'s 179-180, and Ch. 91, s. 63, the BUAR has statutory jurisdiction within state waters and is the sole trustee of the Commonwealth's underwater heritage, charged with the responsibility of encouraging the discovery and reporting, as well as the preservation and protection, of underwater archaeological resources. Underwater archaeological resources located within the waters of the Commonwealth of Massachusetts are property of the Commonwealth, which holds title to these resources and retains regulatory authority over their use. Under Massachusetts General Law, no person, organization or corporation may "remove, displace, damage, or destroy" any underwater archaeological resources located within the Commonwealth's submerged lands except through consultation with the BUAR and in conformity with the permits it issues. <https://www.mass.gov/orgs/board-of-underwater-archaeological-resources>.

#### **15. USACE Property and Federal Projects. (33 USC §408)**

- a. USACE projects and property can be found at: <https://www.nae.usace.army.mil/Missions/Civil-Works/>.
- b. In addition to any authorization under these GPs, prospective permittee shall contact the USACE Real Estate Division (<https://www.nae.usace.army.mil/Missions/Real-Estate-Division/>) at (978) 318-8585 for work occurring on or potentially affecting USACE properties and/or USACE-controlled easements. Work may not commence on USACE properties and/or USACE-controlled easements until they have received any required USACE real estate documents evidencing site-specific permission to work.
- c. Any proposed temporary or permanent occupation or alteration of a Federal project (including, but not limited to, a levee, dike, floodwall, channel, anchorage, breakwater, seawall, bulkhead, jetty, wharf, pier, or other work built or maintained but not necessarily owned by the United States),

is not eligible for SV and requires a PCN. This includes all proposed structures and work in, over, or under a USACE federal navigation project (FNP) or in the FNP's buffer zone. The buffer zone is an area that extends from the horizontal limits of the FNP to a distance of three times the FNP's authorized depth. The activity also requires review and approval by the USACE pursuant to 33 USC 408 (Section 408 Permission). The prospective permittee may reach out to the POCs located here: <https://www.nae.usace.army.mil/Missions/Section-408/>.

d. Any structure or work constructed in a FNP or its buffer zone shall be subject to removal at the owner's expense prior to any future USACE dredging or the performance of periodic hydrographic surveys.

e. Where a Section 408 permission is required, written verification for the PCN will not be issued prior to the decision on the Section 408 permission request.

## 16. Navigation

a. No activity may cause more than a minimal adverse effect on navigation.

b. Any safety lights and signals prescribed by the U.S. Coast Guard, must be installed, and maintained at the permittee's expense on authorized facilities in navigable waters of the U.S.

c. There shall be no unreasonable interference with navigation by the existence or use of the activity authorized herein, and no attempt shall be made by the permittee to prevent the full and free use by the public of all navigable waters at or adjacent to the activity authorized herein.

d. The permittee understands and agrees that if future U.S. operations require the removal, relocation, or other alteration of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from USACE, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the U.S. No claim shall be made against the U.S. on account of any such removal or alteration.

**17. Permit/Authorization Letter On-Site.** For PCNs, the permittee shall ensure that a copy of these GPs and the accompanying authorization letter are at the work site (and the project office) whenever work is being performed, and that all personnel with operational control of the site ensure that all appropriate personnel performing work are fully aware of its terms and conditions. The entire permit authorization shall be made a part of any and all contracts and sub-contracts for work that affects areas of USACE jurisdiction at the site of the work authorized by these GPs. This shall be achieved by including the entire permit authorization in the specifications for work. The term "entire permit authorization" means these GPs, including GCs and the authorization letter (including its drawings, plans, appendices, special conditions, and other attachments), and any permit modifications. If the authorization letter is issued after the construction specifications, but before receipt of bids or quotes, the entire permit authorization shall be included as an addendum to the specifications. If the authorization letter is issued after receipt of bids or quotes, the entire permit authorization shall be included in the contract or sub-contract as a change order. Although the permittee may assign various aspects of the work to different contractors or sub-contractors, all contractors and sub-contractors shall be obligated by contract to comply with all environmental protection provisions contained within the entire authorization letter, and no contract or sub-contract shall require or allow unauthorized work in areas of USACE jurisdiction. For SVs, the permittee shall ensure that a complete and signed copy of the SVN is present on site during construction and is made available for review at any time by USACE and other Federal, State, & Local regulatory agencies. A complete and signed copy of the SVN must be submitted to USACE Regulatory within 30 days of initiating construction of the authorized activity, unless stated otherwise in the applicable GP.

**18. Storage of Seasonal Structures.** Coastal structures such as pier sections, floats, etc., that

are removed from the waterway for a portion of the year (often referred to as seasonal structures) shall be stored in an upland location, located above MHW and not in tidal wetlands. These seasonal structures may be stored on the fixed, pile-supported portion of the structure that is seaward of MHW. This is intended to prevent structures from being stored on the marsh substrate and the substrate seaward of MHW.

### **19. Pile Driving and Pile Removal in Navigable Waters.**

- a. Derelict, degraded or abandoned piles and sheet piles in navigable waters of the U.S., except for those inside existing work footprints for piers, must be completely removed, cut and/or driven to 3 feet below the substrate to prevent interference with navigation, and existing creosote piles that are affected by project activities shall be completely removed if practicable. In areas of fine-grained substrates, piles must be removed by the direct, vibratory or clamshell pull method<sup>1</sup> to minimize sedimentation and turbidity impacts and prevent interference with navigation from cut piles. Removed piles shall be disposed of in an upland location landward of MHW or OHW and not in wetlands, tidal wetlands or mudflats.
- b. A PCN is required for the installation or removal of structures with jetting techniques.
- c. A PCN is required for the installation of >12 inch-diameter piles of any material type or steel piles of any size in tidal waters, unless they are installed in the dry. If piles are not installed in the dry:
  - i. Impact pile driving shall commence with an initial set of three strikes by the hammer at 40% energy, followed by a one-minute wait period, then two subsequent 3-strike sets at 40% energy, with one minute waiting periods, before initiating continuous impact driving.
  - ii. Vibratory pile driving shall be initiated for 15 seconds at reduced energy followed by a one-minute waiting period. This sequence of 15 seconds of reduced energy driving, one-minute waiting period shall be repeated two more times, followed immediately by pile-driving at full rate and energy.
  - iii. In addition to using a soft start at the beginning of the workday for pile driving as described in 19c(i-ii), a soft start must also be used at any time following a cessation of pile driving for a period of 30 minutes or longer.
- d. Bubble curtains may be used to reduce sound pressure levels during vibratory or impact hammer pile driving.

**20. Time-of-Year (TOY) Restrictions.** Activities that include in-water work must comply with the TOY Restrictions below to be SV eligible, otherwise a PCN is required. PCN submittals shall contain written justification for deviation from the TOY Restrictions. The term “in-water work” does not include conditions where the work site is “in-the-dry” (e.g., intertidal areas exposed at low tide). The term “in-the-dry” includes work contained within a cofferdam so long as the cofferdam is installed and subsequently removed outside the TOY Restriction. The TOY restrictions stated in Appendix B of the MA DMF Technical Report TR-47<sup>2</sup> 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.

<sup>1</sup> 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.

<sup>2</sup> 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  $\leq 3$  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  $\leq 1$  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  $\leq 6$  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 controls<sup>1</sup> (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.

<sup>1</sup> 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 loss<sup>1</sup> of the resource area types listed below. Activities<sup>2</sup> 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).

<sup>1</sup> See definition of loss in Section VII.

<sup>2</sup> 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](http://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 &amp; Waterways</u>                       | 100 Cambridge Street, Suite 900<br>Boston, Massachusetts 02114<br>(617) 292-5695  |
| <u>Northeast Region</u>   | 150 Presidential Way, Suite 300<br>Woburn, Massachusetts 01801<br>(978) 694-3200  |
| <u>Southeast Region</u>   | 20 Riverside Drive, Route 105<br>Lakeville, Massachusetts 02347<br>(508) 946-2800 |
| <u>Central Region</u>   | 8 New Bond Street<br>Worcester, Massachusetts 01606<br>(508) 792-7650             |
| <u>Western Region</u>   | 436 Dwight Street<br>Springfield, Massachusetts 01103<br>(413) 784-1100           |

| <u>Massachusetts Office of Coastal Zone Management (CZM)</u>          |  |
|---|--|
| Emails may be sent to: <a href="mailto:czm@mass.gov">czm@mass.gov</a> |  |
| <u>MA Office of Coastal Zone Management</u>                           | 100 Cambridge Street, Suite 900<br>Boston, Massachusetts 02114<br>(617) 626-1200 |
| <u>North Shore Region</u>   | 2 State Fish Pier<br>Gloucester, Massachusetts 01930<br>(978) 281-3972           |
| <u>South Shore Region</u>   | 175 Edward Foster Road<br>Scituate, Massachusetts 02066                          |
| <u>Cape Cod and Islands Region</u>                                    | 3195 Main Street, P.O. Box 220<br>Barnstable, MA 02630                           |
| <u>South Coastal Region</u>   | 81-B County Road, Suite E<br>Mattapoisett, MA 02739                              |

| <u>Massachusetts Historical Commission (MHC)</u> |  |
|--|--|
| Office Location:                                 | 220 Morrissey Boulevard<br>Boston, Massachusetts 02125<br>(617) 727-8470 |

| <u>Massachusetts Board of Underwater Archaeological Resources (BUAR)</u>                        |  |
|---|--|
| Emails may be sent to: <a href="mailto:david.s.robinson@mass.gov">david.s.robinson@mass.gov</a> |  |
| Office Location:  | 100 Cambridge Street, Suite 900<br>Boston, Massachusetts 02114<br>(617) 626-1014 |

## **SECTION VII: Definitions & Acronyms**

**Artificial or Living Reef:** A structure which is constructed or placed in waters for the purpose of enhancing fishery resources and commercial and recreational fishing opportunities.

**Attendant Features:** Occurring with or as a result of; accompanying.

**Biodegradable:** A material that decomposes into elements found in nature within a reasonably short period of time and will not leave a residue of plastic or a petroleum derivative in the environment after degradation. In contrast, degradable plastics break down into plastic fragments that remain in the environment after degradation. Examples of biodegradable materials include jute, sisal, cotton, straw, burlap, coconut husk fiber (coir) or excelsior. In contrast, degradable plastics break down into plastic fragments that remain in the environment after degradation. Photodegradable, UV degradable or Oxo-(bio)degradable plastics are not considered biodegradable under this GP.

**Boating facilities:** These provide, rent or sell mooring space, such as marinas, yacht clubs, boat yards, 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](http://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](http://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  
 Malden River  
 Menemsha Creek  
 Merrimack River  
 Mystic River  
 Nantucket Harbor of Refuge  
 New Bedford and Fairhaven Harbor  
 Newburyport Harbor  
 Oak Bluffs Harbor  
 Pigeon Cove Harbor

Plymouth Harbor  
 Pollock Rip Shoals, Nantucket Sound  
 Provincetown Harbor  
 Red Brook Harbor  
 Rockport Harbor  
 Salem Harbor  
 Sandy Bay Harbor of Refuge  
 Saugus River  
 Scituate Harbor  
 Sesuit Harbor

Taunton River  
 Vineyard Haven Harbor  
 Wareham Harbor  
 Wellfleet Harbor  
 Westport River and Harbor  
 Weymouth Back River  
 Weymouth Fore and Town Rivers  
 Winthrop Harbor  
 Woods Hole Channel

**Flume:** An open artificial water channel, in the form of a gravity chute, which leads water from a diversion dam or weir alongside a natural flow. A flume can be used to measure the rate of flow.

**FNP buffer zone:** The buffer zone of a USACE Federal Navigation Project (FNP) is equal to three times the authorized depth of the FNP.

**Frac out:** During horizontal directional drilling (HDD) operations, drilling fluid travels up the borehole into a pit. When the borehole becomes obstructed or the pressure becomes too great inside the borehole, the ground fractures and fluid escapes to the surface and may affect surface waters.

**Ground disturbance:** Any activity that compacts, relocates, overturns, removes, mixes, or otherwise disturbs the ground, including under water. Ground disturbance can be caused by the use of hand tools (shovels, pick axe, posthole digger, etc.), heavy equipment (excavators, backhoes, bulldozers, dredgers, trenching and earthmoving equipment, etc.), and heavy trucks (large four wheel drive trucks, dump trucks and tractor trailers, etc.). Trenching, bulldozing, dredging, excavating, scraping, and plowing are typical examples of ground disturbance activities.

**Height:width ratio:** The height of structures shall at all points be equal to or exceed the width of the deck. For the purpose of this definition, height shall be measured from the marsh substrate to the bottom of the longitudinal support beam.

**High Tide Line (HTL):** The line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides 58 that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds. (33 CFR 328). Refer to the highest predicted tide for the current year at the nearest NOAA tide gage. <https://tidesandcurrents.noaa.gov/map/index.html>

**Historic Property:** Any prehistoric or historic site (including archaeological sites), district, building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60).

**Impacts:**

**Direct Impacts:** Effects that are caused by the activity and occur at the same time and place (40 CFR 1508.7).

**Indirect impacts:** Effects that are caused by the activity and are later in time or farther removed in distance, but are still reasonably foreseeable.

**Secondary impacts:** Effects on an aquatic ecosystem that are associated with a discharge of dredged or fill materials, but do not result from the actual placement of the dredged or fill material.

Information about secondary effects on aquatic ecosystems shall be considered prior to the time final section 404 action is taken by permitting authorities. Some examples of secondary effects on an aquatic ecosystem are: aquatic areas drained, flooded, fragmented; fluctuating water levels in an impoundment and downstream associated with the operation of a dam; septic tank leaching and surface runoff from residential or commercial developments on fill; and leachate and runoff from a sanitary landfill located in waters of the U.S. See 40 CFR 230.11(h).

**Incidental Fallback:** Incidental fallback is the redeposit of small volumes of dredged material that is incidental to excavation activity in waters of the U.S. when such material falls back to substantially the same place as the initial removal (33 CFR 323.2(d)(2)(iii)).

**In the dry:** Work that is done under dry conditions, e.g., work behind cofferdams or when the stream or tide is waterward of the work.

**Independent utility:** A test to determine what constitutes a single and complete non-linear project in the USACE Regulatory Program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

**Individual permit:** A Department of the Army authorization that is issued following a case-by-case evaluation of a specific structure or work in accordance with the procedures of 33 CFR 322, or a specific project involving the proposed discharge(s) in accordance with the procedures of 33 CFR 323, and in accordance with the procedures of 33 CFR 325 and a determination that the proposed discharge is in the public interest pursuant to 33 CFR 320.

**Intermittent stream:** An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.

**Intertidal:** The area in between mean low water and the high tide line.

**Living reef:** See the definition of "artificial or living reef."

**Living shoreline:** A term used to describe a low-impact approach with a substantial biological component to shoreline protection and restoration along coastal shores, riparian zones, lacustrine fringe wetlands, or oyster or mussel reef structures. This approach integrates natural features to restore, enhance, maintain, or create habitat, functions, and processes while also functioning to mitigate flooding or shoreline erosion. Living shorelines may stabilize banks and shores with small fetch and gentle slopes that are subject to low-to mid-energy waves. A living shoreline has a footprint that is made up mostly of native material. It incorporates vegetation or other living, natural "soft" elements alone or in combination with some type of harder shoreline structure (e.g., oyster or mussel reefs or rock sills) for added protection and stability. Living shorelines should maintain the natural continuity of the land-water interface and retain or enhance shoreline ecological processes.

**Loss of waters of the United States:** Waters of the U.S. that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. The loss of stream bed includes the acres of stream bed that are permanently adversely affected by filling or excavation because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the U.S. is a threshold measurement of the impact to jurisdictional waters or wetlands for determining whether a project may qualify for a GP; it is not a net threshold that is calculated after considering compensatory mitigation that maybe used to offset losses of aquatic functions and services. Waters of the U.S. temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the U.S. Impacts resulting from activities that do not require Department of the Army authorization, such as activities eligible for exemptions under section 404(f) of the Clean Water Act, are not considered when calculating the loss of waters of the U.S.

**Maintenance:** The repair, rehabilitation, or in-kind replacement of any previously authorized, currently serviceable structure or fill, or of any currently serviceable structure or fill authorized by 33 CFR 330.3 – “Activities occurring before certain dates,” provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification. Maintenance includes minor deviations in the structure’s configuration or filled area, including those due to changes in materials, construction techniques, or current construction codes or safety standards that are necessary to make repair, rehabilitation, or replacement are authorized. Currently serviceable means useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

**Maintenance Exemption:** In accordance with 33 CFR 323.4(a)(2), any discharge of dredged or fill material that may result from any of the following activities is not prohibited by or otherwise subject to regulation under Section 404 of the CWA: “Maintenance, including emergency reconstruction of recently damaged parts, of currently serviceable structures such as dikes, dams, levees, groins, riprap, breakwaters, causeways, bridge abutments or approaches, and transportation structures. Maintenance does not include any modification that changes the character, scope, or size of the original fill design.”

**Mean high water:** Line on the shore reached by the plane of the average high water. Where precise determination of the actual location of the line becomes necessary, it must be established by survey with reference to the available tidal datum, preferably averaged over a period of 18.6 years. Less precise methods, such as observation of the “apparent shoreline” which is determined by reference to physical markings, lines of vegetation, or changes in type of vegetation, may be used only where an estimate is needed of the line reached by the mean high water.

**Mechanized land clearing:** Land clearing activities using mechanized equipment such as backhoes or bulldozers with shear 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 substrate 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](http://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](http://www.nae.usace.army.mil/missions/regulatory/state-general-permits/massachusetts-general-permit).

**Vernal pools:** For the purposes of these GPs, vernal pools are depressional wetland basins that typically dry up in most years and may contain inlets or outlets, typically of intermittent flow. Vernal pools range in both size and depth depending upon landscape position and parent material(s). In

most years, vernal pools support one or more of the following obligate indicator species: wood frog, spotted salamander, blue-spotted salamander, marbled salamander, Jefferson's salamander and fairy shrimp. However, they should preclude sustainable populations of predatory fish.

**Water diversions:** Water diversions are activities such as bypass pumping (e.g., "dam and pump") or water withdrawals. Temporary flume pipes, culverts or cofferdams where normal flows are maintained within the stream boundary's confines aren't water diversions. "Normal flows" are defined as no change in flow from pre-project conditions.

**Waters of the United States (U.S.)** These waterbodies are the waters where permits are required for the discharge of dredged or fill material pursuant to §404 of the CWA. These waters include but are not limited to navigable waters of the U.S. and tidal wetlands and include many non-tidal wetlands and other waterbodies. See definitions for navigable waters of the U.S., tidal wetlands, waterbody, and non-tidal wetlands. (33 CFR 328)

**Waterbody:** Examples of "waterbodies" include oceans, coastal waters, rivers, streams, ditches, lakes, ponds, and wetlands. If a wetland is adjacent to a waterbody determined to be a water of the U.S., that waterbody and any adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)).

**Weir:** A barrier across a river designed to alter the flow characteristics. In most cases, weirs take the form of a barrier, smaller than most conventional dams, across a river that causes water to pool behind the structure and allows water to flow over the top. Weirs are commonly used to alter the flow regime of a river, prevent flooding, measure discharge and help render a river navigable.

**Wetland:** Wetlands are areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. The Corps of Engineers Wetlands Delineation Manual in conjunction with the associated regional supplement should be used to determine if a wetland is present and delineate wetland boundaries.

**Acronyms**

|         |  |
|---------|--|
| BMPs    | Best Management Practices                                  |
| BUAR    | Massachusetts Board of Underwater Archaeological Resources |
| CWA     | Clean Water Act  |
| CZM     | Coastal Zone Management                                    |
| EPA     | U.S. Environmental Protection Agency                       |
| ESA     | Endangered Species Act                                     |
| EFH     | Essential Fish Habitat                                     |
| FNP     | Federal Navigation Project                                 |
| GC      | General Condition  |
| GP      | General Permit   |
| HTL     | High Tide Line   |
| IP      | Individual Permit  |
| LID     | Low impact development                                     |
| MassDEP | Massachusetts Department of Environmental Protection       |
| MA DMF  | Massachusetts Division of Marine Fisheries                 |
| MHC     | Massachusetts Historical Commission                        |
| MHW     | Mean High Water  |
| MLLW    | Mean Lower Low Water                                       |
| MLW     | Mean Low Water   |
| NHPA    | National Historic Preservation Act                         |
| NMFS    | National Marine Fisheries Service                          |
| OHW     | Ordinary High Water Mark                                   |
| PCN     | Preconstruction Notification                               |
| SAS     | Special Aquatic Sites                                      |
| SF      | Square Feet  |
| SV      | Self-Verification  |
| SHPO    | State Historic Preservation Officer                        |
| THPO    | Tribal Historic Preservation Officer                       |
| USFWS   | U.S. Fish and Wildlife Service                             |
| USCG    | U.S. Coast Guard   |
| USFS    | U.S. Forest Service  |
| USGS    | U.S. Geological Service                                    |
| WQC     | Water Quality Certification                                |

## Appendix A: Guidance for NHPA Section 106 Compliance in Massachusetts

### 1. Purpose & Applicability

Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA) (54 U.S.C § 306108), requires Federal agencies to take into account the effects of their undertakings on Historic Properties and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings. Therefore, in order for an activity to be eligible for authorization under the 2023 Massachusetts General Permit, the USACE must consider the effect the activity may have on historic properties. Historic properties may include, but are not limited to, historic districts, archaeological districts, sites, buildings, structures, objects, sacred sites, traditional cultural places, and traditional cultural landscapes that are included in, or eligible for inclusion in, the National Register of Historic Places (NRHP).

This guidance applies to projects that require authorization under Section 404 of the Clean Water Act (33 U.S.C. § 1344) and/or Section 10 of the Rivers and Harbors Act (33 U.S.C. §403) and will assist applicants when evaluating and documenting the presence of historic properties within or near their project site(s). The prospective applicant will evaluate their proposed project using the criteria below to determine if their project has the potential to affect historic properties and if so, whether or not historic properties are present or are likely to be present. All activities authorized under these GPs shall follow the terms outlined in General Condition 14: Historic Properties and General Condition 6: Tribal Rights & Burial Sites. Prospective applicants shall complete their due diligence according to the procedures below for their application to be deemed complete.

### 2. No Potential to Affect Historic Properties

Certain activities do not have the potential to cause effects on historic properties, assuming such historic properties were present, based on the nature of the activity and site-specific conditions. Therefore, these activities **do not** require historic property identification efforts or notification of the SHPO, THPOs, and/or BUAR under Section 106. The USACE has determined the following activities within the stated parameters have no potential to affect historic properties:

| General Permit | Activity Parameters   |
|----------------|---|
| 1              | Temporary buoys, markers and similar structures that are placed during winter events on ice and removed before spring thaw.   |
| 2              | Repair or rehabilitation of structures that are less than 45 years in age. Any temporary structures or fills or work necessary to complete repairs or rehabilitation must not result in any ground disturbance.   |
| 3              | Maintenance and replacement of moorings that are less than 45 years in age.   |
| 6              | Maintenance, repair, replacement, or removal of utility lines, oil or natural gas pipelines, outfall or intake structures, and/or appurtenant features that are less than 45 years in age when all access, staging, and ground disturbance is strictly limited to previously disturbed areas (including any previous ground disturbance). Replacement must be in kind or smaller in size.<br><br>Installation of tide gates on outfall structures that are less than 45 years in age. |
| 7              | Maintenance dredging of previously dredged areas where dredging does not extend beyond the original bottom elevations.  |

|    |   |
|----|---|
|    | Disposal of dredged material at an existing established and USACE-approved confined aquatic disposal cell.<br>Beach nourishment in ongoing existing nourishment areas.  |
| 11 | Fish and wildlife harvesting and attraction devices and activities.   |
| 13 | Cleanup of hazardous and toxic waste materials, including contaminated sediments, that are less than 45 years in age.   |
| 16 | Removal of land-based and water-based renewable energy generation facilities and hydropower projects that are less than 45 years in age.  |
| 18 | Installation of buoys, floats, racks, trays, nets, lines, tubes, containers, and other structures for previously authorized by the USACE and ongoing aquaculture activities.<br>Discharges of dredged or fill material into tidal or non-tidal waters necessary for shellfish seeding, rearing, cultivating, transplanting, and harvesting activities for previously authorized and ongoing aquaculture activities. |
| 20 | Maintenance activities for existing living shorelines <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 Form<sup>18</sup>, 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](mailto: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

<sup>18</sup> <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](mailto: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](mailto: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](mailto:106review@mwtribe-nsn.gov)  
Cc: [David.weeden@mwtribe-nsn.gov](mailto: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](mailto: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](mailto:thpo@mohican-nsn.gov)

Applicants or their representative must send project information via email (***preferred***) or regular mail and provide proof of receipt or proof of delivery.

Area of concern: West of the Connecticut River and Northfield, Montague, Miller's Falls, Turner's Falls, Sunderland, Amherst, Hadley, South Hadley, Chicopee, Springfield and Longmeadow.

**APPENDIX B PRE-CONSTRUCTION NOTIFICATION**

**U.S. Army Corps of Engineers (USACE), New England District (NAE)  
PRE-CONSTRUCTION NOTIFICATION (PCN)**

**DATA REQUIRED BY THE PRIVACY ACT OF 1974**

**Authority** Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332.

**Principal Purpose** The information provided will be used in evaluating activities under Pre-Construction Notification procedures within New England.

**Routine Uses** This information may be shared with other federal, state, and local government agencies during the application review process. Submission 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](mailto: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<br>First - Middle - Last -<br>Company -<br>E-mail Address -                |  | 8. AUTHORIZED AGENT'S NAME AND TITLE ( <i>agent is not required</i> )<br>First - Middle - Last -<br>Company -<br>E-mail Address - |  |
| 6. APPLICANT'S ADDRESS:<br>Address-<br>City - State - Zip - Country -                          |  | 9. AGENT'S ADDRESS:<br>Address-<br>City - State - Zip - Country -   |  |
| 7. APPLICANT'S PHONE NOs. with AREA CODE<br>a. Residence    b. Business    c. Fax    d. Mobile |  | 10. AGENT'S PHONE NOs. with AREA CODE<br>a. Residence    b. Business    c. Fax    d. Mobile                                       |  |

**STATEMENT OF AUTHORIZATION**

11. I hereby authorize, \_\_\_\_\_ to act on my behalf as my agent in the processing of this general permit PCN application and to furnish, upon request, supplemental information in support of this general permit PCN application.

\_\_\_\_\_  
SIGNATURE OF APPLICANT

\_\_\_\_\_  
DATE

**NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY**

12. PROJECT NAME or TITLE (*see instructions*)

13. NAME OF WATERBODY, IF KNOWN (*if applicable*)

14. PROPOSED ACTIVITY STREET ADDRESS (*if applicable*)

15. LOCATION OF PROPOSED ACTIVITY (*see instructions*)

Latitude:                      °N                      Longitude:                      °W

City:    State:    Zip:

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (*see instructions*)

State Tax Parcel ID:

Municipality:

Section:

Township:

Range:

17. DIRECTIONS TO THE SITE.

18. IDENTIFY THE SPECIFIC GENERAL PERMIT(S) YOU PROPOSE TO USE:

19. DESCRIPTION OF PROPOSED GENERAL PERMIT ACTIVITY (*see instructions*)

20. DESCRIPTION OF PROPOSED MITIGATION MEASURES (*see instructions*)

21. PURPOSE OF GENERAL PERMIT ACTIVITY (*Describe the reason or purpose of the project, see instructions*)

22. Quantity of Wetlands, Streams, or Other Types of Waters Directly Affected by Proposed General Permit Activity (*see instructions*)

| Area (square feet) | Length (linear feet) | Volume (cubic yards) | Duration | Purpose |
|--------------------|----------------------|----------------------|----------|---------|
|                    |                      |                      |          |         |
|                    |                      |                      |          |         |
|                    |                      |                      |          |         |
|                    |                      |                      |          |         |
|                    |                      |                      |          |         |

**Each PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site.**

23. List any other GP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project on any related activity (*see instructions*)

24. If the proposed activity will result in the loss of aquatic resources that exceed those identified in the New England District Compensatory Mitigation Thresholds, explain how the compensatory mitigation requirement will be satisfied. (*see instructions*)

25. Is Any Portion of the General Permit Activity Already Complete?  Yes  No If Yes, describe the completed work:

26. List the name(s) of any species listed as endangered or threatened under the Endangered Species Act that might be affected by the proposed GP activity or utilize the designated critical habitat that might be affected by the proposed GP activity. (*see instructions*)

27. List any historic properties that have the potential to be affected by the proposed GP activity or include a vicinity map indicating the location of the historic property or properties. Attach relevant project information, along with any responses received from project notifications to this submittal. (*see instructions*)

28. For a proposed GP activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, identify the Wild and Scenic River or the "study river":

29. If the proposed GP activity also requires permission from the USACE pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, have you submitted a written request for section 408 permission from the USACE district having jurisdiction over that project?  Yes  No  
 If "yes", please provide the date your request was submitted to the USACE District:

30. Does the activity require a 401 Water Quality Certification (WQC)? If so, specify the type of 401 WQC that is required (general or individual). In cases where an individual 401 WQC is required, provide the date the 401 WQC certification request was submitted to the certifying authority and their contact information.

31. If the terms of the GP(s) you want to use require additional information to be included in the PCN (i.e. sampling and analysis plan), please include that information in this space or provide it on an additional sheet of paper marked Block 30. (*see instructions*)

32. I certify that the information in this pre-construction notification is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

|                        |      |                    |      |
|------------------------|------|--------------------|------|
| SIGNATURE OF APPLICANT | DATE | SIGNATURE OF AGENT | DATE |
|------------------------|------|--------------------|------|

The Pre-Construction Notification must be signed by the person who desires to undertake the proposed activity (applicant) and, if the statement in block 11 has been filled out and signed, the authorized agent.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.

**Instructions for Preparing a  
Department of the Army  
General Permit (GP) Pre-Construction Notification (PCN)**

**Blocks 1 through 4.** To be completed by the U.S. Army Corps of Engineers.

**Block 5. Applicant' Name.** Enter the name and the e-mail address of the responsible party or parties. If the responsible party is an agency, company, corporation, or other organization, indicate the name of the organization and responsible officer and title. If more than one party is associated with the PCN, please attach a sheet of paper with the necessary information marked Block 5.

**Block 6. Address of Applicant.** Please provide the full address of the party or parties responsible for the PCN. If more space is needed, attach an extra sheet of paper marked Block 6.

**Block 7. Applicant Telephone Number(s).** Please provide the telephone number where you can usually be reached during normal business hours.

**Blocks 8 through 11.** To be completed, if you choose to have an agent.

**Block 8. Authorized Agent's Name and Title.** Indicate name of individual or agency, designated by you, to represent you in this process. An agent can be an attorney, builder, contractor, engineer, consultant, or any other person or organization. Note: An agent is not required.

**Blocks 9 and 10. Agent's Address and Telephone Number.** Please provide the complete mailing address of the agent, along with the telephone number where they can be reached during normal business hours.

**Block 11. Statement of Authorization.** To be completed by the applicant, if an agent is to be employed.

**Block 12. Proposed General Permit Activity Name or Title.** Please provide a name identifying the proposed GP activity, e.g., Windward Marina, Rolling Hills Subdivision, or Smith Commercial Center.

**Block 13. Name of Waterbody.** Please provide the name (if it has a name) of any stream, lake, marsh, or other waterway to be directly impacted by the GP activity. If it is a minor (no name) stream, identify the waterbody the minor stream enters.

**Block 14. Proposed Activity Street Address.** If the proposed GP activity is located at a site having a street address (not a box number), enter it in Block 14.

**Block 15. Location of Proposed Activity.** Enter the latitude and longitude of where the proposed GP activity is located. Indicate whether the project location provided is the center of the project or whether the project location is provided as the latitude and longitude for each of the "corners" of the project area requiring evaluation. If there are multiple sites, please list the latitude and longitude of each site (center or corners) on a separate sheet of paper and mark as Block 15.

**Block 16. Other Location Descriptions.** If available, provide the Tax Parcel Identification number of the site, Section, Township, and Range of the site (if known), and / or local Municipality where the site is located.

**Block 17. Directions to the Site.** Provide directions to the site from a known location or landmark. Include highway and street numbers as well as names. Also provide distances from known locations and any other information that would assist in locating the site. You may also provide a description of the location of the proposed GP activity, such as lot numbers, tract numbers, or you may choose to locate the proposed GP activity site from a known point (such as the right descending bank of Smith Creek, one mile downstream from the Highway 14 bridge). If a large river or stream, include the river mile of the proposed GP activity site if known. If there are multiple locations, please indicate directions to each location on a separate sheet of paper and mark as Block 17.

**Block 18. Identify the Specific General Permit(s) You Propose to Use.** List the number(s) of the General Permit(s) you want to use to authorize the proposed activity (e.g., GP 4).

**Block 19. Description of the Proposed General Permit Activity.** Describe the proposed GP activity, including the direct and indirect adverse environmental effects of the proposed activity. The description of the proposed activity should be sufficiently detailed for USACE to determine that the adverse environmental effects of the activity will be no more than minimal. Identify the materials to be used in construction, as well as the methods by which the work is to be done.

Provide drawings to show that the proposed GP activity complies with the terms of the applicable GP(s). Drawings should contain sufficient detail to provide an illustrative description of the proposed GP activity, but do not need to be detailed engineering plans. The written descriptions and illustrations are an important part of the application. Please describe, in detail, what you wish to do. If more space is needed, attach an extra sheet of paper marked Block 19.

**Block 20: Description of Proposed Mitigation Measures.** Describe any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed GP activity. The description of any proposed mitigation measures should be sufficiently detailed for USACE to determine how the measures would avoid and minimize adverse environmental effects. If adverse effects exceed the New England District compensatory mitigation thresholds, you must document how compensatory mitigation would be satisfied in Block 24.

**Block 21. Purpose of General Permit Activity.** Describe the purpose and need for the proposed GP activity. What will it be used for and why? Also include a brief description of any related activities associated with the proposed project. Provide the approximate dates you plan to begin and complete all work.

**Block 22. Quantity of Wetlands, Streams, or Other Types of Waters Directly Affected by the Proposed General Permit Activity.** For discharges of dredged or fill material into Waters of the U.S., provide the amount of wetlands, streams, or other types of waters filled, flooded, excavated, or drained by the proposed GP activity. For structures or work in Navigable Waters of the U.S. subject to Section 10 of the Rivers and Harbors Act of 1899, provide the amount of navigable waters filled, dredged, occupied by one or more structures (e.g., aids to navigation, mooring buoys) by the proposed GP activity. The area of impact includes the structures or fills with direct or indirect effects to waters of the U.S. The length of impact includes the length of a stream, including 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.

# MASSACHUSETTS DEPARTMENT OF TRANSPORTATION HIGHWAY DIVISION

Proposal No. 609250-100975

BILLERICA  
BOSTON RD (ROUTE 3A)  
AT LEXINGTON RD & GLAD VALLEY DR

| STATE            | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|------------------|--------------------|-----------|--------------|
| MA               | -                  | 1         | 30           |
| PROJECT FILE NO. |                    | 609250    |              |

TITLE SHEET & INDEX

## PLAN AND PROFILE OF BOSTON ROAD (ROUTE 3A) AT LEXINGTON ROAD & GLAD VALLEY DRIVE TRAFFIC AND SAFETY IMPROVEMENTS

IN THE TOWN OF  
**BILLERICA**  
MIDDLESEX COUNTY

FEDERAL AID PROJECT NO. -

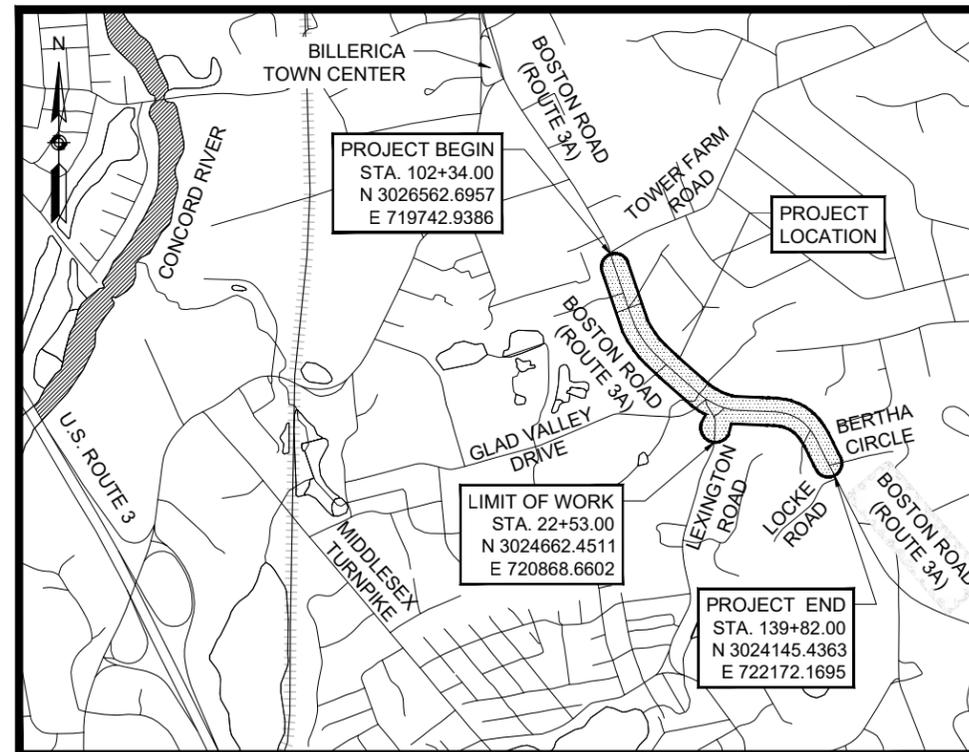
# 100% SUBMITTAL

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.

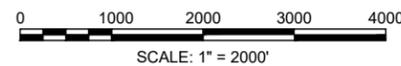
| INDEX     |                                   |
|-----------|-----------------------------------|
| SHEET NO. | DESCRIPTION                       |
| 1         | TITLE SHEET & INDEX               |
| 2         | LEGEND & ABBREVIATIONS            |
| 3         | KEY PLAN & BORING LOG             |
| 4-5       | TYPICAL SECTIONS & PAVEMENT NOTES |
| 6         | GENERAL NOTES                     |
| 7-13      | CONSTRUCTION DETAILS              |
| 14-21     | CONSTRUCTION PLANS                |
| 22-29     | DRAINAGE & UTILITY PLANS          |
| 30        | LANDSCAPE PLAN                    |

### DESIGN DESIGNATION

|                           | BOSTON ROAD (ROUTE 3A)   | LEXINGTON ROAD  | GLAD VALLEY DRIVE |
|---------------------------|--------------------------|-----------------|-------------------|
| DESIGN SPEED              | 40 MPH                   | 35 MPH          | 35 MPH            |
| ADT (2019)                | 22,100                   | 5,400           | 3,400             |
| ADT (2039)                | 26,970                   | 6,590           | 4,150             |
| K                         | 8.2%                     | 8.6%            | 10.0%             |
| D                         | 57% (NB)                 | 69% (NB)        | 64% (WB)          |
| T (PEAK HOUR)             | 1.2%                     | 0.1%            | 0.0%              |
| T (AVERAGE DAY)           | 0.9%                     | 0.4%            | 0.5%              |
| DHV                       | 2,212                    | 567             | 415               |
| DDHV                      | 1,261                    | 392             | 266               |
| FUNCTIONAL CLASSIFICATION | URBAN PRINCIPAL ARTERIAL | URBAN COLLECTOR | LOCAL ROAD        |

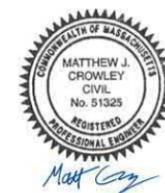


PROJECT LOCATION



BOSTON ROAD (ROUTE 3A) LENGTH OF PROJECT = 3,748 FEET = 0.710 MILES

NOTICE OF INTENT  
PERMIT SET



| DATE       | DESCRIPTION    | REV # |
|------------|----------------|-------|
| 12/19/2023 | NOI PERMIT SET | 0     |
| 8/26/2022  | NOI PERMIT SET | 0     |



APPROVED

CHIEF ENGINEER

DATE

GENERAL SYMBOLS

| EXISTING | PROPOSED | DESCRIPTION   |
|----------|----------|---|
|          |          | JERSEY BARRIER  |
|          |          | CATCH BASIN   |
|          |          | CATCH BASIN CURB INLET                                    |
|          |          | GUTTER INLET  |
|          |          | FLAG POLE   |
|          |          | GAS PUMP  |
|          |          | MAIL BOX  |
|          |          | POST SQUARE   |
|          |          | POST CIRCULAR   |
|          |          | WELL  |
|          |          | ELECTRIC HANDHOLE   |
|          |          | FENCE GATE POST   |
|          |          | GAS GATE  |
|          |          | BORING HOLE   |
|          |          | MONITORING WELL   |
|          |          | TEST PIT  |
|          |          | HYDRANT   |
|          |          | LIGHT POLE  |
|          |          | COUNTY BOUND  |
|          |          | GPS POINT   |
|          |          | CABLE MANHOLE   |
|          |          | DRAINAGE MANHOLE OR CB WITH FRAME AND COVER               |
|          |          | DRAINAGE MANHOLE (5' DIAMETER)                            |
|          |          | ELECTRIC MANHOLE  |
|          |          | GAS MANHOLE   |
|          |          | MISC MANHOLE  |
|          |          | SEWER MANHOLE   |
|          |          | TELEPHONE MANHOLE   |
|          |          | WATER MANHOLE   |
|          |          | MASSACHUSETTS HIGHWAY BOUND                               |
|          |          | MONUMENT  |
|          |          | STONE BOUND   |
|          |          | TOWN OR CITY BOUND  |
|          |          | TRAVERSE OR TRIANGULATION STATION                         |
|          |          | TROLLEY POLE OR GUY POLE                                  |
|          |          | TRANSMISSION POLE   |
|          |          | UTILITY POLE W/ FIREBOX                                   |
|          |          | UTILITY POLE WITH DOUBLE LIGHT                            |
|          |          | UTILITY POLE W / 1 LIGHT                                  |
|          |          | UTILITY POLE  |
|          |          | BUSH  |
|          |          | TREE  |
|          |          | STUMP   |
|          |          | SWAMP / MARSH   |
|          |          | WATER GATE  |
|          |          | PARKING METER   |
|          |          | SIGN  |
|          |          | OVERHEAD CABLE/WIRE                                       |
|          |          | 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                                   |
|          |          | 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  |

PAVEMENT MARKINGS AND SIGNING SYMBOLS

**PROPOSED**

|       |   |
|-------|---|
| CW    | CROSSWALK, 2 - 12" WHITE LINES (8' WIDTH)                 |
| SL    | STOP LINE - 12" WHITE LINE 4' BEHIND CW (TYP.)            |
| SWL   | SOLID WHITE LINE - 6"                                     |
| SWCHL | SOLID WHITE CHANNELIZING LINES - 12" (SPACING NOTED)      |
| SWGL  | SOLID WHITE GORE LINE 12" @ 45°, (SPACING NOTED)          |
| SWPL  | SOLID WHITE PARKING LINE - 6"                             |
| BWL   | BROKEN WHITE LINE - 6" (10' LINE & 30' GAP)               |
| DWLex | DOTTED WHITE LANE EXTENSION LINE - 6" (2' LINE & 6' GAP)  |
| DYLex | DOTTED YELLOW LANE EXTENSION LINE - 6" (2' LINE & 6' GAP) |
| BYL   | BROKEN YELLOW LINE - 6"                                   |
| DBYL  | DOUBLE YELLOW LINE - 2 - 6" LINES                         |
| SYL   | SOLID YELLOW LINE - 6"                                    |
| SYGL  | SOLID YELLOW GORE LINE 12" @ 45°, (SPACING NOTED)         |

|  |                              |
|--|------------------------------|
|  | SCHOOL ZONE - WHITE          |
|  | ACCESSIBILITY SYMBOL - WHITE |
|  | PAVEMENT ARROW - WHITE       |
|  | LEGEND "ONLY" - WHITE        |

TRAFFIC SIGNAL SYMBOLS

| EXISTING | PROPOSED | DESCRIPTION  |
|----------|----------|--|
|          |          | CONTROL CABINET GROUND MOUNTED WITH FOUNDATION                       |
|          |          | CONTROL CABINET POLE MOUNTED   |
|          |          | CONTROLLER PHASE   |
|          |          | MAST ARM, SHAFT & BASE (ARM LENGTH AS NOTED)                         |
|          |          | VEHICULAR SIGNAL HEAD (ALPHA-NUMERIC DESIGNATION AS NOTED)           |
|          |          | VEHICULAR SIGNAL HEAD, OPTICALLY PROGRAMMED                          |
|          |          | VEHICULAR SIGNAL HEAD (REMOVED & RESET)                              |
|          |          | FLASHING BEACON  |
|          |          | PEDESTRIAN SIGNAL HEAD   |
|          |          | PEDESTRIAN SIGNAL HEAD, OPTICALLY PROGRAMMED                         |
|          |          | PULL BOX 12"x12" OR HANDHOLE   |
|          |          | LOOP DETECTOR  |
|          |          | PEDESTRIAN PUSH BUTTON, SIGN (DIRECTIONAL ARROW AS SHOWN) AND SADDLE |
|          |          | PRE-EMPTION DETECTOR   |
|          |          | PRE-EMPTION CONFIRMATION STROBE                                      |
|          |          | SIGNAL CONDUIT (SINGLE RUN)  |
|          |          | SIGNAL CONDUIT (DOUBLE RUN)  |
|          |          | SIGNAL POST & BASE   |
|          |          | MAGNETIC DETECTOR  |
|          |          | SCHOOL ZONE SPEED LIMIT SIGN   |
|          |          | MICROWAVE OR ULTRASONIC DETECTOR                                     |
|          |          | VIDEO DETECTION CAMERA   |
|          |          | VIDEO DETECTION ZONE   |

TRAFFIC SIGNAL SYSTEMS

|     |   |
|-----|---|
| R   | STEADY CIRCULAR RED                                   |
| Y   | STEADY CIRCULAR AMBER                                 |
| G   | STEADY CIRCULAR GREEN                                 |
| FR  | FLASHING CIRCULAR RED                                 |
| FY  | FLASHING CIRCULAR AMBER                               |
| +FY | FLASHING YELLOW LEFT ARROW                            |
| R→  | STEADY RED RIGHT ARROW                                |
| Y→  | STEADY AMBER RIGHT ARROW                              |
| G→  | STEADY GREEN RIGHT ARROW                              |
| +R  | STEADY RED LEFT ARROW                                 |
| +Y  | STEADY AMBER LEFT ARROW                               |
| +G  | STEADY GREEN LEFT ARROW                               |
| W   | STEADY WALK (PERSON WALKING) - LUNAR WHITE            |
| DW  | STEADY DON'T WALK (HAND) - PORTLAND ORANGE            |
| FDW | FLASHING DON'T WALK (FLASHING HAND) - PORTLAND ORANGE |

ABBREVIATIONS

| GENERAL       |                                      |
|---------------|--------------------------------------|
| AADT          | ANNUAL AVERAGE DAILY TRAFFIC         |
| ABAN          | ABANDON                              |
| ADJ           | ADJUST                               |
| APPROX.       | APPROXIMATE                          |
| A.C.          | ASPHALT CONCRETE                     |
| ACCM PIPE     | ASPHALT COATED CORRUGATED METAL PIPE |
| BB            | BITUMINOUS BERM                      |
| 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                          |
| CBICI         | 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                     |
| CLO           | CLEANOUT                             |
| 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                    |
| DU            | DESTINATION UNKNOWN                  |
| 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           | GUARD                                |
| HDW           | HEADWALL                             |
| HMA           | HOT MIX ASPHALT                      |
| HOR           | HORIZONTAL                           |
| HYD           | HYDRANT                              |
| INV           | INVERT                               |
| JCT           | JUNCTION                             |
| L             | LENGTH OF CURVE                      |
| LA            | LANDSCAPING                          |
| 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          |
| PCR           | PEDESTRIAN CURB RAMP                 |
| P.G.L.        | PROFILE GRADE LINE                   |
| PI            | POINT OF INTERSECTION                |
| POC           | POINT ON CURVE                       |
| POT           | POINT ON TANGENT                     |
| PRC           | POINT OF REVERSE CURVATURE           |
| PROJ          | PROJECT                              |
| PROP          | PROPOSED                             |
| PSB           | PLANTABLE SOIL BORROW                |

BILLERICA  
BOSTON RD (ROUTE 3A)  
AT LEXINGTON RD & GLAD VALLEY DR

| STATE            | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|------------------|--------------------|-----------|--------------|
| MA               | -                  | 2         | 30           |
| PROJECT FILE NO. |                    | 609250    |              |

LEGEND & ABBREVIATIONS

ABBREVIATIONS (cont.)

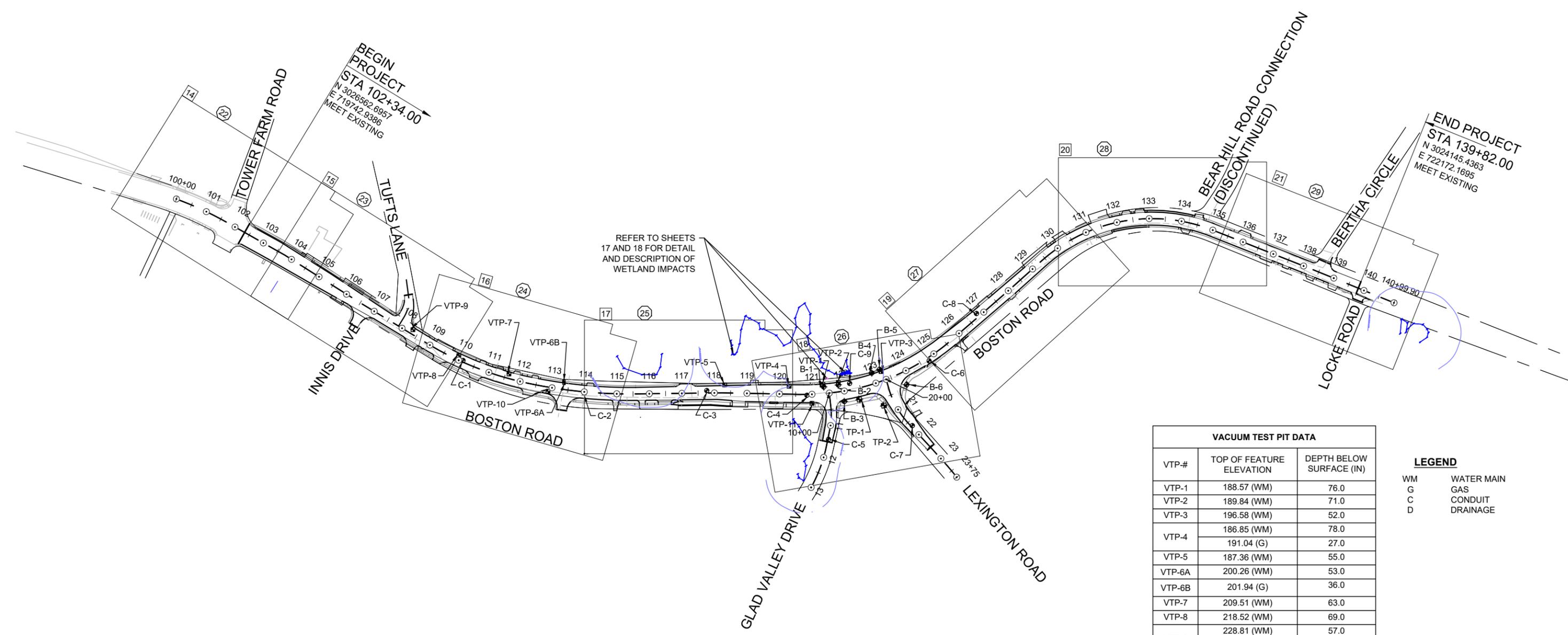
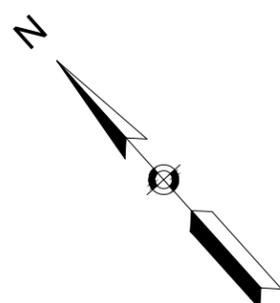
| GENERAL  |                                   |
|----------|-----------------------------------|
| PT       | POINT OF TANGENCY                 |
| PVC      | POINT OF VERTICAL CURVATURE       |
| PVI      | POINT OF VERTICAL INTERSECTION    |
| PVT      | POINT OF VERTICAL TANGENCY        |
| PVMT     | PAVEMENT                          |
| 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&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         |
| SUP      | SHARED USE PATH                   |
| 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      | VARIES                            |
| VERT     | VERTICAL                          |
| VC       | VERTICAL CURVE                    |
| WG       | WATER GATE                        |
| WIP      | WROUGHT IRON PIPE                 |
| WM       | WATER METER/WATER MAIN            |
| X-SECT   | CROSS SECTION                     |

TRAFFIC SIGNAL

|        |                                |
|--------|--------------------------------|
| PWW    | PAVED WATER WAY                |
| CAB.   | CABINET                        |
| CCVE   | CLOSED CIRCUIT VIDEO EQUIPMENT |
| DW     | STEADY DON'T WALK              |
| FDW    | FLASHING DON'T WALK            |
| FR     | FLASHING CIRCULAR RED          |
| FRL    | FLASHING RED LEFT ARROW        |
| FRR    | FLASHING RED RIGHT ARROW       |
| FY     | FLASHING CIRCULAR AMBER        |
| FYL    | FLASHING AMBER LEFT ARROW      |
| FYR    | FLASHING AMBER RIGHT ARROW     |
| G      | STEADY CIRCULAR GREEN          |
| GL     | STEADY GREEN LEFT ARROW        |
| GR     | STEADY GREEN RIGHT ARROW       |
| GSL    | STEADY GREEN SLASH LEFT ARROW  |
| GSR    | STEADY GREEN SLASH RIGHT ARROW |
| GV     | STEADY GREEN VERTICAL ARROW    |
| OL     | OVERLAP                        |
| PED    | PEDESTRIAN                     |
| PTZ    | PAN, TILE, ZOOM                |
| R      | STEADY CIRCULAR RED            |
| RL     | STEADY RED LEFT ARROW          |
| RR     | STEADY RED RIGHT ARROW         |
| TR SIG | TRAFFIC SIGNAL                 |
| TSC    | TRAFFIC SIGNAL CONDUIT         |
| W      | STEADY WALK                    |
| Y      | STEADY CIRCULAR AMBER          |
| YL     | STEADY AMBER LEFT ARROW        |

|                  |                    |           |              |
|------------------|--------------------|-----------|--------------|
| STATE            | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
| MA               | -                  | 3         | 30           |
| PROJECT FILE NO. |                    | 609250    |              |

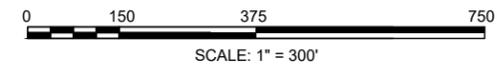
KEY PLAN & BORING LOG



| VACUUM TEST PIT DATA |                          |                          |
|----------------------|--------------------------|--------------------------|
| VTP-#                | TOP OF FEATURE ELEVATION | DEPTH BELOW SURFACE (IN) |
| VTP-1                | 188.57 (WM)              | 76.0                     |
| VTP-2                | 189.84 (WM)              | 71.0                     |
| VTP-3                | 196.58 (WM)              | 52.0                     |
| VTP-4                | 186.85 (WM)              | 78.0                     |
| VTP-5                | 191.04 (G)               | 27.0                     |
| VTP-6                | 187.36 (WM)              | 55.0                     |
| VTP-6A               | 200.26 (WM)              | 53.0                     |
| VTP-6B               | 201.94 (G)               | 36.0                     |
| VTP-7                | 209.51 (WM)              | 63.0                     |
| VTP-8                | 218.52 (WM)              | 69.0                     |
| VTP-9                | 228.81 (WM)              | 57.0                     |
| VTP-10               | 207.33 (C)               | 10.7                     |
| VTP-11               | 193.51 (G)               | 32.0                     |

**LEGEND**

|    |            |
|----|------------|
| WM | WATER MAIN |
| G  | GAS        |
| C  | CONDUIT    |
| D  | DRAINAGE   |



**SHEET NUMBER LEGEND**

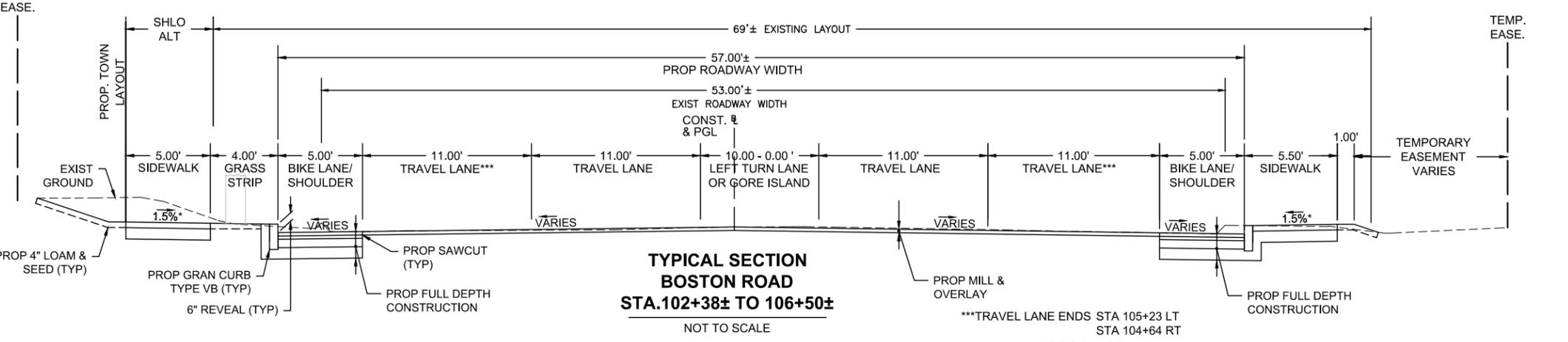
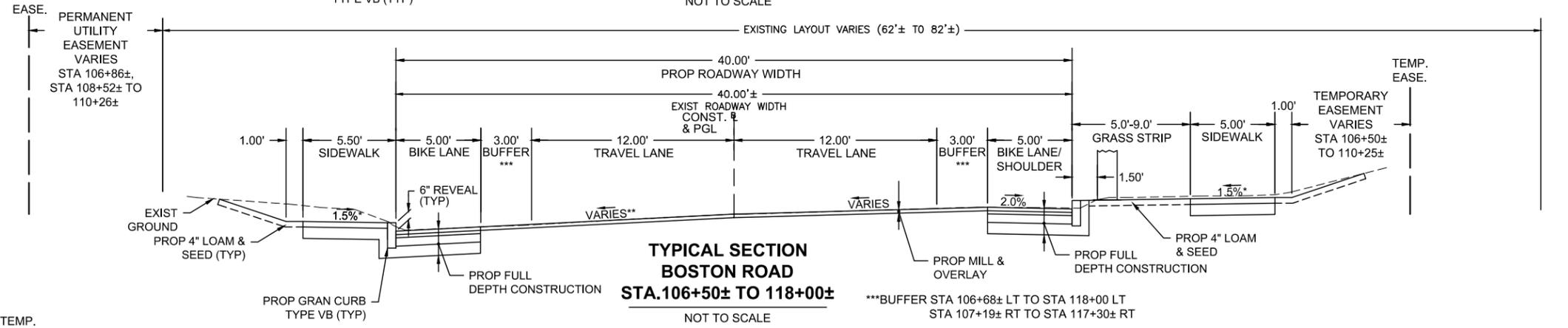
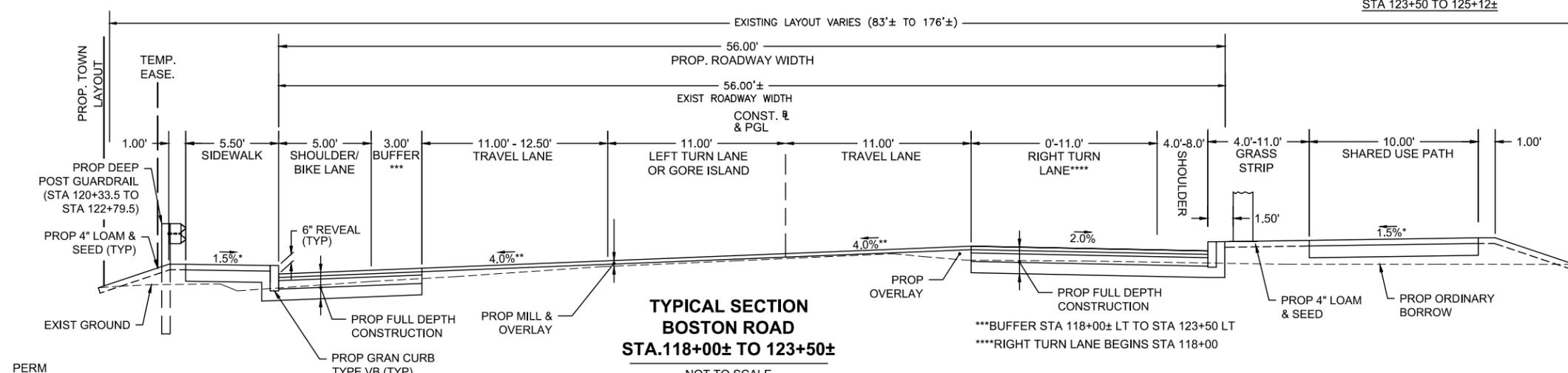
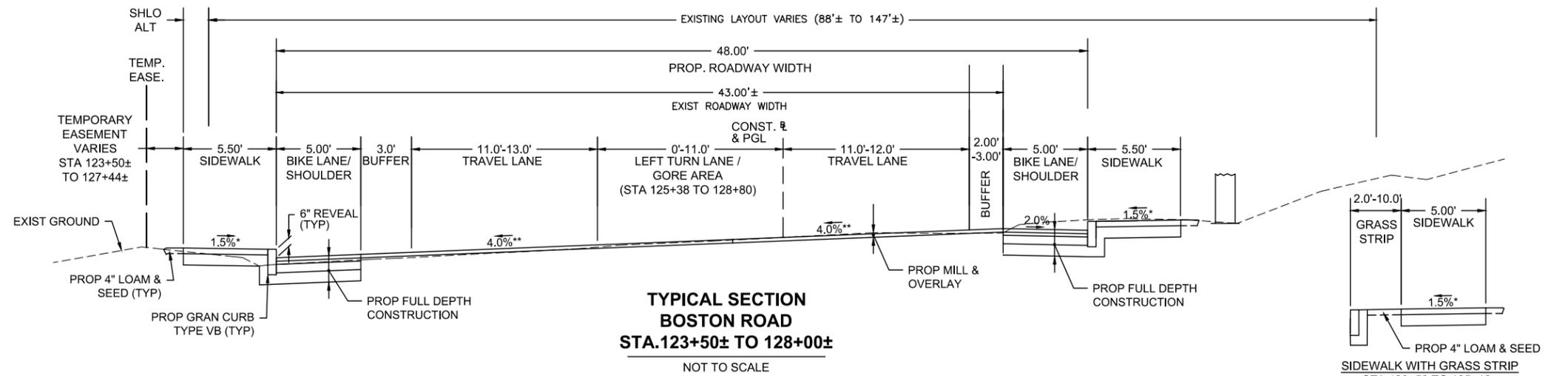
- XX CONSTRUCTION PLAN
- XX DRAINAGE & UTILITY PLAN

- C-# PAVEMENT CORES (SEE DATA IN SPECIAL PROVISIONS)
- B-# BORING LOG (SEE DATA IN SPECIAL PROVISIONS)
- VTP-# VACUUM TEST PIT
- TP-# TEST PIT (SEE DATA ON UTILITY PLANS)

| STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|-------|--------------------|-----------|--------------|
| MA    | -                  | 4         | 30           |

PROJECT FILE NO. 609250

TYPICAL SECTIONS & PAVEMENT NOTES



**PAVEMENT NOTES**

**PAVEMENT MILLING AND OVERLAY**  
SURFACE COURSE: BOSTON ROAD (2-1/4") / SIDE STREETS (1-3/4") SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER ASPHALT EMULSION FOR TACK COAT OVER

PAVEMENT MILLING: 1-3/4" - 2-1/4" PAVEMENT MICROMILLING  
LEVELING COURSE: SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5) COMPACTED 1.5 INCH MAX. LAYERS

**FULL DEPTH PAVEMENT CONSTRUCTION / BOX WIDENING > 4' WIDE**

SURFACE COURSE: BOSTON ROAD (2-1/4") / SIDE STREETS (1-3/4") SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER ASPHALT EMULSION FOR TACK COAT OVER  
INTERMEDIATE COURSE: 2-1/4" SUPERPAVE INTERMEDIATE COURSE 19.0 (SIC-19.0) OVER ASPHALT EMULSION FOR TACK COAT OVER

BASE COURSE: 4-1/2" SUPERPAVE BASE COURSE 37.5 (SBC-37.5) OVER  
SUB-BASE: 4" DENSE GRADED CRUSHED STONE FOR SUB-BASE OVER 8" GRAVEL BORROW, TYPE b (MIN)

**FULL DEPTH PAVEMENT BOX WIDENING ≤ 4' WIDE**

SURFACE COURSE: BOSTON ROAD (2-1/4") / SIDE STREETS (1-3/4") SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER ASPHALT EMULSION FOR TACK COAT OVER  
INTERMEDIATE COURSE: 2-1/4" SUPERPAVE INTERMEDIATE COURSE 19.0 (SIC-19.0) OVER ASPHALT EMULSION FOR TACK COAT OVER

BASE COURSE: 6" HES CEMENT CONCRETE BASE COURSE OVER  
SUB-BASE: 8" GRAVEL BORROW, TYPE b (MIN)

**CEMENT CONCRETE SIDEWALK, WHEELCHAIR RAMPS, AND SHARED USE PATH**

SURFACE: 4" CEMENT CONCRETE WALK SURFACE 4000 PSI, 3/4", 610, AIR-ENTRAINED, OVER  
FOUNDATION: 8" GRAVEL BORROW, TYPE b

**CEMENT CONCRETE DRIVEWAY**

SURFACE: 6" CEMENT CONCRETE WALK SURFACE 4000 PSI, 3/4", 610, AIR-ENTRAINED, OVER  
FOUNDATION: 8" GRAVEL BORROW, TYPE b

**HMA SIDEWALK**

SURFACE: 1-1/4" SUPERPAVE SURFACE COURSE 9.5 (SSC-9.5) OVER ASPHALT EMULSION FOR TACK COAT OVER  
FOUNDATION: 8" GRAVEL BORROW, TYPE b

**HMA DRIVEWAYS**

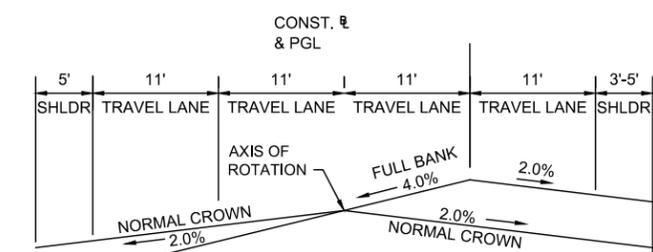
SURFACE: 1-1/2" SUPERPAVE SURFACE COURSE 9.5 (SSC-9.5) (SEE NOTE 3) OVER 2-1/2" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER  
FOUNDATION: 8" GRAVEL BORROW, TYPE b

**PAVEMENT NOTES**

- MILLING SHALL ESTABLISH PROP CROSS SLOPE AND/OR AS SHOWN ON PLANS TO PROVIDE A CONSISTENT HMA OVERLAY THICKNESS. LEVELING COURSE SHALL BE SUPERPAVE
- ALL HMA FOR PATCHING. ASPHALT EMULSION FOR TACK COAT AND HMA JOINT SEALANT SHALL BE INSTALLED PER SECTION 450.43G2.
- HMA DRIVEWAYS - THE SURFACE COURSE SHALL BE A DRIVEWAY AND SIDEWALK RECIPE MIX OR 9.5mm SUPERPAVE SURFACE COURSE. IN AREAS OF HIGH TRAFFIC THE DRIVEWAY SURFACE COURSE SHALL BE 12.5mm SUPERPAVE SURFACE COURSE. THE MIXTURE TYPE AND PLACEMENT METHOD SHALL BE DETERMINED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER PRIOR TO COMMENCING WORK.

\* TOLERANCE FOR CONSTRUCTION ±0.5%

\*\* SLOPE VARIES IN SUPERELEVATION TRANSITION

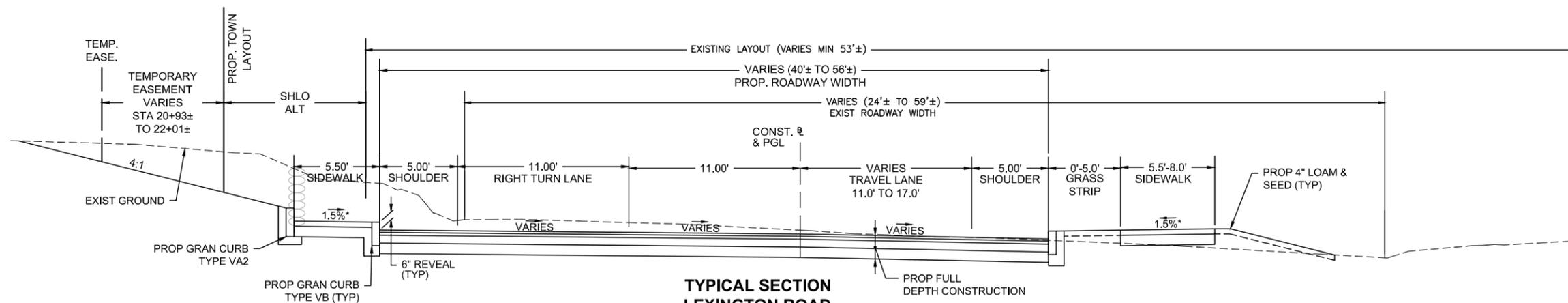


**METHOD OF BANKING  
BOSTON ROAD\*\***  
NOT TO SCALE

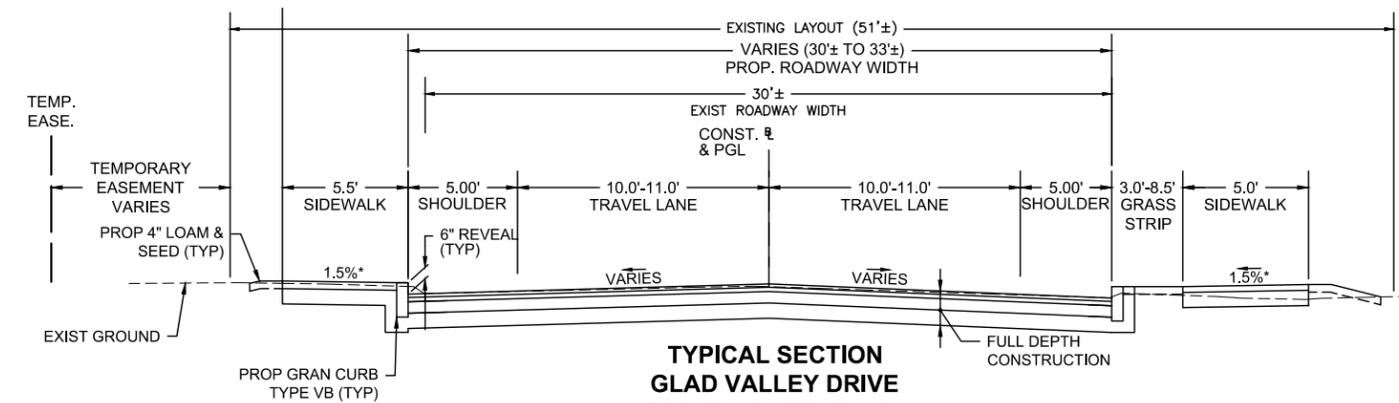
| STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|-------|--------------------|-----------|--------------|
| MA    | -                  | 5         | 30           |

PROJECT FILE NO. 609250

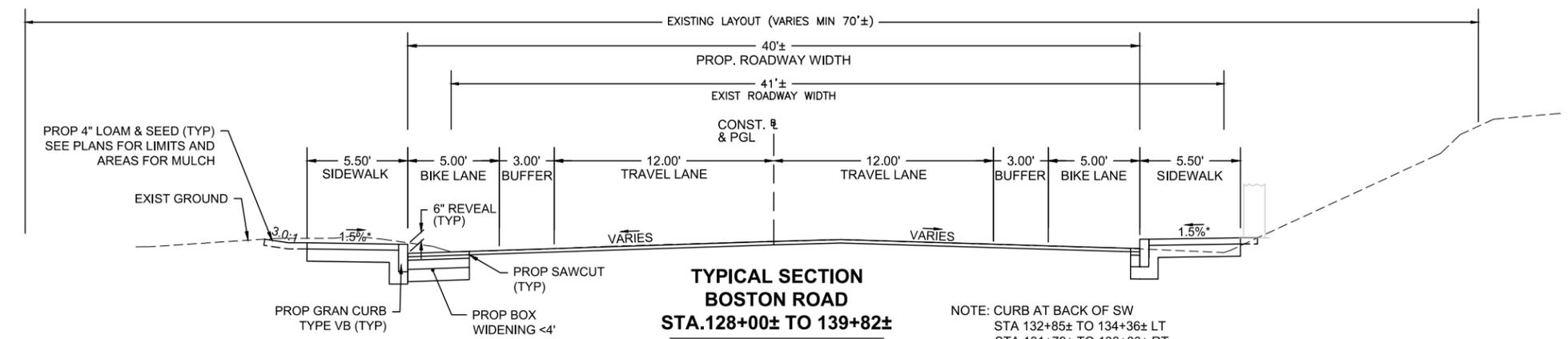
TYPICAL SECTIONS



**TYPICAL SECTION  
 LEXINGTON ROAD  
 STA.20+46± TO 21+61±**  
 NOT TO SCALE



**TYPICAL SECTION  
 GLAD VALLEY DRIVE  
 STA.10+50± TO 10+98±**  
 NOT TO SCALE



**TYPICAL SECTION  
 BOSTON ROAD  
 STA.128+00± TO 139+82±**  
 NOT TO SCALE

NOTE: CURB AT BACK OF SW  
 STA 132+85± TO 134+36± LT  
 STA 131+79± TO 133+00± RT

|                  |                    |           |              |
|------------------|--------------------|-----------|--------------|
| STATE            | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
| MA               | -                  | 6         | 30           |
| PROJECT FILE NO. |                    | 609250    |              |

**GENERAL NOTES**

**GENERAL NOTES**

1. THE LOCATION OF SUBSURFACE UTILITIES SHOWN IS APPROXIMATE AND NOT GUARANTEED TO BE COMPLETE OR ACCURATE. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND ELEVATIONS OF EXISTING UTILITY LINES AND STRUCTURES PRIOR TO COMMENCEMENT OF WORK. THE CONTRACTOR MUST NOTIFY DIG SAFE (811) AT LEAST 72 BUSINESS HOURS PRIOR TO ANY EXCAVATION, DEMOLITION OR EXPLOSIVE WORK IN PUBLIC OR PRIVATE WAYS OR UTILITY COMPANY RIGHT-OF-WAY OR EASEMENT.
2. DRAINAGE ELEVATIONS ARE PROVIDED FOR DESIGN PURPOSES ONLY. THE CONTRACTOR SHALL VERIFY BY TEST PIT, THE LOCATIONS OF EXISTING UTILITIES WHICH MAY CONFLICT WITH THE PROPOSED DRAINAGE DESIGN. ANY FIELD ADJUSTMENTS REQUIRED WILL BE MADE AS APPROVED OR DIRECTED BY THE ENGINEER. ONLY AFTER THE CONTRACTOR VERIFIES ELEVATIONS FOR THE CONSTRUCTABILITY OF THE DRAINAGE SYSTEM SHALL ANY STRUCTURES BE ORDERED. ANY FIELD ADJUSTMENTS TO LINE & GRADE UP TO A DEPTH OF 5' SHALL BE INCLUDED IN THE COST OF THE PIPE. PIPE EXCAVATION GREATER THAN 5' WILL BE PAID UNDER CLASS B TRENCH EXCAVATION.
3. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE ENGINEER FOR THE RESOLUTION OF THE CONFLICT.
4. THE CONTRACTOR SHALL MAINTAIN REASONABLE ACCESS TO ABUTTING PROPERTIES AT ALL TIMES AND NOTIFY ALL ABUTTERS IN ADVANCE OF ANY INTERRUPTIONS TO ACCESS.
5. THE CONTRACTOR SHALL ALTER THE MASONRY OF THE TOP SECTION OF ALL EXISTING DRAINAGE AND SANITARY STRUCTURES AS NECESSARY FOR THE CHANGES IN GRADE, AND RESET ALL WATER AND DRAINAGE FRAMES, GRATES AND BOXES TO THE PROPOSED FINISH SURFACE GRADE. REQUIRED NEW MASONRY SHALL BE CLAY BRICK CONFORMING TO M4.05.2.
6. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE, CABLE TV, FIRE ALARM AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES. ALL UTILITY CASTING SHALL BE ADJUSTED TO FINISH GRADE BY THEIR RESPECTIVE OWNERS.
7. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
8. THE TERM "PROPOSED" (PROP.) MEANS WORK TO BE CONSTRUCTED USING NEW MATERIALS OR, WHERE APPLICABLE, RE-USING EXISTING MATERIALS IDENTIFIED AS "REMOVE AND RESET" (R&R).
9. DRAINAGE STRUCTURES SHALL BE RETAINED UNLESS NOTED OTHERWISE.
10. CATCH BASIN AND MANHOLE FRAMES AND GRATES/COVERS SHALL CLEARLY ALIGN WITH THE OPENINGS IN THE PRECAST STRUCTURES AND THE GRADE OF THE ROADWAY.
11. ALL EXISTING DRAINAGE PIPES THAT ARE NO LONGER BEING UTILIZED BY THE NEW DRAINAGE DESIGN WITHIN THE PROJECT LIMITS SHALL BE REMOVED UNLESS OTHERWISE NOTED ON THE PLANS.
12. WHERE DRAINAGE PIPES OR STRUCTURES ARE ABANDONED IN PLACE THE CONTRACTOR SHALL MAKE SURE THAT ALL CONNECTING PIPES, DOWN SPOUT FROM BUILDING, INLETS AND OUTLETS ARE PLUGGED. ALL LIVE CONNECTIONS SHALL BE CONNECTED TO THE NEW SYSTEM.
13. ALL CURB TIE DIMENSIONS ARE TO THE FACE OF THE CURB (GUTTER LINE) OR EDGE OF TRAVEL WAY.
14. CONSTRUCTION BASELINE TIES ARE SHOWN ON CURB TIE & GRADING PLANS.
15. PROPOSED SIDEWALKS AND PEDESTRIAN CURB RAMPS SHALL BE CONSTRUCTED TO THE NEAREST SCORE LINE OR EXPANSION JOINT IN THE EXISTING ADJACENT WALK SURFACE AS DIRECTED BY THE ENGINEER.
16. IN ALL LOCATIONS WHERE PROPOSED SIDEWALK TRANSITION DOWN TO MEET EXISTING GRADE, EXISTING SIDEWALK OR PAVED AREA, SLOPE SHALL NOT EXCEED 1:12.
17. THE LOCATION OF THE PROPOSED DRIVEWAY OPENINGS ARE SHOWN ON TIE AND GRADING PLANS. EXACT LOCATIONS MAY BE ADJUSTED IF NECESSARY OR AS REQUIRED BY THE ENGINEERS IN THE FIELD.
18. CONTRACTOR SHALL VERIFY LOCATION OF ALL OBJECTS (SIGNS, TREES, POLES ETC.) TO BE SET WITHIN SIDEWALK PRIOR TO FINAL PLACEMENT TO PROVIDE A MINIMUM CLEAR PATH OF 36" EXCLUDING THE CURB. CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY LOCATION WHICH CANNOT MEET THE CLEARANCE REQUIREMENTS.
19. SIGNS, POLES AND OTHER FEATURES LOCATED IN PROPOSED CEMENT CONCRETE SIDEWALK SHALL BE BOXED AND PROVIDED FLEXIBLE JOINT FILLER.
20. CONTRACTOR SHALL VERIFY EXISTING GRADES. IF ANY ADJUSTMENT IS REQUIRED DUE TO DIFFERENT EXISTING GRADES FOUND IN THE FIELD, THE CONTRACTOR SHALL NOTIFY AND SEEK THE APPROVAL OF THE ENGINEER PRIOR TO PERFORMING THE WORK.
21. IN AREAS OF NEW SIDEWALK, NEW EDGE OF PAVEMENT OR CURB WITHOUT SIDEWALK OR ANY WORK ADJACENT TO EXISTING GRASS AREAS, EVEN WHEN NO SLOPE-MATCHING OR GRADING IS NECESSARY AND THE EXISTING GRADE IS MET, LOAM BORROW AND SEED SHALL BE PROVIDED AS NECESSARY TO REPAIR AND COMPLETE ANY DAMAGE TO THE GRADE CAUSED BY THE CONSTRUCTION PROCESS.
22. WHEN WORKING NEXT TO EXISTING TREES, WALLS OR FENCES, THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION NOT TO DISTURB THE EXISTING WALL, TREES OR FENCE. IF THE CONTRACTOR DAMAGES EXISTING TREES, WALLS OR FENCES AS A RESULT OF THE CONSTRUCTION PROCESS, IT SHALL BE HIS/HER RESPONSIBILITY (THE CONTRACTOR) TO REPAIR ALL DAMAGES AS DIRECTED BY THE ENGINEER. ALL WORK ASSOCIATED WITH THE REPAIR OR REPLACEMENT OF EXISTING TREES, WALLS OR FENCES SHALL BE PERFORMED BY THE CONTRACTOR AT HIS/HER EXPENSE AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED THEREFORE.
23. IN FILL AREAS, TOP SOIL/EXISTING PAVEMENT SHALL BE REMOVED FOR A DEPTH OF 12" (MIN.) OR AS DIRECTED BY THE ENGINEER. SUBGRADE AREAS WILL BE COMPACTED PRIOR TO THE PLACEMENT OF FILL MATERIAL.

24. ALL NEW GRANITE CURB SHALL BE MASSDOT TYPE VB, UNLESS OTHERWISE NOTED ON THE PLANS OR SPECIFICATIONS.
25. EXISTING GRANITE CURB IN GOOD CONDITION SHALL BE REMOVED AND RESET BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER. ALL OTHER EXISTING GRANITE CURB SHALL BE REMOVED AND DISCARDED BY THE CONTRACTOR UNLESS OTHERWISE NOTED ON THE PLAN OR DIRECTED BY THE ENGINEER.
26. ALL PROPOSED PAVEMENT MARKINGS ON ROADWAYS SHALL BE REFLECTORIZED WHITE AND YELLOW THERMOPLASTIC.
27. SAFETY CONTROLS FOR CONSTRUCTION OPERATIONS SHALL BE IN ACCORDANCE WITH MASSDOT REQUIREMENTS AND THE LATEST VERSION OF THE MUTCD.
28. TREES TO BE RETAINED WHICH RESTRICT SIGHT DISTANCE OR RESTRICT HORIZONTAL OR VERTICAL CLEARANCES SHALL BE TRIMMED AS REQUIRED BY THE ENGINEER.
29. NO TREE SHALL BE REMOVED PRIOR TO APPROVAL OF THE TOWN OF BILLERICA.
30. WHEN WORKING NEXT TO EXISTING WALLS, BERMS, AND OTHER STRUCTURES, CONTRACTOR SHALL EXERCISE EXTREME CAUTION NOT TO DISTURB THE EXISTING STRUCTURES. ANY DAMAGE TO THE EXISTING STRUCTURES SHALL BE REPAIRED BY THE CONTRACTOR AT HIS OWN EXPENSE.
31. ALL PAVEMENT MARKINGS AND/OR SIGN NOTES ARE SHOWN ON THE SIGNS AND PAVEMENT MARKING PLANS.
32. TOWN HAS PERFORMED SUB-SURFACE INVESTIGATION FOR THE WATER MAIN AND OTHER UTILITIES BY VACUUM EXCAVATION. THE TEST PIT DATA HAS SHOWN ON KEY PLAN AND UTILITY PLANS. THE 16" WATER MAIN IS SHOWN AS A SINGLE LINE WHERE APPROXIMATE AND A DOUBLE LINE WHERE LOCATED THRU SUB-SURFACE INVESTIGATIONS.
33. FRAMES FOUR-INCHES IN HEIGHT SHALL BE SUBSTITUTED FOR STANDARD FRAMES IN AREAS OF LOW COVER AS DETAILED ON THE PLANS OR AS DIRECTED BY THE ENGINEER. FOUR-INCH FRAMES SHALL BE COMPATIBLE WITH MASSDOT STANDARD GRATES. NO ADDITIONAL PAYMENT SHALL BE MADE FOR FOUR-INCH FRAMES.
34. THE 12" AND 8" WATER LINE FROM TUFTS LANE TO LOCKE ROAD WAS MARKED BY THE TOWN OF BILLERICA AND LOCATED USING A LEICA GPS DEVICE IN AUGUST 2023

**PEDESTRIAN CURB RAMP NOTES**

1. ALL PEDESTRIAN CURB RAMPS SHALL CONFORM TO THE REQUIREMENTS OF THE ARCHITECTURAL ACCESS BOARD (A.A.B.) AND THE AMERICANS WITH DISABILITIES ACT (A.D.A.). AND THE LATEST MASSDOT STANDARDS.
2. THE LOCATION OF PROPOSED PEDESTRIAN CURB RAMPS ARE SHOWN ON CONSTRUCTION PLANS AND THE PEDESTRIAN CURB RAMP DETAILS. EXACT LOCATIONS MAY BE ADJUSTED, IF NECESSARY, BY THE ENGINEER IN THE FIELD.
3. ALL PROPOSED PEDESTRIAN CURB RAMPS SHALL HAVE DETECTABLE WARNING PANELS INSTALLED IN ACCORDANCE WITH MASSDOT CONSTRUCTION STANDARD DRAWINGS. THE COLOR OF THE PANEL SHALL BE BRICK RED AND APPROVED BY THE ENGINEER.
4. IN INSTANCES WHERE AN EXISTING MANHOLE, HANDHOLE OR OTHER "SURFACE" TYPE STRUCTURE THAT CANNOT BE REMOVED OR RESET, IS WITHIN THE ACTUAL PEDESTRIAN CURB RAMP PATH, THE STRUCTURE SHALL BE CAREFULLY ADJUSTED SUCH THAT THE TOPMOST SURFACES OF THE STRUCTURE COVER SHALL BE FLUSH WITH THE RAMP SURFACE AND SHALL MATCH THE SLOPE OF THE NEW PEDESTRIAN CURB RAMP AS DIRECTED BY THE ENGINEER.
5. THE TRANSITION SLOPE OF ANY CURB RAMP, EXCEPT MAXIMUM LENGTH HIGH SIDE TRANSITIONS, SHALL NOT EXCEED 7.5%, +/-0.5% FOR TOLERANCE OF CONSTRUCTION. PER AAB 521 CMR, FINISHED SLOPE MAY NOT EXCEED 8.00%. PROPOSED PEDESTRIAN CURB RAMP SLOPES, ESPECIALLY HIGH SIDE TRANSITIONS, SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO POURING OF CONCRETE AND ADJUSTED, IF NECESSARY, AT THE DIRECTION OF THE ENGINEER.

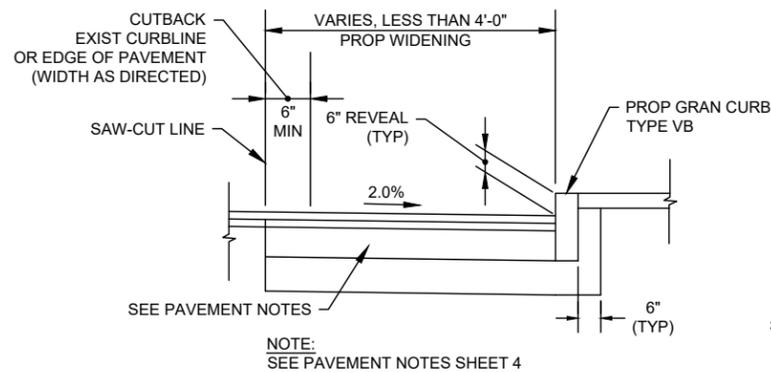
**SURVEY NOTES**

1. MASSDOT SURVEY SECTION PROVIDED CONTROL ONTO POINTS 4 (MASSDOT #32322) & 201 (MASSDOT #32321). THESE WERE OBSERVED DURING THE COURSE OF THE ON-THE-GROUND INSTRUMENT SURVEY.
2. HORIZONTAL DATUM: MASSACHUSETTS STATE PLANE - MAINLAND ZONE NAD83 (2011) EPOCH 2010.00 - US FEET
3. VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (GEOID 12B) - US FEET
4. ALL ON-THE-GROUND OBSERVATIONS WERE PERFORMED USING LEICA TS12 (3") ROBOTIC TOTAL STATIONS.
5. THIS SURVEY AND PLAN ARE BASED UPON AN ACTUAL ON THE GROUND INSTRUMENT SURVEY PERFORMED BETWEEN JULY 2016 AND JUNE 2019.

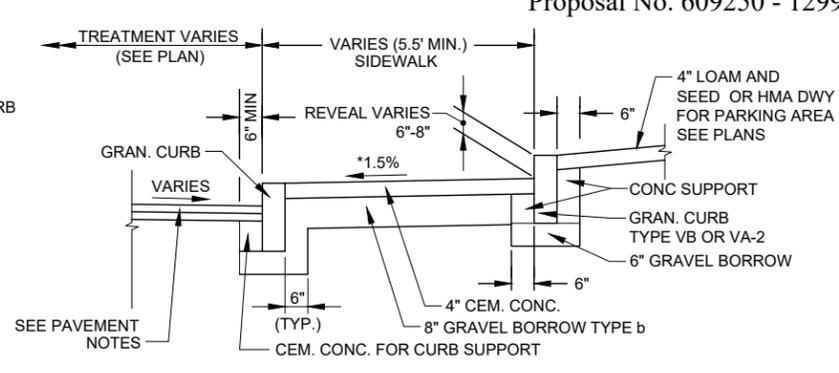
| BOUND DATA |                |              |             |           |           |
|------------|----------------|--------------|-------------|-----------|-----------|
| BOUND NO.  | LOCATION       | NORTHING     | EASTING     | STATION   | OFFSET    |
| 1          | BOSTON ROAD    | 3026566.0337 | 719778.2419 | 102+42.10 | 34.52' LT |
| 2          | BOSTON ROAD    | 3026550.1727 | 719785.8410 | 102+59.61 | 36.67' LT |
| 3          | BOSTON ROAD    | 3026077.7976 | 719919.4721 | 107+49.34 | 29.42' LT |
| 4          | BOSTON ROAD    | 3024968.3430 | 720869.6845 | 122+74.52 | 40.50' LT |
| 5          | LEXINGTON ROAD | 3024814.7160 | 720908.9039 | 20+92.57  | 36.47' LT |
| 6          | LEXINGTON ROAD | 3024753.2171 | 720893.6785 | 21+62.63  | 26.36' LT |
| 7          | LEXINGTON ROAD | 3024752.2903 | 720901.6008 | 21+63.68  | 34.27' LT |

|                  |                    |           |              |
|------------------|--------------------|-----------|--------------|
| STATE            | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
| MA               | -                  | 7         | 30           |
| PROJECT FILE NO. |                    | 609250    |              |

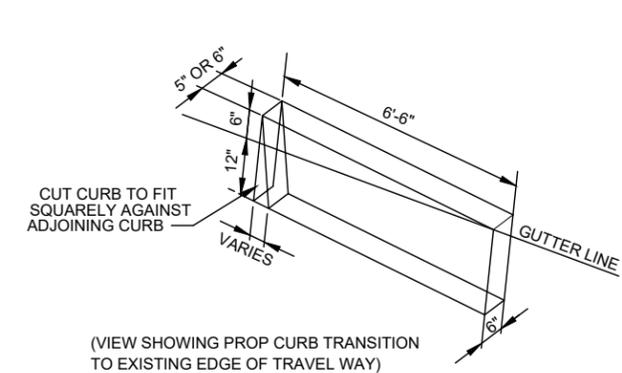
CONSTRUCTION DETAILS



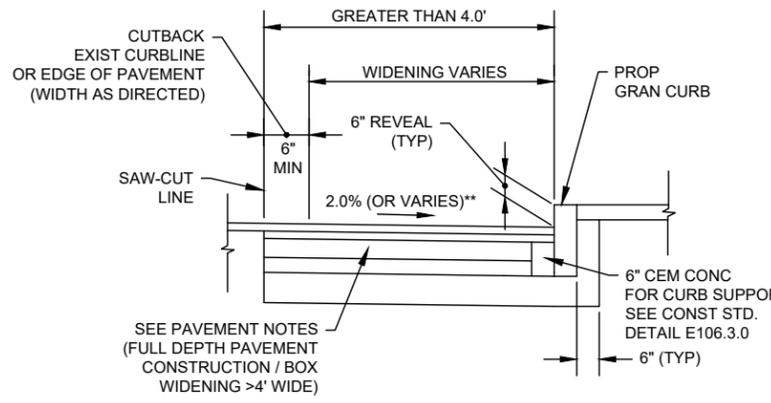
**DETAIL FOR BOX WIDENING 4.0' OR LESS**  
 NOT TO SCALE



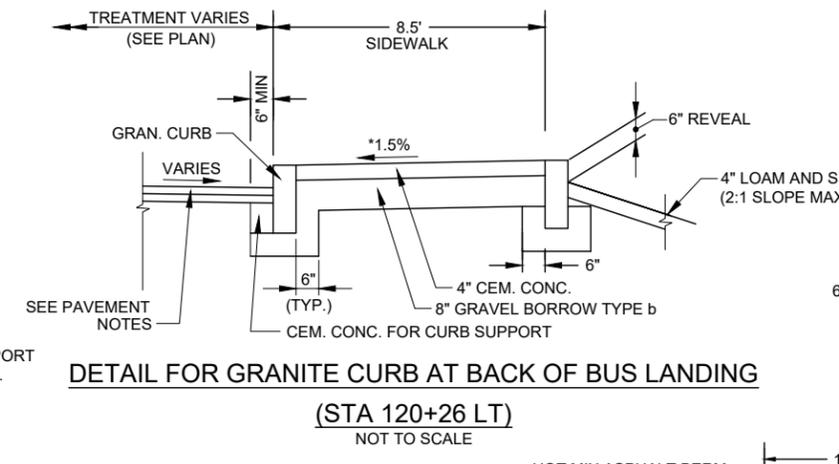
**DETAIL FOR GRANITE CURB AT BACK OF SIDEWALK**  
 NOT TO SCALE



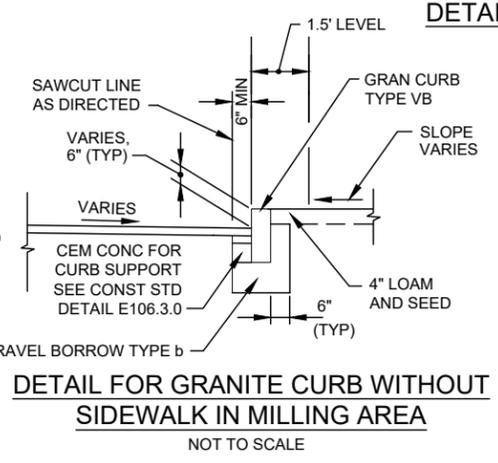
**DETAIL FOR GRANITE TRANSITION CURB**  
 NOT TO SCALE



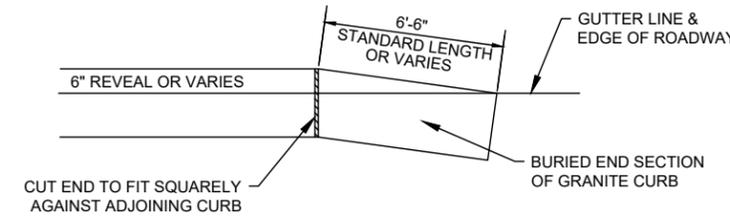
**DETAIL FOR BOX WIDENING GREATER THAN 4.0'**  
 NOT TO SCALE



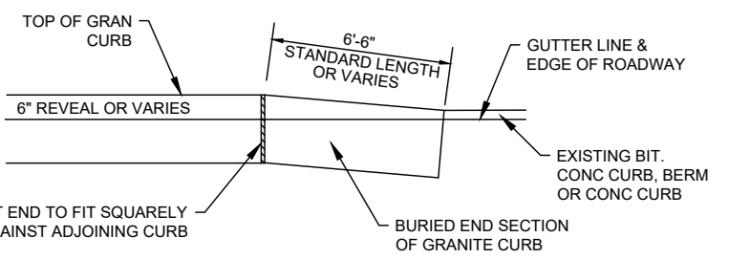
**DETAIL FOR GRANITE CURB AT BACK OF BUS LANDING**  
 (STA 120+26 LT)  
 NOT TO SCALE



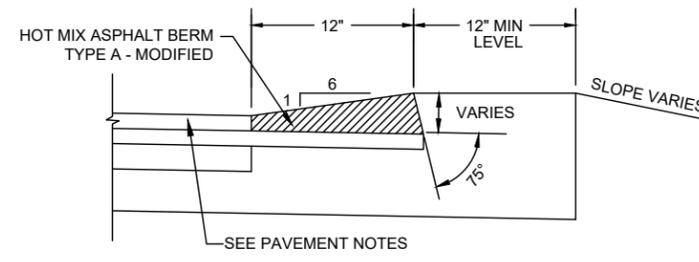
**DETAIL FOR GRANITE CURB WITHOUT SIDEWALK IN MILLING AREA**  
 NOT TO SCALE



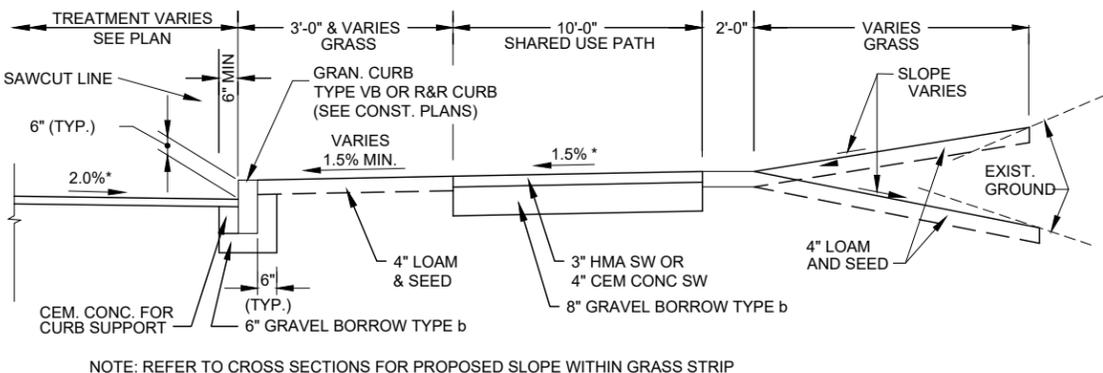
**DETAIL FOR TRANSITION CURB PROP CURB TO EXISTING EDGE OF TRAVEL WAY**  
 NOT TO SCALE



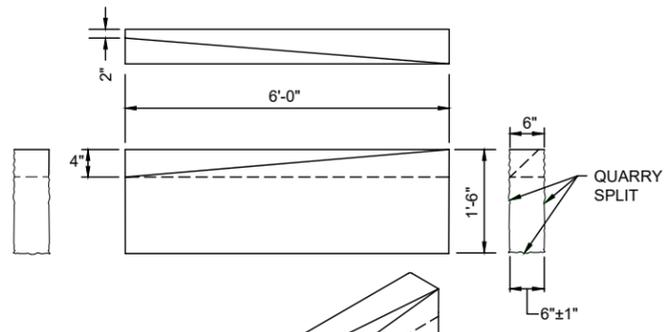
**DETAIL FOR TRANSITION CURB TRANSITION CURB - PROP CURB TO EXISTING CURB**  
 NOT TO SCALE



**DETAIL FOR HMA BERM TYPE A (MODIFIED)**  
 NOT TO SCALE

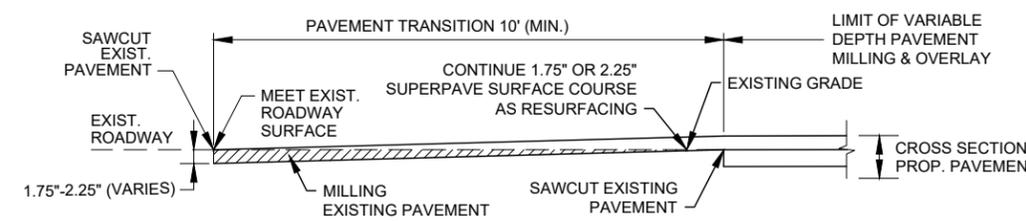


**DETAIL FOR GRANITE CURB WITH SIDEWALK AND GRASS STRIP**  
 STA 121+50± TO 123+00± RT  
 NOT TO SCALE

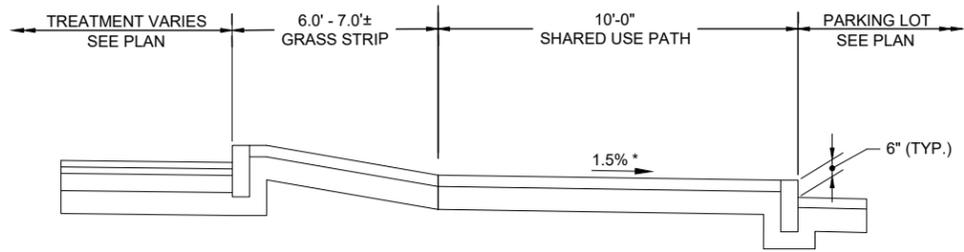


- NOTES:
- TOP SURFACE AND SLOPED SURFACE TO BE DRESSED BY SAW. REMAINDER TO BE QUARRY SPLIT.
  - DRAWING SHOWS TRANSITION CURB FOR ONE DIRECTION. FOR OTHER DIRECTION USE OPPOSITE HAND.

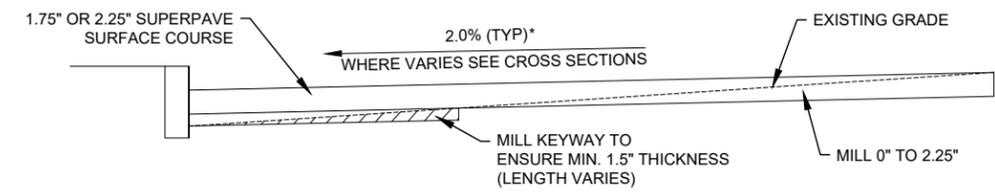
**GRANITE CURB TYPE VA4-SPLAYED END**  
 (ITEM 504.2)



**DETAIL FOR PAVEMENT TRANSITION AT LIMIT OF WORK**  
 NOT TO SCALE



**DETAIL FOR SHARED USE PATH AT STA 117+00 TO 118+50 RT**  
 NOT TO SCALE

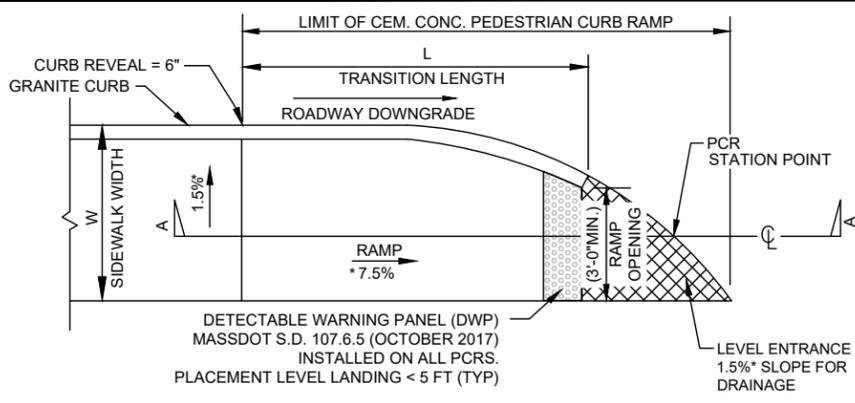


**DETAIL FOR VARIABLE DEPTH LEVELING**  
 NOT TO SCALE

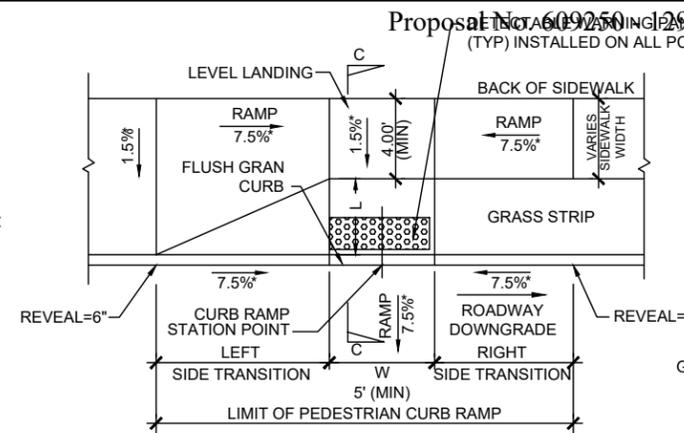
\* TOLERANCE FOR CONSTRUCTION ±0.5%

|                  |                    |           |              |
|------------------|--------------------|-----------|--------------|
| STATE            | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
| MA               | -                  | 8         | 30           |
| PROJECT FILE NO. |                    | 609250    |              |

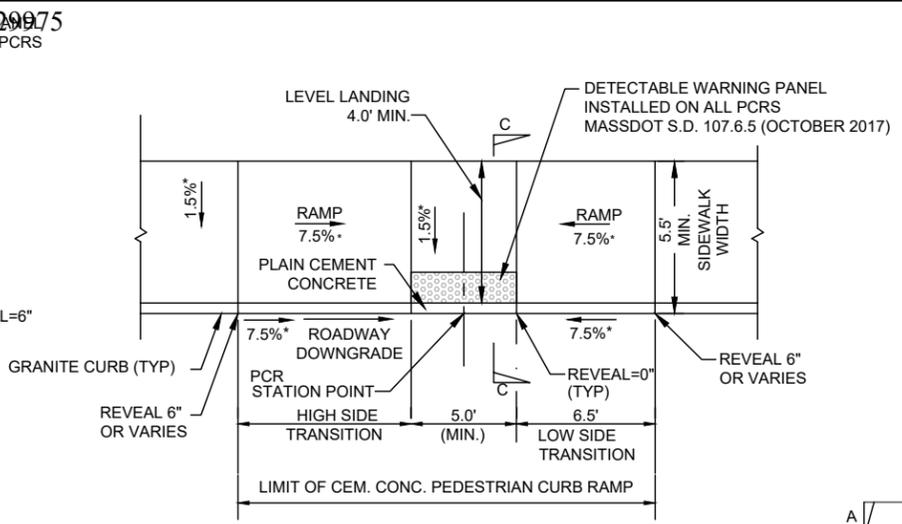
**CONSTRUCTION DETAILS**



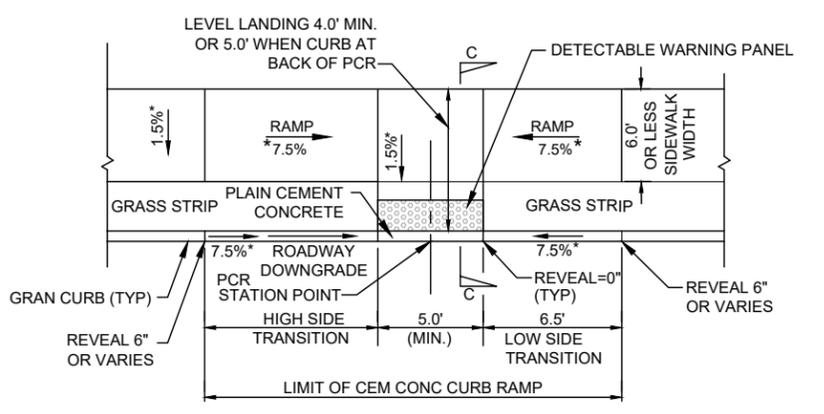
**PEDESTRIAN CURB RAMP TYPE "A"**  
 NOT TO SCALE



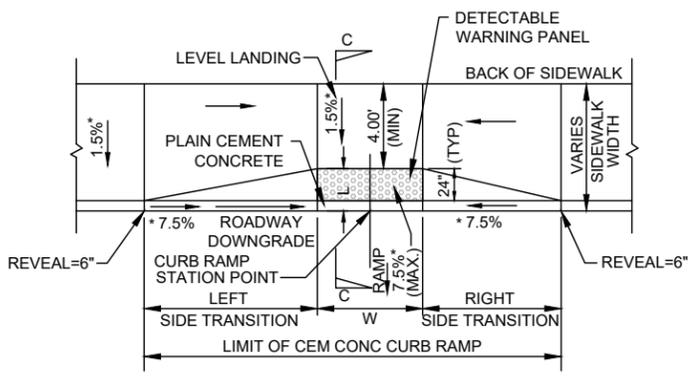
**PEDESTRIAN CURB RAMP DETAIL TYPE "G"**  
 NOT TO SCALE



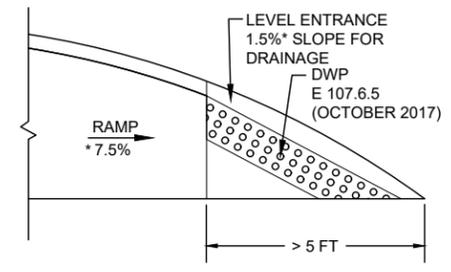
**PEDESTRIAN CURB RAMP DETAIL TYPE "C"**  
 NOT TO SCALE



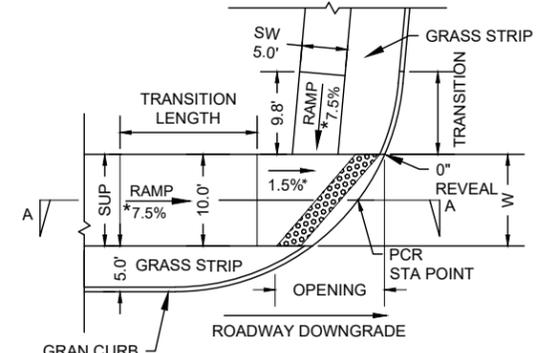
**CURB RAMP DETAIL TYPE "D"**  
 SEE MASSDOT S.D. E107.2.1  
 NOT TO SCALE



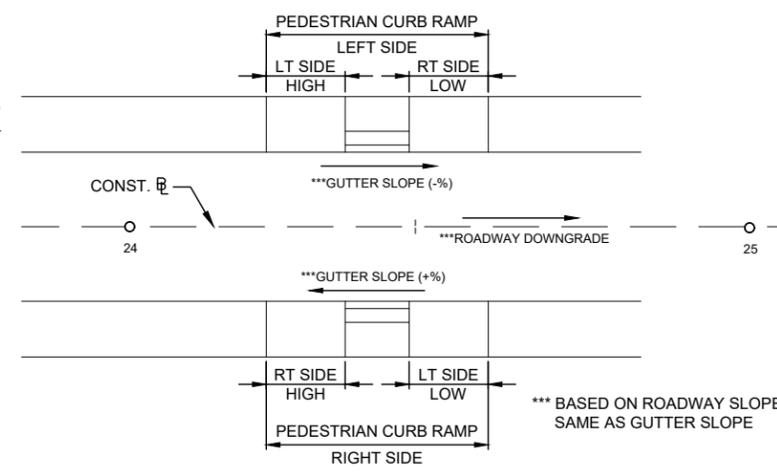
**CURB RAMP DETAIL TYPE "E"**  
 NOT TO SCALE



**DETECTABLE WARNING PANEL AT LEVEL LANDING >5'**  
 NOT TO SCALE



**CURB RAMP DETAIL TYPE "F"**  
 NOT TO SCALE



**GUTTER SLOPE DIAGRAM**  
 NOT TO SCALE

| PEDESTRIAN CURB RAMP TYPE A DATA |           |                      |        |                          |                          |                         |                |
|----------------------------------|-----------|----------------------|--------|--------------------------|--------------------------|-------------------------|----------------|
| PCR NO.                          | LOCATION  | RAMP REFERENCE POINT |        | GUTTER PROFILE SLOPE (%) | LENGTH OF PRIMARY RAMP L | WIDTH OF RAMP OPENING W | SIDEWALK WIDTH |
|                                  |           | STATION              | OFFSET |                          |                          |                         |                |
| 9                                | BOSTON RD | 116+89.0             | 24.3 L | -1.0%                    | 9.0'                     | 4.0'                    | 5.5'           |
| 10                               | BOSTON RD | 117+35.8             | 24.7 L | -0.8%                    | 6.5'                     | 4.0'                    | 5.5'           |
| 17                               | BOSTON RD | 138+30.9             | 23.4 L | -4.5%                    | 15.0'                    | 4.0'                    | 5.5'           |
| 18                               | BOSTON RD | 139+70.2             | 23.2 R | 2.3%                     | 11.0'                    | 4.0'                    | 5.5'           |

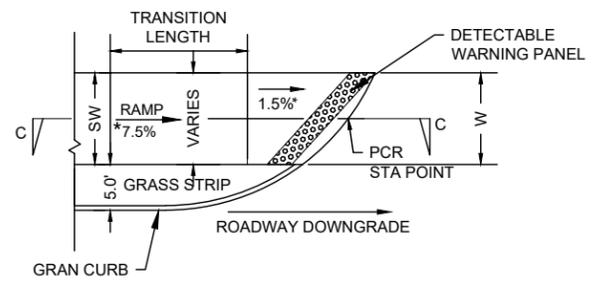
| PEDESTRIAN CURB RAMP TYPE B DATA |           |                      |        |                          |                          |                         |                |
|----------------------------------|-----------|----------------------|--------|--------------------------|--------------------------|-------------------------|----------------|
| PCR NO.                          | LOCATION  | RAMP REFERENCE POINT |        | GUTTER PROFILE SLOPE (%) | LENGTH OF PRIMARY RAMP L | WIDTH OF RAMP OPENING W | SIDEWALK WIDTH |
|                                  |           | STATION              | OFFSET |                          |                          |                         |                |
| 2                                | BOSTON RD | 106+94.0             | 26.9 R | 1.0%                     | 6.5'                     | 5.0'                    | 5.0'           |
| 8                                | BOSTON RD | 113+64.7             | 31.4 R | 5.5%                     | 6.5'                     | 5.0'                    | 5.0'           |

| PEDESTRIAN CURB RAMP TYPE C DATA |           |                      |        |                          |                         |                                   |                   |          |                |
|----------------------------------|-----------|----------------------|--------|--------------------------|-------------------------|-----------------------------------|-------------------|----------|----------------|
| PCR NO.                          | LOCATION  | RAMP REFERENCE POINT |        | GUTTER PROFILE SLOPE (%) | WIDTH OF RAMP OPENING W | DEPTH OF LEVEL LANDING (MIN 4.0') | TRANSITION LENGTH |          | SIDEWALK WIDTH |
|                                  |           | STATION              | OFFSET |                          |                         |                                   | LEFT              | RIGHT    |                |
| 1                                | BOSTON RD | 106+41.6             | 30.7 R | 5.4%                     | 5.0'                    | 5.0'                              | 6.5'              | 15.0'    | 5.5'           |
| 4                                | BOSTON RD | 108+17.9             | 29.5 L | -4.1%                    | 5.0'                    | 5.0'                              | 7.5' 3'R          | 6.5'     | 5.5'           |
| 5                                | BOSTON RD | 108+84.0             | 20.0 L | -5.7%                    | 5.0'                    | 5.0'                              | 15.0'             | 6.5' 4'R | 5.5'           |
| 11                               | BOSTON RD | 121+06.2             | 29.5 L | 2.5%                     | 5.0'                    | 5.0'                              | 6.5'              | 11.0'    | 5.5'           |
| 16                               | BOSTON RD | 123+66.9             | 30.0 L | 4.9%                     | 10.0'                   | 5.0'                              | 6.5'              | 15.0'    | 5.5'           |
| 20                               | BOSTON RD | 138+81.23            | 26.7 L | 1.5%                     | 5.0'                    | 5.0'                              | 6.5'              | 9.0'     | 5.5'           |

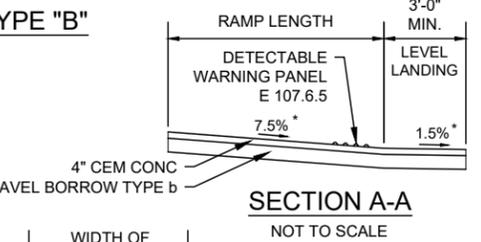
| PEDESTRIAN CURB RAMP TYPE D DATA |           |                      |        |                          |                         |                                   |                   |          |                |
|----------------------------------|-----------|----------------------|--------|--------------------------|-------------------------|-----------------------------------|-------------------|----------|----------------|
| PCR NO.                          | LOCATION  | RAMP REFERENCE POINT |        | GUTTER PROFILE SLOPE (%) | WIDTH OF RAMP OPENING W | DEPTH OF LEVEL LANDING (MIN 4.0') | TRANSITION LENGTH |          | SIDEWALK WIDTH |
|                                  |           | STATION              | OFFSET |                          |                         |                                   | LEFT              | RIGHT    |                |
| 6                                | BOSTON RD | 108+84.0             | 20.0 R | 4.7%                     | 5.0'                    | 10.0'                             | 6.5'              | 5.0' 2'R | 5.0'           |
| 15                               | BOSTON RD | 123+67.8             | 34.3 R | -1.8%                    | 10.0'                   | 20.4'                             | 9.0'              | 6.5'     | 10.0'          |

| PEDESTRIAN CURB RAMP TYPE E DATA |           |                      |        |                          |                          |                         |                                   |                   |       |                                     |
|----------------------------------|-----------|----------------------|--------|--------------------------|--------------------------|-------------------------|-----------------------------------|-------------------|-------|-------------------------------------|
| PCR NO.                          | LOCATION  | RAMP REFERENCE POINT |        | GUTTER PROFILE SLOPE (%) | LENGTH OF PRIMARY RAMP L | WIDTH OF RAMP OPENING W | DEPTH OF LEVEL LANDING (MIN 4.0') | TRANSITION LENGTH |       | SIDEWALK WIDTH                      |
|                                  |           | STATION              | OFFSET |                          |                          |                         |                                   | LEFT              | RIGHT |                                     |
| 3                                | BOSTON RD | 107+68.4             | 29.0 L | -3.2%                    | 2.6'                     | 5.0'                    | 4.3'                              | 14.0'             | 6.5'  | 5.0' (BOSTON RD)<br>5.5' (TUFTS LN) |

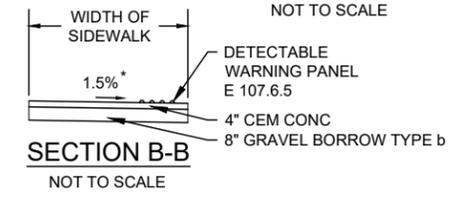
| PEDESTRIAN CURB RAMP TYPE G DATA |           |                      |        |                          |                          |                         |                                   |                   |       |                |
|----------------------------------|-----------|----------------------|--------|--------------------------|--------------------------|-------------------------|-----------------------------------|-------------------|-------|----------------|
| PCR NO.                          | LOCATION  | RAMP REFERENCE POINT |        | GUTTER PROFILE SLOPE (%) | LENGTH OF PRIMARY RAMP L | WIDTH OF RAMP OPENING W | DEPTH OF LEVEL LANDING (MIN 4.0') | TRANSITION LENGTH |       | SIDEWALK WIDTH |
|                                  |           | STATION              | OFFSET |                          |                          |                         |                                   | LEFT              | RIGHT |                |
| 7                                | BOSTON RD | 113+14.0             | 34.0 R | 3.4%                     | 3.8'                     | 5.0'                    | 4.0'                              | 6.5'              | 14.0' | 5.0'           |
| 19                               | BOSTON RD | 121+06.6             | 25.5 R | -2.4%                    | 4.0'                     | 5.0'                    | 10.0'                             | 9.0' 3'R          | 5.0'  | 5.0'           |



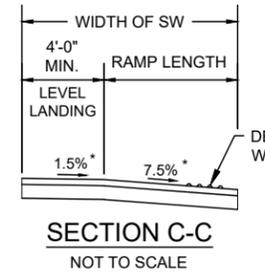
**CURB RAMP DETAIL TYPE "B"**  
 NOT TO SCALE



**SECTION A-A**  
 NOT TO SCALE



**SECTION B-B**  
 NOT TO SCALE



**SECTION C-C**  
 NOT TO SCALE

- NOTES:**
- ALL WHEELCHAIR RAMPS SHALL CONFORM TO THE REQUIREMENTS OF THE MASSACHUSETTS ARCHITECTURAL ACCESS BOARD (AAB) AND THE AMERICAN WITH DISABILITIES ACT (ADA) AND THE LATEST MASSDOT STANDARDS.
  - THE LOCATIONS OF PROPOSED WHEELCHAIR RAMPS ARE SHOWN ON CONSTRUCTION PLANS AND THE WHEELCHAIR RAMP DETAILS SHEETS. EXACT LOCATIONS MAY BE ADJUSTED, IF NECESSARY, BY THE ENGINEER IN THE FIELD.

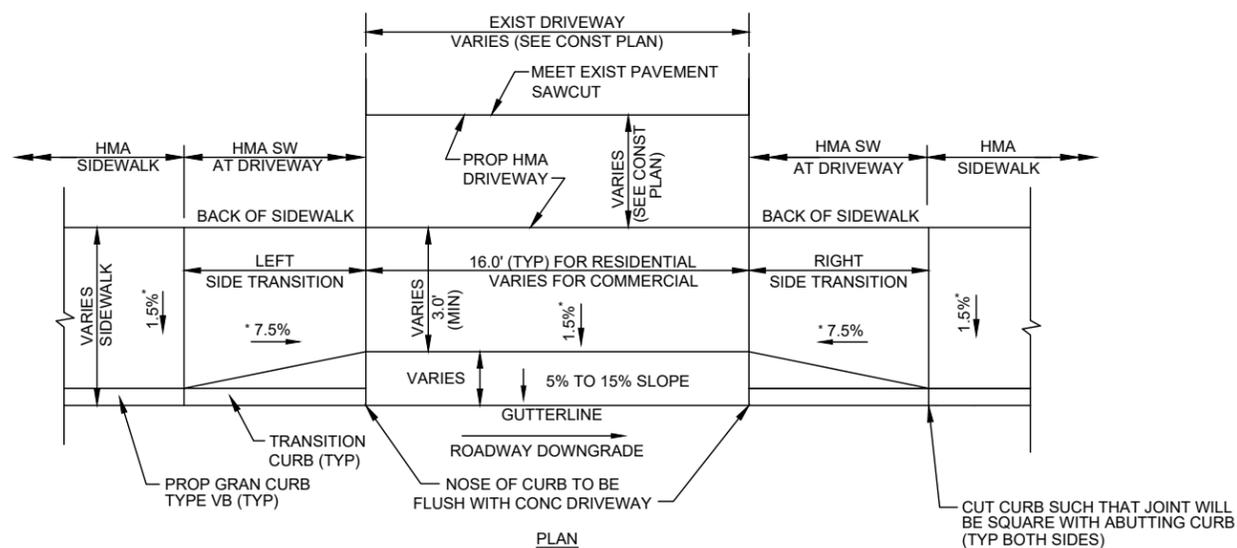
| PEDESTRIAN CURB RAMP TYPE F DATA |           |                      |        |                          |                         |   |   |
|----------------------------------|-----------|----------------------|--------|--------------------------|-------------------------|---|---|
| PCR NO.                          | LOCATION  | RAMP REFERENCE POINT |        | GUTTER PROFILE SLOPE (%) | WIDTH OF RAMP OPENING W | TRANSITION LENGTH                             | SIDEWALK WIDTH                                |
|                                  |           | STATION              | OFFSET |                          |                         |   |   |
| 12                               | BOSTON RD | 121+29.3             | 35.0 R | -2.6%                    | 10.0'                   | 9.0' (BOSTON RD) 3'R<br>6.5' (GLAD VALLEY DR) | 10.0' (BOSTON RD)<br>5.0' (GLAD VALLEY DR)    |
| 13                               | BOSTON RD | 121+77.9             | 33.2 R | -3.1%                    | 10.0'                   | 6.5' (GLAD VALLEY DR)                         | 10.0' (BOSTON RD)<br>5.0' (GLAD VALLEY DR)    |
| 14                               | BOSTON RD | 123+02.6             | 39.6 R | -0.074                   | 10                      | 16.9' (LEXINGTON RD)                          | 10.0' (BOSTON RD)<br>5.5'-8.5' (LEXINGTON RD) |

NOTE: REFER TO GUTTER SLOPE DIAGRAM ON SHEET 8 FOR EXPLANATION OF GUTTER PROFILE SLOPE

\* TOLERANCE FOR CONSTRUCTION ±0.5%

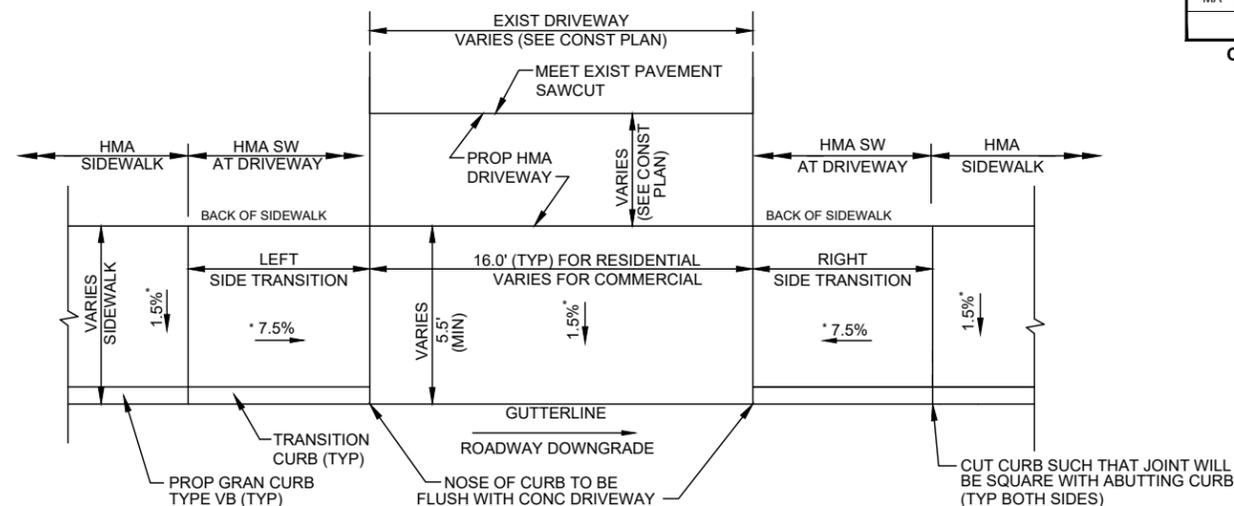
|                  |                    |           |              |
|------------------|--------------------|-----------|--------------|
| STATE            | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
| MA               | -                  | 9         | 30           |
| PROJECT FILE NO. |                    | 609250    |              |

CONSTRUCTION DETAILS



DETAIL FOR TYPICAL DRIVEWAY WITH SIDEWALK - TYPE A

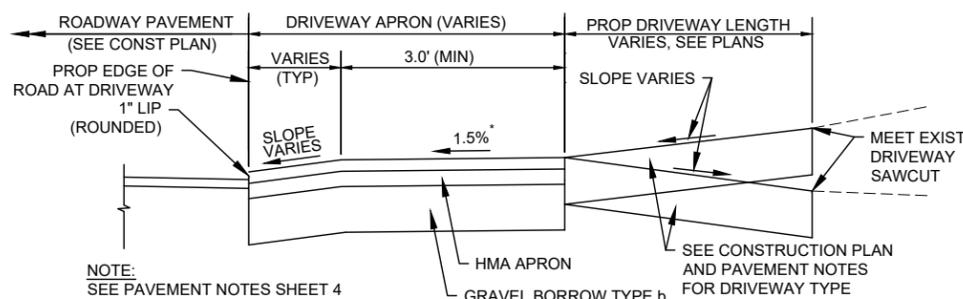
NOT TO SCALE  
MASSDOT CONST. STD. DWG. NO. E107.7.0



PLAN

DETAIL FOR DEPRESSED DRIVEWAY WITH SIDEWALK - TYPE B

NOT TO SCALE

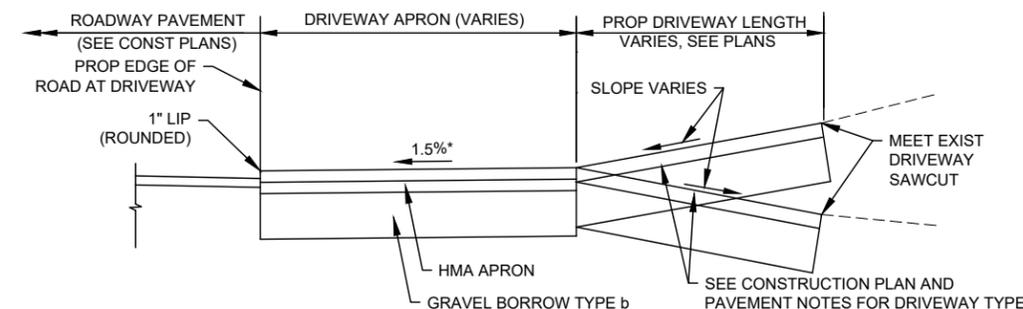


SECTION FOR TYPICAL HMA DRIVEWAY WITH SIDEWALK

NOT TO SCALE

NOTE:  
SEE DRIVEWAY TABLE ON SHEET 8

NOTE:  
SEE WCR TABLE ON SHEET 7



SECTION FOR DEPRESSED HMA DRIVEWAY WITH SIDEWALK

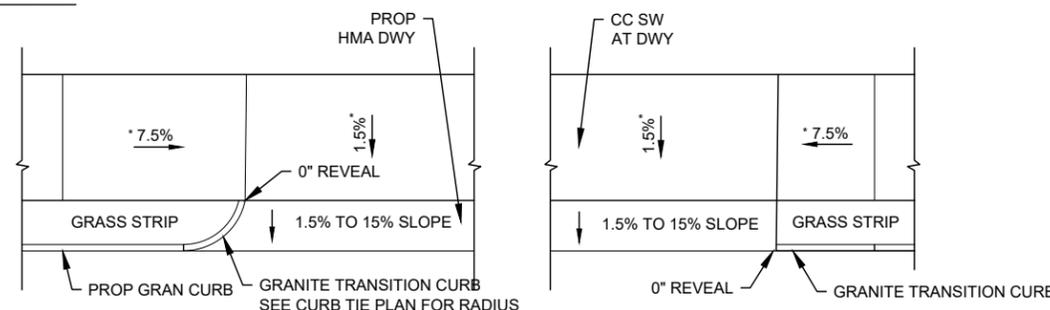
NOT TO SCALE

- NOTES:
- ALL WHEELCHAIR RAMPS SHALL CONFORM TO THE REQUIREMENTS OF THE MASSACHUSETTS ARCHITECTURAL ACCESS BOARD (AAB) AND THE AMERICAN WITH DISABILITIES ACT (ADA) AND THE LATEST MASSDOT STANDARDS.
  - THE LOCATIONS OF PROPOSED WHEELCHAIR RAMPS ARE SHOWN ON CONSTRUCTION PLANS AND THE WHEELCHAIR RAMP DETAILS SHEETS. EXACT LOCATIONS MAY BE ADJUSTED, IF NECESSARY, BY THE ENGINEER IN THE FIELD.

| ROADWAY PROFILE GRADE | * HIGH SIDE TRANSITION LENGTH |
|-----------------------|-------------------------------|
| %                     | ENGLISH UNITS                 |
| =0%                   | 6'-6"                         |
| >0% TO 1%             | 7'-8"                         |
| >1% TO 2%             | 9'-0"                         |
| >2% TO 3%             | 11'-0"                        |
| >3% TO 4%             | 14'-0"                        |
| >4% TO 5%             | 15'-0" MAX.                   |

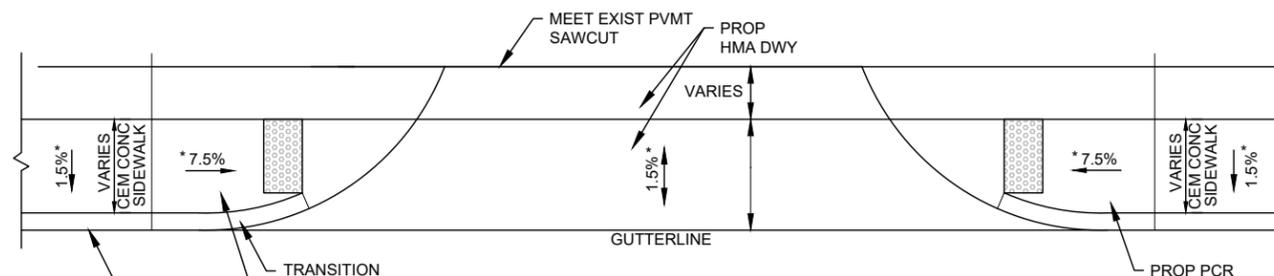
CURB TRANSITION LENGTH FOR PEDESTRIAN CURB RAMPS

MASSDOT CONST. STD. DWG. NO. E107.9.0  
\*BASED ON A DESIGN SLOPE OF 7.5% AND A REVEAL OF 6".



DETAIL FOR TYPICAL DRIVEWAY WITH SIDEWALK & GRASS STRIP

NOT TO SCALE



DETAIL FOR COMMERCIAL HMA DRIVEWAY WITH SIDEWALK

NOT TO SCALE

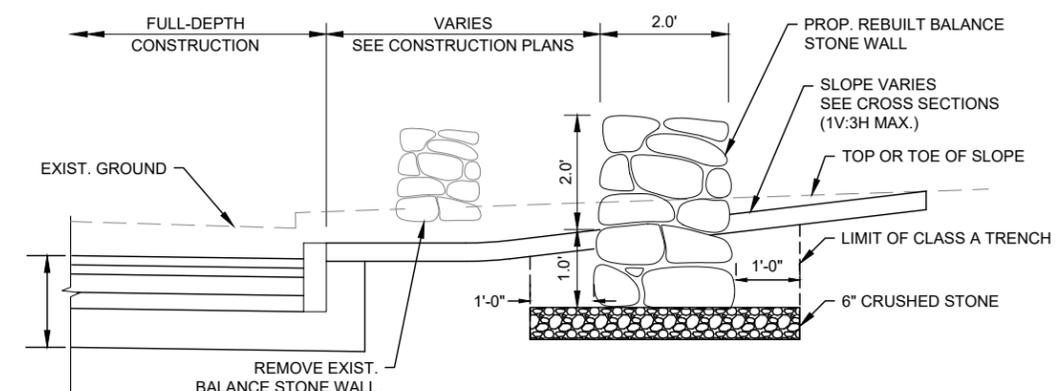
\* TOLERANCE FOR CONSTRUCTION ±0.5%

|                  |                    |           |              |
|------------------|--------------------|-----------|--------------|
| STATE            | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
| MA               | -                  | 10        | 30           |
| PROJECT FILE NO. |                    | 609250    |              |

CONSTRUCTION DETAILS

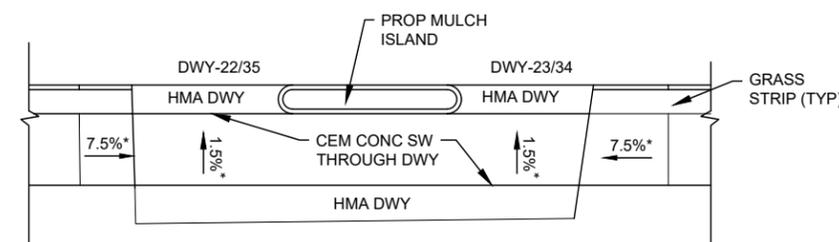
| DRIVEWAY TYPE A OPENING |              |                            |        |                          |                         |                                     |                                      |                   |       |
|-------------------------|--------------|----------------------------|--------|--------------------------|-------------------------|-------------------------------------|--------------------------------------|-------------------|-------|
| DWY NO.                 | LOCATION     | DRIVEWAY OPENING AT GUTTER |        | GUTTER PROFILE SLOPE (%) | OPENING WIDTH AT GUTTER | DEPTH OF GUTTER TO BACK OF SIDEWALK | PATH OF TRAVEL WIDTH ACROSS DRIVEWAY | TRANSITION LENGTH |       |
|                         |              | STATION                    | OFFSET |                          |                         |                                     |                                      | LEFT              | RIGHT |
| 10                      | BOSTON RD    | 111+29.9                   | 20.0 L | -6.0%                    | 20.0'                   | 5.5'                                | 3.0'                                 | 15.0'             | 6.5'  |
| 26                      | LEXINGTON RD | 21+48.1                    | 25.4 L | 6.0%                     | 25.3'                   | 5.5'                                | 5.5'                                 | 6.5'              | -     |
| 27                      | BOSTON RD    | 125+83.3                   | 18.0 R | -4.3%                    | 20.0'                   | 8.0'                                | 3.0'                                 | 15.0'             | 6.5'  |
| 36                      | BOSTON RD    | 134+17.8                   | 20.0 R | 0.6%                     | 29.0'                   | 5.5'                                | 5.5'                                 | 6.5'              | 7.7'  |

| DRIVEWAY TYPE B OPENING |                |                            |        |                          |                         |                                     |                                      |                   |            |
|-------------------------|----------------|----------------------------|--------|--------------------------|-------------------------|-------------------------------------|--------------------------------------|-------------------|------------|
| DWY NO.                 | LOCATION       | DRIVEWAY OPENING AT GUTTER |        | GUTTER PROFILE SLOPE (%) | OPENING WIDTH AT GUTTER | DEPTH OF GUTTER TO BACK OF SIDEWALK | PATH OF TRAVEL WIDTH ACROSS DRIVEWAY | TRANSITION LENGTH |            |
|                         |                | STATION                    | OFFSET |                          |                         |                                     |                                      | LEFT              | RIGHT      |
| 1                       | BOSTON RD      | 104+43.0                   | 27.0 L | -3.9%                    | 25.0'                   | 9.0'                                | 5.0'                                 | 14.0'             | 7.0'       |
| 2                       | BOSTON RD      | 105+79.9                   | 25.9 L | -4.2%                    | 20.0'                   | 9.0'                                | 5.0'                                 | 14.0'             | 6.5'       |
| 3                       | BOSTON RD      | 105+89.7                   | 25.4 R | 4.2%                     | 20.0'                   | 5.5'                                | 5.5'                                 | 6.5'              | 15.0'      |
| 4                       | BOSTON RD      | 106+55.2                   | 24.1 L | -3.9%                    | 25.0'                   | 9.0'                                | 5.0'                                 | 14.0'             | 6.5'       |
| 5                       | BOSTON RD      | 108+49.3                   | 20.0 R | 4.1%                     | 61.3'                   | 10.0'                               | 5.0'                                 | 6.5'              | 15.0'      |
| 6                       | BOSTON RD      | 109+41.1                   | 20.0 L | -6.1%                    | 56.0'                   | 5.5'                                | 5.5'                                 | 10.0' (4"R)       | 6.5'       |
| 7                       | BOSTON RD      | 109+43.3                   | 20.0 R | 6.4%                     | 61.6'                   | 11.5' ±                             | 5.0'                                 | 6.5'              | 15.0'      |
| 8                       | BOSTON RD      | 110+63.5                   | 20.0 R | 5.5%                     | 67.3'                   | 12.5' ±                             | 5.0'                                 | 6.5'              | 15.0'      |
| 9                       | BOSTON RD      | 110+73.1                   | 20.0 L | -3.2%                    | 20.0'                   | 5.5'                                | 5.5'                                 | 15.0'             | 6.5'       |
| 11                      | BOSTON RD      | 111+84.9                   | 20.0 L | -6.5%                    | 20.0'                   | 5.5'                                | 5.0'                                 | 15.0'             | 6.5'       |
| 12                      | BOSTON RD      | 112+31.7                   | 20.0 R | 5.4%                     | 71.7'                   | 13.0'                               | 5.5'                                 | 6.5'              | 15.0'      |
| 13                      | BOSTON RD      | 112+43.1                   | 20.0 L | -5.9%                    | 20.0'                   | 5.5'                                | 5.0'                                 | 15.0'             | 6.5'       |
| 14                      | BOSTON RD      | 114+17.0                   | 20.0 L | -4.6%                    | 22.0'                   | 5.5'                                | 5.5'                                 | 15.0'             | 6.5'       |
| 15                      | BOSTON RD      | 114+97.1                   | 20.0 R | 4.1%                     | 31.8'                   | 14.0'                               | 5.0'                                 | 6.5'              | 15.0'      |
| 16                      | BOSTON RD      | 115+70.5                   | 20.0 R | 3.1%                     | 49.8'                   | 14.0'                               | 5.0'                                 | 6.5'              | 14.0'      |
| 17                      | BOSTON RD      | 116+44.8                   | 20.0 R | 2.7%                     | 61.0'                   | 14.0'                               | 5.0'                                 | 7.7'              | 6.5'       |
| 18                      | BOSTON RD      | 117+12.4                   | 28.8 L | 0.0%                     | 68.5'                   | 5.5'                                | 5.5'                                 | -                 | -          |
| 19                      | BOSTON RD      | 117+60.                    | 20.0 R | 0.8%                     | 56.2'                   | 16.0'                               | 10.0'                                | 6.5'              | 6.5'       |
| 20                      | BOSTON RD      | 118+74.7                   | 23.8 R | -0.6%                    | 42.1'                   | 15.5' ±                             | 10.0'                                | 7.7'              | 14.0'      |
| 21                      | BOSTON RD      | 119+22.7                   | 26.8 L | 1.0%                     | 24.0'                   | 5.5'                                | 5.5'                                 | 6.5'              | 7.7'       |
| 22                      | BOSTON RD      | 119+61.0                   | 25.0 R | -1.1%                    | 22.5'                   | 14.0'                               | 10.0'                                | -                 | 6.5'       |
| 23                      | BOSTON RD      | 120+04.1                   | 25.0 R | -0.9%                    | 20.5'                   | 14.0'                               | 10.0'                                | 7.7'              | -          |
| 28                      | BOSTON RD      | 127+21.9                   | 26.1 L | 5.1%                     | 46.3'                   | 5.5'                                | 5.5'                                 | 6.5'              | 15.0'      |
| 29                      | BOSTON RD      | 128+00.1                   | 18.4 R | -3.0%                    | 23.5'                   | 4.3'                                | 4.3'                                 | 14.0'             | 6.5'       |
| 30                      | BOSTON RD      | 129+33.3                   | 20.0 L | 3.7%                     | 92.9'                   | 5.5'                                | 5.5'                                 | 6.5'              | 14.0'      |
| 31                      | BOSTON RD      | 130+25.7                   | 20.0 L | 2.2%                     | 39.9'                   | 5.5'                                | 5.5'                                 | 11.0'             | 6.5'       |
| 32                      | BOSTON RD      | 131+51.3                   | 20.0 R | 1.2%                     | 50.5'                   | 5.5'                                | 5.5'                                 | 7.7'              | 6.5'       |
| 33                      | BOSTON RD      | 131+53.2                   | 20.0 L | -1.6%                    | 58.5'                   | 5.5'                                | 5.5'                                 | 6.5'              | 9.0'       |
| 34                      | BOSTON RD      | 132+32.5                   | 20.0 L | 0.5%                     | 26.7'                   | 5.5'                                | 5.5'                                 | 6.5'              | 4.0' (3"R) |
| 35                      | BOSTON RD      | 132+73.0                   | 20.0 L | 0.9%                     | 30.4'                   | 5.5'                                | 5.5'                                 | 3.3' (3"R)        | 7.7'       |
| 37                      | BOSTON RD      | 134+49.9                   | 20.0 L | -1.7%                    | 30.0'                   | 5.5'                                | 5.5'                                 | 7.7'              | 6.5'       |
| 38                      | BOSTON RD      | 135+96.7                   | 20.0 L | -5.8%                    | 40.0'                   | 5.5'                                | 5.5'                                 | 15.0'             | 6.5'       |
| 39                      | BOSTON RD      | 136+84.9                   | 20.0 R | 4.3%                     | 39.5'                   | 5.5'                                | 5.5'                                 | 6.5'              | 14.0'      |
| 40                      | BOSTON RD      | 137+49.9                   | 20 R   | 4.4%                     | 20.0'                   | 5.5'                                | 5.5'                                 | 6.5'              | 15.0'      |
| 41                      | BOSTON RD      | 138+31.0                   | 20.0 R | 5.3%                     | 28.0'                   | 5.5'                                | 5.5'                                 | 6.5'              | 15.0'      |
| 42                      | BOSTON RD      | 139+05.7                   | 20.0 R | 3.5%                     | 30.0'                   | 5.5'                                | 5.5'                                 | 6.5'              | 15.0'      |
| 25                      | LEXINGTON RD   | 22+00.2                    | 13.1 R | -6.9%                    | 20.0'                   | 5.5'                                | 5.5'                                 | -                 | 6.5'       |
| 24                      | GLAD VALLEY DR | 10+82.5                    | 16.0 L | -5.3%                    | 18.8'                   | 5.5'                                | 5.5'                                 | 15.0'             | -          |



NOTE: PROVIDE ADDITIONAL FIELD STONE MASONRY (M9.04.4) AS MAY BE NECESSARY TO REBUILD THE STONE WALL TO THE DIMENSIONS SHOWN ABOVE AND ON THE CONSTRUCTION PLANS.

DETAIL FOR BALANCE STONE WALL REMOVED AND REBUILT  
NOT TO SCALE



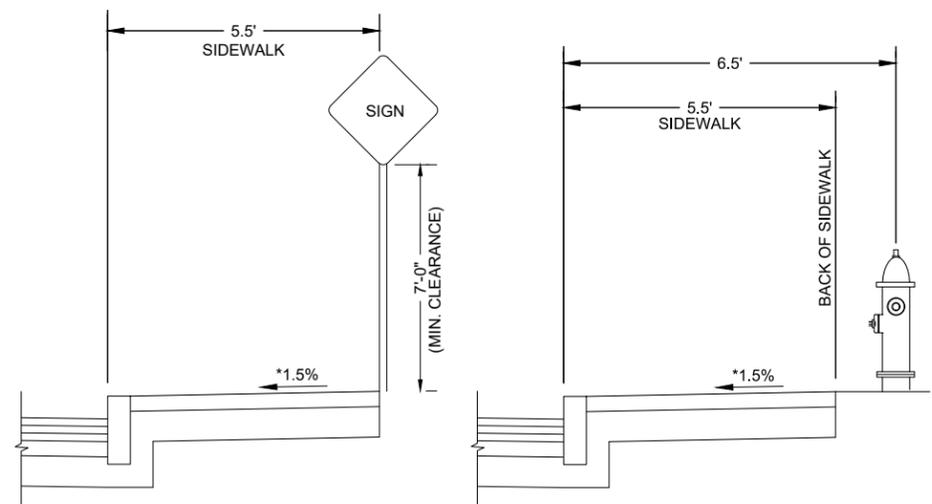
DRIVEWAY-22/23 AND DRIVEWAY-34/35 DETAIL  
NOT TO SCALE

\* TOLERANCE FOR CONSTRUCTION ±0.5%

| STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|-------|--------------------|-----------|--------------|
| MA    | -                  | 11        | 30           |

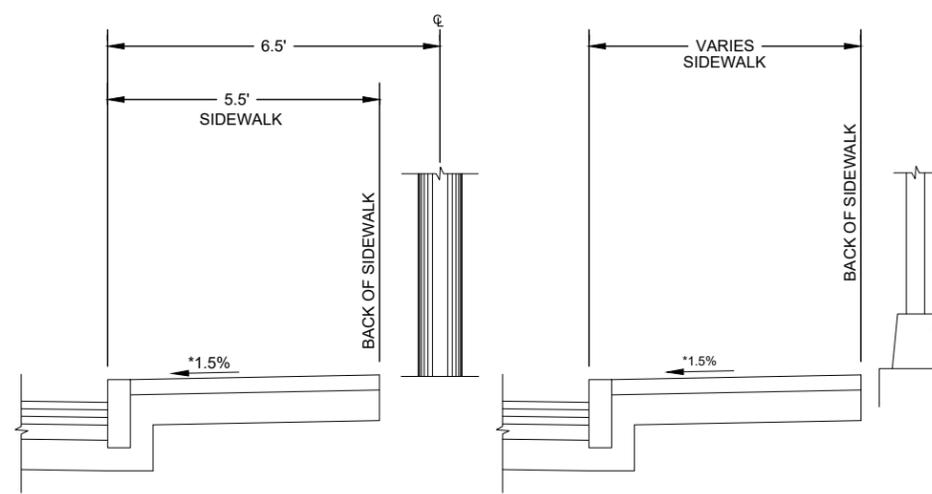
PROJECT FILE NO. 609250

CONSTRUCTION DETAILS



TRAFFIC SIGN  
NOT TO SCALE

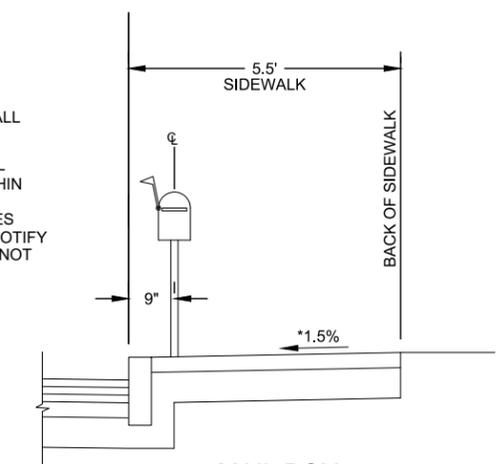
HYDRANT  
NOT TO SCALE



UTILITY POLE  
NOT TO SCALE

TRAFFIC SIGNAL FOUNDATION  
NOT TO SCALE

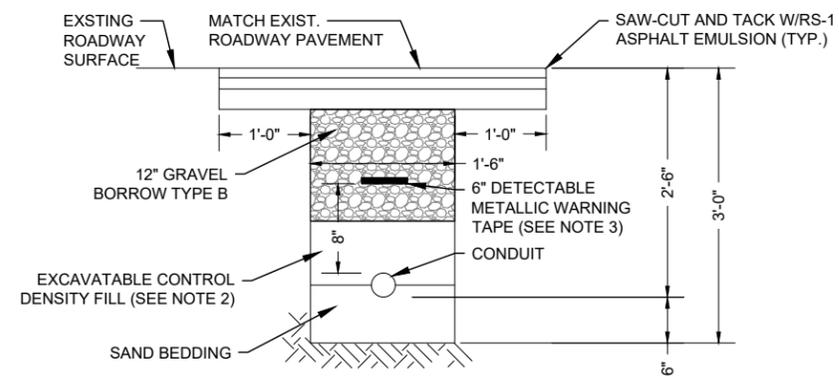
- NOTES:
1. MINIMUM CLEAR PATH ON ALL SIDEWALKS SHALL BE 36 INCHES, EXCLUDING THE CURB.
  2. CONTRACTOR SHALL VERIFY LOCATION OF ALL OBJECTS (SIGNS, POLES ETC.) TO BE SET WITHIN SIDEWALK PRIOR TO FINAL PLACEMENT TO PROVIDE A MINIMUM CLEAR PATH OF 36 INCHES NOT INCLUDING CURB. CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY LOCATION WHICH CANNOT MEET THE CLEARANCE REQUIREMENTS.



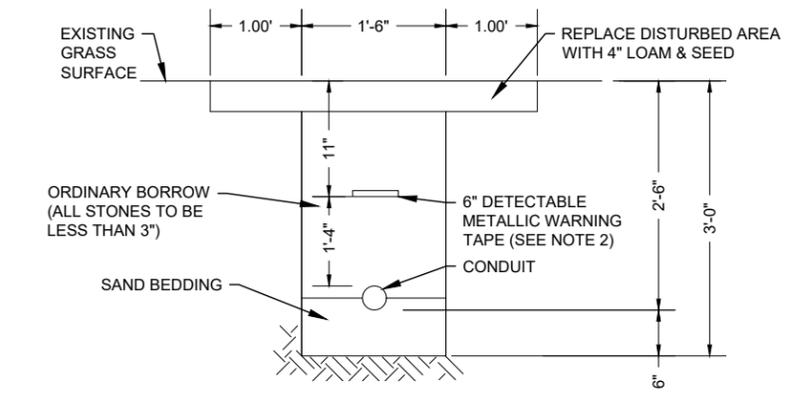
MAIL BOX  
NOT TO SCALE  
SEE MASSDOT S.D. E504.1.0

\* TOLERANCE FOR CONSTRUCTION ±0.5%

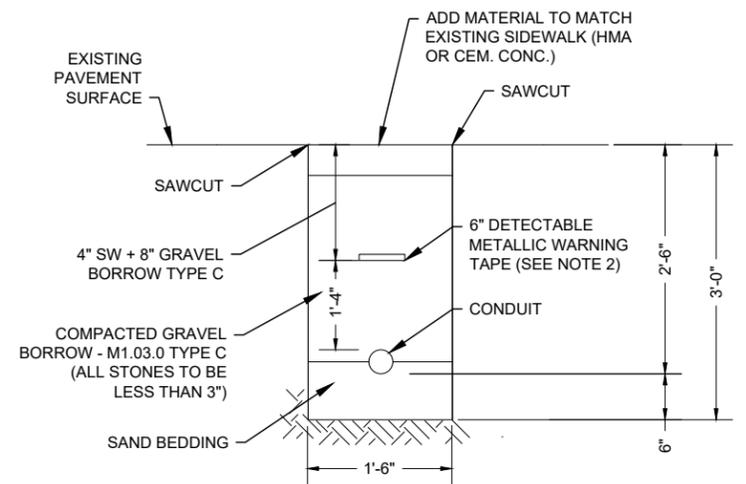
DETAILS SHOWING SIDEWALK CLEARANCES



CONDUIT CROSSING  
ROADWAY  
NOT TO SCALE

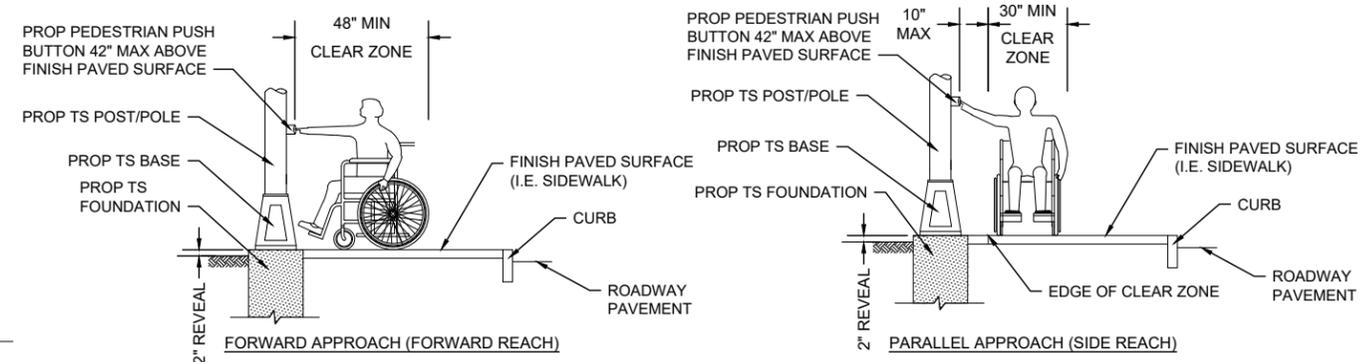


CONDUIT UNDER  
GRASS AREAS  
NOT TO SCALE



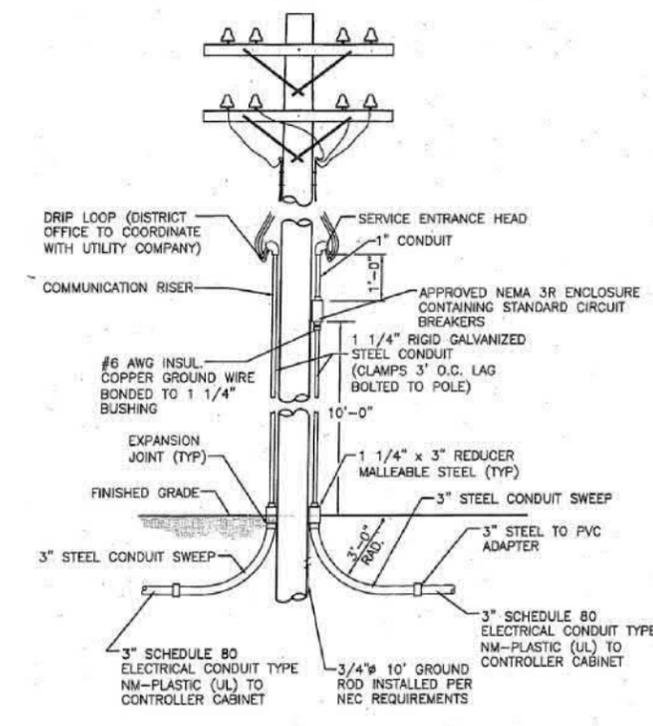
CONDUIT UNDER  
SIDEWALK AREAS  
NOT TO SCALE

- NOTES:
1. SCHEDULE 80 ELECTRICAL CONDUIT TYPE NM-PLASTIC (UL), WITH PULL ROPE UNLESS OTHERWISE APPROVED BY MASSDOT.
  2. CONTROL DENSITY FILL SHALL MEET THE REQUIREMENTS OF SUBSECTION M4.08.0
  3. WARNING TAPE SHALL BE PER CURRENT APWA STANDARDS.



PEDESTRIAN PUSH BUTTON CLEAR ZONE  
NOT TO SCALE

- NOTE:
- A CLEAR GROUND SPACE SHALL CONSIST OF A STABLE AND FIRM AREA, COMPLYING WITH 521 CMR 6.5 (FORWARD REACH) OR 521 CMR 6.6 (SIDE REACH) AND SHALL BE PROVIDED AT EACH OF THE PEDESTRIAN PUSH BUTTONS.
- a) WHERE A FORWARD APPROACH IS PROVIDED, PEDESTRIAN PUSH BUTTONS SHALL ABUT AND BE CENTERED ON THE CLEAR GROUND SPACE.
  - b) WHERE A PARALLEL APPROACH IS PROVIDED, PEDESTRIAN PUSH BUTTONS SHALL BE WITHIN TEN INCHES (10") HORIZONTALLY OF AND CENTERED ON THE CLEAR GROUND SPACE.

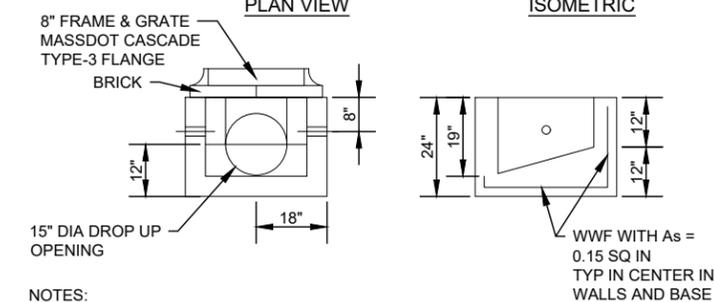
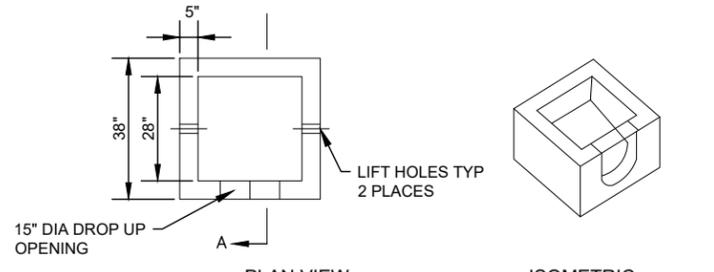


NOTE:  
SPECIFIC ATTACHMENT AND CONNECTION REQUIREMENTS MAY VARY. COORDINATION WITH THE LOCAL UTILITY COMPANY IS REQUIRED BY THE CONTRACTOR.

TRAFFIC SIGNAL SERVICE  
CONNECTION - OVERHEAD  
NOT TO SCALE

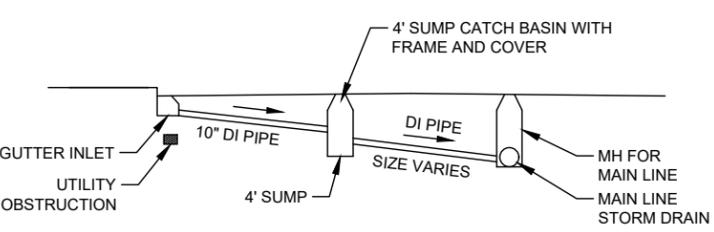
| STATE            | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|------------------|--------------------|-----------|--------------|
| MA               | -                  | 12        | 30           |
| PROJECT FILE NO. |                    | 609250    |              |

CONSTRUCTION DETAILS



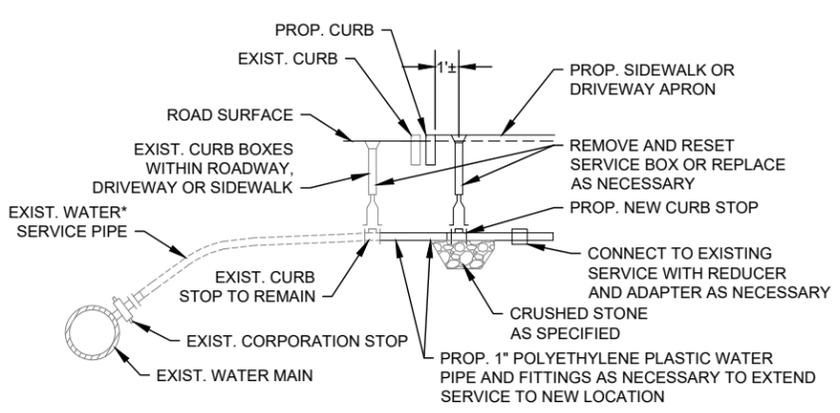
- NOTES:
- DESIGNED FOR AASHTO HS25-44 LOADING
  - CONCRETE STRENGTH  $f_c=4000$  PSI
  - REINFORCING STEEL: ASTM A185 (wwf)  $f_y=60,000$  PSI
  - CURB INLETS ARE REQUIRED WHEN GUTTER INLETS ARE INSTALLED AGAINST CURBING.

**SPECIAL GUTTER INLET**  
 NOT TO SCALE  
 (ITEM 204.11)



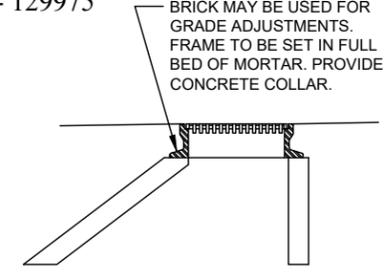
NOTE:  
 GUTTER INLET SHOULD NOT BE USED DIRECTLY OVER GAS MAINS, TELEPHONE OR ELECTRIC DUCTS.

**CONTINGENCY DETAIL FOR STORM DRAIN LATERAL LINES**  
 (USE ONLY IF OBSTRUCTION IS ENCOUNTERED)  
 NOT TO SCALE



\* IF EXISTING WATER SERVICE LINES IS NOT PLASTIC, CONTRACTOR SHALL INFORM EASTON WATER DEPARTMENT. NO CONNECTION SHALL BE MADE UNTIL THE EASTON WATER DEPARTMENT DETERMINES IF THE EXISTING LINE IS SUITABLE TO BE EXTENDED OR MUST BE REPLACE TO THE MAIN.

**CURB STOP RELOCATION DETAIL**  
 NOT TO SCALE

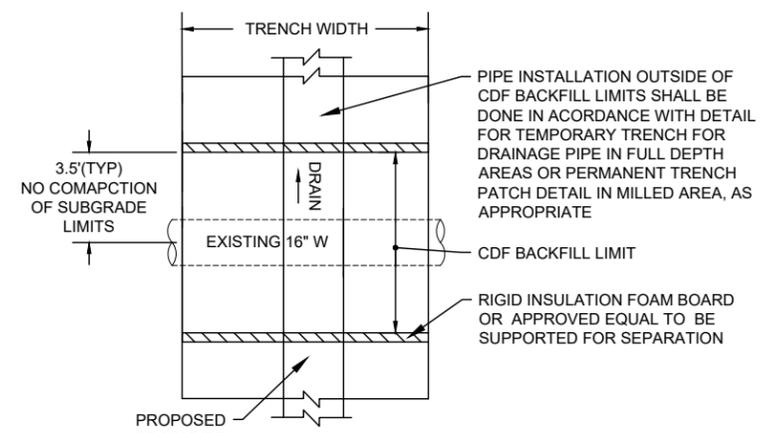


BRICK MAY BE USED FOR GRADE ADJUSTMENTS. FRAME TO BE SET IN FULL BED OF MORTAR. PROVIDE CONCRETE COLLAR.

NOTES:  
 1. BASED ON ACTUAL FIELD CONDITIONS; THE CONTRACTOR SHALL DETERMINE WHICH STYLE OF TOP SECTION SHOULD BE USED.

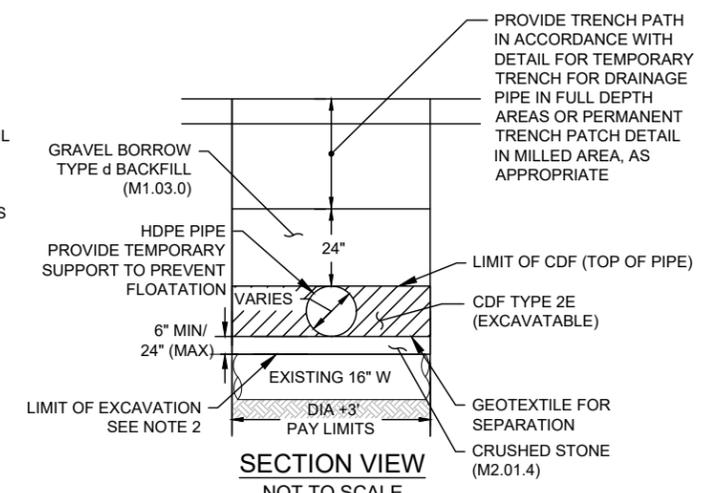
**ALTERNATE ECCENTRIC CONE SECTION FOR CATCH BASIN OR MANHOLE**  
 NOT TO SCALE

**ALTERNATE TOP SLAB FOR CATCH BASIN OR MANHOLE**  
 NOT TO SCALE



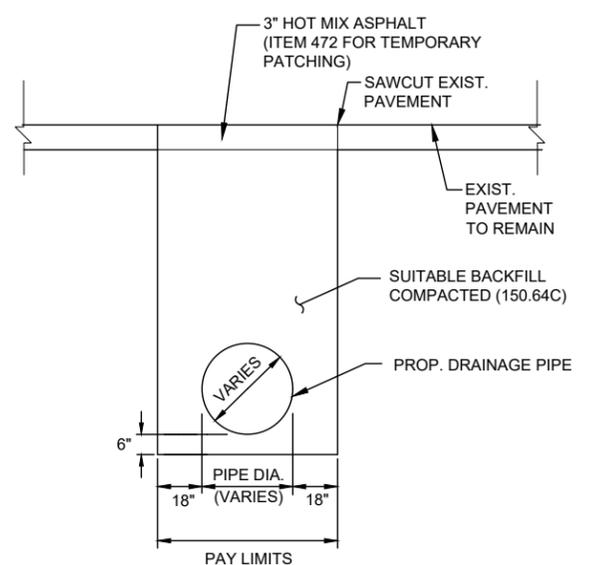
**PLAN VIEW**  
 NOT TO SCALE

- NOTES:
- CDF BACKFILL AT SHALLOW DRAINAGE CROSSINGS SHALL ONLY BE USED AT LOCATIONS WHERE SEPARATION BETWEEN THE PROPOSED DRAIN PIPE AND EXISTING WATER MAIN IS LESS THAN 24 INCHES OR AS DIRECTED BY THE ENGINEER IN COORDINATION WITH THE TOWN OF BILLERICA.
  - HAND OR OTHER NON-DESTRUCTIVE EXCAVATION SHALL BE PERFORMED WHERE PROPOSED DRAINAGE HAS LESS THAN 2' OF SEPARATION TO EXISTING CONCRETE WATER MAIN AND IS WITHIN "NO COMPACTION OF SUBGRADE LIMITS."

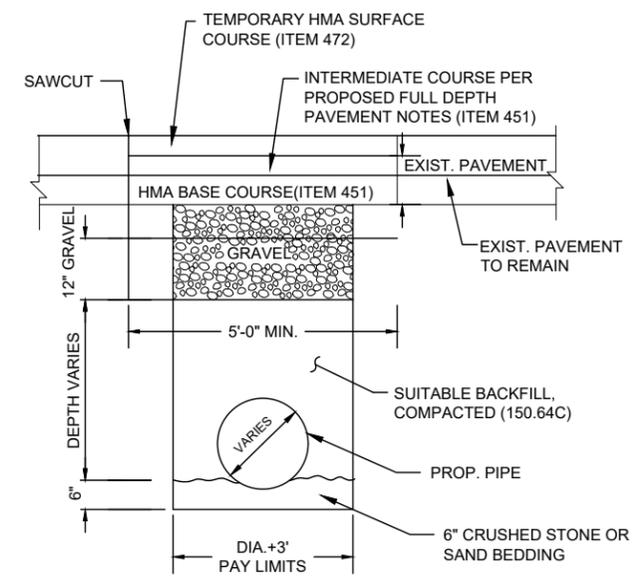


**SECTION VIEW**  
 NOT TO SCALE

**SHALLOW DRAINAGE CROSSING AT EXISTING CONCRETE WATER MAIN DETAIL**



**DETAIL FOR TEMPORARY PATCH OF DRAINAGE PIPE TRENCH IN FULL DEPTH AREAS**  
 NOT TO SCALE

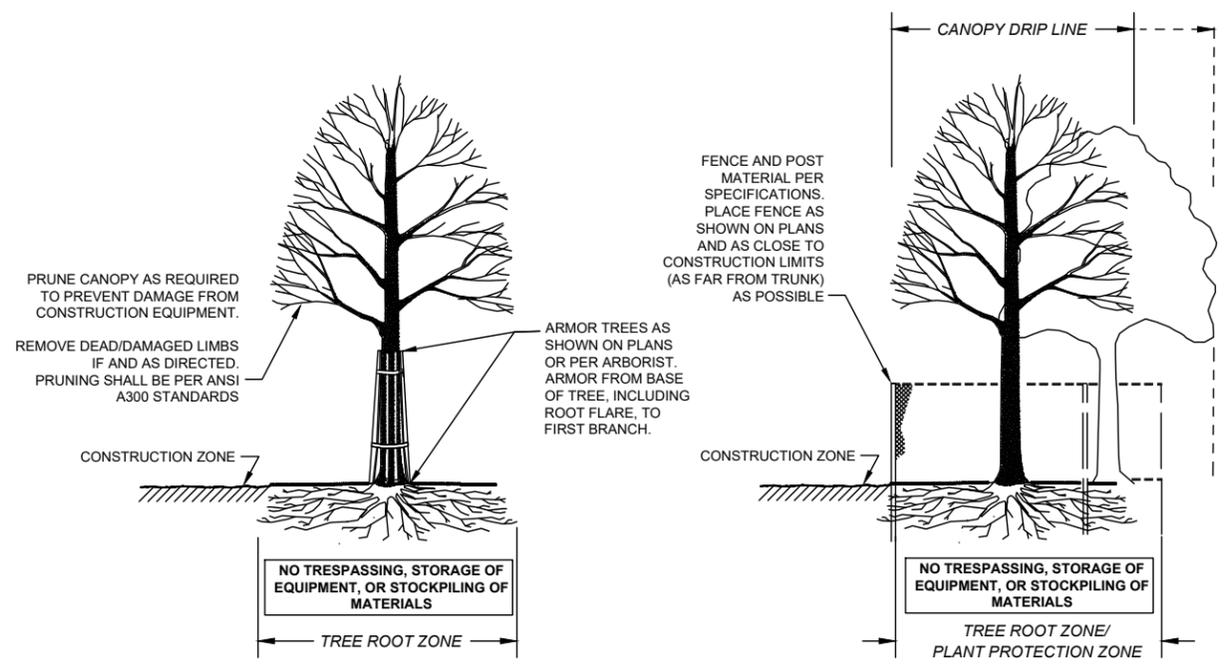


**PERMANENT TRENCH PATCH DETAIL IN MILLED AREAS**  
 NOT TO SCALE

| STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|-------|--------------------|-----------|--------------|
| MA    | -                  | 13        | 30           |

PROJECT FILE NO. 609250

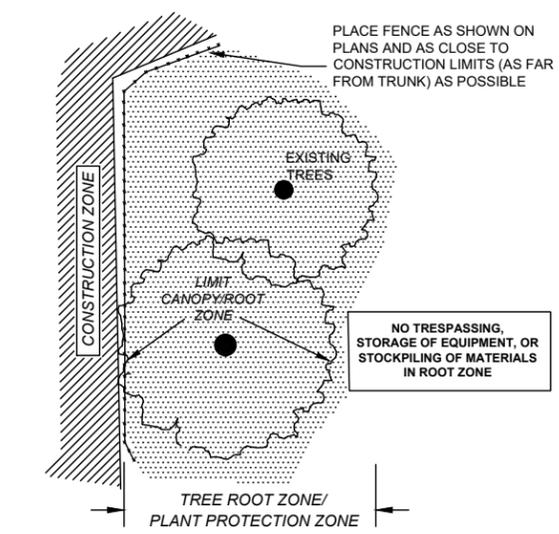
CONSTRUCTION DETAILS



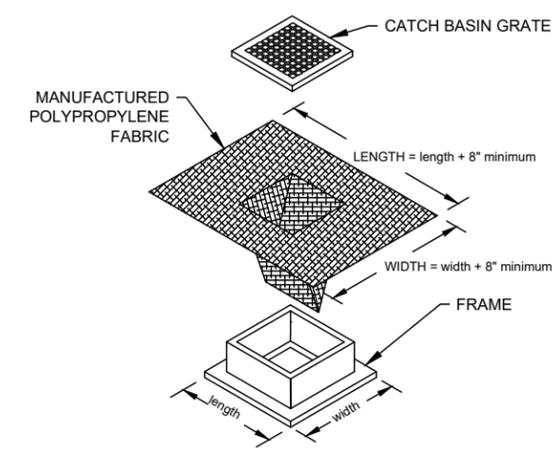
SECTION - TRUNK ARMORING & PRUNING

SECTION - FENCE PROTECTION OF ROOT ZONE

TREE PROTECTION DETAILS  
NOT TO SCALE



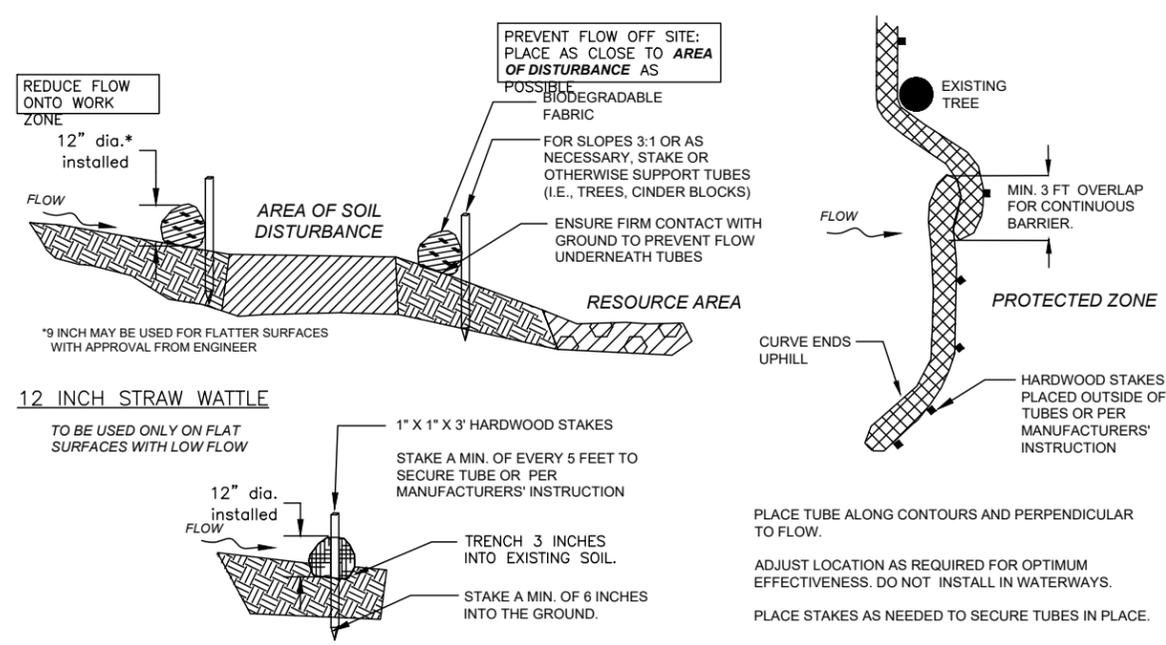
PLAN VIEW - FENCE PROTECTION OF ROOT ZONE



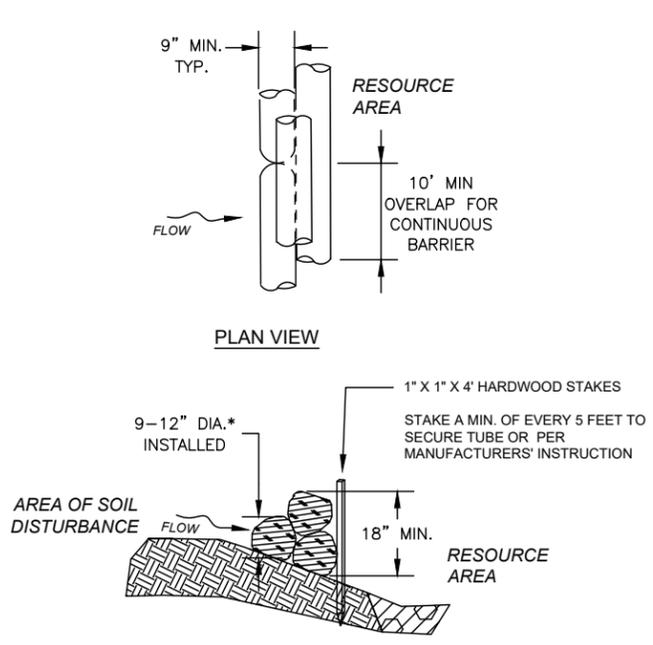
NOTES

1. LENGTH AND WIDTH OF POLYPROPYLENE FABRIC MUST EXCEED EXISTING CATCH BASIN FRAME DIMENSIONS BY A MINIMUM OF 8".
2. REMOVE CATCH BASIN GRATE AND INSTALL POLYPROPYLENE FABRIC OVER CATCH BASIN FRAME. REPLACE CATCH BASIN GRATE TO SECURE POLYPROPYLENE FABRIC IN PLACE.

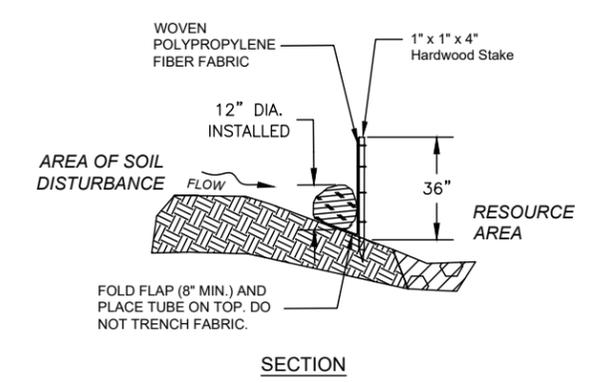
CATCH BASIN EROSION CONTROL PROTECTION (TYP)  
NOT TO SCALE



SEDIMENT BARRIERS - COMPOST FILTER TUBES & STRAW WATTLES  
NOT TO SCALE



COMPOST FILTER TUBE BERM (SLOPES 2:1 OR STEEPER)  
NOT TO SCALE



COMPOST FILTER TUBE & SILT FENCE  
NOT TO SCALE

HIGHWAY GUARD DETAILS

TRAFFIC SIGNAL CONDUIT

WATER SUPPLY ALTERATIONS

DRAINAGE & UTILITY DETAILS

NONE

SHEET 55

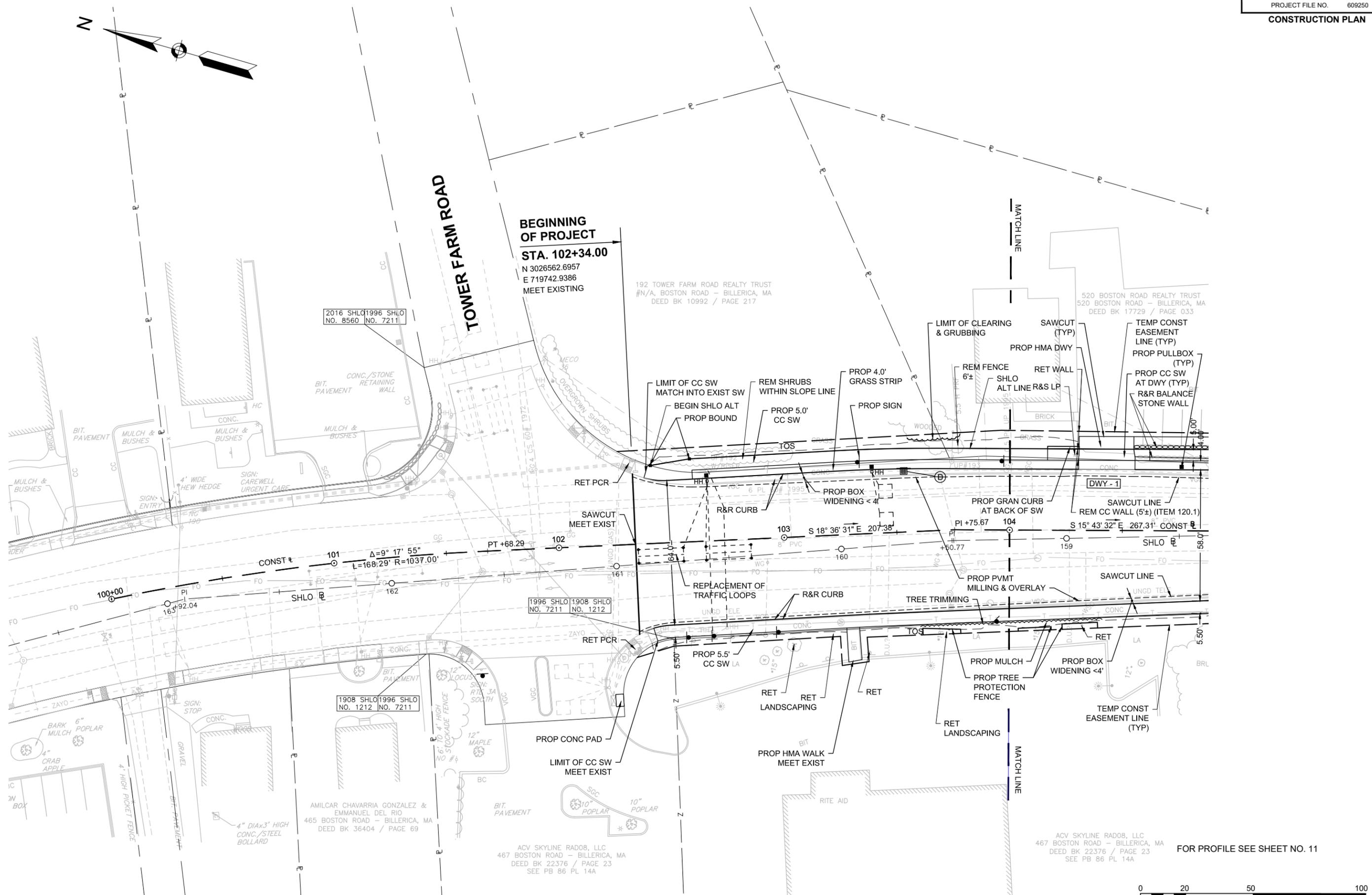
NONE

SHEET 37

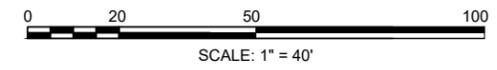
| STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|-------|--------------------|-----------|--------------|
| MA    | -                  | 14        | 30           |

PROJECT FILE NO. 609250

CONSTRUCTION PLAN



CONTINUED ON  
SHEET NO. 15



FOR PROFILE SEE SHEET NO. 11

| STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|-------|--------------------|-----------|--------------|
| MA    | -                  | 15        | 72           |

PROJECT FILE NO. 609250

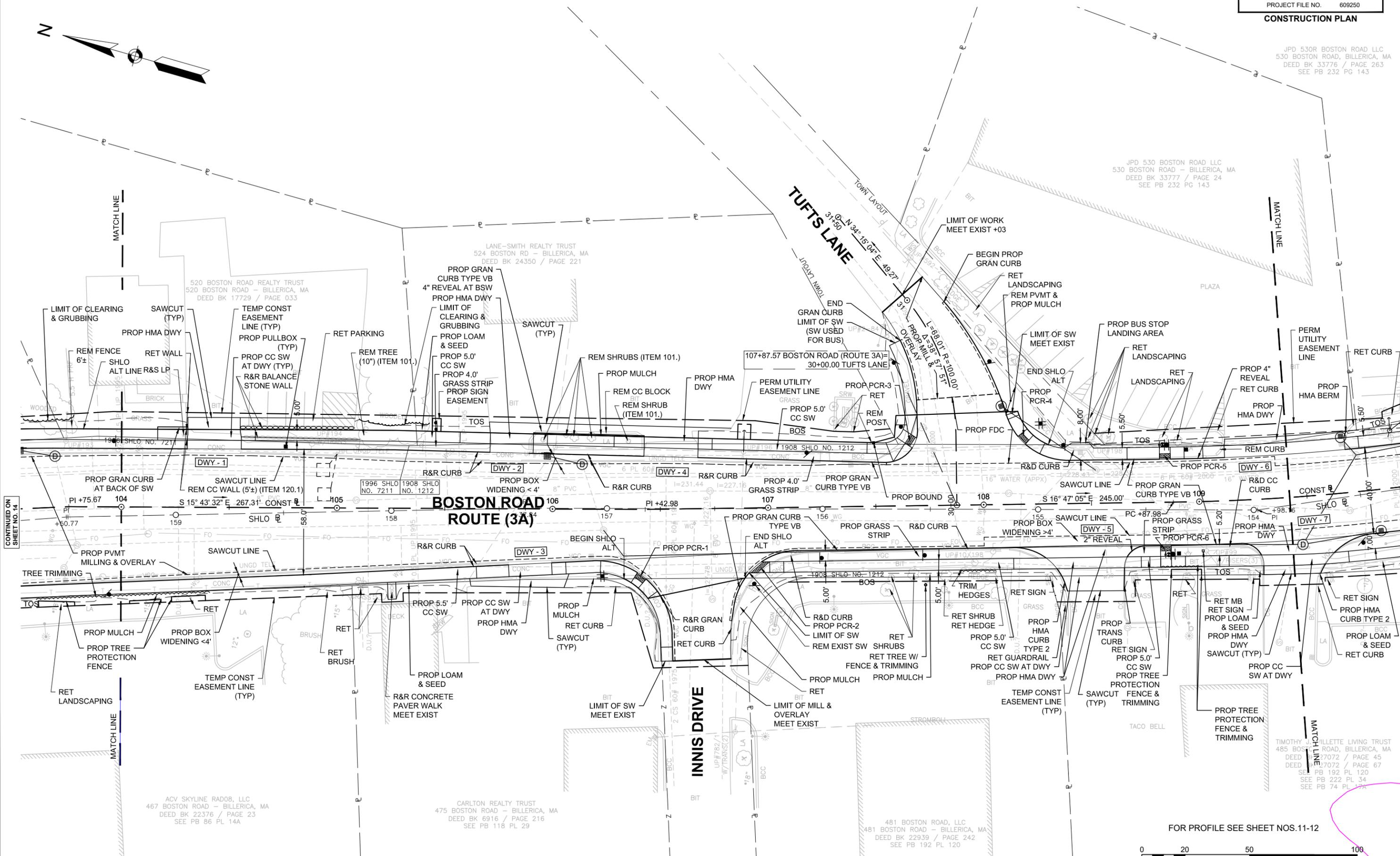
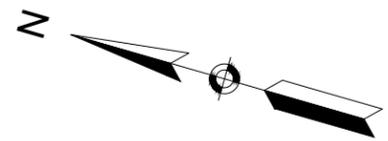
CONSTRUCTION PLAN

JPD 530R BOSTON ROAD LLC  
530 BOSTON ROAD - BILLERICA, MA  
DEED BK 33776 / PAGE 263  
SEE PB 232 PG 143

JPD 530 BOSTON ROAD LLC  
530 BOSTON ROAD - BILLERICA, MA  
DEED BK 33777 / PAGE 24  
SEE PB 232 PG 143

TIMOTHY J. BELLETTE LIVING TRUST  
485 BOSTON ROAD, BILLERICA, MA  
DEED BK 37072 / PAGE 45  
DEED BK 37072 / PAGE 67  
SEE PB 192 PL 120  
SEE PB 222 PL 34  
SEE PB 74 PL 17A

HIGHWAY GUARD DETAILS NONE  
TRAFFIC SIGNAL CONDUIT NONE  
WATER SUPPLY ALTERATIONS NONE  
DRAINAGE & UTILITY DETAILS SEE SHEET 38



CONTINUED ON SHEET NO. 14

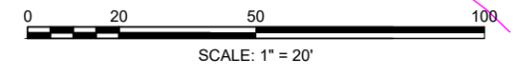
CONTINUED ON SHEET NO. 16

ACV SKYLINE RAD08, LLC  
467 BOSTON ROAD - BILLERICA, MA  
DEED BK 22376 / PAGE 23  
SEE PB 86 PL 14A

CARLTON REALTY TRUST  
475 BOSTON ROAD - BILLERICA, MA  
DEED BK 6916 / PAGE 216  
SEE PB 118 PL 29

481 BOSTON ROAD, LLC  
481 BOSTON ROAD - BILLERICA, MA  
DEED BK 22939 / PAGE 242  
SEE PB 192 PL 120

FOR PROFILE SEE SHEET NOS. 11-12



| STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|-------|--------------------|-----------|--------------|
| MA    | -                  | 16        | 72           |

PROJECT FILE NO. 609250

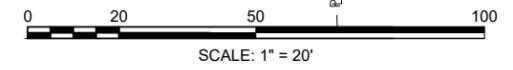
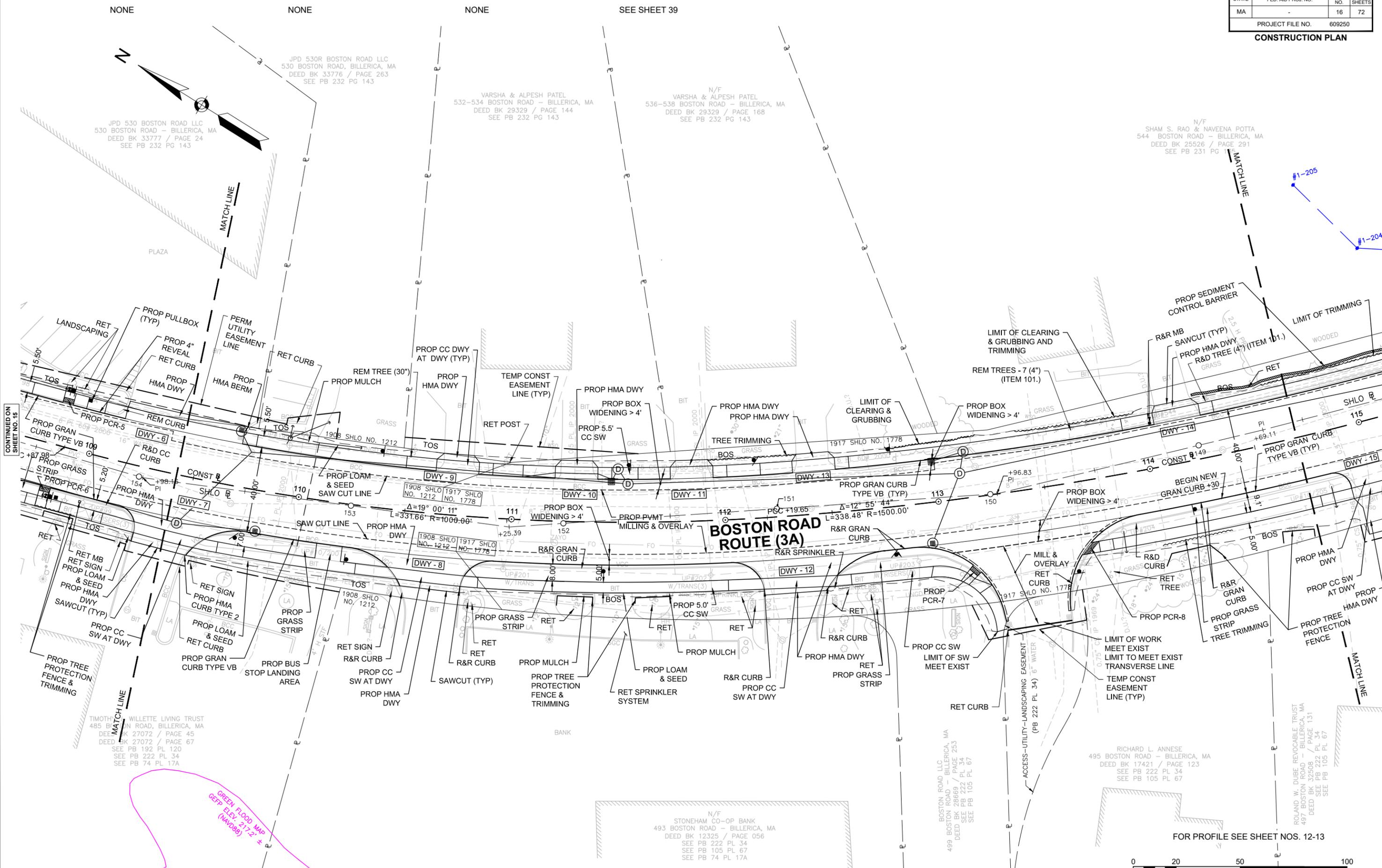
CONSTRUCTION PLAN

HIGHWAY GUARD DETAILS  
NONE

TRAFFIC SIGNAL CONDUIT  
NONE

WATER SUPPLY ALTERATIONS  
NONE

DRAINAGE DETAILS  
SEE SHEET 39



FOR PROFILE SEE SHEET NOS. 12-13

**BILLERICA  
BOSTON RD (ROUTE 3A)  
AT LEXINGTON RD & GLAD VALLEY DR**

| STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|-------|--------------------|-----------|--------------|
| MA    | -                  | 17        | 72           |

PROJECT FILE NO. 609250

**CONSTRUCTION PLAN**

**HIGHWAY GUARD DETAILS**

NONE

**TRAFFIC SIGNAL CONDUIT**

NONE

**WATER SUPPLY ALTERATIONS**

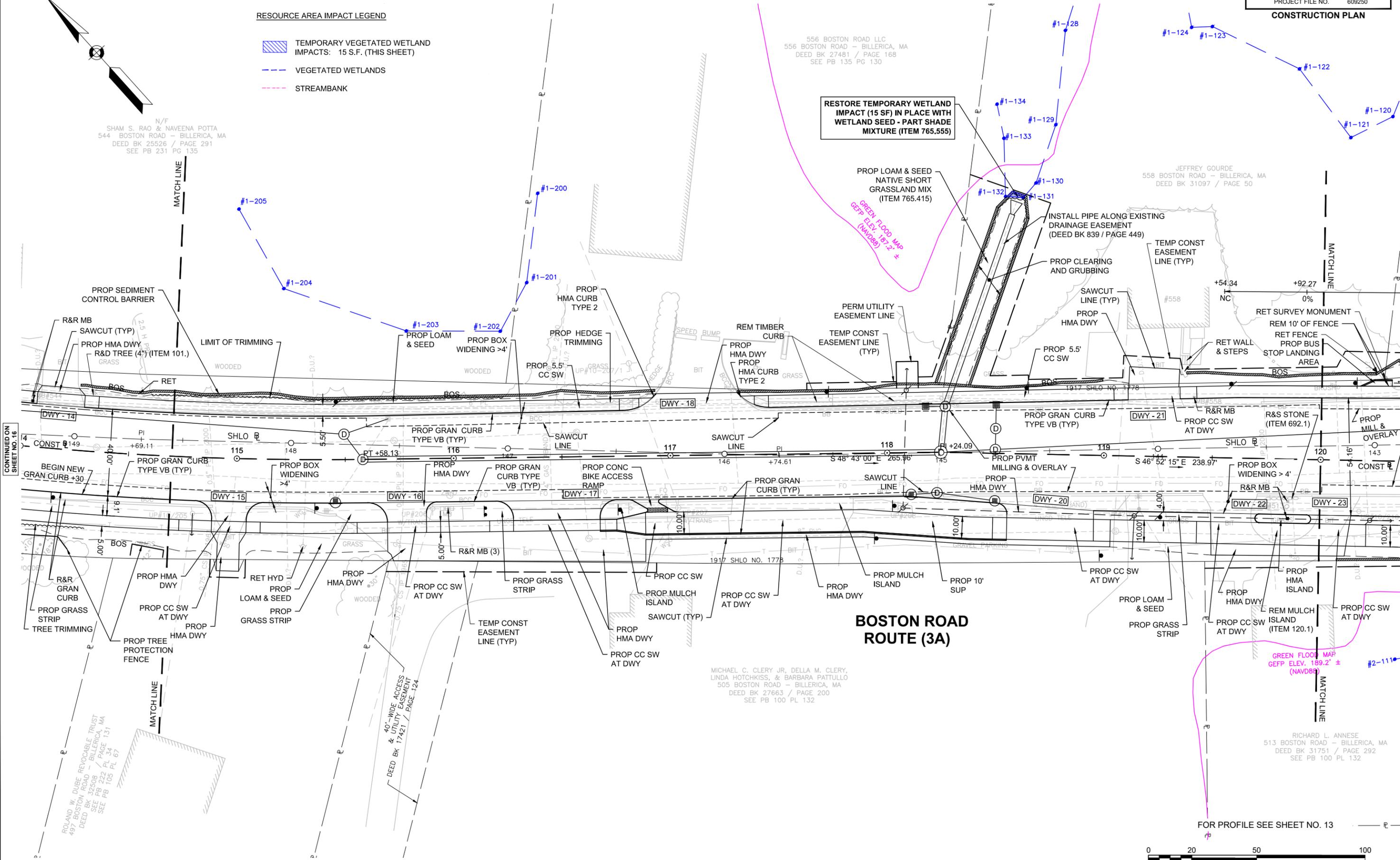
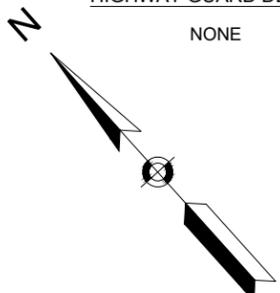
NONE

**DRAINAGE & UTILITY DETAILS**

SEE SHEET 40

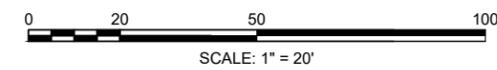
**RESOURCE AREA IMPACT LEGEND**

-  TEMPORARY VEGETATED WETLAND IMPACTS: 15 S.F. (THIS SHEET)
-  VEGETATED WETLANDS
-  STREAMBANK



CONTINUED ON SHEET NO. 16

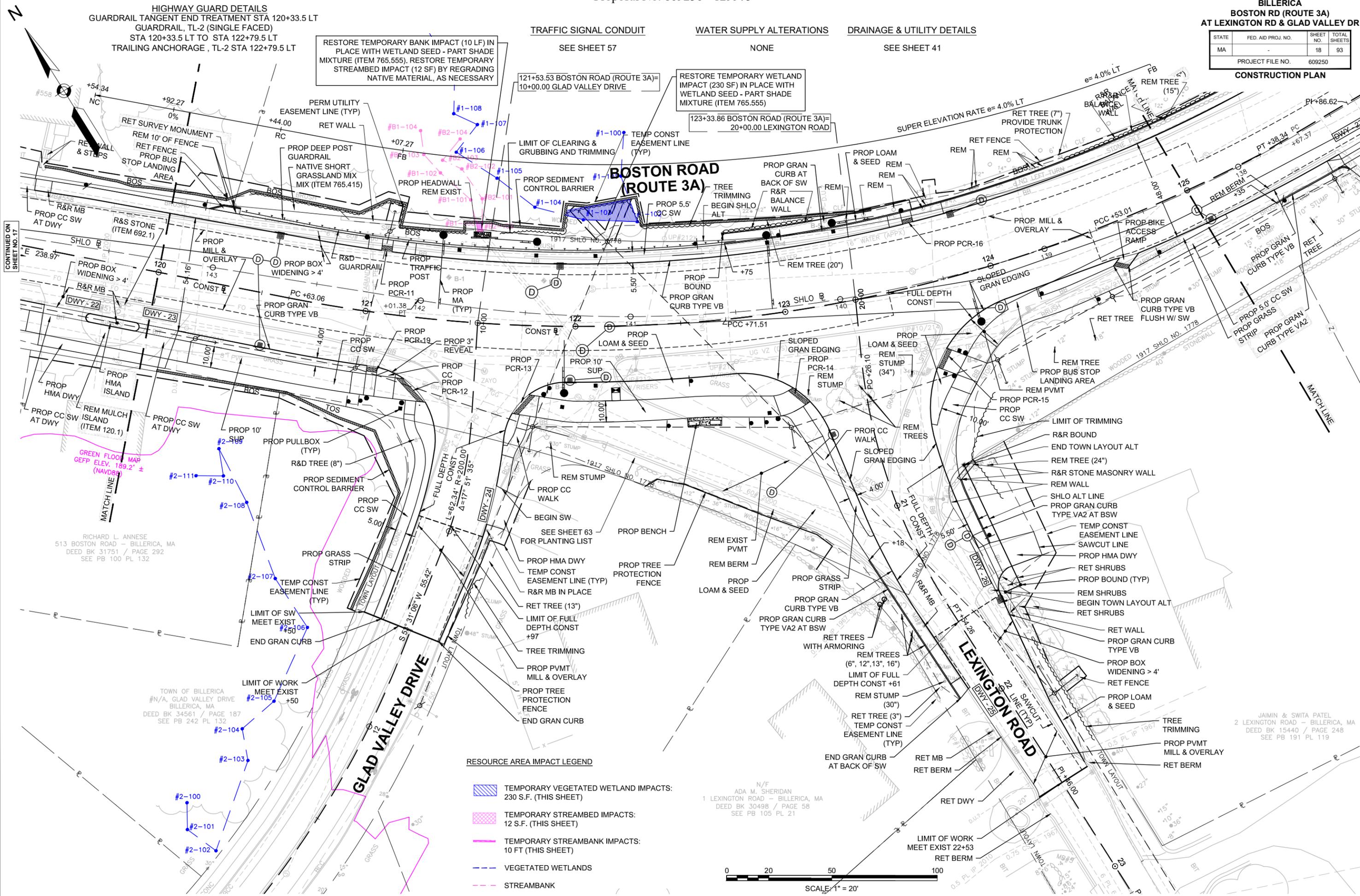
CONTINUED ON SHEET NO. 18



| STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|-------|--------------------|-----------|--------------|
| MA    |                    | 18        | 93           |

PROJECT FILE NO. 609250

CONSTRUCTION PLAN



CONTINUED ON SHEET NO. 17

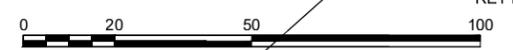
CONTINUED ON SHEET NO. 19

RICHARD L. ANNESE  
513 BOSTON ROAD - BILLERICA, MA  
DEED BK 31751 / PAGE 292  
SEE PB 100 PL 132

TOWN OF BILLERICA  
#N/A, GLAD VALLEY DRIVE  
BILLERICA, MA  
DEED BK 34561 / PAGE 187  
SEE PB 242 PL 132

N/F  
ADA M. SHERIDAN  
1 LEXINGTON ROAD - BILLERICA, MA  
DEED BK 30498 / PAGE 58  
SEE PB 105 PL 21

JAIMIN & SWITA PATEL  
2 LEXINGTON ROAD - BILLERICA, MA  
DEED BK 15440 / PAGE 248  
SEE PB 191 PL 119



| STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|-------|--------------------|-----------|--------------|
| MA    | -                  | 19        | 30           |

PROJECT FILE NO. 609250

CONSTRUCTION PLAN

HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

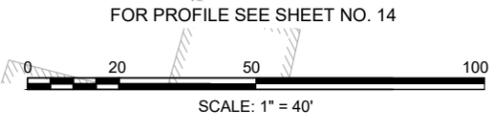
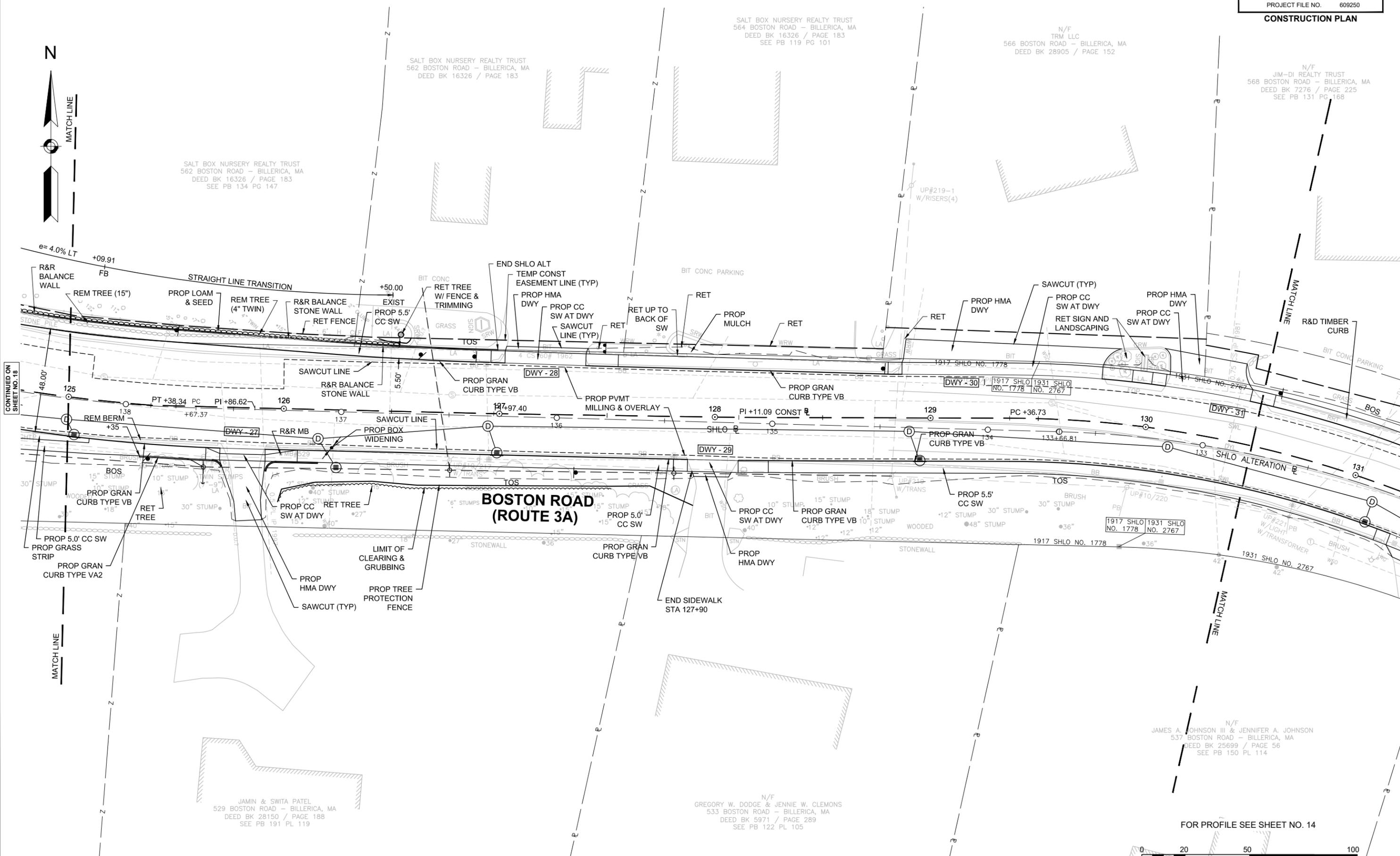
NONE

WATER SUPPLY ALTERATIONS

NONE

DRAINAGE DETAILS

SEE SHEET 42



| STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|-------|--------------------|-----------|--------------|
| MA    | -                  | 20        | 30           |

PROJECT FILE NO. 609250

CONSTRUCTION PLAN

HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

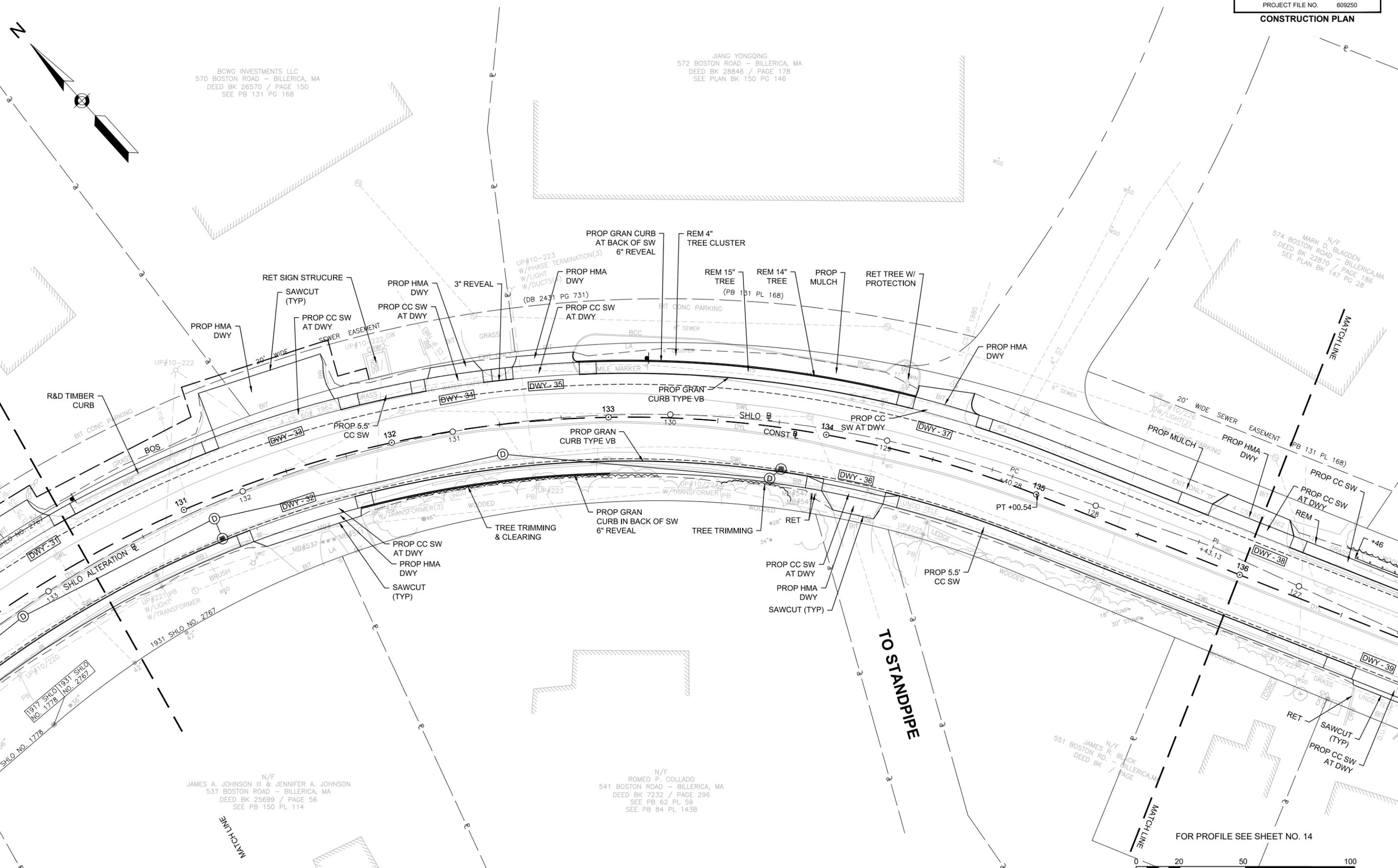
NONE

WATER SUPPLY ALTERATIONS

NONE

DRAINAGE DETAILS

SEE SHEET 43

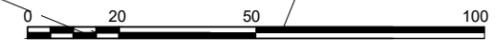


CONTINUED ON SHEET NO. 19

CONTINUED ON SHEET NO. 21

10" STANDPIPE

FOR PROFILE SEE SHEET NO. 14



SCALE: 1" = 40'

| STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|-------|--------------------|-----------|--------------|
| MA    | -                  | 21        | 93           |

PROJECT FILE NO. 609250

CONSTRUCTION PLAN

HIGHWAY GUARD DETAILS

TRAFFIC SIGNAL CONDUIT

WATER SUPPLY ALTERATIONS

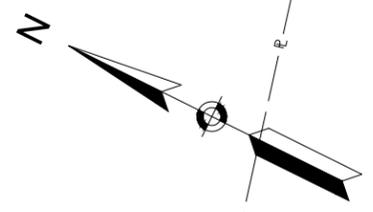
DRAINAGE DETAILS

TRAILING ANCHORAGE, TL-3 STA 136+46.4 LT  
 GUARDRAIL, TL-3 (SINGLE FACED) STA 136+55.8 LT TO STA 137+88 LT  
 GUARDRAIL TANGENT END TREATMENT STA 138+13 LT

NONE

NONE

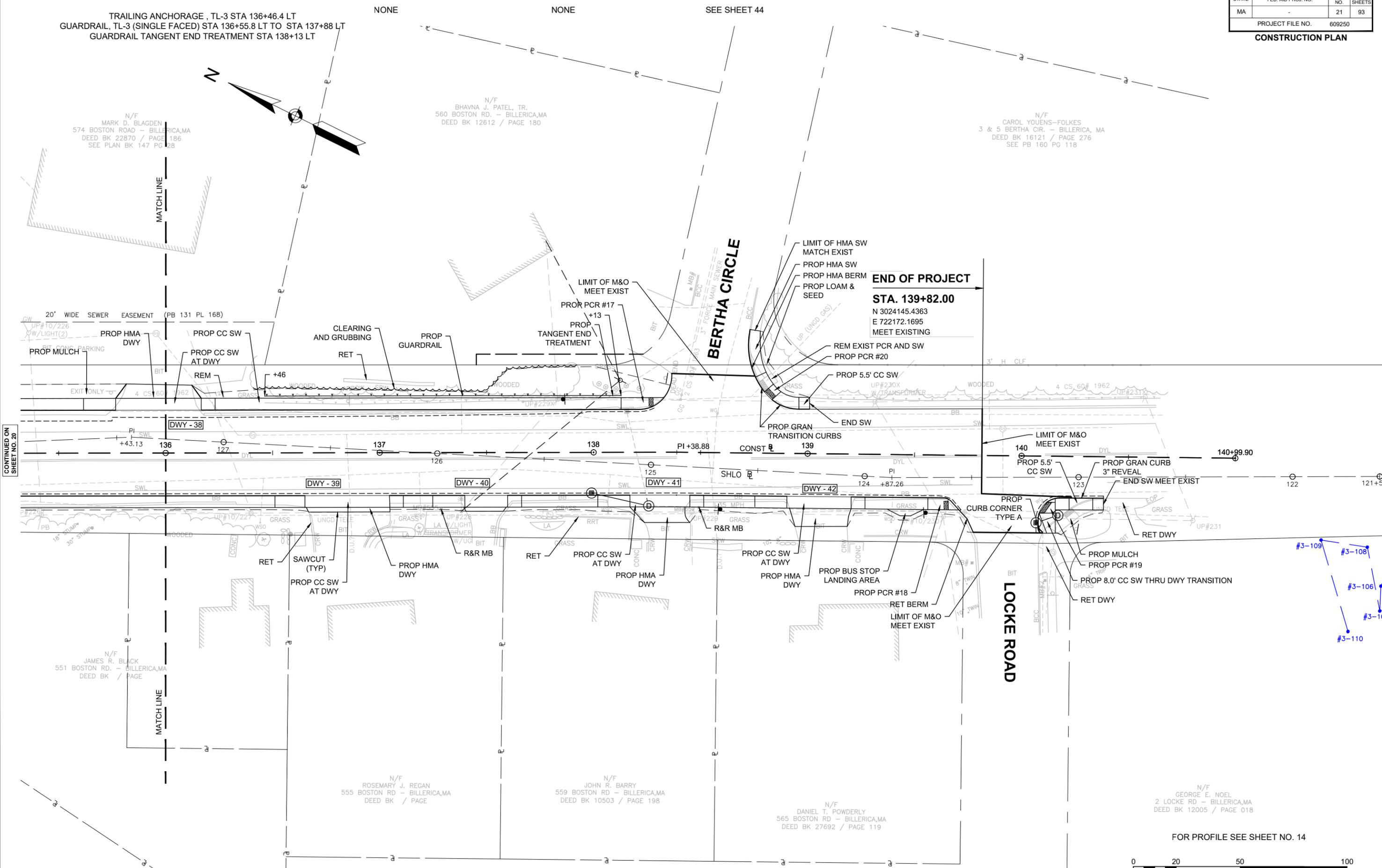
SEE SHEET 44



N/F  
 MARK D. BLAGDEN  
 574 BOSTON ROAD - BILLERICA, MA  
 DEED BK 22870 / PAGE 186  
 SEE PLAN BK 147 PG 128

N/F  
 BHAVNA J. PATEL, TR.  
 560 BOSTON RD. - BILLERICA, MA  
 DEED BK 12612 / PAGE 180

N/F  
 CAROL YUENS-FOLKES  
 3 & 5 BERTHA CIR. - BILLERICA, MA  
 DEED BK 16121 / PAGE 276  
 SEE PB 160 PG 118



CONTINUED ON SHEET NO. 20

#3-109  
 #3-108  
 #3-106  
 #3-107  
 #3-110

N/F  
 JAMES R. BLACK  
 551 BOSTON RD. - BILLERICA, MA  
 DEED BK / PAGE

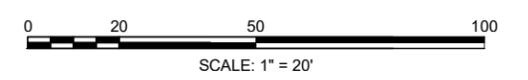
N/F  
 ROSEMARY J. REGAN  
 555 BOSTON RD - BILLERICA, MA  
 DEED BK / PAGE

N/F  
 JOHN R. BARRY  
 559 BOSTON RD - BILLERICA, MA  
 DEED BK 10503 / PAGE 198

N/F  
 DANIEL T. POWDERLY  
 565 BOSTON RD - BILLERICA, MA  
 DEED BK 27692 / PAGE 119

N/F  
 GEORGE E. NOEL  
 2 LOCKE RD - BILLERICA, MA  
 DEED BK 12005 / PAGE 018

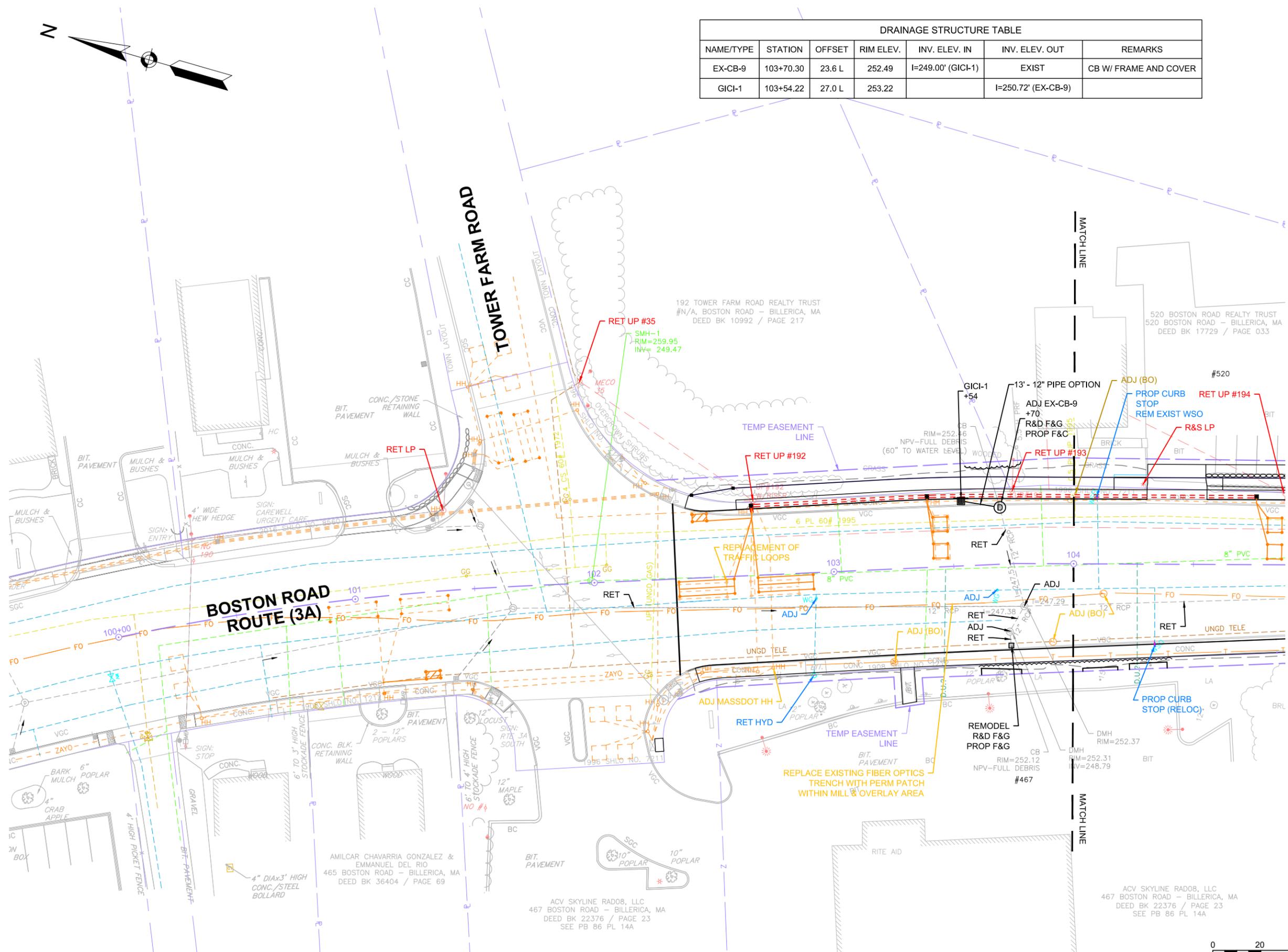
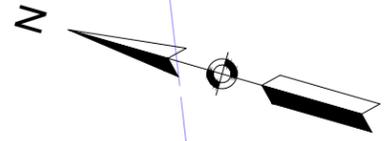
FOR PROFILE SEE SHEET NO. 14



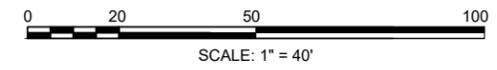
| STATE            | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|------------------|--------------------|-----------|--------------|
| MA               | -                  | 22        | 30           |
| PROJECT FILE NO. |                    | 609250    |              |

DRAINAGE & UTILITY PLAN

| DRAINAGE STRUCTURE TABLE |           |        |           |                   |                     |                       |
|--------------------------|-----------|--------|-----------|-------------------|---------------------|-----------------------|
| NAME/TYPE                | STATION   | OFFSET | RIM ELEV. | INV. ELEV. IN     | INV. ELEV. OUT      | REMARKS               |
| EX-CB-9                  | 103+70.30 | 23.6 L | 252.49    | I=249.00' (GIC-1) | EXIST               | CB W/ FRAME AND COVER |
| GIC-1                    | 103+54.22 | 27.0 L | 253.22    |                   | I=250.72' (EX-CB-9) |                       |



| UTILITY LEGEND             |                    |
|----------------------------|--------------------|
| EXISTING CATV              | PROPOSED CATV      |
| EXISTING RCP               | PROPOSED RCP       |
| EXISTING ELECTRIC          | PROPOSED ELECTRIC  |
| EXISTING OVERHEAD WIRES    |                    |
| EXISTING GAS               | PROPOSED GAS       |
| EXISTING SEWER             | PROPOSED SEWER     |
| EXISTING TELEPHONE CONDUIT | PROPOSED TELEPHONE |
| EXISTING WATER             | PROPOSED WATER     |



CONTINUED ON SHEET NO. 23

192 TOWER FARM ROAD REALTY TRUST  
#N/A, BOSTON ROAD - BILLERICA, MA  
DEED BK 10992 / PAGE 217

520 BOSTON ROAD REALTY TRUST  
520 BOSTON ROAD - BILLERICA, MA  
DEED BK 17729 / PAGE 033

465 BOSTON ROAD - BILLERICA, MA  
DEED BK 36404 / PAGE 69

467 BOSTON ROAD - BILLERICA, MA  
DEED BK 22376 / PAGE 23  
SEE PB 86 PL 14A

ACV SKYLINE RAD08, LLC  
467 BOSTON ROAD - BILLERICA, MA  
DEED BK 22376 / PAGE 23  
SEE PB 86 PL 14A

| STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|-------|--------------------|-----------|--------------|
| MA    | -                  | 23        | 30           |

PROJECT FILE NO. 609250

**DRAINAGE & UTILITY PLAN**

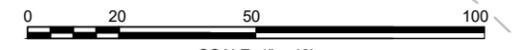
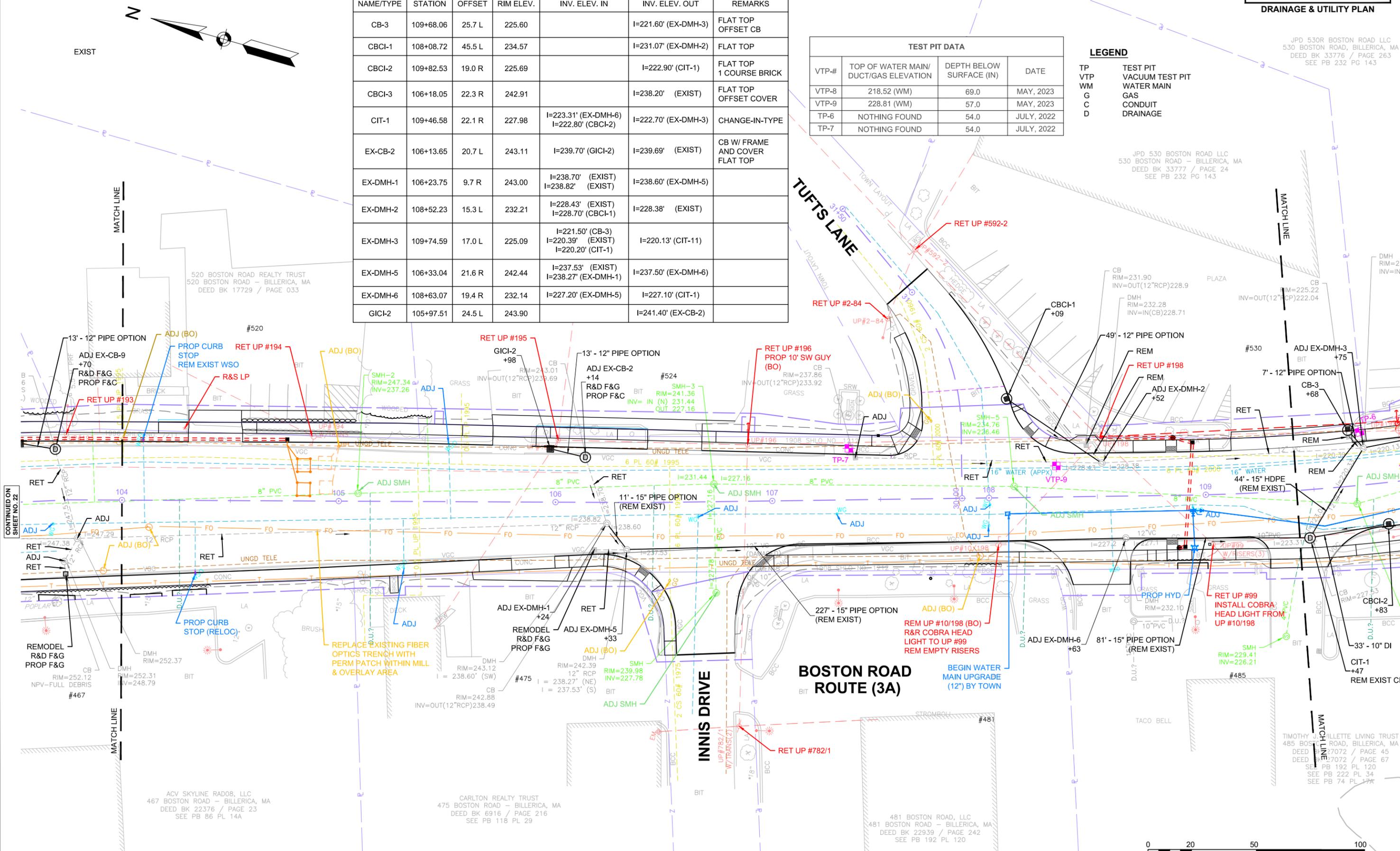
| DRAINAGE STRUCTURE TABLE |           |        |           |  |                      |                                      |
|--------------------------|-----------|--------|-----------|--|----------------------|--------------------------------------|
| NAME/TYPE                | STATION   | OFFSET | RIM ELEV. | INV. ELEV. IN  | INV. ELEV. OUT       | REMARKS                              |
| CB-3                     | 109+68.06 | 25.7 L | 225.60    |  | I=221.60' (EX-DMH-3) | FLAT TOP<br>OFFSET CB                |
| CBCI-1                   | 108+08.72 | 45.5 L | 234.57    |  | I=231.07' (EX-DMH-2) | FLAT TOP                             |
| CBCI-2                   | 109+82.53 | 19.0 R | 225.69    |  | I=222.90' (CIT-1)    | FLAT TOP<br>1 COURSE BRICK           |
| CBCI-3                   | 106+18.05 | 22.3 R | 242.91    |  | I=238.20' (EXIST)    | FLAT TOP<br>OFFSET COVER             |
| CIT-1                    | 109+46.58 | 22.1 R | 227.98    | I=223.31' (EX-DMH-6)<br>I=222.80' (CBCI-2)                 | I=222.70' (EX-DMH-3) | CHANGE-IN-TYPE                       |
| EX-CB-2                  | 106+13.65 | 20.7 L | 243.11    | I=239.70' (GICI-2)   | I=239.69' (EXIST)    | CB W/ FRAME<br>AND COVER<br>FLAT TOP |
| EX-DMH-1                 | 106+23.75 | 9.7 R  | 243.00    | I=238.70' (EXIST)<br>I=238.82' (EXIST)                     | I=238.60' (EX-DMH-5) |                                      |
| EX-DMH-2                 | 108+52.23 | 15.3 L | 232.21    | I=228.43' (EXIST)<br>I=228.70' (CBCI-1)                    | I=228.38' (EXIST)    |                                      |
| EX-DMH-3                 | 109+74.59 | 17.0 L | 225.09    | I=221.50' (CB-3)<br>I=220.39' (EXIST)<br>I=220.20' (CIT-1) | I=220.13' (CIT-11)   |                                      |
| EX-DMH-5                 | 106+33.04 | 21.6 R | 242.44    | I=237.53' (EXIST)<br>I=238.27' (EX-DMH-1)                  | I=237.50' (EX-DMH-6) |                                      |
| EX-DMH-6                 | 108+63.07 | 19.4 R | 232.14    | I=227.20' (EX-DMH-5)                                       | I=227.10' (CIT-1)    |                                      |
| GICI-2                   | 105+97.51 | 24.5 L | 243.90    |  | I=241.40' (EX-CB-2)  |                                      |

| TEST PIT DATA |  |                             |            |
|---------------|--|-----------------------------|------------|
| VTP-#         | TOP OF WATER MAIN/<br>DUCT/GAS ELEVATION | DEPTH BELOW<br>SURFACE (IN) | DATE       |
| VTP-8         | 218.52 (WM)                              | 69.0                        | MAY, 2023  |
| VTP-9         | 228.81 (WM)                              | 57.0                        | MAY, 2023  |
| TP-6          | NOTHING FOUND                            | 54.0                        | JULY, 2022 |
| TP-7          | NOTHING FOUND                            | 54.0                        | JULY, 2022 |

**LEGEND**  
 TP TEST PIT  
 VTP VACUUM TEST PIT  
 WM WATER MAIN  
 G GAS  
 C CONDUIT  
 D DRAINAGE

JPD 530R BOSTON ROAD LLC  
530 BOSTON ROAD, BILLERICA, MA  
DEED BK 33776 / PAGE 263  
SEE PB 232 PG 143

JPD 530 BOSTON ROAD LLC  
530 BOSTON ROAD - BILLERICA, MA  
DEED BK 33777 / PAGE 24  
SEE PB 232 PG 143



SCALE: 1" = 40'

| STATE            | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|------------------|--------------------|-----------|--------------|
| MA               |                    | 24        | 30           |
| PROJECT FILE NO. |                    | 609250    |              |

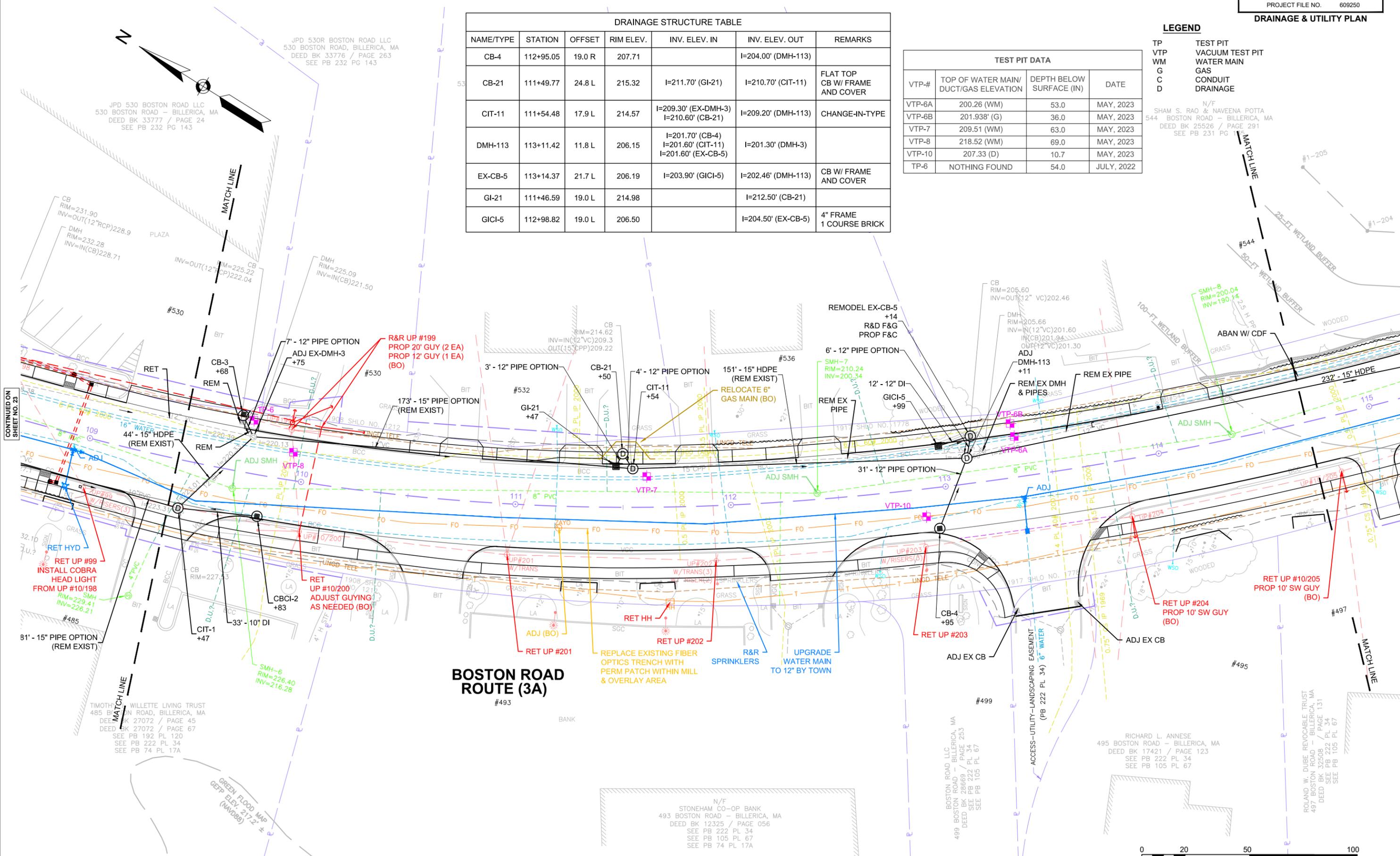
**LEGEND**

- TP TEST PIT
- VTP VACUUM TEST PIT
- WM WATER MAIN
- G GAS
- C CONDUIT
- D DRAINAGE

N/F  
SHAM S. RAO & NAVEENA POTTA  
544 BOSTON ROAD - BILLERICA, MA  
DEED BK 25526 / PAGE 291  
SEE PB 231 PG

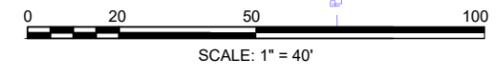
| DRAINAGE STRUCTURE TABLE |           |        |           |   |                     |                                      |
|--------------------------|-----------|--------|-----------|---|---------------------|--------------------------------------|
| NAME/TYPE                | STATION   | OFFSET | RIM ELEV. | INV. ELEV. IN   | INV. ELEV. OUT      | REMARKS                              |
| CB-4                     | 112+95.05 | 19.0 R | 207.71    |   | I=204.00' (DMH-113) |                                      |
| CB-21                    | 111+49.77 | 24.8 L | 215.32    | I=211.70' (GI-21)   | I=210.70' (CIT-11)  | FLAT TOP<br>CB W/ FRAME<br>AND COVER |
| CIT-11                   | 111+54.48 | 17.9 L | 214.57    | I=209.30' (EX-DMH-3)<br>I=210.60' (CB-21)                     | I=209.20' (DMH-113) | CHANGE-IN-TYPE                       |
| DMH-113                  | 113+11.42 | 11.8 L | 206.15    | I=201.70' (CB-4)<br>I=201.60' (CIT-11)<br>I=201.60' (EX-CB-5) | I=201.30' (DMH-3)   |                                      |
| EX-CB-5                  | 113+14.37 | 21.7 L | 206.19    | I=203.90' (GICI-5)  | I=202.46' (DMH-113) | CB W/ FRAME<br>AND COVER             |
| GI-21                    | 111+46.59 | 19.0 L | 214.98    |   | I=212.50' (CB-21)   |                                      |
| GICI-5                   | 112+98.82 | 19.0 L | 206.50    |   | I=204.50' (EX-CB-5) | 4" FRAME<br>1 COURSE BRICK           |

| TEST PIT DATA |  |                             |            |
|---------------|--|-----------------------------|------------|
| VTP-#         | TOP OF WATER MAIN/<br>DUCT/GAS ELEVATION | DEPTH BELOW<br>SURFACE (IN) | DATE       |
| VTP-6A        | 200.26 (WM)                              | 53.0                        | MAY, 2023  |
| VTP-6B        | 201.938' (G)                             | 36.0                        | MAY, 2023  |
| VTP-7         | 209.51 (WM)                              | 63.0                        | MAY, 2023  |
| VTP-8         | 218.52 (WM)                              | 69.0                        | MAY, 2023  |
| VTP-10        | 207.33 (D)                               | 10.7                        | MAY, 2023  |
| TP-6          | NOTHING FOUND                            | 54.0                        | JULY, 2022 |



**BOSTON ROAD  
ROUTE (3A)**  
#493

N/F  
STONEHAM CO-OP BANK  
493 BOSTON ROAD - BILLERICA, MA  
DEED BK 12325 / PAGE 056  
SEE PB 222 PL 34  
SEE PB 105 PL 67  
SEE PB 74 PL 17A



| STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|-------|--------------------|-----------|--------------|
| MA    |                    | 25        | 30           |

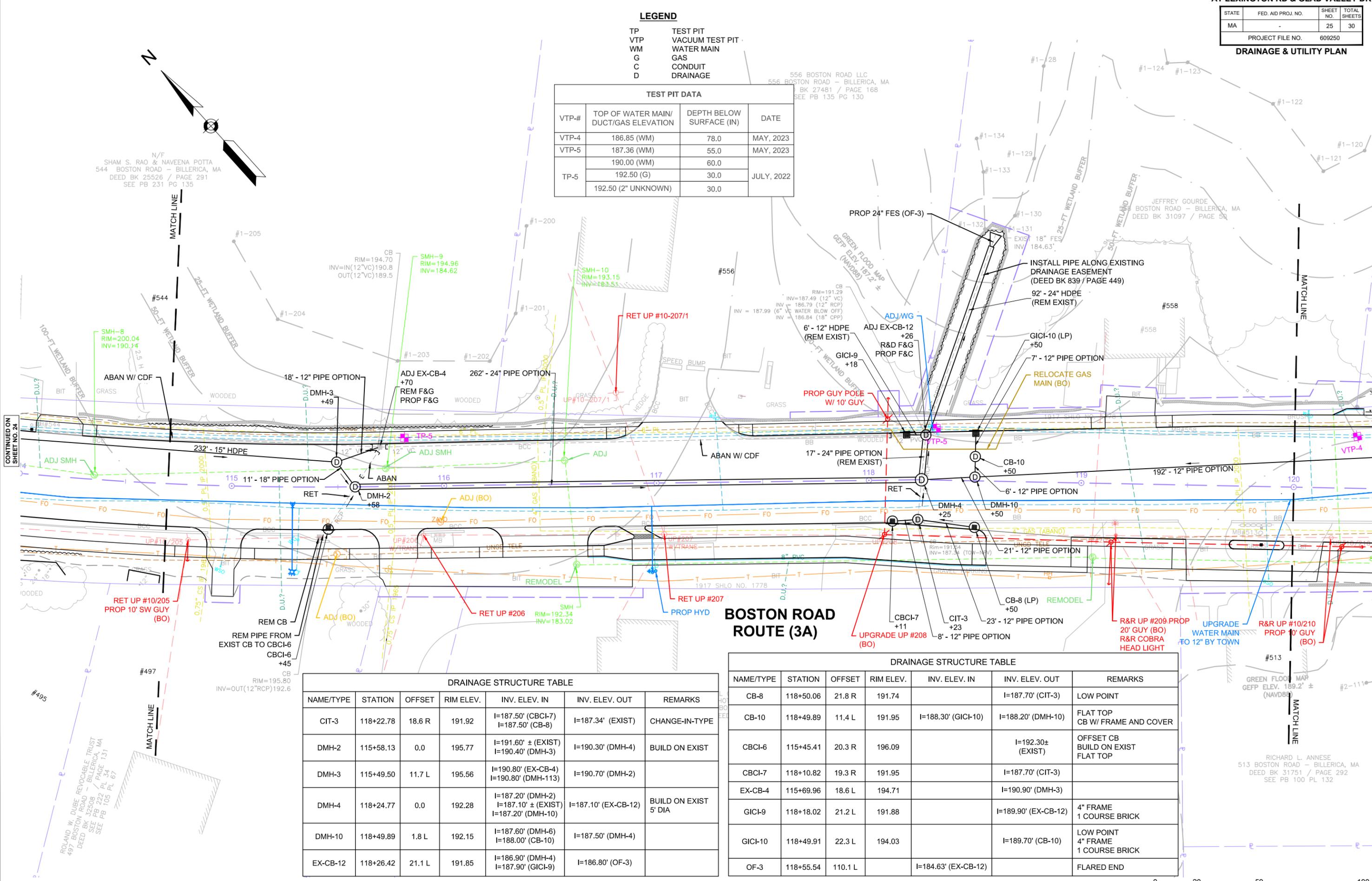
PROJECT FILE NO. 609250

**DRAINAGE & UTILITY PLAN**

**LEGEND**

- TP TEST PIT
- VTP VACUUM TEST PIT
- WM WATER MAIN
- G GAS
- C CONDUIT
- D DRAINAGE

| VTP-# | TOP OF WATER MAIN/ DUCT/GAS ELEVATION | DEPTH BELOW SURFACE (IN) | DATE       |
|-------|---------------------------------------|--------------------------|------------|
| VTP-4 | 186.85 (WM)                           | 78.0                     | MAY, 2023  |
| VTP-5 | 187.36 (WM)                           | 55.0                     | MAY, 2023  |
| TP-5  | 190.00 (WM)                           | 60.0                     | JULY, 2022 |
|       | 192.50 (G)                            | 30.0                     |            |
|       | 192.50 (2" UNKNOWN)                   | 30.0                     |            |

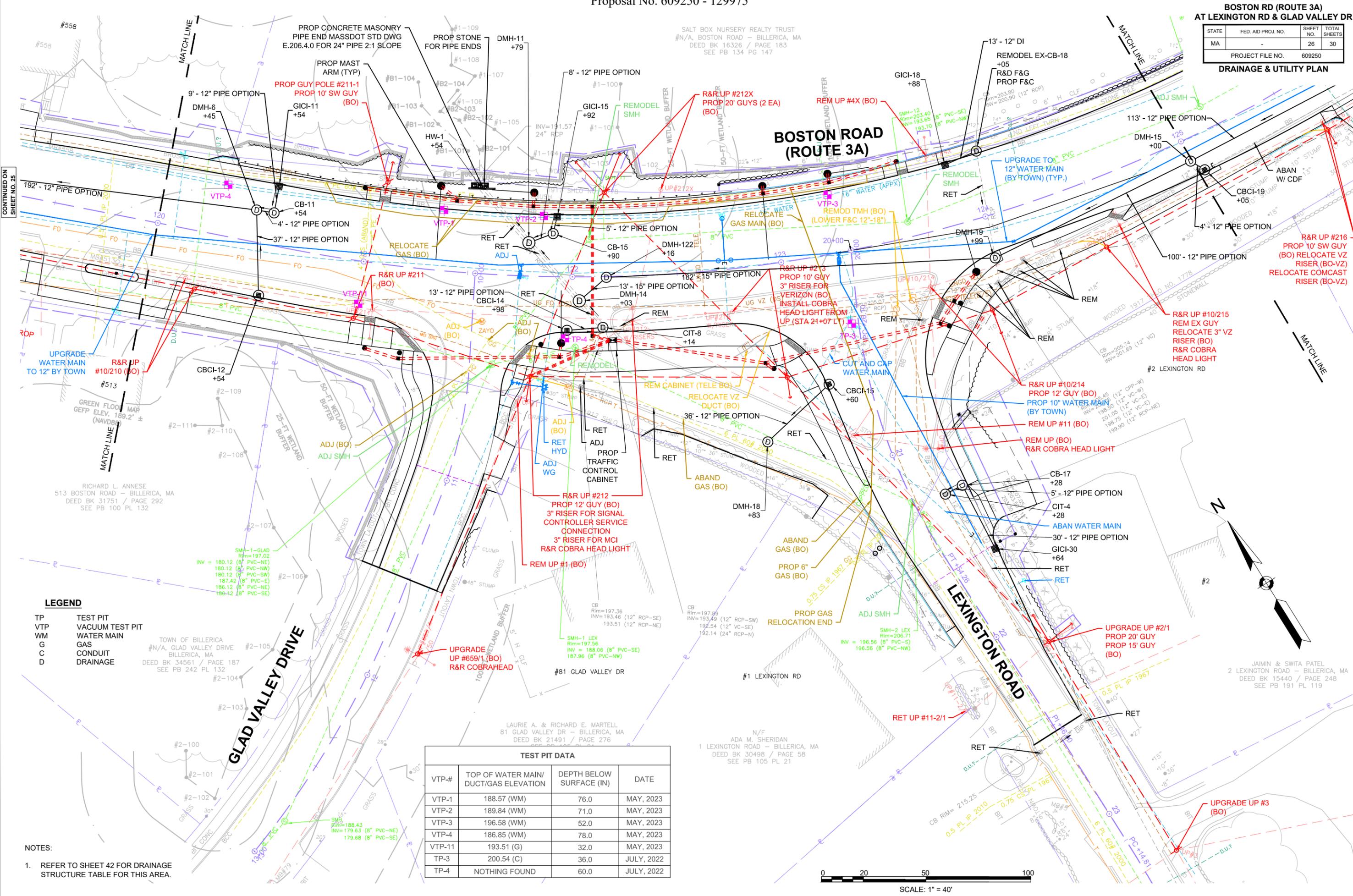


| NAME/TYPE | STATION   | OFFSET | RIM ELEV. | INV. ELEV. IN  | INV. ELEV. OUT       | REMARKS                  |
|-----------|-----------|--------|-----------|--|----------------------|--------------------------|
| CIT-3     | 118+22.78 | 18.6 R | 191.92    | I=187.50' (CBCI-7)<br>I=187.50' (CB-8)                         | I=187.34' (EXIST)    | CHANGE-IN-TYPE           |
| DMH-2     | 115+58.13 | 0.0    | 195.77    | I=191.60' ± (EXIST)<br>I=190.40' (DMH-3)                       | I=190.30' (DMH-4)    | BUILD ON EXIST           |
| DMH-3     | 115+49.50 | 11.7 L | 195.56    | I=190.80' (EX-CB-4)<br>I=190.80' (DMH-113)                     | I=190.70' (DMH-2)    |                          |
| DMH-4     | 118+24.77 | 0.0    | 192.28    | I=187.20' (DMH-2)<br>I=187.10' ± (EXIST)<br>I=187.20' (DMH-10) | I=187.10' (EX-CB-12) | BUILD ON EXIST<br>5' DIA |
| DMH-10    | 118+49.89 | 1.8 L  | 192.15    | I=187.60' (DMH-6)<br>I=188.00' (CB-10)                         | I=187.50' (DMH-4)    |                          |
| EX-CB-12  | 118+26.42 | 21.1 L | 191.85    | I=186.90' (DMH-4)<br>I=187.90' (GICI-9)                        | I=186.80' (OF-3)     |                          |

| NAME/TYPE | STATION   | OFFSET  | RIM ELEV. | INV. ELEV. IN        | INV. ELEV. OUT       | REMARKS                                 |
|-----------|-----------|---------|-----------|----------------------|----------------------|---|
| CB-8      | 118+50.06 | 21.8 R  | 191.74    |                      | I=187.70' (CIT-3)    | LOW POINT                               |
| CB-10     | 118+49.89 | 11.4 L  | 191.95    | I=188.30' (GICI-10)  | I=188.20' (DMH-10)   | FLAT TOP<br>CB W/ FRAME AND COVER       |
| CBCI-6    | 115+45.41 | 20.3 R  | 196.09    |                      | I=192.30± (EXIST)    | OFFSET CB<br>BUILD ON EXIST<br>FLAT TOP |
| CBCI-7    | 118+10.82 | 19.3 R  | 191.95    |                      | I=187.70' (CIT-3)    |   |
| EX-CB-4   | 115+69.96 | 18.6 L  | 194.71    |                      | I=190.90' (DMH-3)    |   |
| GICI-9    | 118+18.02 | 21.2 L  | 191.88    |                      | I=189.90' (EX-CB-12) | 4" FRAME<br>1 COURSE BRICK              |
| GICI-10   | 118+49.91 | 22.3 L  | 194.03    |                      | I=189.70' (CB-10)    | LOW POINT<br>4" FRAME<br>1 COURSE BRICK |
| OF-3      | 118+55.54 | 110.1 L |           | I=184.63' (EX-CB-12) |                      | FLARED END                              |

|                  |                    |           |              |
|------------------|--------------------|-----------|--------------|
| STATE            | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
| MA               |                    | 26        | 30           |
| PROJECT FILE NO. |                    | 609250    |              |

**DRAINAGE & UTILITY PLAN**



CONTINUED ON SHEET NO. 25

CONTINUED ON SHEET NO. 27

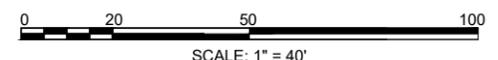
**LEGEND**

|     |                 |
|-----|-----------------|
| TP  | TEST PIT        |
| VTP | VACUUM TEST PIT |
| WM  | WATER MAIN      |
| G   | GAS             |
| C   | CONDUIT         |
| D   | DRAINAGE        |

**TEST PIT DATA**

| VTP-#  | TOP OF WATER MAIN/ DUCT/GAS ELEVATION | DEPTH BELOW SURFACE (IN) | DATE       |
|--------|---------------------------------------|--------------------------|------------|
| VTP-1  | 188.57 (WM)                           | 76.0                     | MAY, 2023  |
| VTP-2  | 189.84 (WM)                           | 71.0                     | MAY, 2023  |
| VTP-3  | 196.58 (WM)                           | 52.0                     | MAY, 2023  |
| VTP-4  | 186.85 (WM)                           | 78.0                     | MAY, 2023  |
| VTP-11 | 193.51 (G)                            | 32.0                     | MAY, 2023  |
| TP-3   | 200.54 (C)                            | 36.0                     | JULY, 2022 |
| TP-4   | NOTHING FOUND                         | 60.0                     | JULY, 2022 |

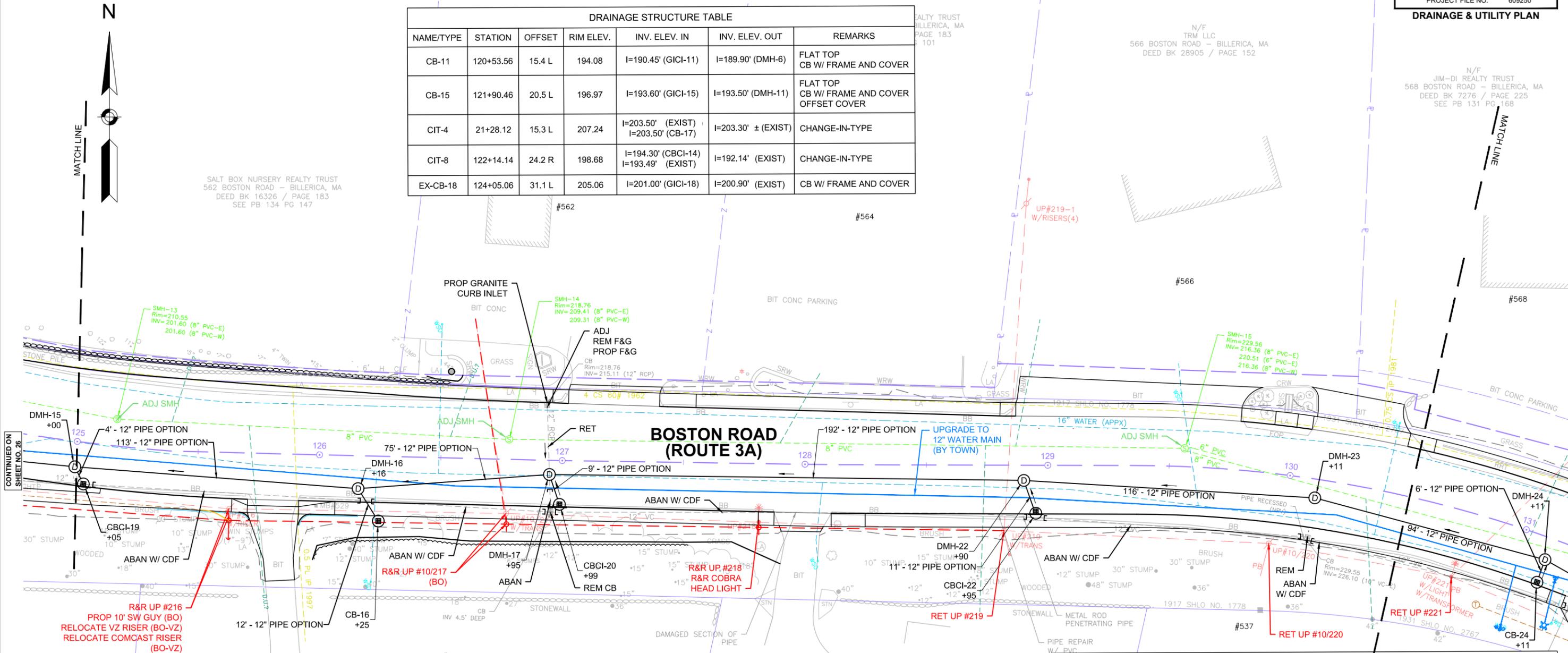
NOTES:  
1. REFER TO SHEET 42 FOR DRAINAGE STRUCTURE TABLE FOR THIS AREA.



| STATE            | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|------------------|--------------------|-----------|--------------|
| MA               | -                  | 27        | 30           |
| PROJECT FILE NO. |                    | 609250    |              |

DRAINAGE & UTILITY PLAN

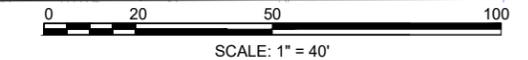
| NAME/TYPE | STATION   | OFFSET | RIM ELEV. | INV. ELEV. IN                            | INV. ELEV. OUT      | REMARKS   |
|-----------|-----------|--------|-----------|--|---------------------|---|
| CB-11     | 120+53.56 | 15.4 L | 194.08    | I=190.45' (GICI-11)                      | I=189.90' (DMH-6)   | FLAT TOP<br>CB W/ FRAME AND COVER                 |
| CB-15     | 121+90.46 | 20.5 L | 196.97    | I=193.60' (GICI-15)                      | I=193.50' (DMH-11)  | FLAT TOP<br>CB W/ FRAME AND COVER<br>OFFSET COVER |
| CIT-4     | 21+28.12  | 15.3 L | 207.24    | I=203.50' (EXIST)<br>I=203.50' (CB-17)   | I=203.30' ± (EXIST) | CHANGE-IN-TYPE                                    |
| CIT-8     | 122+14.14 | 24.2 R | 198.68    | I=194.30' (CBCI-14)<br>I=193.49' (EXIST) | I=192.14' (EXIST)   | CHANGE-IN-TYPE                                    |
| EX-CB-18  | 124+05.06 | 31.1 L | 205.06    | I=201.00' (GICI-18)                      | I=200.90' (EXIST)   | CB W/ FRAME AND COVER                             |



| NAME/TYPE | STATION   | OFFSET | RIM ELEV. | INV. ELEV. IN  | INV. ELEV. OUT      | REMARKS        |
|-----------|-----------|--------|-----------|--|---------------------|----------------|
| DMH-17    | 126+94.86 | 5.8 R  | 219.94    | I=214.50' ± (EXIST)<br>I=216.80' (CBCI-20)<br>I=214.50' (DMH-22) | I=214.40' (DMH-16)  | BUILD ON EXIST |
| DMH-18    | 122+83.23 | 83.9 R | 202.45    | I=198.50' ± (EXIST)<br>I=198.60' (CBCI-15)                       | I=198.50' ± (EXIST) | BUILD ON EXIST |
| DMH-19    | 123+98.78 | 20.2 R | 206.25    | I=200.10' ± (EXIST)<br>I=200.10' (DMH-15)                        | I=200.00' (DMH-122) | BUILD ON EXIST |
| DMH-22    | 128+90.16 | 6.3 R  | 227.17    | I=223.20' (CBCI-22)<br>I=223.20' (DMH-23)                        | I=223.10' (DMH-17)  |                |

| NAME/TYPE | STATION   | OFFSET | RIM ELEV. | INV. ELEV. IN                             | INV. ELEV. OUT     | REMARKS                              |
|-----------|-----------|--------|-----------|---|--------------------|--------------------------------------|
| DMH-6     | 120+45.13 | 15.2 L | 193.95    | I=189.80' (CB-11)<br>I=190.00' (CBCI-12)  | I=189.70' (DMH-10) |                                      |
| DMH-11    | 121+78.69 | 15.9 L | 196.83    | I=191.80' (EXIST)<br>I=192.80' (CB-15)    | I=191.75' (EXIST)  | FLAT TOP<br>BUILD ON EXIST<br>5' DIA |
| DMH-14    | 122+03.28 | 11.4 R | 198.62    | I=192.05' (EXIST)<br>I=193.20' (DMH-122)  | I=192.00' (EXIST)  | BUILD ON EXIST<br>5' DIA             |
| DMH-15    | 125+00.31 | 10.4 R | 210.91    | I=207.40' (CBCI-19)<br>I=206.90' (DMH-16) | I=206.80' (DMH-19) | OFFSET COVER<br>FLAT TOP             |
| DMH-16    | 126+16.21 | 13.5 R | 216.52    | I=212.80' (DMH-17)<br>I=212.80' (CB-16)   | I=212.70' (DMH-15) |                                      |
| DMH-122   | 122+16.20 | 0.4 R  | 198.56    | I=193.75' (DMH-19)                        | I=193.65' (DMH-14) |                                      |

| NAME/TYPE | STATION   | OFFSET | RIM ELEV. | INV. ELEV. IN       | INV. ELEV. OUT       | REMARKS                           |
|-----------|-----------|--------|-----------|---------------------|----------------------|-----------------------------------|
| CB-16     | 126+24.83 | 26.6 R | 217.80    |                     | I=213.80' (DMH-16)   |                                   |
| CB-17     | 21+28.07  | 24.4 L | 207.33    | I=203.60' (GICI-30) | I=203.60' (CIT-4)    | CB W/ FRAME AND COVER<br>FLAT TOP |
| CBCI-12   | 120+53.84 | 24.5 R | 194.48    |                     | I=190.30' (DMH-6)    |                                   |
| CBCI-14   | 121+97.57 | 25.5 R | 198.17    |                     | I=194.50' (CIT-8)    | FLAT TOP                          |
| CBCI-15   | 20+60.20  | 19.1 R | 203.33    |                     | I=199.70' (DMH-18)   | FLAT TOP                          |
| CBCI-19   | 125+04.54 | 17.0 R | 211.18    |                     | I=207.50' (DMH-15)   | FLAT TOP                          |
| CBCI-20   | 126+99.08 | 18.0 R | 219.90    |                     | I=216.90' (DMH-17)   |                                   |
| CBCI-22   | 128+95.11 | 20.2 R | 226.96    |                     | I=223.30' (DMH-22)   | FLAT TOP<br>OFFSET CB             |
| GICI-11   | 120+53.51 | 28.3 L | 193.75    |                     | I=191.25' (CB-11)    |                                   |
| GICI-15   | 121+92.32 | 28.6 L | 196.70    |                     | I=194.20' (CB-15)    |                                   |
| GICI-18   | 123+88.11 | 29.0 L | 203.83    |                     | I=201.80' (EX-CB-18) | 4" FRAME<br>1 COURSE BRICK        |
| GICI-30   | 21+64.32  | 22.5 L | 209.10    |                     | I=206.55' (CB-17)    |                                   |

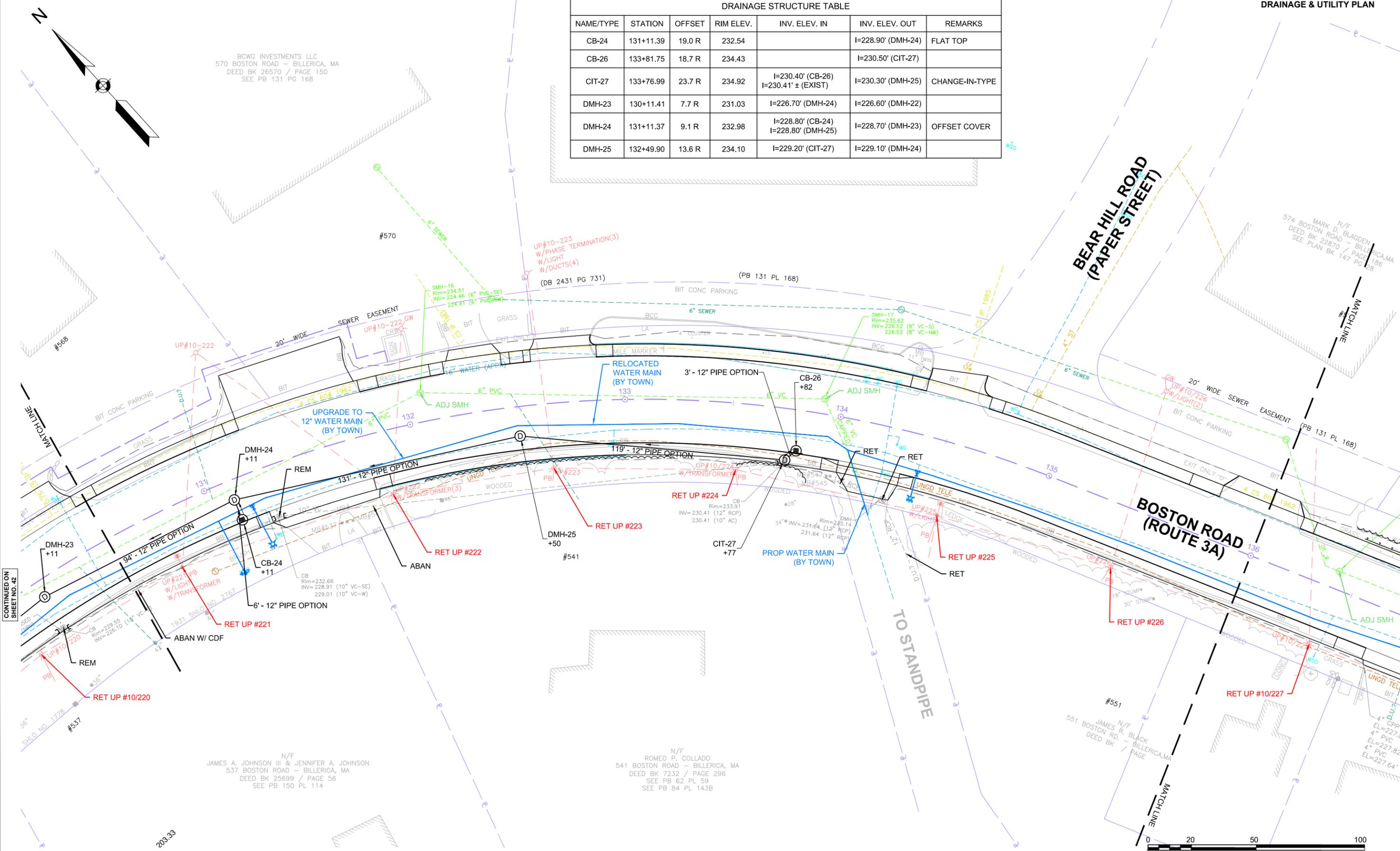


| STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|-------|--------------------|-----------|--------------|
| MA    |                    | 28        | 30           |

PROJECT FILE NO. 609250

DRAINAGE & UTILITY PLAN

| DRAINAGE STRUCTURE TABLE |           |        |           |  |                    |                |
|--------------------------|-----------|--------|-----------|--|--------------------|----------------|
| NAME/TYPE                | STATION   | OFFSET | RIM ELEV. | INV. ELEV. IN                            | INV. ELEV. OUT     | REMARKS        |
| CB-24                    | 131+11.39 | 19.0 R | 232.54    |  | I=228.90' (DMH-24) | FLAT TOP       |
| CB-26                    | 133+81.75 | 18.7 R | 234.43    |  | I=230.50' (CIT-27) |                |
| CIT-27                   | 133+76.99 | 23.7 R | 234.92    | I=230.40' (CB-26)<br>I=230.41' ± (EXIST) | I=230.30' (DMH-25) | CHANGE-IN-TYPE |
| DMH-23                   | 130+11.41 | 7.7 R  | 231.03    | I=226.70' (DMH-24)                       | I=226.60' (DMH-22) |                |
| DMH-24                   | 131+11.37 | 9.1 R  | 232.98    | I=228.80' (CB-24)<br>I=228.80' (DMH-25)  | I=228.70' (DMH-23) | OFFSET COVER   |
| DMH-25                   | 132+49.90 | 13.6 R | 234.10    | I=229.20' (CIT-27)                       | I=229.10' (DMH-24) |                |



BCWG INVESTMENTS LLC  
570 BOSTON ROAD - BILLERICA, MA  
DEED BK 26570 / PAGE 150  
SEE PB 131 PG 168

N/F  
JAMES A. JOHNSON III & JENNIFER A. JOHNSON  
537 BOSTON ROAD - BILLERICA, MA  
DEED BK 25699 / PAGE 56  
SEE PB 150 PL 114

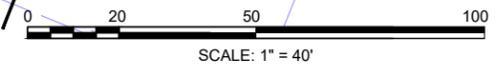
N/F  
ROMEO P. COLLADO  
541 BOSTON ROAD - BILLERICA, MA  
DEED BK 7232 / PAGE 296  
SEE PB 62 PL 59  
SEE PB 84 PL 143B

MARK D. BLAGDEN  
N/F  
574 BOSTON ROAD - BILLERICA, MA  
DEED BK 22870 / PAGE 186  
SEE PLAN BK 147 PG 28

BOSTON ROAD  
(ROUTE 3A)

BEAR HILL ROAD  
(PAPER STREET)

TO SANDPIPER



| STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|-------|--------------------|-----------|--------------|
| MA    | -                  | 29        | 30           |

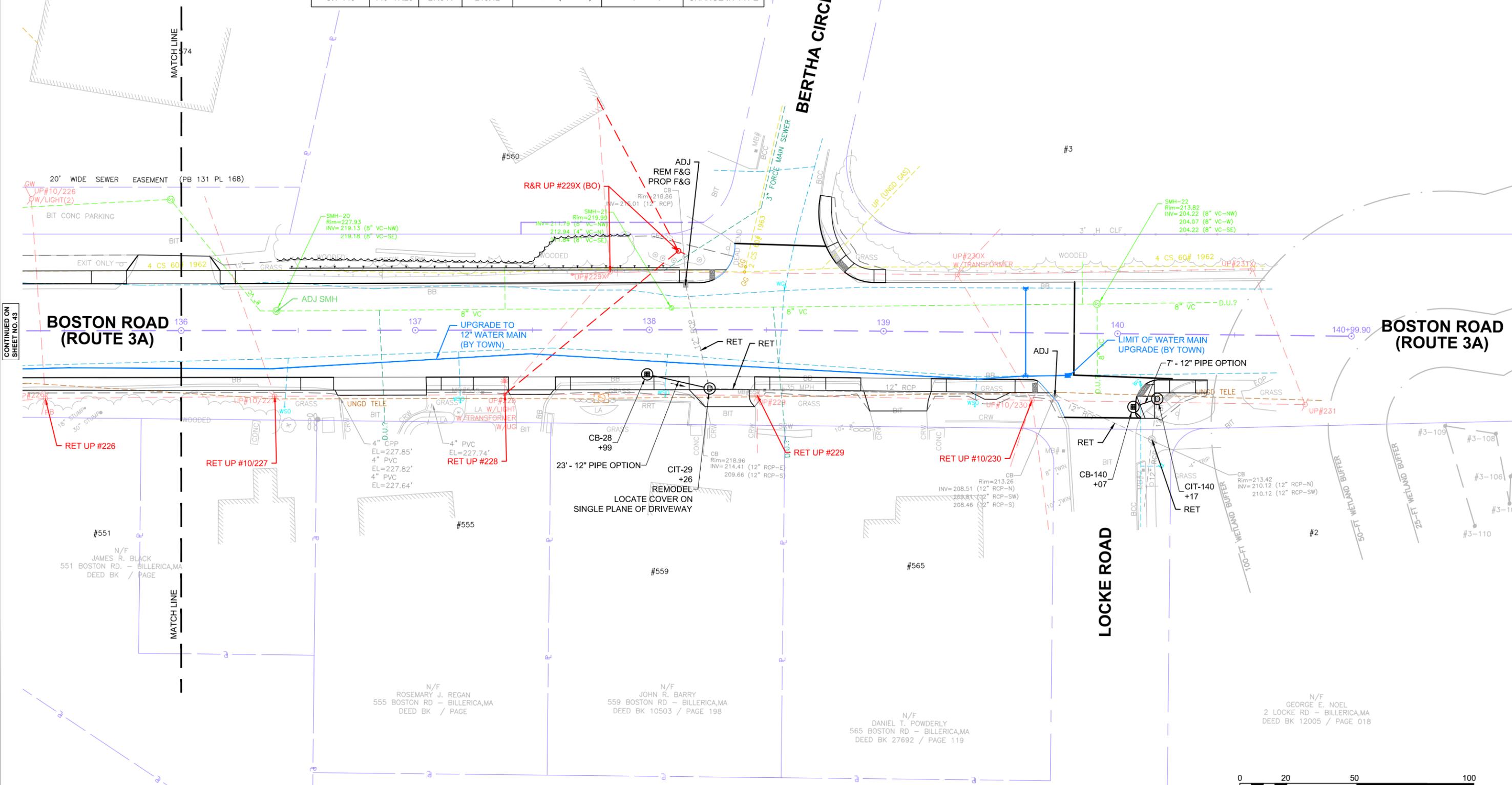
PROJECT FILE NO. 609250

DRAINAGE & UTILITY PLAN

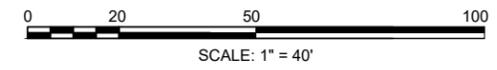
| DRAINAGE STRUCTURE TABLE |           |        |           |  |                     |                |
|--------------------------|-----------|--------|-----------|--|---------------------|----------------|
| NAME/TYPE                | STATION   | OFFSET | RIM ELEV. | INV. ELEV. IN                            | INV. ELEV. OUT      | REMARKS        |
| CB-28                    | 137+99.01 | 19.0 R | 220.63    |  | I=216.60' (CIT-29)  |                |
| CB-140                   | 140+07.09 | 31.1 R | 213.12    |  | I=209.60' (CIT-140) | FLAT TOP       |
| CIT-29                   | 138+25.72 | 25.0 R | 219.40    | I=215.40' (CB-28)<br>I=214.40' ± (EXIST) | I=209.66± (EXIST)   | CHANGE-IN-TYPE |
| CIT-140                  | 140+17.25 | 27.6 R | 213.42    | I=209.50' (CB-140)                       | I= (EXIST)          | CHANGE-IN-TYPE |

N  
N/F  
MARK D. BLADGEN  
574 BOSTON ROAD - BILLERICA, MA  
DEED BK 22870 / PAGE 186  
SEE PLAN BK 147 PG 128

N/F  
CAROL YUENS-FOLKES  
3 & 5 BERTHA CIR. - BILLERICA, MA  
DEED BK 16121 / PAGE 276  
SEE PB 160 PG 118



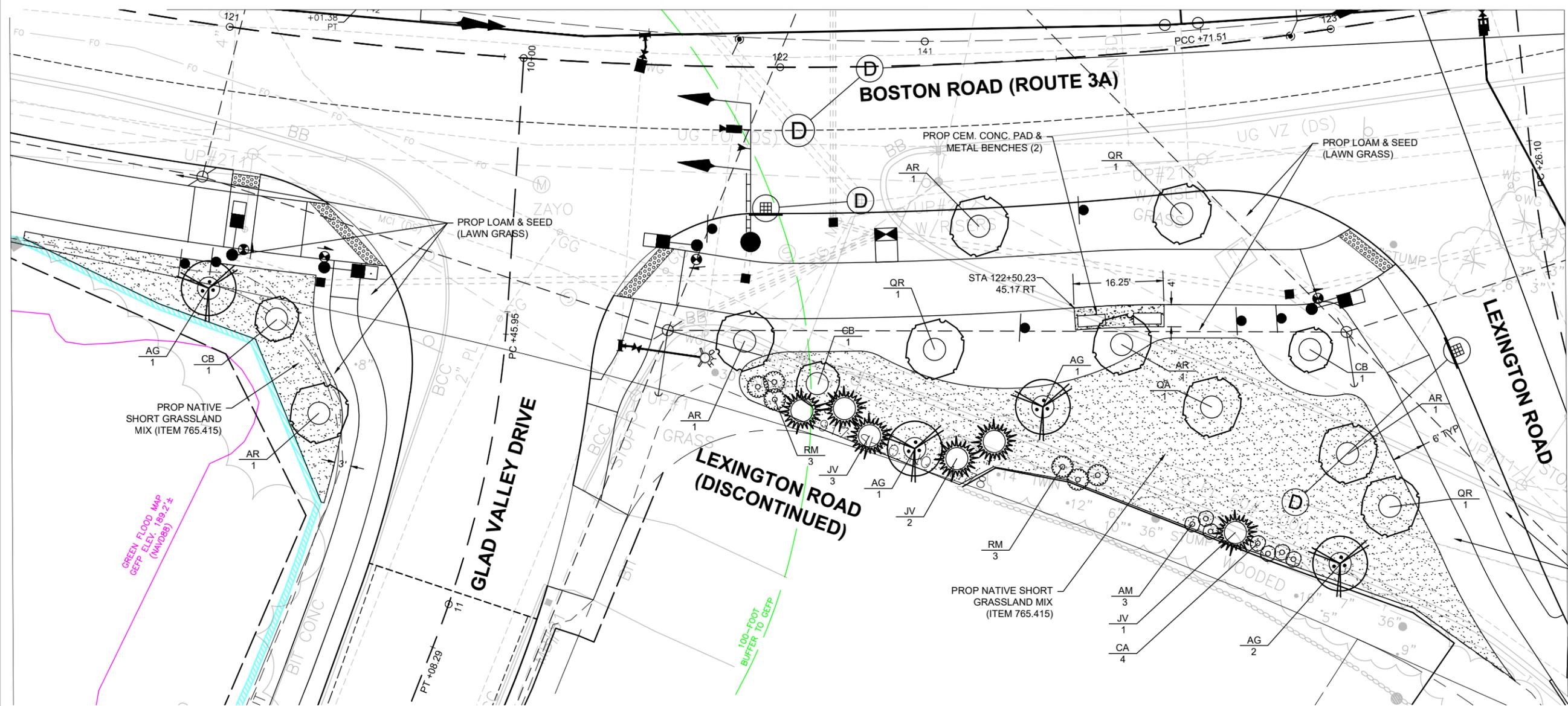
CONTINUED ON  
SHEET NO. 43



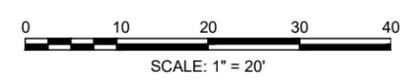
TRAFFIC SIGNAL CONDUIT SEE SHEET 57  
 WATER SUPPLY ALTERATIONS NONE  
 DRAINAGE & UTILITY DETAILS SEE SHEET 41

|                  |                    |           |              |
|------------------|--------------------|-----------|--------------|
| STATE            | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
| MA               | -                  | 30        | 30           |
| PROJECT FILE NO. |                    | 609250    |              |

LANDSCAPE PLAN

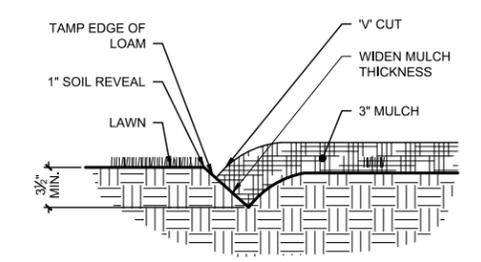


INTERSECTION PLANTING SITE PLAN



PLANT LIST - THIS SHEET

|        | KEY | QTY | BOTANICAL NAME                                       | COMMON NAME                          | SIZE             | REMARKS |
|--------|-----|-----|--|--------------------------------------|------------------|---------|
| TREES  |     |     |  |                                      |                  |         |
|        | AR  | 5   | <i>Acer rubrum</i>                                   | MAPLE - RED                          | 2-2.5" CAL       |         |
|        | AG  | 4   | <i>Amelanchier x grandiflora</i> 'Autumn Brilliance' | SERVICEBERRY - AUTUMN BRILLIANCE     | 7-8 HGT          |         |
|        | CB  | 3   | <i>Carpinus betulus</i> 'Frans Fontain'              | HORNBEAM - COLUMNAR - FRANS FONTAINE | 2-2.5" CAL       |         |
|        | JV  | 6   | <i>Juniperus virginiana</i>                          | CEDAR - RED                          | 7-8" HGT         |         |
|        | QA  | 1   | <i>Quercus alba</i>                                  | OAK - WHITE                          | 2-2.5" CAL       |         |
|        | QR  | 3   | <i>Quercus rubra</i>                                 | OAK - NORTHERN RED                   | 2-2.5" CAL       |         |
| SHRUBS |     |     |  |                                      |                  |         |
|        | AM  | 3   | <i>Aronia melanocarpa</i> 'Viking'                   | CHOKEBERRY - BLACK                   | 2-3' / #3        |         |
|        | CA  | 4   | <i>Clethra alnifolia</i> 'Compacta'                  | SUMMERSWEET SHRUB - COMPACT          | 3-4' / #3        |         |
|        | RH  | 6   | <i>Rhododendron maximum</i> 'Roseum'                 | RHODO - ROSEBAY                      | 2-2.5 FT / 3 GAL |         |



NOTE: LOCATE BEDLINE AS SHOWN ON PLAN.

BEDLINE EDGE  
 NOT TO SCALE



# CULTURAL RESOURCES PROJECT RECORD

|               |  |                           |   |                      |                          |
|---------------|--|---------------------------|---|----------------------|--------------------------|
| City/Town:    | Billerica  | Project #                 | 609250  | Date Cleared         | 9/21/2022                |
| Project Name  | INTERSECTION IMPROVEMENTS AT BOSTON ROAD (ROUTE 3A), LEXINGTON STREET AND GLAD VALLEY ROAD | Date Filed                | 9/21/2022   | Finding Under Review | <input type="checkbox"/> |
| Project Type: | Highway Reconstr - Minor Widening  | Early Coord. Letter Sent: | <input checked="" type="checkbox"/>                       | Reviewer:            | JMH                      |
| Review:       | Section 106 (PA)   | Comment Received:         | <input type="checkbox"/> MHC <input type="checkbox"/> LHC | Consultant           |                          |
| Finding:      | Stip VB - No historic properties affected  |                           |   |                      |                          |
| Comments      | Per Corps permit, PNFs to SHPO, BUAR, ATHPO, NTHPO, and MTHPO 2/6/2024.                    |                           |   |                      |                          |

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 SD*



## CULTURAL RESOURCES PROJECT RECORD

### Summary of MassDOT Highway Division Finding (Appendix 1 and Section V.B. Projects only)

MassDOT proposes intersection improvements at Boston Road (Route 3A), Lexington Street, and Glad Valley Road in Billerica. The project area extends approximately 2,700 feet (0.5 miles) along Boston Road (Route 3A), from Tower Farm Road to a point approximately 500 feet south of Lexington Road. Project limits extend approximately 550 feet along Lexington Road and approximately 150 feet along Glad Valley Drive. Boston Road currently lacks sidewalks along the majority of the project corridor, specifically on the east side from Tufts Lane to the southern end of the project and on the west side from the 499 Boston Road driveway to the southern end of the project. The existing Boston Road intersection with both Lexington Road and Glad Valley Drive is unsignalized and has an irregular geometry, as both Lexington Road and Glad Valley Drive have intersections with Boston Road, as well as with each other.

Improvements to the intersections of Boston Road with Lexington Road and Glad Valley Drive include the realignment of both Lexington Road and Glad Valley Drive to form two closely spaced intersections, eliminating the existing skewed geometry. The existing roadway segment connecting Lexington Road and Glad Valley Drive will be discontinued and the pavement removed as part of this project. An infiltration basin with landscaping and wetland plantings will be constructed within this removed section of roadway. Installation of traffic signals at both realigned intersections will allow for improved and safer operations for all roadway users. The intersection and roadway improvement activities proposed along Boston Road include sidewalk construction / reconstruction, improved bicycle accommodations, installing wood rail fencing, and removing and resetting stone walls. An existing metal pole with a sign dedicating the traffic island at the intersection of Boston Road, Lexington Road and Glad Valley Drive will be removed and reset to a new location. One fee taking is necessary to accommodate sidewalk work. Temporary and permanent easements are also required.

A review of the State and National Register of Historic Places revealed no listed properties within or adjacent to the project area. A review of the Inventory of Historic and Archaeological Assets of the Commonwealth revealed two inventoried buildings located adjacent to the project area: BIL.194 and BIL.196. The Benjamin K. Heald House at 475 Boston Road (BIL.194) is a two-story side-hall Greek Revival house constructed ca. 1845. A porch has been added across the front of the house and extensive additions extend from the rear of the house. The front entry has been insensitively altered with a modern door and single pane sidelights. The property has been converted, in part, to commercial use. The house at 520 Boston Road (BIL.196) is a two-story center-entrance Greek Revival with recessed entry constructed ca. 1840. The house has been insensitively altered through removal of its chimney stack (at least above the roof line), application of artificial siding, and replacement of the original front door and windows. The property has been converted to commercial use. Neither of the inventoried properties appear to meet the criteria for listing in the National Register, either individually or as part of any conceivable historic district due to a loss of integrity from insensitive alterations and a lack of architectural distinction or significant historical associations.

Two other inventoried buildings adjacent to the project area have been demolished: the house at 524 Boston Road (BIL.195) and the William Hamlet-Caleb Farley House at 562 Boston Road (BIL.197). The remainder of the project area consists of mid-to-late 20th and early 21st century commercial and residential development, none of which appears to meet any criteria for listing in the National Register, either individually or as part of an historic district.

A review of the MHC's archaeology maps on MACRIS revealed no recorded sites within the project's direct area of potential effect (APE). The nearest recorded sites to the project area are 19-MD-273 (unnamed) and 19-MD-338 (Bear Hill Site). 19-MD-273 is a flake scatter located approximately 850 feet westerly of the project area. 19-MD-338 is a find spot located 1,150 feet southerly of the project area. It is the opinion of the MassDOT Archaeologist that low sensitivity can be ascribed to the project's direct area of potential effect (APE) based on the impacts of past roadway, sidewalk, drainage, and utility construction and roadside development.

An early coordination letter was forwarded to the Billerica Historic District Commission on December 10, 2019. A copy was forwarded to the SHPO. A letter from the Billerica Historical Commission dated June 15, 2022 requested that MassDOT install a historic marker that has already been fabricated for the Billerica & Bedford Narrow Gauge Railroad. MassDOT will coordinate with the historical commission on the location for the new sign. The project work is exempt from Mashpee THPO review under the conditions of the 2015 MOU with the tribe.

Reviewer's Initials: \_\_\_\_\_

**Harwood, Jameson (DOT)**

---

**From:** Microsoft Outlook  
**To:** Bettina Washington  
**Sent:** Tuesday, February 6, 2024 10:44 AM  
**Subject:** Relayed: MassDOT Project #609250: Billerica Rt 3A intersection

**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 #609250: Billerica Rt 3A intersection

## Harwood, Jameson (DOT)

---

**From:** Harwood, Jameson (DOT)  
**Sent:** Tuesday, February 6, 2024 10:44 AM  
**To:** Bettina Washington  
**Subject:** MassDOT Project #609250: Billerica Rt 3A intersection  
**Attachments:** Billerica - Rt 3A intersection (609250) PNF.pdf; Billerica - Rt 3A intersection (609250) Plans.pdf

Ms. Washington,

MassDOT is submitting information for the above-referenced project to the THPO to meet the Section 106 consultation requirements of FHWA (lead federal agency) and 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](mailto: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:** Robinson, David S (EEA)  
**Sent:** Tuesday, February 6, 2024 10:42 AM  
**Subject:** Delivered: MassDOT Project #609250: Billerica Rt 3A intersection

**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 #609250: Billerica Rt 3A intersection

## Harwood, Jameson (DOT)

---

**From:** Harwood, Jameson (DOT)  
**Sent:** Tuesday, February 6, 2024 10:42 AM  
**To:** Robinson, David S (EEA)  
**Subject:** MassDOT Project #609250: Billerica Rt 3A intersection  
**Attachments:** Billerica - Rt 3A intersection (609250) PNF.pdf; Billerica - Rt 3A intersection (609250) Plans.pdf

David,

MassDOT is submitting information for the above-referenced project to the BUAR to meet the Section 106 consultation requirements of FHWA (lead federal agency) and 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](mailto: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:** David Weeden (David.Weeden@mwtribe-nsn.gov); 106Review  
**Sent:** Tuesday, February 6, 2024 10:44 AM  
**Subject:** Relayed: MassDOT Project #609250: Billerica Rt 3A intersection

**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](mailto:David.Weeden@mwtribe-nsn.gov))

[106Review \(106Review@mwtribe-nsn.gov\)](mailto:106Review@mwtribe-nsn.gov)

Subject: MassDOT Project #609250: Billerica Rt 3A intersection

## Harwood, Jameson (DOT)

---

**From:** Harwood, Jameson (DOT)  
**Sent:** Tuesday, February 6, 2024 10:43 AM  
**To:** David Weeden (David.Weeden@mwtribe-nsn.gov); 106Review  
**Subject:** MassDOT Project #609250: Billerica Rt 3A intersection  
**Attachments:** Billerica - Rt 3A intersection (609250) PNF.pdf; Billerica - Rt 3A intersection (609250) 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](mailto: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:** Tuesday, February 6, 2024 10:45 AM  
**Subject:** Relayed: MassDOT Project #609250: Billerica Rt 3A intersection

**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 #609250: Billerica Rt 3A intersection

## Harwood, Jameson (DOT)

---

**From:** Harwood, Jameson (DOT)  
**Sent:** Tuesday, February 6, 2024 10:45 AM  
**To:** Tashtesook@aol.com  
**Subject:** MassDOT Project #609250: Billerica Rt 3A intersection  
**Attachments:** Billerica - Rt 3A intersection (609250) PNF.pdf; Billerica - Rt 3A intersection (609250) Plans.pdf

Mr. Brown,

MassDOT is submitting information for the above-referenced project to the THPO to meet the Section 106 consultation requirements of FHWA (lead federal agency) and 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](mailto: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

7020 2450 0001 6271 3990

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| <b>U.S. Postal Service™</b><br><b>CERTIFIED MAIL® RECEIPT</b><br><i>Domestic Mail Only</i>       |   |
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| Certified Mail Fee<br>\$ _____   | Postmark<br>Here<br><br><i>Billerica<br/>         609250<br/>         Rt 3A<br/>         SH60-PNF</i> |
| Extra Services & Fees ( <i>check box, add fee as appropriate</i> )                               |   |
| <input type="checkbox"/> Return Receipt (hardcopy) \$ _____                                      |   |
| <input type="checkbox"/> Return Receipt (electronic) \$ _____                                    |   |
| <input type="checkbox"/> Certified Mail Restricted Delivery \$ _____                             |   |
| <input type="checkbox"/> Adult Signature Required \$ _____                                       |   |
| <input type="checkbox"/> Adult Signature Restricted Delivery \$ _____                            |   |
| Postage<br>\$ _____  |   |
| Total Postage and Fees<br>\$ _____   |   |
| Sent To <i>Brody Simon</i>   |   |
| Street and Apt. No., or PO Box No.<br><i>MHC</i>   |   |
| City, State, ZIP+4®  |   |
| PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions                       |   |

## 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:** Intersection Improvements (MassDOT Project #609250)  
**Location /Address:** Boston Road (Route 3A), Lexington Street, and Glad Valley Road  
**City/Town:** Billerica

**Project Proponent**

**Name:** Massachusetts Department of Transportation  
**Address:** 10 Park Plaza  
**City/Town/Zip/Telephone:** Boston, MA 02116

Agency license or funding for the project (list all licenses, permits, approvals, grants or other entitlements being sought from state and federal agencies).

| <u>Agency Name</u> | <u>Type of License or funding (specify)</u>   |
|--------------------|---|
| FHWA               | Federal Funding (FHWA is lead federal agency) |

|        |                    |
|--------|--------------------|
| USACOE | Section 404 Permit |
|--------|--------------------|

**Project Description (narrative):**

MassDOT proposes intersection improvements at Boston Road (Route 3A), Lexington Street, and Glad Valley Road in Billerica. The project area extends approximately 2,700 feet (0.5 miles) along Boston Road (Route 3A), from Tower Farm Road to a point approximately 500 feet south of Lexington Road. Project limits extend approximately 550 feet along Lexington Road and approximately 150 feet along Glad Valley Drive. Boston Road currently lacks sidewalks along the majority of the project corridor, specifically on the east side from Tufts Lane to the southern end of the project and on the west side from the 499 Boston Road driveway to the southern end of the project. The existing Boston Road intersection with both Lexington Road and Glad Valley Drive is unsignalized and has an irregular geometry, as both Lexington Road and Glad Valley Drive have intersections with Boston Road, as well as with each other.

Improvements to the intersections of Boston Road with Lexington Road and Glad Valley Drive include the realignment of both Lexington Road and Glad Valley Drive to form two closely spaced intersections, eliminating the existing skewed geometry. The existing roadway segment connecting Lexington Road and Glad Valley Drive will be discontinued and the pavement removed as part of this project. An infiltration basin with landscaping and wetland plantings will be constructed within this removed section of roadway.

Installation of traffic signals at both realigned intersections will allow for improved and safer operations for all roadway users. The intersection and roadway improvement activities proposed along Boston Road include sidewalk construction / reconstruction, improved bicycle accommodations, installing wood rail fencing, and removing and resetting stone walls. An existing metal pole with a sign dedicating the traffic island at the intersection of Boston Road, Lexington Road and Glad Valley Drive will be removed and reset to a new location. One fee taking is necessary to accommodate sidewalk work. Temporary and permanent easements

are also required.

**Does the project include demolition? If so, specify nature of demolition and describe the building(s) which are proposed for demolition.**

N/A

**Does the project include rehabilitation of any existing buildings? If so, specify nature of rehabilitation and describe the building(s) which are proposed for rehabilitation.**

N/A

**Does the project include new construction? If so, describe (attach plans and elevations if necessary).**

See plans

**To the best of your knowledge, are any historic or archaeological properties known to exist within the project's area of potential impact? If so, specify.**

A review of the State and National Register of Historic Places revealed no listed properties within or adjacent to the project area. A review of the Inventory of Historic and Archaeological Assets of the Commonwealth revealed two inventoried buildings located adjacent to the project area: BIL.194 and BIL.196. The Benjamin K. Heald House at 475 Boston Road (BIL.194) is a two-story side-hall Greek Revival house constructed ca. 1845. A porch has been added across the front of the house and extensive additions extend from the rear of the house. The front entry has been insensitively altered with a modern door and single pane sidelights. The property has been converted, in part, to commercial use. The house at 520 Boston Road (BIL.196) is a two-story center-entrance Greek Revival with recessed entry constructed ca. 1840. The house has been insensitively altered through removal of its chimney stack (at least above the roof line), application of artificial siding, and replacement of the original front door and windows. The property has been converted to commercial use. Neither of the inventoried properties appear to meet the criteria for listing in the National Register, either individually or as part of any conceivable historic district due to a loss of integrity from insensitive alterations and a lack of architectural distinction or significant historical associations.

Two other inventoried buildings adjacent to the project area have been demolished: the house at 524 Boston Road (BIL.195) and the William Hamlet-Caleb Farley House at 562 Boston Road (BIL.197). The remainder of the project area consists of mid-to-late 20th and early 21st century commercial and residential development, none of which appears to meet any criteria for listing in the National Register, either individually or as part of an historic district.

A review of the MHC's archaeology maps on MACRIS revealed no recorded sites within the project's direct area of potential effect (APE). The nearest recorded sites to the project area are 19-MD-273 (unnamed) and 19-MD-338 (Bear Hill Site). 19-MD-273 is a flake scatter located approximately 850 feet westerly of the project area. 19-MD-338 is a find spot located 1,150 feet southerly of the project area. It is the opinion of the MassDOT Archaeologist that low sensitivity can be ascribed to the project's direct area of potential effect (APE) based on the impacts of past roadway, sidewalk, drainage, and utility construction and roadside development.

**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 |

**What is the acreage of the proposed new construction?** \_\_\_\_\_ acres

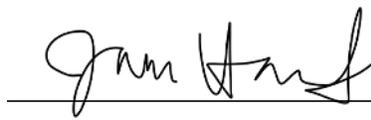
**What is the present land use of the project area?**

The Route 3A area consists of light residential and commercial development.

**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:** 2/06/2024

**Name:** Jameson Harwood

**Address:** 10 Park Plaza – Room 7130

**City/Town/Zip:** Boston, MA 02717

**Telephone:** Email: jameson.harwood@dot.state.ma.us

**REGULATORY AUTHORITY**

**950 CMR 71.00: M.G.L. c. 9, §§ 26-27C as amended by St. 1988, c. 254.**

**7/1/93**

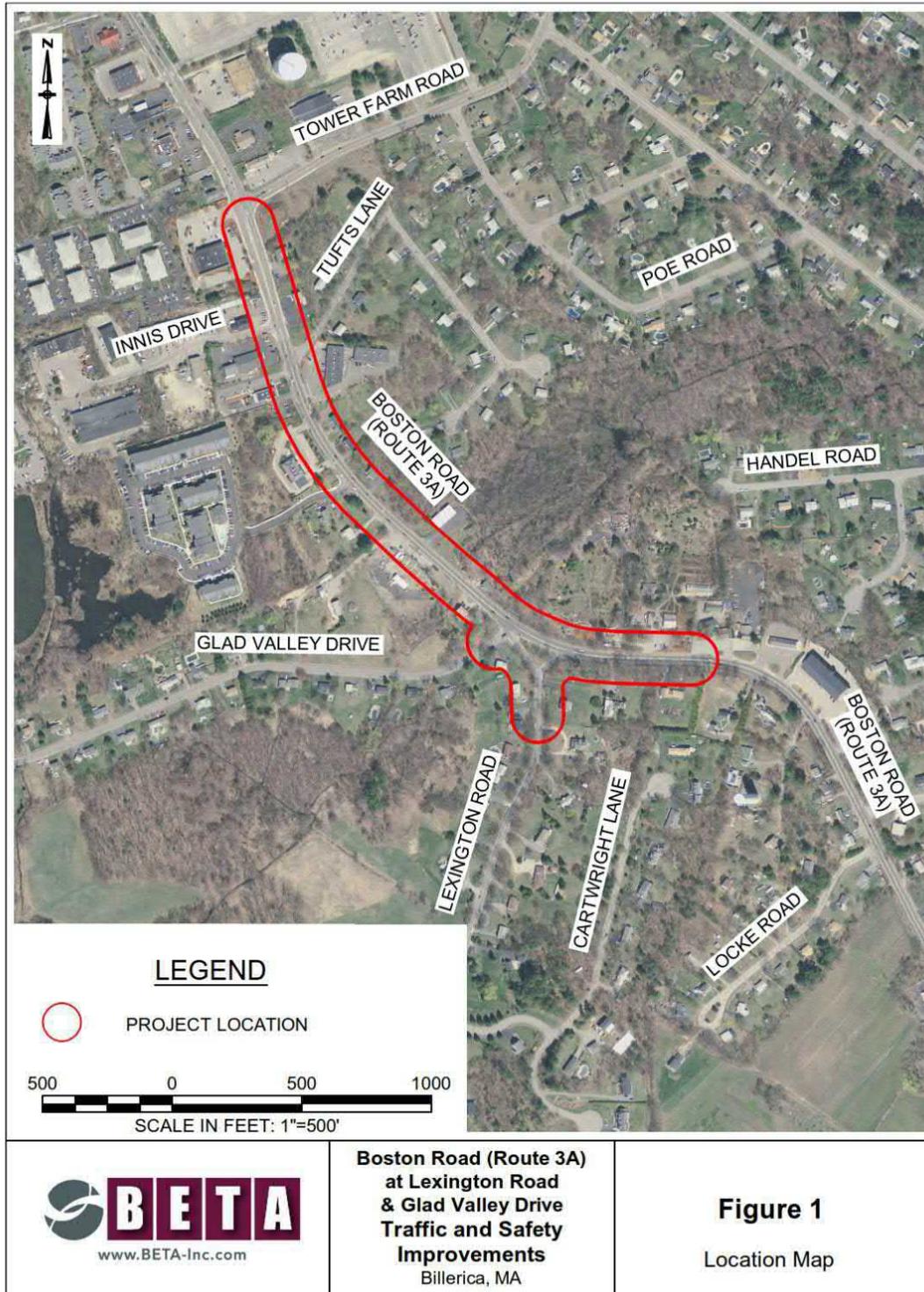
**950 CMR - 276**

CC:

**Intersection Improvements, Boston Road (Route 3A) at  
Lexington Road and Glad Valley Road**

**25% Early Environmental Coordination Checklist**

Billerica, Massachusetts



**Figure 1. Project Location**

**Billerica Historical Commission  
365 Boston Road  
Billerica, MA 01821**

**RECEIVED**

JUN 15 PM 4:16

JUN 21 2022

MassDOT  
PROJECT MANAGEMENT

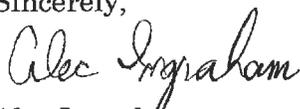
Carrie E. Lavalley, P.E., Chief Engineer  
MassDOT-Highway Division  
10 Park Plaza  
Boston, MA 02116-3973  
May 24, 2022

RE: Virtual Public Hearing  
Boston Road (Route 3A) at Lexington Road & Glad Valley Drive Traffic and Safety  
Improvements  
Improvements  
**Billerica**  
Project File No. 609250  
Atten: Project Manager

Dear Project Manager

Please find the attached comments from the Billerica Historical Commission relative to the redesign of the Boston Road (Rte #3A) at Lexington Road & Glad Valley Drive in Billerica, MA. The comments were also emailed to the Project Manager's attention on May 24, 2022. The Commission's concern is related to the placement of the Billerica & Bedford Railroad route marker which was located on the Lexington Road Island.

Sincerely,



Alec Ingraham  
Chair: Billerica Historical Commission.

THE COMMONWEALTH OF MASSACHUSETTS  
MASSACHUSETTS DEPARTMENT OF TRANSPORTATION  
HIGHWAY DIVISION

FEDERAL AID PROJECT

Billerica, MA  
Boston Road (Route 3A) at Lexington Road & Glad Valley Drive  
Traffic and Safety Improvements  
Project File No. 609250

This sheet is provided for your comments. Your input is solicited and appreciated. You may e-mail comments directly to [MassDOTProjectManagement@dot.state.ma.us](mailto:MassDOTProjectManagement@dot.state.ma.us) or you may mail this sheet with any additional comments to:

Carrie E. Lavalley, P.E., Chief Engineer  
MassDOT – Highway Division  
10 Park Plaza, Boston, MA 02116-3973  
Attn: Project Management

Statements and exhibits intended for inclusion in the public hearing transcript must be emailed or postmarked no later than ten (10) business days after the hearing.

**PLEASE TYPE OR PRINT LEGIBLY.**

About fifteen years ago, the Billerica Historical Commission placed a marker commemorating the route of the historic Billerica & Bedford narrow gauge railroad. About a year ago the marker, which was placed on the Boston/Lexington Road Island was vandalized and removed. Since the marker was an historic marker so designated by the Town's Select Board, a replacement has been authorized and is ready for installation, which the Commission has delayed pending the redesign of the Boston Road, Lexington Road, Glad Valley Drive intersection. The 18" by 24" aluminum sign and u channel post meet all safety standards set by the DPW. Since the new intersection design removes the Island, would it be possible to incorporate the historic marker into the new design? An appropriate location might on the east side of Boston Road near the Glad Valley Drive crosswalk.

I would be happy to discuss this matter with you.

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Name: Alec Ingraham Title: Chair, Billerica Historical Comm.  
Organization: Billerica Historical Commission  
Address: c/o Alec Ingraham, 48 Mount Pleasant Street, North Billerica, MA 01862  
ingrahamalec@gmail.com or (978) 987-1882



December 10, 2019

Michael J. Rea, Jr., Chairman  
Billerica Historic Districts Commission  
365 Boston Road  
Room G05  
Billerica, MA 01821

**Re: Billerica - Intersection Improvements at Boston Road (Route 3A), Lexington Street and Glad Valley Road, MassDOT Project Number 609250**

Dear Chairman Rea:

The Massachusetts Department of Transportation (MassDOT) Highway Division proposes to make safety improvements at the intersection of Boston Road (Route 3A), Lexington Street and Glad Valley Road (the Project). The enclosed Project description is included for the Historic Districts Commission's review.

The purpose of this Project is to improve traffic operations and safety at the intersection through reconfiguring the intersection geometry and installing a new signal. Improved pedestrian and bicycle accommodations from Boston Road's intersection with Tower Farm Road to approximately 500 feet south of Boston Road's intersection with Lexington Street are also included.

MassDOT Highway Division and the Town of Billerica DPW request that the Commission review the enclosed materials at their earliest convenience and solicit any comments that the Commission wishes to make regarding the Project. Written comments should be submitted, preferably within 30 days, to: Patricia A. Leavenworth, P.E., Chief Engineer, MassDOT Highway Division, 10 Park Plaza, Boston, MA 02116, Attn: Kimberley Sloan, [Kimberley.Sloan@state.ma.us](mailto:Kimberley.Sloan@state.ma.us). Please also copy the BETA Group, Inc. Attn: Darshan Jhaveri at the address below.

If you have any questions concerning the Section 106 process, please feel free to contact Jeffrey Shrimpton (857.368.8824) of MassDOT Highway Division's Cultural Resources Unit.

If we can be of any further assistance regarding this matter, please contact us at our office.

Very truly yours,  
BETA Group, Inc.

A handwritten signature in black ink, appearing to read "Marta J. Nover".

Marta J. Nover  
Vice President – Environmental Services

Atts: Project Description  
Figure 1 – Location Map  
Figure 2 – Proposed Roadway and Intersection Improvements

cc: B. Simon, Massachusetts Historical Commission, w/att  
J. Shrimpton, MassDOT CRU, w/att  
K. Sloan, MassDOT (w/o att)

BETA GROUP, INC.  
315 Norwood Park South, 2<sup>nd</sup> Floor, Norwood, MA 02062  
P: 781.255.1982 | F: 781.255.1974 | W: [www.BETA-Inc.com](http://www.BETA-Inc.com)



## 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:

August 25, 2023

Project code: 2023-0121560

Project Name: 609250 BILLERICA- INTERSECTION IMPROVEMENTS AT BOSTON RD  
(ROUTE 3A), LEXINGTON ST AND GLAD VALLEY RD

Subject: Consistency letter for the '609250 BILLERICA- INTERSECTION IMPROVEMENTS AT BOSTON RD (ROUTE 3A), LEXINGTON ST AND GLAD VALLEY RD' project under the amended February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion (dated March 23, 2023) for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat (NLEB).

To whom it may concern:

The U.S. Fish and Wildlife Service (Service) has received your request dated August 25, 2023 to verify that the **609250 BILLERICA- INTERSECTION IMPROVEMENTS AT BOSTON RD (ROUTE 3A), LEXINGTON ST AND GLAD VALLEY RD** (Proposed Action) may rely on the amended February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion (dated March 23, 2023) 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 will have no effect on the endangered Indiana bat (*Myotis sodalis*) or the endangered northern long-eared bat (*Myotis septentrionalis*). If the Proposed Action is not modified, **no consultation is required for these two species**. 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.

**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 and/or NLEB use or occupancy, yet later detected 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 within 2 working days of the incident. In these

instances, potential incidental take of Indiana bats and/or NLEBs may be exempted provided that the take is reported to the Service.

If the Proposed Action may affect any other federally-listed or proposed species and/or 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 advise the lead Federal action agency accordingly.

The following species may occur in your project area and **are not** covered by this determination:

- Monarch Butterfly *Danaus plexippus* Candidate

## **PROJECT DESCRIPTION**

The following project name and description was collected in IPaC as part of the endangered species review process.

### **NAME**

609250 BILLERICA- INTERSECTION IMPROVEMENTS AT BOSTON RD (ROUTE 3A), LEXINGTON ST AND GLAD VALLEY RD

### **DESCRIPTION**

609250 BILLERICA- INTERSECTION IMPROVEMENTS AT BOSTON ROAD (ROUTE 3A), LEXINGTON STREET AND GLAD VALLEY ROAD

The Boston Road (Route 3A) at Lexington Road and Glad Valley Drive intersection improvements include the installation of a traffic signal and realignment of both Lexington Road and Glad Valley Drive. Lexington Road will be realigned to form a more conventional three-legged signalized intersection at Boston Road. Glad Valley Drive will also be realigned to meet Boston Road in a similar three legged signalized intersection, with both realigned intersections operating under one controller. This traffic signal reconfiguration will improve safety and operations for this curved section of Boston Road.

Monarch Butterfly: Candidate Species only, no conservation measures at this time



## DETERMINATION KEY RESULT

Based on the information you provided, you have determined that the Proposed Action will have no effect on the endangered Indiana bat and/or the endangered northern long-eared bat.

Therefore, no 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 for these two species.

## QUALIFICATION INTERVIEW

1. Is the project within the range of the Indiana bat<sup>[1]</sup>?

[1] See [Indiana bat species profile](#)

**Automatically answered**

*No*

2. Is the project within the range of the northern long-eared bat<sup>[1]</sup>?

[1] See [northern long-eared bat species profile](#)

**Automatically answered**

*Yes*

3. [Semantic] Does your proposed action intersect an area where Indiana bats and northern long-eared bats are not likely to occur?

**Automatically answered**

*Yes*

## **DETERMINATION KEY DESCRIPTION: FHWA, FRA, FTA PROGRAMMATIC CONSULTATION FOR TRANSPORTATION PROJECTS AFFECTING NLEB OR INDIANA BAT**

This key was last updated in IPaC on July 27, 2023. 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 endangered **northern long-eared bat** (NLEB) (*Myotis septentrionalis*).

This decision key should only be used to verify project applicability with the Service's [amended February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion \(dated March 23, 2023\) 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: Trevor Burns

Address: 10 Park Plaza

City: Boston

State: MA

Zip: 02116

Email: trevor.b.burns@dot.state.ma.us

Phone: 8573010759

## **LEAD AGENCY CONTACT INFORMATION**

Lead Agency: Federal Highway Administration

**From:** [Vasconcelos, Daniel B CIV USARMY CENAE \(USA\)](#)  
**To:** [Thompson, Kevin S. \(DOT\)](#)  
**Cc:** [Beckwith, Corinna \(DOT\)](#); [Laura Krause](#)  
**Subject:** RE: Billerica (609250) Self-Verification Notification Form  
**Date:** Thursday, March 21, 2024 8:26:14 AM  
**Attachments:** [image001.png](#)

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**CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.**

Kevin,

We received your Self-Verification (SV) application for the General Permits for Massachusetts (GPs for MA) indicating that you plan to conduct work in our jurisdiction. We have logged this into our database and assigned it file number NAE-2024-00663. Please reference this number in any future correspondence with us.

This confirmation that we have received the SV notification form does not confirm that the work is authorized under the GPs for MA. By submitting the SV application, you are self-verifying that your project is authorized under, and meets the terms and conditions of, the applicable GPs with no review by the Corps of Engineers. Activities that do not qualify for SV require a PCN to the Corps.

Please contact me with any questions.

Regards,  
Dan

Daniel B. Vasconcelos, PWS  
Environmental Scientist/Project Manager  
U.S. Army Corps of Engineers  
New England District, Regulatory Division  
696 Virginia Road  
Concord, MA 01742  
(978) 318-8653

---

**From:** Thompson, Kevin S. (DOT) <kevin.s.thompson@dot.state.ma.us>  
**Sent:** Thursday, March 7, 2024 3:44 PM  
**To:** Vasconcelos, Daniel B CIV USARMY CENAE (USA) <Daniel.B.Vasconcelos@usace.army.mil>  
**Cc:** Beckwith, Corinna (DOT) <corinna.beckwith@dot.state.ma.us>; Laura Krause <LKrause@BETA-Inc.com>  
**Subject:** [Non-DoD Source] Billerica (609250) Self-Verification Notification Form

Hello Dan,

We wish to file an SVNF for the above project which will be constructed by a MassDOT contractor, in coordination with the municipality. The project entails intersection improvements at Boston Road (3A) Lexington St, and Glad Valley Rd in Billerica, MA.

Please find attach the SV notification form, including the NE Consistency Letter and the Section 106 coordination.

 [Lexington.Glad Valley Self Verification Form Final.pdf](#)

If you have any questions, feel free to reach out to myself or Laura Krause (cc'd).

Thank you,

Kevin

Kevin Thompson  
Environmental Analyst I  
Wetlands Unit  
*MassDOT – Highway Division*

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.

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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](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](mailto: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](mailto: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](mailto: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](mailto: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 authorized<sup>1</sup>, currently serviceable structure, or fill, or of any currently serviceable structure or fill authorized by 33 CFR 330.3 (activities occurring before certain dates), provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification. Minor deviations in the structure's configuration or filled area, including those due to changes in materials, construction technique requirements of other regulatory agencies, or current construction codes or safety standards that are necessary to make the repair, rehabilitation, or replacement are authorized. This GP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to conduct the activities above. Maintenance dredging and beach nourishment are not eligible under GP 2 (see GP 7). Stream crossing modifications (including sliplining), replacements or extensions are not eligible under GP 2 (see GPs 6, 17, 23). See GP 25 Emergency Situations for expedited review of emergency activities.

**Not authorized under GP 2 (IP required):** (a) Permanent impacts in >1 acre in non-tidal waters and/or wetlands; or (b) Permanent impacts >1/2 acre in tidal waters; >1000 SF in saltmarsh, mud flats, riffle and pool complexes, or non-tidal vegetated shallows; or >100 SF in tidal vegetated shallows; or (c) Temporary impacts >1 acre in tidal waters; >5000 SF in saltmarsh, mud flats, riffle and pool complexes, or non-tidal vegetated shallows; or >1000 SF in vegetated shallows; (d) New stream channelization or stream relocation projects (e.g., those in response to storm or flood events).

**Self-Verification Eligible**

Maintenance activities that meet all of the following terms:

1. In non-tidal waters, the combined permanent and temporary impacts extending beyond the original footprint are ≤5,000 SF<sup>2</sup> 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.

<sup>1</sup> 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).

<sup>2</sup> This excludes dam projects that may require a temporary drawdown with impacts >5,000 SF in non-tidal waters. Instead, the drawdown shall comply with SV #5 to be eligible under Self-Verification.

6. Any stream channel modification is limited to the minimum necessary for the repair, rehabilitation, or replacement of the structure or fill; such modifications, including the removal of material from the stream channel, must be immediately adjacent to the project or within the boundaries of the structure or fill.

7. Work to previously approved tide gates not affecting upstream tidal resource areas.

5. Activities located in the Connecticut River or Merrimack River, unless they are completed in the dry or when the tide is waterward of the work area.

6. Activities on USACE properties & USACE-controlled easements.

7. Activities that do not require an IP. Activities that do not require a PCN or an IP may be SV eligible.

Notes:

1. This authorizes the repair, rehabilitation, or replacement of any previously authorized structure or fill that does not qualify for the CWA §404(f) exemption for maintenance. See 33 CFR 323.4(a)(2). Prior USACE permits may have included authorization to maintain the activity, in which case authorization under this GP is not necessary.

2. See GC 22 for information on temporary construction mats.

**GP 3. MOORINGS (Authority: §10)**

New moorings and mooring fields; the relocation of previously authorized moorings; expansions, boundary reconfigurations or modifications of previously authorized mooring fields; and maintenance and replacement of moorings.

**Not authorized under GP 3 (IP required):** (a) Moorings or mooring fields converted to or associated with a new boating facility<sup>1</sup>; or (b) Moorings in a USACE Federal Navigation Anchorage or USACE Federal Navigation Channel, except municipal-operated mooring fields.

**Self-Verification Eligible**

1. New or relocated moorings that meet all the following terms:
  - a. Authorized by a local harbormaster/municipality under MGL Chapter 91 §10A; and
  - b. No interference with navigation; and
  - c. Single boat, single-point and non-commercial; and
  - d. Not associated with a boating facility, and
  - e. Neither placed within nor impact tidal vegetated shallows (e.g., eelgrass); and
  - f. Not located within a USACE Federal navigation project (FNP) or the FNP buffer zone.
2. Existing, authorized moorings are converted from traditional moorings to low impact mooring technology (see note below) and/or helical anchors.
3. Maintenance and replacement of moorings authorized by the USACE.

**Pre-Construction Notification Required**

1. New mooring fields; or expansions, boundary reconfigurations or modifications of existing, authorized mooring fields.
2. Moorings located such that they, and/or vessels docked or moored at them, are within the buffer zone of the horizontal limits of a Federal Anchorage. The buffer zone is equal to 3 times the authorized depth of that channel (see GC 15).
3. New individual moorings located in saltmarsh, mudflats, natural rocky habitat, and tidal vegetated shallows. Locating moorings these areas should be avoided to the maximum extent practicable. If these areas cannot be avoided, plans should show conservation mooring or low-impact mooring systems that prevent mooring chains from resting or dragging on the bottom substrate at all tides, where practicable. USACE may require a survey in areas previously mapped as containing eelgrass or within 100 ft. of existing eelgrass beds to document presence or absence of eelgrass and to determine the appropriate type and amount of compensatory mitigation for impacts to eelgrass.
4. Replacement moorings located in tidal vegetated shallows.
5. Moorings that are not SV eligible and do not require an IP.

**Notes:**

1. Low impact mooring systems, including conservation moorings, are encouraged to minimize impacts of chain scouring from conventional moorings during the tidal cycle.
2. An SVN submittal to USACE is not required for work authorized under SV #2-3 above.

<sup>1</sup> 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 out hauls, 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  $\leq 600$  SF combined; and (ii) Non-tidal navigable waters of the U.S. total  $\leq 600$  SF combined; and
  - b. Piers are  $\leq 4$  feet wide and  $\geq 6$  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  $\geq 24$  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  $\geq 25$  feet from previously mapped or existing vegetated shallows, or riparian property line extensions; (ii) Extend  $\leq 25\%$  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  $\leq 12$ -inch diameter timber piles. Installation of  $\geq 12$ -inch diameter piles of any material type when installed in the dry.
2. Fenders and similar structures.

**Pre-Construction Notification Required**

1. Shore out hauls.
2. Expansions, modifications, or new reconfiguration zones at any authorized boating facility.
3. New, expansions, reconfigurations, reconfiguration zones, or modifications of structures that provide public, community or government recreational uses such as boating, fishing, swimming, access, etc.
4. Installation of steel piles, including steel sheet piles, that cannot be done in the dry and where NOAA-ESA listed species are mapped as present.
5. Located within the buffer zone of the horizontal limits of an FNP (GC 15).
6. Miscellaneous structures.
7. Impacts in tidal vegetated shallows.
8. Structures that are not SV eligible and do not require an IP.

**Notes:**

1. See GC 19 regarding pile driving and pile removal in navigable waters and
2. See GC 20 regarding time of year restrictions in tidal waters.
3. Boating facilities are facilities that provide for a fee, rent, or sell mooring space, such as marinas, yacht clubs, boat clubs, boat yards, town facilities, dockominiums, etc. Pile supported structures with no discharges of dredged or fill material are not regulated by USACE in non-navigable waters.
4. A SVN submittal to USACE is not required for SV #2 above.

**GP 5. BOAT RAMPS AND MARINE RAILWAYS (Authorities: §10 and §404)**

Activities required for the construction of boat ramps and marine railways, including excavation and fill.

**Not authorized under GP 5 (IP required):** (a) Permanent impacts that are >1 acre in non-tidal waters of the U.S., >½ acre in tidal waters; >1000 SF in saltmarsh, mud flats, riffle and pool complexes, or non-tidal vegetated shallows; or >100 SF in tidal vegetated shallows; (b) Temporary impacts in tidal waters that are >1 acre; >5000 SF in saltmarsh, mud flats, or riffle and pool complexes; or >1000 SF in vegetated shallows<sup>1</sup>; 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 pipelines<sup>1</sup>, outfall or intake structures<sup>2</sup>, 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.<sup>3</sup>

**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.

<sup>1</sup> See the definitions of a “utility line” and “oil or natural gas pipeline” in Section VII.

<sup>2</sup> Outfall structures must be in compliance with regulations issued under the National Pollutant Discharge Elimination System Program (Section 402 of the Clean Water Act).

<sup>3</sup> Temporary impacts shall comply with all GCs, including GC 32 Utility Line Installation and Removal.

**GP 7. DREDGING (Authority: §10), DISPOSAL OF DREDGED MATERIAL (Authorities: §10, §404), BEACH NOURISHMENT (Authorities: §10 & §404), ROCK REMOVAL (Authority: §10) AND ROCK RELOCATION (Authorities: §10 & §404)**

New, improvement and maintenance dredging (see notes below) including: (a) Disposal of dredged material at a confined aquatic disposal cell, beach nourishment location, near shore site, or ocean disposal site selected under Section 404 of the Clean Water Act pursuant to the 404(b)(1) Guidelines, provided the dredged material meets the requirements for such disposal; (b) Beach nourishment not associated with dredging; and (c) Rock removal and relocation for navigation.

**Not authorized under GP 7 (IP required):** (a) Dredging where ocean disposal is required for the disposal of dredged material (Section 103); New dredging >½ acre; ≥10,000 CY; >1000 SF permanent impacts to intertidal areas, saltmarsh, mud flats, riffle and pool complexes, or non-tidal vegetated shallows; or >100 SF permanent impacts to tidal vegetated shallows; (b) Maintenance or improvement dredging and/or disposal with >1 acre of impacts to intertidal areas, saltmarsh, mudflats, riffle and pool complexes, or non-tidal vegetated shallows; (c) New dredging where the primary purpose is sand mining for beach nourishment; (d) Beach scraping; (e) Boulder removal and relocation for navigation >½ acre; or (f) Blasting.

**Self-Verification Eligible**

1. Maintenance dredging of previously dredged areas, with upland disposal, that meet all of the following terms:
  - a. Dredged area ≤1/2 acre; and
  - b. Activities comply with GC 20, TOY Restrictions. The time-of-year restriction(s) stated in Appendix B of the MA Division of Marine Fisheries (DMF) Technical Report TR-47<sup>1</sup> 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.

<sup>1</sup> 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  $\leq 5,000$  SF.
  - b. Combined permanent and temporary impacts that are  $\leq 1,000$  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 >1/2 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 ≤1/2 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)  $\leq 5,000$  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 SHORELINES<sup>1</sup> (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.

<sup>1</sup> 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)**

Activities<sup>1</sup> 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.

<sup>1</sup> 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 situation<sup>1</sup>, 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).

<sup>1</sup> 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](http://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](http://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](http://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](http://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  $\geq 1$  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](https://www.habitat.noaa.gov/application/efhmapper/oa2_efh_hapc.pdf)). If an activity is located within EFH, the PCN application must contain:

1. A description of the action located in EFH.
2. An analysis of the potential adverse effects of the action on EFH and the managed Species.
3. Conclusions regarding the effects of the action on EFH.
4. Proposed mitigation, if applicable (refer to the mitigation thresholds located in Section V).

c. Federal agencies shall follow their own procedures for complying with the EFH requirements of the Magnuson-Stevens Fishery Conservation and Management Act. For activities requiring a PCN, the applicant is responsible for furnishing documentation that demonstrates consultation for EFH has been completed.

d. For PCN activities, no work may commence until EFH consultation as required by the Magnuson-Stevens Act has been completed.

**12. National Lands.** Activities that impinge upon the value of any National Wildlife Refuge, National Forest, National Marine Sanctuary, National Historic Landmarks or any other area administered by the National Park Service, U. S. Fish and Wildlife Service (USFWS) or U.S. Forest Service (USFS) require a PCN or Individual Permit. Federal land managers seeking authorization for activities located in the above listed National Lands may proceed under SV, unless a PCN is required elsewhere in this document.

**13. Wild and Scenic Rivers.** The following activities in designated river or study river segments in the National Wild and Scenic River (WSR) System require a PCN unless the Federal agency with direct management responsibility for such river, in Massachusetts this is generally the National Park Service, has determined in writing to the proponent that the proposed work will not adversely affect the WSR designation or study status:

- a. Activities that occur in WSR segments, in and 0.25 miles up or downstream of WSR segments, or in tributaries within 0.25 miles of WSR segments;
- b. Activities that occur in wetlands within 0.25 miles of WSR segments;
- c. Activities that have the potential to alter free-flowing characteristics in WSR segments.

No GP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.

As of May 10, 2023, affected rivers in Massachusetts include: the Taunton River (40 miles), Sudbury River (16.6 miles), Assabet River (4.4 miles), Concord River (8 miles), Nashua River (27 miles), Squannacook River (16.3 miles), Nissitissit River (4.7 miles), and the Westfield River, including West Branch, Middle Branch, Gendale Brook, East Branch, Drowned Land Brook, Center Brook, Windsor Jambs Brook, Shaker Mill Brook, Depot Brook, Savery Brook, Watson Brook, Center Pond Brook (78.1 miles). The most up to date list of designated and study rivers and their descriptions may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service). Information on these rivers is also available at: <http://www.rivers.gov/>.

#### **14. Historic Properties**

- a. For all SV and PCN applications, permittees shall follow the guidance set forth in Appendix A, Guidance for NHPA Section 106 Compliance in Massachusetts.
- b. No undertaking authorized by these GPs shall cause effects<sup>1</sup> (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)<sup>2</sup>, 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.

<sup>1</sup> 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.

<sup>2</sup> See the NAE Regulatory website, National Register of Historic Places link here: <https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/>.

- c. Many historic properties are not listed on the NRHP and may require identification and evaluation by qualified historic preservation and/or archaeological consultants. The State Historic Preservation Officer (SHPO), Massachusetts Board of Underwater Archaeological Resources (BUAR), local historical societies, certified local governments, general public, and NRHP may also be able to assist with locating information on:
  - i. Previously identified historic properties; and
  - ii. Areas with potential for the presence of historic properties.
- d. Discovery of Previously Unknown Remains and Artifacts: If any previously unidentified human remains, cultural deposits, or artifacts are discovered while accomplishing the activity authorized by this permit, you must immediately notify the USACE of what you have found, and to the maximum extent practicable, cease work and avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The USACE will initiate the Federal, State and tribal coordination required to determine if the items or remains warrant a recovery effort and/or if the site is eligible for listing in the National Register of Historic Places.
- e. Section 110k: Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C. § 306113) prevents the USACE from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106, has intentionally significantly adversely effected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the USACE, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the USACE is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties effected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or effects historic properties on tribal lands or effects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.
- f. Underwater Archaeological Resources: Under Massachusetts General Law Ch. 6, s.'s 179-180, and Ch. 91, s. 63, the BUAR has statutory jurisdiction within state waters and is the sole trustee of the Commonwealth's underwater heritage, charged with the responsibility of encouraging the discovery and reporting, as well as the preservation and protection, of underwater archaeological resources. Underwater archaeological resources located within the waters of the Commonwealth of Massachusetts are property of the Commonwealth, which holds title to these resources and retains regulatory authority over their use. Under Massachusetts General Law, no person, organization or corporation may "remove, displace, damage, or destroy" any underwater archaeological resources located within the Commonwealth's submerged lands except through consultation with the BUAR and in conformity with the permits it issues. <https://www.mass.gov/orgs/board-of-underwater-archaeological-resources>.

**15. USACE Property and Federal Projects. (33 USC §408)**

- a. USACE projects and property can be found at: <https://www.nae.usace.army.mil/Missions/Civil-Works/>.
- b. In addition to any authorization under these GPs, prospective permittee shall contact the USACE Real Estate Division (<https://www.nae.usace.army.mil/Missions/Real-Estate-Division/>) at (978) 318-8585 for work occurring on or potentially affecting USACE properties and/or USACE-controlled easements. Work may not commence on USACE properties and/or USACE-controlled easements until they have received any required USACE real estate documents evidencing site-specific permission to work.
- c. Any proposed temporary or permanent occupation or alteration of a Federal project (including, but not limited to, a levee, dike, floodwall, channel, anchorage, breakwater, seawall, bulkhead, jetty, wharf, pier, or other work built or maintained but not necessarily owned by the United States),

is not eligible for SV and requires a PCN. This includes all proposed structures and work in, over, or under a USACE federal navigation project (FNP) or in the FNP's buffer zone. The buffer zone is an area that extends from the horizontal limits of the FNP to a distance of three times the FNP's authorized depth. The activity also requires review and approval by the USACE pursuant to 33 USC 408 (Section 408 Permission). The prospective permittee may reach out to the POCs located here: <https://www.nae.usace.army.mil/Missions/Section-408/>.

d. Any structure or work constructed in a FNP or its buffer zone shall be subject to removal at the owner's expense prior to any future USACE dredging or the performance of periodic hydrographic surveys.

e. Where a Section 408 permission is required, written verification for the PCN will not be issued prior to the decision on the Section 408 permission request.

## 16. Navigation

a. No activity may cause more than a minimal adverse effect on navigation.

b. Any safety lights and signals prescribed by the U.S. Coast Guard, must be installed, and maintained at the permittee's expense on authorized facilities in navigable waters of the U.S.

c. There shall be no unreasonable interference with navigation by the existence or use of the activity authorized herein, and no attempt shall be made by the permittee to prevent the full and free use by the public of all navigable waters at or adjacent to the activity authorized herein.

d. The permittee understands and agrees that if future U.S. operations require the removal, relocation, or other alteration of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from USACE, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the U.S. No claim shall be made against the U.S. on account of any such removal or alteration.

**17. Permit/Authorization Letter On-Site.** For PCNs, the permittee shall ensure that a copy of these GPs and the accompanying authorization letter are at the work site (and the project office) whenever work is being performed, and that all personnel with operational control of the site ensure that all appropriate personnel performing work are fully aware of its terms and conditions. The entire permit authorization shall be made a part of any and all contracts and sub-contracts for work that affects areas of USACE jurisdiction at the site of the work authorized by these GPs. This shall be achieved by including the entire permit authorization in the specifications for work. The term "entire permit authorization" means these GPs, including GCs and the authorization letter (including its drawings, plans, appendices, special conditions, and other attachments), and any permit modifications. If the authorization letter is issued after the construction specifications, but before receipt of bids or quotes, the entire permit authorization shall be included as an addendum to the specifications. If the authorization letter is issued after receipt of bids or quotes, the entire permit authorization shall be included in the contract or sub-contract as a change order. Although the permittee may assign various aspects of the work to different contractors or sub-contractors, all contractors and sub-contractors shall be obligated by contract to comply with all environmental protection provisions contained within the entire authorization letter, and no contract or sub-contract shall require or allow unauthorized work in areas of USACE jurisdiction. For SVs, the permittee shall ensure that a complete and signed copy of the SVN is present on site during construction and is made available for review at any time by USACE and other Federal, State, & Local regulatory agencies. A complete and signed copy of the SVN must be submitted to USACE Regulatory within 30 days of initiating construction of the authorized activity, unless stated otherwise in the applicable GP.

**18. Storage of Seasonal Structures.** Coastal structures such as pier sections, floats, etc., that

are removed from the waterway for a portion of the year (often referred to as seasonal structures) shall be stored in an upland location, located above MHW and not in tidal wetlands. These seasonal structures may be stored on the fixed, pile-supported portion of the structure that is seaward of MHW. This is intended to prevent structures from being stored on the marsh substrate and the substrate seaward of MHW.

**19. Pile Driving and Pile Removal in Navigable Waters.**

- a. Derelict, degraded or abandoned piles and sheet piles in navigable waters of the U.S., except for those inside existing work footprints for piers, must be completely removed, cut and/or driven to 3 feet below the substrate to prevent interference with navigation, and existing creosote piles that are affected by project activities shall be completely removed if practicable. In areas of fine-grained substrates, piles must be removed by the direct, vibratory or clamshell pull method<sup>1</sup> to minimize sedimentation and turbidity impacts and prevent interference with navigation from cut piles. Removed piles shall be disposed of in an upland location landward of MHW or OHW and not in wetlands, tidal wetlands or mudflats.
- b. A PCN is required for the installation or removal of structures with jetting techniques.
- c. A PCN is required for the installation of >12 inch-diameter piles of any material type or steel piles of any size in tidal waters, unless they are installed in the dry. If piles are not installed in the dry:
  - i. Impact pile driving shall commence with an initial set of three strikes by the hammer at 40% energy, followed by a one-minute wait period, then two subsequent 3-strike sets at 40% energy, with one minute waiting periods, before initiating continuous impact driving.
  - ii. Vibratory pile driving shall be initiated for 15 seconds at reduced energy followed by a one-minute waiting period. This sequence of 15 seconds of reduced energy driving, one-minute waiting period shall be repeated two more times, followed immediately by pile-driving at full rate and energy.
  - iii. In addition to using a soft start at the beginning of the workday for pile driving as described in 19c(i-ii), a soft start must also be used at any time following a cessation of pile driving for a period of 30 minutes or longer.
- d. Bubble curtains may be used to reduce sound pressure levels during vibratory or impact hammer pile driving.

**20. Time-of-Year (TOY) Restrictions.** Activities that include in-water work must comply with the TOY Restrictions below to be SV eligible, otherwise a PCN is required. PCN submittals shall contain written justification for deviation from the TOY Restrictions. The term “in-water work” does not include conditions where the work site is “in-the-dry” (e.g., intertidal areas exposed at low tide). The term “in-the-dry” includes work contained within a cofferdam so long as the cofferdam is installed and subsequently removed outside the TOY Restriction. The TOY restrictions stated in Appendix B of the MA DMF Technical Report TR-47<sup>2</sup> 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.

<sup>1</sup> 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.

<sup>2</sup> 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  $\leq 3$  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  $\leq 1$  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  $\leq 6$  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 controls<sup>1</sup> (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.

<sup>1</sup> 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 loss<sup>1</sup> of the resource area types listed below. Activities<sup>2</sup> 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).

<sup>1</sup> See definition of loss in Section VII.

<sup>2</sup> 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](http://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 &amp; Waterways</u>                       | 100 Cambridge Street, Suite 900<br>Boston, Massachusetts 02114<br>(617) 292-5695  |
| <u>Northeast Region</u>   | 150 Presidential Way, Suite 300<br>Woburn, Massachusetts 01801<br>(978) 694-3200  |
| <u>Southeast Region</u>   | 20 Riverside Drive, Route 105<br>Lakeville, Massachusetts 02347<br>(508) 946-2800 |
| <u>Central Region</u>   | 8 New Bond Street<br>Worcester, Massachusetts 01606<br>(508) 792-7650             |
| <u>Western Region</u>   | 436 Dwight Street<br>Springfield, Massachusetts 01103<br>(413) 784-1100           |

| <u>Massachusetts Office of Coastal Zone Management (CZM)</u>          |  |
|---|--|
| Emails may be sent to: <a href="mailto:czm@mass.gov">czm@mass.gov</a> |  |
| <u>MA Office of Coastal Zone Management</u>                           | 100 Cambridge Street, Suite 900<br>Boston, Massachusetts 02114<br>(617) 626-1200 |
| <u>North Shore Region</u>   | 2 State Fish Pier<br>Gloucester, Massachusetts 01930<br>(978) 281-3972           |
| <u>South Shore Region</u>   | 175 Edward Foster Road<br>Scituate, Massachusetts 02066                          |
| <u>Cape Cod and Islands Region</u>                                    | 3195 Main Street, P.O. Box 220<br>Barnstable, MA 02630                           |
| <u>South Coastal Region</u>   | 81-B County Road, Suite E<br>Mattapoisett, MA 02739                              |

| <u>Massachusetts Historical Commission (MHC)</u> |  |
|--|--|
| Office Location:                                 | 220 Morrissey Boulevard<br>Boston, Massachusetts 02125<br>(617) 727-8470 |

| <u>Massachusetts Board of Underwater Archaeological Resources (BUAR)</u>                        |  |
|---|--|
| Emails may be sent to: <a href="mailto:david.s.robinson@mass.gov">david.s.robinson@mass.gov</a> |  |
| Office Location:  | 100 Cambridge Street, Suite 900<br>Boston, Massachusetts 02114<br>(617) 626-1014 |

## **SECTION VII: Definitions & Acronyms**

**Artificial or Living Reef:** A structure which is constructed or placed in waters for the purpose of enhancing fishery resources and commercial and recreational fishing opportunities.

**Attendant Features:** Occurring with or as a result of; accompanying.

**Biodegradable:** A material that decomposes into elements found in nature within a reasonably short period of time and will not leave a residue of plastic or a petroleum derivative in the environment after degradation. In contrast, degradable plastics break down into plastic fragments that remain in the environment after degradation. Examples of biodegradable materials include jute, sisal, cotton, straw, burlap, coconut husk fiber (coir) or excelsior. In contrast, degradable plastics break down into plastic fragments that remain in the environment after degradation. Photodegradable, UV degradable or Oxo-(bio)degradable plastics are not considered biodegradable under this GP.

**Boating facilities:** These provide, rent or sell mooring space, such as marinas, yacht clubs, boat yards, 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](http://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](http://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 Sound | Vineyard Haven Harbor         |
| Menemsha Creek                   | Provincetown Harbor                 | Wareham Harbor                |
| Merrimack River                  | Red Brook Harbor                    | Wellfleet Harbor              |
| Mystic River                     | Rockport Harbor                     | Westport River and Harbor     |
| Nantucket Harbor of Refuge       | Salem Harbor                        | Weymouth Back River           |
| New Bedford and Fairhaven Harbor | Sandy Bay Harbor of Refuge          | Weymouth Fore and Town Rivers |
| Newburyport Harbor               | Saugus River                        | Winthrop Harbor               |
| Oak Bluffs Harbor                | Scituate Harbor                     | Woods Hole Channel            |
| Pigeon Cove 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 shear 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 substrate 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](http://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](http://www.nae.usace.army.mil/missions/regulatory/state-general-permits/massachusetts-general-permit).

**Vernal pools:** For the purposes of these GPs, vernal pools are depressional wetland basins that typically dry up in most years and may contain inlets or outlets, typically of intermittent flow. Vernal pools range in both size and depth depending upon landscape position and parent material(s). In

most years, vernal pools support one or more of the following obligate indicator species: wood frog, spotted salamander, blue-spotted salamander, marbled salamander, Jefferson's salamander and fairy shrimp. However, they should preclude sustainable populations of predatory fish.

**Water diversions:** Water diversions are activities such as bypass pumping (e.g., "dam and pump") or water withdrawals. Temporary flume pipes, culverts or cofferdams where normal flows are maintained within the stream boundary's confines aren't water diversions. "Normal flows" are defined as no change in flow from pre-project conditions.

**Waters of the United States (U.S.)** These waterbodies are the waters where permits are required for the discharge of dredged or fill material pursuant to §404 of the CWA. These waters include but are not limited to navigable waters of the U.S. and tidal wetlands and include many non-tidal wetlands and other waterbodies. See definitions for navigable waters of the U.S., tidal wetlands, waterbody, and non-tidal wetlands. (33 CFR 328)

**Waterbody:** Examples of "waterbodies" include oceans, coastal waters, rivers, streams, ditches, lakes, ponds, and wetlands. If a wetland is adjacent to a waterbody determined to be a water of the U.S., that waterbody and any adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)).

**Weir:** A barrier across a river designed to alter the flow characteristics. In most cases, weirs take the form of a barrier, smaller than most conventional dams, across a river that causes water to pool behind the structure and allows water to flow over the top. Weirs are commonly used to alter the flow regime of a river, prevent flooding, measure discharge and help render a river navigable.

**Wetland:** Wetlands are areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. The Corps of Engineers Wetlands Delineation Manual in conjunction with the associated regional supplement should be used to determine if a wetland is present and delineate wetland boundaries.

**Acronyms**

|         |  |
|---------|--|
| BMPs    | Best Management Practices                                  |
| BUAR    | Massachusetts Board of Underwater Archaeological Resources |
| CWA     | Clean Water Act  |
| CZM     | Coastal Zone Management                                    |
| EPA     | U.S. Environmental Protection Agency                       |
| ESA     | Endangered Species Act                                     |
| EFH     | Essential Fish Habitat                                     |
| FNP     | Federal Navigation Project                                 |
| GC      | General Condition  |
| GP      | General Permit   |
| HTL     | High Tide Line   |
| IP      | Individual Permit  |
| LID     | Low impact development                                     |
| MassDEP | Massachusetts Department of Environmental Protection       |
| MA DMF  | Massachusetts Division of Marine Fisheries                 |
| MHC     | Massachusetts Historical Commission                        |
| MHW     | Mean High Water  |
| MLLW    | Mean Lower Low Water                                       |
| MLW     | Mean Low Water   |
| NHPA    | National Historic Preservation Act                         |
| NMFS    | National Marine Fisheries Service                          |
| OHW     | Ordinary High Water Mark                                   |
| PCN     | Preconstruction Notification                               |
| SAS     | Special Aquatic Sites                                      |
| SF      | Square Feet  |
| SV      | Self-Verification  |
| SHPO    | State Historic Preservation Officer                        |
| THPO    | Tribal Historic Preservation Officer                       |
| USFWS   | U.S. Fish and Wildlife Service                             |
| USCG    | U.S. Coast Guard   |
| USFS    | U.S. Forest Service  |
| USGS    | U.S. Geological Service                                    |
| WQC     | Water Quality Certification                                |

## Appendix A: Guidance for NHPA Section 106 Compliance in Massachusetts

### 1. Purpose & Applicability

Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA) (54 U.S.C § 306108), requires Federal agencies to take into account the effects of their undertakings on Historic Properties and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings. Therefore, in order for an activity to be eligible for authorization under the 2023 Massachusetts General Permit, the USACE must consider the effect the activity may have on historic properties. Historic properties may include, but are not limited to, historic districts, archaeological districts, sites, buildings, structures, objects, sacred sites, traditional cultural places, and traditional cultural landscapes that are included in, or eligible for inclusion in, the National Register of Historic Places (NRHP).

This guidance applies to projects that require authorization under Section 404 of the Clean Water Act (33 U.S.C. § 1344) and/or Section 10 of the Rivers and Harbors Act (33 U.S.C. §403) and will assist applicants when evaluating and documenting the presence of historic properties within or near their project site(s). The prospective applicant will evaluate their proposed project using the criteria below to determine if their project has the potential to affect historic properties and if so, whether or not historic properties are present or are likely to be present. All activities authorized under these GPs shall follow the terms outlined in General Condition 14: Historic Properties and General Condition 6: Tribal Rights & Burial Sites. Prospective applicants shall complete their due diligence according to the procedures below for their application to be deemed complete.

### 2. No Potential to Affect Historic Properties

Certain activities do not have the potential to cause effects on historic properties, assuming such historic properties were present, based on the nature of the activity and site-specific conditions. Therefore, these activities **do not** require historic property identification efforts or notification of the SHPO, THPOs, and/or BUAR under Section 106. The USACE has determined the following activities within the stated parameters have no potential to affect historic properties:

| General Permit | Activity Parameters   |
|----------------|---|
| 1              | Temporary buoys, markers and similar structures that are placed during winter events on ice and removed before spring thaw.   |
| 2              | Repair or rehabilitation of structures that are less than 45 years in age. Any temporary structures or fills or work necessary to complete repairs or rehabilitation must not result in any ground disturbance.   |
| 3              | Maintenance and replacement of moorings that are less than 45 years in age.   |
| 6              | Maintenance, repair, replacement, or removal of utility lines, oil or natural gas pipelines, outfall or intake structures, and/or appurtenant features that are less than 45 years in age when all access, staging, and ground disturbance is strictly limited to previously disturbed areas (including any previous ground disturbance). Replacement must be in kind or smaller in size.<br><br>Installation of tide gates on outfall structures that are less than 45 years in age. |
| 7              | Maintenance dredging of previously dredged areas where dredging does not extend beyond the original bottom elevations.  |

|    |   |
|----|---|
|    | Disposal of dredged material at an existing established and USACE-approved confined aquatic disposal cell.<br>Beach nourishment in ongoing existing nourishment areas.  |
| 11 | Fish and wildlife harvesting and attraction devices and activities.   |
| 13 | Cleanup of hazardous and toxic waste materials, including contaminated sediments, that are less than 45 years in age.   |
| 16 | Removal of land-based and water-based renewable energy generation facilities and hydropower projects that are less than 45 years in age.  |
| 18 | Installation of buoys, floats, racks, trays, nets, lines, tubes, containers, and other structures for previously authorized by the USACE and ongoing aquaculture activities.<br>Discharges of dredged or fill material into tidal or non-tidal waters necessary for shellfish seeding, rearing, cultivating, transplanting, and harvesting activities for previously authorized and ongoing aquaculture activities. |
| 20 | Maintenance activities for existing living shorelines <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 Form<sup>18</sup>, 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](mailto: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

<sup>18</sup> <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](mailto: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](mailto: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](mailto:106review@mwtribe-nsn.gov)  
Cc: [David.weeden@mwtribe-nsn.gov](mailto: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](mailto: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](mailto:thpo@mohican-nsn.gov)

Applicants or their representative must send project information via email (***preferred***) or regular mail and provide proof of receipt or proof of delivery.

Area of concern: West of the Connecticut River and Northfield, Montague, Miller's Falls, Turner's Falls, Sunderland, Amherst, Hadley, South Hadley, Chicopee, Springfield and Longmeadow.

**APPENDIX B PRE-CONSTRUCTION NOTIFICATION**

**U.S. Army Corps of Engineers (USACE), New England District (NAE)  
PRE-CONSTRUCTION NOTIFICATION (PCN)**

**DATA REQUIRED BY THE PRIVACY ACT OF 1974**

**Authority** Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332.

**Principal Purpose** The information provided will be used in evaluating activities under Pre-Construction Notification procedures within New England.

**Routine Uses** This information may be shared with other federal, state, and local government agencies during the application review process. Submission 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](mailto: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<br>First - Middle - Last -<br>Company -<br>E-mail Address -                |  | 8. AUTHORIZED AGENT'S NAME AND TITLE ( <i>agent is not required</i> )<br>First - Middle - Last -<br>Company -<br>E-mail Address - |  |
| 6. APPLICANT'S ADDRESS:<br>Address-<br>City - State - Zip - Country -                          |  | 9. AGENT'S ADDRESS:<br>Address-<br>City - State - Zip - Country -   |  |
| 7. APPLICANT'S PHONE NOs. with AREA CODE<br>a. Residence    b. Business    c. Fax    d. Mobile |  | 10. AGENT'S PHONE NOs. with AREA CODE<br>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> )<br><br>City: State: Zip: |
| 15. LOCATION OF PROPOSED ACTIVITY ( <i>see instructions</i> )<br><br>Latitude: °N Longitude: °W |  |

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (*see instructions*)

State Tax Parcel ID:

Municipality:

Section:

Township:

Range:

17. DIRECTIONS TO THE SITE.

18. IDENTIFY THE SPECIFIC GENERAL PERMIT(S) YOU PROPOSE TO USE:

19. DESCRIPTION OF PROPOSED GENERAL PERMIT ACTIVITY (*see instructions*)

20. DESCRIPTION OF PROPOSED MITIGATION MEASURES (*see instructions*)

21. PURPOSE OF GENERAL PERMIT ACTIVITY (*Describe the reason or purpose of the project, see instructions*)

22. Quantity of Wetlands, Streams, or Other Types of Waters Directly Affected by Proposed General Permit Activity (*see instructions*)

| Area (square feet) | Length (linear feet) | Volume (cubic yards) | Duration | Purpose |
|--------------------|----------------------|----------------------|----------|---------|
|                    |                      |                      |          |         |
|                    |                      |                      |          |         |
|                    |                      |                      |          |         |
|                    |                      |                      |          |         |
|                    |                      |                      |          |         |

**Each PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site.**

23. List any other GP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project on any related activity (*see instructions*)

24. If the proposed activity will result in the loss of aquatic resources that exceed those identified in the New England District Compensatory Mitigation Thresholds, explain how the compensatory mitigation requirement will be satisfied. (*see instructions*)

25. Is Any Portion of the General Permit Activity Already Complete?  Yes  No If Yes, describe the completed work:

26. List the name(s) of any species listed as endangered or threatened under the Endangered Species Act that might be affected by the proposed GP activity or utilize the designated critical habitat that might be affected by the proposed GP activity. (see instructions)

27. List any historic properties that have the potential to be affected by the proposed GP activity or include a vicinity map indicating the location of the historic property or properties. Attach relevant project information, along with any responses received from project notifications to this submittal. (see instructions)

28. For a proposed GP activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, identify the Wild and Scenic River or the "study river":

29. If the proposed GP activity also requires permission from the USACE pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, have you submitted a written request for section 408 permission from the USACE district having jurisdiction over that project?  Yes  No  
 If "yes", please provide the date your request was submitted to the USACE District:

30. Does the activity require a 401 Water Quality Certification (WQC)? If so, specify the type of 401 WQC that is required (general or individual). In cases where an individual 401 WQC is required, provide the date the 401 WQC certification request was submitted to the certifying authority and their contact information.

31. If the terms of the GP(s) you want to use require additional information to be included in the PCN (i.e. sampling and analysis plan), please include that information in this space or provide it on an additional sheet of paper marked Block 30. (see instructions)

32. I certify that the information in this pre-construction notification is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

|                        |      |                    |      |
|------------------------|------|--------------------|------|
| SIGNATURE OF APPLICANT | DATE | SIGNATURE OF AGENT | DATE |
|------------------------|------|--------------------|------|

The Pre-Construction Notification must be signed by the person who desires to undertake the proposed activity (applicant) and, if the statement in block 11 has been filled out and signed, the authorized agent.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.

**Instructions for Preparing a  
Department of the Army  
General Permit (GP) Pre-Construction Notification (PCN)**

**Blocks 1 through 4.** To be completed by the U.S. Army Corps of Engineers.

**Block 5. Applicant' Name.** Enter the name and the e-mail address of the responsible party or parties. If the responsible party is an agency, company, corporation, or other organization, indicate the name of the organization and responsible officer and title. If more than one party is associated with the PCN, please attach a sheet of paper with the necessary information marked Block 5.

**Block 6. Address of Applicant.** Please provide the full address of the party or parties responsible for the PCN. If more space is needed, attach an extra sheet of paper marked Block 6.

**Block 7. Applicant Telephone Number(s).** Please provide the telephone number where you can usually be reached during normal business hours.

**Blocks 8 through 11.** To be completed, if you choose to have an agent.

**Block 8. Authorized Agent's Name and Title.** Indicate name of individual or agency, designated by you, to represent you in this process. An agent can be an attorney, builder, contractor, engineer, consultant, or any other person or organization. Note: An agent is not required.

**Blocks 9 and 10. Agent's Address and Telephone Number.** Please provide the complete mailing address of the agent, along with the telephone number where they can be reached during normal business hours.

**Block 11. Statement of Authorization.** To be completed by the applicant, if an agent is to be employed.

**Block 12. Proposed General Permit Activity Name or Title.** Please provide a name identifying the proposed GP activity, e.g., Windward Marina, Rolling Hills Subdivision, or Smith Commercial Center.

**Block 13. Name of Waterbody.** Please provide the name (if it has a name) of any stream, lake, marsh, or other waterway to be directly impacted by the GP activity. If it is a minor (no name) stream, identify the waterbody the minor stream enters.

**Block 14. Proposed Activity Street Address.** If the proposed GP activity is located at a site having a street address (not a box number), enter it in Block 14.

**Block 15. Location of Proposed Activity.** Enter the latitude and longitude of where the proposed GP activity is located. Indicate whether the project location provided is the center of the project or whether the project location is provided as the latitude and longitude for each of the "corners" of the project area requiring evaluation. If there are multiple sites, please list the latitude and longitude of each site (center or corners) on a separate sheet of paper and mark as Block 15.

**Block 16. Other Location Descriptions.** If available, provide the Tax Parcel Identification number of the site, Section, Township, and Range of the site (if known), and / or local Municipality where the site is located.

**Block 17. Directions to the Site.** Provide directions to the site from a known location or landmark. Include highway and street numbers as well as names. Also provide distances from known locations and any other information that would assist in locating the site. You may also provide a description of the location of the proposed GP activity, such as lot numbers, tract numbers, or you may choose to locate the proposed GP activity site from a known point (such as the right descending bank of Smith Creek, one mile downstream from the Highway 14 bridge). If a large river or stream, include the river mile of the proposed GP activity site if known. If there are multiple locations, please indicate directions to each location on a separate sheet of paper and mark as Block 17.

**Block 18. Identify the Specific General Permit(s) You Propose to Use.** List the number(s) of the General Permit(s) you want to use to authorize the proposed activity (e.g., GP 4).

**Block 19. Description of the Proposed General Permit Activity.** Describe the proposed GP activity, including the direct and indirect adverse environmental effects of the proposed activity. The description of the proposed activity should be sufficiently detailed for USACE to determine that the adverse environmental effects of the activity will be no more than minimal. Identify the materials to be used in construction, as well as the methods by which the work is to be done.

Provide drawings to show that the proposed GP activity complies with the terms of the applicable GP(s). Drawings should contain sufficient detail to provide an illustrative description of the proposed GP activity, but do not need to be detailed engineering plans. The written descriptions and illustrations are an important part of the application. Please describe, in detail, what you wish to do. If more space is needed, attach an extra sheet of paper marked Block 19.

**Block 20: Description of Proposed Mitigation Measures.** Describe any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed GP activity. The description of any proposed mitigation measures should be sufficiently detailed for USACE to determine how the measures would avoid and minimize adverse environmental effects. If adverse effects exceed the New England District compensatory mitigation thresholds, you must document how compensatory mitigation would be satisfied in Block 24.

**Block 21. Purpose of General Permit Activity.** Describe the purpose and need for the proposed GP activity. What will it be used for and why? Also include a brief description of any related activities associated with the proposed project. Provide the approximate dates you plan to begin and complete all work.

**Block 22. Quantity of Wetlands, Streams, or Other Types of Waters Directly Affected by the Proposed General Permit Activity.** For discharges of dredged or fill material into Waters of the U.S., provide the amount of wetlands, streams, or other types of waters filled, flooded, excavated, or drained by the proposed GP activity. For structures or work in Navigable Waters of the U.S. subject to Section 10 of the Rivers and Harbors Act of 1899, provide the amount of navigable waters filled, dredged, occupied by one or more structures (e.g., aids to navigation, mooring buoys) by the proposed GP activity. The area of impact includes the structures or fills with direct or indirect effects to waters of the U.S. The length of impact includes the length of a stream, including 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](mailto:cenae-r-ma-sv@usace.army.mil). The email subject line shall contain the following: GP #, SVN, City/Town, and date submitted.

**(ITEMS 1 THRU 3 TO BE FILLED BY USACE)**

|                    |                      |                  |
|--------------------|----------------------|------------------|
| 1. APPLICATION NO. | 2. FIELD OFFICE CODE | 3. DATE RECEIVED |
|--------------------|----------------------|------------------|

**APPLICANT AND AGENT INFORMATION**

|   |   |
|---|---|
| <b>4. APPLICANT'S NAME</b><br>First -                      Middle -                      Last -<br>Company -<br>E-mail Address -            | <b>7. AGENT'S ADDRESS:</b><br>First -                      Middle -                      Last -<br>Company -<br>E-mail Address -        |
| <b>5. APPLICANT'S ADDRESS:</b><br>Address-<br>City -                      State -                      Zip -                      Country - | <b>8. AGENT'S ADDRESS:</b><br>Address-<br>City -                      State -                      Zip -                      Country - |
| <b>6. APPLICANT'S PHONE NOs. w/AREA CODE</b><br>a. Residence                      b. Business                      c. Fax                   | <b>9. AGENTS PHONE NOs. w/AREA CODE</b><br>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)<br>Latitude: °N                      Longitude: °W | 14. PROJECT STREET ADDRESS (if applicable)<br>Address<br>City -                      State -                      Zip - |

**ACTIVITY TYPE, PROJECT IMPACTS, AVOIDANCE & MINIMIZATION**

**15. GENERAL PERMIT ACTIVITIES (CHECK ALL THAT APPLY)**

|         |          |          |          |          |
|---------|----------|----------|----------|----------|
| 1 _____ | 6 _____  | 11 _____ | 16 _____ | 21 _____ |
| 2 _____ | 7 _____  | 12 _____ | 17 _____ | 22 _____ |
| 3 _____ | 8 _____  | 13 _____ | 18 _____ | 23 _____ |
| 4 _____ | 9 _____  | 14 _____ | 19 _____ | 24 _____ |
| 5 _____ | 10 _____ | 15 _____ | 20 _____ | 25 _____ |

**16. SUMMARY OF PROJECT IMPACTS (see instructions)**

| Area (square feet) | Length (linear feet) | Volume (cubic yards) | Duration |
|--------------------|----------------------|----------------------|----------|
|                    |                      |                      |          |
|                    |                      |                      |          |
|                    |                      |                      |          |
|                    |                      |                      |          |
|                    |                      |                      |          |

17. PROJECT PLANS (BY CHECKING THE BOXES BELOW, YOU CERTIFY THESE ITEMS ARE COMPLETE) (*see instructions*)

- a. Plans shall at least contain the following: Vicinity Map, Plan View, and Typical Cross Section View of the proposed activity.
- b. All direct, indirect and secondary impacts from USACE regulated activities are shown on the project plans.
- c. The size of the impact area for each activity (acre, square feet, linear feet) are shown on the project plans.
- d. For discharges of fill material (§404), the volume of fill material is identified on the project plans.
- e. The duration of each impact, permanent or temporary (X days), is identified on the project plans.
- f. Do activities with permanent impacts result in the loss of waters? If so, this is identified on the project plans.
- g. All aquatic resources in the vicinity of the USACE regulated activities are delineated on the project plans.

18. AVOIDANCE & MINIMIZATION (BY CHECKING THE BOXES BELOW, YOU CERTIFY THESE CRITERIA ARE MET) (*see instructions*)

- a. The project has been designed to avoid and minimize impacts to aquatic resources.
- b. The footprint of activities in waters of the U.S. has been reduced to only what is necessary to achieve the overall project purpose.
- c. All practicable measures have been taken to avoid and minimize impacts to aquatic resources through construction techniques and site access (e.g., Best Management Practices, Time of Year Restrictions).
- d. All temporary impacts from USACE regulated activities will be restored upon completion of construction and the project area will be returned to pre-construction contours and conditions.

**COMPLIANCE WITH FEDERAL REGULATIONS & SUPPLEMENTAL INFORMATION**

19. DUE DILIGENCE (*see instructions*)

Complete the entries below to document compliance with the following Federal requirements. Construction may NOT begin if a PCN is/may be required, and you must contact USACE to determine permitting requirements. Documentation that demonstrates how the activity complies with each field below shall be submitted to the USACE as noted in the instructions block. See each General Condition (GC) in the GP for how to comply with each requirement.

- a. State Historic Preservation Officer
- 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

24. SIGNATURES *(see instructions)*

I hereby certify that the information in this Self-Verification Notification is complete and accurate. As the applicant or their duly authorized agent, I certify the activity was completed in accordance with the terms and conditions of the GP. This includes all applicable terms, general conditions, and activity-specific GP criteria. I agree to allow the duly authorized representatives of the Corps of Engineers Regulatory Program and other regulatory or advisory agencies to enter upon the premises of the project site at reasonable times to evaluate inspect and photograph site conditions. This consent to enter the property is superior to, takes precedence over, and waives any communication to the contrary. For example, if the property is posted as "no trespassing" this consent specifically supersedes and waives that prohibition and grants permission to enter the property despite such posting.

SIGNATURE OF APPLICANT

DATE

SIGNATURE OF AGENT

DATE

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.

**Instructions for Preparing a  
Department of the Army  
General Permit (GP) Self-Verification**

**Blocks 1 through 3.** To be completed by the Corps of Engineers.

**Block 4. Applicant' Name.** Enter the name and the e-mail address of the responsible party or parties. If the responsible party is an agency, company, corporation, or other organization, indicate the name of the organization and responsible officer and title. If more than one party is associated with the self-verification, please attach a sheet of paper with the necessary information marked Block 4.

**Block 5. Address of Applicant.** Please provide the full address of the party or parties responsible for the self-verification. If more space is needed, attach an extra sheet of paper marked Block 5.

**Block 6. Applicant Telephone Number(s).** Please provide the telephone number where you can usually be reached during normal business hours.

**Blocks 7 through 9.** To be completed, if you choose to have an agent.

**Block 7. Authorized Agent's Name and Title.** Indicate name of individual or agency, designated by you, to represent you in this process. An agent can be an attorney, builder, contractor, engineer, consultant, or any other person or organization. Note: An agent is not required.

**Blocks 8 and 9. Agent's Address and Telephone Number.** Please provide the complete mailing address of the agent, along with the telephone number where they can be reached during normal business hours.

**Block 10. Proposed General Permit Activity Name or Title.** Please provide a name identifying the proposed GP activity, e.g., Windward Marina, Rolling Hills Subdivision, or Smith Commercial Center.

**Block 11. File Number(s) of Previous USACE Actions on the Site** Please provide any known USACE file number. If the activity does not have a known USACE file number, you may state N/A.

**Block 12. Name of Waterbody.** Please provide the name (if it has a name) of any stream, lake, marsh, or other waterway to be directly impacted by the GP activity. If it is a minor (no name) stream, identify the waterbody the minor stream enters.

**Block 13. Proposed Activity Coordinates.** Please enter the latitude and longitude of where the proposed GP activity is located. Indicate whether the project location provided is the center of the project or whether the project location is provided as the latitude and longitude for each of the "corners" of the project area. If there are multiple sites, please list the latitude and longitude of each site (center or corners) on a separate sheet of paper and mark as Block 13.

**Block 14. Proposed Activity Street Address.** If the proposed activity is located at a site having a street address (not a box number), enter it in Block 14.

**Block 15. General Permit Activity Type.** Please select all GP activity types that apply to the proposed activity. A list of GP activity types can be found in Section III of the GP.

**Block 16. Summary of Project Impacts.** Please provide ALL proposed impacts, both temporary and permanent in duration, that are located in Waters of the United States. The area of impact shall be provided in square feet (SF). When applicable, impacts that result in conversion of stream bank or shoreline must also be identified in linear feet (LF). Dredging or the discharge of dredged or fill material shall also include the volume, cubic yards (CY), of material removed from or placed into Waters of the U.S. If more entries are required, please attach a table matching the desired format in Block 16.

**Block 17. Project Plans.** Please verify that items a-g are included in the project plans. Three types of illustrations are necessary to properly depict the proposed work. These illustrations or drawings are identified as a Vicinity Map, a Plan View (Aerial view) and a Cross Section Map. For linear projects (e.g. roads, subsurface utility lines, etc.) gradient drawings (longitudinal profile) should also be included. Plans must accurately depict the existing conditions and all aspects of the proposed activity located in waters of the U.S. Please submit one copy of all drawings formatted to print on 8½ x 11 inch or 11 x 17 inch plain white paper. Use the fewest number of sheets necessary for your drawings or illustrations. Each illustration should identify the project, the applicant, and the type of illustration (vicinity map, plan view, or cross section). While illustrations need not be certified engineering sheets; they should be clear, accurate, contain all necessary information, and depict all proposed work. Each submission must also include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current wetland delineation manual and regional supplement published by USACE.

**Block 18. Avoidance & Minimization.** Please verify that items a-d have been implemented for the proposed activity.

**Block 19. Due Diligence.** Please complete all the fields and submit documentation to USACE to demonstrate compliance with the above requirements. This Documentation may include emails, letters, meeting notes, phone call log, project narrative, project plans, a species list from the NOAA Section 7 Mapper, a completed copy of the IPAC determination keys, etc. Documentation should be limited to what is necessary to demonstrate how the proposed activity meets each requirement. Refer to the MA GP, Appendix A, for specific guidance on the identification of previously identified historic properties and previously unidentified historic properties. Endangered Species: \*The applicant must be designated as the non-federal representative for the purposes of Section 7 consultation to select the Rangewide D-Key options. Otherwise, the applicant shall select the following option when IPAC indicates the NLEB is present: "The activity IS located within the NLEB Species Range (PCN Required)."

**Block 20. Aquaculture Activities.** Please verify that items a-d have been obtained or completed prior to commencing work in waters of the U.S.

**Block 21. Additional Information/Attachments.** Please verify that items a-d have been completed prior to commencing work in waters of the U.S.

**Block 22. Lead Federal Agency.** Please identify if there is another lead federal agency involved with the proposed activity. Enter the lead federal agency name (e.g., the Federal Emergency Management Agency, FEMA) and the agency's designated person of contact for the activity.

**Block 23. Statement of Authorization.** The applicant shall sign this section for all activities. If an agent is to be employed, the agent shall sign this section.

**Block 24. Signatures.** The SVN must be signed by the person proposing to undertake the GP activity, and if applicable, the authorized party (agent) that prepared the SVN. The signature of the person proposing to undertake the GP activity shall be an affirmation that the party submitting the SVN possesses the requisite property rights to undertake the GP activity.



**US Army Corps  
of Engineers®**  
New England District

## **APPENDIX D: PCN APPLICATION CHECKLIST**

The following information shall be submitted for all PCNs for USACE to properly evaluate your application. Some applications may require more information and this checklist is offered as a tool to assist applicants with submitting a complete application.

### **SECTION 1: GENERAL APPLICATION INFORMATION**

1.  Complete the Pre-Construction Notification document (Appendix B).
2.  Specify which local/state/federal authorizations are required for the project and if any have been obtained or applied for at the time of USACE application submittal.
3.  Identify all funding sources the project will receive or has received to date. Provide any relevant information in the application submission.
4.  Is this part of a larger project that is being implemented in phases? If so, describe the project schedule and how each phase will be implemented.
5.  Describe the existing conditions on the site and the general land use in the vicinity of the project at the time application submittal.
6.  Provide any historic information available that you may have of project area, e.g., existing USACE permit numbers, the names under which the permits were obtained if the permit numbers are unknown, construction dates and proof of prior existence (aerials, photos, town hall records, affidavits, state or local permits, etc.) to verify that the project predates regulation and is "vested".<sup>19</sup>
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.

<sup>19</sup> 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](http://www.nae.usace.army.mil/missions/regulatory/invasive-species).
- 17.  If applicable, describe how the proposed wetland/waterbody crossing is compliant with GC 31, Stream Work and Crossings, and Wetland Crossings.

### **SECTION 4A: PROJECT IMPACTS**

- 18.  Describe the overall project and the activities located in Waters of the U.S. (WOTUS) that you are seeking authorization for.
- 19.  Identify the following for project impacts in WOTUS:
  - a.  Direct, indirect, secondary impacts<sup>20</sup> 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.

<sup>20</sup> 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  $\leq 4$  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  $\geq 1.2$  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  $\geq 0.82$ -feet (0.25-meters). For how to calculate openness ratio and stream simulation ecological approach for road and stream crossings, see <https://www.nae.usace.army.mil/Missions/Regulatory/Stream-and-River-Continuity/>.

### **SECTION 9: COMPENSATORY MITIGATION**

41.  Does the project require Compensatory Mitigation<sup>21</sup> 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](https://www.habitat.noaa.gov/apps/efhmapper/?page=page_3).

<sup>21</sup> 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 A00860

**MASSACHUSETTS**

**DEPARTMENT OF ENVIRONMENTAL PROTECTION**

**NOTICE OF INTENT**

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December 22, 2023

William Bulens, Chairman  
Billerica Conservation Commission  
365 Boston Road  
Office #211  
Billerica, MA 01821

**Re: Notice of Intent – Intersection Improvements  
At Boston Road (Route 3A), Lexington Road, and Glad Valley Drive  
Billerica, Massachusetts**

Dear Mr. Bulens and Commissioners:

On behalf of the Town of Billerica, in conjunction with the Massachusetts Department of Transportation – Highway Division (MassDOT), BETA Group, Inc. is submitting a Notice of Intent (NOI) for Intersection Improvements at Boston Road, Lexington Road, and Glad Valley Drive (the Project) along an approximately 3,840-foot (0.7 miles) stretch of Boston Road (Route 3A) centrally located in Billerica, Massachusetts. The Boston Road corridor and the intersections of Lexington Road and Glad Valley Drive have safety and operational deficiencies which require improvements for safe and efficient operation for all users, including motor vehicles, bicyclists and pedestrians.

Work associated with the Project will take place within resource areas Subject to Jurisdiction under the Massachusetts Wetlands Protection Act and its Regulations at 310 CMR 10.00 (the Act), as well as the Town of Billerica Wetlands Protection Bylaw (Article XXII) and associated regulations (the Bylaw). The Project has been designed to meet the Performance Standards as set forth by the Act and the Bylaw to the extent practicable, however, waivers are being requested from Sections 3.01 and 3.03.C.3 (a and b) of the Bylaw Regulations, and Section 7.1. of the Bylaw to allow for work within a BVW and intermittent stream associated with outfall and headwall replacement, and in the 25 and 50-foot Buffer Zone associated with clearing and grading, and to notify only abutters within 100 feet of the Project. The Project is being filed under the Limited Project provision found in the WPA Regulations at 310 CMR 10.53(3)(d) and 310 CMR 10.53(3)(f) and is classified as a redevelopment project under the Stormwater Management Standards.

The Project will result in temporary impacts to Bordering Vegetated Wetland (BVW), Bank (to intermittent stream) and Land Under Water (LUW – to intermittent stream), as well as temporary and permanent impacts within the 25-foot no disturb zone to these Resource Areas. Given the densely developed nature of the Project area, minimal opportunities for mitigation are available, however, construction best management practices are included in the Project to prevent impacts to resource areas during construction, such as the installation of erosion controls and inlet protection measures, as well as restoration of temporarily impacted Resource Areas.

This NOI has been concurrently submitted to the Massachusetts Department of Environmental Protection (MassDEP) Northeast Regional Office and Project abutters have been notified in accordance with State and Local requirements (see Waiver Request). As a municipal project, this NOI filing is not subject to fees under the Act or Bylaw.

We trust that the following application provides adequate information to facilitate the issuance of an Order of Conditions. Should you have any additional questions, please do not hesitate to contact us.

Very truly yours,  
**BETA Group, Inc.**



Tyler Drew  
Staff Scientist



Laura Krause  
Project Manager

cc: Kelley Conway, PE, Town of Billerica  
Darshan Jhaveri, PE, BETA Group, Inc.  
MassDEP NERO, Division of Wetlands

Job No: 20.05958.00

Billerica, Massachusetts

# **Boston Road (Route 3a) At Lexington Road & Glad Valley Drive Traffic and Safety Improvements Project**

*MassDOT Project Number 609250*

*December 2023*

## **NOTICE OF INTENT**

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**BETA**

89 Shrewsbury Street  
Suite 300  
Worcester, MA 01604  
508.756.1600  
[www.BETA-Inc.com](http://www.BETA-Inc.com)

# **Boston Road (Route 3a) At Lexington Road & Glad Valley Drive Traffic and Safety Improvements Project**

Billerica, Massachusetts

*MassDOT Project Number 609250*

## **NOTICE OF INTENT**

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Prepared by: **BETA GROUP, INC.**

Prepared for: The Town of Billerica and MassDOT Highway Division

December 2023

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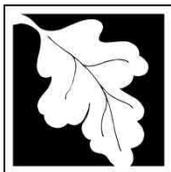
**Boston Road (Route 3a) At Lexington Road & Glad Valley Drive  
Traffic and Safety Improvements Project**

**Notice of Intent**

Billerica, Massachusetts

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**WPA FORM 3 – NOTICE OF INTENT**



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

**WPA Form 3 – Notice of Intent**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Billerica

City/Town

**Important:**

When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Note: Before completing this form consult your local Conservation Commission regarding any municipal bylaw or ordinance.

**A. General Information**

1. Project Location (**Note:** electronic filers will click on button to locate project site):

Boston Road at Lexington Road Billerica 01821  
 a. Street Address b. City/Town c. Zip Code  
 Latitude and Longitude: 42.54843 -71.26024  
 d. Latitude e. Longitude  
N/A Roadway N/A Roadway  
 f. Assessors Map/Plat Number g. Parcel /Lot Number

2. Applicant:

Kelley Conway  
 a. First Name b. Last Name  
Town of Billerica  
 c. Organization  
365 Boston Road  
 d. Street Address  
Billerica MA 01821  
 e. City/Town f. State g. Zip Code  
978-671-1300 kconway@town.billerica.ma.us  
 h. Phone Number i. Fax Number j. Email Address

3. Property owner (required if different from applicant):  Check if more than one owner

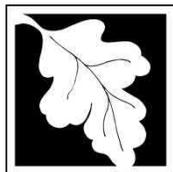
\_\_\_\_\_  
 a. First Name b. Last Name  
 \_\_\_\_\_  
 c. Organization  
 \_\_\_\_\_  
 d. Street Address  
 \_\_\_\_\_  
 e. City/Town f. State g. Zip Code  
 \_\_\_\_\_  
 h. Phone Number i. Fax Number j. Email address

4. Representative (if any):

Laura Krause  
 a. First Name b. Last Name  
BETA Group, Inc.  
 c. Company  
89 Shrewsbury Street, Suite 300  
 d. Street Address  
Worcester MA 01604  
 e. City/Town f. State g. Zip Code  
774-258-1230 lkrause@beta-inc.com  
 h. Phone Number i. Fax Number j. Email address

5. Total WPA Fee Paid (from NOI Wetland Fee Transmittal Form):

Fee exempt  
 a. Total Fee Paid b. State Fee Paid c. City/Town Fee Paid



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

**WPA Form 3 – Notice of Intent**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

|                             |
|-----------------------------|
| Provided by MassDEP:        |
| MassDEP File Number         |
| Document Transaction Number |
| Billerica                   |
| City/Town                   |

**A. General Information (continued)**

6. General Project Description:

The Project includes traffic and safety improvements along Boston Road from Tower Farm Road to Locke Road including the intersections of Boston Road with Lexington Road and Glad Valley Drive. Improvements include pavement rehabilitation, pedestrian/bicycle accomodations, intersection realignment, new signs/pavement markings & stormwater improvements.

7a. Project Type Checklist: (Limited Project Types see Section A. 7b.)

- |   |   |
|---|---|
| 1. <input type="checkbox"/> Single Family Home                        | 2. <input type="checkbox"/> Residential Subdivision       |
| 3. <input type="checkbox"/> Commercial/Industrial                     | 4. <input type="checkbox"/> Dock/Pier                     |
| 5. <input type="checkbox"/> Utilities                                 | 6. <input type="checkbox"/> Coastal engineering Structure |
| 7. <input type="checkbox"/> Agriculture (e.g., cranberries, forestry) | 8. <input checked="" type="checkbox"/> Transportation     |
| 9. <input type="checkbox"/> Other                                     |   |

7b. Is any portion of the proposed activity eligible to be treated as a limited project (including Ecological Restoration Limited Project) subject to 310 CMR 10.24 (coastal) or 310 CMR 10.53 (inland)?

1.  Yes  No      If yes, describe which limited project applies to this project. (See 310 CMR 10.24 and 10.53 for a complete list and description of limited project types)  
 10.53(3)(d) - Maintenance of utilities and 10.53(f) - Maintenance and improvement of existing public roadways.

If the proposed activity is eligible to be treated as an Ecological Restoration Limited Project (310 CMR10.24(8), 310 CMR 10.53(4)), complete and attach Appendix A: Ecological Restoration Limited Project Checklist and Signed Certification.

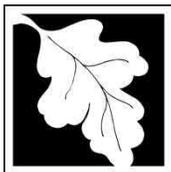
8. Property recorded at the Registry of Deeds for:

|           |                                       |
|-----------|---------------------------------------|
| N/A       | N/A                                   |
| a. County | b. Certificate # (if registered land) |
| N/A       | N/A                                   |
| c. Book   | d. Page Number                        |

**B. Buffer Zone & Resource Area Impacts (temporary & permanent)**

- Buffer Zone Only – Check if the project is located only in the Buffer Zone of a Bordering Vegetated Wetland, Inland Bank, or Coastal Resource Area.
- Inland Resource Areas (see 310 CMR 10.54-10.58; if not applicable, go to Section B.3, Coastal Resource Areas).

Check all that apply below. Attach narrative and any supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.



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

**WPA Form 3 – Notice of Intent**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Billerica

City/Town

**B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)**

For all projects affecting other Resource Areas, please attach a narrative explaining how the resource area was delineated.

| Resource Area   | Size of Proposed Alteration                                | Proposed Replacement (if any) |
|---|--|-------------------------------|
| a. <input checked="" type="checkbox"/> Bank                                 | 10<br>1. linear feet                                       | 10<br>2. linear feet          |
| b. <input checked="" type="checkbox"/> Bordering Vegetated Wetland          | 245 (temp.)<br>1. square feet                              | 245<br>2. square feet         |
| c. <input checked="" type="checkbox"/> Land Under Waterbodies and Waterways | 12 (temp.)<br>1. square feet<br><br>3. cubic yards dredged | 12<br>2. square feet          |

| Resource Area  | Size of Proposed Alteration   | Proposed Replacement (if any)                |
|--|---|--|
| d. <input type="checkbox"/> Bordering Land Subject to Flooding | 1. square feet<br><br>3. cubic feet of flood storage lost             | 2. square feet<br><br>4. cubic feet replaced |
| e. <input type="checkbox"/> Isolated Land Subject to Flooding  | 1. square feet<br><br>2. cubic feet of flood storage lost             | 3. cubic feet replaced                       |
| f. <input type="checkbox"/> Riverfront Area                    | 1. Name of Waterway (if available) - <b>specify coastal or inland</b> |  |

2. Width of Riverfront Area (check one):

- 25 ft. - Designated Densely Developed Areas only
- 100 ft. - New agricultural projects only
- 200 ft. - All other projects

3. Total area of Riverfront Area on the site of the proposed project: \_\_\_\_\_ square feet

4. Proposed alteration of the Riverfront Area:

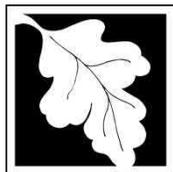
a. total square feet \_\_\_\_\_ b. square feet within 100 ft. \_\_\_\_\_ c. square feet between 100 ft. and 200 ft. \_\_\_\_\_

5. Has an alternatives analysis been done and is it attached to this NOI?  Yes  No

6. Was the lot where the activity is proposed created prior to August 1, 1996?  Yes  No

3.  Coastal Resource Areas: (See 310 CMR 10.25-10.35)

**Note:** for coastal riverfront areas, please complete **Section B.2.f.** above.



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

**WPA Form 3 – Notice of Intent**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

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MassDEP File Number

---

Document Transaction Number

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BillERICA

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City/Town

**B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)**

Check all that apply below. Attach narrative and supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.

Online Users:  
 Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

| <u>Resource Area</u>                              | <u>Size of Proposed Alteration</u>                             | <u>Proposed Replacement (if any)</u> |
|---|--|--------------------------------------|
| a. <input type="checkbox"/> Designated Port Areas | Indicate size under Land Under the Ocean, below                |                                      |
| b. <input type="checkbox"/> Land Under the Ocean  | _____  |                                      |
|   | 1. square feet   |                                      |
|   | _____  |                                      |
|   | 2. cubic yards dredged   |                                      |
| c. <input type="checkbox"/> Barrier Beach         | Indicate size under Coastal Beaches and/or Coastal Dunes below |                                      |
| d. <input type="checkbox"/> Coastal Beaches       | _____  | _____                                |
|   | 1. square feet   | 2. cubic yards beach nourishment     |
| e. <input type="checkbox"/> Coastal Dunes         | _____  | _____                                |
|   | 1. square feet   | 2. cubic yards dune nourishment      |

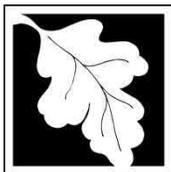
|   | <u>Size of Proposed Alteration</u>  | <u>Proposed Replacement (if any)</u>   |
|---|---|--|
| f. <input type="checkbox"/> Coastal Banks                         | _____   |  |
|   | 1. linear feet  |  |
| g. <input type="checkbox"/> Rocky Intertidal Shores               | _____   |  |
|   | 1. square feet  |  |
| h. <input type="checkbox"/> Salt Marshes                          | _____   | _____                                  |
|   | 1. square feet  | 2. sq ft restoration, rehab., creation |
| i. <input type="checkbox"/> Land Under Salt Ponds                 | _____   |  |
|   | 1. square feet  |  |
|   | _____   |  |
|   | 2. cubic yards dredged  |  |
| j. <input type="checkbox"/> Land Containing Shellfish             | _____   |  |
|   | 1. square feet  |  |
| k. <input type="checkbox"/> Fish Runs                             | Indicate size under Coastal Banks, inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above |  |
|   | _____   |  |
|   | 1. cubic yards dredged  |  |
| l. <input type="checkbox"/> Land Subject to Coastal Storm Flowage | _____   |  |
|   | 1. square feet  |  |

4.  Restoration/Enhancement  
 If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.2.b or B.3.h above, please enter the additional amount here.

|                       |                              |
|-----------------------|------------------------------|
| _____                 | _____                        |
| a. square feet of BVW | b. square feet of Salt Marsh |

5.  Project Involves Stream Crossings

|                                   |   |
|-----------------------------------|---|
| _____                             | _____                                     |
| a. number of new stream crossings | b. number of replacement stream crossings |



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

**WPA Form 3 – Notice of Intent**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Billerica

City/Town

**C. Other Applicable Standards and Requirements**

- This is a proposal for an Ecological Restoration Limited Project. Skip Section C and complete Appendix A: Ecological Restoration Limited Project Checklists – Required Actions (310 CMR 10.11).

**Streamlined Massachusetts Endangered Species Act/Wetlands Protection Act Review**

1. Is any portion of the proposed project located in **Estimated Habitat of Rare Wildlife** as indicated on the most recent Estimated Habitat Map of State-Listed Rare Wetland Wildlife published by the Natural Heritage and Endangered Species Program (NHESP)? To view habitat maps, see the *Massachusetts Natural Heritage Atlas* or go to [http://maps.massgis.state.ma.us/PRI\\_EST\\_HAB/viewer.htm](http://maps.massgis.state.ma.us/PRI_EST_HAB/viewer.htm).

- a.  Yes  No **If yes, include proof of mailing or hand delivery of NOI to:**

**Natural Heritage and Endangered Species Program**  
**Division of Fisheries and Wildlife**  
 1 Rabbit Hill Road  
 Westborough, MA 01581

August 2021  
 b. Date of map

If yes, the project is also subject to Massachusetts Endangered Species Act (MESA) review (321 CMR 10.18). To qualify for a streamlined, 30-day, MESA/Wetlands Protection Act review, please complete Section C.1.c, and include requested materials with this Notice of Intent (NOI); OR complete Section C.2.f, if applicable. *If MESA supplemental information is not included with the NOI, by completing Section 1 of this form, the NHESP will require a separate MESA filing which may take up to 90 days to review (unless noted exceptions in Section 2 apply, see below).*

- c. Submit Supplemental Information for Endangered Species Review\*

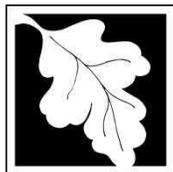
1.  Percentage/acreage of property to be altered:
  - (a) within wetland Resource Area \_\_\_\_\_ percentage/acreage
  - (b) outside Resource Area \_\_\_\_\_ percentage/acreage
2.  Assessor's Map or right-of-way plan of site

2.  Project plans for entire project site, including wetland resource areas and areas outside of wetlands jurisdiction, showing existing and proposed conditions, existing and proposed tree/vegetation clearing line, and clearly demarcated limits of work \*\*
  - (a)  Project description (including description of impacts outside of wetland resource area & buffer zone)
  - (b)  Photographs representative of the site

\* Some projects **not** in Estimated Habitat may be located in Priority Habitat, and require NHESP review (see <https://www.mass.gov/endangered-species-act-mesa-regulatory-review>).

Priority Habitat includes habitat for state-listed plants and strictly upland species not protected by the Wetlands Protection Act.

\*\* MESA projects may not be segmented (321 CMR 10.16). The applicant must disclose full development plans even if such plans are not required as part of the Notice of Intent process.



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

**WPA Form 3 – Notice of Intent**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

|                             |  |
|-----------------------------|--|
| Provided by MassDEP:        |  |
| MassDEP File Number         |  |
| Document Transaction Number |  |
| Billerica                   |  |
| City/Town                   |  |

**C. Other Applicable Standards and Requirements (cont'd)**

(c)  MESA filing fee (fee information available at <https://www.mass.gov/how-to/how-to-file-for-a-mesa-project-review>).

Make check payable to “Commonwealth of Massachusetts - NHESP” and **mail to NHESP** at above address

*Projects altering 10 or more acres of land, also submit:*

(d)  Vegetation cover type map of site

(e)  Project plans showing Priority & Estimated Habitat boundaries

(f) OR Check One of the Following

1.  Project is exempt from MESA review.  
 Attach applicant letter indicating which MESA exemption applies. (See 321 CMR 10.14, <https://www.mass.gov/service-details/exemptions-from-review-for-projectsactivities-in-priority-habitat>; the NOI must still be sent to NHESP if the project is within estimated habitat pursuant to 310 CMR 10.37 and 10.59.)

2.  Separate MESA review ongoing. a. NHESP Tracking # \_\_\_\_\_ b. Date submitted to NHESP \_\_\_\_\_

3.  Separate MESA review completed.  
 Include copy of NHESP “no Take” determination or valid Conservation & Management Permit with approved plan.

3. For coastal projects only, is any portion of the proposed project located below the mean high water line or in a fish run?

a.  Not applicable – project is in inland resource area only      b.  Yes     No

If yes, include proof of mailing, hand delivery, or electronic delivery of NOI to either:

South Shore - Cohasset to Rhode Island border, and the Cape & Islands:

North Shore - Hull to New Hampshire border:

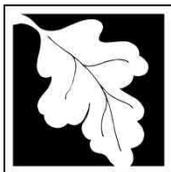
Division of Marine Fisheries -  
 Southeast Marine Fisheries Station  
 Attn: Environmental Reviewer  
 836 South Rodney French Blvd.  
 New Bedford, MA 02744  
 Email: [dmf.envreview-south@mass.gov](mailto:dmf.envreview-south@mass.gov)

Division of Marine Fisheries -  
 North Shore Office  
 Attn: Environmental Reviewer  
 30 Emerson Avenue  
 Gloucester, MA 01930  
 Email: [dmf.envreview-north@mass.gov](mailto:dmf.envreview-north@mass.gov)

Also if yes, the project may require a Chapter 91 license. For coastal towns in the Northeast Region, please contact MassDEP’s Boston Office. For coastal towns in the Southeast Region, please contact MassDEP’s Southeast Regional Office.

c.  Is this an aquaculture project?      d.  Yes     No

If yes, include a copy of the Division of Marine Fisheries Certification Letter (M.G.L. c. 130, § 57).



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

**WPA Form 3 – Notice of Intent**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

|                             |
|-----------------------------|
| Provided by MassDEP:        |
| MassDEP File Number         |
| Document Transaction Number |
| Billerica                   |
| City/Town                   |

**Online Users:**  
 Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

**C. Other Applicable Standards and Requirements (cont'd)**

4. Is any portion of the proposed project within an Area of Critical Environmental Concern (ACEC)?  
 a.  Yes  No      If yes, provide name of ACEC (see instructions to WPA Form 3 or MassDEP Website for ACEC locations). **Note:** electronic filers click on Website.  
 b. ACEC

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5. Is any portion of the proposed project within an area designated as an Outstanding Resource Water (ORW) as designated in the Massachusetts Surface Water Quality Standards, 314 CMR 4.00?  
 a.  Yes  No
6. Is any portion of the site subject to a Wetlands Restriction Order under the Inland Wetlands Restriction Act (M.G.L. c. 131, § 40A) or the Coastal Wetlands Restriction Act (M.G.L. c. 130, § 105)?  
 a.  Yes  No
7. Is this project subject to provisions of the MassDEP Stormwater Management Standards?  
 a.  Yes. Attach a copy of the Stormwater Report as required by the Stormwater Management Standards per 310 CMR 10.05(6)(k)-(q) and check if:
  1.  Applying for Low Impact Development (LID) site design credits (as described in Stormwater Management Handbook Vol. 2, Chapter 3)
  2.  A portion of the site constitutes redevelopment
  3.  Proprietary BMPs are included in the Stormwater Management System.
 b.  No. Check why the project is exempt:
  1.  Single-family house
  2.  Emergency road repair
  3.  Small Residential Subdivision (less than or equal to 4 single-family houses or less than or equal to 4 units in multi-family housing project) with no discharge to Critical Areas.

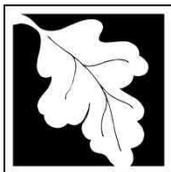
**D. Additional Information**

- This is a proposal for an Ecological Restoration Limited Project. Skip Section D and complete Appendix A: Ecological Restoration Notice of Intent – Minimum Required Documents (310 CMR 10.12).

Applicants must include the following with this Notice of Intent (NOI). See instructions for details.

**Online Users:** Attach the document transaction number (provided on your receipt page) for any of the following information you submit to the Department.

1.  USGS or other map of the area (along with a narrative description, if necessary) containing sufficient information for the Conservation Commission and the Department to locate the site. (Electronic filers may omit this item.)
2.  Plans identifying the location of proposed activities (including activities proposed to serve as a Bordering Vegetated Wetland [BVW] replication area or other mitigating measure) relative to the boundaries of each affected resource area.



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

**WPA Form 3 – Notice of Intent**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

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MassDEP File Number

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Document Transaction Number

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Billerica

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City/Town

**D. Additional Information (cont'd)**

3.  Identify the method for BVW and other resource area boundary delineations (MassDEP BVW Field Data Form(s), Determination of Applicability, Order of Resource Area Delineation, etc.), and attach documentation of the methodology.

4.  List the titles and dates for all plans and other materials submitted with this NOI.  
 Boston Road (Route 3A) at Lexington Road & Glad Valley Drive Traffic and Safety Improvments, Billierca, 100% Submittal, Notice of Intent Permit Set

BETA Group, Inc.

b. Prepared By c. Signed and Stamped by

December 2023 Varies, as specified

d. Final Revision Date e. Scale

f. Additional Plan or Document Title g. Date

5.  If there is more than one property owner, please attach a list of these property owners not listed on this form.

6.  Attach proof of mailing for Natural Heritage and Endangered Species Program, if needed.

7.  Attach proof of mailing for Massachusetts Division of Marine Fisheries, if needed.

8.  Attach NOI Wetland Fee Transmittal Form

9.  Attach Stormwater Report, if needed.

**E. Fees**

1.  Fee Exempt: No filing fee shall be assessed for projects of any city, town, county, or district of the Commonwealth, federally recognized Indian tribe housing authority, municipal housing authority, or the Massachusetts Bay Transportation Authority.

Applicants must submit the following information (in addition to pages 1 and 2 of the NOI Wetland Fee Transmittal Form) to confirm fee payment:

2. Municipal Check Number 3. Check date

4. State Check Number 5. Check date

6. Payor name on check: First Name 7. Payor name on check: Last Name



Massachusetts Department of Environmental Protection  
Bureau of Resource Protection - Wetlands

### WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Billerica

City/Town

#### F. Signatures and Submittal Requirements

I hereby certify under the penalties of perjury that the foregoing Notice of Intent and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I understand that the Conservation Commission will place notification of this Notice in a local newspaper at the expense of the applicant in accordance with the wetlands regulations, 310 CMR 10.05(5)(a).

I further certify under penalties of perjury that all abutters were notified of this application, pursuant to the requirements of M.G.L. c. 131, § 40. Notice must be made by Certificate of Mailing or in writing by hand delivery or certified mail (return receipt requested) to all abutters within 100 feet of the property line of the project location.

|   |                                  |
|---|----------------------------------|
| <p>1. Signature of Applicant <u><i>Kelley Conway</i></u></p>                    | <p>2. Date <u>12-19-23</u></p>   |
| <p>3. Signature of Property Owner (if different) <u><i>Laura Krause</i></u></p> | <p>4. Date <u>12/19/2023</u></p> |
| <p>5. Signature of Representative (if any)</p>                                  | <p>6. Date</p>                   |

**For Conservation Commission:**

Two copies of the completed Notice of Intent (Form 3), including supporting plans and documents, two copies of the NOI Wetland Fee Transmittal Form, and the city/town fee payment, to the Conservation Commission by certified mail or hand delivery.

**For MassDEP:**

One copy of the completed Notice of Intent (Form 3), including supporting plans and documents, one copy of the NOI Wetland Fee Transmittal Form, and a **copy** of the state fee payment to the MassDEP Regional Office (see Instructions) by certified mail or hand delivery.

**Other:**

If the applicant has checked the "yes" box in any part of Section C, Item 3, above, refer to that section and the Instructions for additional submittal requirements.

The original and copies must be sent simultaneously. Failure by the applicant to send copies in a timely manner may result in dismissal of the Notice of Intent.

**Boston Road (Route 3a) At Lexington Road & Glad Valley Drive  
Traffic and Safety Improvements Project**

**Notice of Intent**

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Billerica, Massachusetts

**BILLERICA NOTICE OF INTENT APPLICATION AND FORMS**

Proposal No. 609250 - 129975  
**BILLERICA CONSERVATION COMMISSION**  
**NOTICE OF INTENT (NOI) FILING CHECKLIST**

MA Wetlands Protection Act (MGL Ch. 131, Sect. 40) Billerica Wetlands Protection By-Law (Article XXII - General By-Laws)

**Application Forms** (available at the Conservation Department's webpage at: <http://www.town.billerica.ma.us>)

- Notice of Intent (NOI) Form – Complete and sign; Plat / parcel numbers / deed information (Book & Page and/or Certificate Number)
- Notice of Intent Fee Transmittal Form – Complete (with check)
- By-Law Application Form – Complete and sign (including check & all supplemental forms)

**Maps and Plans**

- Engineered Plans – Signed / stamped by a Registered Professional Engineer, Registered Land Surveyor, or, other qualified professional acceptable to the Commission. Plans must be folded. Plans shall clearly detail existing conditions, proposed site work and development, including: vegetative communities, existing / proposed grades, earthwork, landscaping, new site features, wetland resources, 100 ft. buffer zone, 25 foot *or* 50 ft. no alteration zone, limit of work, location of erosion/siltation controls, proposed mitigation, drainage controls and stormwater structures (drywells, infiltration, detention, vegetated swales, etc.), visual barrier along wetland (fence, shrub, boulders, etc.)
- Locus Plan – From USGS Topographic Map for project area (8.5" x 11" sheet) → Available at
- FEMA Floodplain Map – For project area (8.5" x 11" sheet) → Engineering
- Green Engineering Floodplain Map – For project area (8.5" x 11" sheet) → Department

**Additional Required Material** (forms are on the Conservation Department's webpage at: <http://www.town.billerica.ma.us>)

- Project Narrative – A detailed and thorough description of the site and the project, including construction methodologies and sequencing
- Explanation – How projects meet State & local regulations & performance standards, including limited projects and exemptions under bylaw
- Wetlands Report – Prepared by a Botanist or Professional Wetland Scientist, including a thorough description of the wetland resources on the site, their functions and role in the watershed, and, date of the wetlands flagging.
- Sedimentation and Erosion Control Narrative and/or Construction Sequencing Plan (for all projects except single family projects)
- Notification to Abutters – Must be complete when filing is submitted; Abutter notice shall summarize / describe the project (below Question B); Complete and sign form, submit w/ ap; White certified mail slips or green certified mail return cards must be submitted at the hearing
- Certified Abutters List – For direct abutters and abutters within 300 feet of the property of the applicant; Obtain list from Assessor's Office
- Affidavit of Service Form for Abutters – Complete and sign
- Affidavit of Service Form – From Board of Health and the Planning Board; Complete and sign
- Applicant Representative Form (When owner is not the consultant / presenter) – Complete and sign
- Permission to Inspect Form – Complete and sign
- Letter of Intent Form (Signed by Building Inspector) – Available in Building Department
- Permit Status Form – Complete and sign
- Minimum of 6 photos – Showing existing site conditions, and, representative shots of the property's wetland resource areas
- Filing Fees (\$Checks) – Wetland bylaw fee & Commission's share of the WPA fee & a copy of the check to the State
- Permission to Advertise Form – Complete form allowing the Lowell Sun to direct bill the applicant for the legal ad.

**Supplemental Forms** (as applicable)

- Wetlands Replication Narrative and Replication/Restoration Area Planting Plan – Include planting list utilizing native species.
- Stormwater Management Form – Where the Town is responsible under a Maintenance Plan a written agreement signed by the Department of Public Works must be submitted
- Drainage Report – From a Registered Professional Engineer
- Operation and Management Plan – For stormwater and drainage system proposed (complete compliance with stormwater guidance adopted in Jan. 2008 required)
- Wildlife Habitat Evaluation – Prepared by a wildlife biologist, or, other professional acceptable to the Commission.
- Alternatives Analysis – As required under the bylaw or regulations

Submit one (1) full set of the all documents listed above to the DEP Northeast Regional Office, one (1) full set to the Board of Health, one (1) full set to the Planning Board, and nine (9) full sets to the Conservation Commission (the signed original, 1 file copy, and, 7 member sets). Member sets may include half-size plans *if* approved by the Commission and/or Director.



*Conservation of Natural Resources  
in  
Billerica, Massachusetts*

**TOWN OF BILLERICA  
WETLANDS BY-LAW APPLICATION**

WETLANDS PROTECTION BY-LAW  
Town of Billerica General By-Laws, Article XXII

Application for:  Resource Delineation     Determination of Applicability  
 Notice of Intent

Please type or print the following information:

---

**Section A – General Information**

**APPLICANT:** Kelley Conway, Town Engineer  
Address: Department of Public Works  
365 Boston Road, Billerica, MA 01821  
Phone: (978) 671 - 1300

|                              |
|------------------------------|
| <b>BY-LAW<br/>FILING FEE</b> |
| <b>\$</b>                    |

**REPRESENTATIVE:** Laura Krause  
Address: BETA Group, Inc.  
89 Shrewsbury Street, Suite 300, Worcester, MA 01604  
Phone: (774) 258 - 1230

**PROPERTY OWNER:** \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone: (    )    -   

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**Section B – Project Information**

**1. Project Location**

Street Address: Boston Road at Lexington Road and Glad Valley Drive  
Assessor's Map/Plat Number: N/A - Roadway Parcel/Lot Number: N/A - Roadway

**2. Project Narrative:** (Proposed activity, project impacts, proposed mitigation, etc. Attach additional paper as necessary.)

**TOWN OF BILLERICA  
 WETLANDS BY-LAW APPLICATION**

**Section C – Project Impacts**

1. If work is proposed in the Buffer Zone, list how many square feet: 8,245 Sq. Ft.
2. List the impacts of proposed activities on each wetland resource area (temporary and permanent impacts, prior to restoration and mitigation):

| Resource Area               | Size of Impact | Temporary/Permanent |
|-----------------------------|----------------|---------------------|
| Bordering Vegetated Wetland | 245 sf         | Temporary           |
| Bank                        | 10 ft          | Temporary           |
| Land Under Water            | 12 sf          | Temporary           |
|                             |                |                     |
|                             |                |                     |
|                             |                |                     |
|                             |                |                     |

**Section D – Additional Information**

The following information shall be included with this application. Check the first box to indicate that it was included as part of this application (Y). Check the second box to indicate that it was not included as part of this application (N). Check the third box to indicate that it is not applicable to this project (N/A). Please check with the Conservation Commission Director for applicable requirements.

**RESOURCE DELINEATION**

**Y    N    N/A**

- General locus map from a USGS topographic map.
- Certified list of abutters and proof that they have been notified of the hearing.
- Check made payable to the Town of Billerica for the filing fee(s).
- Soil Classification from the U.S. Natural Resources Conservation Service soils maps and soil logs.

Plan of land showing:

- Existing buildings, structures and utilities.
- Topography with maximum contour intervals of 2-feet (existing and proposed).
- Resource Areas as defined in MGL Chapter 131 § 40 and any amendments thereof, and the Town of Billerica Wetlands Protection By-Law and any amendments thereof.
- North arrow.
- Legend.
- Property boundaries.
- Drainage divides (pre- and post-construction).
- F.E.M.A. Flood Plain and Green Engineering Flood Plain (available through the Billerica Conservation Commission office).
- When a vegetated wetland is present, an analysis of wetland soils including depth, croma and value, soil horizons, etc. Sample locations shall be shown on plans.

**TOWN OF BILLERICA  
 WETLANDS BY-LAW APPLICATION  
 Section D – Additional Information (cont.)**

**DETERMINATION OF APPLICABILITY**

| Y                        | N                        | N/A                      |  |
|--------------------------|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | General locus map from a USGS topographic map.   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | When a vegetated wetland is present, an analysis of wetland soils including depth, chroma and value, soil horizons, etc. Sample locations shall be shown on plans. |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Certified list of abutters and proof that they have been notified of the hearing.  |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Check made payable to the Town of Billerica for the filing fee(s).   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Photographs of the project site, to include resource areas, vegetation communities, and area of proposed construction staking.                                     |

Plan of land showing:

|                          |                          |                          |  |
|--------------------------|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Existing and proposed buildings, structures and utilities.   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Topography with maximum contour intervals of 2-feet (existing and proposed).   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Resource Areas as defined in MGL Chapter 131 § 40 and any amendments thereof, and the Town of Billerica Wetlands Protection By-Law and any amendments thereof. |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | North arrow.   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Legend.  |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Property boundaries.   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Map and parcel number and name of direct abutters.   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Limits of work line.   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Location of stockpile area, including the temporary storage of equipment, fill, and supplies.  |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Drainage divides (pre- and post-construction).   |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | F.E.M.A. Flood Plain and Green Engineering Flood Plain (available through the Billerica Conservation Commission office).                                       |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Soil Classification from the U.S. Natural Resources Conservation Service soils maps and soil logs.   |

**NOTICE OF INTENT**

| Y                                   | N                        | N/A                                 |  |
|-------------------------------------|--------------------------|-------------------------------------|--|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | General locus map from a USGS topographic map.   |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Photographs of the project site, to include resource areas, vegetation communities, and proposed construction staking.   |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Drainage calculations: to include pre- and post-construction, method used, assumptions, and worksheets.  |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | When a vegetated wetland is present, an analysis of wetland soils including depth, chroma and value, soil horizons, etc. Sample locations shall be shown on plans. |
| <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Check made payable to the Town of Billerica for the filing fee(s).   |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Certified list of abutters and proof that they have been notified of the hearing.  |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Status of Permits Form (available through the Conservation Commission office).   |

Plan of land showing:

|                                     |                          |                                     |   |
|-------------------------------------|--------------------------|-------------------------------------|---|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Existing and proposed buildings, structures and utilities.  |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Topography with maximum contour intervals of 2-feet (existing and proposed).  |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Resource Areas as defined in MGL Chapter 131 § 40 and any amendments thereof, and the Town of Billerica Wetlands By-Law and any amendments thereof. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | North arrow.  |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Legend.   |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Property boundaries.  |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Location of erosion control measures.   |
| <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Location of snow storage.   |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Limits of work line.  |
| <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Location of stockpile area, including the temporary storage of equipment, fill, and supplies.   |

**TOWN OF BILLERICA  
 WETLANDS BY-LAW APPLICATION  
 Section D – Additional Information (cont.)**

**NOTICE OF INTENT (Cont.)**

Plan of land showing (cont.):

| <b>Y</b>                            | <b>N</b>                 | <b>N/A</b>                          |   |
|-------------------------------------|--------------------------|-------------------------------------|---|
| <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Professional Engineer's and/or Registered Land Surveyor's stamp and date.   |
| <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Location of proposed replication and/or restoration areas, including transition slopes and proposed 25-foot post-construction buffer to these areas.                |
| <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Location of soil borings and test pits.   |
| <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Soil Classification from the U.S. Natural Resources Conservation Service soils maps and soil logs.  |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Drainage divides (pre- and post-construction).  |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | F.E.M.A. Flood Plain and Green Engineering Flood Plain contours (available through the Billerica Conservation Commission office) and associated flood compensation. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Storm drainage systems.   |

In addition to the above, the Commission may require the following information:

| <b>Y</b>                            | <b>N</b>                 | <b>N/A</b>                          |   |
|-------------------------------------|--------------------------|-------------------------------------|---|
| <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Certification of compliance with Title 5, Massachusetts Sanitary Code.  |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Erosion control specifications and details.   |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Description of how work will comply with 310 CMR 10.00 and any amendments thereof, and Town of Billerica Wetlands Protection Bylaw and any amendments thereof.  |
| <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Work completion schedule.   |
| <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Depth to average annual high water table.   |
| <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Aquifers and groundwater resources in vicinity of site.   |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Dates when fieldwork was conducted.   |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Headwall and riprap specifications.   |
| <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Contours of the water table.  |
| <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Direction of groundwater flow.  |
| <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Maintenance plans shown on drawings including: detention and/or retention ponds, replicated resource areas, oil and grease traps, conservation and pedestrian easements of rights of way, and culverts.   |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Narrative for wetland replication/restoration, including baseline information, proposed soils and vegetation criteria, compliance with performance standards, construction sequence, and monitoring plan. |
| <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | When work is proposed in a River Front Area, provide a narrative detailing how this project meets the general performance standard established in 310 CMR 10.58.  |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | 100-scale plan of field-delineated and approved wetland boundaries.   |

The Commission may require other supporting information as deemed necessary to reach a determination. Please consult the Conservation Commission Director for guidance on what information should be included with this application.



APPLICANT REPRESENTATIVE FORM

I, the undersigned, give permission for Tyler Drew - BETA Group, Inc.,  
to represent me at the Wetland Hearings before the Billerica Conservation Commission.  
In my absence, said representative has my permission to continue hearings, and  
otherwise act in my behalf.

Kelley Conway, Town Engineer  
Applicant Name

365 Boston Road, Billerica MA 01821  
Address

978-671-1300  
Phone

  
Signature

**PERMIT STATUS FORM**

As Applicant for an Order of Conditions from the Billerica Conservation Commission, I hereby certify that I have obtained or applied for all obtainable permits, variances and approvals required by local by-law with respect to the activity proposed in this Notice of Intent in accordance with MGL Ch. 131, sect. 40 and 310 CMR 10.05 (4) (e).

Kelley Conway  
Signature of Applicant

Kelley Conway  
Printed Name

12-19-23  
Date

The following is a list of all obtainable permits and their status (Local, State and Federal):

| <u>Permit Description</u>  | <u>Applied For (date)</u>      | <u>Obtained (date)</u>         | <u>Denied* (date)</u>          |
|----------------------------|--------------------------------|--------------------------------|--------------------------------|
| <u>Order of Conditions</u> | <input type="checkbox"/> _____ | <input type="checkbox"/> _____ | <input type="checkbox"/> _____ |
| _____                      | <input type="checkbox"/> _____ | <input type="checkbox"/> _____ | <input type="checkbox"/> _____ |
| _____                      | <input type="checkbox"/> _____ | <input type="checkbox"/> _____ | <input type="checkbox"/> _____ |
| _____                      | <input type="checkbox"/> _____ | <input type="checkbox"/> _____ | <input type="checkbox"/> _____ |
| _____                      | <input type="checkbox"/> _____ | <input type="checkbox"/> _____ | <input type="checkbox"/> _____ |
| _____                      | <input type="checkbox"/> _____ | <input type="checkbox"/> _____ | <input type="checkbox"/> _____ |
| _____                      | <input type="checkbox"/> _____ | <input type="checkbox"/> _____ | <input type="checkbox"/> _____ |
| _____                      | <input type="checkbox"/> _____ | <input type="checkbox"/> _____ | <input type="checkbox"/> _____ |

\* If a permit has been denied by another Agency, Board or Commission, a copy of the denial document shall be submitted to the Conservation Commission for its files.

## PERMISSION TO ADVERTISE

Date: \_\_\_\_\_

TO: Lowell Sun Newspapers  
Legal Notice Department

I hereby authorize Lowell Sun Newspaper to bill me directly for the legal notice published in the Lowell Sun on \_\_\_\_\_ for a  
Notice of Intent for Roadway Improvements to Boston Road at Lexington  
Road and Glad Valley Drive

**\*Note: The Lowell Sun will not place the legal advertisement until they have received payment from the Applicant. First Hearings will be postponed if payment has not been received by the Lowell Sun in sufficient time to publish the legal advertisement five (5) days prior to the meeting date.**

  
Signature

Kelley Conway  
Printed Name

365 Boston Road  
Street Address

Billerica, MA 01821  
City, State, Zip Code

978-671-1300  
Phone

kconway@town.billerica.ma.us  
Email

AFFIDAVIT OF SERVICE  
TOWN DEPARTMENTS

The Board of Health circle one Planning Board is in receipt of a copy of the following Wetlands Filing: (please circle appropriate filing)

Notice of Intent and Plans of

Request for a Determination of Applicability or

Abbreviated Notice of Resource Delineation

This filing was recently submitted to the Conservation Commission for the proposed

project of The Town of Billerica, located on Boston Road at Lexington Road  
Applicant Name Street Name

Assessor's Plate & Parcel #

Name/Title

Department

Date

AFFIDAVIT OF SERVICE  
TOWN DEPARTMENTS

The Board of Health circle one Planning Board is in receipt of a copy of the following Wetlands Filing: (please circle appropriate filing)

Notice of Intent and Plans o

**Request for a Determination of Applicability or**

**Abbreviated Notice of Resource Delineation**

This filing was recently submitted to the Conservation Commission for the proposed

project of The Town of Billerica, located on Boston Road at Lexington Road  
Applicant Name Street Name

Assessor's Plate & Parcel #

Name/Title

Department

Date

PERMISSION TO INSPECT FORM

To the conservation Commission:

I, the undersigned landowner, am aware of the project

Submitted to the Conservation Commission by

Town of Billerica Department of Public Works

\_\_\_\_\_  
(Applicant)

at Boston Road at Lexington Road and Glad Valley Drive

\_\_\_\_\_  
(Street Address, Plate and Parcel)

Billerica, Massachusetts 01821/01862. I also give permission to the Conservation Commission and their agents to perform the necessary inspection of the property for this Project.

*Kelley Conway*

\_\_\_\_\_  
(Signature of Landowner)

*Kelley Conway*

\_\_\_\_\_  
(Printed Landowner Name)

*12-19-23*

\_\_\_\_\_  
(Date)

**Boston Road (Route 3a) At Lexington Road & Glad Valley Drive  
Traffic and Safety Improvements Project**

**Notice of Intent**

---

Billerica, Massachusetts

**ABUTTERS INFORMATION**



Board of Assessors  
Town Hall  
365 Boston Road  
Billerica, Massachusetts 01821



JOHN B. SPEIDEL, *Chairman*  
RICHARD J. SCANLON, *Associate*  
RICK LADD, *Associate*

Tele: (978) 671-0971  
[assessors@town.billerica.ma.us](mailto:assessors@town.billerica.ma.us)

ABUTTERS LIST REQUEST

Name Tyler Drew Date 11/17/2023  
Address of Property Boston Road at Glad Valley Drive and Plate \_\_\_\_\_  
Lexington Road (See attached map)  
Telephone Number 401-333-2382 Parcel \_\_\_\_\_

I request one copy of the following abutters list and three copies of the labels for the above listed property. The cost of this service shall be \$2.00 per name. The list shall be available five to ten (5-10) working days from the requested date or earlier.

Signature of applicant *Tyler Drew*

Types of Abutters Lists

There are four types of abutters lists which may be required in the Town of Billerica. The board or commission you are seeking approval from and the particular request you are making determines the type of list. You will need to contact the applicable board or commission to determine which of the following will be required in your case.

(Circle one -- If no letter is circled a "D" list will be prepared.)

A. Direct Abutters - Direct Abutters to Parcel and Roadway Being Improved

This list contains direct abutters only. Properties across public right-of-ways or paper streets, which have not been discontinued, are not included. (This list should include direct abutters to the roadway being improved if road construction is involved.)

B. Abutters Within 100 Feet

This list contains all abutters within 100 feet of the parcel, notwithstanding public or private streets or ways, municipal borders or bodies of water.

C. Abutter to Abutter Within 300 Feet

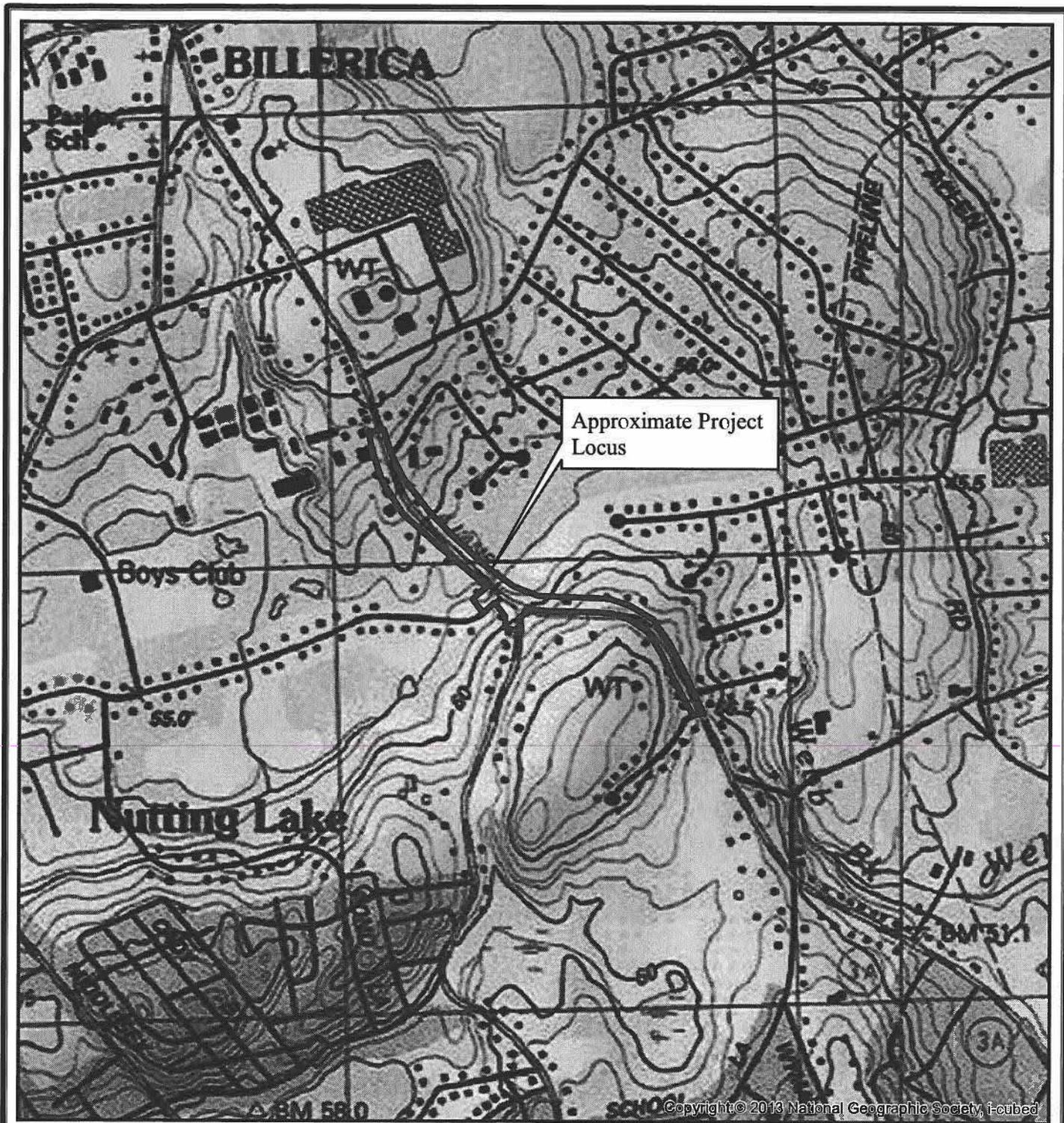
This list contains abutters to direct abutters within 300 feet of the parcel. If there is more than one abutter between the subject parcel and the abutting property within 300 feet, the owner will not be notified.

D. All Property Owners Within 300 Feet OR (Cell Towers - All Property Within 500 Feet)  
(Please circle 300 feet or 500 feet)

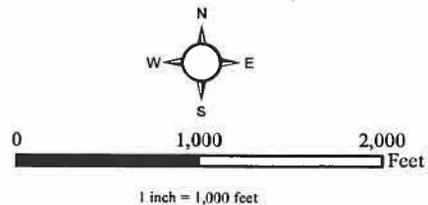
This list contains all properties within 300 feet of the subject parcel. Abutters to abutter restrictions do not apply.

Office Use Only  
\_\_\_\_\_ Parcels - \_\_\_\_\_ Applicant - \_\_\_\_\_ Duplicates = \_\_\_\_\_ Total

Assessor's Signature \_\_\_\_\_ Date \_\_\_\_\_ Amount \_\_\_\_\_



**Figure 1**  
**Site Locus**  
**Boston Road, MA Route 3A**  
**Billerica, MA**



Data Source: USGS Topographic Map

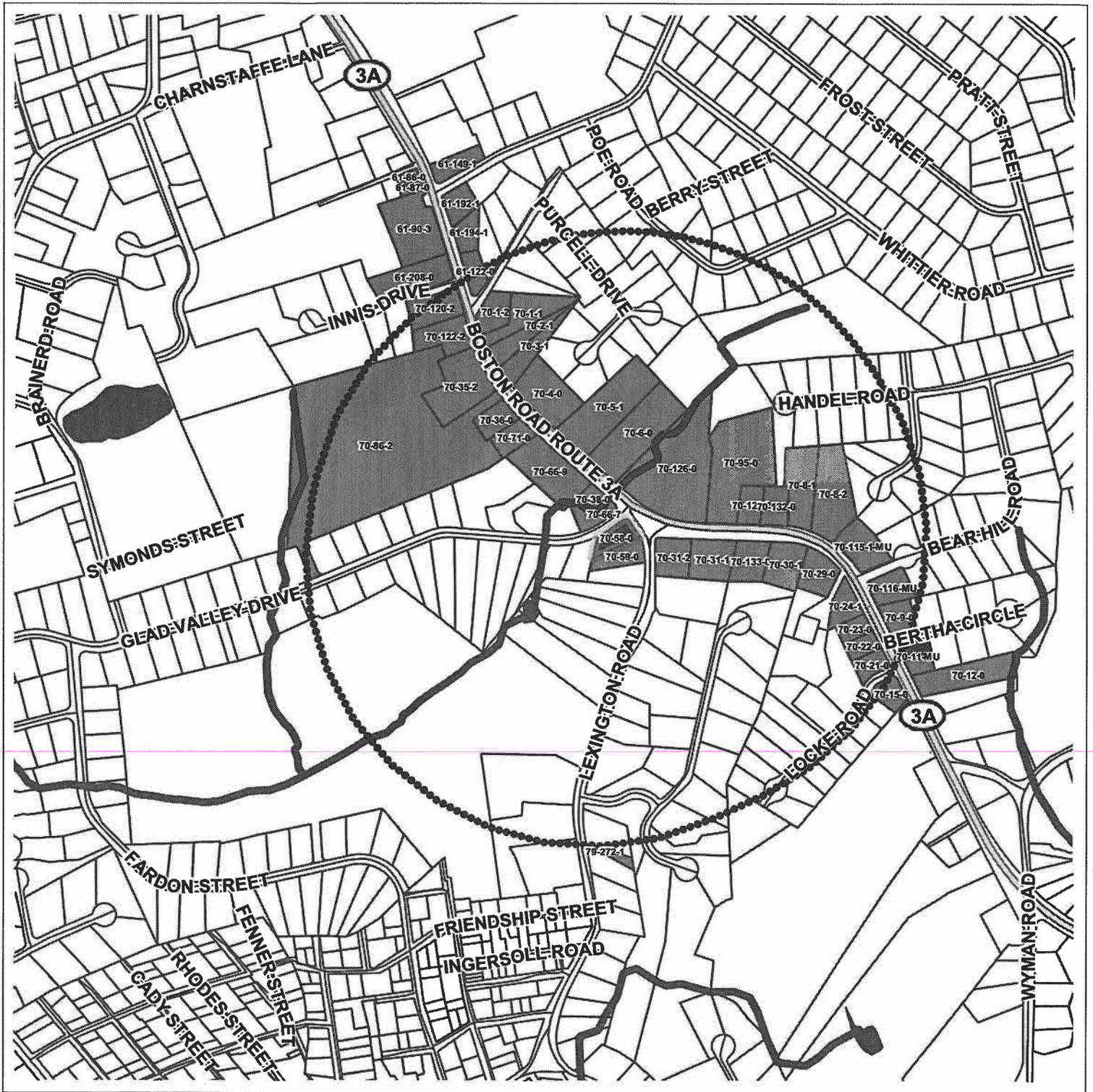
| Parcel ID    | LOCATION                     | OWNER 1                               | OWNER 2 | ADDRESS 1                          | ADDRESS 2 | CITY          | STATE | ZIP CODE   |
|--------------|------------------------------|---------------------------------------|---------|------------------------------------|-----------|---------------|-------|------------|
| 79-272-1     | REAR LENINGTON RD            | ALLAN HARRY J                         |         | 572 BOSTON RD                      |           | BILERICA      | MA    | 01821      |
| 70-35-2      | 499 BOSTON RD                | STONEHAM CO-OP BANK                   |         | 80 MONTVALE AVE                    |           | STONEHAM      | MA    | 02180      |
| 70-1-2       | 530 BOSTON RD                | IPD 530 BOSTON RD LLC                 |         | 530 BOSTON RD                      |           | BILERICA      | MA    | 01821-3770 |
| 70-66-7      | GLAD VALLEY DR               | TOWN OF BILERICA                      |         | 365 BOSTON RD                      |           | BILERICA      | MA    | 01821      |
| 70-66-9      | 505 BOSTON RD                | MCCUE OUTLET LLC                      |         | 200 CAMBRIDGE ROAD                 |           | WOBURN        | MA    | 01801      |
| 61-122-0     | 524 BOSTON RD                | GRANITE MANAGEMENT LLC                |         | 524 BOSTON RD                      |           | BILERICA      | MA    | 01821-2812 |
| 61-149-1     | 510 BOSTON RD UNIT 1         | O'CE LLC                              |         | C/O PORTFOLIO MANAGEMENT #2511     |           | BILERICA      | CA    | 92130-2539 |
| 61-192-1     | TOWER FARM RD                | FARMER MARK A TR                      |         | 119 ASLEY CR                       |           | BILERICA      | MA    | 01821      |
| 61-194-1     | 520 BOSTON ROAD REALTY TRUST | SEGAU DAVID J TR                      |         | 11 MAAYS WAY                       |           | BILERICA      | MA    | 01773-2009 |
| 61-208-0     | 425 BOSTON RD                | INNIS ROBERT B TR                     |         | 475 BOSTON RD                      |           | BILERICA      | MA    | 01821      |
| 61-86-0      | 469 BOSTON RD                | LUIGI LOBI RESTO                      |         | 463 BOSTON RD                      |           | BILERICA      | MA    | 01821-2810 |
| 61-87-0      | 465 BOSTON RD                | RAMIREZ BRON                          |         | 465 BOSTON ROAD                    |           | BILERICA      | MA    | 01821      |
| 61-90-3      | 467 BOSTON RD                | ACV SKYLINE RADOR, LLC                |         | 30 HUNTER LANE                     |           | CAMP HILL     | PA    | 17011      |
| 70-1-1       | 530 BOSTON RD                | IPD 530R BOSTON ROAD LLC              |         | 530R BOSTON ROAD                   |           | BILERICA      | MA    | 01821      |
| 70-11-1      | 3 BERTHA CR                  | CAROL FOLKES-VOUENS REVOC TR          |         | 3 BERTHA CR #3                     |           | BILERICA      | MA    | 01821      |
| 70-11-2      | 5 BERTHA CR                  | LONG MARIA                            |         | 5 BERTHA CR #5                     |           | BILERICA      | MA    | 01821      |
| 70-115-1-1   | 572 BOSTON RD UNIT 1         | LYONS BRIAN P                         |         | C/O MARK LYONS                     |           | PHOENIX       | AZ    | 85048      |
| 70-115-1-10  | 572 BOSTON RD UNIT 10        | HUANG GANGYI                          |         | 1747 E SOUTH FORK DR               |           | SHREWSBURY    | MA    | 01545-1388 |
| 70-115-1-11  | 572 BOSTON RD UNIT 11        | B1 & S REALTY TRUST                   |         | PO BOX 235                         |           | NUTTING LAKE  | MA    | 01865      |
| 70-115-1-12  | 572 BOSTON RD UNIT 12        | B1 & S REALTY TRUST                   |         | PO BOX 235                         |           | NUTTING LAKE  | MA    | 01865      |
| 70-115-1-12A | 572 BOSTON RD UNIT 12A       | BILERICA PROFESSIONAL ASSO TR         |         | 572 BOSTON RD #2                   |           | BILERICA      | MA    | 01821      |
| 70-115-1-13  | 572 BOSTON RD UNIT 13        | 572 OFFICE PROPERTY LLC               |         | 572 BOSTON RD #16                  |           | BILERICA      | MA    | 01821      |
| 70-115-1-14  | 572 BOSTON RD UNIT 14        | NACH OFFICE REALTY TRUST ROGER CUNHUI |         | 6 PEMBROOK CR                      |           | ANDOVER       | MA    | 01810      |
| 70-115-1-15  | 572 BOSTON RD UNIT 15        | NACH OFFICE REALTY TRUST ROGER CUNHUI |         | 6 PEMBROOK CR                      |           | ANDOVER       | MA    | 01810      |
| 70-115-1-16  | 572 BOSTON RD UNIT 16        | NACH OFFICE REALTY TRUST ROGER CUNHUI |         | 6 PEMBROOK CR                      |           | ANDOVER       | MA    | 01810      |
| 70-115-1-17  | 572 BOSTON RD UNIT 17        | NACH OFFICE REALTY TRUST ROGER CUNHUI |         | 6 PEMBROOK CR                      |           | ANDOVER       | MA    | 01810      |
| 70-115-1-18  | 572 BOSTON RD UNIT 18        | OMKAR REALTY LLC                      |         | 36 HATIKAWAY                       |           | NORTH CHELSEA | MA    | 01863-2333 |
| 70-115-1-19  | 572 BOSTON RD UNIT 19        | JIANG LIANGWEI                        |         | 280 JUDDA RD BLDG 5 UNIT 2 APT 803 |           | LANZHOU GANSU | CN    | 73000      |
| 70-115-1-2   | 572 BOSTON RD UNIT 2         | ANNESE ROBERT M                       |         | 572 BOSTON RD #2                   |           | BILERICA      | MA    | 01821      |
| 70-115-1-21  | 572 BOSTON RD UNIT 21        | ALPHAN GROUP LLC                      |         | 7 TUCKER STREET                    |           | PEPPERELL     | MA    | 01852      |
| 70-115-1-22  | 572 BOSTON RD UNIT 22        | LOPEZ RANDY P                         |         | 31 HOYT AVE                        |           | LOWELL        | MA    | 01463      |
| 70-115-1-23  | 572 BOSTON RD UNIT 23        | JIANG YONGQING                        |         | 7 TUCKER STREET                    |           | PEPPERELL     | MA    | 01852      |
| 70-115-1-24  | 572 BOSTON RD UNIT 24        | TRINKER WILLIAM G & GLORIA M          |         | 244 VINTON ST                      |           | MELROSE       | MA    | 02176      |
| 70-115-1-25  | 572 BOSTON RD UNIT 25        | B1 & S REALTY TRUST                   |         | PO BOX 2096                        |           | DUXBURY       | MA    | 02331      |
| 70-115-1-26  | 572 BOSTON RD UNIT 26        | ALLEN GEORGE T JR TR                  |         | 572 BOSTON RD #3A                  |           | NUTTING LAKE  | MA    | 01865      |
| 70-115-1-27  | 572 BOSTON RD UNIT 27        | T J A REALTY TRUST                    |         | 572 BOSTON RD #3                   |           | BILERICA      | MA    | 01821      |
| 70-115-1-28  | 572 BOSTON RD UNIT 28        | SHAWN WARREN REVOC TRUST              |         | 462 GARDNER HILL RD                |           | TANMOUTH      | NH    | 03866-5012 |
| 70-115-1-29  | 572 BOSTON RD UNIT 29        | B1 & S REALTY TRUST                   |         | PO BOX 235                         |           | NUTTING LAKE  | MA    | 01865-235  |
| 70-115-1-29A | 572 BOSTON RD UNIT 29A       | B1 & S REALTY TRUST                   |         | PO BOX 235                         |           | NUTTING LAKE  | MA    | 01865-235  |
| 70-115-1-30  | 572 BOSTON RD UNIT 30        | ALLEN GEORGE T, JR., TR.              |         | 572 BOSTON RD #3                   |           | BILERICA      | MA    | 01821      |
| 70-115-1-31  | 572 BOSTON RD UNIT 31        | B1 & S REALTY TRUST                   |         | PO BOX 235                         |           | NUTTING LAKE  | MA    | 01865      |
| 70-115-1-32  | 572 BOSTON RD UNIT 32        | VERTUCCIO RICHARD JR                  |         | 13A PETERSON RD                    |           | BROOKLINE     | NH    | 03033      |
| 70-115-1-33  | 572 BOSTON RD UNIT 33        | LOUISE M MAYER REVOCABLE TRUST        |         | 14 TURNER ROAD                     |           | NO BILERICA   | MA    | 01862      |
| 70-115-1-4   | 572 BOSTON RD UNIT 4         | ALLEN GEORGE T, JR., TR.              |         | 572 BOSTON RD #3                   |           | BILERICA      | MA    | 01821      |
| 70-115-1-5   | 572 BOSTON RD UNIT 5         | JOSEPH MARTINESE                      |         | 70 LUDHAM ST                       |           | LOWELL        | MA    | 01850      |
| 70-115-1-6   | 572 BOSTON RD UNIT 6         | SASHA REALTY TRUST                    |         | 572 BOSTON RD #5                   |           | BILERICA      | MA    | 01821-3776 |
| 70-115-1-7   | 572 BOSTON RD UNIT 7         | REEM PROPERTIES LLC                   |         | 10 ESTEY ROAD                      |           | BILERICA      | MA    | 01862-3006 |
| 70-115-1-8   | 572 BOSTON RD UNIT 8         | 572 BOSTON PROPERTY LLC               |         | 572 BOSTON RD #16                  |           | BILERICA      | MA    | 01821      |
| 70-115-1-9   | 572 BOSTON RD UNIT 9         | 572 BOSTON PROPERTY LLC               |         | 572 BOSTON RD #16                  |           | BILERICA      | MA    | 01821      |
| 70-116-10    | 574 BOSTON RD UNIT 10        | HUANG GANGYI                          |         | 7 RAWSON HILL DR                   |           | SHREWSBURY    | MA    | 01545-1388 |
| 70-116-11    | 574 BOSTON RD UNIT 11        | LAURYN + KAVLEIGH TRUST               |         | 574 BOSTON RD #1                   |           | BILERICA      | MA    | 01821-3722 |
| 70-116-12    | 574 BOSTON RD UNIT 12        | PENTA JOHN, TR.                       |         | 574 BOSTON RD #1                   |           | BILERICA      | MA    | 01821-5245 |
| 70-116-13    | 574 BOSTON RD UNIT 13        | LONGRUM MANAGEMENT LLC                |         | C/O J P HAR & SONS, INC.           |           | BILERICA      | MA    | 02420-3920 |
| 70-116-14    | 574 BOSTON RD UNIT 14        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-15    | 574 BOSTON RD UNIT 15        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 02420-3920 |
| 70-116-16    | 574 BOSTON RD UNIT 16        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 02420-3920 |
| 70-116-17    | 574 BOSTON RD UNIT 17        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-18    | 574 BOSTON RD UNIT 18        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-19    | 574 BOSTON RD UNIT 19        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-20    | 574 BOSTON RD UNIT 20        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-21    | 574 BOSTON RD UNIT 21        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-22    | 574 BOSTON RD UNIT 22        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-23    | 574 BOSTON RD UNIT 23        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-24    | 574 BOSTON RD UNIT 24        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-25    | 574 BOSTON RD UNIT 25        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-26    | 574 BOSTON RD UNIT 26        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-27    | 574 BOSTON RD UNIT 27        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-28    | 574 BOSTON RD UNIT 28        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-29    | 574 BOSTON RD UNIT 29        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-30    | 574 BOSTON RD UNIT 30        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-31    | 574 BOSTON RD UNIT 31        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-32    | 574 BOSTON RD UNIT 32        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-33    | 574 BOSTON RD UNIT 33        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-34    | 574 BOSTON RD UNIT 34        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-35    | 574 BOSTON RD UNIT 35        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-36    | 574 BOSTON RD UNIT 36        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-37    | 574 BOSTON RD UNIT 37        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-38    | 574 BOSTON RD UNIT 38        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-39    | 574 BOSTON RD UNIT 39        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-40    | 574 BOSTON RD UNIT 40        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-41    | 574 BOSTON RD UNIT 41        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-42    | 574 BOSTON RD UNIT 42        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-43    | 574 BOSTON RD UNIT 43        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-44    | 574 BOSTON RD UNIT 44        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-45    | 574 BOSTON RD UNIT 45        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-46    | 574 BOSTON RD UNIT 46        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-47    | 574 BOSTON RD UNIT 47        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-48    | 574 BOSTON RD UNIT 48        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-49    | 574 BOSTON RD UNIT 49        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-50    | 574 BOSTON RD UNIT 50        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-51    | 574 BOSTON RD UNIT 51        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-52    | 574 BOSTON RD UNIT 52        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-53    | 574 BOSTON RD UNIT 53        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-54    | 574 BOSTON RD UNIT 54        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-55    | 574 BOSTON RD UNIT 55        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-56    | 574 BOSTON RD UNIT 56        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-57    | 574 BOSTON RD UNIT 57        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-58    | 574 BOSTON RD UNIT 58        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-59    | 574 BOSTON RD UNIT 59        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-60    | 574 BOSTON RD UNIT 60        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-61    | 574 BOSTON RD UNIT 61        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-62    | 574 BOSTON RD UNIT 62        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-63    | 574 BOSTON RD UNIT 63        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-64    | 574 BOSTON RD UNIT 64        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-65    | 574 BOSTON RD UNIT 65        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-66    | 574 BOSTON RD UNIT 66        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-67    | 574 BOSTON RD UNIT 67        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-68    | 574 BOSTON RD UNIT 68        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-69    | 574 BOSTON RD UNIT 69        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-70    | 574 BOSTON RD UNIT 70        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-71    | 574 BOSTON RD UNIT 71        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-72    | 574 BOSTON RD UNIT 72        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-73    | 574 BOSTON RD UNIT 73        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-74    | 574 BOSTON RD UNIT 74        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-75    | 574 BOSTON RD UNIT 75        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-76    | 574 BOSTON RD UNIT 76        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-77    | 574 BOSTON RD UNIT 77        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-78    | 574 BOSTON RD UNIT 78        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      | MA    | 01821      |
| 70-116-79    | 574 BOSTON RD UNIT 79        | LONGRUM MANAGEMENT LLC                |         | 927 MASSACHUSETTS AVE              |           | BILERICA      |       |            |

|          |                   |                            |                       |                         |            |    |            |
|----------|-------------------|----------------------------|-----------------------|-------------------------|------------|----|------------|
| 70-126-0 | BOSTON RD         | MCCOYLAND DOUGLAS B TR     | VERZONE JEFFREY L TR  | 562 BOSTON RD           | BILERICA   | MA | 01821      |
| 70-128-0 | 564 BOSTON RD     | MCCOYLAND DOUGLAS B        | VERZONE JEFFREY L TRS | 562 BOSTON RD           | BILERICA   | MA | 01821      |
| 70-132-0 | 566 BOSTON RD     | TMI LLC                    |                       | 566 BOSTON RD           | BILERICA   | MA | 01821-3799 |
| 70-133-0 | 533 BOSTON RD     | DODGE GREGORY W            | CLEMONS JEANINE W     | P O BOX 506             | BILERICA   | MA | 01821      |
| 70-15-0  | 2 LOCKE RD        | NOEL GEORGE E              | NOEL ANNE M           | 2 LOCKE RD              | BILERICA   | MA | 01821      |
| 70-21-0  | 565 BOSTON RD     | PATEL VARSHA               | PATEL ALPESH          | 124 LEXINGTON ST        | BURLINGTON | MA | 01803      |
| 70-22-0  | 559 BOSTON RD     | POWDERHILL DANIEL T        | POWDERHILL DANIEL T   | 559 BOSTON RD           | BILERICA   | MA | 01821      |
| 70-23-0  | 555 BOSTON RD     | BARRY JOHN R               | BARRY MARY F          | 555 BOSTON RD           | BILERICA   | MA | 01821      |
| 70-24-1  | 551 BOSTON RD     | REGAN ROSEMARY J           | REGAN THOMAS T        | 551 BOSTON RD           | BILERICA   | MA | 01821      |
| 70-29-0  | 541 BOSTON RD     | BLACK JAMES R              | BLACK CHRISTINE       | 541 BOSTON RD           | BILERICA   | MA | 01821      |
| 70-3-1   | 536-538 BOSTON RD | COLLADO ROMEO P            | COLLADO CONSUELO E    | 124 LEXINGTON ST        | BILERICA   | MA | 01821      |
| 70-30-1  | 537 BOSTON RD     | PATEL VARSHA               | PATEL ALPESH          | 537 BOSTON RD           | BURLINGTON | MA | 01803      |
| 70-31-1  | 529 BOSTON RD     | DESOUZA SANDRO CESAR       |                       | 2 LEXINGTON RD          | BILERICA   | MA | 01821-3613 |
| 70-31-2  | 495 BOSTON RD     | PATEL JAMINI               | PATEL SWITA           | 2 LEXINGTON RD          | BILERICA   | MA | 01821      |
| 70-36-0  | 513 BOSTON RD     | RILEY PROPERTIES II LLC    |                       | 10 ESTY RD              | N BILERICA | MA | 01862      |
| 70-4-0   | 544 BOSTON RD     | RAO SHAM S                 | POTTA NAVENNA         | 544 BOSTON RD           | N BILERICA | MA | 01862-3006 |
| 70-5-1   | 81 GLAD VALLEY DR | MARTELL LAURIE A           | MARTELL RICHARD E     | 81 GLAD VALLEY DR       | BILERICA   | MA | 01821      |
| 70-58-0  | 558 BOSTON RD     | GANCHI MEHROOB A           | GANCHI MEMUNA         | 1 LEXINGTON ROAD        | BILERICA   | MA | 01821      |
| 70-6-0   | 497 BOSTON RD     | GOUNDE JEFFREY             |                       | 558 BOSTON RD           | BILERICA   | MA | 01821-3620 |
| 70-7-1   | 568 BOSTON RD     | ROLAND W DUBE REVOCABLE TR | DUBE ANNA M TR        | 497 BOSTON RD           | BILERICA   | MA | 01821-3700 |
| 70-8-1   | 568 BOSTON RD     | J SUMNER REALTY LLC        |                       | 568 BOSTON ROAD         | BILERICA   | MA | 01821      |
| 70-8-2   | 499 BOSTON RD     | BCWG INVESTMENTS LLC       |                       | 783 MAIN STREET         | WINCHESTER | MA | 01890      |
| 70-8-2   | 560 BOSTON RD     | PATEL BHAVNIA, TR          | BHAVNIA, PATEL REALTR | ONE INTERNATIONAL PLACE | BOSTON     | MA | 02110      |
| 70-9-0   | 562 BOSTON RD     | MCCOYLAND DOUGLAS B        | VERZONE JEFFREY L TRS | 562 BOSTON RD           | BILERICA   | MA | 01821      |
| 70-95-0  |                   |                            |                       |                         |            |    |            |

DISCLAIMER: This list is certified based upon records held in this department as of the date on the abutter's list. It was completed to the best of our ability based upon the information we have available. We do not certify the accuracy of this list per se, only the names and addresses listed on it. In most cases, public disclosure of the hearing pertaining to this list is required and published in the local newspaper. Every effort has been taken to insure proper notification.

The Board of Assessors certifies the accuracy of the names and addresses on this list based upon our current records.

*John P. B. [Signature]*  
 Chief Assessor  
 November 20, 2023

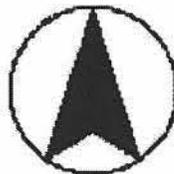


### Abutters Map for Parcels Abutting Boston Rd From Tower Farm Rd to Locke Rd

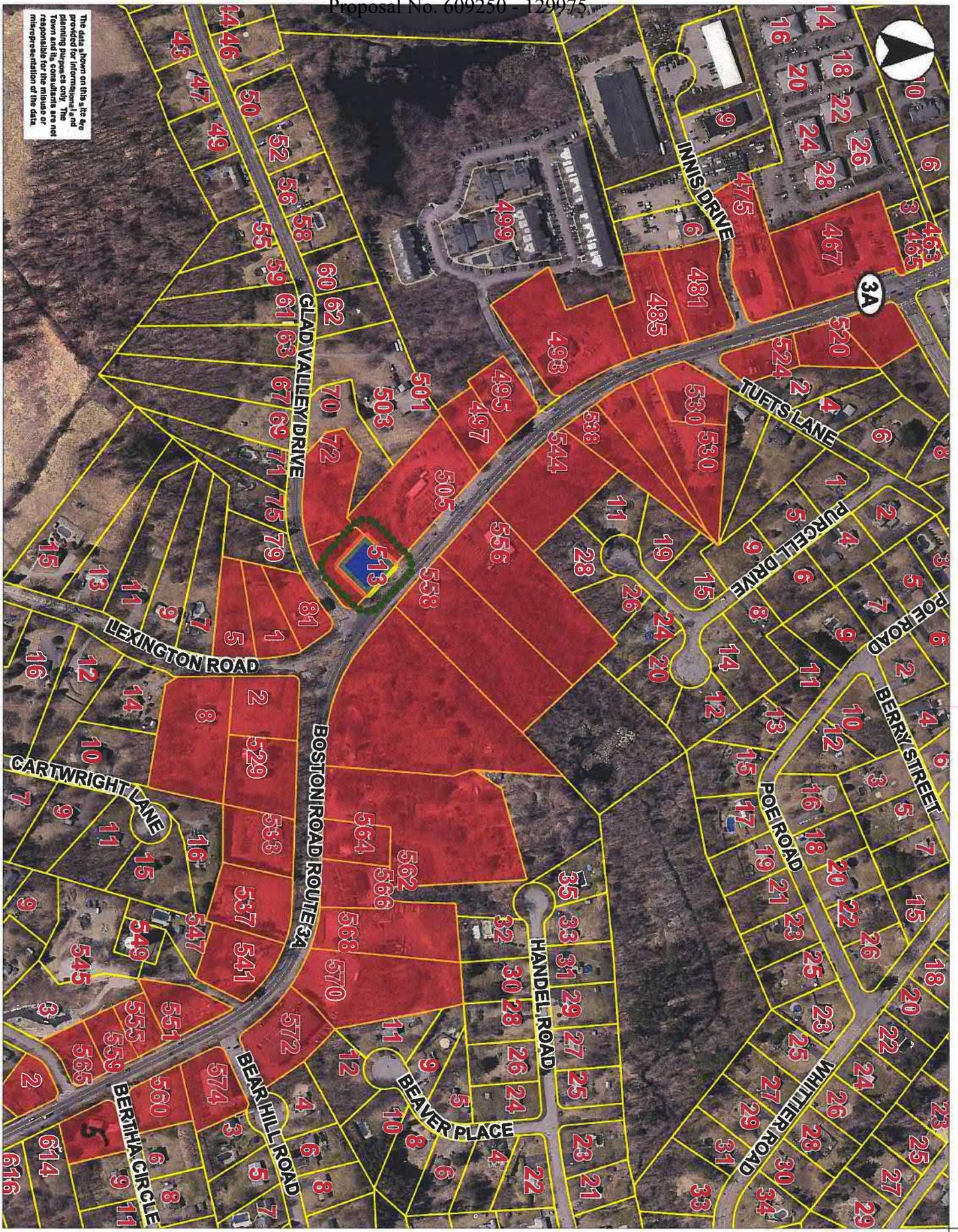
Printed on 11/20/2023 at 01:44 PM

#### Legend

-  Parcel Boundary Selection
-  Parcel Boundary



The data shown on this site are provided for informational and planning purposes only. The town and its consultants are not responsible for the release or use of this information.



The data shown on this site are provided for informational purposes only. The Town and its consultants are not responsible for the misuse or misrepresentation of the data.

0 400

800 ft

Printed on 11/20/2023 at 11:16 AM

# Lexington Rd. Glad Valley Dr. Project



- Parcels with Orbits
- MA Highways
- Interstate
- US Highway Routes
- Town Boundary
- MA Open Water 25k.wf7cv

## Notification to Abutters

### under the Massachusetts Wetlands Protection Act and the Billerica Wetlands Protection Bylaw

In accordance with the second paragraph of Massachusetts General Laws, Chapter 131, Section 40, and the Town of Billerica Wetlands Protection Bylaw you are hereby notified of the following:

A. The Name of the Applicant is: Kelley Conway (Town of Billerica DPW)

B. The Applicant has filed a wetlands application [*e.g.*, Notice of Intent (NOI), Abbreviated Notice of Resource Area Delineation (ANRAD), or a request for Determination of Applicability (RDA)] with the Billerica Conservation Commission seeking permission to *remove, fill, dredge, or alter an Area subject to protection under the Massachusetts Wetlands Protection Act [M.G.L. c.131, § 40] and the Town of Billerica Wetlands Protection Bylaw:*

Project Description: Completion of traffic and pedestrian improvements to the intersection of Boston Road, Lexington Road and Glad Valley Drive.

C. The Address of the lot where the Activity is proposed:  
Boston Road at its intersection with Lexington Road and Glad Valley Drive.

D. A copy of the wetlands application may be examined at the Billerica Conservation Commission at Town Hall, 365 Boston Road between the hours of 8:30 AM and 4:00 PM Monday to Friday. **Please contact the Billerica Conservation Department at (978) 671-0966 to schedule a file review appointment or for more information.**

E. A copy of the permit application may be obtained from the applicant or the applicant's representative by calling (Name: Tyler Drew) at tdrew@beta-inc.com  
*NOTE: An administrative fee may be applied for providing copies of the application and plans.*

F. Information regarding the date, time, and place of the public hearing may be obtained from the Billerica Conservation Commission by calling (978) 671-0966 between the hours of 8:30 AM and 4:00 PM Monday to Friday.

NOTE: Notice of the public hearing, including its date, time, and place will be published at least five (5) days in advance in the **Lowell Sun**.

Notice of the public hearing, including its date, time, and place will also be posted in the Town Clerk's Office, Town Hall not less than forty-eight (48) hours in advance.

*You are receiving this notification because you have been identified as the owner of land abutting a property at which certain activities are proposed within and/or adjacent to wetland resource areas, including Buffer Zone. Those activities require a wetlands permit from the local Conservation Commission under the Massachusetts Wetlands Protection Act (M.G.L. c. 131, § 40) and/or Billerica Wetlands Protection Bylaw.*

AFFIDAVIT OF SERVICE ABUTTERS

Under the Massachusetts Wetland Protection Act and  
The Billerica Wetlands Protection By-Law

(To be submitted to the Massachusetts Department of Environmental Protection and the  
Conservation Commission when filing a Notice of Intent, Request for Determination of  
Applicability and/or Abbreviated Notice of Resource Area Delineation)

I, Tyler Drew Applicant or Representative Name hereby certify under the pains and penalties of  
Perjury that on 12/22/2023, I gave notification to abutters in compliance with  
Date  
The second paragraph of Massachusetts General Laws Chapter 131, Section 40, the  
DEP Guide to Abutter Notification dated April 18, 1994, as well as Section 7.1A of  
the Wetlands Protection By-Law and Section 2.04B of the By-Law Regulations in  
connection with the following matter:

**A Notice of Intent or Request for a Determination of Applicability or Abbreviated  
Notice of Resource Area Delineation** (circle one) filed under the Massachusetts

Wetlands Protection By-Law by The Town of Billerica Department of Public Works, with the  
Applicant Name  
Billerica Conservation Commission on 12/22/2023 for property located at \_\_\_\_\_  
Street  
Boston Road at Lexington Road and Glad Valley Drive.  
Address Assessor's Plate & Parcel No.

The form of the notification, and a list of the direct abutters and abutters to abutters  
within ~~300~~ **100 feet** (See Bylaw Variance Request) of the property line to whom it was given and their addresses, are  
attached to this Affidavit of Service.



12/22/2023

Signature of Applicant

Date

**Boston Road (Route 3a) At Lexington Road & Glad Valley Drive  
Traffic and Safety Improvements Project**

**Notice of Intent**

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Billerica, Massachusetts

**NARRATIVE**

## 1.0 INTRODUCTION

BETA Group, Inc. (BETA) is filing this Notice of Intent (NOI) on behalf of The Town of Billerica under the Massachusetts Department of Transportation's Healthy Transportation Policy Directive for the proposed Boston Road (Route 3A), Lexington Road, and Glad Valley Drive Traffic and Safety Improvements Project (the Project). The Project proposes improvements along an approximately 3,840-foot (0.7 mile) stretch of Boston Road (Route 3A) from Tower Farm Road to Locke Road and includes the Boston Road intersections with Lexington Road and Glad Valley Drive in Billerica, Massachusetts (the Project Corridor) (Figure 1 – Site Locus). In addition, the existing roadway segment connecting Lexington Road and Glad Valley Drive will be discontinued as part of this Project.

The Boston Road corridor and the intersections of Boston Road with Lexington Road and Glad Valley Drive have safety and operational deficiencies which require improvements for safe and efficient operation for all users, including motor vehicles, bicyclists and pedestrians. The existing Boston Road intersections with both Lexington Road and Glad Valley Drive are unsignalized and have an irregular geometry. This condition is because both Lexington Road and Glad Valley Drive have intersections with Boston Road, as well as with each other. The proposed improvements were designed to address the existing deficiencies through examination of existing conditions, known deficiencies, future traffic volumes, and discussions with Massachusetts Department of Transportation Highway Division (MassDOT) and Billerica town officials.

Proposed activities will occur within Bordering Vegetated Wetlands (BVW), Bank (to an intermittent stream) and Land Under Water (LUW - to an intermittent stream), as well as the 100-foot buffer zone to BVW and Bank (to an intermittent stream). These areas are Subject to Jurisdiction and/or Protection under the Massachusetts Wetlands Protection Act, M.G.L. Chapter 131, Section 40 (the Act) and its Regulations, 310 CMR 10.00 (WPA Regulations); and the Town of Billerica Wetlands Protection Regulations and Bylaw (Article XXII). In addition, work will occur within Bylaw regulated 100-foot buffer zone to Bordering Land Subject to Flooding associated with the local Green Engineering Floodplain.

Improvement activities proposed include:

- Widening the roadway along Boston Road by means of full depth construction, with milling and overlay for the rest of Boston Road and all other side streets within the Project limits.
- Construct 5-foot wide cement concrete sidewalks along both sides of Boston Road for the majority of the Project Corridor with new concrete wheelchair ramps meeting ADA requirements within the Project limits, as well as sidewalks along side streets where construction is proposed.
- Construct a 10-foot-wide shared-use path along the west side of Boston Road from Station 116+80 to Station 124+00.
- Install a Rectangular Rapid Flashing Beacon and crosswalk just south of the Tufts Lane Intersection.
- Realign the intersections of Glad Valley Drive and Lexington Road with Boston Road, including installation of right and left turn-only lanes and new traffic signals.
- Discontinue the existing connection between Lexington Road and Glad Valley Drive.
- Provide new pavement markings and signs throughout the Project.
- Provide 5-foot buffered bicycle lanes on Boston Road along the Project Corridor to meet MassDOT's Healthy Transportation Policy guidelines for bicycle accommodations.
- Replacement of the outfall located at 558 Boston Road
- Replacement of the headwall associated with the unnamed intermittent stream

Billerica, Massachusetts

- Improve and upgrade the existing drainage system and structures, as necessary, to address drainage concerns and implement proposed improvements. Improvements including installing deep sump catch basins and construction of an infiltration basin and sediment forebay between Glad Valley Drive and Lexington Road.

The Project is being filed under the Limited Project provision found in the WPA Regulations at 310 CMR 10.53(3)(d) and 310 CMR 10.53(3)(f) and is classified as a redevelopment project under the Stormwater Management Standards. In addition, the Project proposes impacts to waters of the commonwealth and waters of the US and is therefore subject to Section 401 and 404 of the Clean Water Act and will require the filing of a Self-verification form with the US Army Corps of Engineers (USACE). While subject to Section 401 of the Clean Water Act, because the impacts to BVW do not exceed 5,000 square feet and no dredging is proposed, the Order of conditions will serve as the Section 401 Water Quality Certification for this Project. The Project is not Subject to Chapter 91 or Massachusetts Environmental Policy Act (MEPA) Review and is not located within Natural Heritage and Endangered Species Program (NHESP) Mapped Habitat.

## 2.0 SITE DESCRIPTION

Boston Road is an Urban Principal Arterial that follows a general north-south alignment through the town center with 22,100 average trips per day. Glad Valley Drive is classified as a Local Road and Lexington Road is classified as an Urban Collector or Rural Minor Collector, both under Town of Billerica jurisdiction. The Project Corridor is characterized by a mix of medium density residential and commercial properties along Boston Road, with residential communities along Glad Valley Drive and Lexington Road.

Boston Road is a significant regional roadway, connecting Billerica with neighboring communities of Burlington and Lowell. Boston Road provides access to I-95 to the south and parallels Route 3. Resource Areas located along the Project Corridor are primarily situated along both sides of Boston Road near the Glad Valley Drive intersection and adjacent to Glad Valley Drive. Given the proximity to the Resource Areas, work within buffer zones is required.

Within the Project Corridor, the roadway varies from 40 to 46 feet wide, with a single 13-foot travel lane in each direction. Parking is prohibited along the entirety of the Corridor and sidewalks and curbing vary. Pavement along the corridor varies between the travel lanes and shoulders. The travel lanes have been recently seal coated and are in good condition, while the shoulders along the corridor are in fair condition, with crack sealing, edge unraveling and settlement at utility structures.

A Lowell Regional Transit Authority (LRTA) bus operates along Boston Road providing access to Lowell to the north and Burlington (MBTA Bus connection) to the south, as well as access to the North Billerica Commuter Rail Station. No pre-defined bus stops are located within the Project limits, according to the LRTA bus routes map; however, bus stop signage is located along the corridor.

Existing stormwater runoff from Boston Road and the intersecting roadways along the Project Corridor is primarily collected by closed drainage systems which convey flow to two outfalls, one located near 558 Boston Road and the other located across from Glad Valley Drive. A small portion of the Project area flows overland to Glad Valley and is eventually collected by a closed drainage system with discharge to a wetland resource area.

## 2.1 PROJECT LOCUS

The Site is centrally located within the Town of Billerica (Figure 1 – Site Locus). The limit of work will generally remain within the existing roadway alignment. Areas of Bordering Vegetated Wetlands (BVW) were identified along the Project Corridor, as well as one intermittent stream with flow that originates from the Boston Road drainage system that discharges to the WF1 Series BVW. The Bylaw Green Engineering Floodplain, associated with the BVWs and intermittent stream, is also situated along both sides of Boston Road. (Figure 2 – Environmental Resources Map).

## 2.2 WETLAND RESOURCE AREAS

A site inspection and delineation were conducted by BETA's wetland scientists on May 20, 2019, and were reviewed and confirmed on July 25, 2023. Resource area boundaries were identified and delineated in accordance with methods developed by the Massachusetts Department of Environmental Protection's *Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act: Second Edition*, dated September 2022, as well as definitions set forth in the state Wetland Regulations, 310 CMR 10.00, and the Town of Billerica Wetland Protection Regulations and Bylaw.

Existing Resource Areas identified immediately adjacent to the Project Corridor include two areas of BVW, one (1) isolated vegetated wetland (IVW) and Bank of one (1) intermittent stream. These Resource Areas are located to the east and west of Boston Road and north of Glad Valley Drive. Based on Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) panel 25017C0267F, dated 7/7/2014, no flood hazard areas exist on or in the vicinity of the site (Figure 3 - FIRMette); however, the Project is located within the 100-foot buffer zone to the locally-designated Green Engineering Floodplain. A description of Areas Subject to Protection under the Act and the Billerica Bylaw is included in Appendix A (*Wetland Delineation Report*).

## 2.3 BUFFER ZONES

Buffer zones associated with Banks of an intermittent stream, BVW, and Land Subject to Flooding (local) exist on the Site and include the 100-foot buffer Zones under the Act, as well as Buffer Zones and No Alterations Zones under the Billerica Bylaw and its Regulations. Portions of the Project will occur within Buffer Zone at the intersection of Boston Road and Glad Valley Drive and extend east and west along Boston Road. Work within the Bylaw 25- and 50-foot No Alteration Zones is proposed along the northeast side of Boston Road adjacent to its intersection with Glad Valley Drive, and a small section of proposed sidewalk near the western limit of work on Glad Valley Drive.

Existing conditions within Buffer Zones upgradient of Bank/BVW consist largely of paved roadway, roadway shoulders, and sidewalks. The majority of the work will occur within previously disturbed areas. All adjacent wetland resources will be protected from work within Buffer Zones via the proper installation and maintenance of erosion controls as described below.

## 2.4 NHESP-MAPPED HABITAT AND OTHER SENSITIVE AREAS

According to the latest MassGIS data, the Project is not located within NHESP mapped Priority Habitat of Rare Species or Estimated Habitat of Rare Wildlife. The Project Area is not located within an Area of Critical Environmental Concern (ACEC), or within 200 feet of mapped Certified or Potential Vernal Pools. In addition, the site is not located within groundwater or surface water protection zones associated with a public water supply, Outstanding Resource Waters, or within proximity to a Coldwater Fishery (Figure 2 - Environmental Resources Map).

### 3.0 WORK DESCRIPTION

Based on examination of existing conditions, future traffic volumes, and discussions with State and Town officials, the following proposed improvements were developed to address the existing deficiencies. The Project proposes pavement milling and overlay of Boston Road and side streets within the existing footprint of the road, full depth roadway reconstruction and widening, reconstruction of sidewalks including ADA-compliant handicap ramps and new granite curbing, stormwater improvements, new pavement markings and striping, street lighting, and undergrounding of overhead utilities.

The work also includes modifying the cross-section of the roadway to incorporate on-road buffered bicycle lanes, installing new traffic signals at the intersections of Glad Valley Drive and Lexington Road, and removal of a small section of connector roadway between Lexington Road and Glad Valley Drive. As a result of these geometric changes, the Project enables small areas of impervious right-of-way to be revegetated with landscaped areas.

Staging and laydown areas will be selected by the contractor, however, all staging and laydown areas will be proposed within existing developed areas. If staging and laydown areas are proposed within developed Buffer Zone, these areas will be surrounded by supplemental erosion controls.

#### 3.1 WORK WITHIN PROTECTED RESOURCE AREAS

The Project primarily involves improvements and construction within the existing right-of-way for Boston Road, Lexington Road, and Glad Valley Drive. The Project has been designed to avoid work within protected Resource Areas to the extent practicable, however, temporary impacts are proposed within the WF1 Series BVW associated with replacement of an outfall and clearing for utility line installation as well as temporary impacts within the B1/B2 Series intermittent stream associated with replacement of a headwall. Table 1 below summarizes proposed impacts to Resource Areas.

**Table 1. Resource Area Impacts**

| Location    | Resource Area Impacts                               |
|-------------|---|
| Station 118 | BVW – 15 sf (Temporary)                             |
| Station 121 | Bank – 10 lf (Temporary)<br>LUW – 12 sf (Temporary) |
| Station 122 | BVW – 230 sf (Temporary)                            |

##### 3.1.1 BORDERING VEGETATED WETLAND

The Project proposes 245 square feet (sf) of temporary impact to BVW associated with replacement of an existing outfall located at 558 Boston Road as well as clearing required for installation of utility line guy wire. The replacement outfall will be placed upgradient from the existing structure and stabilized with a riprap sediment trap. Installation of the utility line guy wire will require minor vegetation clearing followed by installation of the guy wire and anchors.

Impacts are associated with installation of erosion controls within the BVW to establish a work area and clearing activities. Following completion of the work, temporarily impacted BVW will be restored with a wetland seed mix.

**3.1.2 BANK/LUW (TO INTERMITTENT STREAM)**

A replacement headwall is proposed at the origin of the B1/B2 Series intermittent stream. This work will result in 12 sf of temporary impacts to LUW and 10 linear feet (lf) of temporary Bank impact associated with installation of erosion controls necessary to establish a work area. The replacement headwall will be placed upgradient from the existing structure, and a riprap sediment trap will be installed at the discharge point. Temporarily impacted streambed will be restored with native streambed material and impacted Bank will be stabilized with a wetland seed mix.

**3.2 WORK IN BUFFER ZONES**

While work proposed in buffer zones will primarily occur within the existing roadway footprint and impervious surfaces, minor work will occur outside the limits of the existing roadway. Activities within buffer zone include:

- Installation of temporary erosion controls,
- Changes in roadway geometry, including a portion of the Glad Valley Drive intersection,
- Installation of utility poles and guy wires,
- Installation of new traffic signals at the Glad Valley Drive and Lexington Road intersections,
- Reconstruction of an existing stone balance wall,
- Construction of a new sidewalks with ADA-compliant ramps and granite curbing,
- Drainage Improvements,
- Pavement resurfacing,
- Installation of a guard rail from Station 120+50 to 122+75,
- Construction of a 10-foot-wide Shared Use Path,
- Replacement of the outfall located at 558 Boston Road, and,
- Replacement of the headwall associated with the unnamed intermittent stream.

Temporarily impacted buffer zone areas will be restored to preconstruction condition and exposed soil will be loamed and/or reseeded with a native seed mix. The intersection of Lexington Road and Boston Road is proposed outside of the 100-foot buffer zone as part of the realignment. The location of the retired roadway segment will be restored with the proposed shared use path, loam and native seed mix, and landscaping.

The Bylaw provides further protection of areas within 50 and 25 feet of Resource Areas as No Alteration Zones<sup>1</sup>. When activities are proposed within the buffer zones on lots legally developed prior to of June 27, 2003, where there is a proposed alteration to an existing structure or a temporary alteration with

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<sup>1</sup> Section 3.03, C,3: “a....when any activity is proposed within the wetland buffer resource area (Buffer Zone) on previously undeveloped lots, or previously developed lots where an existing structure has been or is proposed to be razed, a continuous strip of at least fifty feet (50 ft) in width of undisturbed naturally occurring vegetation between the proposed activity and the wetland resource area. b. The Commission shall require, when any activity is proposed within the wetland buffer resource area (Buffer Zone) on lots legally developed as of June 27,2003 where there is a proposed alteration to an existing structure or a temporary alteration with restoration, a continuous strip of at least twenty-five feet (25ft) in width of naturally occurring vegetation between the proposed activity and the wetland resource. c. The Commission may require the creation of such No Alteration Zone where no wetland buffer resource area (buffer zone) currently exists because of previous activities that have altered the wetland resource area.”

restoration, the Bylaw requires a 25-foot minimum continuous strip of naturally occurring vegetation between the proposed activity and the wetland.

The Project will require work within the No Alteration Zone, including grading, sidewalk construction, installation of erosion controls, utility work, traffic signal installation, and stormwater improvements. This work will generally occur within the previously disturbed roadside shoulders where there is no 25-foot strip of naturally occurring vegetation. Existing conditions within 25 feet of wetlands include disturbed vegetated roadway shoulder, sidewalks, drainage structures, and paved roadway. Work within the 50-foot No Alteration Zone will also be necessary, though this does not apply as the Project will occur within previously developed lots and existing roadways.

The Bylaw stipulates placement of impervious surface within the buffer zone shall not exceed twenty-five percent (25%) for the entire Project of lots with existing impervious surface.<sup>2</sup> The proposed work on the roadside shoulders will result in the addition of 245 sf of impervious surface within the 25' buffer and 740 sf of impervious surface within the 50' buffer.

Due to existing roadway width, the State Bicycle Plan, and MassDOT Healthy Transportation Policy Directive, the proposed increase in impervious surface within buffer zones is unavoidable. The Project plans were designed to result in the least possible impacts to buffer zone practicable while still accomplishing the roadway safety improvement Project goals. Resource Areas will be protected during work within buffer zones via the proper installation and maintenance of erosion controls as described below.

## 4.0 MITIGATION MEASURES

The *Boston Road (Route 3A) at Lexington Road and Glad Valley Traffic and Safety Improvements Project* Design and Construction Plans were developed to avoid, minimize and mitigate impacts to resource areas, wildlife habitat, and other sensitive areas. Measures provided to mitigate temporary and unavoidable Resource Area impacts will allow the Project to comply with the General Performance Standards set forth in the Wetland Regulations and Bylaw and to contribute to their interests. Impacts to the buffer zone have been mitigated through restoration of temporarily impacted areas with native seed mix, reducing impervious surfaces, planting the areas in the vicinity of the Glad Valley Drive and Lexington Road Intersections, and improving drainage. Stormwater improvements include adding deep sump catch basins along the realigned roadway.

### 4.1 EROSION AND SEDIMENTATION CONTROLS

The attached Project Plans in Appendix C provide details and descriptions of the stormwater, erosion, and sedimentation protection measures. Erosion and sedimentation controls will be installed and maintained by the contractor where activities are proposed within 100-feet of Bank and BVW. The erosion controls will provide a limit of work barrier while preventing silt and sediment from migrating into or towards the resource areas. Erosion and sediment controls will consist of compost-filled filter tubes, silt fencing, and turbidity curtains where appropriate.

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<sup>2</sup> Section 3.03, C, 2. of the Bylaw states “the placement of impervious surface in the Buffer Zone. For new construction, the impervious surface area shall not exceed twenty-five percent (25%) of the Buffer Zone located on the site. On lots with legally existing impervious surfaces, the impervious surface in the Buffer Zone shall not be increased more than twenty-five percent (25%) for the entire project.

The erosion and sedimentation controls will be installed in accordance with the Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas, March 1997 and the U.S.D.A. SCS's Erosion and Sediment control in the Site Development, Massachusetts Conservation Guide, September - 1983. As per the standard, the contractor will be responsible for obtaining the NPDES Construction General Permit. A Stormwater Pollution Prevention Plan (SWPPP) will be submitted prior to any land disturbance. Per the SWPPP, the contractor will monitor and assess conditions and identify problems in the field during and after construction activities.

Erosion control measures will be implemented downgradient of all disturbed areas during construction to minimize water quality impacts to adjoining Resource Areas. Erosion and sedimentation barriers will be embedded in the soil and backfilled to reduce the chance of soil migration under and beyond the sedimentation barrier. Erosion controls will remain in place and in proper working order until the site is completely stabilized. A stockpile of erosion control materials will be kept on-site for emergency and routine replacement. Temporarily impacted areas will be restored at the completion of the Project.

#### **4.2 WATER CONTROLS AND DEWATERING**

Although anticipated that work will be conducted during low- to no-flow conditions if possible, the replacement of the outfall and headwall may require implementation of temporary water control systems and/or dewatering within LUW. If dewatering for Project construction is required, dewatering will be conducted in a manner to avoid an increase in turbidity over the baseline conditions. If dewatering and/or water control is determined to be necessary, the Contractor will be responsible for developing an acceptable dewatering/water control plan that will be submitted to the Town and the Conservation Commission for approval.

#### **4.3 PROPOSED LANDSCAPING**

The proposed landscaping elements are depicted on the Construction Plans, which show planting of species appropriate for the conditions in the area where Lexington Road will be discontinued. The selected species include trees, flowering shrubs and herbaceous vegetation, which will increase pollinator habitat along the Corridor.

#### **4.4 STORMWATER MANAGEMENT**

The Stormwater Checklist and a Stormwater Report have been completed and submitted with this NOI, Appendix B. As described in the Stormwater Report, according to the Stormwater Management Standards (310 CMR 10.05(6)(k-q)), the Project constitutes a Redevelopment Project because the work will substantially occur within an existing paved roadway. Redevelopment projects are required to meet Standards 1 and 7 through 10 fully; and Standards 2 through 6 only to the maximum extent practicable. The Contractor will be responsible for developing a Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan. The proposed work will result in a 23,020 sf increase in impervious area, while no changes will occur to the Project Corridor that will alter surface drainage patterns.

The majority of the existing closed drainage systems will be replaced with a new closed drainage system sized for current design standards. The existing trunklines beyond the limits of the Project will be retained.

The Project has significant right-of-way constraints, presence of private, commercial and residential features, utility conflicts, soils with limited infiltration capacity (HSG C and D), and high groundwater, which severely restrict the opportunity to install substantial Stormwater Control Measures (SCMs). Despite constraints, the proposed stormwater management systems will provide an improvement to the

existing conditions by installing deep sump catch basins and providing qualifying pervious area. A portion of the proposed shared use path will be directed to the qualifying pervious area to be created in a portion of the Site between Boston Road, Glad Valley Drive, and Lexington Road. The impervious catchment area includes approximately 850 Sq. Ft. of pavement to be directed to an approximately 2,450 sf grassed area. Refer to Summary of Compliance with the Ten Stormwater Management Standards in Appendix B.

Post-Development flow patterns and discharge locations will primarily remain unchanged.

## 5.0 ALTERNATIVE ANALYSIS

Several design concepts were developed to address the operational deficiencies at the intersection of Boston Road, Glad Valley Drive and Lexington Road as well as updating sidewalks and shoulders for ADA compliance. All design alternatives involve the realignment of the intersection of Boston Road with Glad Valley Drive and Lexington Road.

### ***No-Build Alternative***

The No-Build Alternative was not considered a viable alternative for any of the levels of improvements for the Project, as it would not satisfy the Project purpose and need of providing improved traffic and safety conditions for all users along Boston Road (Route 3A). Deteriorating narrow sidewalk conditions, the lack of continuous pedestrian and bicycle accommodations, and irregular intersection geometry all pose safety risks to pedestrians and motorists. Therefore, the No-Build Alternative was not selected as the preferred alternative.

### ***Roundabout Layout***

A roundabout was considered during the preliminary design process but was not developed because it would introduce more delay to Route 3A than would be desired. For acceptable delays to be achieved, a two-lane roundabout would be required, which present numerous challenges given existing right of way and wetland proximity to the intersection. Meeting the minimum diameter for the roundabout circle also requires significant right-of-way acquisition and impact to abutting properties, including potential impacts to the wetland areas on the northwest corner, given the existing 60-foot width of the Route 3A State Highway layout. The current layout of Boston Road abuts the nearby wetland, so expanding the right-of-way here to accommodate a roundabout would result in additional wetland and buffer zone impacts.

### ***Signalized Intersection Layout***

The proposed design includes a complex intersection consisting of two separate intersections operating under a single traffic signal controller. The concepts featured the realignment of both the Lexington Road and Glad Valley Drive approaches to form two closely spaced T-intersections. Boston Road will be widened to a four-lane cross-section at the intersection to allow for a travel through lane in each direction, with dedicated left and right turn lanes to access Glad Valley Drive and Lexington Road. Glad Valley Drive will have one travel lane in each direction and Lexington Road will have dedicated left turn and right turn lanes onto Boston Road.

This layout allows for accommodations to be constructed within the existing right-of-way for Boston Road. This minimizes potential impacts to wetland resources and their associated buffer zones by constructing improvements within the previously disturbed roadway and road shoulder. Realignment of the two intersections will also result in the removal of impervious surfaces within the 100-foot buffer to the adjacent BVW, where stormwater infrastructure improvements are proposed to attenuate additional runoff and improve discharged stormwater quality.

## 6.0 REGULATORY COMPLIANCE

The Project is being filed as a Limited Project; however, it has been designed to meet the WPA General and By-Law performance standards to the extent practicable and feasible. The Project, as proposed, will result in temporary impacts to BVW, Bank, and LUW, and impacts to buffer zones. Minor and unavoidable impacts to the buffer zones will occur within previously disturbed and degraded roadside areas and are associated with sidewalk construction, utility work, traffic signal installation, roadway and driveway resurfacing with hot mix asphalt (HMA), and drainage improvements.

### 6.1 MASSACHUSETTS WETLANDS PROTECTION ACT REGULATIONS 310 CMR 10.00

The Project is being filed under the Limited Project provision found in the WPA Regulations at 310 CMR 10.53(3)(d) and 310 CMR 10.53(3)(f), however, it has been designed to comply with General Performance Standards for BVW, Bank and LUW to the extent practicable. Activities proposed within the buffer zone will be mitigated through installation of erosion controls, planting of vegetation, and construction of stormwater improvements.

#### 6.1.1 BANK – PERFORMANCE STANDARDS – 310 CMR 10.54 (4)

The Project does not propose any permanent impacts to Bank, however 10 lf of temporary impacts are proposed. These impacts are associated with installation of erosion controls and access to the stream in order to complete headwall replacement and relocation. This will not impact the carrying capacity of the stream or the stability of the Bank. In addition, proposed impacts are less than 50 feet, therefore it is presumed that the work will not negatively impact its capacity to provide wildlife habitat.

#### 6.1.2 BORDERING VEGETATED WETLAND – PERFORMANCE STANDARDS – 310 CMR 10.55 (4)

Work will result in 245 sf of temporary impacts, however, no permanent impacts to BVW are proposed as part of the Project; therefore, wetland replication is not necessary. No heavy equipment access or staging is proposed within BVW, and all temporarily impacts will be restored in place with a native wetland seed mix.

#### 6.1.3 LAND UNDER WATER - PERFORMANCE STANDARDS – 310 CMR 10.56 (4)

Work within LUW will result in 12 sf of temporary impacts, associated with the headwall replacement work adjacent to the intermittent stream. The work will not reduce the carrying capacity, ground or surface water quality, or exceed thresholds for wildlife habitat impairment for the intermittent stream. Dewatering within LUW may be required depending on site conditions due to the intermittent nature of the stream. All temporary impacts will be restored following completion of the work with native streambed material.

### 6.2 BILLERICA CONSERVATION COMMISSION WETLANDS PROTECTION BYLAW AND REGULATIONS – ARTICLE XXII

The Project involves work within BVW, Bank, LUW and buffer zone, which are significant to the protection of wetland values as defined in Part Three of the Regulations. Proposed activities within these Resource Areas will meet performance standards to the extent practicable. The Project's compliance with applicable local Performance Standards is described below.

*6.2.1 SECTION 3.01.B. PERFORMANCE STANDARDS COMMON TO ALL AREAS SUBJECT TO PROTECTION UNDER THE BYLAW*

*1. The Commission shall not permit any activity, other than the maintenance of an already existing structure, that will result in the building within or upon, removing, filling, or otherwise altering an Area Subject to Protection Under the By-Law, except for an activity that the Commission allows under a By-Law Permit and, in appropriate circumstances, under a By-Law Determination of Applicability.*

The nature of the Project requires work within Areas Subject to Protection Under the Bylaw, including temporary impacts to BVW, Bank and LUW as well as permanent and temporary impacts to buffer zones. Work within BVW, Bank and LUW is temporary and intended to relocate existing stormwater infrastructure upgradient of the existing structures.

Buffer Zone activities will occur within previously altered or disturbed areas and roadside slopes that will be restored at the completion of the work. Best available measures will be used to minimize adverse effects during vegetation removal. A request for a Variance from this performance standard is being submitted to the Commission as a separate document (Appendix D).

*2. The Commission must find that any proposed activity shall not significantly impair in any manner the ability of the Area Subject to Protection under the By-Law to perform any of the Area's functions that protect relevant wetland values.*

Proposed impacts to BVW, Bank and LUW are temporary and will result in an improvement in discharged stormwater into these Resource Areas which will increase the water quality of stormwater runoff into these areas.

Where the Project activities are located within buffer zones, the work will be confined to previously disturbed roadside areas only. The Project does not propose to impair the ability of areas protected under the By-Law to provide functions that protect wetland values.

*3. To control flooding, prevent sedimentation and erosion, protect the hydrology of the wetland resource areas, and to preserve water quality, the Commission shall apply the Storm Water Management Policy of the Department of Environmental Protection to all proposed activities within An Area Subject to Protection Under the By-Law, except those projects that are determined to be minor in 310 CMR 10.02(2)(b) and 10.58(6)(b).*

The Project complies with the Storm Water Management Policy of the Department of Environmental Protection. A Stormwater Report and Checklist describing the Project's compliance with the Stormwater Standards are provided in Appendix B.

*4. To preserve water quality, the Commission shall require that the proposed activity not increase levels of contaminants or pollutants in the groundwater or surface water. The Commission shall require that:*

*a. The stormwater management system be designed to maximize treatment before discharge;*

The proposed stormwater improvements have been designed to improve existing conditions and provide the maximum treatment practicable by providing additional treatment through implementation of BMPs, including sediment traps at existing outfalls and deep sump catch basins. Runoff will be captured, peak flows will be controlled to the maximum extent practicable and total suspended solids (TSS) will be reduced. The plans as presented incorporate design features intended to mitigate adverse effects to down-gradient wetlands and aquifers.

The proposed stormwater management system has been designed to meet MassDEP Stormwater Management Policy as a Redevelopment Project and will improve existing conditions, see Stormwater Report and Checklist in Appendix B.

*b. The drainage structures shall not discharge directly to any wetland resource area, and if discharging into a wetland buffer resource area, the applicant must show that there is no increase in runoff rate from the wetland buffer resource area post construction;*

Improvements associated with the Project involve installing new catch basins within the realigned intersection. These improvements will serve to attenuate additional runoff to the existing outfall associated with the B1/B2 Series intermittent stream north of Boston Road. The Project also proposes work on existing outfall structures that currently discharge directly into the WF1 Series BVW and B1/B2 Series intermittent stream. Sediment traps will be installed downgradient from these structures to improve water quality of stormwater discharges into these areas.

*c. or velocity dissipaters, and drainage swales shall meet the requirements of 3.03(C). In appropriate circumstances, as needed to protect the wetland resource area due to conditions affecting water quality, the Commission may require a more extensive setback for vegetated and nonvegetated drainage structures.*

See Section 6.2.3 below.

*5. When an animal or plant species listed as rare, threatened, endangered, or of special concern by the Massachusetts Natural Heritage Program.*

This standard does not apply.

**6.2.2 SECTION 3.02 C. BANK AND BEACH PERFORMANCE STANDARDS**

- 1. In addition to the performance standards specified in Section 3.01.B of these regulations, the Commission must find that the proposed activity will not impair in any manner the following:
 
  - a) the physical stability of the Bank;*
  - b) the water-carrying capacity of the existing channel within the Bank;*
  - c) the capacity of the Bank to provide breeding habitat, escape cover, and food for fisheries; and*
  - d) the capacity of the Bank to provide important wildlife habitat functions.**

See section 6.1.1 above.

**6.2.3 SECTION 3.03. C. BUFFER ZONE PERFORMANCE STANDARDS**

- 1. The Commission presumes that proposed activities within a Buffer Zone shall alter the adjacent wetland resource area.*

The Project will protect all adjacent wetland resource areas with the use of properly installed and maintained erosion and sedimentation controls. Prior to construction activities the erosion control measures will be installed between the proposed work and Resource Areas in a manner that will protect the wetland and thereby not impact the Resource Area values. Where erosion controls are proposed within buffer zones, all temporary impacts will be restored in place in-kind at the completion of the work. Generally, erosion controls will be implemented along the limit of work, downgradient of the disturbance areas during construction. Erosion and sedimentation barriers, consisting of compost-filled silt socks and/or silt fence, will be installed to reduce the chance of soil or sediment migration under and beyond the sedimentation barrier. A stockpile of erosion control materials will be kept on-site for emergency and routine replacement.

*2. Limit on Impervious Surface in Buffer Zone*

*The Commission limits placement of impervious surface in Buffer Zones on lots with legally existing impervious surfaces, proposed impervious surfaces shall not be increased more than twenty-five percent (25%) for the entire Project.*

The Project results in an increase in impervious area from 181,015 sf to 204,045 sf over the entire Project, which constitutes as 12.7% increase in impervious area. Accordingly, the Project will not result in an increase of more than 25% of impervious surfaces for the entire Project. In addition, the Project will result in 985 sf new impervious surface within the 0-50' buffer zone.

*3. No Alteration Zone*

*a. The Commission shall require, when any activity is proposed within the wetland buffer resource area (Buffer Zone) on previously undeveloped lots, or previously developed lots where an existing structure has been or is proposed to be razed, a continuous strip of at least fifty feet in width of undisturbed naturally occurring vegetation between the proposed activity and the wetland resource area.*

The proposed Project Corridor is located within disturbed areas and a continuous strip of at least fifty feet in width of undisturbed naturally occurring vegetation between the proposed activity and wetland resource area does not exist within the site. Areas of disturbance and exposed soil will be loamed and seeded with native seed mix at the completion of the work. A request for a Variance from this performance standard is being submitted to the Commission as a separate document (Appendix D).

*b. The Commission shall require, when any activity is proposed within the wetland buffer resource area (Buffer Zone) on lots legally developed as of June 27, 2003 where there is a proposed alteration to an existing structure or a temporary alteration with restoration, a continuous strip of at least twenty-five feet (25ft) in width of naturally occurring vegetation between the proposed activity and the wetland resource.*

The location of adjacent wetland boundaries is within 25 feet of the existing paved surfaces. Accordingly, this limits the ability of the Project to provide a continuous 25' strip of naturally occurring vegetation between proposed activities and the wetland. Proposed activities within 25-feet of a wetland resource will occur within previously disturbed areas of roadside areas where minimal vegetation currently exists. The Project will leave a 25-foot strip of vegetation along wetlands where feasible and will restore temporarily impacted areas with native seed mixes. A request for a Variance from this performance standard is being submitted to the Commission as a separate document (Appendix D).

*c. The Commission may require the creation of such No Alteration Zone where no wetland buffer resource area (buffer zone) currently exists because of previous activities that have altered the wetland resource area.*

The current layout of Boston Road closely abuts the nearby BVW which prevents the creation of a vegetated strip between the roadway and the wetland. Additional stormwater improvements will also reduce impacts to the adjacent Jurisdictional Resource Areas. At the completion of the Project all temporarily disturbed areas will be restored with native vegetation.

**6.2.4 SECTION 3.04 C FRESHWATER VEGETATED WETLANDS**

*The performance standards are stated in Section 3.01.B of these regulations and those contained in 310 CMR 10.55(4), which the Commission shall apply in regulating this wetland resource area.*

Billerica, Massachusetts

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The Project has been designed to meet the performance standards of 310 CMR 10.55(4) of the Act and Section 3.01B of the Bylaw and is therefore in compliance with these regulations.

## **7.0 SUMMARY**

The proposed Boston Road at Lexington Road and Glad Valley Drive Traffic and Safety Improvement Project will improve traffic and safety for all users along Boston Road within the Project limits, including at its intersections with Glad Valley Drive and Lexington Road. Improvements are needed to upgrade deficient conditions that include a lack of continuous pedestrian and bicycle accommodations, as well as deteriorating sidewalk pavement and unsafe intersection conditions.

Proposed improvements will be made to pedestrian and bicycle accommodations and safety along the Corridor, while also rehabilitating the roadway pavement and realigning the Glad Valley Drive and Lexington Road intersections. Proposed improvements include the installation of traffic signals, pavement rehabilitation via full depth construction, sidewalk reconstruction with ADA improvements, and construction of a Shared Use Path. The Project will result in safer traffic flow patterns and pedestrian use, with improved turn lanes, signals, sidewalk widening and curbing, and pavement markings. The proposed design includes upgrades to the existing drainage system with outfall and headwall replacement, and new deep sump catch basins to improve water quality.

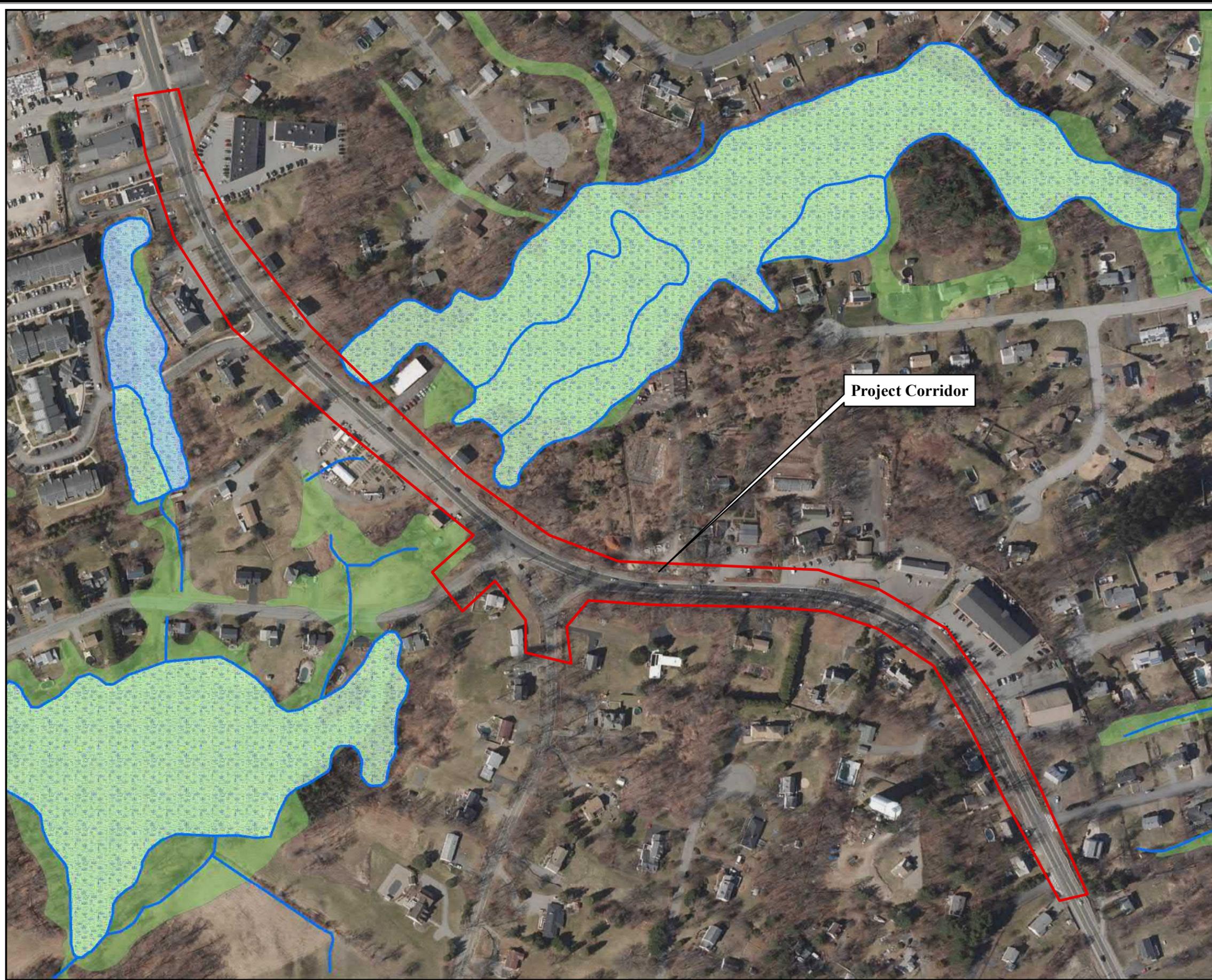
The Town of Billerica and Massachusetts Department of Transportation respectfully request that the Billerica Conservation Commission find these measures adequately protective of the interests of the Act in the Order of Conditions approving the work as described in the Notice of Intent and accompanying plans.

# FIGURES

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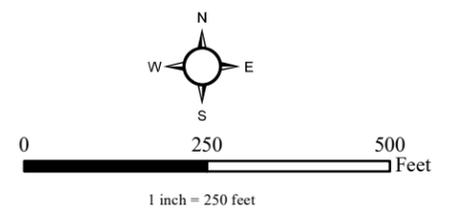
**Figure 2**  
**Environmental Resources**  
**Boston Road at Lexington Road**  
**Billerica, MA**



**Environmental Resources Legend**

- MassDEP Hydrologic Feature
- Marsh/Bog
- Wooded marsh
- Open Water
- DFW Coldwater Fisheries
- NHESP Potential Vernal Pool
- ★ NHESP Certified Vernal Pool
- NHESP Priority Habitat of Rare Species
- NHESP Estimated Habitats of Rare Wildlife
- NFHL 100 Year Flood Zone
- Area of Critical Environmental Concern (ACEC)
- Zone A
- Zone B
- Zone C
- MassDEP IWPA
- MassDEP Zone I
- MassDEP Zone II
- Outstanding Resource Water
- DFW Coldwater Fisheries
- Green Engineering Flood Plain

**Project Corridor**



Data Source: MassGIS USGS Color Ortho Imagery (2014), MassDEP Wetlands (1:12000) (2009), NHESP Potential Vernal Pools (2000), NHESP Certified Vernal Pools, NHESP Priority Habitats of Rare Species (2008), NHESP Estimated Habitats of Rare Species (2008), Areas of Critical Environmental Concern (2009), FEMA National Flood Hazard Layer (2014).

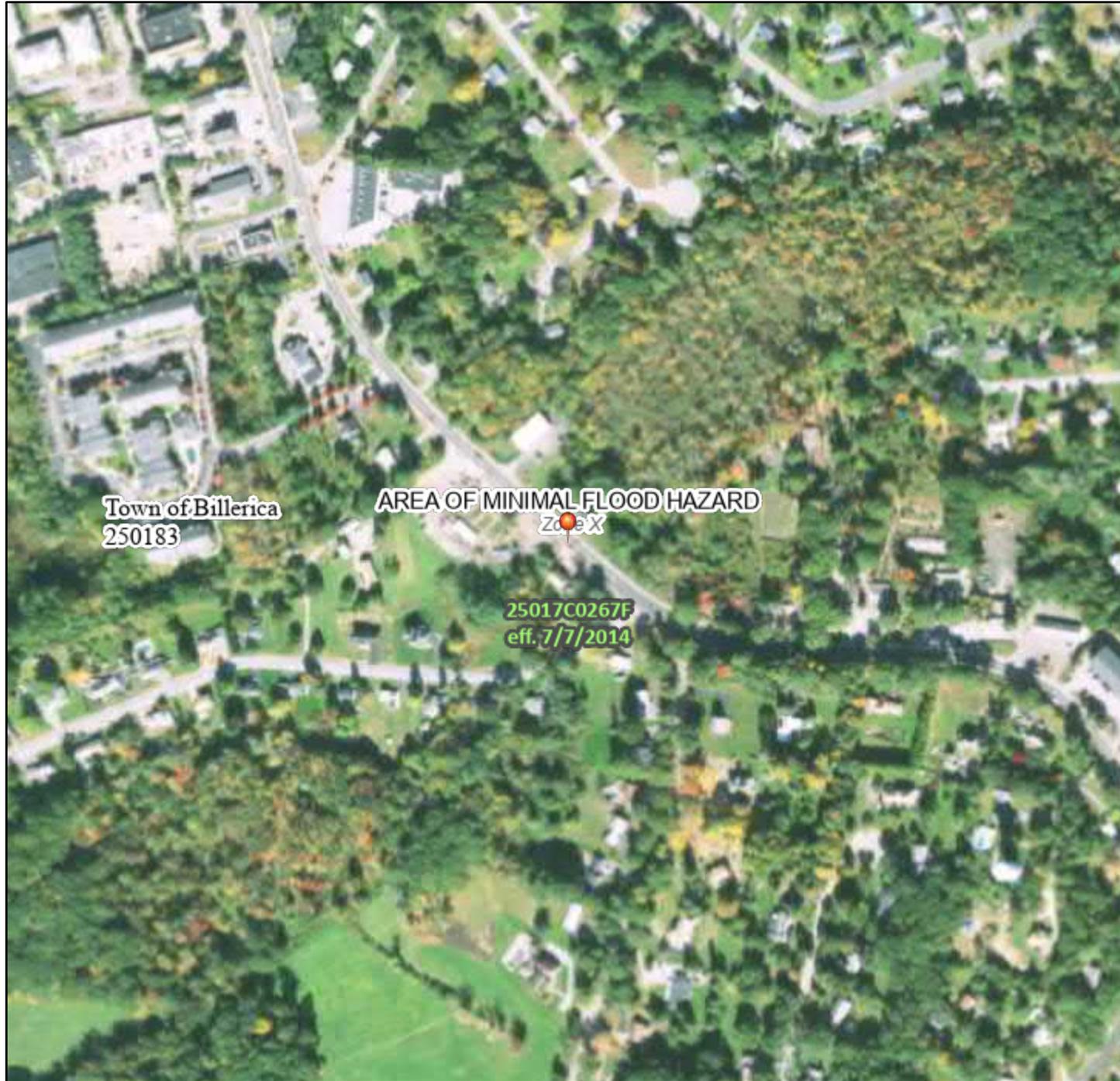


# National Flood Hazard Layer FIRMette

Proposal No. 609250 - 129975



71°15'58"W 42°33'9"N



## Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

|                            |  |   |
|----------------------------|--|---|
| SPECIAL FLOOD HAZARD AREAS |  | Without Base Flood Elevation (BFE)<br><i>Zone A, V, A99</i> |
|                            |  | With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i>            |
|                            |  | 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 <i>Zone X</i> |
|                             |  | Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i>  |
|                             |  | Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone X</i>  |
|                             |  | Area with Flood Risk due to Levee <i>Zone D</i>  |

|             |  |  |
|-------------|--|--|
| OTHER AREAS |  | NO SCREEN Area of Minimal Flood Hazard <i>Zone X</i> |
|             |  | Effective LOMRs                                      |
|             |  | Area of Undetermined Flood Hazard <i>Zone D</i>      |

|                    |  |                                  |
|--------------------|--|----------------------------------|
| GENERAL STRUCTURES |  | Channel, Culvert, or Storm Sewer |
|                    |  | Levee, Dike, or Floodwall        |

|                |  |   |
|----------------|--|---|
| OTHER FEATURES |  | 20.2 Cross Sections with 1% Annual Chance Water Surface Elevation |
|                |  | 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation |
|                |  | Coastal Transect  |
|                |  | Base Flood Elevation Line (BFE)                                   |
|                |  | Limit of Study  |
|                |  | Jurisdiction Boundary   |
| OTHER FEATURES |  | 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 **7/21/2022 at 4:01 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.

**Photo 1**



View of the B1/B2 Bank series stream from flag B1-103—facing south

**Photo 2**



Typical view interior of the WF1 series wetland between flags WF1-100 and WF1-134—facing northeast

**PHOTOGRAPHIC DOCUMENTATION**

Boston Road/MA Route 3A

Billerica, Massachusetts

Photographs Documented July 25, 2023

**Photo 3**



Typical view interior of the WF1 series wetland between WF1-200 and WF1-205—facing northeast

**Photo 4**



View of hydric soils observed within the WF1 series wetland

**PHOTOGRAPHIC DOCUMENTATION**

Boston Road/MA Route 3A

Billerica, Massachusetts

Photographs Documented July 25, 2023

**Photo 5**



View of dense sensitive fern (*Onoclea sensibilis*) within the WF2 series wetland—facing east

**Photo 6**



View of the northern extent of the WF3 series wetland at flag WF3-116—facing west

**PHOTOGRAPHIC DOCUMENTATION**

Boston Road/MA Route 3A

Billerica, Massachusetts

Photographs Documented July 25, 2023

# **APPENDIX A –Resource Area Delineation Report**

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**Wetland Resource Area Boundary Delineation  
Intersection of Boston Road, Lexington Road, and Glad Valley Drive  
Billerica, Massachusetts**

**July 31, 2023**

On May 20, 2019, and July 25, 2023, BETA Group, Inc. (BETA) wetland scientists conducted wetland Resource Area boundary delineations in the vicinity of the Boston Road and Lexington Road intersection in central Billerica, Massachusetts (the Site). This report describes Resource Areas Subject to Protection under the Massachusetts Wetlands Protection Act (M.G.L. Chapter 131 Section 40 – the Act), the federal Clean Water Act (33 U.S.C. §1251 et seq (1972)), the Massachusetts Clean Waters Act (MGL Chapter 21 Section 26-53), and the Town of Billerica Wetlands Protection Bylaw (Article XXII – the Bylaw) that exist on the Site and methodology used to delineate their boundaries.

**Site Description**

The Site consists of an approximately 3,200-linear foot portion of Boston Road (Route 3A) from its intersection with Tufts Lane to its intersection with Locke Road. The Site also includes the intersections of Boston Road with Lexington Road and Glad Valley Drive, inclusive of approximately 200-linear feet of each of these two (2) roadways (Figure 1 – Site Locus). The Site is primarily bounded on all sides by private residential and commercial parcels, and undeveloped forested wetlands are located immediately north of the Boston Road / Lexington Road intersection (Figure 2 – Environmental Resources Map).

According to the USDA Natural Resources Conservation Service – Soil Survey, mapped soils on the Site and in the vicinity of the Site are classified as Scarborough mucky fine sand, Ridgebury fine sandy loam, Windsor loamy sand, Montauk fine sandy loam, Montauk fine sandy loam extremely stony, Scituate fine sandy loam, and Urban land. Our field work generally confirmed the soil types within the Site. The *Custom Soil Resource Report for Middlesex County, Massachusetts* is attached.

State Jurisdictional Resource Areas identified on and within proximity to the Site include Bordering Vegetated Wetlands (BVW), Bank (to an intermittent stream), and Land Under Water (LUW). The MassGIS database was used as the initial step in identifying critical areas on or within proximity to the Site that would be examined more closely if construction activities are proposed. The table below describes selected environmentally critical categories as determined through MassGIS.

**Table 1: Selected MassGIS Environmental Data Layers**

| <b>Mapped Resource on or Within Proximity to the Site</b> | <b>Yes</b> | <b>No</b> |
|---|------------|-----------|
| Area of Critical Environmental Concern                    |            | ✓         |
| NHESP Certified Vernal Pool                               |            | ✓         |
| NHESP Potential Vernal Pool                               |            | ✓         |
| NHESP Estimated Habitat of Rare Wildlife                  |            | ✓         |
| NHESP Priority Habitat of Rare Species                    |            | ✓         |
| Outstanding Resource Waters                               |            | ✓         |
| FEMA Flood Zones  |            | ✓         |
| Surface Water Protection Area (Zones A and/or B)          |            | ✓         |

| Mapped Resource on or Within Proximity to the Site | Yes | No |
|--|-----|----|
| Interim Wellhead Protection Area                   |     | ✓  |
| Zone I Wellhead Protection Area                    |     | ✓  |
| Zone II Wellhead Protection Area                   |     | ✓  |
| Wild and Scenic River                              |     | ✓  |
| Great Ponds  |     | ✓  |
| Coldwater Fisheries Resource                       |     | ✓  |

Source: MassGIS

**Jurisdictional Wetland Resource Areas – Massachusetts Wetlands Protection Act**

A Site inspection was conducted by BETA’s Wetland Scientists on May 20, 2019, and July 25, 2023 to identify and delineate the boundaries of Wetland Resource Areas on and in the immediate vicinity of the Site. Resource Area boundaries were identified and delineated in accordance with methods developed by the Massachusetts Department of Environmental Protection’s *Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act: Second Edition*, dated September 2022, as well as definitions set forth in the Wetland Regulations, 310 CMR 10.00. Three (3) Areas Subject to Protection under the Act exist on the Site and are described below.

Bank (to intermittent stream) – 310 CMR 10.54

According to 310 CMR 10.54(2), the definition of a Bank is the portion of the land surface which normally abuts and confines a water body, occurring between a water body and a vegetated bordering wetland and adjacent floodplain, or, in the absence of these, it occurs between a water body and an upland. The upper boundary of a Bank is the first observable break in the slope or the mean annual flood level, whichever is lower.

BETA identified Bank associated with one (1) unnamed intermittent stream in proximity to the Site. Bank was delineated in the field using blue flagging as described below in Table 2.

**Table 2: Bank Boundary Descriptions**

| Flag Series   | Waterbody  | Description / Notes  |
|---|--|--|
| <i>B1 / B2 Series<br/>Flags<br/>B1-100 to 104<br/>and<br/>B2-100 to 104</i> | Located within the <i>WF1 Series</i> BVW north of the Boston Road / Lexington Road intersection. | The eastern ( <i>B2 Series</i> ) and western ( <i>B1 Series</i> ) Banks associated with the unnamed intermittent stream north of the Boston Road / Lexington Road intersection were delineated along the coincident first observable break in slope and mean annual flood level. Banks generally consist of shallow slopes and are vegetated with red maple ( <i>Acer rubrum</i> ), jewelweed ( <i>Impatiens capensis</i> ), and Virginia creeper ( <i>Parthenocissus quinquefolia</i> ). This stream is approximately one (1) foot wide with a water depth of approximately one (1) inch at the time of the Site visit and is underlain by a substrate ranging from a fine mineral sand to small, rounded gravel.<br><br>This stream is not shown in the most recent USGS topographic map or on the USGS StreamStats application; therefore, it is presumed to be intermittent. |

July 31, 2023

Page 3 of 5

Bordering Vegetated Wetlands (BVW) – 310 CMR 10.55

According to 310 CMR 10.55(2), the definition of BVW are freshwater wetlands which border on creeks, rivers, streams, ponds and lakes and are areas where the soils are saturated and/or inundated such that they support a predominance of wetland indicator plants. The boundary of BVW is the line within which 50% or more of the vegetation community consists of wetland indicator plants and saturated or inundated conditions exist.

BETA identified two (2) areas of BVW in proximity to the Site and delineated their boundaries with pink flagging as described below in Table 3. US Army Corps of Engineers’ *Vegetated Wetland Boundary Delineation Field Data Sheets* are attached documenting BETA’s observed evidence of hydrology, soils, and hydrophytic vegetation at specific data plots.

**Table 3: BVW Boundary Descriptions**

| Flag Series  | Location  | Description / Notes  |
|--|---|--|
| <p><i>WF1 Series</i><br/><i>Flags</i><br/><i>WF1-100 to 134</i><br/><i>and</i><br/><i>WF1-200 to 205</i></p> | <p>Northeast of Boston Road at its intersection with Lexington Road</p> | <p>The <i>WF1 Series</i> BVW consists of both a palustrine wetland and a scrub shrub swamp, both of which are located northeast of the intersection between Boston Road and Lexington Road and border on the <i>B1 / B2 Series</i> intermittent stream. The attached U.S. Army Corp of Engineers Field Data Sheets describe evidence of hydrology, hydric soils, and hydrophytic vegetation at a specific data plot.</p> |
| <p><i>WF2 Series</i><br/><i>Flags</i><br/><i>WF2-100 to 111</i></p>  | <p>West of the Boston Road intersection with Glad Valley Drive</p>      | <p>The <i>WF2 Series</i> BVW is a forested wetland located west of the Boston Road and Glad Valley Drive intersection and borders on an off-site intermittent stream. The attached U.S. Army Corp of Engineers Field Data Sheets describe evidence of hydrology, hydric soils, and hydrophytic vegetation at a specific data plot.</p>   |

Land Under Water – 310 CMR 10.56

According to 310 CMR 10.56(2), the definition of LUW is the land beneath any creek, river, stream, pond or lake and may be composed of organic muck or peat, fine sediments, rocks or bedrock. LUW exists between the Bank boundaries below the mean annual low water level of the intermittent stream located onsite. The boundary of LUW is the mean annual low water level. This boundary was not delineated in the field. LUW is present below the *B1 / B2 Series* Banks and consists of a fine mineral sand and small, rounded gravel.

Bordering Land Subject to Flooding– 310 CMR 10.57

According to the July 7, 2014 Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) community panel number 250170267F, the Site is not located within or near any FEMA Flood Zones (Figure 3—FEMA FIRMette).

**Jurisdictional Wetland Resource Areas – Town of Billerica**

The Town of Billerica Wetland Protection Bylaw (Article XXII) maintains the same Wetland Resource Area definitions as provided in the Act except for the following:

Bank

The Bylaw defines Bank as “the land area which normally abuts and confines a water body, the lower boundary being the mean annual low flow level and the upper boundary being the first observable



July 31, 2023

Page 4 of 5

break in the slope or the mean annual flood level, whichever is higher.”

The Bank boundaries delineated onsite were delineated in accordance with this definition, as the first observable break in slope is coincident with the mean annual flood level.

Buffer Zone

The Bylaw extends the 100-foot Buffer Zone to all Resource Areas Subject to Protection under the Act and/or Bylaw except for Riverfront Area.

The 100-foot Buffer Zone will be shown for all Resource Areas on future plan sets.

25- and 50-foot No Alteration Zones

The Bylaw requires either a 25- or 50-foot No-Alteration Zone be established and maintained. The 50-foot No Alteration Zone applies to previously undeveloped sites or sites with structures that are proposed to be demolished. Sites that have been developed as of June 27, 2003 where there is a proposed structural alteration or a temporary alteration with restoration is subject to the 25-foot No Alteration Zone.

Resource Areas described in this report are subject to either a 25- or 50-foot No Alteration Zone depending on the nature of the proposed work.

Freshwater Vegetated Wetlands

The Bylaw extends jurisdiction to all freshwater vegetated wetlands, regardless of whether they border on surface waters.

The *WF1* and *WF2 Series* BVW and the *WF3 Series* IVW are considered Freshwater Wetlands under the Bylaw. The *WF3 Series* IVW was delineated south of the Locke Road / Boston Road intersection with pink flagging as described below in Table 4.

**Table 4: Isolated Vegetated Wetland Description**

| Flag Series  | Location  | Description / Notes  |
|--|---|--|
| <i>WF3 Series</i><br><i>Flags</i><br><i>WF3-100 to 116</i> | South of the intersection between Locke Road and Boston Road, in the managed meadow | The <i>WF3 Series</i> IVW consists of both wet meadow and forested wetland complexes located south of the Locke Road/Boston Road intersection within a poorly defined depression. The attached U.S. Army Corp of Engineers Field Data Sheets describe evidence of hydrology, hydric soils, and hydrophytic vegetation at a specific data plot. |

Green Engineering Floodplain (GEFP)

The Billerica Conservation Commission also has jurisdiction over the Green Engineering Floodplain (GEFP). The GEFP is present along within the Site at the intersection of Boston Road and Glad Valley Drive and near the northern and western extents of the Site (Figure 2—Environmental Resources).

**Jurisdictional Wetland Resource Areas – Federal Clean Water Act (Section 404)**

The wetlands, streams, and waterbodies located along the Site are “waters of the United States,” and are therefore subject to the federal Clean Water Act, 33 U.S.C. §1251 et seq (1972). The boundary to “waters of the United States” is the Vegetated Wetlands boundary, or, in the absence of Vegetated Wetlands, is the Ordinary High Water Mark (OHWM) for non-tidal rivers and streams, as specified at 33 CFR §328.4.



July 31, 2023

Page 5 of 5

According to 33 CFR §328.3(c)(4), Vegetated Wetlands are defined as “those areas that are inundated or saturated by surface or groundwater 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.” By this definition, a Vegetated Wetland would also include IVW (Table 4 above).

The wetland boundaries previously described in this report were delineated in accordance with this definition. The US Army Corps of Engineers’ *Vegetated Wetland Boundary Delineation Field Data Sheets* are attached documenting BETA’s observed evidence of hydrology, soils, and hydrophytic vegetation at specific data plots.

Work conducted below the boundary of Vegetated Wetlands or the OHWM is Subject to Jurisdiction under Section 404 of the Clean Water Act. Vegetated Wetlands are located upgradient of the OHWM of the stream at the Site; therefore, the boundary of Vegetated Wetlands is the limit of federal jurisdiction.

**Jurisdictional Wetland Resource Areas – Massachusetts Clean Waters Act (Section 401)**

The limit of jurisdiction under Massachusetts Clean Waters Act (Section 401), as specified in 314 CMR 9.00, is the limit of Section 404 jurisdiction under the federal Clean Water Act. Exceedances of the jurisdictional threshold under 314 CMR 9.00 require filing for a Water Quality Certification under Section 401.

Many of the wetlands, streams, and ponds along the Site qualify as Outstanding Resource Waters. Work within the boundary of Outstanding Resource Waters requires a 401 Water Quality Certification.

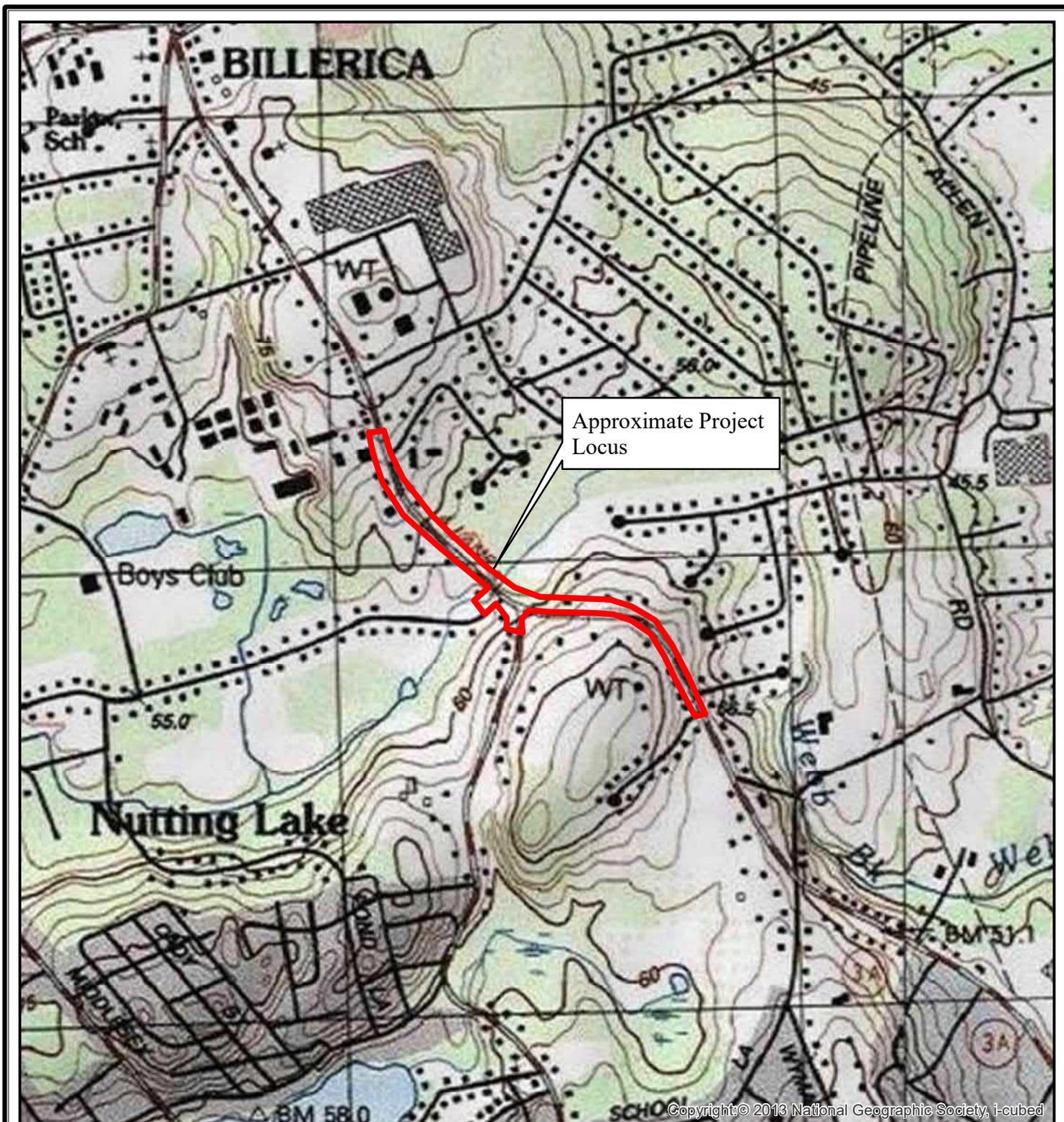
**Findings and Recommendations**

BETA has identified areas Subject to Protection and/or Jurisdiction under the Massachusetts Wetlands Protection Act, the Billerica Wetlands Protection Bylaw, the federal Clean Water Act, and the Massachusetts Clean Waters Act located on or within 100 feet of the Site and has delineated the boundaries of Bank and BVW that exist along the Site. In order to definitively determine the extent of Conservation Commission jurisdiction, Army Corps jurisdiction, and MassDEP jurisdiction, the boundary flags would need to be located and depicted on a to-scale plan of the Site.

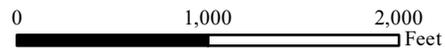
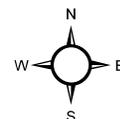
- Attachments: Figure 1 – Site Locus  
 Figure 2 – Environmental Resources Map  
 Figure 3 – FEMA FIRMette  
 Photographic Documentation  
 Custom Soil Report for Bristol County, Massachusetts, Northern Part  
 US Army Corps of Engineers’ *Vegetated Wetland Boundary Delineation Field Data Sheets*

Job No: 18.05958.00





**Figure 1**  
**Site Locus**  
**Boston Road, MA Route 3A**  
**Billerica, MA**



1 inch = 1,000 feet

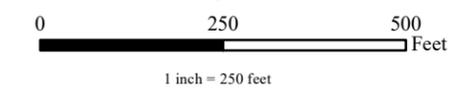
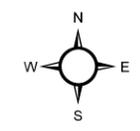
Data Source: USGS Topographic Map

**Figure 2**  
**Environmental Resources**  
**Boston Road at Lexington Road**  
**Billerica, MA**



**Environmental Resources Legend**

- MassDEP Hydrologic Feature
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- DFW Coldwater Fisheries
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Data Source: MassGIS USGS Color Ortho Imagery (2014), MassDEP Wetlands (1:12000) (2009), NHESP Potential Vernal Pools (2000), NHESP Certified Vernal Pools, NHESP Priority Habitats of Rare Species (2008), NHESP Estimated Habitats of Rare Species (2008), Areas of Critical Environmental Concern (2009), FEMA National Flood Hazard Layer (2014).

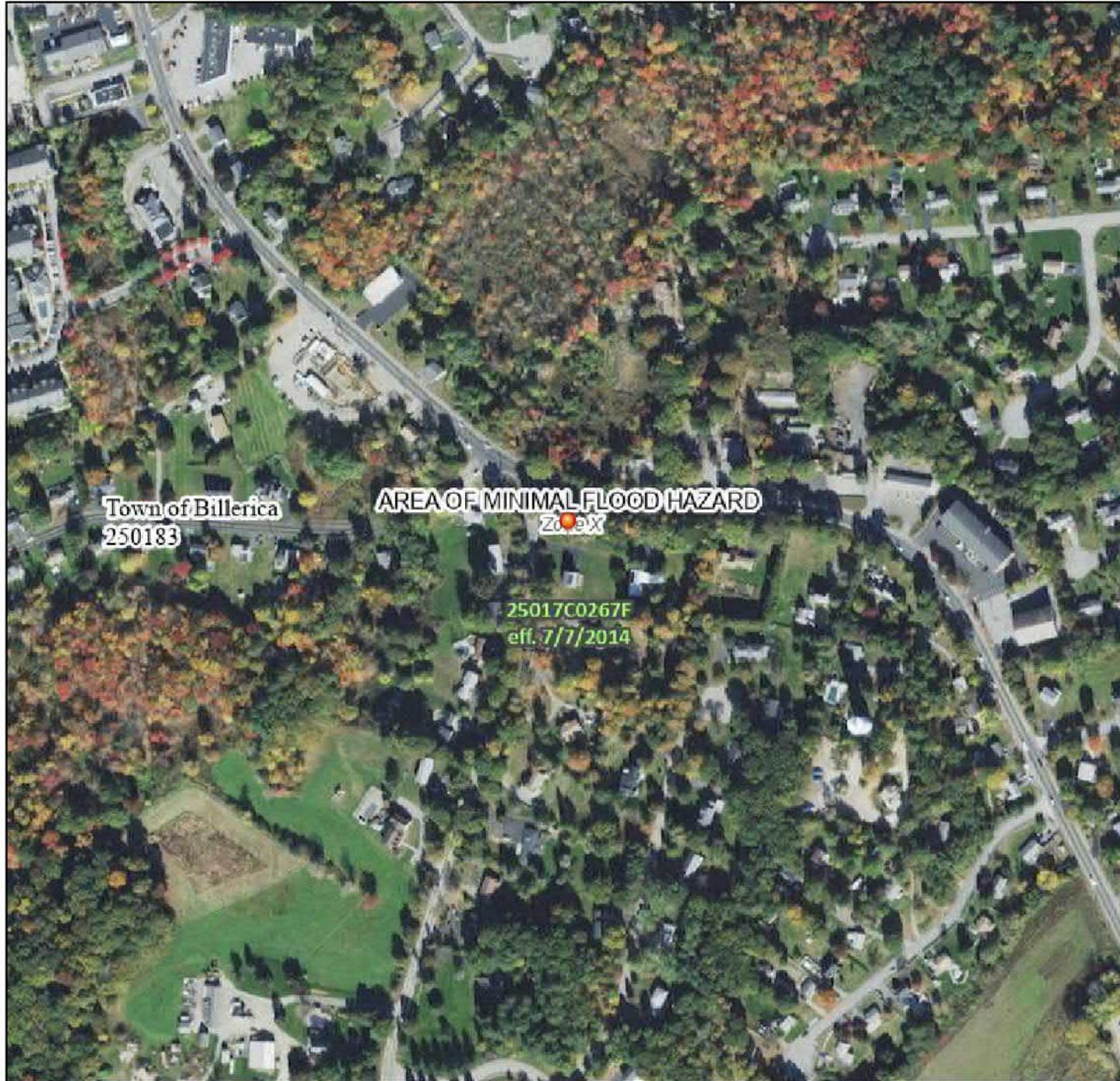


# National Flood Hazard Layer FIRMette

Proposal No. 609250 - 129975



71°15'53"W 42°33'6"N



## Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

|                            |  |   |
|----------------------------|--|---|
| SPECIAL FLOOD HAZARD AREAS |  | Without Base Flood Elevation (BFE)<br><i>Zone A, V, A99</i> |
|                            |  | With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i>            |
|                            |  | 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 <i>Zone X</i> |
|                             |  | Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i>  |
|                             |  | Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone X</i>  |
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|             |  |  |
|-------------|--|--|
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|             |  | Effective LOMRs                                      |
|             |  | Area of Undetermined Flood Hazard <i>Zone D</i>      |

|                    |  |                                  |
|--------------------|--|----------------------------------|
| GENERAL STRUCTURES |  | Channel, Culvert, or Storm Sewer |
|                    |  | Levee, Dike, or Floodwall        |

|                |                      |   |
|----------------|----------------------|---|
| OTHER FEATURES |                      | 20.2 Cross Sections with 1% Annual Chance Water Surface Elevation |
|                |                      | 17.5 Coastal Transect   |
|                |                      | Base Flood Elevation Line (BFE)                                   |
|                |                      | Limit of Study  |
|                |                      | Jurisdiction Boundary   |
|                |                      | Coastal Transect Baseline   |
|                |                      | Profile Baseline  |
|                | Hydrographic Feature |   |

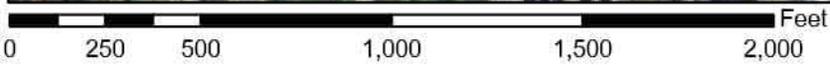
|            |  |                           |
|------------|--|---------------------------|
| MAP PANELS |  | Digital Data Available    |
|            |  | No Digital Data Available |
|            |  | Unmapped                  |

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1:6,000

71°15'16"W 42°32'39"N

A00860 - 69

Basemap Imagery Source: USGS National Map 2023

**Photo 1**



View of the B1/B2 Bank series stream from flag B1-103—facing south

**Photo 2**



Typical view interior of the WF1 series wetland between flags WF1-100 and WF1-134—facing northeast

**PHOTOGRAPHIC DOCUMENTATION**

Boston Road/MA Route 3A

Billerica, Massachusetts

Photographs Documented July 25, 2023

**Photo 3**



Typical view interior of the WF1 series wetland between WF1-200 and WF1-205—facing northeast

**Photo 4**



View of hydric soils observed within the WF1 series wetland

**PHOTOGRAPHIC DOCUMENTATION**

Boston Road/MA Route 3A

Billerica, Massachusetts

Photographs Documented July 25, 2023

**Photo 5**



View of dense sensitive fern (*Onoclea sensibilis*) within the WF2 series wetland—facing east

**Photo 6**



View of the northern extent of the WF3 series wetland at flag WF3-116—facing west

**PHOTOGRAPHIC DOCUMENTATION**

Boston Road/MA Route 3A

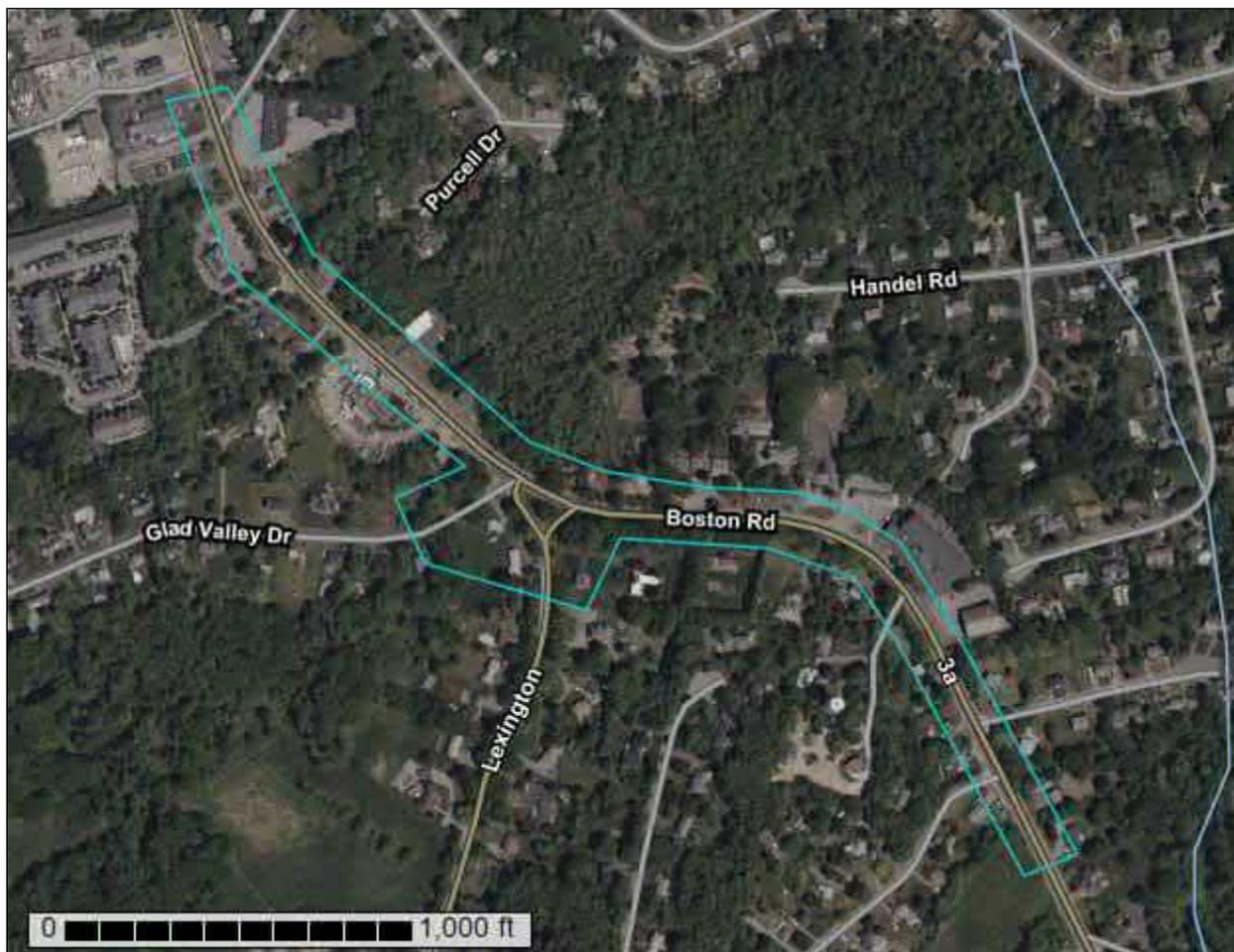
Billerica, Massachusetts

Photographs Documented July 25, 2023



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 Middlesex County, Massachusetts



# Preface

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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](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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## **How Soil Surveys Are Made**

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Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

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scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

## Soil Map

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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.



## MAP LEGEND

**Area of Interest (AOI)**

- Area of Interest (AOI)

**Soils**

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

**Special Point Features**

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot

**Water Features**

- Streams and Canals

**Transportation**

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

**Background**

- Aerial Photography

**Area of Interest (AOI)**

- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

**Water Features**

- Streams and Canals

**Transportation**

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

**Background**

- Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

**Warning:** Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL:  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Middlesex County, Massachusetts  
 Survey Area Data: Version 22, Sep 9, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 22, 2022—Jun 5, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

| Map Unit Symbol                    | Map Unit Name   | Acres in AOI | Percent of AOI |
|------------------------------------|---|--------------|----------------|
| 6A                                 | Scarboro mucky fine sandy loam, 0 to 3 percent slopes             | 0.0          | 0.0%           |
| 71B                                | Ridgebury fine sandy loam, 3 to 8 percent slopes, extremely stony | 1.2          | 6.5%           |
| 255B                               | Windsor loamy sand, 3 to 8 percent slopes                         | 0.1          | 0.8%           |
| 300C                               | Montauk fine sandy loam, 8 to 15 percent slopes                   | 2.2          | 12.5%          |
| 302C                               | Montauk fine sandy loam, 8 to 15 percent slopes, extremely stony  | 7.5          | 42.3%          |
| 315B                               | Scituate fine sandy loam, 3 to 8 percent slopes                   | 6.0          | 33.8%          |
| 315C                               | Scituate fine sandy loam, 8 to 15 percent slopes                  | 0.1          | 0.6%           |
| 602                                | Urban land  | 0.6          | 3.5%           |
| <b>Totals for Area of Interest</b> |   | <b>17.8</b>  | <b>100.0%</b>  |

## 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

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are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

## Middlesex County, Massachusetts

### 6A—Scarboro mucky fine sandy loam, 0 to 3 percent slopes

#### Map Unit Setting

*National map unit symbol:* 2svky  
*Elevation:* 0 to 1,320 feet  
*Mean annual precipitation:* 36 to 71 inches  
*Mean annual air temperature:* 39 to 55 degrees F  
*Frost-free period:* 140 to 250 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Scarboro and similar soils:* 80 percent  
*Minor components:* 20 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Scarboro

##### Setting

*Landform:* Drainageways, outwash deltas, outwash terraces, depressions  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Base slope, tread, dip  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Parent material:* Sandy glaciofluvial deposits derived from schist and/or sandy glaciofluvial deposits derived from gneiss and/or sandy glaciofluvial deposits derived from granite

##### Typical profile

*Oe - 0 to 3 inches:* mucky peat  
*A - 3 to 11 inches:* mucky fine sandy loam  
*Cg1 - 11 to 21 inches:* sand  
*Cg2 - 21 to 65 inches:* gravelly coarse sand

##### Properties and qualities

*Slope:* 0 to 3 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 high to high (1.42 to 14.17 in/hr)  
*Depth to water table:* About 0 to 2 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* Frequent  
*Maximum salinity:* Nonsaline (0.0 to 1.9 mmhos/cm)  
*Available water supply, 0 to 60 inches:* Low (about 4.7 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 5w  
*Hydrologic Soil Group:* A/D  
*Ecological site:* F144AY031MA - Very Wet Outwash  
*Hydric soil rating:* Yes

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**Minor Components**

**Swansea**

*Percent of map unit:* 10 percent  
*Landform:* Bogs, swamps  
*Landform position (three-dimensional):* Dip  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Hydric soil rating:* Yes

**Wareham**

*Percent of map unit:* 5 percent  
*Landform:* Depressions  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Hydric soil rating:* Yes

**Walpole**

*Percent of map unit:* 5 percent  
*Landform:* Deltas, depressions, outwash terraces, depressions, outwash plains  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Tread, talf, dip  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Hydric soil rating:* Yes

**71B—Ridgebury fine sandy loam, 3 to 8 percent slopes, extremely stony**

**Map Unit Setting**

*National map unit symbol:* 2w69c  
*Elevation:* 0 to 1,290 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**

*Ridgebury, extremely stony, and similar soils:* 80 percent  
*Minor components:* 20 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Ridgebury, Extremely Stony**

**Setting**

*Landform:* Drumlins, 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

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*Parent material:* Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

**Typical profile**

*Oe - 0 to 1 inches:* moderately decomposed plant material

*A - 1 to 6 inches:* fine sandy loam

*Bw - 6 to 10 inches:* sandy loam

*Bg - 10 to 19 inches:* gravelly sandy loam

*Cd - 19 to 66 inches:* gravelly sandy loam

**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 35 inches to densic material

*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 0.14 in/hr)

*Depth to water table:* About 0 to 6 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 3.0 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 7s

*Hydrologic Soil Group:* D

*Ecological site:* F144AY009CT - Wet Till Depressions

*Hydric soil rating:* Yes

**Minor Components**

**Woodbridge, extremely stony**

*Percent of map unit:* 10 percent

*Landform:* Ground moraines, hills, drumlins

*Landform position (two-dimensional):* Summit, backslope, footslope

*Landform position (three-dimensional):* Side slope, crest

*Down-slope shape:* Convex

*Across-slope shape:* Linear

*Hydric soil rating:* No

**Whitman, extremely stony**

*Percent of map unit:* 8 percent

*Landform:* Depressions

*Down-slope shape:* Concave

*Across-slope shape:* Concave

*Hydric soil rating:* Yes

**Paxton, extremely stony**

*Percent of map unit:* 2 percent

*Landform:* Ground moraines, hills, drumlins

*Landform position (two-dimensional):* Summit, shoulder, backslope

*Landform position (three-dimensional):* Side slope, crest

*Down-slope shape:* Convex, linear

*Across-slope shape:* Linear, convex

*Hydric soil rating:* No

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**255B—Windsor loamy sand, 3 to 8 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 2svkf  
*Elevation:* 0 to 1,210 feet  
*Mean annual precipitation:* 36 to 71 inches  
*Mean annual air temperature:* 39 to 55 degrees F  
*Frost-free period:* 140 to 240 days  
*Farmland classification:* Farmland of statewide importance

**Map Unit Composition**

*Windsor, loamy sand, and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Windsor, Loamy Sand**

**Setting**

*Landform:* Dunes, outwash plains, deltas, outwash terraces  
*Landform position (three-dimensional):* Tread, riser  
*Down-slope shape:* Convex, linear  
*Across-slope shape:* Convex, linear  
*Parent material:* Loose sandy glaciofluvial deposits derived from granite and/or loose sandy glaciofluvial deposits derived from schist and/or loose sandy glaciofluvial deposits derived from gneiss

**Typical profile**

*O - 0 to 1 inches:* moderately decomposed plant material  
*A - 1 to 3 inches:* loamy sand  
*Bw - 3 to 25 inches:* loamy sand  
*C - 25 to 65 inches:* sand

**Properties and qualities**

*Slope:* 3 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Excessively drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to very high (1.42 to 99.90 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Maximum salinity:* Nonsaline (0.0 to 1.9 mmhos/cm)  
*Available water supply, 0 to 60 inches:* Low (about 4.5 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2s  
*Hydrologic Soil Group:* A  
*Ecological site:* F144AY022MA - Dry Outwash

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*Hydric soil rating:* No

**Minor Components**

**Hinckley, loamy sand**

*Percent of map unit:* 10 percent

*Landform:* Deltas, kames, eskers, outwash plains

*Landform position (two-dimensional):* Summit, shoulder, backslope

*Landform position (three-dimensional):* Head slope, nose slope, crest, side slope, rise

*Down-slope shape:* Convex

*Across-slope shape:* Convex, linear

*Hydric soil rating:* No

**Deerfield, loamy sand**

*Percent of map unit:* 5 percent

*Landform:* Deltas, terraces, outwash plains

*Landform position (two-dimensional):* Footslope

*Landform position (three-dimensional):* Tread, talf

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* No

**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

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*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*  
*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*

### **302C—Montauk fine sandy loam, 8 to 15 percent slopes, extremely stony**

#### **Map Unit Setting**

*National map unit symbol:* 2w80s

*Elevation:* 0 to 1,080 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**

*Montauk, extremely stony, and similar soils:* 85 percent

*Minor components:* 15 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### **Description of Montauk, Extremely Stony**

##### **Setting**

*Landform:* Hills, recessional moraines, ground moraines, 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**

*Oe - 0 to 2 inches:* moderately decomposed plant material

*A - 2 to 6 inches:* fine sandy loam

*Bw1 - 6 to 28 inches:* fine sandy loam

*Bw2 - 28 to 36 inches:* sandy loam

*2Cd - 36 to 74 inches:* gravelly loamy sand

##### **Properties and qualities**

*Slope:* 8 to 15 percent

*Surface area covered with cobbles, stones or boulders:* 9.0 percent

*Depth to restrictive feature:* 20 to 43 inches to densic material

*Drainage class:* Well drained

*Runoff class:* Medium

*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 5.6 inches)

##### **Interpretive groups**

*Land capability classification (irrigated):* None specified

Custom Soil Resource Report

*Land capability classification (nonirrigated): 7s*  
*Hydrologic Soil Group: C*  
*Ecological site: F144AY007CT - Well Drained Dense Till Uplands*  
*Hydric soil rating: No*

**Minor Components**

**Scituate, extremely stony**

*Percent of map unit: 8 percent*  
*Landform: Drumlins, ground moraines, hills*  
*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, extremely stony**

*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, extremely stony**

*Percent of map unit: 2 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*

**315B—Scituate fine sandy loam, 3 to 8 percent slopes**

**Map Unit Setting**

*National map unit symbol: vqqw*  
*Elevation: 70 to 1,120 feet*  
*Mean annual precipitation: 45 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**

*Scituate and similar soils: 85 percent*  
*Minor components: 15 percent*  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

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**Description of Scituate**

**Setting**

*Landform:* Hillslopes, depressions  
*Landform position (two-dimensional):* Summit, toeslope  
*Landform position (three-dimensional):* Head slope, base slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Parent material:* Friable loamy eolian deposits over dense sandy lodgment till derived from granite and gneiss

**Typical profile**

*H1 - 0 to 8 inches:* fine sandy loam  
*H2 - 8 to 20 inches:* sandy loam  
*H3 - 20 to 27 inches:* loamy fine sand  
*H4 - 27 to 65 inches:* gravelly loamy sand

**Properties and qualities**

*Slope:* 3 to 8 percent  
*Depth to restrictive feature:* 18 to 33 inches to densic material  
*Drainage class:* Moderately well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)  
*Depth to water table:* About 18 to 24 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Low (about 3.1 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2w  
*Hydrologic Soil Group:* D  
*Ecological site:* F144AY037MA - Moist Dense Till Uplands  
*Hydric soil rating:* No

**Minor Components**

**Ridgebury**

*Percent of map unit:* 5 percent  
*Landform:* Drainageways, depressions  
*Landform position (two-dimensional):* Footslope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Hydric soil rating:* Yes

**Woodbridge**

*Percent of map unit:* 5 percent  
*Landform:* Hillslopes  
*Landform position (two-dimensional):* Shoulder, toeslope  
*Landform position (three-dimensional):* Nose slope, base slope  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Hydric soil rating:* No

**Montauk**

*Percent of map unit:* 5 percent

Custom Soil Resource Report

*Landform:* Hillslopes  
*Landform position (two-dimensional):* Summit, shoulder  
*Landform position (three-dimensional):* Head slope, nose slope  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

**315C—Scituate fine sandy loam, 8 to 15 percent slopes**

**Map Unit Setting**

*National map unit symbol:* 992n  
*Elevation:* 110 to 480 feet  
*Mean annual precipitation:* 45 to 54 inches  
*Mean annual air temperature:* 43 to 54 degrees F  
*Frost-free period:* 145 to 240 days  
*Farmland classification:* Farmland of statewide importance

**Map Unit Composition**

*Scituate and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Scituate**

**Setting**

*Landform:* Swales, hillslopes  
*Landform position (two-dimensional):* Backslope, toeslope  
*Landform position (three-dimensional):* Side slope, base slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Parent material:* Friable loamy eolian deposits over dense sandy lodgment till derived from granite and gneiss

**Typical profile**

*H1 - 0 to 8 inches:* fine sandy loam  
*H2 - 8 to 20 inches:* sandy loam  
*H3 - 20 to 27 inches:* loamy fine sand  
*H4 - 27 to 65 inches:* gravelly loamy sand

**Properties and qualities**

*Slope:* 8 to 15 percent  
*Depth to restrictive feature:* 18 to 33 inches to densic material  
*Drainage class:* Moderately well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)  
*Depth to water table:* About 18 to 24 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Low (about 3.1 inches)

Custom Soil Resource Report

**Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* D  
*Ecological site:* F144AY037MA - Moist Dense Till Uplands  
*Hydric soil rating:* No

**Minor Components**

**Montauk**

*Percent of map unit:* 7 percent  
*Landform:* Hillslopes  
*Landform position (two-dimensional):* Summit, shoulder  
*Landform position (three-dimensional):* Head slope, nose slope  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

**Woodbridge**

*Percent of map unit:* 5 percent  
*Landform:* Hillslopes  
*Landform position (two-dimensional):* Shoulder, toeslope  
*Landform position (three-dimensional):* Nose slope, base slope  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Hydric soil rating:* No

**Ridgebury**

*Percent of map unit:* 3 percent  
*Landform:* Drainageways, depressions  
*Landform position (two-dimensional):* Footslope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Hydric soil rating:* Yes

**602—Urban land**

**Map Unit Setting**

*National map unit symbol:* 9950  
*Elevation:* 0 to 3,000 feet  
*Mean annual precipitation:* 32 to 50 inches  
*Mean annual air temperature:* 45 to 50 degrees F  
*Frost-free period:* 110 to 200 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Urban land:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

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**Description of Urban Land**

**Setting**

*Landform position (two-dimensional):* Footslope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Excavated and filled land

**Minor Components**

**Udorthents, loamy**

*Percent of map unit:* 5 percent  
*Hydric soil rating:* No

**Rock outcrop**

*Percent of map unit:* 5 percent  
*Landform:* Ledges  
*Landform position (two-dimensional):* Summit  
*Landform position (three-dimensional):* Head slope  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave

**Udorthents, wet substratum**

*Percent of map unit:* 5 percent  
*Hydric soil rating:* No

## References

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- American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.
- American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.
- Federal Register. July 13, 1994. Changes in hydric soils of the United States.
- Federal Register. September 18, 2002. Hydric soils of the United States.
- Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.
- National Research Council. 1995. Wetlands: Characteristics and boundaries.
- Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_054262](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262)
- Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_053577](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577)
- Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_053580](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580)
- Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.
- United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.
- United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2\\_053374](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374)
- United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>

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United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2\\_054242](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242)

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_053624](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624)

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. [http://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/nrcs142p2\\_052290.pdf](http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf)

**WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region**

Project/Site: Boston Road at Lexington Road City/County: Billerica Sampling Date: 5.20.2019  
 Applicant/Owner: MassDOT State: MA Sampling Point: WF1-106  
 Investigator(s): Laura Krause and Caitlin Nover Section, Township, Range: Middlesex County Upland  
 Landform (hillslope, terrace, etc.): Drainage Basin Local relief (concave, convex, none): Convex  
 Slope (%): \_\_\_\_\_ Lat: 42°32'55.92"N Long: 71°15'36.83"W Datum: WGS84  
 Soil Map Unit Name: Scituate fine sandy loam, 3 to 8% slopes NWI classification: ----

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil , or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes  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 <input checked="" type="checkbox"/><br>Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/><br>Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>                    | Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/><br>If yes, optional Wetland Site ID: _____ |
| Remarks: (Explain alternative procedures here or in a separate report.)<br><br>The upland associated with the WF1 Series BVW generally consists of a fill slope up toward Boston Road. The area is disturbed and vegetated primarily with invasive species. |   |

**HYDROLOGY**

|   |  |
|---|--|
| <b>Wetland Hydrology Indicators:</b><br>Primary Indicators (minimum of one is required; check all that apply)<br><input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9)<br><input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13)<br><input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15)<br><input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1)<br><input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)<br><input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4)<br><input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)<br><input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7)<br><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks)<br><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | <b>Secondary Indicators (minimum of two required)</b><br><input type="checkbox"/> Surface Soil Cracks (B6)<br><input type="checkbox"/> Drainage Patterns (B10)<br><input type="checkbox"/> Moss Trim Lines (B16)<br><input type="checkbox"/> Dry-Season Water Table (C2)<br><input type="checkbox"/> Crayfish Burrows (C8)<br><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)<br><input type="checkbox"/> Stunted or Stressed Plants (D1)<br><input type="checkbox"/> Geomorphic Position (D2)<br><input type="checkbox"/> Shallow Aquitard (D3)<br><input type="checkbox"/> Microtopographic Relief (D4)<br><input type="checkbox"/> FAC-Neutral Test (D5) |
| <b>Field Observations:</b><br>Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____<br>Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____<br>Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____<br>(includes capillary fringe)   | <b>Wetland Hydrology Present?</b> Yes _____ No <input checked="" type="checkbox"/>   |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:<br><br>_____<br><br>_____  |  |
| Remarks:<br><br>_____<br><br>_____  |  |

**VEGETATION – Use scientific names of plants.**

Sampling Point: Upland

|   | Absolute % Cover | Dominant Species? | Indicator Status |   |  |
|---|------------------|-------------------|------------------|---|--|
| <b>Tree Stratum</b> (Plot size: <u>30 ft.</u> )                 |                  |                   |                  |   |  |
| 1. <u>American elm (<i>Ulmus americana</i>)</u>                 | <u>38.0</u>      | <u>yes</u>        | <u>FACW</u>      | <b>Dominance Test worksheet:</b><br>Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)<br><br>Total Number of Dominant Species Across All Strata: <u>6</u> (B)<br><br>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33 %</u> (A/B)  |  |
| 2. <u>Norway maple (<i>Acer platanoides</i>)</u>                | <u>38.0</u>      | <u>no</u>         | <u>UPL</u>       |   |  |
| 3. _____  | _____            | _____             | _____            |   |  |
| 4. _____  | _____            | _____             | _____            |   |  |
| 5. _____  | _____            | _____             | _____            |   |  |
| 6. _____  | _____            | _____             | _____            |   |  |
| 7. _____  | _____            | _____             | _____            |   |  |
| <u>76.0</u> = Total Cover                                       |                  |                   |                  | <b>Prevalence Index worksheet:</b><br>_____ Total % Cover of: _____ Multiply by: _____<br>OBL species _____ x 1 = _____<br>FACW species _____ x 2 = _____<br>FAC species _____ x 3 = _____<br>FACU species _____ x 4 = _____<br>UPL species _____ x 5 = _____<br>Column Totals: _____ (A) _____ (B)<br><br>Prevalence Index = B/A = _____   |  |
| <b>Sapling/Shrub Stratum</b> (Plot size: <u>15 ft.</u> )        |                  |                   |                  |   |  |
| 1. <u>Japanese knotweed (<i>Fallopia japonica</i>)</u>          | <u>38.0</u>      | <u>yes</u>        | <u>FACU</u>      |   |  |
| 2. <u>gray dogwood (<i>Cornus racemose</i>)</u>                 | <u>10.5</u>      | <u>no</u>         | <u>FAC</u>       |   |  |
| 3. <u>Japanese barberry (<i>Berberis thunbergii</i>)</u>        | <u>10.5</u>      | <u>no</u>         | <u>FACU</u>      |   |  |
| 4. _____  | _____            | _____             | _____            |   |  |
| 5. _____  | _____            | _____             | _____            |   |  |
| 6. _____  | _____            | _____             | _____            |   |  |
| 7. _____  | _____            | _____             | _____            |   |  |
| <u>59.0</u> = Total Cover                                       |                  |                   |                  | <b>Hydrophytic Vegetation Indicators:</b><br><input type="checkbox"/> Rapid Test for Hydrophytic Vegetation<br><input type="checkbox"/> Dominance Test is >50%<br><input type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup><br><input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)<br><input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)<br><br><sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |  |
| <b>Herb Stratum</b> (Plot size: <u>5 ft.</u> )                  |                  |                   |                  |   |  |
| 1. <u>poison ivy (<i>Toxicodendron radicans</i>)</u>            | <u>38.0</u>      | <u>yes</u>        | <u>FAC</u>       |   |  |
| 2. <u>Virginia creeper (<i>Parthenocissus quinquefolia</i>)</u> | <u>38.0</u>      | <u>yes</u>        | <u>FACU</u>      |   |  |
| 3. <u>garlic mustard (<i>Alliaria petiolata</i>)</u>            | <u>20.5</u>      | <u>yes</u>        | <u>FACU</u>      |   |  |
| 4. _____  | _____            | _____             | _____            |   |  |
| 5. _____  | _____            | _____             | _____            |   |  |
| 6. _____  | _____            | _____             | _____            |   |  |
| 7. _____  | _____            | _____             | _____            |   |  |
| 8. _____  | _____            | _____             | _____            |   |  |
| 9. _____  | _____            | _____             | _____            |   |  |
| 10. _____   | _____            | _____             | _____            |   |  |
| 11. _____   | _____            | _____             | _____            |   |  |
| 12. _____   | _____            | _____             | _____            |   |  |
| <u>96.5</u> = Total Cover                                       |                  |                   |                  | <b>Definitions of Vegetation Strata:</b><br><br><b>Tree</b> – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.<br><br><b>Sapling/shrub</b> – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.<br><br><b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.<br><br><b>Woody vines</b> – All woody vines greater than 3.28 ft in height.  |  |
| <b>Woody Vine Stratum</b> (Plot size: <u>30 ft.</u> )           |                  |                   |                  |   |  |
| 1. <u>n/a</u>   | _____            | _____             | _____            |   |  |
| 2. _____  | _____            | _____             | _____            |   |  |
| 3. _____  | _____            | _____             | _____            |   |  |
| 4. _____  | _____            | _____             | _____            |   |  |
| <u>0</u> = Total Cover  |                  |                   |                  | <b>Hydrophytic Vegetation Present?</b> Yes _____ No <input checked="" type="checkbox"/>   |  |
| Remarks: (Include photo numbers here or on a separate sheet.)   |                  |                   |                  |   |  |



**WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region**

Project/Site: Boston Road at Lexington Road City/County: Billerica Sampling Date: 5.20.2019  
 Applicant/Owner: MassDOT State: MA Sampling Point: WF1-106  
 Investigator(s): Laura Krause and Caitlin Nover Section, Township, Range: Middlesex County Wetland  
 Landform (hillslope, terrace, etc.): Drainage Basin Local relief (concave, convex, none): Convex  
 Slope (%): \_\_\_\_\_ Lat: 42°32'55.41"N Long: 71°15'36.85"W Datum: WGS84  
 Soil Map Unit Name: Freetown muck, 0 to 1% slopes NWI classification: PFOE1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil , or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes  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 <input checked="" type="checkbox"/> No _____<br>Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/><br>Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____ | Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____<br>If yes, optional Wetland Site ID: <u>WF1 Series</u> |
| Remarks: (Explain alternative procedures here or in a separate report.)<br><br>The WF1 Series is located north of the Boston Road / Lexington Road the intersection and borders on the B1/B2 Series intermittent stream.                 |   |

**HYDROLOGY**

|   |   |
|---|---|
| <b>Wetland Hydrology Indicators:</b><br>Primary Indicators (minimum of one is required; check all that apply)<br><input type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> Water-Stained Leaves (B9)<br><input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13)<br><input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15)<br><input checked="" type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1)<br><input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)<br><input checked="" type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4)<br><input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)<br><input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7)<br><input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks)<br><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | <b>Secondary Indicators (minimum of two required)</b><br><input type="checkbox"/> Surface Soil Cracks (B6)<br><input checked="" type="checkbox"/> Drainage Patterns (B10)<br><input type="checkbox"/> Moss Trim Lines (B16)<br><input type="checkbox"/> Dry-Season Water Table (C2)<br><input type="checkbox"/> Crayfish Burrows (C8)<br><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)<br><input type="checkbox"/> Stunted or Stressed Plants (D1)<br><input type="checkbox"/> Geomorphic Position (D2)<br><input type="checkbox"/> Shallow Aquitard (D3)<br><input type="checkbox"/> Microtopographic Relief (D4)<br><input type="checkbox"/> FAC-Neutral Test (D5) |
| <b>Field Observations:</b><br>Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____<br>Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____<br>Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>12"</u><br>(includes capillary fringe)  | <b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No _____  |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:<br><br>Remarks:  |   |

**VEGETATION – Use scientific names of plants.**

Sampling Point: \_\_\_\_\_

| Tree Stratum (Plot size: 30 ft. _____ )                         | Absolute % Cover | Dominant Species? | Indicator Status |  |
|---|------------------|-------------------|------------------|--|
| 1. <u>American elm (<i>Ulmus americana</i>)</u>                 | 38.0             | yes               | FACW             | <b>Dominance Test worksheet:</b><br>Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A)<br><br>Total Number of Dominant Species Across All Strata: <u>4</u> (B)<br><br>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> % (A/B)  |
| 2. <u>red maple (<i>Acer rubrum</i>)</u>                        | 38.0             | yes               | FAC              |  |
| 3. _____  |                  |                   |                  |  |
| 4. _____  |                  |                   |                  |  |
| 5. _____  |                  |                   |                  |  |
| 6. _____  |                  |                   |                  |  |
| 7. _____  |                  |                   |                  |  |
|   | <u>76.0</u>      | = Total Cover     |                  |  |
| Sapling/Shrub Stratum (Plot size: 15 ft. _____ )                |                  |                   |                  |  |
| 1. <u>n/a</u>   |                  |                   |                  | <b>Prevalence Index worksheet:</b><br>_____ Total % Cover of: _____ Multiply by: _____<br>OBL species _____ x 1 = _____<br>FACW species _____ x 2 = _____<br>FAC species _____ x 3 = _____<br>FACU species _____ x 4 = _____<br>UPL species _____ x 5 = _____<br>Column Totals: _____ (A) _____ (B)<br><br>Prevalence Index = B/A = _____  |
| 2. _____  |                  |                   |                  |  |
| 3. _____  |                  |                   |                  |  |
| 4. _____  |                  |                   |                  |  |
| 5. _____  |                  |                   |                  |  |
| 6. _____  |                  |                   |                  |  |
| 7. _____  |                  |                   |                  |  |
|   | <u>0</u>         | = Total Cover     |                  |  |
| Herb Stratum (Plot size: 5 ft. _____ )                          |                  |                   |                  |  |
| 1. <u>spotted jewelweed (<i>Impatiens capensis</i>)</u>         | 85.0             | yes               | FACW             | <b>Hydrophytic Vegetation Indicators:</b><br><input type="checkbox"/> Rapid Test for Hydrophytic Vegetation<br><input checked="" type="checkbox"/> Dominance Test is >50%<br><input type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup><br><input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)<br><input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)<br><br><sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 2. <u>pokeweed (<i>Phytolacca Americana</i>)</u>                | 3.0              | no                | FACU             |  |
| 3. _____  |                  |                   |                  |  |
| 4. _____  |                  |                   |                  |  |
| 5. _____  |                  |                   |                  |  |
| 6. _____  |                  |                   |                  |  |
| 7. _____  |                  |                   |                  |  |
| 8. _____  |                  |                   |                  |  |
| 9. _____  |                  |                   |                  |  |
| 10. _____   |                  |                   |                  |  |
| 11. _____   |                  |                   |                  |  |
| 12. _____   |                  |                   |                  |  |
|   | <u>88.0</u>      | = Total Cover     |                  |  |
| Woody Vine Stratum (Plot size: 30 ft. _____ )                   |                  |                   |                  |  |
| 1. <u>poison ivy (<i>Toxicodendron radicans</i>)</u>            | 20.5             | yes               | FAC              | <b>Definitions of Vegetation Strata:</b><br><br><b>Tree</b> – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.<br><br><b>Sapling/shrub</b> – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.<br><br><b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.<br><br><b>Woody vines</b> – All woody vines greater than 3.28 ft in height.   |
| 2. <u>Virginia creeper (<i>Parthenocissus quinquefolia</i>)</u> | 3.0              | no                | FACU             |  |
| 3. <u>black raspberry (<i>Rubus occidentalis</i>)</u>           | 3.0              | no                | UPL              |  |
| 4. _____  |                  |                   |                  |  |
|   | <u>26.5</u>      | = Total Cover     |                  | <b>Hydrophytic Vegetation Present?</b> Yes _____ No <input checked="" type="checkbox"/>  |
| Remarks: (Include photo numbers here or on a separate sheet.)   |                  |                   |                  |  |



**WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region**

Project/Site: Boston Road at Lexington Road City/County: Middlesex County Sampling Date: 7/25/2023  
 Applicant/Owner: Billerica Department of Public Works State: MA Sampling Point: WF3-102 Up  
 Investigator(s): Tyler Drew and Jonathan Chidekel Section, Township, Range: Billerica  
 Landform (hillside, terrace, etc.): Meadow Local relief (concave, convex, none): None Slope %: \_\_\_\_\_  
 Subregion (LRR or MLRA): LRR R, MLRA 144A Lat: 42.54831 Long: -71.26420 Datum: WGS84  
 Soil Map Unit Name: Scituate fine sandy loam NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

|   |   |
|---|---|
| Hydrophytic Vegetation Present? Yes _____ No <u>X</u><br>Hydric Soil Present? Yes _____ No <u>X</u><br>Wetland Hydrology Present? Yes _____ No <u>X</u> | <b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u><br>If yes, optional Wetland Site ID: _____ |
| Remarks: (Explain alternative procedures here or in a separate report.)   |   |

**HYDROLOGY**

|   |   |
|---|---|
| <b>Wetland Hydrology Indicators:</b><br><u>Primary Indicators (minimum of one is required; check all that apply)</u><br>_____ Surface Water (A1) _____ Water-Stained Leaves (B9)<br>_____ High Water Table (A2) _____ Aquatic Fauna (B13)<br>_____ Saturation (A3) _____ Marl Deposits (B15)<br>_____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1)<br>_____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3)<br>_____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4)<br>_____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6)<br>_____ Iron Deposits (B5) _____ Thin Muck Surface (C7)<br>_____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks)<br>_____ Sparsely Vegetated Concave Surface (B8) | <u>Secondary Indicators (minimum of two required)</u><br>_____ Surface Soil Cracks (B6)<br>_____ Drainage Patterns (B10)<br>_____ Moss Trim Lines (B16)<br>_____ Dry-Season Water Table (C2)<br>_____ Crayfish Burrows (C8)<br>_____ Saturation Visible on Aerial Imagery (C9)<br>_____ Stunted or Stressed Plants (D1)<br>_____ Geomorphic Position (D2)<br>_____ Shallow Aquitard (D3)<br>_____ Microtopographic Relief (D4)<br>_____ FAC-Neutral Test (D5) |
| <b>Field Observations:</b><br>Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____<br>Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____<br>Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____<br>(includes capillary fringe)  | <b>Wetland Hydrology Present?</b> Yes _____ No <u>X</u>   |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  |   |
| Remarks:  |   |

**VEGETATION** – Use scientific names of plants.

Sampling Point: WF3-102 Up

|  | Absolute % Cover | Dominant Species? | Indicator Status |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
|--|------------------|-------------------|------------------|---|-------------------|--------------|----------------------|----------------|-----------------------|----------------|----------------------|----------------|-------------------------|------------------|----------------------|----------------|-------------------------------|----------------|--------------------------------------|--|
| <b>Tree Stratum</b> (Plot size: <u>30' Radius</u> )                  |                  |                   |                  |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| 1. _____   | _____            | _____             | _____            | <b>Dominance Test worksheet:</b><br>Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)<br><br>Total Number of Dominant Species Across All Strata: <u>3</u> (B)<br><br>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0%</u> (A/B)  |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| 2. _____   | _____            | _____             | _____            |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| 3. _____   | _____            | _____             | _____            |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| 4. _____   | _____            | _____             | _____            |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| 5. _____   | _____            | _____             | _____            |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| 6. _____   | _____            | _____             | _____            |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| 7. _____   | _____            | _____             | _____            |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| _____ =Total Cover   |                  |                   |                  | <b>Prevalence Index worksheet:</b><br><table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:50%;">Total % Cover of:</th> <th style="width:50%;">Multiply by:</th> </tr> </thead> <tbody> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>105</u></td> <td>x 4 = <u>420</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>105</u> (A)</td> <td><u>420</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>4.00</u></td> </tr> </tbody> </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>105</u> | x 4 = <u>420</u> | UPL species <u>0</u> | x 5 = <u>0</u> | Column Totals: <u>105</u> (A) | <u>420</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>   |                   |                  |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| FAC species <u>0</u>   | x 3 = <u>0</u>   |                   |                  |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| FACU species <u>105</u>  | x 4 = <u>420</u> |                   |                  |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| UPL species <u>0</u>   | x 5 = <u>0</u>   |                   |                  |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| Column Totals: <u>105</u> (A)  | <u>420</u> (B)   |                   |                  |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| Prevalence Index = B/A = <u>4.00</u>                                 |                  |                   |                  |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| <b>Sapling/Shrub Stratum</b> (Plot size: <u>15' Radius</u> )         |                  |                   |                  |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| 1. <u>Catalpa speciosa</u>   | <u>15</u>        | <u>Yes</u>        | <u>FACU</u>      |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| 2. _____   | _____            | _____             | _____            |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| 3. _____   | _____            | _____             | _____            |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| 4. _____   | _____            | _____             | _____            |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| 5. _____   | _____            | _____             | _____            |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| 6. _____   | _____            | _____             | _____            |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| 7. _____   | _____            | _____             | _____            |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| _____ =Total Cover   |                  |                   |                  | <b>Hydrophytic Vegetation Indicators:</b><br><u>1</u> - Rapid Test for Hydrophytic Vegetation<br><u>2</u> - Dominance Test is >50%<br><u>3</u> - Prevalence Index is ≤3.0 <sup>1</sup><br><u>4</u> - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)<br><br><u>  </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)<br><br><sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.  |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| <b>Herb Stratum</b> (Plot size: <u>5' Radius</u> )                   |                  |                   |                  |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| 1. <u>Cirsium vulgare</u>  | <u>25</u>        | <u>Yes</u>        | <u>FACU</u>      |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| 2. <u>Solidago canadensis</u>  | <u>65</u>        | <u>Yes</u>        | <u>FACU</u>      |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| 3. _____   | _____            | _____             | _____            |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| 4. _____   | _____            | _____             | _____            |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| 5. _____   | _____            | _____             | _____            |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| 6. _____   | _____            | _____             | _____            |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| 7. _____   | _____            | _____             | _____            |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| 8. _____   | _____            | _____             | _____            |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| 9. _____   | _____            | _____             | _____            |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| 10. _____  | _____            | _____             | _____            |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| 11. _____  | _____            | _____             | _____            |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| 12. _____  | _____            | _____             | _____            |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| _____ =Total Cover   |                  |                   |                  |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| <b>Woody Vine Stratum</b> (Plot size: <u>30' Radius</u> )            |                  |                   |                  |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| 1. _____   | _____            | _____             | _____            |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| 2. _____   | _____            | _____             | _____            |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| 3. _____   | _____            | _____             | _____            |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| 4. _____   | _____            | _____             | _____            |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| _____ =Total Cover   |                  |                   |                  | <b>Definitions of Vegetation Strata:</b><br><br><b>Tree</b> – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.<br><br><b>Sapling/shrub</b> – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.<br><br><b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.<br><br><b>Woody vines</b> – All woody vines greater than 3.28 ft in height.  |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |
| <b>Hydrophytic Vegetation Present?</b> Yes <u>  </u> No <u>  X  </u> |                  |                   |                  |   |                   |              |                      |                |                       |                |                      |                |                         |                  |                      |                |                               |                |                                      |  |

Remarks: (Include photo numbers here or on a separate sheet.)



**WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region**

Project/Site: Boston Road at Lexington Road City/County: Middlesex County Sampling Date: 7/25/2023  
 Applicant/Owner: Billerica Department of Public Works State: MA Sampling Point: WF3-102 Wet  
 Investigator(s): Tyler Drew and Jonathan Chidekel Section, Township, Range: Billerica  
 Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope %: 1-2%  
 Subregion (LRR or MLRA): LRR R, MLRA 144A Lat: 42.54831 Long: -71.26420 Datum: WGS84  
 Soil Map Unit Name: Scituate fine snady loam NWI classification: Not Classified

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 <u>    </u> | <b>Is the Sampled Area within a Wetland?</b> Yes <u>X</u> No <u>    </u><br>If yes, optional Wetland Site ID: <u>WF3</u> |
| Hydric Soil Present? Yes <u>X</u> No <u>    </u>            |  |
| Wetland Hydrology Present? Yes <u>X</u> No <u>    </u>      |  |

Remarks: (Explain alternative procedures here or in a separate report.)

**HYDROLOGY**

|  |   |
|--|---|
| <b>Wetland Hydrology Indicators:</b>   | <b>Secondary Indicators (minimum of two required)</b> |
| <u>Primary Indicators (minimum of one is required; check all that apply)</u> |   |
| <u>    </u> Surface Water (A1)   | <u>    </u> Surface Soil Cracks (B6)                  |
| <u>    </u> High Water Table (A2)  | <u>    </u> Drainage Patterns (B10)                   |
| <u>X</u> Saturation (A3)   | <u>    </u> Moss Trim Lines (B16)                     |
| <u>X</u> Water Marks (B1)  | <u>    </u> Dry-Season Water Table (C2)               |
| <u>    </u> Sediment Deposits (B2)   | <u>    </u> Crayfish Burrows (C8)                     |
| <u>X</u> Drift Deposits (B3)   | <u>    </u> Saturation Visible on Aerial Imagery (C9) |
| <u>    </u> Algal Mat or Crust (B4)  | <u>X</u> Stunted or Stressed Plants (D1)              |
| <u>    </u> Iron Deposits (B5)   | <u>X</u> Geomorphic Position (D2)                     |
| <u>    </u> Inundation Visible on Aerial Imagery (B7)                        | <u>    </u> Shallow Aquitard (D3)                     |
| <u>    </u> Sparsely Vegetated Concave Surface (B8)                          | <u>    </u> Microtopographic Relief (D4)              |
| <u>    </u> Water-Stained Leaves (B9)  | <u>    </u> FAC-Neutral Test (D5)                     |
| <u>    </u> Aquatic Fauna (B13)  |   |
| <u>    </u> Marl Deposits (B15)  |   |
| <u>    </u> Hydrogen Sulfide Odor (C1)                                       |   |
| <u>    </u> Oxidized Rhizospheres on Living Roots (C3)                       |   |
| <u>    </u> Presence of Reduced Iron (C4)                                    |   |
| <u>    </u> Recent Iron Reduction in Tilled Soils (C6)                       |   |
| <u>    </u> Thin Muck Surface (C7)   |   |
| <u>    </u> Other (Explain in Remarks)                                       |   |

|   |   |
|---|---|
| <b>Field Observations:</b>  | <b>Wetland Hydrology Present?</b> Yes <u>X</u> No <u>    </u> |
| Surface Water Present? Yes <u>    </u> No <u>X</u> Depth (inches): <u>    </u>                          |   |
| Water Table Present? Yes <u>    </u> No <u>X</u> Depth (inches): <u>    </u>                            |   |
| Saturation Present? Yes <u>X</u> No <u>    </u> Depth (inches): <u>0</u><br>(includes capillary fringe) |   |

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** – Use scientific names of plants.

Sampling Point: WF3-102 Wet

|  | Absolute % Cover  | Dominant Species?                    | Indicator Status |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
|--|-------------------|--------------------------------------|------------------|--|--|-------------------|--------------|-------------|-----------|-----------------|--------------|-----------|------------------|-------------|-----------|------------------|--------------|----------|-----------------|-------------|-----------|-----------------|----------------|----------------|----------------|--|--|--------------------------------------|--|
| <b>Tree Stratum</b> (Plot size: <u>30' Radius</u> )          |                   |                                      |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| 1. <u><i>Prunus pensylvanica</i></u>                         | 5                 | Yes                                  | FACU             | <b>Dominance Test worksheet:</b><br>Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)<br><br>Total Number of Dominant Species Across All Strata: <u>5</u> (B)<br><br>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>60.0%</u> (A/B)  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| 2. _____   |                   |                                      |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| 3. _____   |                   |                                      |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| 4. _____   |                   |                                      |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| 5. _____   |                   |                                      |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| 6. _____   |                   |                                      |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| 7. _____   |                   |                                      |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
|  | 5                 | =Total Cover                         |                  | <b>Prevalence Index worksheet:</b><br><table style="width:100%; border:none;"> <tr> <td style="width:50%;"></td> <td style="width:25%; text-align:center;">Total % Cover of:</td> <td style="width:25%; text-align:center;">Multiply by:</td> </tr> <tr> <td>OBL species</td> <td style="text-align:center;"><u>15</u></td> <td style="text-align:center;">x 1 = <u>15</u></td> </tr> <tr> <td>FACW species</td> <td style="text-align:center;"><u>50</u></td> <td style="text-align:center;">x 2 = <u>100</u></td> </tr> <tr> <td>FAC species</td> <td style="text-align:center;"><u>75</u></td> <td style="text-align:center;">x 3 = <u>225</u></td> </tr> <tr> <td>FACU species</td> <td style="text-align:center;"><u>5</u></td> <td style="text-align:center;">x 4 = <u>20</u></td> </tr> <tr> <td>UPL species</td> <td style="text-align:center;"><u>10</u></td> <td style="text-align:center;">x 5 = <u>50</u></td> </tr> <tr> <td>Column Totals:</td> <td style="text-align:center;"><u>155</u> (A)</td> <td style="text-align:center;"><u>410</u> (B)</td> </tr> <tr> <td colspan="2"></td> <td colspan="2" style="text-align:center;">Prevalence Index = B/A = <u>2.65</u></td> </tr> </table> |  | Total % Cover of: | Multiply by: | OBL species | <u>15</u> | x 1 = <u>15</u> | FACW species | <u>50</u> | x 2 = <u>100</u> | FAC species | <u>75</u> | x 3 = <u>225</u> | FACU species | <u>5</u> | x 4 = <u>20</u> | UPL species | <u>10</u> | x 5 = <u>50</u> | Column Totals: | <u>155</u> (A) | <u>410</u> (B) |  |  | Prevalence Index = B/A = <u>2.65</u> |  |
|  | Total % Cover of: | Multiply by:                         |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| OBL species  | <u>15</u>         | x 1 = <u>15</u>                      |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| FACW species   | <u>50</u>         | x 2 = <u>100</u>                     |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| FAC species  | <u>75</u>         | x 3 = <u>225</u>                     |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| FACU species   | <u>5</u>          | x 4 = <u>20</u>                      |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| UPL species  | <u>10</u>         | x 5 = <u>50</u>                      |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| Column Totals:   | <u>155</u> (A)    | <u>410</u> (B)                       |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
|  |                   | Prevalence Index = B/A = <u>2.65</u> |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| <b>Sapling/Shrub Stratum</b> (Plot size: <u>15' Radius</u> ) |                   |                                      |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| 1. <u><i>Frangula alnus</i></u>                              | 10                | Yes                                  | FAC              | <b>Hydrophytic Vegetation Indicators:</b><br><input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation<br><input checked="" type="checkbox"/> 2 - Dominance Test is >50%<br><input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup><br><input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)<br><br><input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| 2. _____   |                   |                                      |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| 3. _____   |                   |                                      |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| 4. _____   |                   |                                      |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| 5. _____   |                   |                                      |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| 6. _____   |                   |                                      |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| 7. _____   |                   |                                      |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
|  | 10                | =Total Cover                         |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| <b>Herb Stratum</b> (Plot size: <u>5' Radius</u> )           |                   |                                      |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| 1. <u><i>Juncus effusus</i></u>                              | 15                | No                                   | OBL              | <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.<br><br><b>Definitions of Vegetation Strata:</b><br><br><b>Tree</b> – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.<br><br><b>Sapling/shrub</b> – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.<br><br><b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.<br><br><b>Woody vines</b> – All woody vines greater than 3.28 ft in height.   |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| 2. <u><i>Impatiens capensis</i></u>                          | 50                | Yes                                  | FACW             |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| 3. <u><i>Solidago rugosa</i></u>                             | 50                | Yes                                  | FAC              |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| 4. <u><i>Ambrosia trifida</i></u>                            | 15                | No                                   | FAC              |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| 5. _____   |                   |                                      |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| 6. _____   |                   |                                      |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| 7. _____   |                   |                                      |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| 8. _____   |                   |                                      |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| 9. _____   |                   |                                      |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| 10. _____  |                   |                                      |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| 11. _____  |                   |                                      |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| 12. _____  |                   |                                      |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
|  | 130               | =Total Cover                         |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| <b>Woody Vine Stratum</b> (Plot size: <u>30' Radius</u> )    |                   |                                      |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| 1. <u><i>Celastrus orbiculatus</i></u>                       | 10                | Yes                                  | UPL              | <b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____   |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| 2. _____   |                   |                                      |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| 3. _____   |                   |                                      |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
| 4. _____   |                   |                                      |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |
|  | 10                | =Total Cover                         |                  |  |  |                   |              |             |           |                 |              |           |                  |             |           |                  |              |          |                 |             |           |                 |                |                |                |  |  |                                      |  |

Remarks: (Include photo numbers here or on a separate sheet.)



# **APPENDIX B – Stormwater Report and Checklist**

---

Billerica, Massachusetts  
Boston Road (Route 3A)  
At Lexington Road & Glad Valley Drive  
MassDOT Highway Division  
Project File # 609250  
December 18, 2023

# STORMWATER MANAGEMENT REPORT

---



315 Norwood Park South  
2nd Floor  
Norwood, Massachusetts 02062  
781.255.1982  
[www.BETA-Inc.com](http://www.BETA-Inc.com)

Boston Road (Route 3A)  
At Lexington Road & Glad Valley Drive  
Billerica, Massachusetts  
MassDOT Highway Division  
Project File # 609250

## STORMWATER MANAGEMENT REPORT

---

Prepared by: BETA GROUP, INC.

Prepared for: MassDOT Highway Division

December 2023

### Property Information:

| ASSESSOR ID             | OWNER             | LEGAL REFERENCE | AREA |
|-------------------------|-------------------|-----------------|------|
| N/A – Boston Road       | Town of Billerica | N/A             | N/A  |
| N/A – Glad Valley Drive | Town of Billerica | N/A             | N/A  |
| N/A – Lexington Road    | Town of Billerica | N/A             | N/A  |

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- D: WATERSHED PLANS
- E: EXISTING CONDITIONS CALCULATION
- F: PROPOSED CONDITIONS CALCULATION
- G: SUPPLEMENTAL CALCULATIONS

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## STORMWATER MANAGEMENT CHECKLIST



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.<sup>1</sup> This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8<sup>2</sup>
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

<sup>1</sup> 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.

<sup>2</sup> For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.



# Checklist for Stormwater Report

## B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

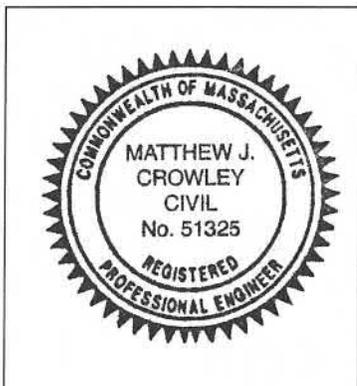
*Note:* Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

### Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature



*Matthew Crowley*  
 Signature and Date

12/18/23

## Checklist

**Project Type:** Is the application for new development, redevelopment, or a mix of new and redevelopment?

- New development
- Redevelopment
- Mix of New Development and Redevelopment



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

# Checklist for Stormwater Report

## Checklist (continued)

**LID Measures:** Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- No disturbance to any Wetland Resource Areas
- Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- Reduced Impervious Area (Redevelopment Only)
- Minimizing disturbance to existing trees and shrubs
- LID Site Design Credit Requested:
  - Credit 1
  - Credit 2
  - Credit 3
- Use of “country drainage” versus curb and gutter conveyance and pipe
- Bioretention Cells (includes Rain Gardens)
- Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- Treebox Filter
- Water Quality Swale
- Grass Channel
- Green Roof
- Other (describe): Pavement Disconnection

### Standard 1: No New Untreated Discharges

- No new untreated discharges
- Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.



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

# Checklist for Stormwater Report

## Checklist (continued)

### Standard 2: Peak Rate Attenuation

- Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.
- Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.
- Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

### Standard 3: Recharge

- Soil Analysis provided.
- Required Recharge Volume calculation provided.
- Required Recharge volume reduced through use of the LID site Design Credits.
- Sizing the infiltration, BMPs is based on the following method: Check the method used.
  - Static
  - Simple Dynamic
  - Dynamic Field<sup>1</sup>
- Runoff from all impervious areas at the site discharging to the infiltration BMP.
- Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.
- Recharge BMPs have been sized to infiltrate the Required Recharge Volume.
- Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:
  - Site is comprised solely of C and D soils and/or bedrock at the land surface
  - M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
  - Solid Waste Landfill pursuant to 310 CMR 19.000
  - Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.
- Calculations showing that the infiltration BMPs will drain in 72 hours are provided.
- Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

<sup>1</sup> 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.



Massachusetts Department of Environmental Protection  
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# Checklist for Stormwater Report

## Checklist (continued)

### Standard 3: Recharge (continued)

- The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.
- Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

### Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
  - Provisions for storing materials and waste products inside or under cover;
  - Vehicle washing controls;
  - Requirements for routine inspections and maintenance of stormwater BMPs;
  - Spill prevention and response plans;
  - Provisions for maintenance of lawns, gardens, and other landscaped areas;
  - Requirements for storage and use of fertilizers, herbicides, and pesticides;
  - Pet waste management provisions;
  - Provisions for operation and management of septic systems;
  - Provisions for solid waste management;
  - Snow disposal and plowing plans relative to Wetland Resource Areas;
  - Winter Road Salt and/or Sand Use and Storage restrictions;
  - Street sweeping schedules;
  - Provisions for prevention of illicit discharges to the stormwater management system;
  - Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
  - Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
  - List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.
- A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.
  - Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:
    - is within the Zone II or Interim Wellhead Protection Area
    - is near or to other critical areas
    - is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
    - involves runoff from land uses with higher potential pollutant loads.
  - The Required Water Quality Volume is reduced through use of the LID site Design Credits.
  - Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.



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# Checklist for Stormwater Report

## Checklist (continued)

### Standard 4: Water Quality (continued)

- The BMP is sized (and calculations provided) based on:
  - The ½" or 1" Water Quality Volume or
  - The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.
- The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.
- A TMDL exists that indicates a need to reduce pollutants ~~other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.~~

### Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

- The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.
- The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted **prior to** the discharge of stormwater to the post-construction stormwater BMPs.
- The NPDES Multi-Sector General Permit does **not** cover the land use.
- LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.
- All exposure has been eliminated.
- All exposure has **not** been eliminated and all BMPs selected are on MassDEP LUHPPL list.
- The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

### Standard 6: Critical Areas

- The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.
- Critical areas and BMPs are identified in the Stormwater Report.



**Massachusetts Department of Environmental Protection  
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# Checklist for Stormwater Report

## Checklist (continued)

### Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

- The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:
  - Limited Project
    - Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
    - Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
    - Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
  - Bike Path and/or Foot Path
  - Redevelopment Project
    - Redevelopment portion of mix of new and redevelopment.
- Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.
- The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

### Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
  - Construction Period Operation and Maintenance Plan;
  - Names of Persons or Entity Responsible for Plan Compliance;
  - Construction Period Pollution Prevention Measures;
  - Erosion and Sedimentation Control Plan Drawings;
  - Detail drawings and specifications for erosion control BMPs, including sizing calculations;
  - Vegetation Planning;
  - Site Development Plan;
  - Construction Sequencing Plan;
  - Sequencing of Erosion and Sedimentation Controls;
  - Operation and Maintenance of Erosion and Sedimentation Controls;
  - Inspection Schedule;
  - Maintenance Schedule;
  - Inspection and Maintenance Log Form.
- A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.



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# Checklist for Stormwater Report

## Checklist (continued)

### Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

- The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has **not** been included in the Stormwater Report but will be submitted **before** land disturbance begins.
- The project is **not** covered by a NPDES Construction General Permit.
- The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.
- The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

### Standard 9: Operation and Maintenance Plan

- The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:
  - Name of the stormwater management system owners;
  - Party responsible for operation and maintenance;
  - Schedule for implementation of routine and non-routine maintenance tasks;
  - Plan showing the location of all stormwater BMPs maintenance access areas;
  - Description and delineation of public safety features;
  - Estimated operation and maintenance budget; and
  - Operation and Maintenance Log Form.
- The responsible party is **not** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:
  - A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
  - A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

### Standard 10: Prohibition of Illicit Discharges

- The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;
- An Illicit Discharge Compliance Statement is attached;
- NO Illicit Discharge Compliance Statement is attached but will be submitted **prior to** the discharge of any stormwater to post-construction BMPs.

## OBJECTIVE OF CALCULATIONS

The calculations presented in this report are an analysis of the site hydrology and stormwater runoff, including scenarios for both Pre- and Post-Development Conditions. The project is considered a redevelopment project and the objective of this analysis is to demonstrate that measures have been implemented to mitigate stormwater impacts to the maximum extent practicable in compliance with the Town of Billerica Stormwater requirements and Massachusetts Stormwater Management Standards. Analysis of the Pre- and Post-Development Conditions is included for the one (1), two (2), ten (10), and one hundred (100) year rainfall events. A complete description of the project is included as well as the project's compliance with the Ten Stormwater Management Standards.

## CALCULATION METHODS AND ASSUMPTIONS

Stormwater runoff is analyzed using the following:

- "HydroCAD™ Stormwater Modeling System," by Applied Microcomputer Systems based upon SCS Technical Releases No. 55 and 20 for generating hydrologic calculations including peak flow rates and runoff volumes
- Microsoft Excel spreadsheet calculations used to determine Total Suspended Solids (TSS) removal rates
- A minimum time of concentration of 6 minutes has been used for the hydrologic calculations, where applicable.

## EQUATIONS AND SOURCES OF DATA USED

- Type III 24-Hour Rainfall data: Northeast Regional Climate Center  
1 year = 2.61 inches      2 year = 3.14 inches      10 year = 4.75 inches      100 year = 8.63 inches
- Soils information from the Natural Resources Conservation Service (NRCS) website (Retrieved July 18, 2023) and Test Pit Data conducted in August of 2022.

## POINTS OF ANALYSIS

Stormwater runoff generated from the roadway corridor is and will be discharged to four separate points of analysis (POA) within the project area with minimal changes to flow patterns. Watersheds were delineated within the full extents of the right-of-way and relevant abutting areas to account for the proposed widening of the roadway corridor. Runoff rates and volumes were analyzed at each POA and correspond to the following:

- POA1: Existing outfall near 558 Boston Road.
- POA2: B1 / B2 Series Intermittent Stream (200± south of 558 Boston Road)
- POA3: Overland to Glad Valley Drive
- POA4: Existing Drainage System at Locke Road

## EXISTING CONDITIONS

The project area is an approximately 0.71-mile-long section of Boston Road (Route 3A) located between Tower Farm Drive and Locke Road in the Town of Billerica, MA. The project also includes portions of intersecting side streets, primarily including Glad Valley Drive and Lexington Road. Refer to Site locus map for the location and extent of the project.

Within the project area, the width of Boston Road generally varies from 40 feet to 46 feet, with one lane in each direction. Intersecting side streets provide one lane in each direction. A continuous sidewalk is provided on both sides of Boston Road from the western project limit at Tower Farm Road to Tufts Lane. The sidewalk on the south side of Boston Road continues to the driveway at 493 Boston Road, while the sidewalk on the north side terminates at Tufts Lane. No sidewalk is provided on the either side of Boston Road from the 493 Boston Road driveway to the eastern project limit at Locke Road. Sidewalks are typically separated from the street by a vertical granite curb, and some areas include a grass strip. In all other areas of the street, the edge treatment is typically in the form of an asphalt berm or no edge treatment is provided.

Wetland resource areas are in proximity to the project area. Refer to Notice of Intent narrative for a summary of project compliance. The project is not located in the vicinity of a wellhead protection area or any other critical area.

Natural Resources Conservation Service (NRCS) soils maps indicate soils in the project area are generally varied between Urban Land, Montauk Fine Sandy Loam, Windsor Loamy Sand, and Scituate Fine Sandy Loam. Soils in the project area are rated in Hydrologic Soil Groups (HSG) C (low infiltration potential) or D (very low infiltration potential).

Stormwater runoff from Boston Road and the intersecting project roadway areas is primarily collected by closed drainage systems which convey flow to two outfalls within the project limits, one located near 558 Boston Road (POA1) and the other located across from Glad Valley Drive (POA2). Stormwater runoff from the easternmost portions of Boston Road is collected by a closed drainage system which extends beyond the project limits at Locke Road. A small portion of the project area flows overland to Glad Valley and is eventually collected by a closed drainage system with discharge to a wetland resource area. Refer to Appendix D for detailed delineation of pre-development flow patterns and watershed boundaries and Appendix E for hydrologic calculations.

## PROPOSED CONDITION DESCRIPTION

The project will include minor modifications to roadway width, (less than a single lane) mill and overlay of existing pavement, and installation of continuous curb and sidewalk or shared use paths along both sides of the project corridor. In addition, the project includes modification of the intersection of Glad Valley Drive, Lexington Road, and Boston Road. The project will result in an impervious increase of approximately 23,020 sq. ft. The majority of the existing closed drainage systems will be replaced with a new closed drainage systems sized for current design standards. The existing trunklines that extend beyond the limits of the project will be retained.

The project has significant right-of-way constraints, presence of private and commercial and residential features, utility conflicts, soils with limited infiltration capacity (HSG C and D), and high groundwater, which severely restrict the opportunity to install substantial Stormwater Control Measures (SCMs). Despite constraints, the proposed stormwater management systems will provide an improvement to the existing conditions by installing deep sump catch basins and providing qualifying pervious area. A portion of the proposed shared use path will be directed to the qualifying pervious area to be created in

a portion of the Site between Boston Road, Glad Valley Drive, and Lexington Road. The impervious catchment area includes approximately 850 Sq. Ft. of pavement to be directed to an approximately 2,450 Sq. Ft. grassed area. Refer to Summary of Compliance with the Ten Stormwater Management Standards.

Post-Development flow patterns and discharge locations will primarily remain unchanged. Refer to Appendix D for detailed delineation of post-development flow patterns and watershed boundaries and Appendix E for hydrologic calculations. Supplemental calculations used for the design are provided as Appendix G.

**SUMMARY OF RESULTS**

Table 1: Stormwater Peak Discharge Summary

| Peak Rate of Runoff |                            | Flow (cubic feet per second) |       |              |       |               |       |                |       |
|---------------------|----------------------------|------------------------------|-------|--------------|-------|---------------|-------|----------------|-------|
|                     |                            | 1-Year Storm                 |       | 2 Year Storm |       | 10 Year Storm |       | 100 Year Storm |       |
| Outlet To:          |                            | Exist                        | Prop  | Exist        | Prop  | Exist         | Prop  | Exist          | Prop  |
| POA1                | Outfall at 558 Boston Road | 8.45                         | 8.87  | 10.60        | 11.03 | 17.06         | 17.51 | 32.35          | 32.88 |
| POA2                | B1 / B2 Stream             | 4.92                         | 5.09  | 6.52         | 6.61  | 11.48         | 11.28 | 23.42          | 22.42 |
| POA3                | Glad Valley Drive          | 0.37                         | 0.57  | 0.50         | 0.77  | 0.90          | 1.40  | 1.85           | 2.94  |
| POA4                | Locke Road System          | 2.03                         | 2.22  | 2.62         | 2.81  | 4.40          | 4.58  | 8.63           | 8.78  |
| Project Total:      |                            | 15.77                        | 16.75 | 20.24        | 21.22 | 33.84         | 34.77 | 66.25          | 67.02 |

Table 2: Stormwater Runoff Volume Summary

| Runoff Volume  |                            | Volume (acre-feet) |       |              |       |               |       |                |       |
|----------------|----------------------------|--------------------|-------|--------------|-------|---------------|-------|----------------|-------|
|                |                            | 1-Year Storm       |       | 2 Year Storm |       | 10 Year Storm |       | 100 Year Storm |       |
| Outlet To:     |                            | Exist              | Prop  | Exist        | Prop  | Exist         | Prop  | Exist          | Prop  |
| POA1           | Outfall at 558 Boston Road | 0.591              | 0.664 | 0.751        | 0.835 | 1.243         | 1.358 | 2.435          | 2.619 |
| POA2           | B1 / B2 Stream             | 0.332              | 0.370 | 0.442        | 0.483 | 0.797         | 0.842 | 1.697          | 1.733 |
| POA3           | Glad Valley Drive          | 0.025              | 0.041 | 0.034        | 0.056 | 0.062         | 0.103 | 0.134          | 0.223 |
| POA4           | Locke Road System          | 0.139              | 0.163 | 0.181        | 0.209 | 0.312         | 0.349 | 0.637          | 0.690 |
| Project Total: |                            | 1.087              | 1.075 | 1.408        | 1.583 | 2.414         | 2.652 | 4.903          | 5.265 |

Table 3: Watershed Parameters

| Flow Parameters |                            | Contributing Area (SF) |        |            | Contributing Impervious Area (SF) |        |            | Time of Concentration (Minutes) |      | Composite Runoff Coefficient |      |
|-----------------|----------------------------|------------------------|--------|------------|-----------------------------------|--------|------------|---------------------------------|------|------------------------------|------|
|                 |                            | Exist                  | Prop   | Net Change | Exist                             | Prop   | Net Change | Exist                           | Prop | Exist                        | Prop |
| POA1            | Outfall at 558 Boston Road | 174015                 | 175840 | 1825       | 130760                            | 140175 | 9415       | 6.0                             | 6.0  | 93                           | 94   |
| POA2            | B1 / B2 Stream             | 132850                 | 124590 | -8260      | 74255                             | 82105  | 7850       | 6.0                             | 6.0  | 86                           | 89   |
| POA3            | Glad Valley Drive          | 10645                  | 17080  | 6435       | 4180                              | 6675   | 2495       | 6.0                             | 6.0  | 86                           | 85   |
| POA4            | Locke Road System          | 47540                  | 47540  | 0          | 31530                             | 34790  | 3260       | 6.0                             | 6.0  | 90                           | 92   |
| Project Total:  |                            | 365050                 | 365050 | 0          | 240725                            | 263745 | 23020      |                                 |      |                              |      |

PROJECT PARAMETERS

Recharge Volume Required (HSG A through D) = 389 cu. ft.

Excluding Qualifying Pervious Area Catchment = 371 cu. ft.  
 Recharge Volume Provided = 0 cu. ft.

Water Quality Volume Required (1/2" Depth) = 959 cu. ft.  
 Excluding Qualifying Pervious Area Catchment = 924 cu. ft.  
 Water Quality Volume Provided = 0 cu. ft.

Existing TSS Removal Rate = N/A  
 Proposed TSS Removal Rate for Impervious Areas = 25%  
 Proposed Project Wide TSS Removal Rate = 19%  
 Proposed New Impervious Area = 23,020± sq. ft.  
 Proposed 80% TSS Removal Rate Equivalent Area = 61,788± sq. ft.

**SUMMARY OF COMPLIANCE WITH THE TEN STORMWATER MANAGEMENT STANDARDS**

The project is subject to the Massachusetts Stormwater Standards, as outlined in the Massachusetts Stormwater Handbook (MSH) as published by the Massachusetts Department of Environmental Protection (MassDEP). The following narrative discusses the project as it relates to the Ten Stormwater Management Standards.

LID Measures:

Low Impact Development (LID) techniques utilized along portions of the project consist of use of country drainage for portions of the Site, minimizing disturbance to existing trees and shrubs, and disconnecting impervious area.

### Standard 1: No New Untreated Discharges

No new stormwater conveyances (e.g. outfalls) may discharge directly untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.

No new untreated discharges to wetlands are created as a result of this project. The existing 18" outfall at POA1, currently located at the boundary of the #1 Series wetlands, will be replaced with a new 24" flared end section. The existing 24" outfall at POA2, currently located at the boundary of the #B1 series intermittent stream, will be relocated to 5' ± from the stream bank and provided with a new headwall and riprap apron to mitigate erosion potential. An existing paved waterway in the same location which currently discharges untreated stormwater runoff to POA 2 will be removed. Proposed riprap will be provided in accordance with MassDOT Standard Detail E 206.7.0. The stormwater management system will retain existing outfalls for POA3 and POA4 – project complies.

### Standard 2: Peak Rate Attenuation

Stormwater management systems shall be designed so that the post-development peak discharge rates do not exceed pre-development peak discharge rates.

This project includes a net increase of 23,020± sq. ft. of impervious surface, which will result in minor increases to the volume and rate of stormwater runoff from the project area (refer to Table 1: Stormwater Runoff Flow Rate Summary and Table 2: Stormwater Runoff Volume Summary). This accounts for an approximate 6.3% increase in impervious area throughout the entire study area of approximately 8.35 acres. The project has significant constraints, as noted in Proposed Condition Description, which severely restrict the opportunity to install substantial SCMs. Despite project constraints and a minor increase in peak flow rates, the proposed pretreatment SCMs and pavement disconnection will improve existing conditions throughout the project corridor. Refer to HydroCAD calculations provided in Appendices A and B for additional information – project complies to the maximum extent practicable.

### Standard 3: Recharge

Loss of annual recharge to groundwater shall be eliminated or minimized. At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil type.

The project has been designed to meet this standard only to the maximum extent practicable as the project is a limited, redevelopment project and is located in an area primarily comprised of soils rated in HSG C and D. The project has significant constraints, as noted in Proposed Condition Description, which severely restrict the opportunity to install substantial SCMs. The areas in proximity to the existing outfalls POA1 and POA2 were evaluated for potential recharge SCM locations; however, these outfalls are located within or adjacent to wetland resource areas and are located on privately owned parcels. The southern corner of the Boston Road and Lexington Road intersection was also evaluated for a recharge SCM but was not considered to be practicable due to soils with poor infiltration capacity, limited separation to groundwater in relation potential outlet pipes, presence of existing utilities, both within the infield and those that would need to be crossed for a reconfigured drainage system, and desire to provide an enhanced green space adjacent to the shared use path and adjacent residence, which will allow for replacement of mature trees lost due to roadway and utility improvements. This area will instead serve as a qualifying pervious area for a portion of the proposed shared use path representing approximately 850 Sq. Ft. of impervious area or 18 Cu. Ft. of required recharge volume.

Despite project constraints, the proposed deep sump catch basins will improve existing conditions throughout the project corridor. Proposed disconnected pavement will promote natural infiltration over pervious surfaces for a portion of the project area. Refer to Appendix G for calculations relating to required recharge volumes and time to drawdown - project complies to the maximum extent practicable.

#### Standard 4: Water Quality

Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids.

The Project has been designed to comply with Standard 4 only to the maximum extent practicable as the project is a limited, redevelopment project. Proposed drainage system improvements, including the installation of deep sump catch basins, will provide treatment of stormwater runoff that does not currently exist and will improve existing conditions. The proposed project will provide a TSS removal rate of 25% for 61,850± sq. ft. of impervious surfaces.

As previously noted, the project is a limited, redevelopment project with significant constraints as noted in Proposed Condition Description, which severely restrict the opportunity to install substantial SCMs; therefore, the project is required to meet this standard only to the maximum extent practicable. Recharge SCMs were evaluated at several locations, as described under Standard 3, but were not considered to be practicable. Other structural SCMs were evaluated at these locations and also determined to be impracticable for similar reasons. Despite project constraints, the proposed deep sump catch basins will improve existing conditions throughout the project corridor. Refer to Appendix G for calculations relating to TSS Removal and Water Quality Volumes.

A portion of the proposed shared use path, located between Glad Valley drive and Lexington Road, is proposed to be graded away from the roadway towards a new grassed area created by reconfiguration of roadway geometry to create an area of pavement disconnection. BETA completed calculations using the MassDOT Water Quality Data Form to determine a 1:3 impervious to pervious area ratio for an estimated treatment rate of 64%.

The project is located within watershed of the Shawsheen River, which has a Final TMDL for Bacteria. As noted in the TMDL, pathogen sources for Bacteria are varied and likely related to illicit sewer connections, sewer line leaks, septic systems, and urban stormwater runoff. Pathogen sources for stormwater pollutants are likely related to a substantial increase in impervious surface and reduction of infiltration to groundwater systems.

Municipal sewer is located throughout the project corridor, which has recently been evaluated and determined to be in good condition, and there are no CSO or SSO. There are also no known illicit connections to the existing stormwater management system and any illicit discharges discovered during construction will be eliminated. The proposed deep sump catch basins will provide treatment for stormwater runoff which does not currently exist. As a transportation corridor, it is not anticipated that the project area is a measurable source of pathogen pollutant that requires specific treatment – project complies to the maximum extent practicable.

#### Standard 5: Land Uses with Higher Potential Pollutant Loads (LUHPPLs)

Land use with high potential pollutant loads must have source control and pollution prevention measures implemented in accordance with the Massachusetts Stormwater Handbook.

The project does not propose Land Uses with Higher Potential Pollutant Loads – not applicable.

#### 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 specific source control, pollution prevention measures.

The project will not include discharges to any critical areas – not applicable.

#### Standard 7: Redevelopment

A redevelopment project is required to meet certain Stormwater Management Standards only to the maximum extent practicable.

The project is classified as a redevelopment under the first definition “Maintenance and improvement of existing roadways, including widening less than a single lane, adding shoulders, correcting substandard intersections, improving existing drainage systems and repaving.” Proposed deep sump catch basins will provide treatment to the maximum extent practicable and represents an improvement to the existing conditions. Standards 1, 8, 9, and 10 are met and Standards 2, 3, and 4 are met to the maximum extent practicable. Standards 5 and 6 are not applicable to this project.

#### Standard 8: Construction Period Pollution Prevention and Erosion and Sediment Control

A plan to control construction related impacts, including erosion, sedimentation, and other pollutant sources during construction and land disturbance activities shall be developed and implemented.

The project is anticipated to disturb greater than one acre; therefore, filing a Notice of Intent with EPA and developing a Stormwater Pollution Prevention Plan (SWPPP) is required. The SWPPP will be provided as part of the construction documents; however, a Construction Period Pollution Prevention and Erosion and Sediment Control Plan is included in Appendix A – project complies.

#### Standard 9: Long Term Operation and Maintenance Plan

A Long-Term Operation and Maintenance Plan shall be developed and implemented to ensure that stormwater management systems function as designed.

A Long-Term Operation and Maintenance Plan has been included. Operations and maintenance of stormwater management systems will be the responsibility of MassDOT; therefore, inspection and maintenance will utilize MassDOT’s performance based approach. Refer to Appendix B for the project’s Operation and Maintenance Plan – project complies.

#### Standard 10: Prohibition of Illicit Discharges

All illicit discharges to the stormwater management system are prohibited.

Based on plan review and confirmation in the field, there are no known or proposed illicit connections associated with the Project. Should an interconnection to the stormwater management system be identified, the 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 MassDOT’s Illicit Discharge Detection and Elimination (IDDE) program and/or through other agencies. Refer to Section 2.1.6 of the Operation and Maintenance Plan – project complies.

## COMMENTS AND CONCLUSIONS

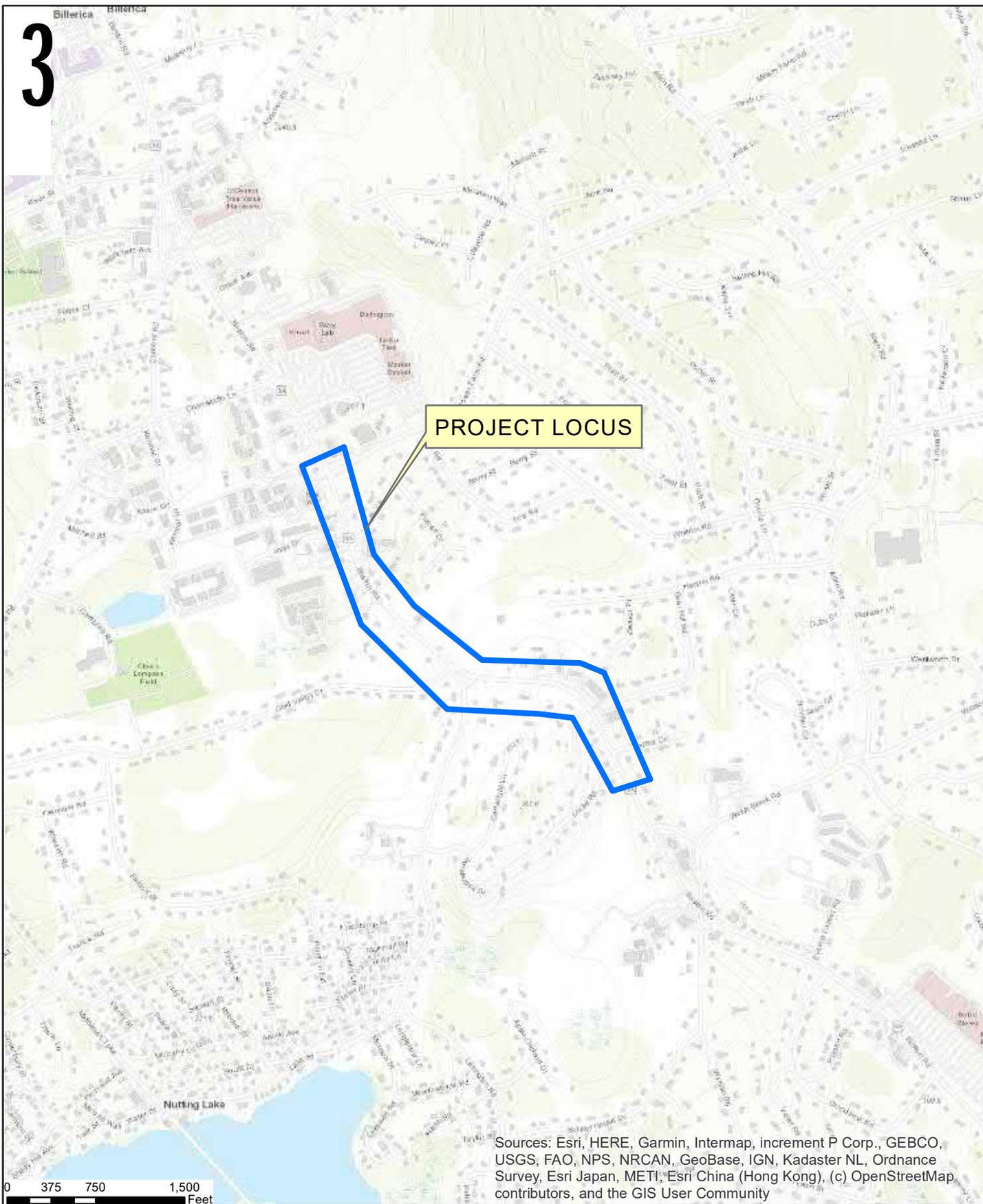
As a result of the aforementioned proposed mitigation measures, runoff will be captured, peak flows will be controlled to the maximum extent practicable, and total suspended solids (TSS) will be reduced. The proposed stormwater management system has been designed to meet MassDEP's Stormwater Management Policy to the maximum extent practicable as a redevelopment project and will be an improvement over the existing conditions.

Although any site construction can impact local hydrology and water quality, the plans as presented incorporate design features intended to mitigate adverse effects to down-gradient wetlands and aquifers.

# FIGURES

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3



Boston Road (Route 3A)  
Lexington Road & Glad Valley Drive  
Billerica, MA

**Figure 1**  
**Site Locus Map**

# MassDEP - Bureau of Waste Site Cleanup

## Phase 1 Site Assessment Map: 500 feet & 0.5 Mile Radii

### Site Information:

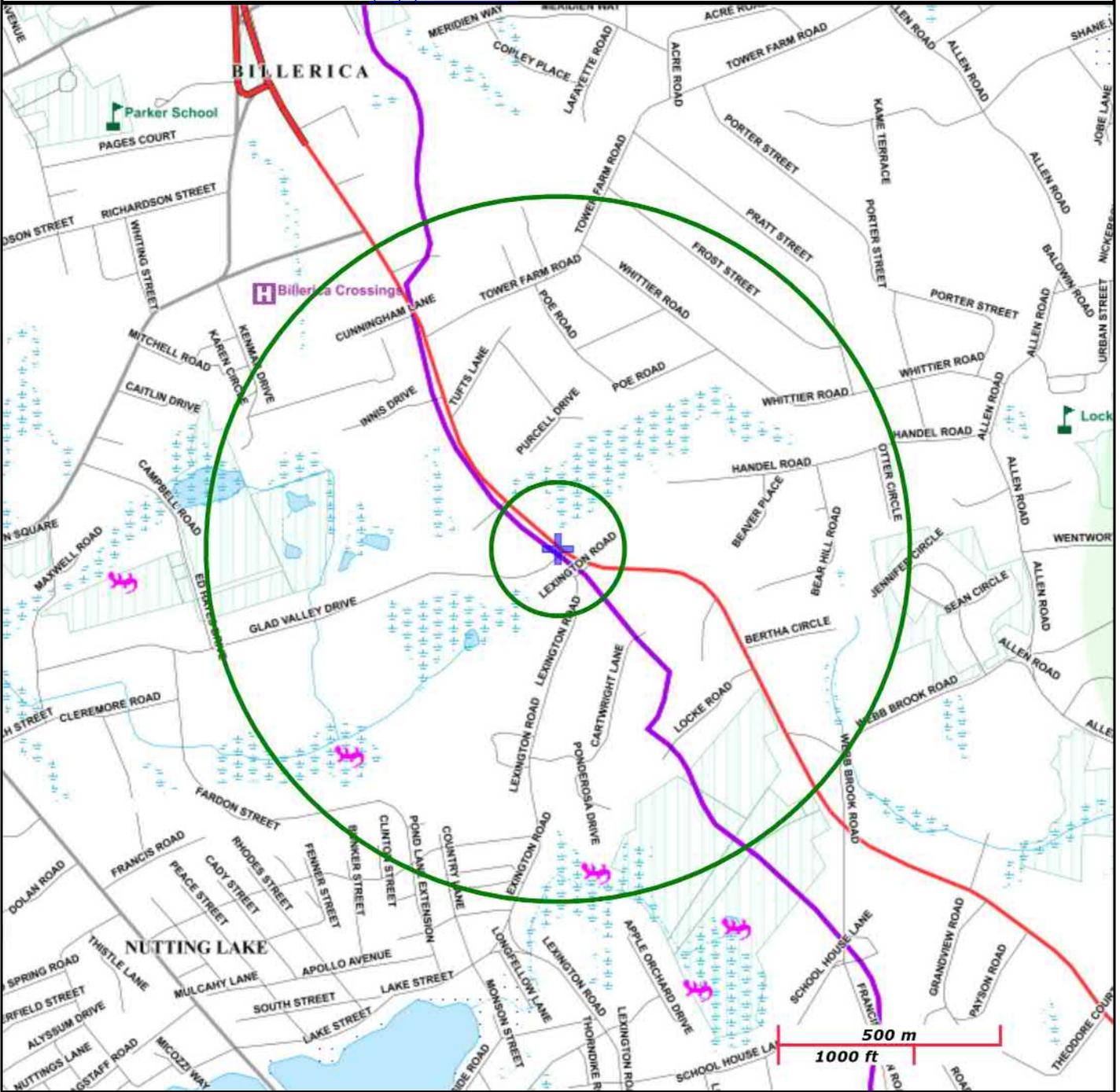
BILLERICA, MA

NAD83 UTM Meters:  
4713159mN, 314407mE (Zone: 19)  
April 4, 2022

The information shown is the best available at the date of printing. However, it may be incomplete. The responsible party and LSP are ultimately responsible for ascertaining the true conditions surrounding the site. Metadata for data layers shown on this map can be found at: <https://www.mass.gov/orgs/massgis-bureau-of-geographic-information>.



**MassDEP**  
Commonwealth of Massachusetts  
Department of Environmental Protection



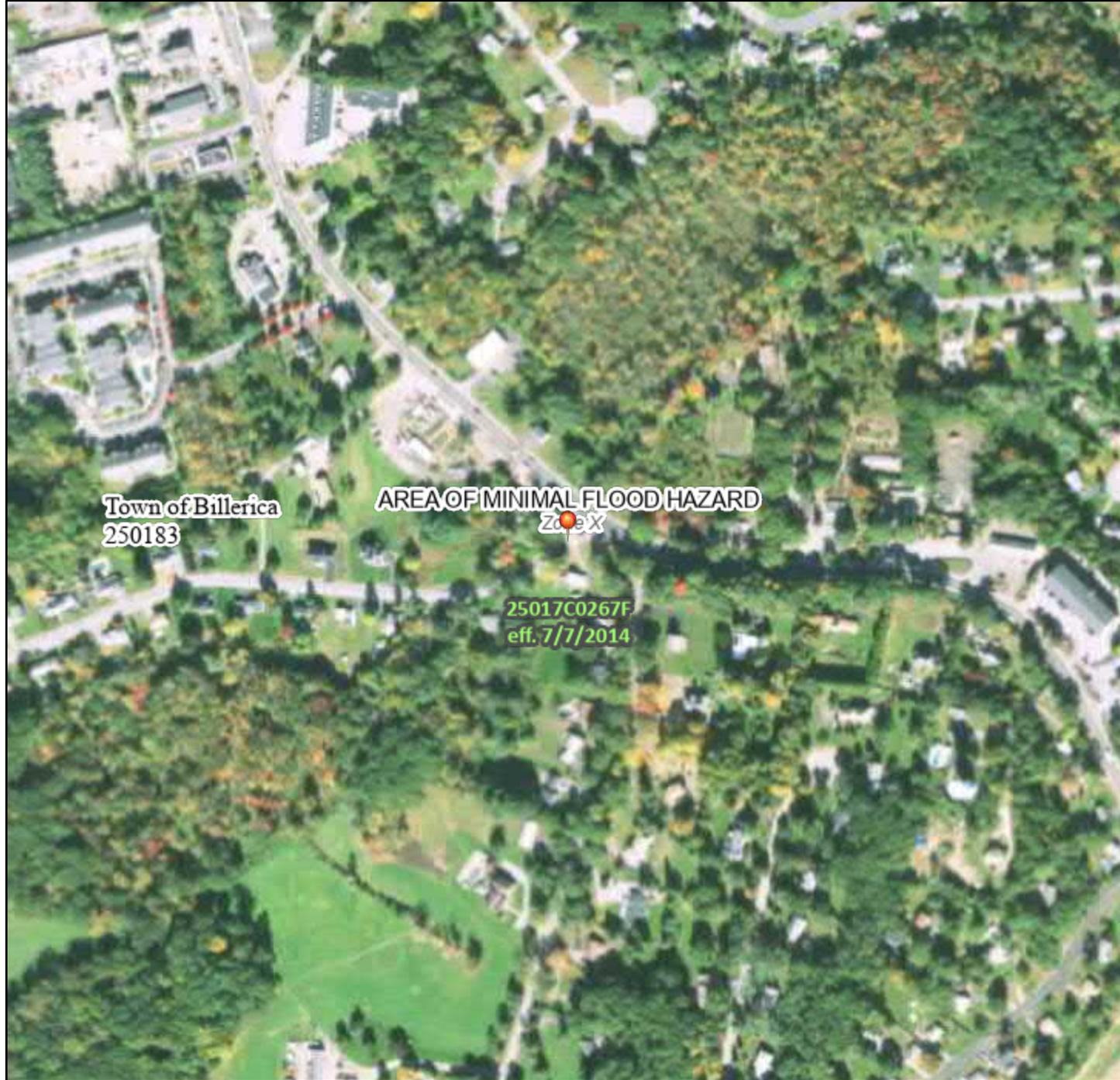
|   |   |  |
|---|---|--|
| Roads: Limited Access, Divided, Other Hwy, Major Road, Minor Road, Track, Trail | PWS Protection Areas: Zone II, IWPA, Zone A                   |  |
| Boundaries: Town, County, DEP Region; Train; Powerline; Pipeline; Aqueduct      | Hydrography: Open Water, PWS Reservoir, Tidal Flat            |  |
| Basins: Major, PWS; Streams: Perennial, Intermittent, Man Made Shore, Dam       | Wetlands: Freshwater, Saltwater, Cranberry Bog                |  |
| Aquifers: Medium Yield, High Yield, EPA Sole Source                             | FEMA 100yr Floodplain; Protected Open Space; ACEC             |  |
| Non Potential Drinking Water Source Area: Medium, High (Yield)                  | Est. Rare Wetland Wildlife Hab; Vernal Pool: Cert., Potential |  |
|   | Solid Waste Landfill; PWS: Com.GW,SW, Emerg., Non-Com.        |  |

# National Flood Hazard Layer FIRMette

Proposal No. 609250 - 129975



71°15'57"W 42°33'7"N



## Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

|                            |  |   |
|----------------------------|--|---|
| SPECIAL FLOOD HAZARD AREAS |  | Without Base Flood Elevation (BFE)<br><i>Zone A, V, A99</i> |
|                            |  | With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i>            |
|                            |  | 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 <i>Zone X</i> |
|                             |  | Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i>  |
|                             |  | Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone X</i>  |
|                             |  | Area with Flood Risk due to Levee <i>Zone D</i>  |

|             |  |  |
|-------------|--|--|
| OTHER AREAS |  | NO SCREEN Area of Minimal Flood Hazard <i>Zone X</i> |
|             |  | Effective LOMRs                                      |
|             |  | Area of Undetermined Flood Hazard <i>Zone D</i>      |

|                    |  |                                  |
|--------------------|--|----------------------------------|
| GENERAL STRUCTURES |  | Channel, Culvert, or Storm Sewer |
|                    |  | Levee, Dike, or Floodwall        |

|                |  |   |
|----------------|--|---|
| OTHER FEATURES |  | 20.2 Cross Sections with 1% Annual Chance |
|                |  | 17.5 Water Surface Elevation              |
|                |  | Coastal Transect                          |
|                |  | Base Flood Elevation Line (BFE)           |
|                |  | Limit of Study                            |
|                |  | Jurisdiction Boundary                     |
| OTHER FEATURES |  | 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 4/4/2022 at 12:57 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 A – CONSTRUCTION PERIOD POLLUTION PREVENTION AND EROSION AND SEDIMENT CONTROL PLAN

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Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan

Boston Road (Route 3A) At Lexington Road & Glad Valley Drive

Billerica, Massachusetts

Introduction

The project is anticipated to disturb greater than one acre; therefore, filing a Notice of Intent with EPA and developing of a Stormwater Pollution Prevention Plan (SWPPP) is required. The SWPPP will be provided as part of the construction documents and will be submitted to the Town of Billerica Conservation Commission prior to commencement of construction. The following plan provides general guidance for the prevention of pollution and erosion and sedimentation during construction.

Potential Erosion and Sedimentation

Portions of the project involve soil disturbance in areas upgradient of stormwater collection systems and wetland resources. Site preparation, scheduling, and construction practices need to be carefully planned to prevent construction debris and erosion caused by stormwater runoff over exposed soils from causing degradation of downstream wetland resources. Although it is not always possible to avoid impacts from storm events, the following guidelines shall be followed:

- Minimize land disturbance area and soil exposure to stormwater and wind erosion.
- Minimize time that area is disturbed.
- Avoid routing stormwater runoff or dewatering flows through disturbed areas.
- Inspect and maintain erosion controls until all soils are stabilized.
- Maintain good housekeeping practices.
- Stabilize disturbed soils as soon as possible to limit exposure.

Erosion and Sedimentation Plan

This Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan has been prepared in accordance with the Department of Environmental Protection's Massachusetts Erosion and Sedimentation Guidelines for Urban and Suburban Areas.

Pre-Construction and Site Preparation

- Contractor shall install all erosion control barrier in accordance with the construction documents prior to commencing any land disturbance activity.
- Inspect and maintain erosion controls until all soils are stabilized.
- Monitor weather reports daily and stabilize/prepare site if storm event in excess of the 2-year storm is expected.

Inspection and Maintenance of Erosion Controls during Construction

Inspect erosion controls weekly and after every storm event until all soils are stabilized.

- Catch Basin Inlet Protection: Check for sedimentation accumulation, removing sediments when they reach excessive volumes.
- Erosion Control Barrier: Check for sedimentation accumulation, removing sediments when they reach excessive volumes (approximately 1/3 the height of the barrier). Also remove sediments when runoff ponds for 24 or more hours to prevent potential mosquito breeding habitat. Restake/replace controls as necessary to maintain their effectiveness.
- Street Sweeping: Sweep Boston Road, Lexington Road, Glad Valley Drive, and other roadways in vicinity of the project at the end of each workday. Sweepings to be disposed in a legal manner.

Plans

See construction drawings for locations of all proposed erosion and sedimentation controls.



Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan

Boston Road (Route 3A) At Lexington Road & Glad Valley Drive

Billerica, Massachusetts

Extent of Disturbance

The total area of disturbance is approximately 7.55± acres. The project has been designed to minimize disturbance to existing woodlands and the majority of proposed work is within an existing roadway and its associated right-of-way.

Material Stockpiling

All construction materials shall be stored in designated stockpile areas to be coordinated with the Conservation Commission. Stockpiles shall be surrounded with silt fence, straw wattles, and/or compost filter tubes to mitigate erosion potential. All waste materials shall be removed from the Site or placed in approved receptacles at the conclusion of each workday. Disposal of waste materials shall be in accordance with relevant local, state, and federal regulations.

No excavated soil material shall be stockpiled within one hundred (100) feet of rivers, streams, ponds, or reservoirs.

Potential Construction Site Pollutants

| Pollutant-Generating Activity     | Pollutants or Pollutant Constituents (that could be discharged if exposed to stormwater) | Location on Site                     |
|-----------------------------------|--|--------------------------------------|
| Equipment Re-fueling              | Diesel Fuel, Gasoline  | Laydown Area                         |
| Leaking or Broken Hydraulic Lines | Hydraulic Oil  | Building Work Areas and Laydown Area |
| Minor Equipment Maintenance       | Diesel Fuel, Gasoline, Hydraulic Oil, Motor Oil, Anti-Freeze                             | Laydown Area                         |
| Applying Fertilizer               | Nitrogen, Phosphorous  | Newly Seeded Areas                   |
| Portable Sanitary Toilets         | Bacteria, Parasites and Viruses  | Laydown Area                         |
| Vehicle Accident                  | Diesel Fuel, Gasoline  | Entire Site                          |
| Trash Containers/Dumpsters        | Paper, Plastic, and Food Waste   | Laydown Area                         |

Refer to Long-Term Pollution Prevention Plan, included as part of Appendix B, for measures to be implemented to minimize pollutant discharges.

Construction Period Grading Activities Log

Record of Major Grading Activities

| Activity #             | Date: | Description of Grading Activity | Notes |
|------------------------|-------|---------------------------------|-------|
|                        |       |                                 |       |
|                        |       |                                 |       |
|                        |       |                                 |       |
|                        |       |                                 |       |
|                        |       |                                 |       |
|                        |       |                                 |       |
|                        |       |                                 |       |
|                        |       |                                 |       |
|                        |       |                                 |       |
| Additional<br>Comments |       |                                 |       |



Construction Period Precipitation Event Log

Record of Precipitation Events occurring at the Site

| Event #             | Date: | Rainfall Measurement (Inches) | Rainfall Duration (Hours) | Source of Rainfall Data | Notes |
|---------------------|-------|-------------------------------|---------------------------|-------------------------|-------|
|                     |       |                               |                           |                         |       |
|                     |       |                               |                           |                         |       |
|                     |       |                               |                           |                         |       |
|                     |       |                               |                           |                         |       |
|                     |       |                               |                           |                         |       |
|                     |       |                               |                           |                         |       |
|                     |       |                               |                           |                         |       |
|                     |       |                               |                           |                         |       |
|                     |       |                               |                           |                         |       |
|                     |       |                               |                           |                         |       |
|                     |       |                               |                           |                         |       |
| Additional Comments |       |                               |                           |                         |       |



Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan  
 Boston Road (Route 3A) At Lexington Road & Glad Valley Drive Billerica, Massachusetts

Construction Period SCM Inspection and Maintenance Documentation Form

Inspection No.: \_\_\_\_\_ Date: \_\_\_\_\_ Weather: \_\_\_\_\_

Date & Amount of Last Precipitation Event: \_\_\_\_\_

Inspector Name: \_\_\_\_\_ Inspection Signature: \_\_\_\_\_

| SCM                              | Condition/Stability | Comment & Recommendations | Date Corrected |
|----------------------------------|---------------------|---------------------------|----------------|
| Catch Basin Inlet Protection     |                     |                           |                |
| Erosion Control Barrier          |                     |                           |                |
| Stabilized Construction Entrance |                     |                           |                |
| Street Sweepings                 |                     |                           |                |
| Other                            |                     |                           |                |
| Additional Comments              |                     |                           |                |



Construction Period Interruption Event Log

Record of Events in which construction activities temporarily or permanently cease on a portion of the Site

| Event #             | Date Work Ceases | Temporary / Permanent? | Area | Reason for Stoppage | Date Work Resumes |
|---------------------|------------------|------------------------|------|---------------------|-------------------|
|                     |                  |                        |      |                     |                   |
|                     |                  |                        |      |                     |                   |
|                     |                  |                        |      |                     |                   |
|                     |                  |                        |      |                     |                   |
|                     |                  |                        |      |                     |                   |
|                     |                  |                        |      |                     |                   |
|                     |                  |                        |      |                     |                   |
|                     |                  |                        |      |                     |                   |
|                     |                  |                        |      |                     |                   |
|                     |                  |                        |      |                     |                   |
| Additional Comments |                  |                        |      |                     |                   |



Construction Period Stabilization Activities Log

Record of Stabilization Measure Initialization

| Activity #          | Date: | Temporary / Permanent Stabilization? | Area of Site Affected | Description of Stabilization Measure | Notes |
|---------------------|-------|--------------------------------------|-----------------------|--------------------------------------|-------|
|                     |       |                                      |                       |                                      |       |
|                     |       |                                      |                       |                                      |       |
|                     |       |                                      |                       |                                      |       |
|                     |       |                                      |                       |                                      |       |
|                     |       |                                      |                       |                                      |       |
|                     |       |                                      |                       |                                      |       |
|                     |       |                                      |                       |                                      |       |
|                     |       |                                      |                       |                                      |       |
|                     |       |                                      |                       |                                      |       |
| Additional Comments |       |                                      |                       |                                      |       |



Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan  
Boston Road (Route 3A) At Lexington Road & Glad Valley Drive Billerica, Massachusetts

Construction Period Periodic Inspection Log

Date: \_\_\_\_\_

Name and Title of Inspection Personnel: \_\_\_\_\_

Inspection Criteria:

1. Is Construction in compliance with the Approved Stormwater Management Plan? \_\_\_\_\_

If not, explain noncompliance:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2. Are there any variations from approved construction specifications? \_\_\_\_\_

If yes, explain variations:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

3. Are there any other variations or violations of the conditions of the approved Stormwater Management Plan? \_\_\_\_\_

If yes, explain variations/violations:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Signature: \_\_\_\_\_



Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan

Boston Road (Route 3A) At Lexington Road & Glad Valley Drive

Billerica, Massachusetts

Erosion Control Inspection Log

Date: \_\_\_\_\_

Name and Title of Inspection Personnel: \_\_\_\_\_

Weather Information since time of last inspection:

| Storm Event Date | Duration | Approximate Rainfall (Inches) | Discharges Occurred? |
|------------------|----------|-------------------------------|----------------------|
|                  |          |                               |                      |
|                  |          |                               |                      |
|                  |          |                               |                      |
|                  |          |                               |                      |

Location of Discharges of Sediment or other Pollutants from the Site:

| Discharge # | Location | Description | Corrective Action Implemented? |
|-------------|----------|-------------|--------------------------------|
|             |          |             |                                |
|             |          |             |                                |
|             |          |             |                                |
|             |          |             |                                |

Location of SCMs that failed to operate as designed or proved inadequate

| SCM Type | Location | Description of Failure/Inadequacy | Corrective Action Implemented? |
|----------|----------|-----------------------------------|--------------------------------|
|          |          |                                   |                                |
|          |          |                                   |                                |
|          |          |                                   |                                |
|          |          |                                   |                                |



Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan

Boston Road (Route 3A) At Lexington Road & Glad Valley Drive

Billerica, Massachusetts

Record of New SCMs added:

| Date of Installation: | SCM Type | Location | Reason for Installation |
|-----------------------|----------|----------|-------------------------|
|                       |          |          |                         |
|                       |          |          |                         |
|                       |          |          |                         |
|                       |          |          |                         |

Required Corrective Action

| Proposed Action | Proposed Location | Reason for Action | Anticipated Implementation Date |
|-----------------|-------------------|-------------------|---------------------------------|
|                 |                   |                   |                                 |
|                 |                   |                   |                                 |
|                 |                   |                   |                                 |
|                 |                   |                   |                                 |

Status of Previous Corrective Actions

| Action | Location | Reason for Action | Corrective Action Successful? |
|--------|----------|-------------------|-------------------------------|
|        |          |                   |                               |
|        |          |                   |                               |
|        |          |                   |                               |

Signature: \_\_\_\_\_



# APPENDIX B – LONG TERM OPERATIONS & MAINTENANCE PLAN

---

# Boston Road (Route 3A) At Lexington Road & Glad Valley Drive

Stormwater Management System  
Operation and Maintenance Plan and  
Long-Term Pollution Prevention Plan  
Billerica, MA

PREPARED FOR

---



10 Park Plaza  
Boston, MA 02116

PREPARED BY

---



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July 28, 2023



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# 1

## Stormwater Management System Operation and Maintenance (O&M) Plan

This Stormwater Management System Operation and Maintenance (O&M) Plan describes the approach for inspection and maintenance of drainage infrastructure and structural stormwater control measures (SCMs) to minimize contaminant loading for the proposed closed drainage system along portions of Boston Road (Route 3A), Glad Valley Drive, and Lexington Road (the “Project”) located in Billerica, MA. In general, inspection and maintenance activities will be conducted consistent with the National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer System (MS4) and MassDOT’s anticipated NPDES Transportation Separate Storm Sewer System (TS4) Permit.

This document has been prepared per the requirements of Massachusetts Department of Environmental Protection (MassDEP) Regulations 310 CMR 10.05 (6)(k)(9) and satisfies the requirements of Massachusetts Stormwater Standard 9.

### 1.1 Responsible Party

In accordance with MassDOT procedures, the MassDOT District 4 office located in Arlington, MA, is responsible for the maintenance of all stormwater management systems on MassDOT roads within the project area.

Questions or concerns regarding activities associated with this O&M Plan should be addressed to MassDOT’s District 4 office located at 519 Appleton Street, Arlington, MA 02476, phone (857)-368-4000, during regular weekday hours, or to MassDOT’s Highway Operations Center located in South Boston, MA at (800) 227-0608 during all other times and days, including weekends and holidays.

The Town of Billerica will be responsible for the operation and maintenance of all stormwater management systems within the portion of the project area along Lexington Road and Glad Valley Drive. Questions or concerns regarding activities associated with this O&M Plan should be addressed to the Billerica Department of Public Works located at 365 Boston Road, Billerica, MA 01821, phone (978) 671-0906.

## 1.2 Inspection and Maintenance Measures and Record-Keeping

See Appendix D of the Stormwater Management Report for the proposed stormwater system within the project limits. The stormwater management system covered by this O&M Plan consists of the following measures:

- Deep Sump Catch Basins
- Retained Catch Basins
- Qualifying Pervious Area

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 inspections, including documentation of sediment accumulation, and maintenance will generally occur simultaneously.

MassDOT’s O&M program is data driven. Inspections and maintenance are recorded by personnel using hand-held tablets in the field to document sediment accumulation, maintenance action performed, and follow-up actions needed. Data are recorded in MassDOT’s asset management system which is accessible in the field (mobile) or the office (desktop).

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"> <li>› Catch basins</li> <li>› Outlet control structures</li> </ul>   | <ul style="list-style-type: none"> <li>› Sediment accumulation</li> <li>› Trash/Debris accumulation</li> <li>› Signs of contamination</li> <li>› Frame and grate condition</li> <li>› Overall structure condition</li> </ul>   |
| SCMs                   | <p>Consistent with the MassDOT Stormwater Design Guide (SDG), SCM categories include:</p> <ul style="list-style-type: none"> <li>› Infiltration SCMs</li> <li>› Stormwater wetland SCMs</li> <li>› Bioretention SCMs</li> <li>› Other SCMs</li> </ul> | <ul style="list-style-type: none"> <li>› SCM accessibility</li> <li>› Presence of standing water</li> <li>› Level of erosion</li> <li>› Sediment accumulation</li> <li>› Trash/Debris accumulation</li> <li>› Vegetation condition</li> <li>› Overall SCM condition</li> </ul> |
| Storm Discharge Points | <ul style="list-style-type: none"> <li>› Outlets to SCMs</li> </ul>   | <ul style="list-style-type: none"> <li>› Presence of flow</li> <li>› Signs of contaminated flow</li> <li>› Sediment accumulation</li> <li>› Level of erosion</li> <li>› Pipe condition</li> <li>› Scour protection condition</li> <li>› Overall structure condition</li> </ul> |

Inspection and maintenance records can be made available using the asset management system through request with the MassDOT District 4 Environmental Engineer. Records will be kept for at least three years. Representatives of the Town of Billerica’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.

Maintenance actions will not occur at any set frequency, but rather will be based on condition and impact to functionality. Maintenance to be performed on the stormwater system includes:

| Stormwater Feature                      | Potential Maintenance Actions   |
|---|---|
| Surface SCMs (Qualifying Pervious Area) | <ul style="list-style-type: none"> <li>• Remove and properly dispose of accumulated material (e.g., sediment, trash, leaf litter, debris)</li> <li>• Mow vegetated areas and remove and dispose of grass clippings</li> <li>• Regrade areas that show signs of unwanted ponding and channelization</li> <li>• Stabilize or reconstruct eroded areas and reseed</li> <li>• Replace stones/soil and/or replant vegetation</li> <li>• Remove woody growth</li> <li>• Treat invasive plants according to MassDOT Landscape Design Section</li> <li>• Infiltration and bioretention SCMs only:                             <ul style="list-style-type: none"> <li>○ Address issues of standing water</li> <li>○ Drain and reconstruct SCM</li> <li>○ If rehabilitation is not possible, then retrofit to be a wet SCM while considering safety implications</li> </ul> </li> </ul> |
| Underground SCMs                        | <ul style="list-style-type: none"> <li>• Remove and properly dispose of trash, sediment, debris, and root intrusions</li> <li>• Clean out sumps at an interval to maintain functionality (less than 50% full of sediment)</li> <li>• Jet and repair pipes</li> <li>• Rehabilitate filtering and infiltration materials (e.g., geotextile fabric, crushed stone)</li> <li>• Stabilize and replace deteriorated structures</li> <li>• Perform evaluations (e.g., test pits) to evaluate subsurface conditions</li> </ul>  |
| Inlets and Outlets to SCMs              | <ul style="list-style-type: none"> <li>• Clear inlet and remove and properly dispose of sediment, trash, leaf litter, debris, and vegetation</li> <li>• Regrade areas that show signs of ponding and channelization</li> <li>• Repair or replace structural components</li> <li>• Repair damaged or eroded areas</li> <li>• Provide or rehabilitate erosion control at the outlet</li> <li>• Regrade and replace the channel materials</li> <li>• Remove woody growth</li> <li>• Stabilize or reconstruct eroded areas</li> <li>• Treat invasive plants according to MassDOT Vegetation Management Plan</li> </ul>  |

Based on the results of the inspection, repairs will be made in accordance with MassDOT standard practices. Maintenance will be prioritized given the urgency of the required maintenance and availability of staff, contracts, etc. Maintenance may require contracting if

existing contracts are unavailable to perform the work. More intensive remedial activities may require permitting and/or an engineering solution.

Inspection, maintenance, and record keeping on Glad Valley Drive and Lexington Road will be performed in conjunction with the Town of Billerica's MS4 compliance requirements.

### 1.3 Erosion and Sediment Control Measures during Maintenance Activities

For maintenance activities that could result in discharges of sediments or other contaminants into wetlands, waterways, or other resource areas regulated under 310 CMR 10.00, the responsible maintenance personnel will employ measures to prevent migration of these sediments/contaminants. Such temporary measures may include, but are not necessarily limited to, the use of siltation barriers, catch basin silt sacks/filter bags, pipe plugs, cofferdams deployed within the stormwater structure, turbidity curtains, or other practices designed to prevent such discharges.

Where maintenance occurs in areas that are confined, with no risk of discharge to adjacent water bodies, no special measures may be needed. Examples include, but are not limited to: (1) cleaning of a forebay under dry conditions when the work can be completed and exposed surfaces stabilized prior to placing it back into service; and (2) catch basin cleaning where the activity is limited to removing material from a sump below the elevation of the outlet pipe.

### 1.4 O&M Budget

MassDOT and the Town of Billerica perform maintenance for stormwater management systems as part of their routine operation and maintenance budget for roadways and bridges. Budgets are managed at the district level and vary by fiscal year, depending on funding sources.

# 2

## Long-Term Pollution Prevention Plan

This Long-Term Pollution Prevention Plan (LTPPP) describes the approach for pollution prevention and related maintenance activities for the proposed closed drainage system along portion of Boston Road (Route 3A), Glad Valley Drive, and Lexington Road (the “Project”) located in Billerica, MA. In general, long-term pollution prevention and related maintenance activities will be conducted consistent with:

- The National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer System (MS4),
- 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.

### 2.1 Practices for Long-Term Pollution Prevention

For the facilities covered, long-term pollution prevention includes the following measures.

#### 2.1.1 Litter Pick-up

MassDOT will conduct litter pick-up from the stormwater management facilities in conjunction with routine road maintenance activities.

#### 2.1.2 Inspection and Maintenance of Stormwater Assets

MassDOT will conduct inspection and maintenance of drainage infrastructure and the stormwater control measures (SCMs) in accordance with the O&M Plan, as described in Section 1.

#### 2.1.3 Maintenance of Landscaped Areas

Routine mowing will be conducted according to standard MassDOT practices. SCM basin bottoms and embankments designed to impound water should be mowed as required to prevent establishment of woody vegetation.

Except in rare circumstances, MassDOT does not use fertilizers, herbicides, and pesticides for the maintenance of facilities. Exceptions include using fertilizer to ensure the survival of new

plantings and herbicides to control invasive plants. Use of fertilizers and herbicides is reviewed and approved by the MassDOT Landscape Design Section and District 4 Environmental Engineer prior to application. Local Conservation Commission review may also be required.

#### 2.1.4 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.

#### 2.1.5 Street Sweeping

Routine highway cleaning, with a brush-type street sweeper, will be conducted in accordance with standard MassDOT practices. Sweeping will occur annually in the Spring.

#### 2.1.6 Prohibition of Illicit Discharges

The MassDEP Stormwater Management Standard 10 prohibits illicit discharges to the stormwater management system. Illicit discharges are discharges that do not consist entirely of stormwater, except for certain specified non-stormwater discharges.

In accordance with the existing MS4 permit and anticipated TS4 permit requirements, examples of discharges from the following sources are not considered illicit discharges:

- › Firefighting activities\*
- › Foundation drains
- › Water line flushing
- › Footing drains
- › Landscape irrigation
- › Individual residential car washing
- › Uncontaminated groundwater
- › Rising groundwater
- › Diverted stream flows
- › Flows from riparian habitats/wetlands
- › Potable water sources
- › Dechlorinated swimming pool water
- › Street wash waters
- › Wash water from residential buildings (no detergents)
- › Condensation from air conditioning units
- › Run-on from private driveways caused by precipitation
- › Lawn watering
- › Water from crawl space pumps

\*Water from firefighting activities is allowed and need only be addressed where they are identified as significant sources of pollutants to waters of the United States.

Based on plan review and confirmation in the field, there are no known or proposed illicit connections associated with the Project. Should an interconnection to the stormwater management system be identified, the MassDOT PM will coordinate with the District Permits Engineer to confirm if the connections are authorized. For unauthorized connections, the 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

MassDOT's Illicit Discharge Detection and Elimination (IDDE) program and/or through other agencies.

### 2.1.7 Spill Prevention and Response

The following spill prevention and response measures shall be implemented at the Site:

- Refuel construction equipment off-site.
- Any spills of hazardous materials shall be reported, contained, and removed in accordance with local, State, and Federal regulations.
- Review on-site equipment and activities to ensure no illicit discharges are created.

## APPENDIX C – SOILS DATA

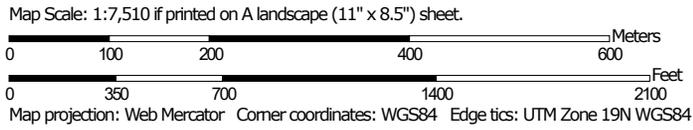
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# Proposal No. 609250 - 129975

Hydrologic Soil Group—Middlesex County, Massachusetts



Soil Map may not be valid at this scale.



### MAP LEGEND

**Area of Interest (AOI)**

 Area of Interest (AOI)

**Soils**

**Soil Rating Polygons**

-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available

**Soil Rating Lines**

-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available

**Soil Rating Points**

-  A
-  A/D
-  B
-  B/D

-  C
-  C/D
-  D
-  Not rated or not available

**Water Features**

 Streams and Canals

**Transportation**

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

**Background**

 Aerial Photography

### MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

**Warning:** Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL:  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Middlesex County, Massachusetts  
 Survey Area Data: Version 22, Sep 9, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 22, 2022—Jun 5, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Hydrologic Soil Group

| Map unit symbol                    | Map unit name   | Rating | Acres in AOI | Percent of AOI |
|------------------------------------|---|--------|--------------|----------------|
| 6A                                 | Scarboro mucky fine sandy loam, 0 to 3 percent slopes             | A/D    | 2.4          | 2.4%           |
| 51A                                | Swansea muck, 0 to 1 percent slopes                               | B/D    | 2.8          | 2.8%           |
| 52A                                | Freetown muck, 0 to 1 percent slopes                              | B/D    | 2.2          | 2.2%           |
| 71B                                | Ridgebury fine sandy loam, 3 to 8 percent slopes, extremely stony | D      | 3.5          | 3.5%           |
| 103B                               | Charlton-Hollis-Rock outcrop complex, 3 to 8 percent slopes       | A      | 6.1          | 6.1%           |
| 255B                               | Windsor loamy sand, 3 to 8 percent slopes                         | A      | 3.1          | 3.0%           |
| 256B                               | Deerfield loamy fine sand, 3 to 8 percent slopes                  | A      | 2.0          | 2.0%           |
| 300B                               | Montauk fine sandy loam, 3 to 8 percent slopes                    | C      | 0.0          | 0.0%           |
| 300C                               | Montauk fine sandy loam, 8 to 15 percent slopes                   | C      | 11.6         | 11.5%          |
| 302C                               | Montauk fine sandy loam, 8 to 15 percent slopes, extremely stony  | C      | 37.2         | 37.2%          |
| 315B                               | Scituate fine sandy loam, 3 to 8 percent slopes                   | D      | 13.6         | 13.5%          |
| 315C                               | Scituate fine sandy loam, 8 to 15 percent slopes                  | D      | 2.1          | 2.1%           |
| 317B                               | Scituate fine sandy loam, 3 to 8 percent slopes, extremely stony  | D      | 0.0          | 0.0%           |
| 602                                | Urban land  |        | 13.6         | 13.6%          |
| <b>Totals for Area of Interest</b> |   |        | <b>100.2</b> | <b>100.0%</b>  |

## Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

## Rating Options

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff:* None Specified

*Tie-break Rule:* Higher



**Commonwealth of Massachusetts**  
**City/Town of**

## Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

### C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

**Deep Observation Hole Number:** TP-1      8/23/22      10:30 AM      Cloudy  
Hole #      Date      Time      Weather      Latitude      Longitude

1. Land Use Grass/roadway      Grass      \_\_\_\_\_  
(e.g., woodland, agricultural field, vacant lot, etc.)      Vegetation      Surface Stones (e.g., cobbles, stones, boulders, etc.)      Slope (%)

Description of Location: Intersection center island

2. Soil Parent Material: \_\_\_\_\_  
Landform      Position on Landscape (SU, SH, BS, FS, TS, Plain)

3. Distances from:      Open Water Body \_\_\_\_\_ feet      Drainage Way \_\_\_\_\_ feet      Wetlands \_\_\_\_\_ feet  
    Property Line \_\_\_\_\_ feet      Drinking Water Well \_\_\_\_\_ feet      Other \_\_\_\_\_ feet

4. Unsuitable Materials Present:  Yes  No    If Yes:  Disturbed Soil/Fill Material       Weathered/Fractured Rock       Bedrock

5. Groundwater Observed:  Yes       No      If yes: \_\_\_\_\_ Depth to Weeping in Hole      \_\_\_\_\_ Depth to Standing Water in Hole

#### Soil Log

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA) | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features |               |         | Coarse Fragments % by Volume |                  | Soil Structure | Soil Consistence (Moist) | Other |
|------------|---------------------|---------------------|------------------------------------|------------------------|---------------|---------|------------------------------|------------------|----------------|--------------------------|-------|
|            |                     |                     |                                    | Depth                  | Color         | Percent | Gravel                       | Cobbles & Stones |                |                          |       |
| 0-12       | A                   | FSL (Fill)          |                                    |                        | Cnc :<br>Dpl: |         |                              |                  |                |                          |       |
| 12-48      | B                   | FSL/Loam (Fill)     |                                    |                        | Cnc :<br>Dpl: |         |                              |                  |                |                          |       |
| 48-96      | C                   | Sandy Clay loam     |                                    | 60"                    | Cnc :<br>Dpl: |         |                              |                  |                |                          |       |
|            |                     |                     |                                    |                        | Cnc :<br>Dpl: |         |                              |                  |                |                          |       |
|            |                     |                     |                                    |                        | Cnc :<br>Dpl: |         |                              |                  |                |                          |       |
|            |                     |                     |                                    |                        | Cnc :<br>Dpl: |         |                              |                  |                |                          |       |

Additional Notes: \_\_\_\_\_



**Commonwealth of Massachusetts**  
**City/Town of**

**Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal**

**C. On-Site Review** (*minimum of two holes required at every proposed primary and reserve disposal area*)

**Deep Observation Hole Number:** TP-2      8/23/22      9 AM      Cloudy  
Hole #      Date      Time      Weather      Latitude      Longitude

1. Land Use Grass/roadway      Grass      \_\_\_\_\_  
(e.g., woodland, agricultural field, vacant lot, etc.)      Vegetation      Surface Stones (e.g., cobbles, stones, boulders, etc.)      Slope (%)  
 Description of Location: Intersection center island

2. Soil Parent Material: \_\_\_\_\_  
Landform      Position on Landscape (SU, SH, BS, FS, TS, Plain)

3. Distances from:      Open Water Body \_\_\_\_\_ feet      Drainage Way \_\_\_\_\_ feet      Wetlands \_\_\_\_\_ feet  
    Property Line \_\_\_\_\_ feet      Drinking Water Well \_\_\_\_\_ feet      Other \_\_\_\_\_ feet

4. Unsuitable Materials Present:  Yes  No      If Yes:  Disturbed Soil/Fill Material       Weathered/Fractured Rock       Bedrock

5. Groundwater Observed:  Yes  No      If yes: \_\_\_\_\_ Depth to Weeping in Hole      \_\_\_\_\_ Depth to Standing Water in Hole

**Soil Log**

| Depth (in) | Soil Horizon /Layer | Soil Texture (USDA) | Soil Matrix: Color-Moist (Munsell) | Redoximorphic Features |               |         | Coarse Fragments % by Volume |                  | Soil Structure | Soil Consistence (Moist) | Other |
|------------|---------------------|---------------------|------------------------------------|------------------------|---------------|---------|------------------------------|------------------|----------------|--------------------------|-------|
|            |                     |                     |                                    | Depth                  | Color         | Percent | Gravel                       | Cobbles & Stones |                |                          |       |
| 0-12       | A                   | FSL (Fill)          |                                    |                        | Cnc :<br>Dpl: |         |                              |                  |                |                          |       |
| 12-48      | B                   | FSL/Loam (Fill)     |                                    |                        | Cnc :<br>Dpl: |         |                              |                  |                |                          |       |
| 48-96      | C                   | Silt loam           |                                    | 54"                    | Cnc :<br>Dpl: |         |                              |                  |                |                          |       |
|            |                     |                     |                                    |                        | Cnc :<br>Dpl: |         |                              |                  |                |                          |       |
|            |                     |                     |                                    |                        | Cnc :<br>Dpl: |         |                              |                  |                |                          |       |
|            |                     |                     |                                    |                        | Cnc :<br>Dpl: |         |                              |                  |                |                          |       |

Additional Notes: \_\_\_\_\_

# APPENDIX D – WATERSHED PLANS

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Prepared by:



# BOSTON ROAD (ROUTE 3A) AT LEXINGTON RD & GLAD VALLEY DR.

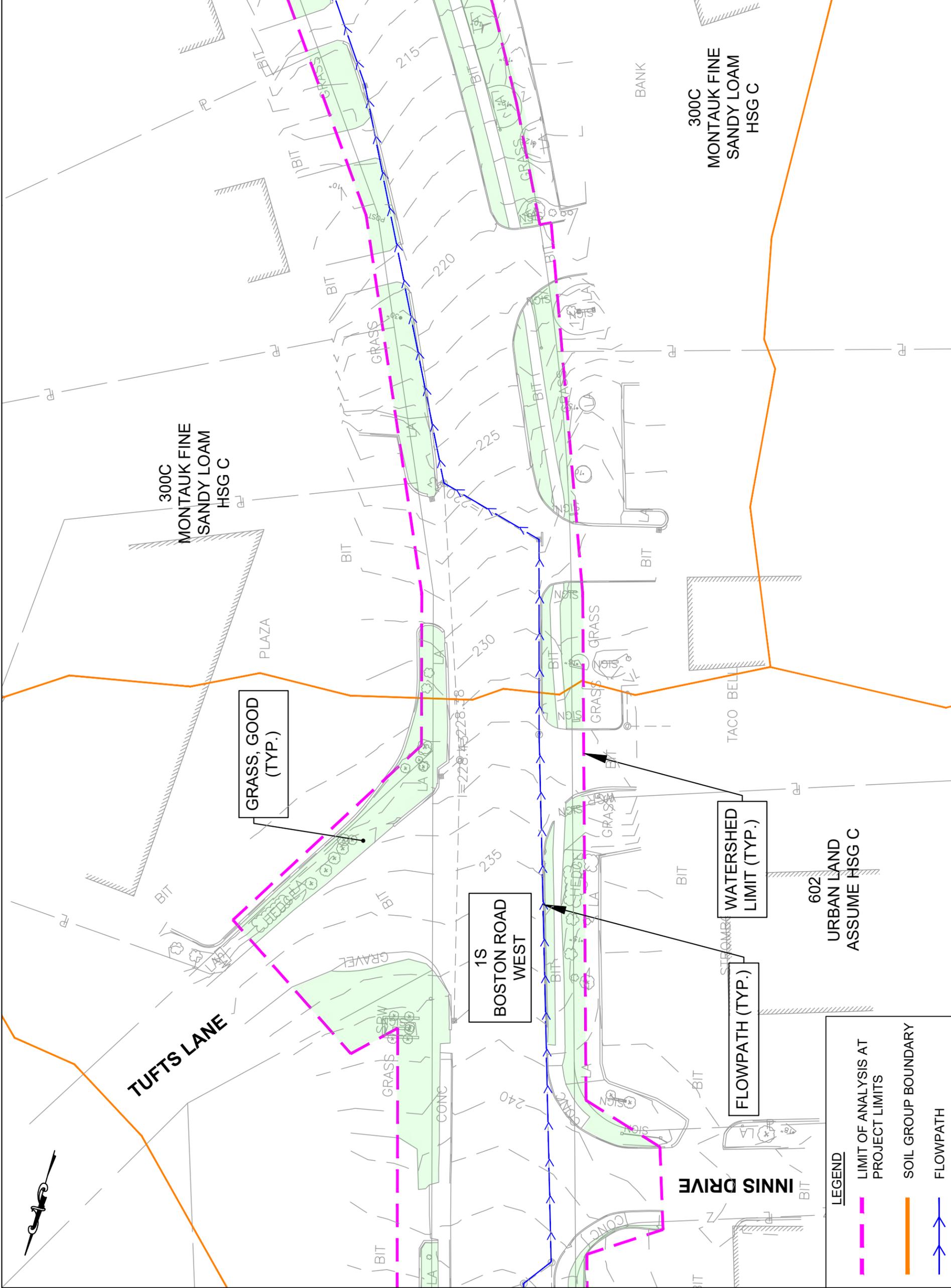
BILLERICA, MA



FIGURE D-2E

PRE-DEVELOPMENT  
WATERSHED PLAN

ISSUE DATE: DECEMBER 14, 2023



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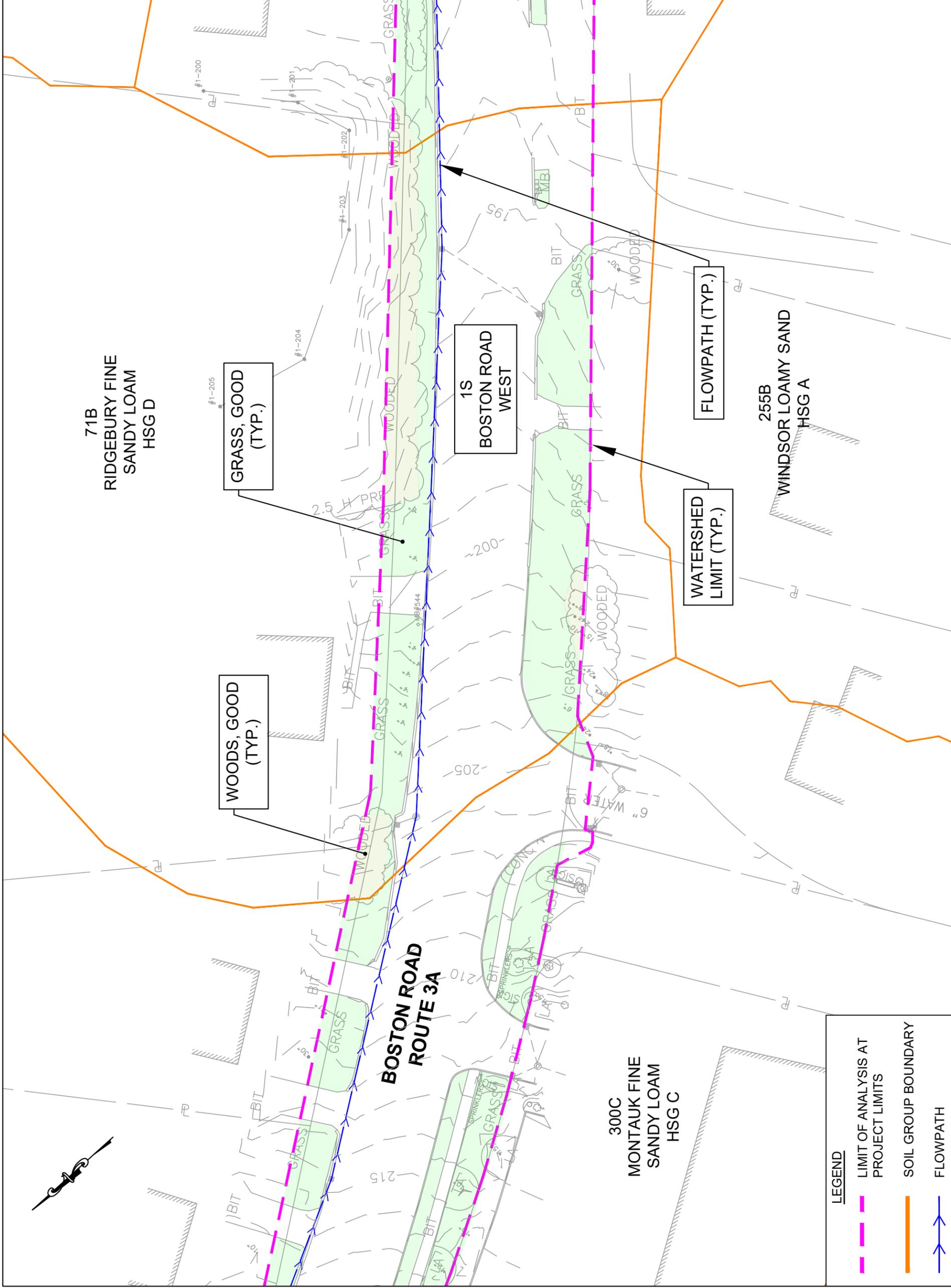
BILLERICA, MA



FIGURE D-3E

PRE-DEVELOPMENT  
WATERSHED PLAN

ISSUE DATE: DECEMBER 14, 2023



Prepared by:



# BOSTON ROAD (ROUTE 3A) AT LEXINGTON RD & GLAD VALLEY DR.

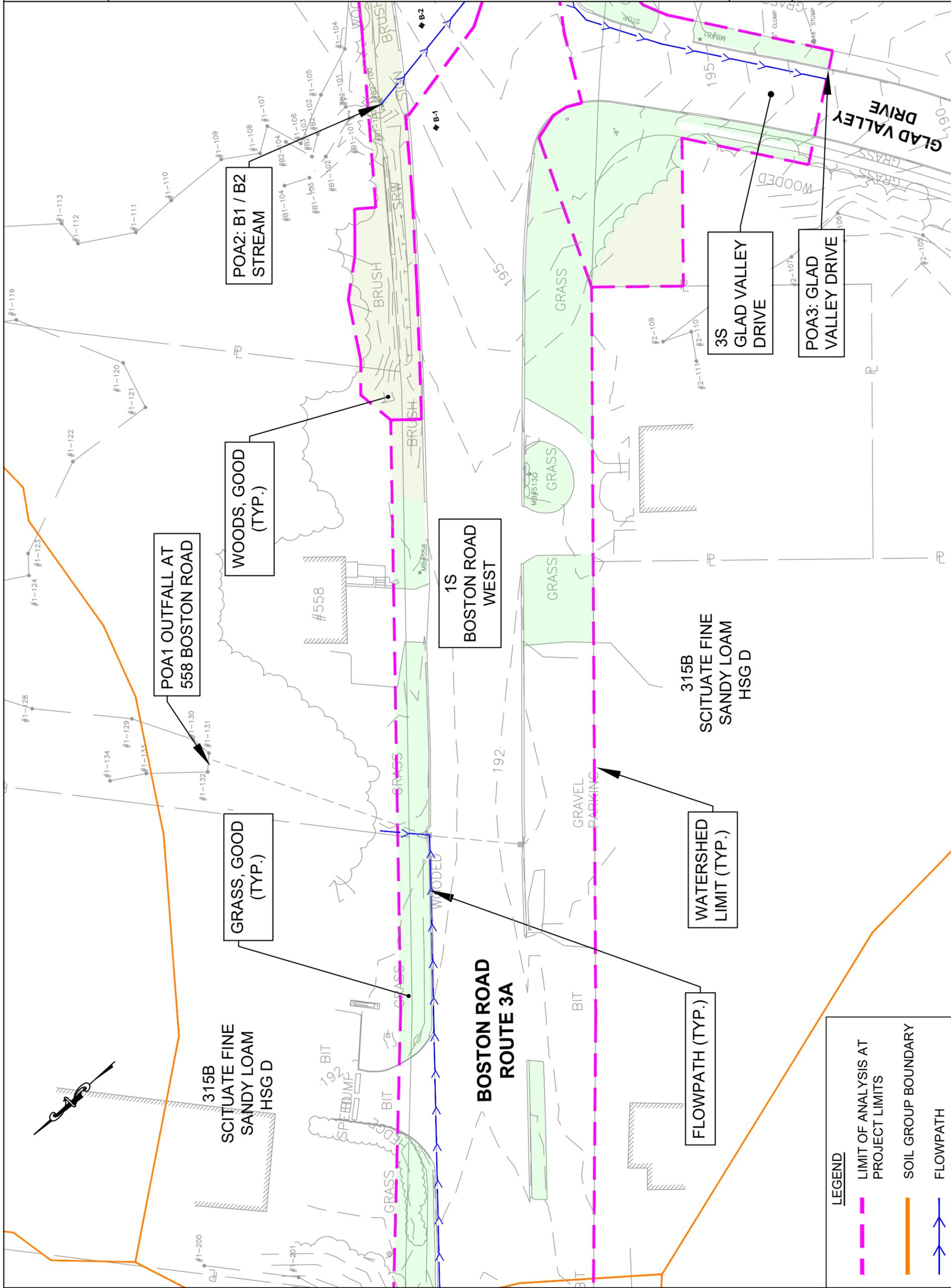
BILLERICA, MA



FIGURE D-4E

PRE-DEVELOPMENT  
WATERSHED PLAN

ISSUE DATE: DECEMBER 14, 2023



| LEGEND |                                     |
|--------|-------------------------------------|
|        | LIMIT OF ANALYSIS AT PROJECT LIMITS |
|        | SOIL GROUP BOUNDARY                 |
|        | FLOWPATH                            |

Prepared by:



# BOSTON ROAD (ROUTE 3A) AT LEXINGTON RD & GLAD VALLEY DR.

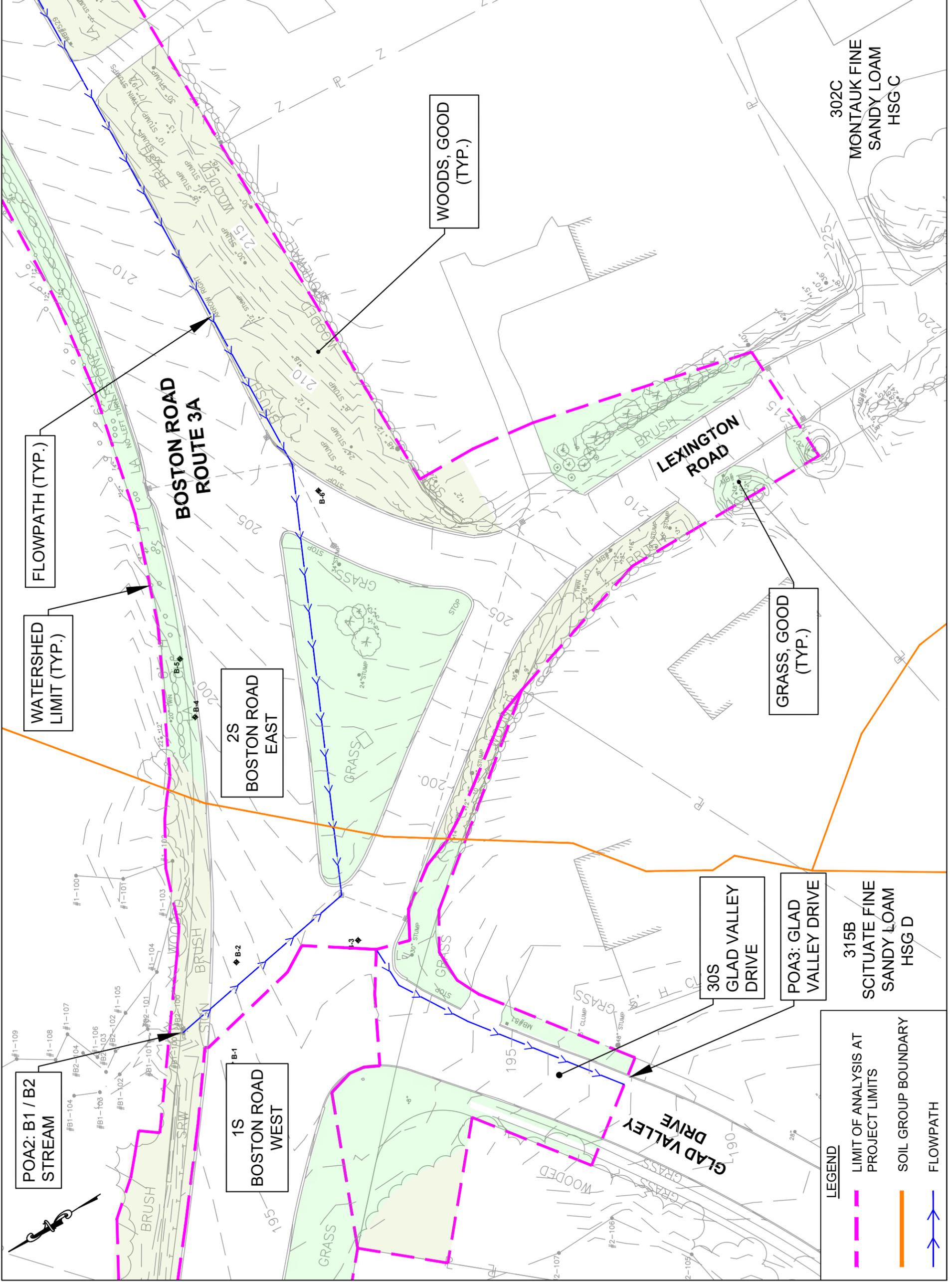
BILLERICA, MA



FIGURE D-5E

PRE-DEVELOPMENT  
WATERSHED PLAN

ISSUE DATE: DECEMBER 14, 2023



FLOWPATH (TYP.)

WATERSHED LIMIT (TYP.)

BOSTON ROAD  
ROUTE 3A

WOODS, GOOD  
(TYP.)

LEXINGTON ROAD

GRASS, GOOD  
(TYP.)

302C  
MONTAUK FINE  
SANDY LOAM  
HSG C

2S  
BOSTON ROAD  
EAST

POA2: B1 / B2  
STREAM

1S  
BOSTON ROAD  
WEST

30S  
GLAD VALLEY  
DRIVE

POA3: GLAD  
VALLEY DRIVE

315B  
SCITUATE FINE  
SANDY LOAM  
HSG D

**LEGEND**

- (dashed magenta) LIMIT OF ANALYSIS AT PROJECT LIMITS
- (solid orange) SOIL GROUP BOUNDARY
- (blue line with arrow) FLOWPATH

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# BOSTON ROAD (ROUTE 3A) AT LEXINGTON RD & GLAD VALLEY DR.

BILLERICA, MA



FIGURE D-6E  
PRE-DEVELOPMENT  
WATERSHED PLAN

ISSUE DATE: DECEMBER 14, 2023



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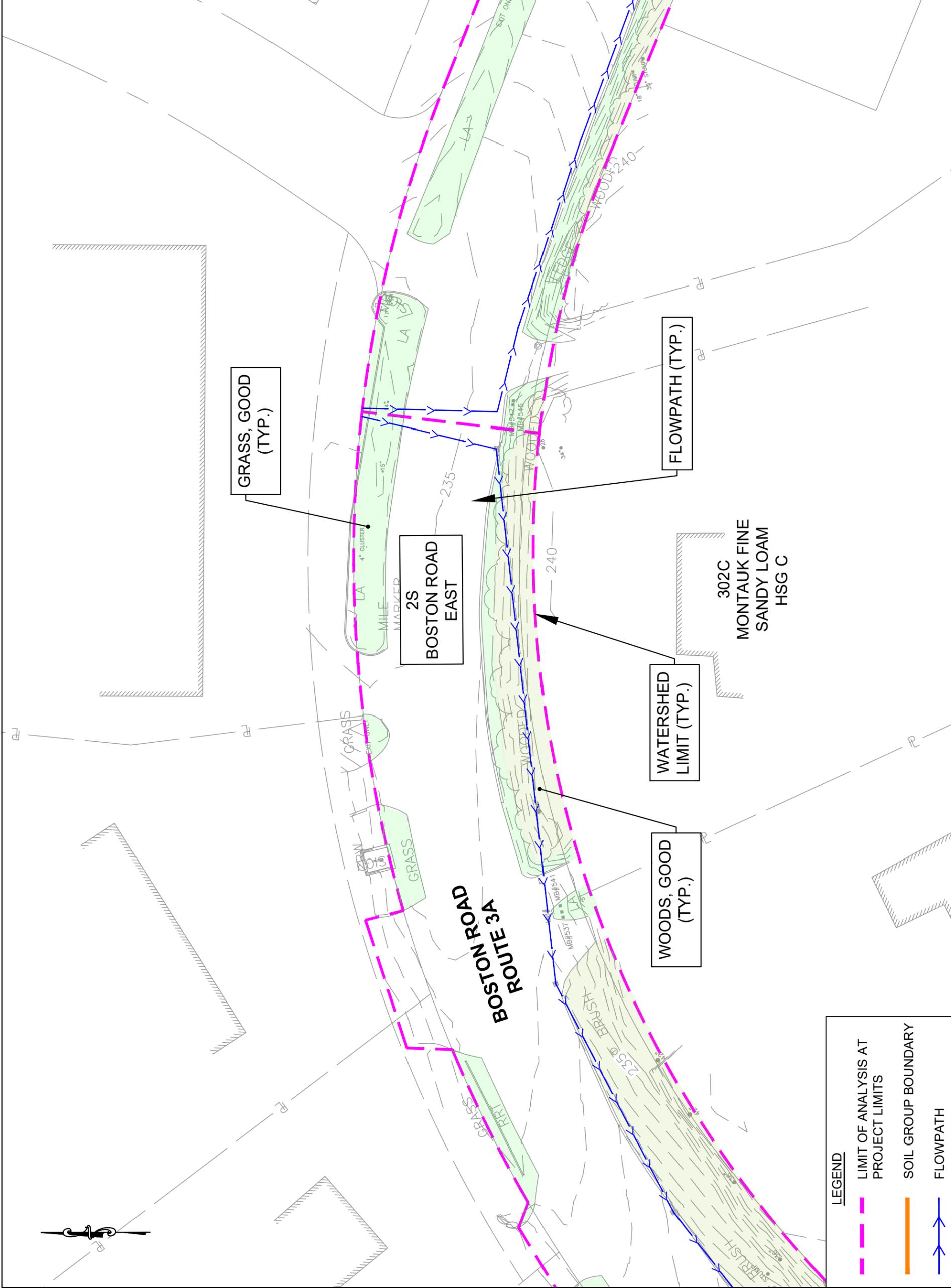
# BOSTON ROAD (ROUTE 3A) AT LEXINGTON RD & GLAD VALLEY DR.

BILLERICA, MA



FIGURE D-7E  
PRE-DEVELOPMENT  
WATERSHED PLAN

ISSUE DATE: DECEMBER 14, 2023



| LEGEND |                                     |
|--------|-------------------------------------|
|        | LIMIT OF ANALYSIS AT PROJECT LIMITS |
|        | SOIL GROUP BOUNDARY                 |
|        | FLOWPATH                            |

Prepared by:



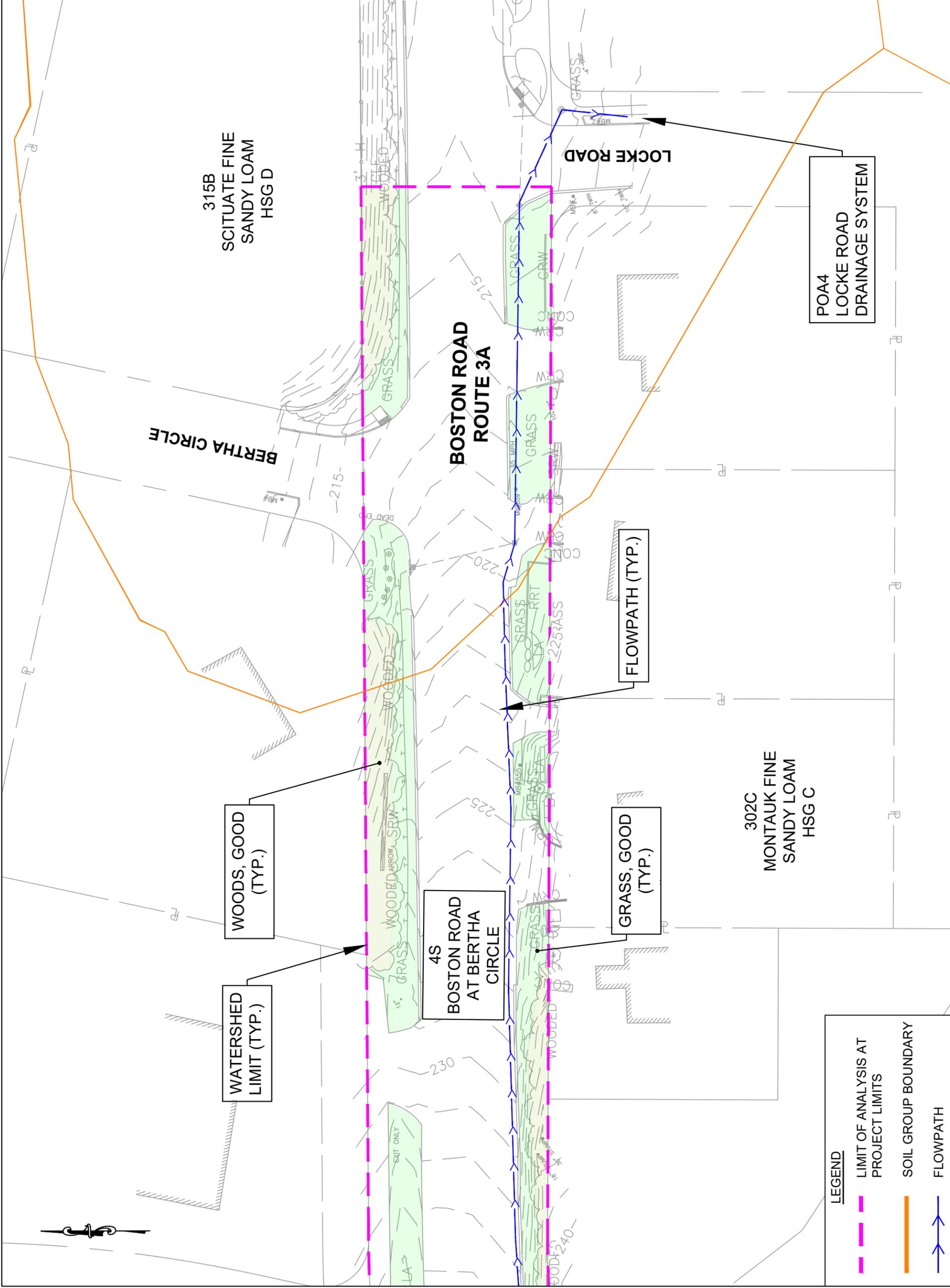
# BOSTON ROAD (ROUTE 3A) AT LEXINGTON RD & GLAD VALLEY DR.

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FIGURE D-8E  
PRE-DEVELOPMENT  
WATERSHED PLAN

ISSUE DATE: DECEMBER 14, 2023



| LEGEND |                                     |
|--------|-------------------------------------|
|        | LIMIT OF ANALYSIS AT PROJECT LIMITS |
|        | SOIL GROUP BOUNDARY                 |
|        | FLOWPATH                            |



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# BOSTON ROAD (ROUTE 3A) AT LEXINGTON RD & GLAD VALLEY DR.

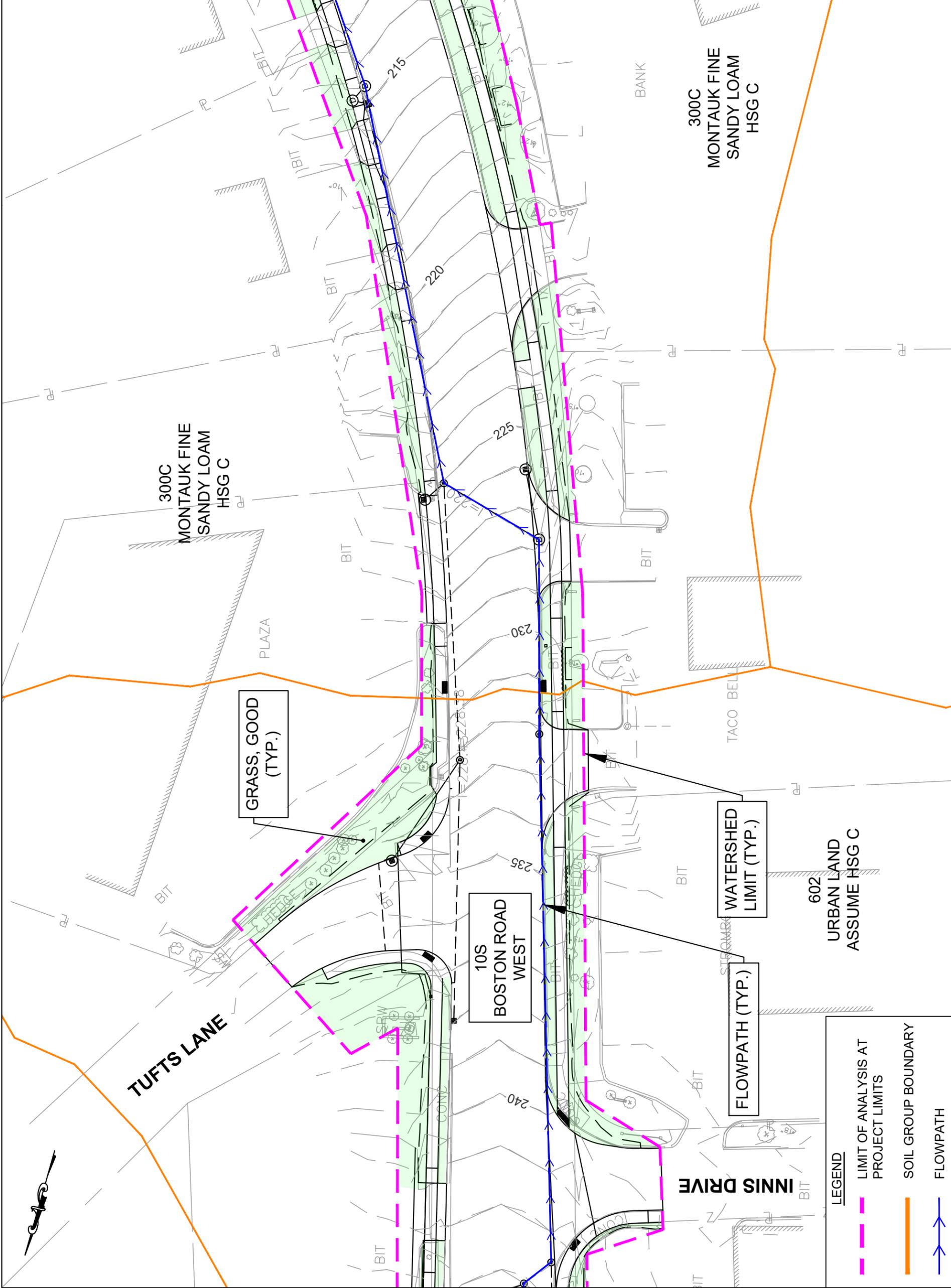
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FIGURE D-2P

POST-DEVELOPMENT  
WATERSHED PLAN

ISSUE DATE: DECEMBER 14, 2023



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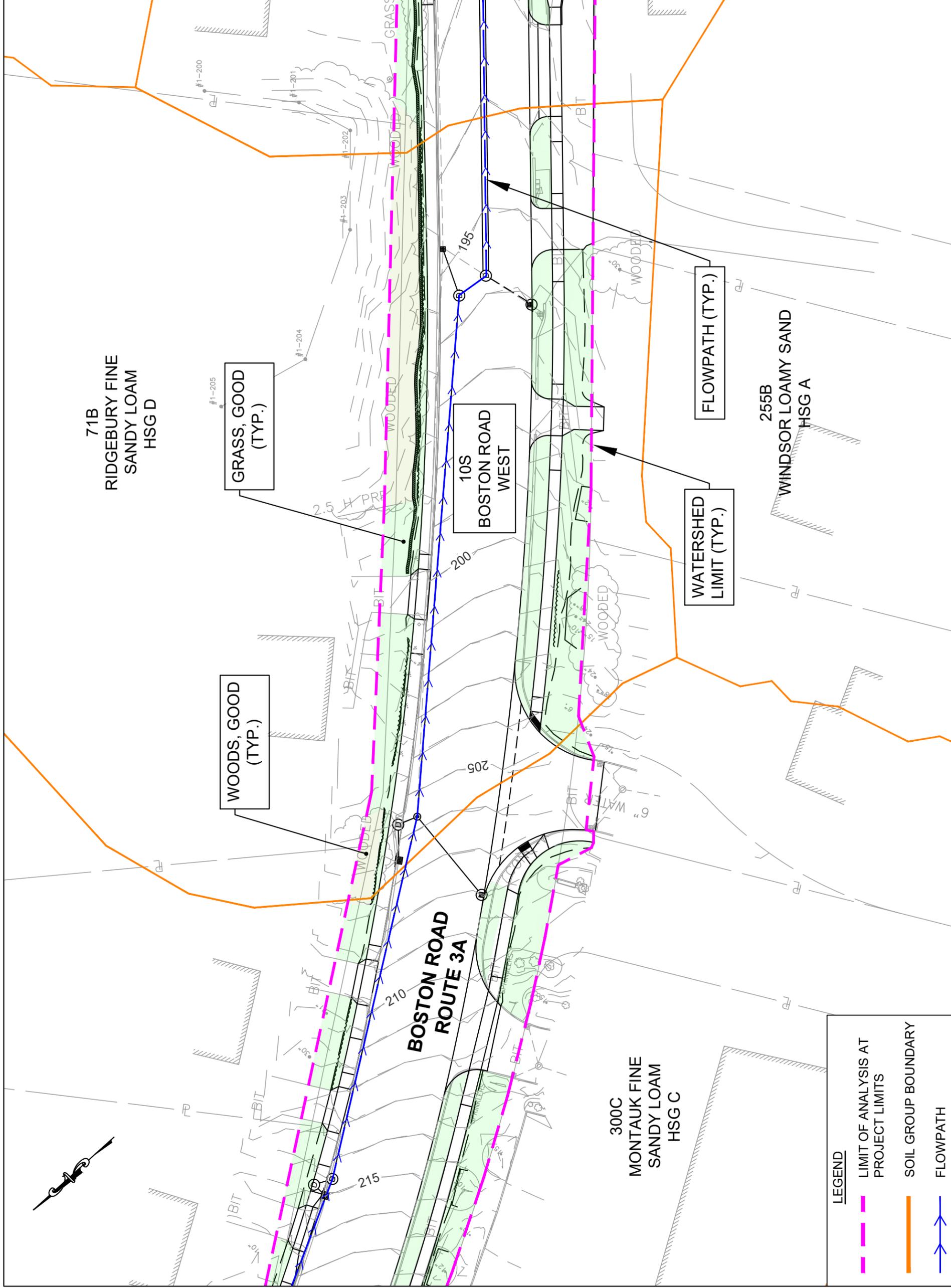
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FIGURE D-3P

## POST-DEVELOPMENT WATERSHED PLAN

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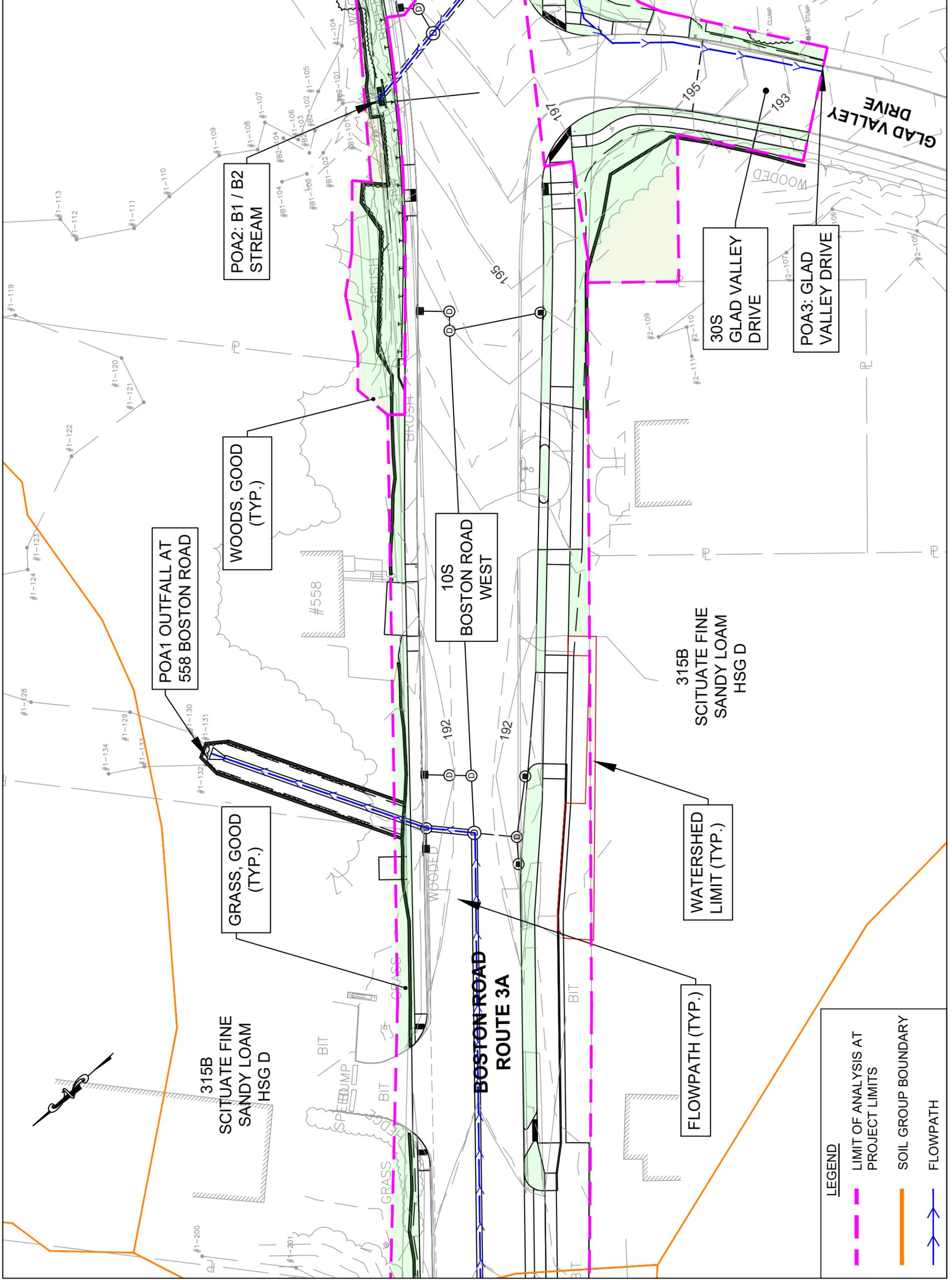
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FIGURE D-4P

POST-DEVELOPMENT  
WATERSHED PLAN

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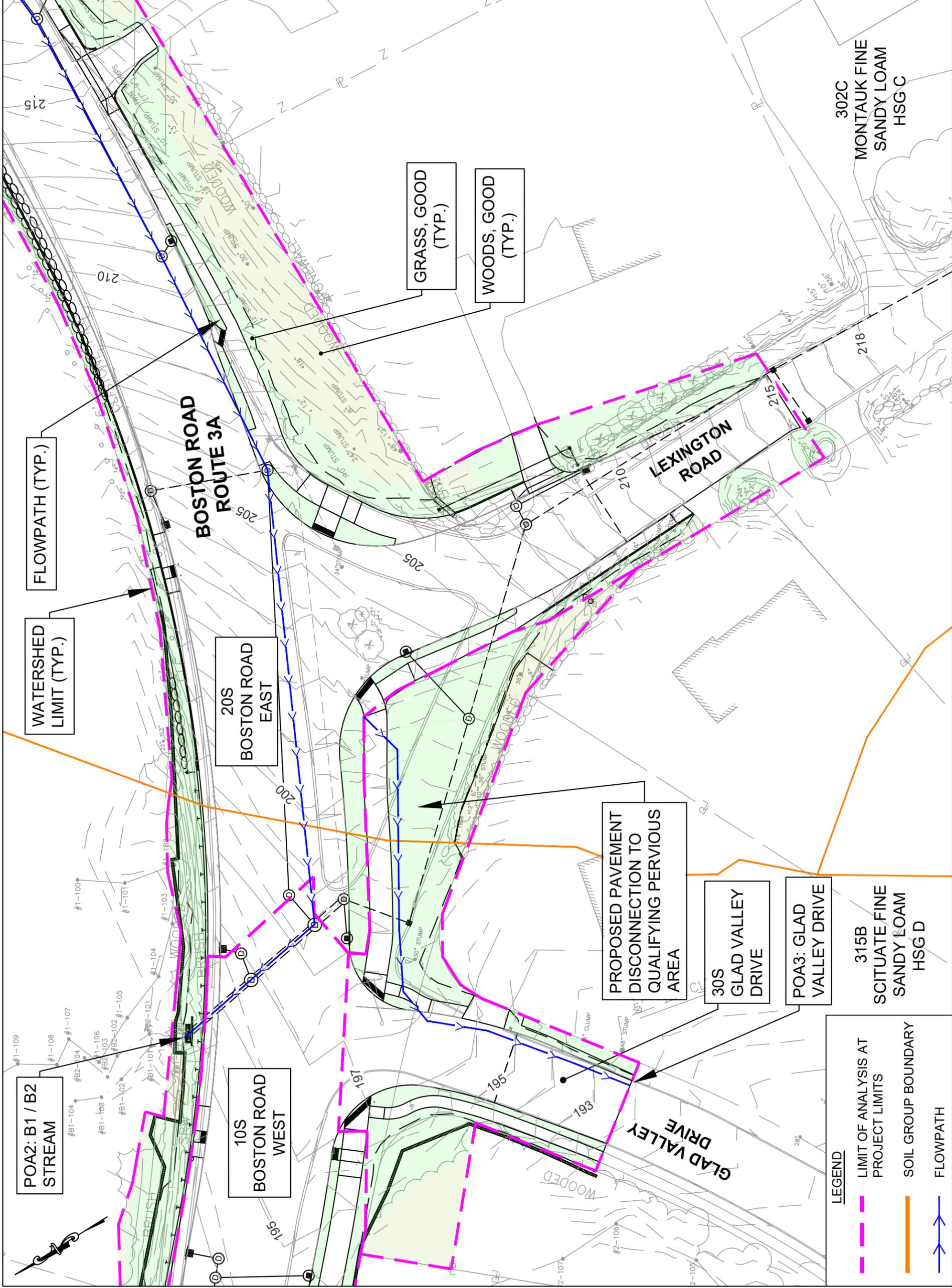
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FIGURE D-5P

POST-DEVELOPMENT  
WATERSHED PLAN

ISSUE DATE: DECEMBER 14, 2023



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FIGURE D-6P

## POST-DEVELOPMENT WATERSHED PLAN

ISSUE DATE: DECEMBER 14, 2023



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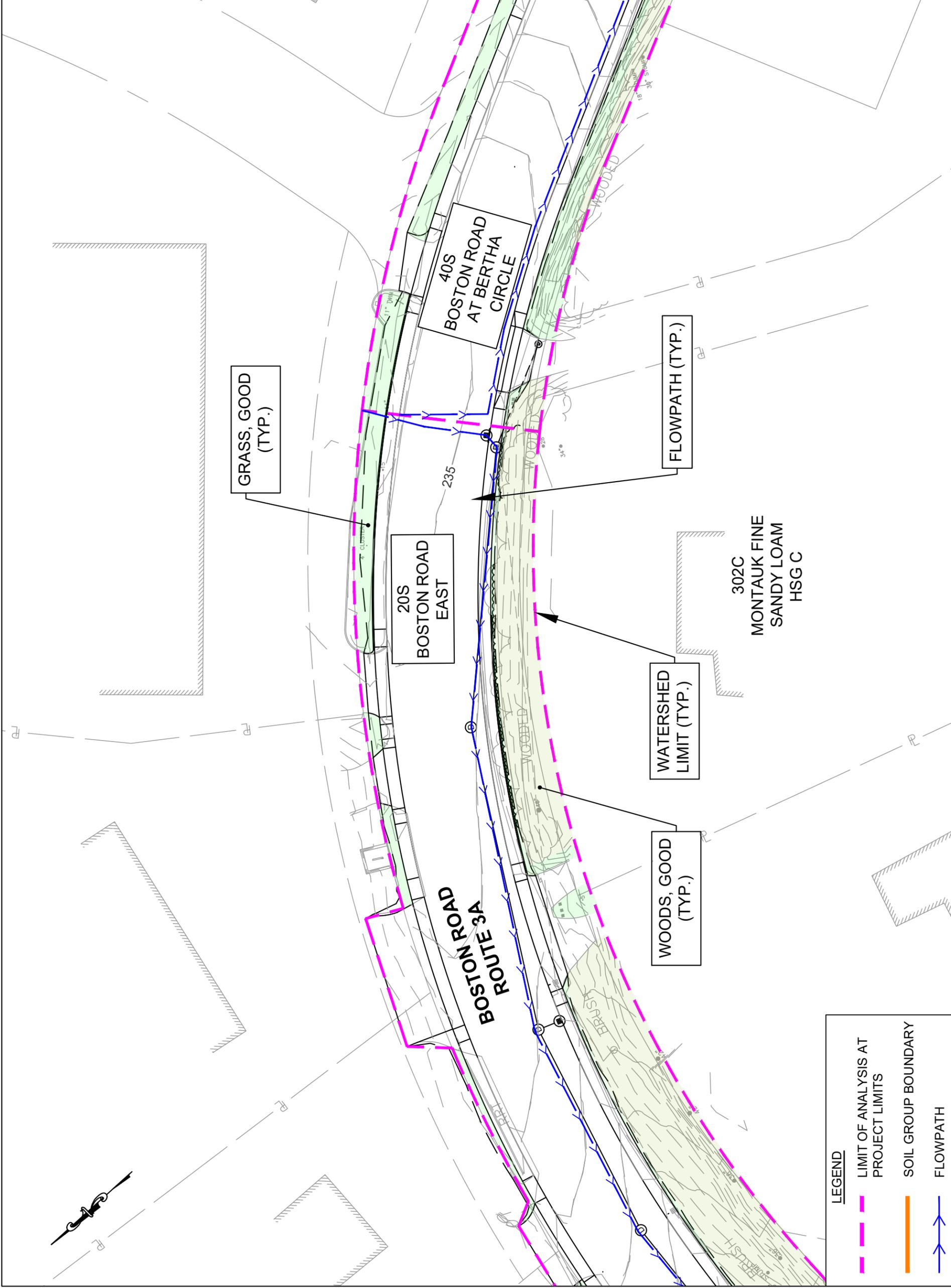
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FIGURE D-7P

## POST-DEVELOPMENT WATERSHED PLAN

ISSUE DATE: DECEMBER 14, 2023



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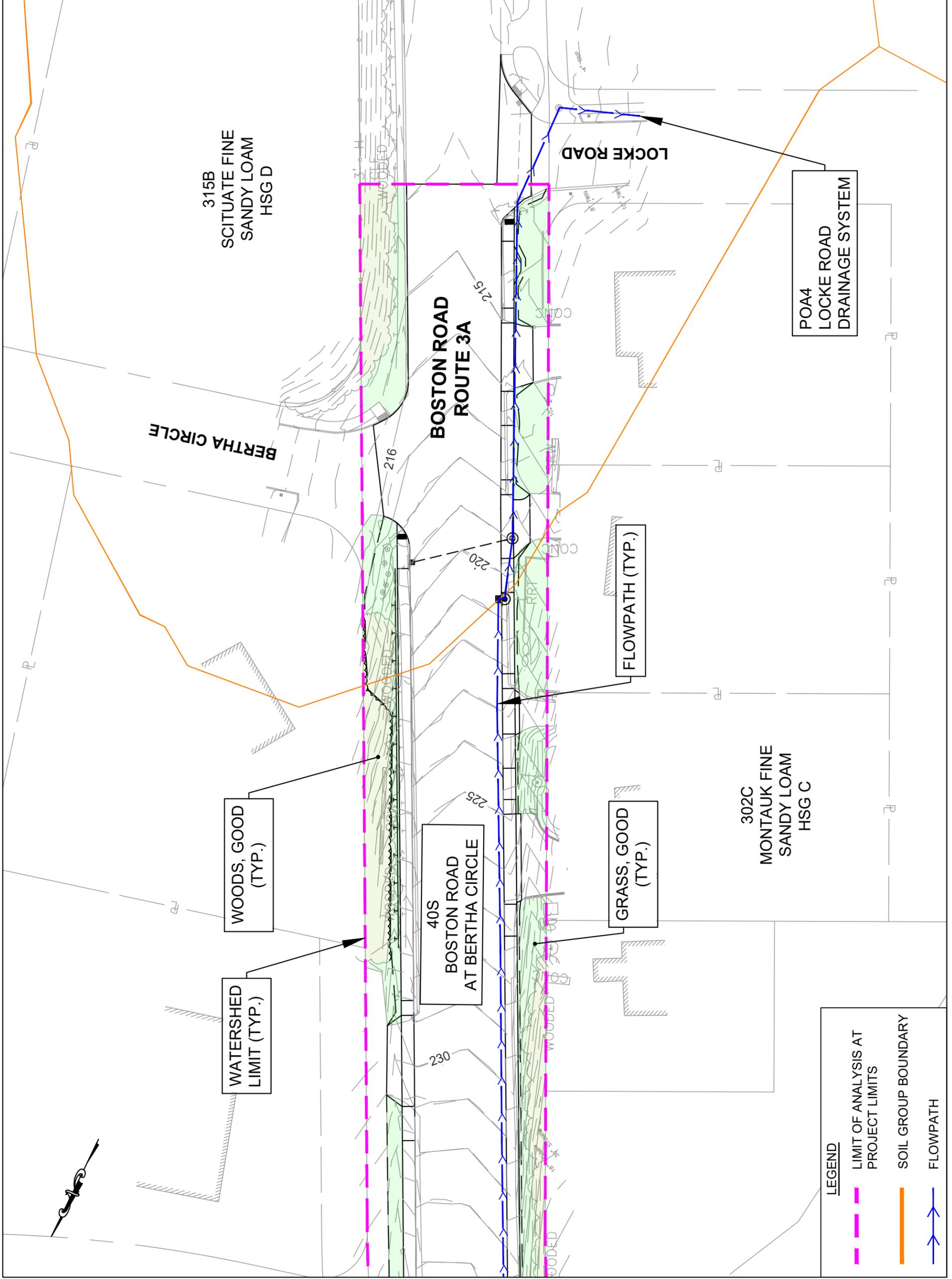
# BOSTON ROAD (ROUTE 3A) AT LEXINGTON RD & GLAD VALLEY DR.

BILLERICA, MA



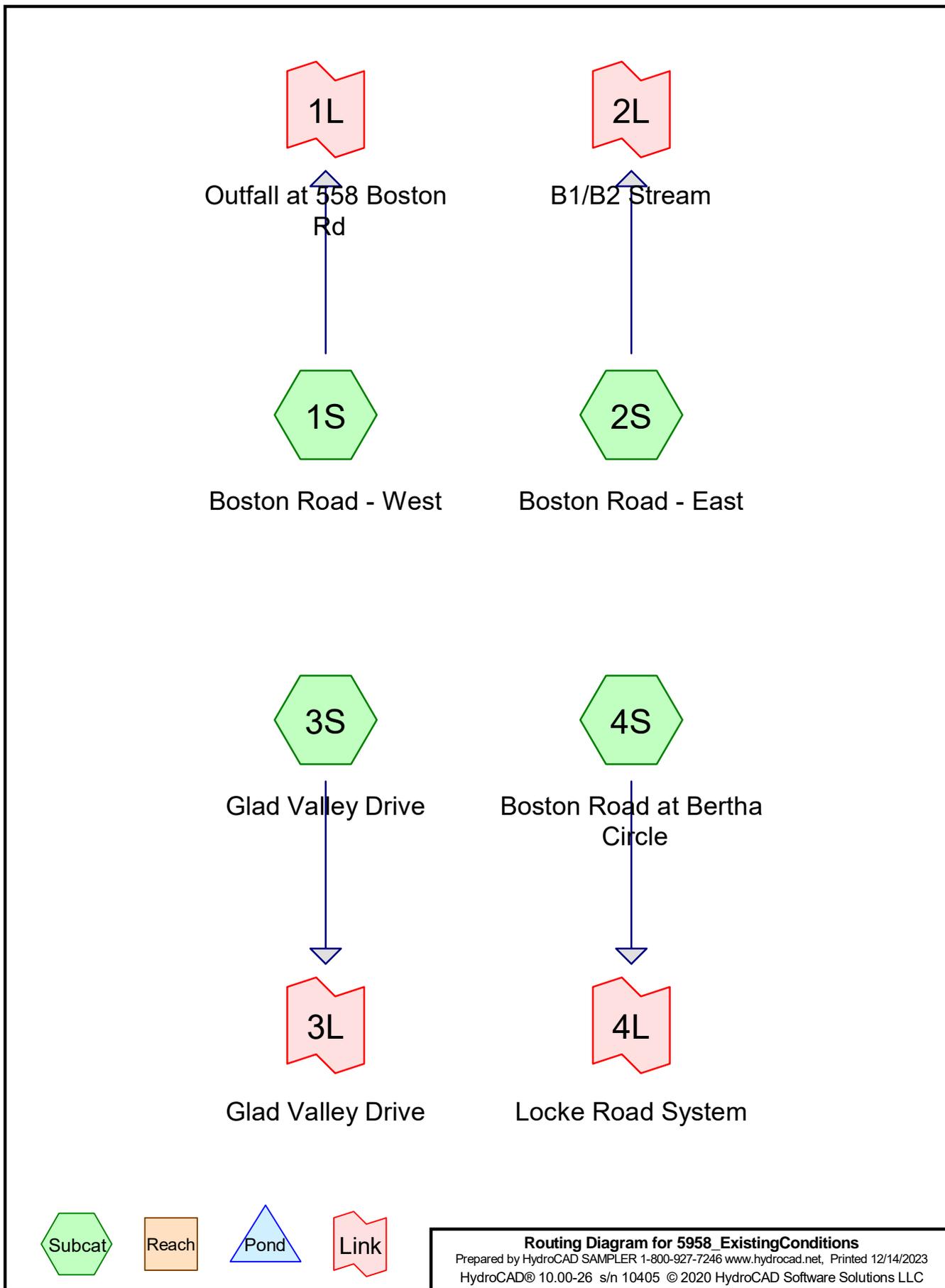
FIGURE D-8P  
POST-DEVELOPMENT  
WATERSHED PLAN

ISSUE DATE: DECEMBER 14, 2023



# APPENDIX E – EXISTING CONDITIONS CALCULATION

---



# Proposal No. 609250 - 129975

## 5958\_ExistingConditions

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Page 1

### Area Listing (all nodes)

| Area (acres) | CN | Description (subcatchment-numbers)                   |
|--------------|----|--|
| 1.180        | 74 | >75% Grass cover, Good, HSG C (1S, 2S, 3S, 4S)       |
| 0.596        | 80 | >75% Grass cover, Good, HSG D (1S, 2S, 3S, 4S)       |
| 0.004        | 96 | Gravel surface, HSG C (1S)                           |
| 0.090        | 96 | Gravel surface, HSG D (1S)                           |
| 3.862        | 98 | Paved roads w/curbs & sewers, HSG C (1S, 2S, 3S, 4S) |
| 1.570        | 98 | Paved roads w/curbs & sewers, HSG D (1S, 2S, 3S, 4S) |
| 0.829        | 70 | Woods, Good, HSG C (1S, 2S, 3S, 4S)                  |
| 0.249        | 77 | Woods, Good, HSG D (1S, 2S, 3S, 4S)                  |

## 5958\_ExistingConditions

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Page 2

### Soil Listing (all nodes)

| Area (acres) | Soil Group | Subcatchment Numbers |
|--------------|------------|----------------------|
| 0.000        | HSG A      |                      |
| 0.000        | HSG B      |                      |
| 5.875        | HSG C      | 1S, 2S, 3S, 4S       |
| 2.505        | HSG D      | 1S, 2S, 3S, 4S       |
| 0.000        | Other      |                      |

## 5958\_ExistingConditions

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Page 3

### Ground Covers (all nodes)

| HSG-A (acres) | HSG-B (acres) | HSG-C (acres) | HSG-D (acres) | Other (acres) | Total (acres) | Ground Cover                 | Subcatchment Numbers |
|---------------|---------------|---------------|---------------|---------------|---------------|------------------------------|----------------------|
| 0.000         | 0.000         | 1.180         | 0.596         | 0.000         | 1.777         | >75% Grass cover, Good       | 1S, 2S, 3S, 4S       |
| 0.000         | 0.000         | 0.004         | 0.090         | 0.000         | 0.094         | Gravel surface               | 1S                   |
| 0.000         | 0.000         | 3.862         | 1.570         | 0.000         | 5.432         | Paved roads w/curbs & sewers | 1S, 2S, 3S, 4S       |
| 0.000         | 0.000         | 0.829         | 0.249         | 0.000         | 1.077         | Woods, Good                  | 1S, 2S, 3S, 4S       |

## 5958\_ExistingConditions

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Type III 24-hr 1-year Rainfall=2.61"

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Page 4

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

|   |   |
|---|---|
| <b>Subcatchment 1S: Boston Road - West</b>    | Runoff Area=174,016 sf 72.78% Impervious Runoff Depth>1.78"<br>Flow Length=1,650' Tc=6.0 min CN=93 Runoff=8.45 cfs 0.591 af |
| <b>Subcatchment 2S: Boston Road - East</b>    | Runoff Area=132,845 sf 55.89% Impervious Runoff Depth>1.31"<br>Tc=6.0 min CN=87 Runoff=4.92 cfs 0.332 af                    |
| <b>Subcatchment 3S: Glad Valley Drive</b>     | Runoff Area=10,643 sf 39.26% Impervious Runoff Depth>1.24"<br>Flow Length=125' Tc=6.0 min CN=86 Runoff=0.37 cfs 0.025 af    |
| <b>Subcatchment 4S: Boston Road at Bertha</b> | Runoff Area=47,537 sf 66.32% Impervious Runoff Depth>1.53"<br>Tc=6.0 min CN=90 Runoff=2.03 cfs 0.139 af                     |
| <b>Link 1L: Outfall at 558 Boston Rd</b>      | Inflow=8.45 cfs 0.591 af<br>Primary=8.45 cfs 0.591 af   |
| <b>Link 2L: B1/B2 Stream</b>                  | Inflow=4.92 cfs 0.332 af<br>Primary=4.92 cfs 0.332 af   |
| <b>Link 3L: Glad Valley Drive</b>             | Inflow=0.37 cfs 0.025 af<br>Primary=0.37 cfs 0.025 af   |
| <b>Link 4L: Locke Road System</b>             | Inflow=2.03 cfs 0.139 af<br>Primary=2.03 cfs 0.139 af   |

# Proposal No. 609250 - 129975

**5958\_ExistingConditions** Type III 24-hr 1-year Rainfall=2.61"  
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### Summary for Subcatchment 1S: Boston Road - West

Runoff = 8.45 cfs @ 12.09 hrs, Volume= 0.591 af, Depth> 1.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 1-year Rainfall=2.61"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 22,651    | 74 | >75% Grass cover, Good, HSG C       |
| 16,735    | 80 | >75% Grass cover, Good, HSG D       |
| 181       | 96 | Gravel surface, HSG C               |
| 3,924     | 96 | Gravel surface, HSG D               |
| 78,681    | 98 | Paved roads w/curbs & sewers, HSG C |
| 47,972    | 98 | Paved roads w/curbs & sewers, HSG D |
| 607       | 70 | Woods, Good, HSG C                  |
| 3,265     | 77 | Woods, Good, HSG D                  |
| 174,016   | 93 | Weighted Average                    |
| 47,363    |    | 27.22% Pervious Area                |
| 126,653   |    | 72.78% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 0.6      | 50            | 0.0330        | 1.44              |                | <b>Sheet Flow, Sheet Flow</b><br>Smooth surfaces n= 0.011 P2= 3.12"                    |
| 0.4      | 90            | 0.0420        | 4.16              |                | <b>Shallow Concentrated Flow, Shallow Conc.</b><br>Paved Kv= 20.3 fps                  |
| 2.6      | 1,510         | 0.0330        | 9.74              | 7.65           | <b>Pipe Channel, Pipe</b><br>12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.011 |
| 2.4      |               |               |                   |                | <b>Direct Entry, Min. TC</b>   |
| 6.0      | 1,650         | Total         |                   |                |  |

**5958\_ExistingConditions** Type III 24-hr 1-year Rainfall=2.61"  
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### Summary for Subcatchment 2S: Boston Road - East

Runoff = 4.92 cfs @ 12.09 hrs, Volume= 0.332 af, Depth> 1.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 1-year Rainfall=2.61"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 20,523    | 74 | >75% Grass cover, Good, HSG C       |
| 505       | 80 | >75% Grass cover, Good, HSG D       |
| 68,755    | 98 | Paved roads w/curbs & sewers, HSG C |
| 5,496     | 98 | Paved roads w/curbs & sewers, HSG D |
| 32,701    | 70 | Woods, Good, HSG C                  |
| 4,866     | 77 | Woods, Good, HSG D                  |
| 132,845   | 87 | Weighted Average                    |
| 58,595    |    | 44.11% Pervious Area                |
| 74,250    |    | 55.89% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                  |
|----------|---------------|---------------|-------------------|----------------|------------------------------|
| 6.0      |               |               |                   |                | <b>Direct Entry, Min. TC</b> |

**5958\_ExistingConditions** Type III 24-hr 1-year Rainfall=2.61"  
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### Summary for Subcatchment 3S: Glad Valley Drive

Runoff = 0.37 cfs @ 12.09 hrs, Volume= 0.025 af, Depth> 1.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 1-year Rainfall=2.61"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 0         | 74 | >75% Grass cover, Good, HSG C       |
| 4,834     | 80 | >75% Grass cover, Good, HSG D       |
| 18        | 98 | Paved roads w/curbs & sewers, HSG C |
| 4,161     | 98 | Paved roads w/curbs & sewers, HSG D |
| 313       | 70 | Woods, Good, HSG C                  |
| 1,317     | 77 | Woods, Good, HSG D                  |
| 10,643    | 86 | Weighted Average                    |
| 6,464     |    | 60.74% Pervious Area                |
| 4,179     |    | 39.26% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 0.7      | 50            | 0.0240        | 1.27              |                | <b>Sheet Flow, Sheet Flow</b><br>Smooth surfaces n= 0.011 P2= 3.12"   |
| 0.3      | 75            | 0.0550        | 4.76              |                | <b>Shallow Concentrated Flow, Shallow Conc.</b><br>Paved Kv= 20.3 fps |
| 5.0      |               |               |                   |                | <b>Direct Entry, Min TC</b>   |
| 6.0      | 125           | Total         |                   |                |   |

**5958\_ExistingConditions** Type III 24-hr 1-year Rainfall=2.61"  
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### Summary for Subcatchment 4S: Boston Road at Bertha Circle

Runoff = 2.03 cfs @ 12.09 hrs, Volume= 0.139 af, Depth> 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 1-year Rainfall=2.61"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 8,247     | 74 | >75% Grass cover, Good, HSG C       |
| 3,899     | 80 | >75% Grass cover, Good, HSG D       |
| 20,772    | 98 | Paved roads w/curbs & sewers, HSG C |
| 10,753    | 98 | Paved roads w/curbs & sewers, HSG D |
| 2,469     | 70 | Woods, Good, HSG C                  |
| 1,397     | 77 | Woods, Good, HSG D                  |
| 47,537    | 90 | Weighted Average                    |
| 16,012    |    | 33.68% Pervious Area                |
| 31,525    |    | 66.32% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                     |
|----------|---------------|---------------|-------------------|----------------|---------------------------------|
| 6.0      |               |               |                   |                | <b>Direct Entry, Minimum TC</b> |

# Proposal No. 609250 - 129975

## 5958\_ExistingConditions

Type III 24-hr 1-year Rainfall=2.61"

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### Summary for Link 1L: Outfall at 558 Boston Rd

Inflow Area = 3.995 ac, 72.78% Impervious, Inflow Depth > 1.78" for 1-year event  
Inflow = 8.45 cfs @ 12.09 hrs, Volume= 0.591 af  
Primary = 8.45 cfs @ 12.09 hrs, Volume= 0.591 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

## 5958\_ExistingConditions

Type III 24-hr 1-year Rainfall=2.61"

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### Summary for Link 2L: B1/B2 Stream

Inflow Area = 3.050 ac, 55.89% Impervious, Inflow Depth > 1.31" for 1-year event  
Inflow = 4.92 cfs @ 12.09 hrs, Volume= 0.332 af  
Primary = 4.92 cfs @ 12.09 hrs, Volume= 0.332 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

## 5958\_ExistingConditions

Type III 24-hr 1-year Rainfall=2.61"

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### Summary for Link 3L: Glad Valley Drive

Inflow Area = 0.244 ac, 39.26% Impervious, Inflow Depth > 1.24" for 1-year event  
Inflow = 0.37 cfs @ 12.09 hrs, Volume= 0.025 af  
Primary = 0.37 cfs @ 12.09 hrs, Volume= 0.025 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

## 5958\_ExistingConditions

Type III 24-hr 1-year Rainfall=2.61"

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### Summary for Link 4L: Locke Road System

Inflow Area = 1.091 ac, 66.32% Impervious, Inflow Depth > 1.53" for 1-year event  
Inflow = 2.03 cfs @ 12.09 hrs, Volume= 0.139 af  
Primary = 2.03 cfs @ 12.09 hrs, Volume= 0.139 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

# Proposal No. 609250 - 129975

**5958\_ExistingConditions** Type III 24-hr 2-year Rainfall=3.14"  
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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

|   |  |
|---|--|
| <b>Subcatchment 1S: Boston Road - West</b>    | Runoff Area=174,016 sf 72.78% Impervious Runoff Depth>2.26"<br>Flow Length=1,650' Tc=6.0 min CN=93 Runoff=10.60 cfs 0.751 af |
| <b>Subcatchment 2S: Boston Road - East</b>    | Runoff Area=132,845 sf 55.89% Impervious Runoff Depth>1.74"<br>Tc=6.0 min CN=87 Runoff=6.52 cfs 0.442 af                     |
| <b>Subcatchment 3S: Glad Valley Drive</b>     | Runoff Area=10,643 sf 39.26% Impervious Runoff Depth>1.66"<br>Flow Length=125' Tc=6.0 min CN=86 Runoff=0.50 cfs 0.034 af     |
| <b>Subcatchment 4S: Boston Road at Bertha</b> | Runoff Area=47,537 sf 66.32% Impervious Runoff Depth>1.99"<br>Tc=6.0 min CN=90 Runoff=2.62 cfs 0.181 af                      |
| <b>Link 1L: Outfall at 558 Boston Rd</b>      | Inflow=10.60 cfs 0.751 af<br>Primary=10.60 cfs 0.751 af  |
| <b>Link 2L: B1/B2 Stream</b>                  | Inflow=6.52 cfs 0.442 af<br>Primary=6.52 cfs 0.442 af  |
| <b>Link 3L: Glad Valley Drive</b>             | Inflow=0.50 cfs 0.034 af<br>Primary=0.50 cfs 0.034 af  |
| <b>Link 4L: Locke Road System</b>             | Inflow=2.62 cfs 0.181 af<br>Primary=2.62 cfs 0.181 af  |

**5958\_ExistingConditions** Type III 24-hr 2-year Rainfall=3.14"  
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### Summary for Subcatchment 1S: Boston Road - West

Runoff = 10.60 cfs @ 12.09 hrs, Volume= 0.751 af, Depth> 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2-year Rainfall=3.14"

| Area (sf) | CN            | Description                         |                   |                |  |
|-----------|---------------|-------------------------------------|-------------------|----------------|--|
| 22,651    | 74            | >75% Grass cover, Good, HSG C       |                   |                |  |
| 16,735    | 80            | >75% Grass cover, Good, HSG D       |                   |                |  |
| 181       | 96            | Gravel surface, HSG C               |                   |                |  |
| 3,924     | 96            | Gravel surface, HSG D               |                   |                |  |
| 78,681    | 98            | Paved roads w/curbs & sewers, HSG C |                   |                |  |
| 47,972    | 98            | Paved roads w/curbs & sewers, HSG D |                   |                |  |
| 607       | 70            | Woods, Good, HSG C                  |                   |                |  |
| 3,265     | 77            | Woods, Good, HSG D                  |                   |                |  |
| <hr/>     |               |                                     |                   |                |  |
| 174,016   | 93            | Weighted Average                    |                   |                |  |
| 47,363    |               | 27.22% Pervious Area                |                   |                |  |
| 126,653   |               | 72.78% Impervious Area              |                   |                |  |
| <hr/>     |               |                                     |                   |                |  |
| Tc (min)  | Length (feet) | Slope (ft/ft)                       | Velocity (ft/sec) | Capacity (cfs) | Description  |
| 0.6       | 50            | 0.0330                              | 1.44              |                | <b>Sheet Flow, Sheet Flow</b><br>Smooth surfaces n= 0.011 P2= 3.12"                    |
| 0.4       | 90            | 0.0420                              | 4.16              |                | <b>Shallow Concentrated Flow, Shallow Conc.</b><br>Paved Kv= 20.3 fps                  |
| 2.6       | 1,510         | 0.0330                              | 9.74              | 7.65           | <b>Pipe Channel, Pipe</b><br>12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25"<br>n= 0.011 |
| <hr/>     |               |                                     |                   |                |  |
| 2.4       |               |                                     |                   |                | <b>Direct Entry, Min. TC</b>   |
| <hr/>     |               |                                     |                   |                |  |
| 6.0       | 1,650         | Total                               |                   |                |  |

**5958\_ExistingConditions** Type III 24-hr 2-year Rainfall=3.14"  
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### Summary for Subcatchment 2S: Boston Road - East

Runoff = 6.52 cfs @ 12.09 hrs, Volume= 0.442 af, Depth> 1.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2-year Rainfall=3.14"

| Area (sf) | CN            | Description                         |                   |                |                              |
|-----------|---------------|-------------------------------------|-------------------|----------------|------------------------------|
| 20,523    | 74            | >75% Grass cover, Good, HSG C       |                   |                |                              |
| 505       | 80            | >75% Grass cover, Good, HSG D       |                   |                |                              |
| 68,755    | 98            | Paved roads w/curbs & sewers, HSG C |                   |                |                              |
| 5,496     | 98            | Paved roads w/curbs & sewers, HSG D |                   |                |                              |
| 32,701    | 70            | Woods, Good, HSG C                  |                   |                |                              |
| 4,866     | 77            | Woods, Good, HSG D                  |                   |                |                              |
| <hr/>     |               |                                     |                   |                |                              |
| 132,845   | 87            | Weighted Average                    |                   |                |                              |
| 58,595    |               | 44.11% Pervious Area                |                   |                |                              |
| 74,250    |               | 55.89% Impervious Area              |                   |                |                              |
| <hr/>     |               |                                     |                   |                |                              |
| Tc (min)  | Length (feet) | Slope (ft/ft)                       | Velocity (ft/sec) | Capacity (cfs) | Description                  |
| 6.0       |               |                                     |                   |                | <b>Direct Entry, Min. TC</b> |

**5958\_ExistingConditions** Type III 24-hr 2-year Rainfall=3.14"  
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### Summary for Subcatchment 3S: Glad Valley Drive

Runoff = 0.50 cfs @ 12.09 hrs, Volume= 0.034 af, Depth> 1.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2-year Rainfall=3.14"

| Area (sf) | CN            | Description                         |                   |                |   |
|-----------|---------------|-------------------------------------|-------------------|----------------|---|
| 0         | 74            | >75% Grass cover, Good, HSG C       |                   |                |   |
| 4,834     | 80            | >75% Grass cover, Good, HSG D       |                   |                |   |
| 18        | 98            | Paved roads w/curbs & sewers, HSG C |                   |                |   |
| 4,161     | 98            | Paved roads w/curbs & sewers, HSG D |                   |                |   |
| 313       | 70            | Woods, Good, HSG C                  |                   |                |   |
| 1,317     | 77            | Woods, Good, HSG D                  |                   |                |   |
| <hr/>     |               |                                     |                   |                |   |
| 10,643    | 86            | Weighted Average                    |                   |                |   |
| 6,464     |               | 60.74% Pervious Area                |                   |                |   |
| 4,179     |               | 39.26% Impervious Area              |                   |                |   |
| <hr/>     |               |                                     |                   |                |   |
| Tc (min)  | Length (feet) | Slope (ft/ft)                       | Velocity (ft/sec) | Capacity (cfs) | Description   |
| 0.7       | 50            | 0.0240                              | 1.27              |                | <b>Sheet Flow, Sheet Flow</b><br>Smooth surfaces n= 0.011 P2= 3.12"   |
| 0.3       | 75            | 0.0550                              | 4.76              |                | <b>Shallow Concentrated Flow, Shallow Conc.</b><br>Paved Kv= 20.3 fps |
| <hr/>     |               |                                     |                   |                |   |
| 5.0       |               |                                     |                   |                | <b>Direct Entry, Min TC</b>   |
| <hr/>     |               |                                     |                   |                |   |
| 6.0       | 125           | Total                               |                   |                |   |

# Proposal No. 609250 - 129975

**5958\_ExistingConditions** Type III 24-hr 2-year Rainfall=3.14"  
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### Summary for Subcatchment 4S: Boston Road at Bertha Circle

Runoff = 2.62 cfs @ 12.09 hrs, Volume= 0.181 af, Depth> 1.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2-year Rainfall=3.14"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 8,247     | 74 | >75% Grass cover, Good, HSG C       |
| 3,899     | 80 | >75% Grass cover, Good, HSG D       |
| 20,772    | 98 | Paved roads w/curbs & sewers, HSG C |
| 10,753    | 98 | Paved roads w/curbs & sewers, HSG D |
| 2,469     | 70 | Woods, Good, HSG C                  |
| 1,397     | 77 | Woods, Good, HSG D                  |
| <hr/>     |    |                                     |
| 47,537    | 90 | Weighted Average                    |
| 16,012    |    | 33.68% Pervious Area                |
| 31,525    |    | 66.32% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                     |
|----------|---------------|---------------|-------------------|----------------|---------------------------------|
| 6.0      |               |               |                   |                | <b>Direct Entry, Minimum TC</b> |

**5958\_ExistingConditions** Type III 24-hr 2-year Rainfall=3.14"  
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### Summary for Link 1L: Outfall at 558 Boston Rd

Inflow Area = 3.995 ac, 72.78% Impervious, Inflow Depth > 2.26" for 2-year event  
 Inflow = 10.60 cfs @ 12.09 hrs, Volume= 0.751 af  
 Primary = 10.60 cfs @ 12.09 hrs, Volume= 0.751 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

**5958\_ExistingConditions** Type III 24-hr 2-year Rainfall=3.14"  
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### Summary for Link 2L: B1/B2 Stream

Inflow Area = 3.050 ac, 55.89% Impervious, Inflow Depth > 1.74" for 2-year event  
 Inflow = 6.52 cfs @ 12.09 hrs, Volume= 0.442 af  
 Primary = 6.52 cfs @ 12.09 hrs, Volume= 0.442 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

**5958\_ExistingConditions** Type III 24-hr 2-year Rainfall=3.14"  
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### Summary for Link 3L: Glad Valley Drive

Inflow Area = 0.244 ac, 39.26% Impervious, Inflow Depth > 1.66" for 2-year event  
 Inflow = 0.50 cfs @ 12.09 hrs, Volume= 0.034 af  
 Primary = 0.50 cfs @ 12.09 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

# Proposal No. 609250 - 129975

**5958\_ExistingConditions** Type III 24-hr 2-year Rainfall=3.14"  
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## Summary for Link 4L: Locke Road System

Inflow Area = 1.091 ac, 66.32% Impervious, Inflow Depth > 1.99" for 2-year event  
 Inflow = 2.62 cfs @ 12.09 hrs, Volume= 0.181 af  
 Primary = 2.62 cfs @ 12.09 hrs, Volume= 0.181 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

**5958\_ExistingConditions** Type III 24-hr 10-year Rainfall=4.75"  
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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1S: Boston Road - West** Runoff Area=174,016 sf 72.78% Impervious Runoff Depth>3.73"  
 Flow Length=1,650' Tc=6.0 min CN=93 Runoff=17.06 cfs 1.243 af

**Subcatchment 2S: Boston Road - East** Runoff Area=132,845 sf 55.89% Impervious Runoff Depth>3.14"  
 Tc=6.0 min CN=87 Runoff=11.48 cfs 0.797 af

**Subcatchment 3S: Glad Valley Drive** Runoff Area=10,643 sf 39.26% Impervious Runoff Depth>3.04"  
 Flow Length=125' Tc=6.0 min CN=86 Runoff=0.90 cfs 0.062 af

**Subcatchment 4S: Boston Road at Bertha** Runoff Area=47,537 sf 66.32% Impervious Runoff Depth>3.43"  
 Tc=6.0 min CN=90 Runoff=4.40 cfs 0.312 af

**Link 1L: Outfall at 558 Boston Rd** Inflow=17.06 cfs 1.243 af  
 Primary=17.06 cfs 1.243 af

**Link 2L: B1/B2 Stream** Inflow=11.48 cfs 0.797 af  
 Primary=11.48 cfs 0.797 af

**Link 3L: Glad Valley Drive** Inflow=0.90 cfs 0.062 af  
 Primary=0.90 cfs 0.062 af

**Link 4L: Locke Road System** Inflow=4.40 cfs 0.312 af  
 Primary=4.40 cfs 0.312 af

**5958\_ExistingConditions** Type III 24-hr 10-year Rainfall=4.75"  
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## Summary for Subcatchment 1S: Boston Road - West

Runoff = 17.06 cfs @ 12.09 hrs, Volume= 1.243 af, Depth> 3.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10-year Rainfall=4.75"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 22,651    | 74 | >75% Grass cover, Good, HSG C       |
| 16,735    | 80 | >75% Grass cover, Good, HSG D       |
| 181       | 96 | Gravel surface, HSG C               |
| 3,924     | 96 | Gravel surface, HSG D               |
| 78,681    | 98 | Paved roads w/curbs & sewers, HSG C |
| 47,972    | 98 | Paved roads w/curbs & sewers, HSG D |
| 607       | 70 | Woods, Good, HSG C                  |
| 3,265     | 77 | Woods, Good, HSG D                  |

|         |    |                        |
|---------|----|------------------------|
| 174,016 | 93 | Weighted Average       |
| 47,363  |    | 27.22% Pervious Area   |
| 126,653 |    | 72.78% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 0.6      | 50            | 0.0330        | 1.44              |                | <b>Sheet Flow, Sheet Flow</b><br>Smooth surfaces n= 0.011 P2= 3.12"                    |
| 0.4      | 90            | 0.0420        | 4.16              |                | <b>Shallow Concentrated Flow, Shallow Conc.</b><br>Paved Kv= 20.3 fps                  |
| 2.6      | 1,510         | 0.0330        | 9.74              | 7.65           | <b>Pipe Channel, Pipe</b><br>12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.011 |
| 2.4      |               |               |                   |                | <b>Direct Entry, Min. TC</b>   |
| 6.0      | 1,650         |               |                   |                | Total  |

**5958\_ExistingConditions** Type III 24-hr 10-year Rainfall=4.75"  
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## Summary for Subcatchment 2S: Boston Road - East

Runoff = 11.48 cfs @ 12.09 hrs, Volume= 0.797 af, Depth> 3.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10-year Rainfall=4.75"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 20,523    | 74 | >75% Grass cover, Good, HSG C       |
| 505       | 80 | >75% Grass cover, Good, HSG D       |
| 68,755    | 98 | Paved roads w/curbs & sewers, HSG C |
| 5,496     | 98 | Paved roads w/curbs & sewers, HSG D |
| 32,701    | 70 | Woods, Good, HSG C                  |
| 4,866     | 77 | Woods, Good, HSG D                  |

|         |    |                        |
|---------|----|------------------------|
| 132,845 | 87 | Weighted Average       |
| 58,595  |    | 44.11% Pervious Area   |
| 74,250  |    | 55.89% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                  |
|----------|---------------|---------------|-------------------|----------------|------------------------------|
| 6.0      |               |               |                   |                | <b>Direct Entry, Min. TC</b> |

# Proposal No. 609250 - 129975

**5958\_ExistingConditions** Type III 24-hr 10-year Rainfall=4.75"  
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### Summary for Subcatchment 3S: Glad Valley Drive

Runoff = 0.90 cfs @ 12.09 hrs, Volume= 0.062 af, Depth> 3.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10-year Rainfall=4.75"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 0         | 74 | >75% Grass cover, Good, HSG C       |
| 4,834     | 80 | >75% Grass cover, Good, HSG D       |
| 18        | 98 | Paved roads w/curbs & sewers, HSG C |
| 4,161     | 98 | Paved roads w/curbs & sewers, HSG D |
| 313       | 70 | Woods, Good, HSG C                  |
| 1,317     | 77 | Woods, Good, HSG D                  |
| 10,643    | 86 | Weighted Average                    |
| 6,464     |    | 60.74% Pervious Area                |
| 4,179     |    | 39.26% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 0.7      | 50            | 0.0240        | 1.27              |                | <b>Sheet Flow, Sheet Flow</b><br>Smooth surfaces n= 0.011 P2= 3.12"   |
| 0.3      | 75            | 0.0550        | 4.76              |                | <b>Shallow Concentrated Flow, Shallow Conc.</b><br>Paved Kv= 20.3 fps |
| 5.0      |               |               |                   |                | <b>Direct Entry, Min TC</b>   |
| 6.0      | 125           | Total         |                   |                |   |

**5958\_ExistingConditions** Type III 24-hr 10-year Rainfall=4.75"  
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### Summary for Subcatchment 4S: Boston Road at Bertha Circle

Runoff = 4.40 cfs @ 12.09 hrs, Volume= 0.312 af, Depth> 3.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10-year Rainfall=4.75"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 8,247     | 74 | >75% Grass cover, Good, HSG C       |
| 3,899     | 80 | >75% Grass cover, Good, HSG D       |
| 20,772    | 98 | Paved roads w/curbs & sewers, HSG C |
| 10,753    | 98 | Paved roads w/curbs & sewers, HSG D |
| 2,469     | 70 | Woods, Good, HSG C                  |
| 1,397     | 77 | Woods, Good, HSG D                  |
| 47,537    | 90 | Weighted Average                    |
| 16,012    |    | 33.68% Pervious Area                |
| 31,525    |    | 66.32% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                     |
|----------|---------------|---------------|-------------------|----------------|---------------------------------|
| 6.0      |               |               |                   |                | <b>Direct Entry, Minimum TC</b> |

**5958\_ExistingConditions** Type III 24-hr 10-year Rainfall=4.75"  
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### Summary for Link 1L: Outfall at 558 Boston Rd

Inflow Area = 3.995 ac, 72.78% Impervious, Inflow Depth > 3.73" for 10-year event  
 Inflow = 17.06 cfs @ 12.09 hrs, Volume= 1.243 af  
 Primary = 17.06 cfs @ 12.09 hrs, Volume= 1.243 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

**5958\_ExistingConditions** Type III 24-hr 10-year Rainfall=4.75"  
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### Summary for Link 2L: B1/B2 Stream

Inflow Area = 3.050 ac, 55.89% Impervious, Inflow Depth > 3.14" for 10-year event  
 Inflow = 11.48 cfs @ 12.09 hrs, Volume= 0.797 af  
 Primary = 11.48 cfs @ 12.09 hrs, Volume= 0.797 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

# Proposal No. 609250 - 129975

**5958\_ExistingConditions** Type III 24-hr 10-year Rainfall=4.75"  
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### Summary for Link 3L: Glad Valley Drive

Inflow Area = 0.244 ac, 39.26% Impervious, Inflow Depth > 3.04" for 10-year event  
 Inflow = 0.90 cfs @ 12.09 hrs, Volume= 0.062 af  
 Primary = 0.90 cfs @ 12.09 hrs, Volume= 0.062 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

**5958\_ExistingConditions** Type III 24-hr 10-year Rainfall=4.75"  
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### Summary for Link 4L: Locke Road System

Inflow Area = 1.091 ac, 66.32% Impervious, Inflow Depth > 3.43" for 10-year event  
 Inflow = 4.40 cfs @ 12.09 hrs, Volume= 0.312 af  
 Primary = 4.40 cfs @ 12.09 hrs, Volume= 0.312 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

**5958\_ExistingConditions** Type III 24-hr 100-year Rainfall=8.63"  
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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1S: Boston Road - West** Runoff Area=174,016 sf 72.78% Impervious Runoff Depth>7.31"  
 Flow Length=1,650' Tc=6.0 min CN=93 Runoff=32.35 cfs 2.435 af

**Subcatchment 2S: Boston Road - East** Runoff Area=132,845 sf 55.89% Impervious Runoff Depth>6.68"  
 Tc=6.0 min CN=87 Runoff=23.42 cfs 1.697 af

**Subcatchment 3S: Glad Valley Drive** Runoff Area=10,643 sf 39.26% Impervious Runoff Depth>6.56"  
 Flow Length=125' Tc=6.0 min CN=86 Runoff=1.85 cfs 0.134 af

**Subcatchment 4S: Boston Road at Bertha** Runoff Area=47,537 sf 66.32% Impervious Runoff Depth>7.01"  
 Tc=6.0 min CN=90 Runoff=8.63 cfs 0.637 af

**Link 1L: Outfall at 558 Boston Rd** Inflow=32.35 cfs 2.435 af  
 Primary=32.35 cfs 2.435 af

**Link 2L: B1/B2 Stream** Inflow=23.42 cfs 1.697 af  
 Primary=23.42 cfs 1.697 af

**Link 3L: Glad Valley Drive** Inflow=1.85 cfs 0.134 af  
 Primary=1.85 cfs 0.134 af

**Link 4L: Locke Road System** Inflow=8.63 cfs 0.637 af  
 Primary=8.63 cfs 0.637 af

**5958\_ExistingConditions** Type III 24-hr 100-year Rainfall=8.63"  
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### Summary for Subcatchment 1S: Boston Road - West

Runoff = 32.35 cfs @ 12.09 hrs, Volume= 2.435 af, Depth> 7.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100-year Rainfall=8.63"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 22,651    | 74 | >75% Grass cover, Good, HSG C       |
| 16,735    | 80 | >75% Grass cover, Good, HSG D       |
| 181       | 96 | Gravel surface, HSG C               |
| 3,924     | 96 | Gravel surface, HSG D               |
| 78,681    | 98 | Paved roads w/curbs & sewers, HSG C |
| 47,972    | 98 | Paved roads w/curbs & sewers, HSG D |
| 607       | 70 | Woods, Good, HSG C                  |
| 3,265     | 77 | Woods, Good, HSG D                  |
| 174,016   | 93 | Weighted Average                    |
| 47,363    |    | 27.22% Pervious Area                |
| 126,653   |    | 72.78% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 0.6      | 50            | 0.0330        | 1.44              |                | <b>Sheet Flow, Sheet Flow</b><br>Smooth surfaces n= 0.011 P2= 3.12"                    |
| 0.4      | 90            | 0.0420        | 4.16              |                | <b>Shallow Concentrated Flow, Shallow Conc.</b><br>Paved Kv= 20.3 fps                  |
| 2.6      | 1,510         | 0.0330        | 9.74              | 7.65           | <b>Pipe Channel, Pipe</b><br>12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.011 |
| 2.4      |               |               |                   |                | <b>Direct Entry, Min. TC</b>   |
| 6.0      | 1,650         | Total         |                   |                |  |

# Proposal No. 609250 - 129975

**5958\_ExistingConditions** Type III 24-hr 100-year Rainfall=8.63"  
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### Summary for Subcatchment 2S: Boston Road - East

Runoff = 23.42 cfs @ 12.09 hrs, Volume= 1.697 af, Depth> 6.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100-year Rainfall=8.63"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 20,523    | 74 | >75% Grass cover, Good, HSG C       |
| 505       | 80 | >75% Grass cover, Good, HSG D       |
| 68,755    | 98 | Paved roads w/curbs & sewers, HSG C |
| 5,496     | 98 | Paved roads w/curbs & sewers, HSG D |
| 32,701    | 70 | Woods, Good, HSG C                  |
| 4,866     | 77 | Woods, Good, HSG D                  |
| 132,845   | 87 | Weighted Average                    |
| 58,595    |    | 44.11% Pervious Area                |
| 74,250    |    | 55.89% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description           |
|----------|---------------|---------------|-------------------|----------------|-----------------------|
| 6.0      |               |               |                   |                | Direct Entry, Min. TC |

**5958\_ExistingConditions** Type III 24-hr 100-year Rainfall=8.63"  
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### Summary for Subcatchment 3S: Glad Valley Drive

Runoff = 1.85 cfs @ 12.09 hrs, Volume= 0.134 af, Depth> 6.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100-year Rainfall=8.63"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 0         | 74 | >75% Grass cover, Good, HSG C       |
| 4,834     | 80 | >75% Grass cover, Good, HSG D       |
| 18        | 98 | Paved roads w/curbs & sewers, HSG C |
| 4,161     | 98 | Paved roads w/curbs & sewers, HSG D |
| 313       | 70 | Woods, Good, HSG C                  |
| 1,317     | 77 | Woods, Good, HSG D                  |
| 10,643    | 86 | Weighted Average                    |
| 6,464     |    | 60.74% Pervious Area                |
| 4,179     |    | 39.26% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 0.7      | 50            | 0.0240        | 1.27              |                | Sheet Flow, Sheet Flow<br>Smooth surfaces n= 0.011 P2= 3.12"   |
| 0.3      | 75            | 0.0550        | 4.76              |                | Shallow Concentrated Flow, Shallow Conc.<br>Paved Kv= 20.3 fps |
| 5.0      |               |               |                   |                | Direct Entry, Min TC   |
| 6.0      | 125           | Total         |                   |                |  |

**5958\_ExistingConditions** Type III 24-hr 100-year Rainfall=8.63"  
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### Summary for Subcatchment 4S: Boston Road at Bertha Circle

Runoff = 8.63 cfs @ 12.09 hrs, Volume= 0.637 af, Depth> 7.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100-year Rainfall=8.63"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 8,247     | 74 | >75% Grass cover, Good, HSG C       |
| 3,899     | 80 | >75% Grass cover, Good, HSG D       |
| 20,772    | 98 | Paved roads w/curbs & sewers, HSG C |
| 10,753    | 98 | Paved roads w/curbs & sewers, HSG D |
| 2,469     | 70 | Woods, Good, HSG C                  |
| 1,397     | 77 | Woods, Good, HSG D                  |
| 47,537    | 90 | Weighted Average                    |
| 16,012    |    | 33.68% Pervious Area                |
| 31,525    |    | 66.32% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description              |
|----------|---------------|---------------|-------------------|----------------|--------------------------|
| 6.0      |               |               |                   |                | Direct Entry, Minimum TC |

**5958\_ExistingConditions** Type III 24-hr 100-year Rainfall=8.63"  
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### Summary for Link 1L: Outfall at 558 Boston Rd

Inflow Area = 3.995 ac, 72.78% Impervious, Inflow Depth > 7.31" for 100-year event  
 Inflow = 32.35 cfs @ 12.09 hrs, Volume= 2.435 af  
 Primary = 32.35 cfs @ 12.09 hrs, Volume= 2.435 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

# Proposal No. 609250 - 129975

## 5958\_ExistingConditions

Type III 24-hr 100-year Rainfall=8.63"

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### Summary for Link 2L: B1/B2 Stream

Inflow Area = 3.050 ac, 55.89% Impervious, Inflow Depth > 6.68" for 100-year event  
Inflow = 23.42 cfs @ 12.09 hrs, Volume= 1.697 af  
Primary = 23.42 cfs @ 12.09 hrs, Volume= 1.697 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

## 5958\_ExistingConditions

Type III 24-hr 100-year Rainfall=8.63"

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### Summary for Link 3L: Glad Valley Drive

Inflow Area = 0.244 ac, 39.26% Impervious, Inflow Depth > 6.56" for 100-year event  
Inflow = 1.85 cfs @ 12.09 hrs, Volume= 0.134 af  
Primary = 1.85 cfs @ 12.09 hrs, Volume= 0.134 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

## 5958\_ExistingConditions

Type III 24-hr 100-year Rainfall=8.63"

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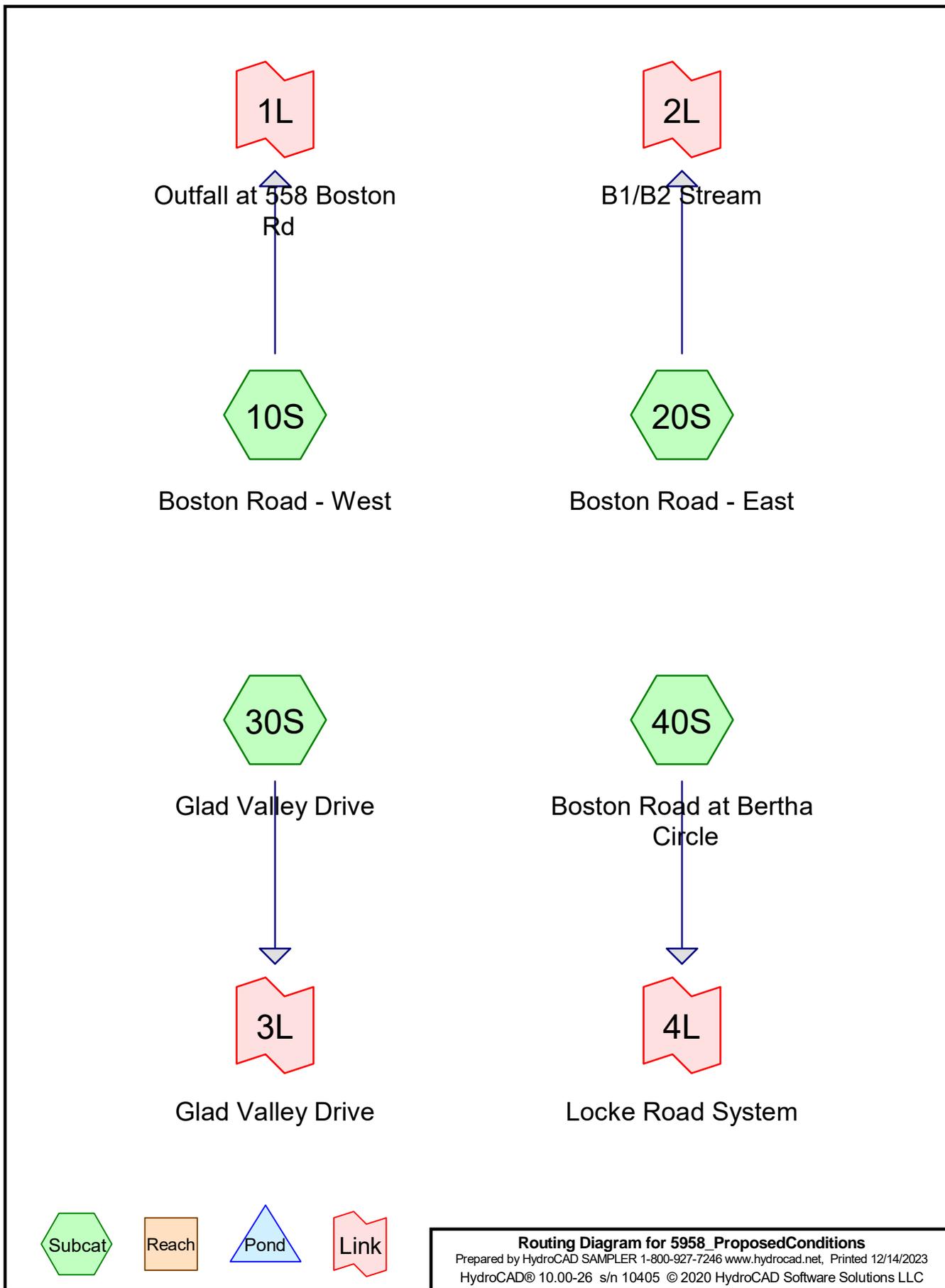
### Summary for Link 4L: Locke Road System

Inflow Area = 1.091 ac, 66.32% Impervious, Inflow Depth > 7.01" for 100-year event  
Inflow = 8.63 cfs @ 12.09 hrs, Volume= 0.637 af  
Primary = 8.63 cfs @ 12.09 hrs, Volume= 0.637 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

# APPENDIX F – PROPOSED CONDITIONS CALCULATION

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# Proposal No. 609250 - 129975

**5958\_ProposedConditions**

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 Page 1

**Area Listing (all nodes)**

| Area (acres) | CN | Description (subcatchment-numbers)                       |
|--------------|----|--|
| 1.055        | 74 | >75% Grass cover, Good, HSG C (10S, 20S, 30S, 40S)       |
| 0.545        | 80 | >75% Grass cover, Good, HSG D (10S, 20S, 30S, 40S)       |
| 0.022        | 96 | Gravel surface, HSG D (10S)                              |
| 4.228        | 98 | Paved roads w/curbs & sewers, HSG C (10S, 20S, 30S, 40S) |
| 1.805        | 98 | Paved roads w/curbs & sewers, HSG D (10S, 20S, 30S, 40S) |
| 0.592        | 70 | Woods, Good, HSG C (10S, 20S, 30S, 40S)                  |
| 0.135        | 77 | Woods, Good, HSG D (10S, 20S, 30S, 40S)                  |

**5958\_ProposedConditions**

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**Soil Listing (all nodes)**

| Area (acres) | Soil Group | Subcatchment Numbers |
|--------------|------------|----------------------|
| 0.000        | HSG A      |                      |
| 0.000        | HSG B      |                      |
| 5.874        | HSG C      | 10S, 20S, 30S, 40S   |
| 2.507        | HSG D      | 10S, 20S, 30S, 40S   |
| 0.000        | Other      |                      |

**5958\_ProposedConditions**

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**Ground Covers (all nodes)**

| HSG-A (acres) | HSG-B (acres) | HSG-C (acres) | HSG-D (acres) | Other (acres) | Total (acres) | Ground Cover                 | Subcatchment Numbers        |
|---------------|---------------|---------------|---------------|---------------|---------------|------------------------------|-----------------------------|
| 0.000         | 0.000         | 1.055         | 0.545         | 0.000         | 1.600         | >75% Grass cover, Good       | 10S,<br>20S,<br>30S,<br>40S |
| 0.000         | 0.000         | 0.000         | 0.022         | 0.000         | 0.022         | Gravel surface               | 10S                         |
| 0.000         | 0.000         | 4.228         | 1.805         | 0.000         | 6.033         | Paved roads w/curbs & sewers | 10S,<br>20S,<br>30S,<br>40S |
| 0.000         | 0.000         | 0.592         | 0.135         | 0.000         | 0.727         | Woods, Good                  | 10S,<br>20S,<br>30S,<br>40S |

**5958\_ProposedConditions**

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*Type III 24-hr 1-year Rainfall=2.61"*

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 Time span=5.00-80.00 hrs, dt=0.05 hrs, 1501 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

|  |   |
|--|---|
| <b>Subcatchment 10S: Boston Road - West</b>    | Runoff Area=175,807 sf 79.19% Impervious Runoff Depth>1.97"<br>Flow Length=1,690' Tc=6.0 min CN=94 Runoff=8.87 cfs 0.664 af |
| <b>Subcatchment 20S: Boston Road - East</b>    | Runoff Area=124,676 sf 65.86% Impervious Runoff Depth=1.55"<br>Tc=6.0 min CN=89 Runoff=5.09 cfs 0.370 af                    |
| <b>Subcatchment 30S: Glad Valley Drive</b>     | Runoff Area=17,082 sf 39.07% Impervious Runoff Depth=1.27"<br>Tc=6.0 min CN=85 Runoff=0.57 cfs 0.041 af                     |
| <b>Subcatchment 40S: Boston Road at Bertha</b> | Runoff Area=47,537 sf 73.18% Impervious Runoff Depth=1.80"<br>Tc=6.0 min CN=92 Runoff=2.22 cfs 0.163 af                     |
| <b>Link 1L: Outfall at 558 Boston Rd</b>       | Inflow=8.87 cfs 0.664 af<br>Primary=8.87 cfs 0.664 af   |
| <b>Link 2L: B1/B2 Stream</b>                   | Inflow=5.09 cfs 0.370 af<br>Primary=5.09 cfs 0.370 af   |
| <b>Link 3L: Glad Valley Drive</b>              | Inflow=0.57 cfs 0.041 af<br>Primary=0.57 cfs 0.041 af   |
| <b>Link 4L: Locke Road System</b>              | Inflow=2.22 cfs 0.163 af<br>Primary=2.22 cfs 0.163 af   |

# Proposal No. 609250 - 129975

**5958\_ProposedConditions** Type III 24-hr 1-year Rainfall=2.61"  
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### Summary for Subcatchment 10S: Boston Road - West

Runoff = 8.87 cfs @ 12.09 hrs, Volume= 0.664 af, Depth> 1.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-80.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 1-year Rainfall=2.61"

| Area (sf) | CN            | Description                         |                   |                |   |
|-----------|---------------|-------------------------------------|-------------------|----------------|---|
| 20,873    | 74            | >75% Grass cover, Good, HSG C       |                   |                |   |
| 12,008    | 80            | >75% Grass cover, Good, HSG D       |                   |                |   |
| 937       | 96            | Gravel surface, HSG D               |                   |                |   |
| 80,942    | 98            | Paved roads w/curbs & sewers, HSG C |                   |                |   |
| 58,288    | 98            | Paved roads w/curbs & sewers, HSG D |                   |                |   |
| 318       | 70            | Woods, Good, HSG C                  |                   |                |   |
| 2,441     | 77            | Woods, Good, HSG D                  |                   |                |   |
| <hr/>     |               |                                     |                   |                |   |
| 175,807   | 94            | Weighted Average                    |                   |                |   |
| 36,577    |               | 20.81% Pervious Area                |                   |                |   |
| 139,230   |               | 79.19% Impervious Area              |                   |                |   |
| <hr/>     |               |                                     |                   |                |   |
| Tc (min)  | Length (feet) | Slope (ft/ft)                       | Velocity (ft/sec) | Capacity (cfs) | Description   |
| 0.6       | 50            | 0.0360                              | 1.50              |                | <b>Sheet Flow, Sheet Flow</b><br>Smooth surfaces n= 0.011 P2= 3.12"                       |
| 0.3       | 85            | 0.0400                              | 4.06              |                | <b>Shallow Concentrated Flow, Shallow Conc</b><br>Paved Kv= 20.3 fps                      |
| 2.6       | 1,555         | 0.0480                              | 9.94              | 7.81           | <b>Pipe Channel, 12" RCP</b><br>12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 |
| 2.5       |               |                                     |                   |                | <b>Direct Entry, Min TC</b>   |
| 6.0       | 1,690         | Total                               |                   |                |   |

**5958\_ProposedConditions** Type III 24-hr 1-year Rainfall=2.61"  
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### Summary for Subcatchment 20S: Boston Road - East

Runoff = 5.09 cfs @ 12.09 hrs, Volume= 0.370 af, Depth= 1.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-80.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 1-year Rainfall=2.61"

| Area (sf) | CN            | Description                         |                   |                |                                     |
|-----------|---------------|-------------------------------------|-------------------|----------------|-------------------------------------|
| 16,291    | 74            | >75% Grass cover, Good, HSG C       |                   |                |                                     |
| 3,979     | 80            | >75% Grass cover, Good, HSG D       |                   |                |                                     |
| 79,211    | 98            | Paved roads w/curbs & sewers, HSG C |                   |                |                                     |
| 2,894     | 98            | Paved roads w/curbs & sewers, HSG D |                   |                |                                     |
| 21,590    | 70            | Woods, Good, HSG C                  |                   |                |                                     |
| 710       | 77            | Woods, Good, HSG D                  |                   |                |                                     |
| <hr/>     |               |                                     |                   |                |                                     |
| 124,676   | 89            | Weighted Average                    |                   |                |                                     |
| 42,570    |               | 34.14% Pervious Area                |                   |                |                                     |
| 82,106    |               | 65.86% Impervious Area              |                   |                |                                     |
| <hr/>     |               |                                     |                   |                |                                     |
| Tc (min)  | Length (feet) | Slope (ft/ft)                       | Velocity (ft/sec) | Capacity (cfs) | Description                         |
| 6.0       |               |                                     |                   |                | <b>Direct Entry, Use Minimum TC</b> |

**5958\_ProposedConditions** Type III 24-hr 1-year Rainfall=2.61"  
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### Summary for Subcatchment 30S: Glad Valley Drive

Runoff = 0.57 cfs @ 12.09 hrs, Volume= 0.041 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-80.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 1-year Rainfall=2.61"

| Area (sf) | CN            | Description                         |                   |                |                             |
|-----------|---------------|-------------------------------------|-------------------|----------------|-----------------------------|
| 3,358     | 74            | >75% Grass cover, Good, HSG C       |                   |                |                             |
| 4,489     | 80            | >75% Grass cover, Good, HSG D       |                   |                |                             |
| 584       | 98            | Paved roads w/curbs & sewers, HSG C |                   |                |                             |
| 6,090     | 98            | Paved roads w/curbs & sewers, HSG D |                   |                |                             |
| 1,237     | 70            | Woods, Good, HSG C                  |                   |                |                             |
| 1,325     | 77            | Woods, Good, HSG D                  |                   |                |                             |
| <hr/>     |               |                                     |                   |                |                             |
| 17,082    | 85            | Weighted Average                    |                   |                |                             |
| 10,409    |               | 60.93% Pervious Area                |                   |                |                             |
| 6,674     |               | 39.07% Impervious Area              |                   |                |                             |
| <hr/>     |               |                                     |                   |                |                             |
| Tc (min)  | Length (feet) | Slope (ft/ft)                       | Velocity (ft/sec) | Capacity (cfs) | Description                 |
| 6.0       |               |                                     |                   |                | <b>Direct Entry, Min TC</b> |

**5958\_ProposedConditions** Type III 24-hr 1-year Rainfall=2.61"  
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### Summary for Subcatchment 40S: Boston Road at Bertha Circle

Runoff = 2.22 cfs @ 12.09 hrs, Volume= 0.163 af, Depth= 1.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-80.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 1-year Rainfall=2.61"

| Area (sf) | CN            | Description                         |                   |                |                                 |
|-----------|---------------|-------------------------------------|-------------------|----------------|---------------------------------|
| 5,436     | 74            | >75% Grass cover, Good, HSG C       |                   |                |                                 |
| 3,281     | 80            | >75% Grass cover, Good, HSG D       |                   |                |                                 |
| 23,419    | 98            | Paved roads w/curbs & sewers, HSG C |                   |                |                                 |
| 11,371    | 98            | Paved roads w/curbs & sewers, HSG D |                   |                |                                 |
| 2,634     | 70            | Woods, Good, HSG C                  |                   |                |                                 |
| 1,397     | 77            | Woods, Good, HSG D                  |                   |                |                                 |
| <hr/>     |               |                                     |                   |                |                                 |
| 47,537    | 92            | Weighted Average                    |                   |                |                                 |
| 12,748    |               | 26.82% Pervious Area                |                   |                |                                 |
| 34,789    |               | 73.18% Impervious Area              |                   |                |                                 |
| <hr/>     |               |                                     |                   |                |                                 |
| Tc (min)  | Length (feet) | Slope (ft/ft)                       | Velocity (ft/sec) | Capacity (cfs) | Description                     |
| 6.0       |               |                                     |                   |                | <b>Direct Entry, Minimum TC</b> |

# Proposal No. 609250 - 129975

## 5958\_ProposedConditions

Type III 24-hr 1-year Rainfall=2.61"

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### Summary for Link 1L: Outfall at 558 Boston Rd

Inflow Area = 4.036 ac, 79.19% Impervious, Inflow Depth > 1.97" for 1-year event  
Inflow = 8.87 cfs @ 12.09 hrs, Volume= 0.664 af  
Primary = 8.87 cfs @ 12.09 hrs, Volume= 0.664 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-80.00 hrs, dt= 0.05 hrs

## 5958\_ProposedConditions

Type III 24-hr 1-year Rainfall=2.61"

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### Summary for Link 2L: B1/B2 Stream

Inflow Area = 2.862 ac, 65.86% Impervious, Inflow Depth = 1.55" for 1-year event  
Inflow = 5.09 cfs @ 12.09 hrs, Volume= 0.370 af  
Primary = 5.09 cfs @ 12.09 hrs, Volume= 0.370 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-80.00 hrs, dt= 0.05 hrs

## 5958\_ProposedConditions

Type III 24-hr 1-year Rainfall=2.61"

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### Summary for Link 3L: Glad Valley Drive

Inflow Area = 0.392 ac, 39.07% Impervious, Inflow Depth = 1.27" for 1-year event  
Inflow = 0.57 cfs @ 12.09 hrs, Volume= 0.041 af  
Primary = 0.57 cfs @ 12.09 hrs, Volume= 0.041 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-80.00 hrs, dt= 0.05 hrs

## 5958\_ProposedConditions

Type III 24-hr 1-year Rainfall=2.61"

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### Summary for Link 4L: Locke Road System

Inflow Area = 1.091 ac, 73.18% Impervious, Inflow Depth = 1.80" for 1-year event  
Inflow = 2.22 cfs @ 12.09 hrs, Volume= 0.163 af  
Primary = 2.22 cfs @ 12.09 hrs, Volume= 0.163 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-80.00 hrs, dt= 0.05 hrs

# Proposal No. 609250 - 129975

**5958\_ProposedConditions** Type III 24-hr 2-year Rainfall=3.14"  
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Time span=5.00-80.00 hrs, dt=0.05 hrs, 1501 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

|  |  |
|--|--|
| <b>Subcatchment 10S: Boston Road - West</b>    | Runoff Area=175,807 sf 79.19% Impervious Runoff Depth>2.48"<br>Flow Length=1,690' Tc=6.0 min CN=94 Runoff=11.03 cfs 0.835 af |
| <b>Subcatchment 20S: Boston Road - East</b>    | Runoff Area=124,676 sf 65.86% Impervious Runoff Depth=2.03"<br>Tc=6.0 min CN=89 Runoff=6.62 cfs 0.483 af                     |
| <b>Subcatchment 30S: Glad Valley Drive</b>     | Runoff Area=17,082 sf 39.07% Impervious Runoff Depth=1.71"<br>Tc=6.0 min CN=85 Runoff=0.77 cfs 0.056 af                      |
| <b>Subcatchment 40S: Boston Road at Bertha</b> | Runoff Area=47,537 sf 73.18% Impervious Runoff Depth>2.29"<br>Tc=6.0 min CN=92 Runoff=2.81 cfs 0.209 af                      |
| <b>Link 1L: Outfall at 558 Boston Rd</b>       | Inflow=11.03 cfs 0.835 af<br>Primary=11.03 cfs 0.835 af  |
| <b>Link 2L: B1/B2 Stream</b>                   | Inflow=6.62 cfs 0.483 af<br>Primary=6.62 cfs 0.483 af  |
| <b>Link 3L: Glad Valley Drive</b>              | Inflow=0.77 cfs 0.056 af<br>Primary=0.77 cfs 0.056 af  |
| <b>Link 4L: Locke Road System</b>              | Inflow=2.81 cfs 0.209 af<br>Primary=2.81 cfs 0.209 af  |

**5958\_ProposedConditions** Type III 24-hr 2-year Rainfall=3.14"  
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### Summary for Subcatchment 10S: Boston Road - West

Runoff = 11.03 cfs @ 12.09 hrs, Volume= 0.835 af, Depth> 2.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-80.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2-year Rainfall=3.14"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 20,873    | 74 | >75% Grass cover, Good, HSG C       |
| 12,008    | 80 | >75% Grass cover, Good, HSG D       |
| 937       | 96 | Gravel surface, HSG D               |
| 80,942    | 98 | Paved roads w/curbs & sewers, HSG C |
| 58,288    | 98 | Paved roads w/curbs & sewers, HSG D |
| 318       | 70 | Woods, Good, HSG C                  |
| 2,441     | 77 | Woods, Good, HSG D                  |
| 175,807   | 94 | Weighted Average                    |
| 36,577    |    | 20.81% Pervious Area                |
| 139,230   |    | 79.19% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 0.6      | 50            | 0.0360        | 1.50              |                | <b>Sheet Flow, Sheet Flow</b><br>Smooth surfaces n= 0.011 P2= 3.12"                       |
| 0.3      | 85            | 0.0400        | 4.06              |                | <b>Shallow Concentrated Flow, Shallow Conc</b><br>Paved Kv= 20.3 fps                      |
| 2.6      | 1,555         | 0.0480        | 9.94              | 7.81           | <b>Pipe Channel, 12" RCP</b><br>12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 |
| 2.5      |               |               |                   |                | <b>Direct Entry, Min TC</b>   |
| 6.0      | 1,690         | Total         |                   |                |   |

**5958\_ProposedConditions** Type III 24-hr 2-year Rainfall=3.14"  
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### Summary for Subcatchment 20S: Boston Road - East

Runoff = 6.62 cfs @ 12.09 hrs, Volume= 0.483 af, Depth= 2.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-80.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2-year Rainfall=3.14"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 16,291    | 74 | >75% Grass cover, Good, HSG C       |
| 3,979     | 80 | >75% Grass cover, Good, HSG D       |
| 79,211    | 98 | Paved roads w/curbs & sewers, HSG C |
| 2,894     | 98 | Paved roads w/curbs & sewers, HSG D |
| 21,590    | 70 | Woods, Good, HSG C                  |
| 710       | 77 | Woods, Good, HSG D                  |
| 124,676   | 89 | Weighted Average                    |
| 42,570    |    | 34.14% Pervious Area                |
| 82,106    |    | 65.86% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                         |
|----------|---------------|---------------|-------------------|----------------|-------------------------------------|
| 6.0      |               |               |                   |                | <b>Direct Entry, Use Minimum TC</b> |

**5958\_ProposedConditions** Type III 24-hr 2-year Rainfall=3.14"  
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### Summary for Subcatchment 30S: Glad Valley Drive

Runoff = 0.77 cfs @ 12.09 hrs, Volume= 0.056 af, Depth= 1.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-80.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2-year Rainfall=3.14"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 3,358     | 74 | >75% Grass cover, Good, HSG C       |
| 4,489     | 80 | >75% Grass cover, Good, HSG D       |
| 584       | 98 | Paved roads w/curbs & sewers, HSG C |
| 6,090     | 98 | Paved roads w/curbs & sewers, HSG D |
| 1,237     | 70 | Woods, Good, HSG C                  |
| 1,325     | 77 | Woods, Good, HSG D                  |
| 17,082    | 85 | Weighted Average                    |
| 10,409    |    | 60.93% Pervious Area                |
| 6,674     |    | 39.07% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                 |
|----------|---------------|---------------|-------------------|----------------|-----------------------------|
| 6.0      |               |               |                   |                | <b>Direct Entry, Min TC</b> |

# Proposal No. 609250 - 129975

**5958\_ProposedConditions** Type III 24-hr 2-year Rainfall=3.14"  
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### Summary for Subcatchment 40S: Boston Road at Bertha Circle

Runoff = 2.81 cfs @ 12.09 hrs, Volume= 0.209 af, Depth> 2.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-80.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2-year Rainfall=3.14"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 5,436     | 74 | >75% Grass cover, Good, HSG C       |
| 3,281     | 80 | >75% Grass cover, Good, HSG D       |
| 23,419    | 98 | Paved roads w/curbs & sewers, HSG C |
| 11,371    | 98 | Paved roads w/curbs & sewers, HSG D |
| 2,634     | 70 | Woods, Good, HSG C                  |
| 1,397     | 77 | Woods, Good, HSG D                  |
| 47,537    | 92 | Weighted Average                    |
| 12,748    |    | 26.82% Pervious Area                |
| 34,789    |    | 73.18% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description              |
|----------|---------------|---------------|-------------------|----------------|--------------------------|
| 6.0      |               |               |                   |                | Direct Entry, Minimum TC |

**5958\_ProposedConditions** Type III 24-hr 2-year Rainfall=3.14"  
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### Summary for Link 1L: Outfall at 558 Boston Rd

Inflow Area = 4.036 ac, 79.19% Impervious, Inflow Depth > 2.48" for 2-year event  
 Inflow = 11.03 cfs @ 12.09 hrs, Volume= 0.835 af  
 Primary = 11.03 cfs @ 12.09 hrs, Volume= 0.835 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-80.00 hrs, dt= 0.05 hrs

**5958\_ProposedConditions** Type III 24-hr 2-year Rainfall=3.14"  
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### Summary for Link 2L: B1/B2 Stream

Inflow Area = 2.862 ac, 65.86% Impervious, Inflow Depth = 2.03" for 2-year event  
 Inflow = 6.62 cfs @ 12.09 hrs, Volume= 0.483 af  
 Primary = 6.62 cfs @ 12.09 hrs, Volume= 0.483 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-80.00 hrs, dt= 0.05 hrs

**5958\_ProposedConditions** Type III 24-hr 2-year Rainfall=3.14"  
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### Summary for Link 3L: Glad Valley Drive

Inflow Area = 0.392 ac, 39.07% Impervious, Inflow Depth = 1.71" for 2-year event  
 Inflow = 0.77 cfs @ 12.09 hrs, Volume= 0.056 af  
 Primary = 0.77 cfs @ 12.09 hrs, Volume= 0.056 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-80.00 hrs, dt= 0.05 hrs

# Proposal No. 609250 - 129975

**5958\_ProposedConditions** Type III 24-hr 2-year Rainfall=3.14"  
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## Summary for Link 4L: Locke Road System

Inflow Area = 1.091 ac, 73.18% Impervious, Inflow Depth > 2.29" for 2-year event  
 Inflow = 2.81 cfs @ 12.09 hrs, Volume= 0.209 af  
 Primary = 2.81 cfs @ 12.09 hrs, Volume= 0.209 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-80.00 hrs, dt= 0.05 hrs

**5958\_ProposedConditions** Type III 24-hr 10-year Rainfall=4.75"  
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Time span=5.00-80.00 hrs, dt=0.05 hrs, 1501 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 10S: Boston Road - West** Runoff Area=175,807 sf 79.19% Impervious Runoff Depth>4.04"  
 Flow Length=1,690' Tc=6.0 min CN=94 Runoff=17.51 cfs 1.358 af

**Subcatchment 20S: Boston Road - East** Runoff Area=124,676 sf 65.86% Impervious Runoff Depth>3.53"  
 Tc=6.0 min CN=89 Runoff=11.29 cfs 0.843 af

**Subcatchment 30S: Glad Valley Drive** Runoff Area=17,082 sf 39.07% Impervious Runoff Depth=3.14"  
 Tc=6.0 min CN=85 Runoff=1.40 cfs 0.103 af

**Subcatchment 40S: Boston Road at Bertha** Runoff Area=47,537 sf 73.18% Impervious Runoff Depth>3.84"  
 Tc=6.0 min CN=92 Runoff=4.58 cfs 0.349 af

**Link 1L: Outfall at 558 Boston Rd** Inflow=17.51 cfs 1.358 af  
 Primary=17.51 cfs 1.358 af

**Link 2L: B1/B2 Stream** Inflow=11.29 cfs 0.843 af  
 Primary=11.29 cfs 0.843 af

**Link 3L: Glad Valley Drive** Inflow=1.40 cfs 0.103 af  
 Primary=1.40 cfs 0.103 af

**Link 4L: Locke Road System** Inflow=4.58 cfs 0.349 af  
 Primary=4.58 cfs 0.349 af

**5958\_ProposedConditions** Type III 24-hr 10-year Rainfall=4.75"  
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## Summary for Subcatchment 10S: Boston Road - West

Runoff = 17.51 cfs @ 12.09 hrs, Volume= 1.358 af, Depth> 4.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-80.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10-year Rainfall=4.75"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 20,873    | 74 | >75% Grass cover, Good, HSG C       |
| 12,008    | 80 | >75% Grass cover, Good, HSG D       |
| 937       | 96 | Gravel surface, HSG D               |
| 80,942    | 98 | Paved roads w/curbs & sewers, HSG C |
| 58,288    | 98 | Paved roads w/curbs & sewers, HSG D |
| 318       | 70 | Woods, Good, HSG C                  |
| 2,441     | 77 | Woods, Good, HSG D                  |
| 175,807   | 94 | Weighted Average                    |
| 36,577    |    | 20.81% Pervious Area                |
| 139,230   |    | 79.19% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 0.6      | 50            | 0.0360        | 1.50              |                | Sheet Flow, Sheet Flow<br>Smooth surfaces n= 0.011 P2= 3.12"                       |
| 0.3      | 85            | 0.0400        | 4.06              |                | Shallow Concentrated Flow, Shallow Conc<br>Paved Kv= 20.3 fps                      |
| 2.6      | 1,555         | 0.0480        | 9.94              | 7.81           | Pipe Channel, 12" RCP<br>12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 |
| 2.5      |               |               |                   |                | Direct Entry, Min TC   |
| 6.0      | 1,690         | Total         |                   |                |  |

**5958\_ProposedConditions** Type III 24-hr 10-year Rainfall=4.75"  
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## Summary for Subcatchment 20S: Boston Road - East

Runoff = 11.29 cfs @ 12.09 hrs, Volume= 0.843 af, Depth> 3.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-80.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10-year Rainfall=4.75"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 16,291    | 74 | >75% Grass cover, Good, HSG C       |
| 3,979     | 80 | >75% Grass cover, Good, HSG D       |
| 79,211    | 98 | Paved roads w/curbs & sewers, HSG C |
| 2,894     | 98 | Paved roads w/curbs & sewers, HSG D |
| 21,590    | 70 | Woods, Good, HSG C                  |
| 710       | 77 | Woods, Good, HSG D                  |
| 124,676   | 89 | Weighted Average                    |
| 42,570    |    | 34.14% Pervious Area                |
| 82,106    |    | 65.86% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                  |
|----------|---------------|---------------|-------------------|----------------|------------------------------|
| 6.0      |               |               |                   |                | Direct Entry, Use Minimum TC |

# Proposal No. 609250 - 129975

**5958\_ProposedConditions** Type III 24-hr 10-year Rainfall=4.75"  
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### Summary for Subcatchment 30S: Glad Valley Drive

Runoff = 1.40 cfs @ 12.09 hrs, Volume= 0.103 af, Depth= 3.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-80.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10-year Rainfall=4.75"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 3,358     | 74 | >75% Grass cover, Good, HSG C       |
| 4,489     | 80 | >75% Grass cover, Good, HSG D       |
| 584       | 98 | Paved roads w/curbs & sewers, HSG C |
| 6,090     | 98 | Paved roads w/curbs & sewers, HSG D |
| 1,237     | 70 | Woods, Good, HSG C                  |
| 1,325     | 77 | Woods, Good, HSG D                  |
| 17,082    | 85 | Weighted Average                    |
| 10,409    |    | 60.93% Pervious Area                |
| 6,674     |    | 39.07% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description          |
|----------|---------------|---------------|-------------------|----------------|----------------------|
| 6.0      |               |               |                   |                | Direct Entry, Min TC |

**5958\_ProposedConditions** Type III 24-hr 10-year Rainfall=4.75"  
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### Summary for Subcatchment 40S: Boston Road at Bertha Circle

Runoff = 4.58 cfs @ 12.09 hrs, Volume= 0.349 af, Depth> 3.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-80.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10-year Rainfall=4.75"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 5,436     | 74 | >75% Grass cover, Good, HSG C       |
| 3,281     | 80 | >75% Grass cover, Good, HSG D       |
| 23,419    | 98 | Paved roads w/curbs & sewers, HSG C |
| 11,371    | 98 | Paved roads w/curbs & sewers, HSG D |
| 2,634     | 70 | Woods, Good, HSG C                  |
| 1,397     | 77 | Woods, Good, HSG D                  |
| 47,537    | 92 | Weighted Average                    |
| 12,748    |    | 26.82% Pervious Area                |
| 34,789    |    | 73.18% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description              |
|----------|---------------|---------------|-------------------|----------------|--------------------------|
| 6.0      |               |               |                   |                | Direct Entry, Minimum TC |

**5958\_ProposedConditions** Type III 24-hr 10-year Rainfall=4.75"  
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### Summary for Link 1L: Outfall at 558 Boston Rd

Inflow Area = 4.036 ac, 79.19% Impervious, Inflow Depth > 4.04" for 10-year event  
 Inflow = 17.51 cfs @ 12.09 hrs, Volume= 1.358 af  
 Primary = 17.51 cfs @ 12.09 hrs, Volume= 1.358 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-80.00 hrs, dt= 0.05 hrs

**5958\_ProposedConditions** Type III 24-hr 10-year Rainfall=4.75"  
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### Summary for Link 2L: B1/B2 Stream

Inflow Area = 2.862 ac, 65.86% Impervious, Inflow Depth > 3.53" for 10-year event  
 Inflow = 11.29 cfs @ 12.09 hrs, Volume= 0.843 af  
 Primary = 11.29 cfs @ 12.09 hrs, Volume= 0.843 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-80.00 hrs, dt= 0.05 hrs

# Proposal No. 609250 - 129975

**5958\_ProposedConditions** Type III 24-hr 10-year Rainfall=4.75"  
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## Summary for Link 3L: Glad Valley Drive

Inflow Area = 0.392 ac, 39.07% Impervious, Inflow Depth = 3.14" for 10-year event  
 Inflow = 1.40 cfs @ 12.09 hrs, Volume= 0.103 af  
 Primary = 1.40 cfs @ 12.09 hrs, Volume= 0.103 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-80.00 hrs, dt= 0.05 hrs

**5958\_ProposedConditions** Type III 24-hr 10-year Rainfall=4.75"  
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## Summary for Link 4L: Locke Road System

Inflow Area = 1.091 ac, 73.18% Impervious, Inflow Depth > 3.84" for 10-year event  
 Inflow = 4.58 cfs @ 12.09 hrs, Volume= 0.349 af  
 Primary = 4.58 cfs @ 12.09 hrs, Volume= 0.349 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-80.00 hrs, dt= 0.05 hrs

**5958\_ProposedConditions** Type III 24-hr 100-year Rainfall=8.63"  
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Time span=5.00-80.00 hrs, dt=0.05 hrs, 1501 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 10S: Boston Road - West** Runoff Area=175,807 sf 79.19% Impervious Runoff Depth>7.79"  
 Flow Length=1,690' Tc=6.0 min CN=94 Runoff=32.88 cfs 2,619 af

**Subcatchment 20S: Boston Road - East** Runoff Area=124,676 sf 65.86% Impervious Runoff Depth>7.27"  
 Tc=6.0 min CN=89 Runoff=22.44 cfs 1,734 af

**Subcatchment 30S: Glad Valley Drive** Runoff Area=17,082 sf 39.07% Impervious Runoff Depth>6.81"  
 Tc=6.0 min CN=85 Runoff=2.94 cfs 0.223 af

**Subcatchment 40S: Boston Road at Bertha** Runoff Area=47,537 sf 73.18% Impervious Runoff Depth>7.59"  
 Tc=6.0 min CN=92 Runoff=8.78 cfs 0.690 af

**Link 1L: Outfall at 558 Boston Rd** Inflow=32.88 cfs 2,619 af  
 Primary=32.88 cfs 2,619 af

**Link 2L: B1/B2 Stream** Inflow=22.44 cfs 1,734 af  
 Primary=22.44 cfs 1,734 af

**Link 3L: Glad Valley Drive** Inflow=2.94 cfs 0.223 af  
 Primary=2.94 cfs 0.223 af

**Link 4L: Locke Road System** Inflow=8.78 cfs 0.690 af  
 Primary=8.78 cfs 0.690 af

**5958\_ProposedConditions** Type III 24-hr 100-year Rainfall=8.63"  
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## Summary for Subcatchment 10S: Boston Road - West

Runoff = 32.88 cfs @ 12.09 hrs, Volume= 2,619 af, Depth> 7.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-80.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100-year Rainfall=8.63"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 20,873    | 74 | >75% Grass cover, Good, HSG C       |
| 12,008    | 80 | >75% Grass cover, Good, HSG D       |
| 937       | 96 | Gravel surface, HSG D               |
| 80,942    | 98 | Paved roads w/curbs & sewers, HSG C |
| 58,288    | 98 | Paved roads w/curbs & sewers, HSG D |
| 318       | 70 | Woods, Good, HSG C                  |
| 2,441     | 77 | Woods, Good, HSG D                  |
| 175,807   | 94 | Weighted Average                    |
| 36,577    |    | 20.81% Pervious Area                |
| 139,230   |    | 79.19% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 0.6      | 50            | 0.0360        | 1.50              |                | Sheet Flow, Sheet Flow<br>Smooth surfaces n= 0.011 P2= 3.12"                       |
| 0.3      | 85            | 0.0400        | 4.06              |                | Shallow Concentrated Flow, Shallow Conc<br>Paved Kv= 20.3 fps                      |
| 2.6      | 1,555         | 0.0480        | 9.94              | 7.81           | Pipe Channel, 12" RCP<br>12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 |
| 2.5      |               |               |                   |                | Direct Entry, Min TC   |
| 6.0      | 1,690         | Total         |                   |                |  |

# Proposal No. 609250 - 129975

**5958\_ProposedConditions** Type III 24-hr 100-year Rainfall=8.63"  
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### Summary for Subcatchment 20S: Boston Road - East

Runoff = 22.44 cfs @ 12.09 hrs, Volume= 1.734 af, Depth> 7.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-80.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100-year Rainfall=8.63"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 16,291    | 74 | >75% Grass cover, Good, HSG C       |
| 3,979     | 80 | >75% Grass cover, Good, HSG D       |
| 79,211    | 98 | Paved roads w/curbs & sewers, HSG C |
| 2,894     | 98 | Paved roads w/curbs & sewers, HSG D |
| 21,590    | 70 | Woods, Good, HSG C                  |
| 710       | 77 | Woods, Good, HSG D                  |
| 124,676   | 89 | Weighted Average                    |
| 42,570    |    | 34.14% Pervious Area                |
| 82,106    |    | 65.86% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description                  |
|----------|---------------|---------------|-------------------|----------------|------------------------------|
| 6.0      |               |               |                   |                | Direct Entry, Use Minimum TC |

**5958\_ProposedConditions** Type III 24-hr 100-year Rainfall=8.63"  
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### Summary for Subcatchment 30S: Glad Valley Drive

Runoff = 2.94 cfs @ 12.09 hrs, Volume= 0.223 af, Depth> 6.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-80.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100-year Rainfall=8.63"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 3,358     | 74 | >75% Grass cover, Good, HSG C       |
| 4,489     | 80 | >75% Grass cover, Good, HSG D       |
| 584       | 98 | Paved roads w/curbs & sewers, HSG C |
| 6,090     | 98 | Paved roads w/curbs & sewers, HSG D |
| 1,237     | 70 | Woods, Good, HSG C                  |
| 1,325     | 77 | Woods, Good, HSG D                  |
| 17,082    | 85 | Weighted Average                    |
| 10,409    |    | 60.93% Pervious Area                |
| 6,674     |    | 39.07% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description          |
|----------|---------------|---------------|-------------------|----------------|----------------------|
| 6.0      |               |               |                   |                | Direct Entry, Min TC |

**5958\_ProposedConditions** Type III 24-hr 100-year Rainfall=8.63"  
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### Summary for Subcatchment 40S: Boston Road at Bertha Circle

Runoff = 8.78 cfs @ 12.09 hrs, Volume= 0.690 af, Depth> 7.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-80.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100-year Rainfall=8.63"

| Area (sf) | CN | Description                         |
|-----------|----|-------------------------------------|
| 5,436     | 74 | >75% Grass cover, Good, HSG C       |
| 3,281     | 80 | >75% Grass cover, Good, HSG D       |
| 23,419    | 98 | Paved roads w/curbs & sewers, HSG C |
| 11,371    | 98 | Paved roads w/curbs & sewers, HSG D |
| 2,634     | 70 | Woods, Good, HSG C                  |
| 1,397     | 77 | Woods, Good, HSG D                  |
| 47,537    | 92 | Weighted Average                    |
| 12,748    |    | 26.82% Pervious Area                |
| 34,789    |    | 73.18% Impervious Area              |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description              |
|----------|---------------|---------------|-------------------|----------------|--------------------------|
| 6.0      |               |               |                   |                | Direct Entry, Minimum TC |

**5958\_ProposedConditions** Type III 24-hr 100-year Rainfall=8.63"  
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### Summary for Link 1L: Outfall at 558 Boston Rd

Inflow Area = 4.036 ac, 79.19% Impervious, Inflow Depth > 7.79" for 100-year event  
 Inflow = 32.88 cfs @ 12.09 hrs, Volume= 2.619 af  
 Primary = 32.88 cfs @ 12.09 hrs, Volume= 2.619 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-80.00 hrs, dt= 0.05 hrs

# Proposal No. 609250 - 129975

## 5958\_ProposedConditions

Type III 24-hr 100-year Rainfall=8.63"

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### Summary for Link 2L: B1/B2 Stream

Inflow Area = 2.862 ac, 65.86% Impervious, Inflow Depth > 7.27" for 100-year event  
Inflow = 22.44 cfs @ 12.09 hrs, Volume= 1.734 af  
Primary = 22.44 cfs @ 12.09 hrs, Volume= 1.734 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-80.00 hrs, dt= 0.05 hrs

## 5958\_ProposedConditions

Type III 24-hr 100-year Rainfall=8.63"

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### Summary for Link 3L: Glad Valley Drive

Inflow Area = 0.392 ac, 39.07% Impervious, Inflow Depth > 6.81" for 100-year event  
Inflow = 2.94 cfs @ 12.09 hrs, Volume= 0.223 af  
Primary = 2.94 cfs @ 12.09 hrs, Volume= 0.223 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-80.00 hrs, dt= 0.05 hrs

## 5958\_ProposedConditions

Type III 24-hr 100-year Rainfall=8.63"

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### Summary for Link 4L: Locke Road System

Inflow Area = 1.091 ac, 73.18% Impervious, Inflow Depth > 7.59" for 100-year event  
Inflow = 8.78 cfs @ 12.09 hrs, Volume= 0.690 af  
Primary = 8.78 cfs @ 12.09 hrs, Volume= 0.690 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-80.00 hrs, dt= 0.05 hrs

# APPENDIX G – SUPPLEMENTAL CALCULATIONS

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# Extreme Precipitation Tables

## Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

|                  |                                 |
|------------------|---------------------------------|
| <b>Smoothing</b> | Yes                             |
| <b>State</b>     | Massachusetts                   |
| <b>Location</b>  |                                 |
| <b>Longitude</b> | 71.261 degrees West             |
| <b>Latitude</b>  | 42.549 degrees North            |
| <b>Elevation</b> | 0 feet                          |
| <b>Date/Time</b> | Mon, 04 Apr 2022 14:44:39 -0400 |

### Extreme Precipitation Estimates

|              | 5min | 10min | 15min | 30min | 60min | 120min |              | 1hr  | 2hr  | 3hr  | 6hr  | 12hr  | 24hr  | 48hr  |              | 1day  | 2day  | 4day  | 7day  | 10day |              |
|--------------|------|-------|-------|-------|-------|--------|--------------|------|------|------|------|-------|-------|-------|--------------|-------|-------|-------|-------|-------|--------------|
| <b>1yr</b>   | 0.28 | 0.43  | 0.53  | 0.69  | 0.86  | 1.09   | <b>1yr</b>   | 0.75 | 1.03 | 1.27 | 1.60 | 2.04  | 2.61  | 2.83  | <b>1yr</b>   | 2.31  | 2.72  | 3.17  | 3.86  | 4.50  | <b>1yr</b>   |
| <b>2yr</b>   | 0.34 | 0.53  | 0.65  | 0.86  | 1.08  | 1.37   | <b>2yr</b>   | 0.94 | 1.25 | 1.58 | 1.99 | 2.49  | 3.14  | 3.45  | <b>2yr</b>   | 2.78  | 3.32  | 3.83  | 4.55  | 5.19  | <b>2yr</b>   |
| <b>5yr</b>   | 0.40 | 0.63  | 0.79  | 1.06  | 1.35  | 1.72   | <b>5yr</b>   | 1.17 | 1.57 | 2.00 | 2.52 | 3.16  | 3.97  | 4.40  | <b>5yr</b>   | 3.51  | 4.23  | 4.85  | 5.77  | 6.50  | <b>5yr</b>   |
| <b>10yr</b>  | 0.46 | 0.72  | 0.90  | 1.23  | 1.60  | 2.05   | <b>10yr</b>  | 1.38 | 1.86 | 2.40 | 3.03 | 3.80  | 4.75  | 5.29  | <b>10yr</b>  | 4.20  | 5.08  | 5.80  | 6.90  | 7.72  | <b>10yr</b>  |
| <b>25yr</b>  | 0.54 | 0.86  | 1.09  | 1.51  | 2.00  | 2.59   | <b>25yr</b>  | 1.72 | 2.33 | 3.03 | 3.84 | 4.82  | 6.02  | 6.75  | <b>25yr</b>  | 5.33  | 6.49  | 7.35  | 8.75  | 9.68  | <b>25yr</b>  |
| <b>50yr</b>  | 0.61 | 0.98  | 1.25  | 1.76  | 2.37  | 3.10   | <b>50yr</b>  | 2.04 | 2.76 | 3.65 | 4.63 | 5.80  | 7.21  | 8.12  | <b>50yr</b>  | 6.38  | 7.81  | 8.80  | 10.48 | 11.49 | <b>50yr</b>  |
| <b>100yr</b> | 0.70 | 1.13  | 1.46  | 2.06  | 2.81  | 3.70   | <b>100yr</b> | 2.42 | 3.28 | 4.36 | 5.54 | 6.95  | 8.63  | 9.77  | <b>100yr</b> | 7.64  | 9.40  | 10.54 | 12.55 | 13.65 | <b>100yr</b> |
| <b>200yr</b> | 0.80 | 1.30  | 1.68  | 2.41  | 3.33  | 4.42   | <b>200yr</b> | 2.88 | 3.89 | 5.23 | 6.65 | 8.34  | 10.34 | 11.77 | <b>200yr</b> | 9.15  | 11.32 | 12.62 | 15.03 | 16.22 | <b>200yr</b> |
| <b>500yr</b> | 0.96 | 1.58  | 2.06  | 2.99  | 4.19  | 5.60   | <b>500yr</b> | 3.61 | 4.89 | 6.64 | 8.46 | 10.61 | 13.14 | 15.06 | <b>500yr</b> | 11.63 | 14.48 | 16.03 | 19.10 | 20.39 | <b>500yr</b> |

### Lower Confidence Limits

|              | 5min | 10min | 15min | 30min | 60min | 120min |              | 1hr  | 2hr  | 3hr  | 6hr  | 12hr | 24hr | 48hr |              | 1day | 2day | 4day  | 7day  | 10day |              |
|--------------|------|-------|-------|-------|-------|--------|--------------|------|------|------|------|------|------|------|--------------|------|------|-------|-------|-------|--------------|
| <b>1yr</b>   | 0.24 | 0.37  | 0.45  | 0.60  | 0.74  | 0.83   | <b>1yr</b>   | 0.64 | 0.81 | 1.11 | 1.38 | 1.73 | 2.33 | 2.44 | <b>1yr</b>   | 2.06 | 2.35 | 2.79  | 3.41  | 3.97  | <b>1yr</b>   |
| <b>2yr</b>   | 0.32 | 0.50  | 0.61  | 0.83  | 1.03  | 1.23   | <b>2yr</b>   | 0.89 | 1.21 | 1.41 | 1.86 | 2.39 | 3.03 | 3.33 | <b>2yr</b>   | 2.68 | 3.21 | 3.69  | 4.39  | 5.02  | <b>2yr</b>   |
| <b>5yr</b>   | 0.38 | 0.58  | 0.72  | 0.99  | 1.25  | 1.47   | <b>5yr</b>   | 1.08 | 1.43 | 1.68 | 2.18 | 2.79 | 3.64 | 4.01 | <b>5yr</b>   | 3.22 | 3.86 | 4.46  | 5.28  | 5.99  | <b>5yr</b>   |
| <b>10yr</b>  | 0.42 | 0.64  | 0.79  | 1.11  | 1.43  | 1.67   | <b>10yr</b>  | 1.23 | 1.63 | 1.89 | 2.46 | 3.14 | 4.18 | 4.60 | <b>10yr</b>  | 3.70 | 4.43 | 5.12  | 6.02  | 6.87  | <b>10yr</b>  |
| <b>25yr</b>  | 0.48 | 0.73  | 0.90  | 1.29  | 1.69  | 1.96   | <b>25yr</b>  | 1.46 | 1.92 | 2.22 | 2.89 | 3.66 | 5.00 | 5.52 | <b>25yr</b>  | 4.43 | 5.31 | 6.17  | 7.16  | 8.20  | <b>25yr</b>  |
| <b>50yr</b>  | 0.52 | 0.80  | 0.99  | 1.43  | 1.92  | 2.24   | <b>50yr</b>  | 1.66 | 2.19 | 2.51 | 3.27 | 4.12 | 5.73 | 6.32 | <b>50yr</b>  | 5.08 | 6.07 | 7.10  | 8.09  | 9.38  | <b>50yr</b>  |
| <b>100yr</b> | 0.58 | 0.88  | 1.10  | 1.59  | 2.18  | 2.54   | <b>100yr</b> | 1.88 | 2.48 | 2.83 | 3.55 | 4.63 | 6.58 | 7.21 | <b>100yr</b> | 5.82 | 6.93 | 8.19  | 9.14  | 10.74 | <b>100yr</b> |
| <b>200yr</b> | 0.65 | 0.97  | 1.23  | 1.78  | 2.48  | 2.88   | <b>200yr</b> | 2.14 | 2.82 | 3.19 | 3.99 | 5.23 | 7.54 | 8.24 | <b>200yr</b> | 6.67 | 7.92 | 9.44  | 10.27 | 12.29 | <b>200yr</b> |
| <b>500yr</b> | 0.75 | 1.11  | 1.43  | 2.07  | 2.95  | 3.42   | <b>500yr</b> | 2.54 | 3.34 | 3.74 | 4.66 | 6.16 | 9.01 | 9.76 | <b>500yr</b> | 7.97 | 9.39 | 11.40 | 11.96 | 14.71 | <b>500yr</b> |

### Upper Confidence Limits

|              | 5min | 10min | 15min | 30min | 60min | 120min |              | 1hr  | 2hr  | 3hr  | 6hr  | 12hr  | 24hr  | 48hr  |              | 1day  | 2day  | 4day  | 7day  | 10day |              |
|--------------|------|-------|-------|-------|-------|--------|--------------|------|------|------|------|-------|-------|-------|--------------|-------|-------|-------|-------|-------|--------------|
| <b>1yr</b>   | 0.31 | 0.48  | 0.58  | 0.79  | 0.97  | 1.13   | <b>1yr</b>   | 0.83 | 1.10 | 1.30 | 1.72 | 2.18  | 2.81  | 3.09  | <b>1yr</b>   | 2.49  | 2.97  | 3.42  | 4.22  | 4.91  | <b>1yr</b>   |
| <b>2yr</b>   | 0.36 | 0.55  | 0.68  | 0.92  | 1.13  | 1.34   | <b>2yr</b>   | 0.98 | 1.31 | 1.54 | 2.01 | 2.58  | 3.26  | 3.61  | <b>2yr</b>   | 2.89  | 3.47  | 3.98  | 4.75  | 5.38  | <b>2yr</b>   |
| <b>5yr</b>   | 0.44 | 0.68  | 0.85  | 1.16  | 1.48  | 1.74   | <b>5yr</b>   | 1.28 | 1.70 | 1.99 | 2.56 | 3.24  | 4.32  | 4.82  | <b>5yr</b>   | 3.82  | 4.64  | 5.29  | 6.26  | 7.03  | <b>5yr</b>   |
| <b>10yr</b>  | 0.54 | 0.82  | 1.02  | 1.43  | 1.84  | 2.13   | <b>10yr</b>  | 1.59 | 2.08 | 2.44 | 3.09 | 3.87  | 5.36  | 6.01  | <b>10yr</b>  | 4.74  | 5.78  | 6.55  | 7.76  | 8.60  | <b>10yr</b>  |
| <b>25yr</b>  | 0.69 | 1.05  | 1.31  | 1.87  | 2.47  | 2.78   | <b>25yr</b>  | 2.13 | 2.72 | 3.21 | 3.96 | 4.89  | 7.11  | 8.07  | <b>25yr</b>  | 6.29  | 7.76  | 8.70  | 10.35 | 11.25 | <b>25yr</b>  |
| <b>50yr</b>  | 0.84 | 1.28  | 1.59  | 2.28  | 3.07  | 3.42   | <b>50yr</b>  | 2.65 | 3.35 | 3.95 | 4.78 | 5.84  | 8.82  | 10.11 | <b>50yr</b>  | 7.81  | 9.72  | 10.78 | 12.87 | 13.79 | <b>50yr</b>  |
| <b>100yr</b> | 1.02 | 1.55  | 1.94  | 2.80  | 3.84  | 4.20   | <b>100yr</b> | 3.32 | 4.11 | 4.86 | 5.99 | 6.99  | 10.95 | 12.68 | <b>100yr</b> | 9.69  | 12.19 | 13.37 | 16.05 | 16.90 | <b>100yr</b> |
| <b>200yr</b> | 1.25 | 1.87  | 2.38  | 3.44  | 4.80  | 5.16   | <b>200yr</b> | 4.14 | 5.04 | 5.99 | 7.28 | 8.35  | 13.62 | 15.93 | <b>200yr</b> | 12.05 | 15.32 | 16.58 | 19.98 | 20.73 | <b>200yr</b> |
| <b>500yr</b> | 1.62 | 2.42  | 3.11  | 4.52  | 6.43  | 6.76   | <b>500yr</b> | 5.55 | 6.61 | 7.90 | 9.42 | 10.57 | 18.17 | 21.55 | <b>500yr</b> | 16.08 | 20.72 | 22.02 | 26.76 | 27.14 | <b>500yr</b> |





### Recharge Volume (R<sub>v</sub>) and Water Quality Volume (WQ<sub>v</sub>) Provided Volumes Worksheet

#### Project Wide Totals

| <u>Required Recharge Volume</u> |  | Impervious Area<br>(sq. ft.) | Runoff Depth<br>(in.) | Recharge Volume<br>(cu. ft.) |
|---------------------------------|--|------------------------------|-----------------------|------------------------------|
| <b>Pre-Development</b>          | HSG C  | <b>240725</b>                |                       |                              |
|                                 | HSG D  | 168410                       |                       |                              |
|                                 |  | 72315                        |                       |                              |
| <b>Post-Development</b>         | HSG C  | <b>263745</b>                |                       |                              |
|                                 | HSG D  | 184160                       |                       |                              |
|                                 |  | 79585                        |                       |                              |
| <b>Net Change</b>               |  | <b>23020</b>                 |                       | 389                          |
|                                 | HSG C  | 15750                        | 0.25                  | 328                          |
|                                 | HSG D  | 7270                         | 0.10                  | 61                           |
|                                 | Exclude Catchment to<br>Qualifying Pervious Area | -850                         | 0.25                  | -18                          |

Recharge Volume (R<sub>v</sub>) Required = Impervious Area x Runoff Depth (from HSG)

\*For sites comprised of primarily HSG C and D soils, proponents are required to infiltrate to the maximum extent practicable. All portions of the project located within jurisdictional areas are also located in areas of HSG C and D mapped soils.

**Total Recharge Volume Required: 371 CF**

**Total Recharge Volume Provided: (See Page 2) 0 CF**

| <u>Required Water Quality Volume</u>                | Impervious Area<br>(sq. ft.) | Runoff Depth<br>(in.) | Water Quality Volume<br>(cu. ft.) |
|---|------------------------------|-----------------------|-----------------------------------|
| Net New Impervious Area                             | 23020                        | 0.5                   | 959                               |
| Impervious Catchment to Qualifying<br>Pervious Area | 850                          |                       |                                   |
| Adjusted New Impervious Area                        | 22170                        | 0.5                   | 924                               |

Water Quality Volume (WQ<sub>v</sub>) Required = Impervious Area x Runoff Depth (0.5" Depth)

**Total Water Quality Volume Required: 924 CF**

**Total Water Quality Volume Provided: (See Page 2) 0 CF**



### TSS Removal

#### Total Treatment

| <u>Treatment Train</u>                            | A: Total Removal Rate (%) | B: Total Treatment Area (sq. ft.) | C: A x B |
|---|---------------------------|-----------------------------------|----------|
| No Treatment (Existing Cbs)                       | 0%                        | 69425                             | 0        |
| Pavement Disconnection (Qualifying Pervious Area) | 100%                      | 850                               | 850      |
| Deep Sump Catch Basins                            | 25%                       | 194320                            | 48580    |

Totals: 263745 SF 49430

Total TSS Removal (C / B) 19%

Total of Column C divided by Total of Column B

Equivalent Area for 80% TSS Removal: 61787.5 SF

Total of Column B x total TSS Rate divided by 80%

Proposed New Impervious Area: 23020 SF



## **APPENDIX C – Project Plans**

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# MASSACHUSETTS DEPARTMENT OF TRANSPORTATION HIGHWAY DIVISION

## PLAN AND PROFILE OF BOSTON ROAD (ROUTE 3A) AT LEXINGTON ROAD & GLAD VALLEY DRIVE TRAFFIC AND SAFETY IMPROVEMENTS

IN THE TOWN OF  
**BILLERICA**  
MIDDLESEX COUNTY

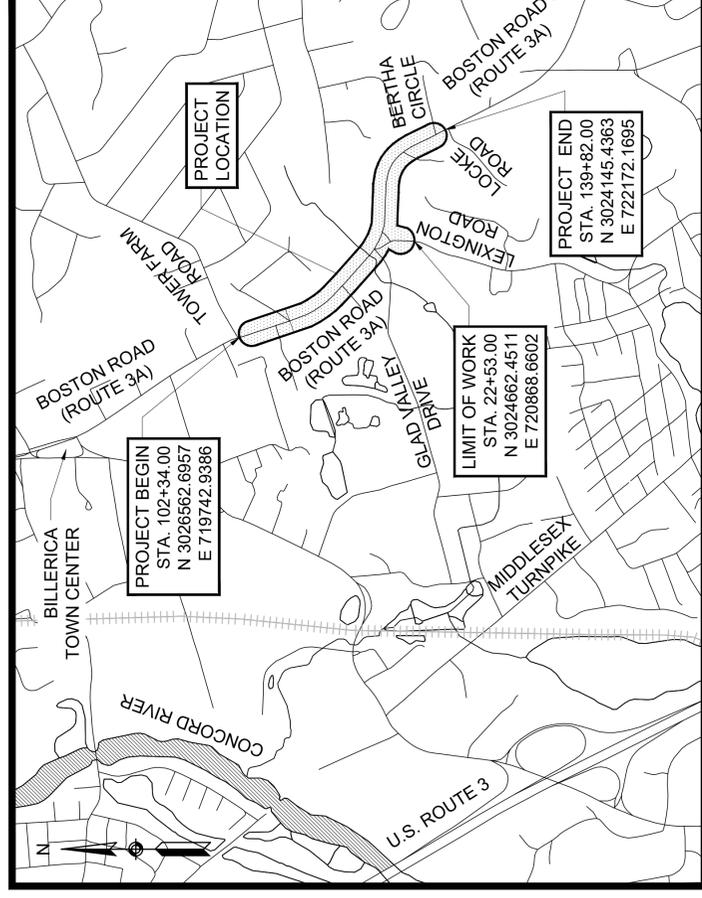
FEDERAL AID PROJECT NO. -

# 100% SUBMITTAL

| SHEET NO. | DESCRIPTION                       |
|-----------|-----------------------------------|
| 1         | TITLE SHEET & INDEX               |
| 2         | LEGEND & ABBREVIATIONS            |
| 3         | KEY PLAN & BORING LOG             |
| 4-5       | TYPICAL SECTIONS & PAVEMENT NOTES |
| 6         | GENERAL NOTES                     |
| 7-13      | CONSTRUCTION DETAILS              |
| 14-21     | CONSTRUCTION PLANS                |
| 22-29     | DRAINAGE & UTILITY PLANS          |
| 30        | LANDSCAPE PLAN                    |

### INDEX

| SHEET NO. | DESCRIPTION                       |
|-----------|-----------------------------------|
| 1         | TITLE SHEET & INDEX               |
| 2         | LEGEND & ABBREVIATIONS            |
| 3         | KEY PLAN & BORING LOG             |
| 4-5       | TYPICAL SECTIONS & PAVEMENT NOTES |
| 6         | GENERAL NOTES                     |
| 7-13      | CONSTRUCTION DETAILS              |
| 14-21     | CONSTRUCTION PLANS                |
| 22-29     | DRAINAGE & UTILITY PLANS          |
| 30        | LANDSCAPE PLAN                    |



PROJECT LOCATION



BOSTON ROAD (ROUTE 3A) LENGTH OF PROJECT = 3,748 FEET = 0.710 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 1988 STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING, AND THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK.

### DESIGN DESIGNATION

BOSTON ROAD (ROUTE 3A)

|                 |          |
|-----------------|----------|
| DESIGN SPEED    | 40 MPH   |
| ADT (2019)      | 22,100   |
| ADT (2039)      | 26,970   |
| K               | 8.2%     |
| D               | 57% (NB) |
| T (PEAK HOUR)   | 1.2%     |
| T (AVERAGE DAY) | 0.9%     |
| DHV             | 2,212    |
| DDHV            | 1,261    |

FUNCTIONAL CLASSIFICATION

URBAN PRINCIPAL ARTERIAL

LEXINGTON ROAD

|                 |          |
|-----------------|----------|
| DESIGN SPEED    | 35 MPH   |
| ADT (2019)      | 5,400    |
| ADT (2039)      | 6,590    |
| K               | 8.6%     |
| D               | 69% (NB) |
| T (PEAK HOUR)   | 0.1%     |
| T (AVERAGE DAY) | 0.4%     |
| DHV             | 567      |
| DDHV            | 392      |

FUNCTIONAL CLASSIFICATION

URBAN COLLECTOR

GLAD VALLEY DRIVE

35 MPH

3,400

4,150

10.0%

64% (WB)

0.0%

0.5%

415

286

LOCAL ROAD

NOTICE OF INTENT  
PERMIT SET

BILLERICA  
BOSTON RD (ROUTE 3A)  
AT LEXINGTON RD & GLAD VALLEY DR

| STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|-------|--------------------|-----------|--------------|
| MA    | -                  | 1         | 38           |

PROJECT FILE NO. 609250  
TITLE SHEET & INDEX

| DATE       | DESCRIPTION    | REV # |
|------------|----------------|-------|
| 12/19/2023 | NOI PERMIT SET | 0     |
| 8/26/2022  | NOI PERMIT SET | 0     |



APPROVED

CHIEF ENGINEER

DATE

GENERAL SYMBOLS

| EXISTING | PROPOSED | DESCRIPTION   |
|----------|----------|---|
|          |          | JERSEY BARRIER  |
|          |          | CATCH BASIN   |
|          |          | CATCH BASIN CURB INLET                                    |
|          |          | FLAG POLE   |
|          |          | GAS PUMP  |
|          |          | MAIL BOX  |
|          |          | POST SQUARE   |
|          |          | POST CIRCULAR   |
|          |          | WELL  |
|          |          | ELECTRIC HANDHOLE   |
|          |          | FENCE GATE POST   |
|          |          | GAS GATE  |
|          |          | BORING HOLE   |
|          |          | MONITORING WELL   |
|          |          | TEST PIT  |
|          |          | HYDRANT   |
|          |          | LIGHT POLE  |
|          |          | COUNTY BOUND  |
|          |          | GPS POINT   |
|          |          | CABLE MANHOLE   |
|          |          | DRAINAGE MANHOLE OR CB WITH FRAME AND COVER               |
|          |          | DRAINAGE MANHOLE (5' DIAMETER)                            |
|          |          | ELECTRIC MANHOLE  |
|          |          | MISC MANHOLE  |
|          |          | SEWER MANHOLE   |
|          |          | TELEPHONE MANHOLE   |
|          |          | WATER MANHOLE   |
|          |          | MASSACHUSETTS HIGHWAY BOUND                               |
|          |          | MONUMENT  |
|          |          | STONE BOUND   |
|          |          | TOWN OR CITY BOUND  |
|          |          | TRAVERSE OR TRIANGULATION STATION                         |
|          |          | TROLLEY POLE OR GUY POLE                                  |
|          |          | TRANSMISSION POLE   |
|          |          | UTILITY POLE W/ FIREBOX                                   |
|          |          | UTILITY POLE WITH DOUBLE LIGHT                            |
|          |          | UTILITY POLE W/ 1 LIGHT                                   |
|          |          | UTILITY POLE  |
|          |          | BUSH  |
|          |          | TREE  |
|          |          | STUMP   |
|          |          | SWAMP / MARSH   |
|          |          | WATER GATE  |
|          |          | PARKING METER   |
|          |          | SIGN  |
|          |          | 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                                   |
|          |          | 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                                       |
|          |          | RAILROAD SIDELINE   |
|          |          | TOWN OR CITY BOUNDARY LINE                                |
|          |          | PROPERTY LINE OR APPROXIMATE PROPERTY LINE                |
|          |          | EASEMENT  |

PAVEMENT MARKINGS AND SIGNING SYMBOLS

| PROPOSED | DESCRIPTION   |
|----------|---|
|          | CROSSWALK 2 - 12" WHITE LINES (8' WIDTH)                  |
|          | STOP LINE - 12" WHITE LINE 4' BEHIND CW (TYP.)            |
|          | SOLID WHITE LINE - 6"                                     |
|          | SOLID WHITE CHANNELIZING LINES - 12" (SPACING NOTED)      |
|          | SOLID WHITE GORE LINE 12" @ 45°, (SPACING NOTED)          |
|          | SOLID WHITE PARKING LINE - 6"                             |
|          | BROKEN WHITE LINE - 6" (10' LINE & 30' GAP)               |
|          | DOTTED WHITE LANE EXTENSION LINE - 6" (2' LINE & 6' GAP)  |
|          | DOTTED YELLOW LANE EXTENSION LINE - 6" (2' LINE & 6' GAP) |
|          | BROKEN YELLOW LINE - 6"                                   |
|          | DOUBLE YELLOW LINE - 2 - 6" LINES                         |
|          | SOLID YELLOW LINE - 6"                                    |
|          | SOLID YELLOW GORE LINE 12" @ 45°, (SPACING NOTED)         |
|          | SCHOOL ZONE - WHITE                                       |
|          | ACCESSIBILITY SYMBOL - WHITE                              |
|          | PAVEMENT ARROW - WHITE                                    |
|          | LEGEND "ONLY" - WHITE                                     |

TRAFFIC SIGNAL SYMBOLS

| EXISTING | PROPOSED | DESCRIPTION  |
|----------|----------|--|
|          |          | CONTROL CABINET GROUND MOUNTED WITH FOUNDATION                       |
|          |          | CONTROL CABINET POLE MOUNTED   |
|          |          | CONTROLLER PHASE   |
|          |          | MAST ARM, SHAFT & BASE (ARM LENGTH AS NOTED)                         |
|          |          | VEHICULAR SIGNAL HEAD (ALPHA-NUMERIC DESIGNATION AS NOTED)           |
|          |          | VEHICULAR SIGNAL HEAD, OPTICALLY PROGRAMMED                          |
|          |          | VEHICULAR SIGNAL HEAD (REMOVED & RESET)                              |
|          |          | FLASHING BEACON  |
|          |          | PEDESTRIAN SIGNAL HEAD   |
|          |          | PEDESTRIAN SIGNAL HEAD, OPTICALLY PROGRAMMED                         |
|          |          | PULL BOX 12"x12" OR HANDHOLE   |
|          |          | LOOP DETECTOR  |
|          |          | PEDESTRIAN PUSH BUTTON, SIGN (DIRECTIONAL ARROW AS SHOWN) AND SADDLE |
|          |          | PRE-EMPTION DETECTOR   |
|          |          | PRE-EMPTION CONFIRMATION STROBE                                      |
|          |          | SIGNAL CONDUIT (SINGLE RUN)  |
|          |          | SIGNAL CONDUIT (DOUBLE RUN)  |
|          |          | SIGNAL POST & BASE   |
|          |          | MAGNETIC DETECTOR  |
|          |          | SCHOOL ZONE SPEED LIMIT SIGN   |
|          |          | MICROWAVE OR ULTRASONIC DETECTOR                                     |
|          |          | VIDEO DETECTION CAMERA   |
|          |          | VIDEO DETECTION ZONE   |

TRAFFIC SIGNAL SYSTEMS

|     |   |
|-----|---|
| R   | STEADY CIRCULAR RED                                   |
| Y   | STEADY CIRCULAR AMBER                                 |
| G   | STEADY CIRCULAR GREEN                                 |
| FR  | FLASHING CIRCULAR RED                                 |
| FY  | FLASHING CIRCULAR AMBER                               |
| +FY | FLASHING YELLOW LEFT ARROW                            |
| R-  | STEADY RED RIGHT ARROW                                |
| Y-  | STEADY AMBER RIGHT ARROW                              |
| G-  | STEADY GREEN RIGHT ARROW                              |
| +R  | STEADY RED LEFT ARROW                                 |
| +Y  | STEADY AMBER LEFT ARROW                               |
| +G  | STEADY GREEN LEFT ARROW                               |
| W   | STEADY WALK (PERSON WALKING) - LUNAR WHITE            |
| DW  | STEADY DON'T WALK (HAND) - PORTLAND ORANGE            |
| FDW | FLASHING DON'T WALK (FLASHING HAND) - PORTLAND ORANGE |

ABBREVIATIONS

| GENERAL         | DESCRIPTION                          |
|-----------------|--------------------------------------|
| AADT            | ANNUAL AVERAGE DAILY TRAFFIC         |
| ABAN            | ABANDON                              |
| ADJ             | ADJUST                               |
| APPROX.         | APPROXIMATE                          |
| A.C.            | ASPHALT CONCRETE                     |
| ACCM PIPE       | ASPHALT COATED CORRUGATED METAL PIPE |
| BB              | BITUMINOUS BERM                      |
| 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                          |
| CBCL            | 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                     |
| CLO             | CLEANOUT                             |
| 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                    |
| DU              | DESTINATION UNKNOWN                  |
| 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             | GUARD                                |
| HDW             | HEADWALL                             |
| HMA             | HOT MIX ASPHALT                      |
| HOR             | HORIZONTAL                           |
| HYD             | HYDRANT                              |
| INV             | INVERT                               |
| JCT             | JUNCTION                             |
| L               | LENGTH OF CURVE                      |
| LA              | LANDSCAPING                          |
| 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          |
| PCR             | PEDESTRIAN CURB RAMP                 |
| P.G.L.          | PROFILE GRADE LINE                   |
| PI              | POINT OF INTERSECTION                |
| POC             | POINT ON CURVE                       |
| POT             | POINT ON TANGENT                     |
| PRC             | POINT OF REVERSE CURVATURE           |
| PROJ            | PROJECT                              |
| PROP            | PROPOSED                             |
| PSB             | PLANTABLE SOIL BORROW                |
| PWW             | PAVED WATER WAY                      |
| CAB             | CABINET                              |
| CCVE            | CLOSED CIRCUIT VIDEO EQUIPMENT       |
| DW              | STEADY DON'T WALK                    |
| FDW             | FLASHING DON'T WALK                  |
| FR              | FLASHING CIRCULAR RED                |
| FRL             | FLASHING RED LEFT ARROW              |
| FY              | FLASHING CIRCULAR AMBER              |
| FYL             | FLASHING AMBER LEFT ARROW            |
| FYR             | FLASHING AMBER RIGHT ARROW           |
| G               | STEADY CIRCULAR GREEN                |
| GL              | STEADY GREEN LEFT ARROW              |
| GR              | STEADY GREEN RIGHT ARROW             |
| GSL             | STEADY GREEN SLASH LEFT ARROW        |
| GSR             | STEADY GREEN SLASH RIGHT ARROW       |
| GV              | STEADY GREEN VERTICAL ARROW          |
| OL              | OVERLAP                              |
| PEDESTRIAN      | PEDESTRIAN                           |
| PAN. TILE. ZOOM | PAN. TILE. ZOOM                      |
| R               | STEADY CIRCULAR RED                  |
| RL              | STEADY RED LEFT ARROW                |
| RR              | STEADY RED RIGHT ARROW               |
| TR SIG          | TRAFFIC SIGNAL                       |
| TSC             | TRAFFIC SIGNAL CONDUIT               |
| W               | STEADY WALK                          |
| Y               | STEADY CIRCULAR AMBER                |
| YL              | STEADY AMBER LEFT ARROW              |

BILLERICA  
BOSTON RD (ROUTE 3A)  
AT LEXINGTON RD & GLAD VALLEY DR

|                  |                    |           |              |
|------------------|--------------------|-----------|--------------|
| STATE            | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
| MA               | -                  | 2         | 30           |
| PROJECT FILE NO. |                    | 609250    |              |

LEGEND & ABBREVIATIONS

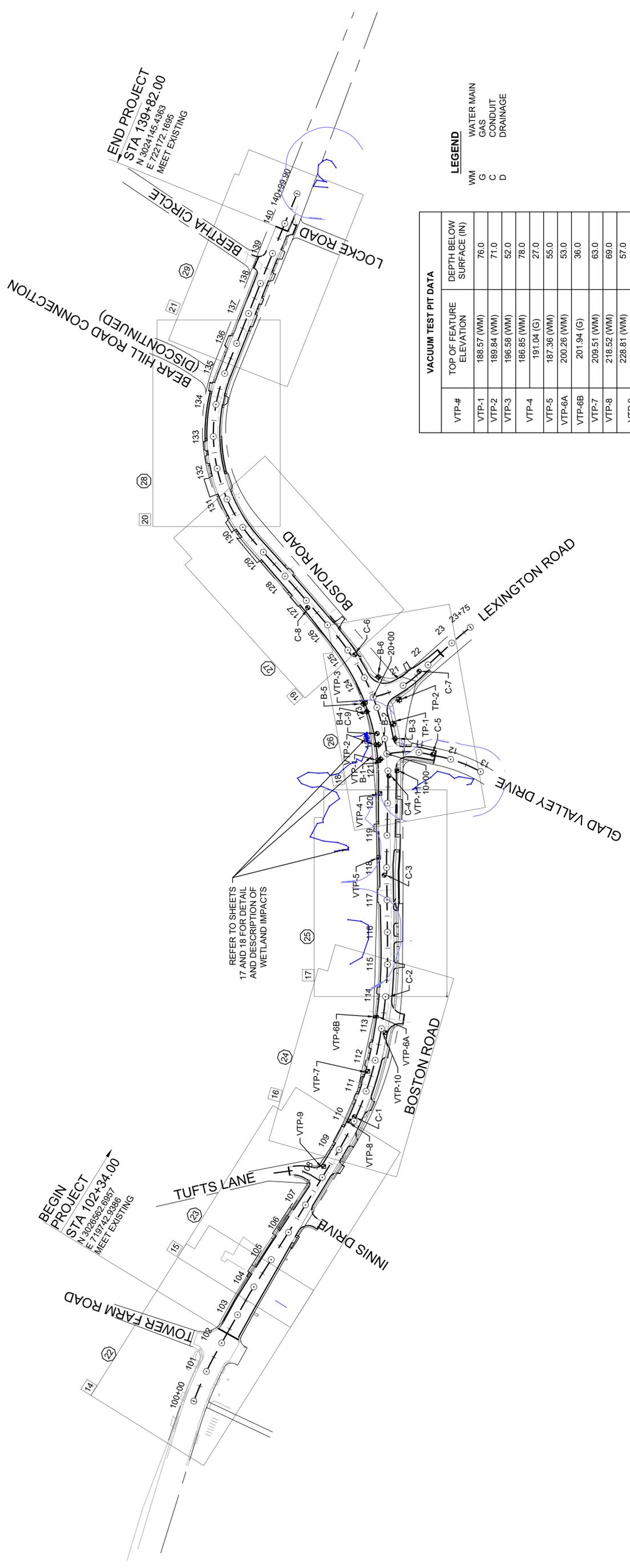
ABBREVIATIONS (cont.)

| GENERAL  | DESCRIPTION                       |
|----------|-----------------------------------|
| PT       | POINT OF TANGENCY                 |
| PVC      | POINT OF VERTICAL CURVATURE       |
| PVI      | POINT OF VERTICAL INTERSECTION    |
| PVT      | POINT OF VERTICAL TANGENCY        |
| PVMT     | PAVEMENT                          |
| 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&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         |
| SUP      | SHARED USE PATH                   |
| 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      | VARIES                            |
| VERT     | VERTICAL                          |
| VC       | VERTICAL CURVE                    |
| WG       | WATER GATE                        |
| WIP      | WROUGHT IRON PIPE                 |
| WM       | WATER METER/WATER MAIN            |
| X-SECT   | CROSS SECTION                     |

**BILLERICA  
BOSTON RD (ROUTE 3A)  
AT LEXINGTON RD & GLAD VALLEY DR**

|                  |                    |           |              |
|------------------|--------------------|-----------|--------------|
| STATE            | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
| MA               |                    | 3         | 93           |
| PROJECT FILE NO. |                    | 609250    |              |

**KEY PLAN & BORING LOG**



REFER TO SHEETS  
17 AND 18 FOR DETAIL  
AND DESCRIPTION OF  
WETLAND IMPACTS

**BEGIN PROJECT  
STA 102+34.00**  
N 3024145 43863  
E 722172 16895  
MEET EXISTING

**END PROJECT  
STA 139+82.00**  
N 3024145 43863  
E 722172 16895  
MEET EXISTING

| VTP-#  | TOP OF FEATURE ELEVATION | DEPTH BELOW SURFACE (IN) |
|--------|--------------------------|--------------------------|
| VTP-1  | 188.57 (WM)              | 76.0                     |
| VTP-2  | 189.84 (WM)              | 71.0                     |
| VTP-3  | 196.58 (WM)              | 52.0                     |
| VTP-4  | 186.85 (WM)              | 76.0                     |
| VTP-5  | 191.04 (G)               | 27.0                     |
| VTP-6A | 187.36 (WM)              | 55.0                     |
| VTP-6B | 200.26 (WM)              | 53.0                     |
| VTP-7  | 201.94 (G)               | 36.0                     |
| VTP-8  | 209.51 (WM)              | 63.0                     |
| VTP-9  | 218.52 (WM)              | 69.0                     |
| VTP-10 | 228.81 (WM)              | 57.0                     |
| VTP-11 | 230.60 (D)               | 33.0                     |
| VTP-12 | 207.33 (C)               | 10.7                     |
| VTP-13 | 193.51 (G)               | 32.0                     |

**LEGEND**

WM WATER MAIN  
G GAS  
C CONDUIT  
D DRAINAGE

**SHEET NUMBER LEGEND**

XX CONSTRUCTION PLAN  
XX DRAINAGE & UTILITY PLAN

C-# PAVEMENT CORES (SEE DATA IN SPECIAL PROVISIONS)  
B-# BORING LOG (SEE DATA IN SPECIAL PROVISIONS)  
VTP-# VACUUM TEST PIT  
TP-# TEST PIT (SEE DATA ON UTILITY PLANS)



**BILLERICA  
BOSTON RD (ROUTE 3A)  
AT LEXINGTON RD & GLAD VALLEY DR**

|                  |                    |           |              |
|------------------|--------------------|-----------|--------------|
| STATE            | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
| MA               |                    | 4         | 30           |
| PROJECT FILE NO. |                    | 609250    |              |

**TYPICAL SECTIONS & PAVEMENT NOTES**

**PAVEMENT NOTES**

**PAVEMENT MILLING AND OVERLAY**  
 SURFACE COURSE: BOSTON ROAD (2-1/4") / SIDE STREETS (1-3/4") SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER ASPHALT EMULSION FOR TACK COAT OVER  
 PAVEMENT MILLING: 1-3/4" - 2-1/4" PAVEMENT MICROMILLING  
 LEVELING COURSE: SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5) COMPACTED 1.5 INCH MAX. LAYERS

**FULL DEPTH PAVEMENT CONSTRUCTION / BOX WIDENING > 4' WIDE**  
 SURFACE COURSE: BOSTON ROAD (2-1/4") / SIDE STREETS (1-3/4") SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER ASPHALT EMULSION FOR TACK COAT OVER  
 INTERMEDIATE COURSE: 2-1/4" SUPERPAVE INTERMEDIATE COURSE 19.0 (SIC-19.0) OVER ASPHALT EMULSION FOR TACK COAT OVER  
 BASE COURSE: 4-1/2" SUPERPAVE BASE COURSE 37.5 (SBC-37.5) OVER  
 SUB-BASE: 4" DENSE GRADED CRUSHED STONE FOR SUB-BASE OVER 8" GRAVEL BORROW, TYPE b (MIN)

**FULL DEPTH PAVEMENT BOX WIDENING 5'-4" WIDE**  
 SURFACE COURSE: BOSTON ROAD (2-1/4") / SIDE STREETS (1-3/4") SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER ASPHALT EMULSION FOR TACK COAT OVER  
 INTERMEDIATE COURSE: 2-1/4" SUPERPAVE INTERMEDIATE COURSE 19.0 (SIC-19.0) OVER ASPHALT EMULSION FOR TACK COAT OVER  
 BASE COURSE: 6" HES CEMENT CONCRETE BASE COURSE OVER 8" GRAVEL BORROW, TYPE b (MIN)

**CEMENT CONCRETE SIDEWALK, WHEELCHAIR RAMPS, AND SHARED USE PATH**  
 SURFACE: 4" CEMENT CONCRETE WALK SURFACE 4000 PSI, 3/4" - 6"10, AIR-ENTRAINED, OVER 8" GRAVEL BORROW, TYPE b  
 FOUNDATION: 8" GRAVEL BORROW, TYPE b

**CEMENT CONCRETE DRIVEWAY**  
 SURFACE: 6" CEMENT CONCRETE WALK SURFACE 4000 PSI, 3/4" - 6"10, AIR-ENTRAINED, OVER 8" GRAVEL BORROW, TYPE b  
 FOUNDATION: 8" GRAVEL BORROW, TYPE b

**HMA SIDEWALK**  
 SURFACE: 1-1/4" SUPERPAVE SURFACE COURSE 9.5 (SSC-9.5) OVER ASPHALT EMULSION FOR TACK COAT OVER 1-3/4" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER 8" GRAVEL BORROW, TYPE b  
 FOUNDATION: 8" GRAVEL BORROW, TYPE b

**HMA DRIVEWAYS**  
 SURFACE: 1-1/2" SUPERPAVE SURFACE COURSE 9.5 (SSC-9.5) (SEE NOTE 3) OVER 2-1/2" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER 8" GRAVEL BORROW, TYPE b  
 FOUNDATION: 8" GRAVEL BORROW, TYPE b

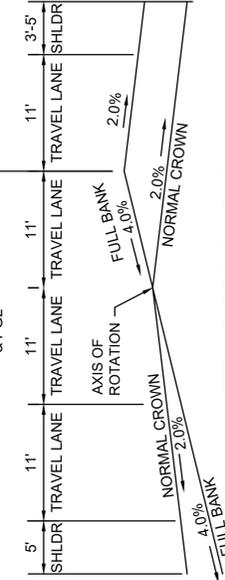
**PAVEMENT NOTES**

- MILLING SHALL ESTABLISH PROP CROSS SLOPE AND/OR AS SHOWN ON PLANS TO PROVIDE A CONSISTENT HMA OVERLAY THICKNESS. LEVELING COURSE SHALL BE SUPERPAVE ALL HMA FOR PATCHING. ASPHALT EMULSION FOR TACK COAT AND HMA JOINT SEALANT SHALL BE INSTALLED PER SECTION 450.43G2.
- HMA DRIVEWAYS - THE SURFACE COURSE SHALL BE A DRIVEWAY AND SIDEWALK RECIPE MIX OR 9.5mm SUPERPAVE SURFACE COURSE. IN AREAS OF HIGH TRAFFIC THE DRIVEWAY SURFACE COURSE SHALL BE 12.5mm SUPERPAVE SURFACE COURSE. THE MIXTURE TYPE AND PLACEMENT METHOD SHALL BE DETERMINED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER PRIOR TO COMMENCING WORK.

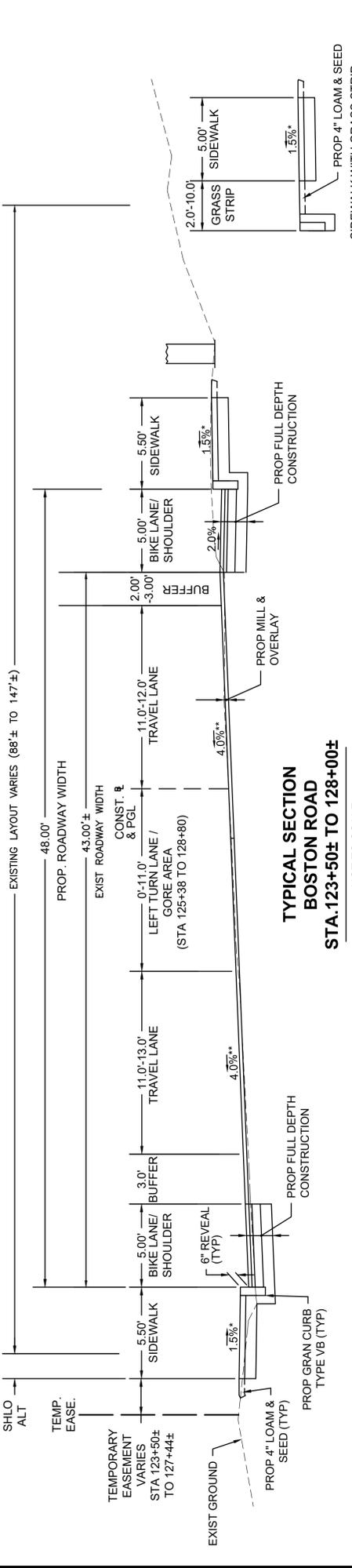
\* TOLERANCE FOR CONSTRUCTION ±0.5%

\*\* SLOPE VARIES IN SUPERELEVATION TRANSITION

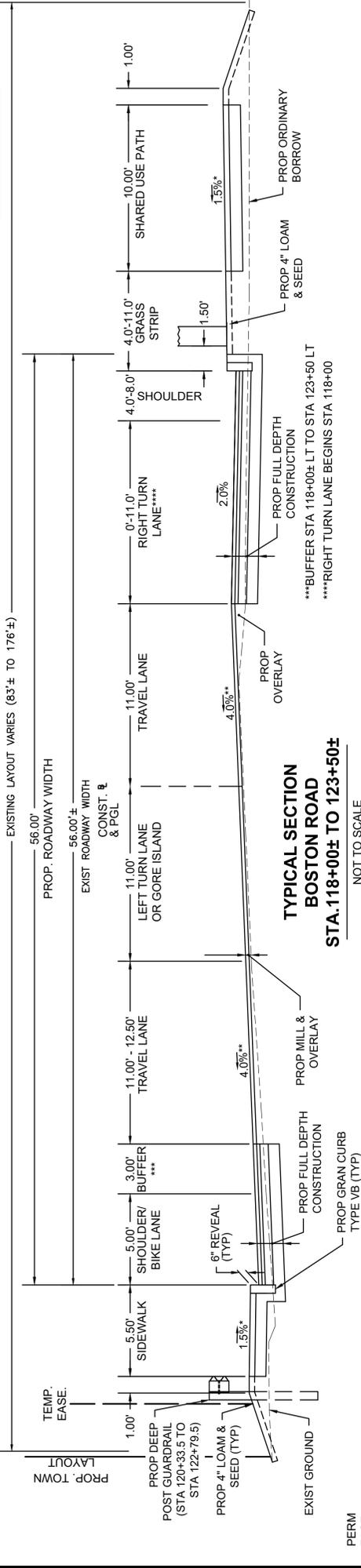
CONST. R & PGL



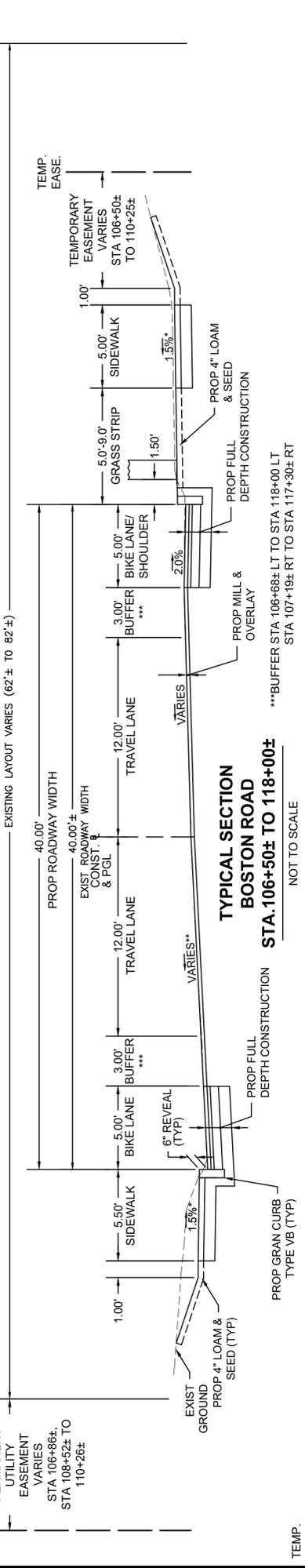
**METHOD OF BANKING  
BOSTON ROAD\*\***  
NOT TO SCALE



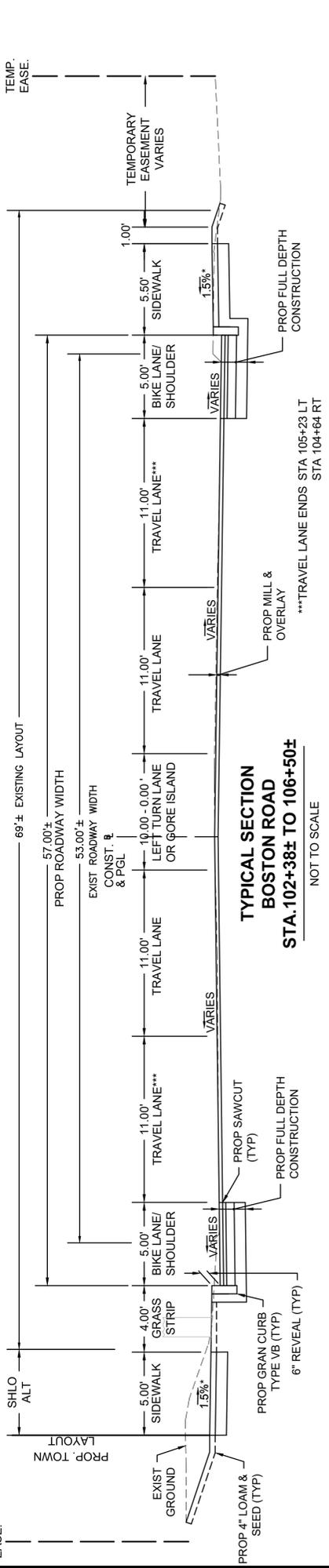
**TYPICAL SECTION  
BOSTON ROAD  
STA. 123+50± TO 128+00±**  
NOT TO SCALE



**TYPICAL SECTION  
BOSTON ROAD  
STA. 118+00± TO 123+50±**  
NOT TO SCALE



**TYPICAL SECTION  
BOSTON ROAD  
STA. 106+50± TO 118+00±**  
NOT TO SCALE

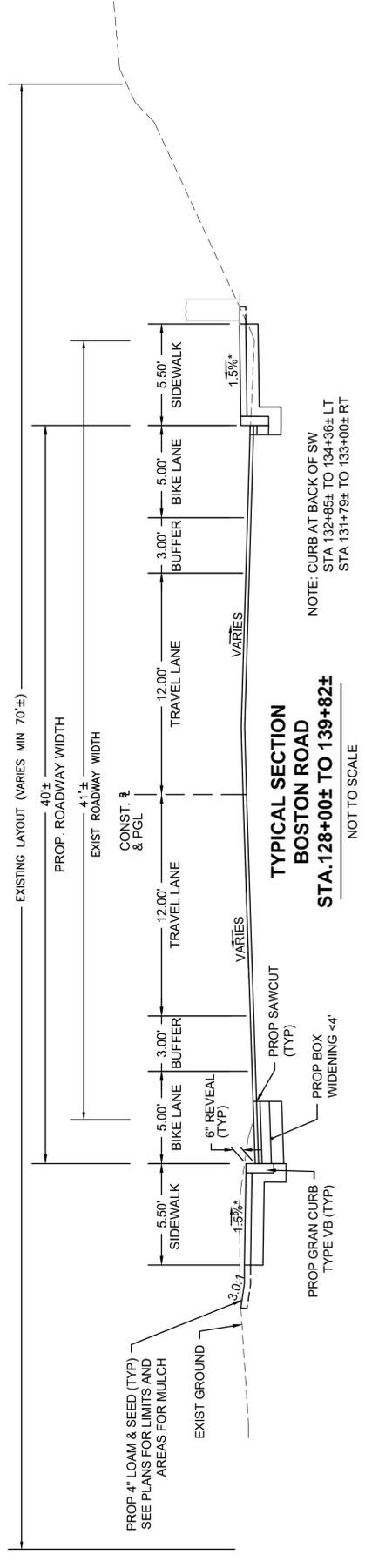
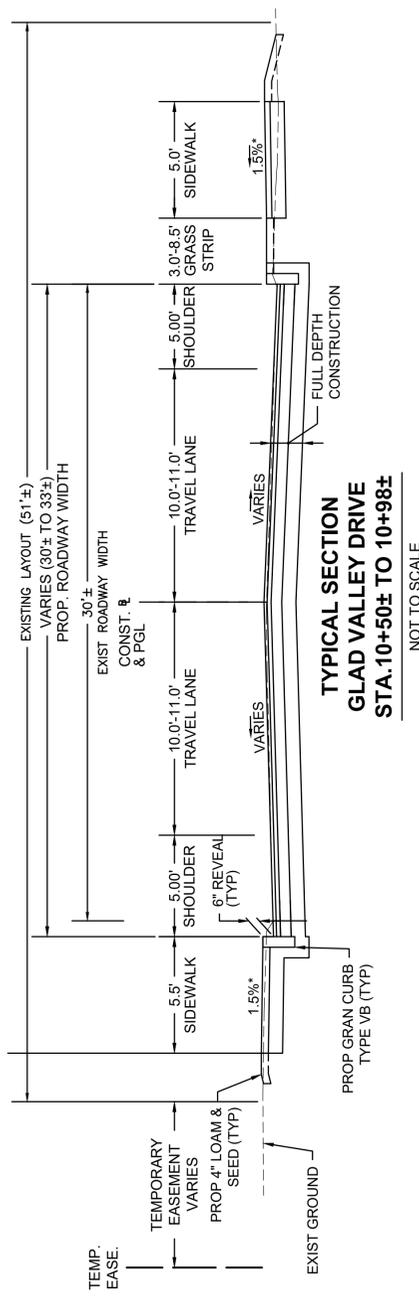
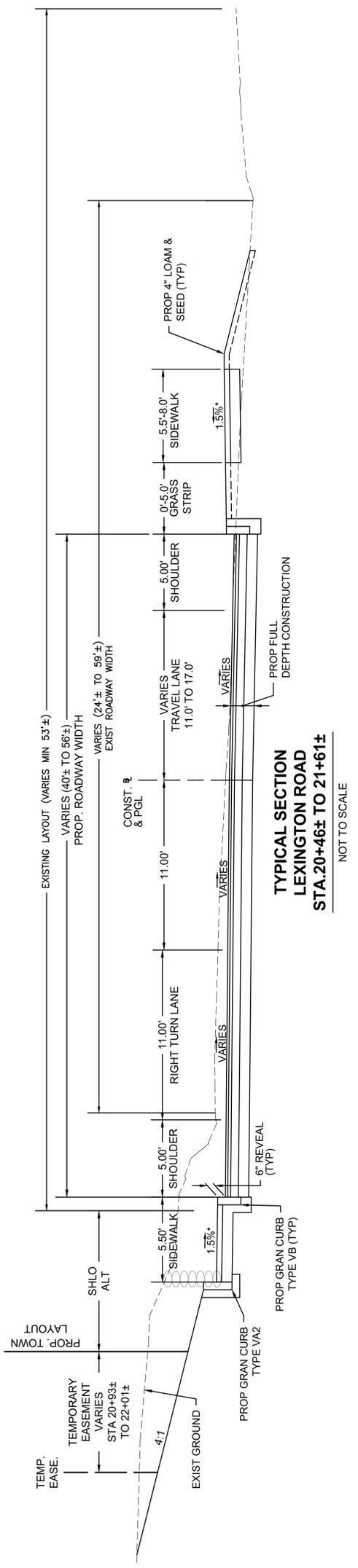


**TYPICAL SECTION  
BOSTON ROAD  
STA. 102+38± TO 106+50±**  
NOT TO SCALE

**BILLERICA  
BOSTON RD (ROUTE 3A)  
AT LEXINGTON RD & GLAD VALLEY DR**

|                  |                    |           |              |
|------------------|--------------------|-----------|--------------|
| STATE            | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
| MA               | -                  | 5         | 30           |
| PROJECT FILE NO. |                    | 609250    |              |

**TYPICAL SECTIONS**



**BILLERICA  
BOSTON RD (ROUTE 3A)  
AT LEXINGTON RD & GLAD VALLEY DR**

|                  |                    |           |              |
|------------------|--------------------|-----------|--------------|
| STATE            | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
| MA               | -                  | 6         | 30           |
| PROJECT FILE NO. |                    | 609250    |              |

**GENERAL NOTES**

1. THE LOCATION OF SUBSURFACE UTILITIES SHOWN IS APPROXIMATE AND NOT GUARANTEED TO BE COMPLETE OR ACCURATE. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND ELEVATIONS OF EXISTING UTILITY LINES AND STRUCTURES PRIOR TO COMMENCEMENT OF WORK. THE CONTRACTOR MUST NOTIFY DIG SAFE (811) AT LEAST 72 BUSINESS HOURS PRIOR TO ANY EXCAVATION, DEMOLITION OR EXPLOSIVE WORK IN PUBLIC OR PRIVATE WAYS OR UTILITY COMPANY RIGHT-OF-WAY OR EASEMENT.
2. DRAINAGE ELEVATIONS ARE PROVIDED FOR DESIGN PURPOSES ONLY. THE CONTRACTOR SHALL VERIFY BY TEST PIT, THE LOCATIONS OF EXISTING UTILITIES WHICH MAY CONFLICT WITH THE PROPOSED DRAINAGE DESIGN. ANY FIELD ADJUSTMENTS REQUIRED WILL BE MADE AS APPROVED OR DIRECTED BY THE ENGINEER. ONLY AFTER THE CONTRACTOR VERIFIES ELEVATIONS FOR THE CONSTRUCTIBILITY OF THE DRAINAGE SYSTEM SHALL ANY STRUCTURES BE ORDERED. ANY FIELD ADJUSTMENTS TO LINE & GRADE UP TO A DEPTH OF 5' SHALL BE INCLUDED IN THE COST OF THE PIPE. PIPE EXCAVATION GREATER THAN 5' WILL BE PAID UNDER CLASS B TRENCH EXCAVATION.
3. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE ENGINEER FOR THE RESOLUTION OF THE CONFLICT.
4. THE CONTRACTOR SHALL MAINTAIN REASONABLE ACCESS TO ABUTTING PROPERTIES AT ALL TIMES AND NOTIFY ALL ABUTTERS IN ADVANCE OF ANY INTERRUPTIONS TO ACCESS.
5. THE CONTRACTOR SHALL ALTER THE MASONRY OF THE TOP SECTION OF ALL EXISTING DRAINAGE AND SANITARY STRUCTURES AS NECESSARY FOR THE CHANGES IN GRADE, AND RESET ALL WATER AND DRAINAGE FRAMES, GRATES AND BOXES TO THE PROPOSED FINISH SURFACE GRADE. REQUIRED NEW MASONRY SHALL BE CLAY BRICK CONFORMING TO M4.05.2.
6. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE, CABLE TV, FIRE ALARM AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES. ALL UTILITY CASTING SHALL BE ADJUSTED TO FINISH GRADE BY THEIR RESPECTIVE OWNERS.
7. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
8. THE TERM "PROPOSED" (PROP.) MEANS WORK TO BE CONSTRUCTED USING NEW MATERIALS OR, WHERE APPLICABLE, RE-USING EXISTING MATERIALS IDENTIFIED AS "REMOVE AND RESET" (R&R).
9. DRAINAGE STRUCTURES SHALL BE RETAINED UNLESS NOTED OTHERWISE.
10. CATCH BASIN AND MANHOLE FRAMES AND GRATES/COVERS SHALL CLEARLY ALIGN WITH THE OPENINGS IN THE PRECAST STRUCTURES AND THE GRADE OF THE ROADWAY.
11. ALL EXISTING DRAINAGE PIPES THAT ARE NO LONGER BEING UTILIZED BY THE NEW DRAINAGE DESIGN WITHIN THE PROJECT LIMITS SHALL BE REMOVED UNLESS OTHERWISE NOTED ON THE PLANS.
12. WHERE DRAINAGE PIPES OR STRUCTURES ARE ABANDONED IN PLACE THE CONTRACTOR SHALL MAKE SURE THAT ALL CONNECTING PIPES, DOWN SPOUT FROM BUILDING, INLETS AND OUTLETS ARE PLUGGED. ALL LIVE CONNECTIONS SHALL BE CONNECTED TO THE NEW SYSTEM.
13. ALL CURB TIE DIMENSIONS ARE TO THE FACE OF THE CURB (GUTTER LINE) OR EDGE OF TRAVEL WAY.
14. CONSTRUCTION BASELINE TIES ARE SHOWN ON CURB TIE & GRADING PLANS.
15. PROPOSED SIDEWALKS AND PEDESTRIAN CURB RAMPS SHALL BE CONSTRUCTED TO THE NEAREST SCORE LINE OR EXPANSION JOINT IN THE EXISTING ADJACENT WALK SURFACE AS DIRECTED BY THE ENGINEER.
16. IN ALL LOCATIONS WHERE PROPOSED SIDEWALK TRANSITION DOWN TO MEET EXISTING GRADE, EXISTING SIDEWALK OR PAVED AREA, SLOPE SHALL NOT EXCEED 1:12.
17. THE LOCATION OF THE PROPOSED DRIVEWAY OPENINGS ARE SHOWN ON TIE AND GRADING PLANS. EXACT LOCATIONS MAY BE ADJUSTED IF NECESSARY OR AS REQUIRED BY THE ENGINEERS IN THE FIELD.
18. CONTRACTOR SHALL VERIFY LOCATION OF ALL OBJECTS (SIGNS, TREES, POLES ETC.) TO BE SET WITHIN SIDEWALK PRIOR TO FINAL PLACEMENT TO PROVIDE A MINIMUM CLEAR PATH OF 36" EXCLUDING THE CURB. CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY LOCATION WHICH CANNOT MEET THE CLEARANCE REQUIREMENTS.
19. SIGNS, POLES AND OTHER FEATURES LOCATED IN PROPOSED CEMENT CONCRETE SIDEWALK SHALL BE BOXED AND PROVIDED FLEXIBLE JOINT FILLER.
20. CONTRACTOR SHALL VERIFY EXISTING GRADES. IF ANY ADJUSTMENT IS REQUIRED DUE TO DIFFERENT EXISTING GRADES FOUND IN THE FIELD, THE CONTRACTOR SHALL NOTIFY AND SEEK THE APPROVAL OF THE ENGINEER PRIOR TO PERFORMING THE WORK.
21. IN AREAS OF NEW SIDEWALK, NEW EDGE OF PAVEMENT OR CURB WITHOUT SIDEWALK OR ANY WORK ADJACENT TO EXISTING GRASS AREAS, EVEN WHEN NO SLOPE-MATCHING OR GRADING IS NECESSARY AND THE EXISTING GRADE IS MET, LOAM BORROW AND SEED SHALL BE PROVIDED AS NECESSARY TO REPAIR AND COMPLETE ANY DAMAGE TO THE GRADE CAUSED BY THE CONSTRUCTION PROCESS.
22. WHEN WORKING NEXT TO EXISTING TREES, WALLS OR FENCES, THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION NOT TO DISTURB THE EXISTING WALL, TREES OR FENCE. IF THE CONTRACTOR DAMAGES EXISTING TREES, WALLS OR FENCES AS A RESULT OF THE CONSTRUCTION PROCESS, IT SHALL BE HIS/HER RESPONSIBILITY (THE CONTRACTOR) TO REPAIR ALL DAMAGES AS DIRECTED BY THE ENGINEER. ALL WORK ASSOCIATED WITH THE REPAIR OR REPLACEMENT OF EXISTING TREES, WALLS OR FENCES SHALL BE PERFORMED BY THE CONTRACTOR AT HIS/HER EXPENSE AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED THEREFORE.
23. IN FILL AREAS, TOP SOIL/EXISTING PAVEMENT SHALL BE REMOVED FOR A DEPTH OF 12" (MIN.) OR AS DIRECTED BY THE ENGINEER. SUBGRADE AREAS WILL BE COMPACTED PRIOR TO THE PLACEMENT OF FILL MATERIAL.

**GENERAL NOTES**

24. ALL NEW GRANITE CURB SHALL BE MASSDOT TYPE VB, UNLESS OTHERWISE NOTED ON THE PLANS OR SPECIFICATIONS.
25. EXISTING GRANITE CURB IN GOOD CONDITION SHALL BE REMOVED AND RESET BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER. ALL OTHER EXISTING GRANITE CURB SHALL BE REMOVED AND DISCARDED BY THE CONTRACTOR UNLESS OTHERWISE NOTED ON THE PLAN OR DIRECTED BY THE ENGINEER.
26. ALL PROPOSED PAVEMENT MARKINGS ON ROADWAYS SHALL BE REFLECTORIZED WHITE AND YELLOW THERMOPLASTIC.
27. SAFETY CONTROLS FOR CONSTRUCTION OPERATIONS SHALL BE IN ACCORDANCE WITH MASSDOT REQUIREMENTS AND THE LATEST VERSION OF THE MUTCD.
28. TREES TO BE RETAINED WHICH RESTRICT SIGHT DISTANCE OR RESTRICT HORIZONTAL OR VERTICAL CLEARANCES SHALL BE TRIMMED AS REQUIRED BY THE ENGINEER.
29. NO TREE SHALL BE REMOVED PRIOR TO APPROVAL OF THE TOWN OF BILLERICA.
30. WHEN WORKING NEXT TO EXISTING WALLS, BERMS, AND OTHER STRUCTURES, CONTRACTOR SHALL EXERCISE EXTREME CAUTION NOT TO DISTURB THE EXISTING STRUCTURES. ANY DAMAGE TO THE EXISTING STRUCTURES SHALL BE REPAIRED BY THE CONTRACTOR AT HIS OWN EXPENSE.
31. ALL PAVEMENT MARKINGS AND/OR SIGN NOTES ARE SHOWN ON THE SIGNS AND PAVEMENT MARKING PLANS.
32. TOWN HAS PERFORMED SUB-SURFACE INVESTIGATION FOR THE WATER MAIN AND OTHER UTILITIES BY VACUUM EXCAVATION. THE TEST PIT DATA HAS SHOWN ON KEY PLAN AND UTILITY PLANS. THE 16" WATER MAIN IS SHOWN AS A SINGLE LINE WHERE APPROXIMATE AND A DOUBLE LINE WHERE LOCATED THRU SUB-SURFACE INVESTIGATIONS.
33. FRAMES FOUR-INCHES IN HEIGHT SHALL BE SUBSTITUTED FOR STANDARD FRAMES IN AREAS OF LOW COVER AS DETAILED ON THE PLANS OR AS DIRECTED BY THE ENGINEER. FOUR-INCH FRAMES SHALL BE COMPATIBLE WITH MASSDOT STANDARD GRATES. NO ADDITIONAL PAYMENT SHALL BE MADE FOR FOUR-INCH FRAMES.
34. THE 12" AND 8" WATER LINE FROM TUFTS LANE TO LOCKE ROAD WAS MARKED BY THE TOWN OF BILLERICA AND LOCATED USING A LEICA GPS DEVICE IN AUGUST 2023

**PEDESTRIAN CURB RAMP NOTES**

1. ALL PEDESTRIAN CURB RAMPS SHALL CONFORM TO THE REQUIREMENTS OF THE ARCHITECTURAL ACCESS BOARD (A.A.B.) AND THE AMERICANS WITH DISABILITIES ACT (A.D.A.), AND THE LATEST MASSDOT STANDARDS.
2. THE LOCATION OF PROPOSED PEDESTRIAN CURB RAMPS ARE SHOWN ON CONSTRUCTION PLANS AND THE PEDESTRIAN CURB RAMP DETAILS. EXACT LOCATIONS MAY BE ADJUSTED, IF NECESSARY, BY THE ENGINEER IN THE FIELD.
3. ALL PROPOSED PEDESTRIAN CURB RAMPS SHALL HAVE DETECTABLE WARNING PANELS INSTALLED IN ACCORDANCE WITH MASSDOT CONSTRUCTION STANDARD DRAWINGS. THE COLOR OF THE PANEL SHALL BE BRICK RED AND APPROVED BY THE ENGINEER.
4. IN INSTANCES WHERE AN EXISTING MANHOLE, HANDHOLE OR OTHER "SURFACE" TYPE STRUCTURE THAT CANNOT BE REMOVED OR RESET, IS WITHIN THE ACTUAL PEDESTRIAN CURB RAMP PATH, THE STRUCTURE SHALL BE CAREFULLY ADJUSTED SUCH THAT THE TOPMOST SURFACES OF THE STRUCTURE COVER SHALL BE FLUSH WITH THE RAMP SURFACE AND SHALL MATCH THE SLOPE OF THE NEW PEDESTRIAN CURB RAMP AS DIRECTED BY THE ENGINEER.
5. THE TRANSITION SLOPE OF ANY CURB RAMP, EXCEPT MAXIMUM LENGTH HIGH SIDE TRANSITIONS, SHALL NOT EXCEED 7.5%, +/-0.5% FOR TOLERANCE OF CONSTRUCTION. PER AAB 521 CMR, FINISHED SLOPE MAY NOT EXCEED 8.00%. PROPOSED PEDESTRIAN CURB RAMP SLOPES, ESPECIALLY HIGH SIDE TRANSITIONS, SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO POURING OF CONCRETE AND ADJUSTED, IF NECESSARY, AT THE DIRECTION OF THE ENGINEER.

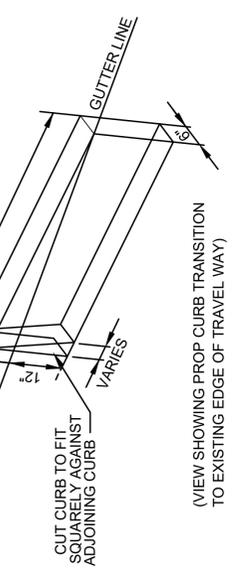
**SURVEY NOTES**

1. MASSDOT SURVEY SECTION PROVIDED CONTROL ONTO POINTS 4 (MASSDOT #32322) & 201 (MASSDOT #32321). THESE WERE OBSERVED DURING THE COURSE OF THE ON-THE-GROUND INSTRUMENT SURVEY.
2. HORIZONTAL DATUM: MASSACHUSETTS STATE PLANE - MAINLAND ZONE NAD83 (2011) EPOCH 2010.00 - US FEET
3. VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (GEOID 12B) - US FEET
4. ALL ON-THE-GROUND OBSERVATIONS WERE PERFORMED USING LEICA TS12 (3") ROBOTIC TOTAL STATIONS.
5. THIS SURVEY AND PLAN ARE BASED UPON AN ACTUAL ON THE GROUND INSTRUMENT SURVEY PERFORMED BETWEEN JULY 2016 AND JUNE 2019.

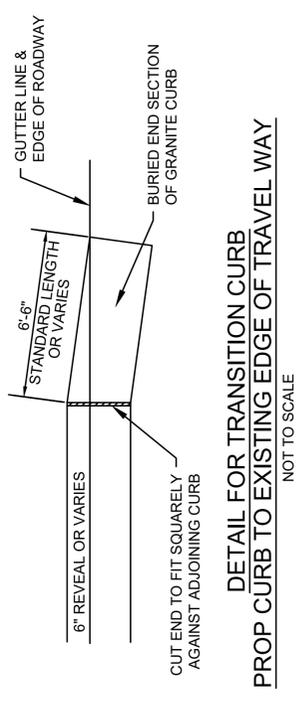
| BOUND DATA |                |              |             |           |        |           |
|------------|----------------|--------------|-------------|-----------|--------|-----------|
| BOUND NO.  | LOCATION       | NORTHING     | EASTING     | STATION   | OFFSET |           |
| 1          | BOSTON ROAD    | 3026566.0337 | 719778.2419 | 102+42.10 |        | 34.52' LT |
| 2          | BOSTON ROAD    | 3026550.1727 | 719785.8410 | 102+59.61 |        | 36.67' LT |
| 3          | BOSTON ROAD    | 3028077.7976 | 719919.4721 | 107+49.34 |        | 29.42' LT |
| 4          | BOSTON ROAD    | 3024968.3430 | 720869.6845 | 122+74.52 |        | 40.50' LT |
| 5          | LEXINGTON ROAD | 3024814.7160 | 720908.9039 | 20+92.57  |        | 36.47' LT |
| 6          | LEXINGTON ROAD | 3024753.2171 | 720893.6785 | 21+62.63  |        | 26.36' LT |
| 7          | LEXINGTON ROAD | 3024752.2903 | 720901.6008 | 21+63.68  |        | 34.27' LT |

**BILLERICA**  
**BOSTON RD (ROUTE 3A)**  
**AT LEXINGTON RD & GLAD VALLEY DR**

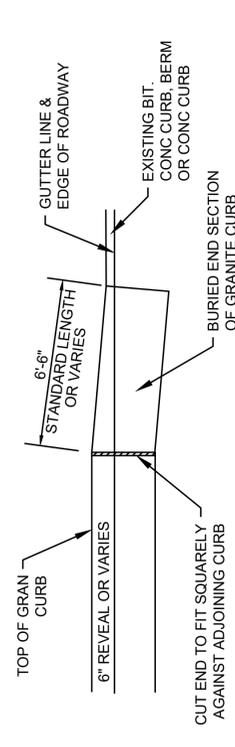
|                         |                    |                      |              |
|-------------------------|--------------------|----------------------|--------------|
| STATE                   | FED. AID PROJ. NO. | SHEET NO.            | TOTAL SHEETS |
| MA                      |                    | 7                    | 30           |
| PROJECT FILE NO. 609250 |                    | CONSTRUCTION DETAILS |              |



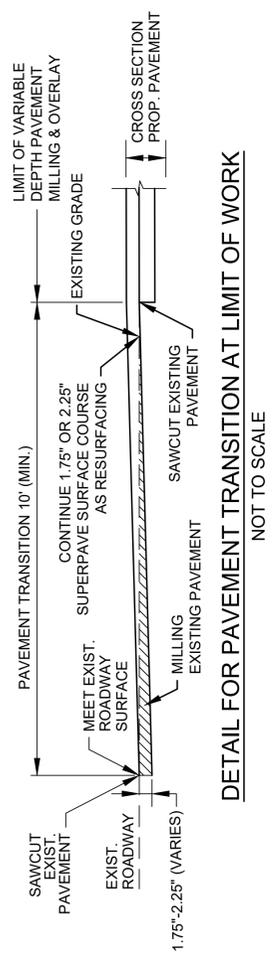
**DETAIL FOR GRANITE TRANSITION CURB**  
 NOT TO SCALE



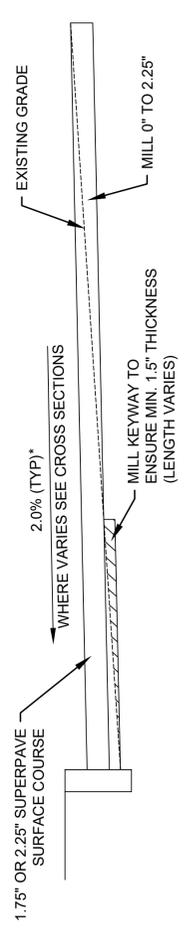
**DETAIL FOR TRANSITION CURB**  
**PROP CURB TO EXISTING EDGE OF TRAVEL WAY**  
 NOT TO SCALE



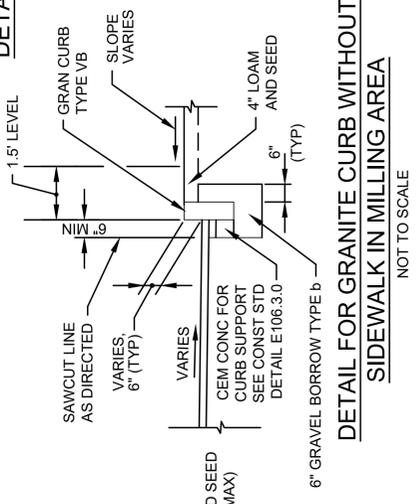
**DETAIL FOR TRANSITION CURB**  
**TRANSITION CURB - PROP CURB TO EXISTING CURB**  
 NOT TO SCALE



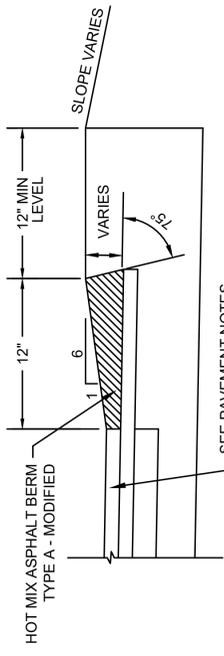
**DETAIL FOR PAVEMENT TRANSITION AT LIMIT OF WORK**  
 NOT TO SCALE



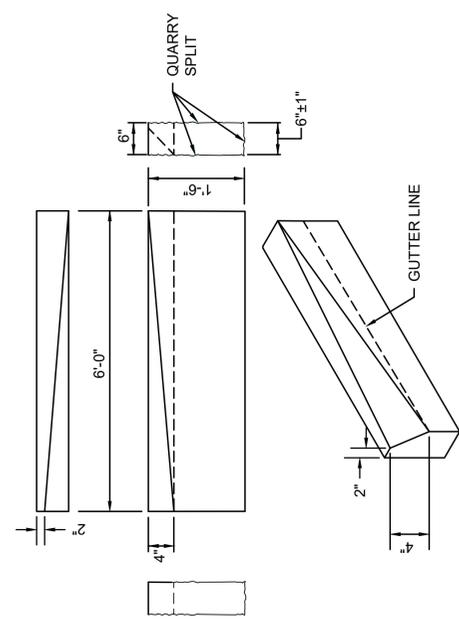
**DETAIL FOR VARIABLE DEPTH LEVELING**  
 NOT TO SCALE



**DETAIL FOR GRANITE CURB WITHOUT**  
**SIDEWALK IN MILLING AREA**  
 NOT TO SCALE

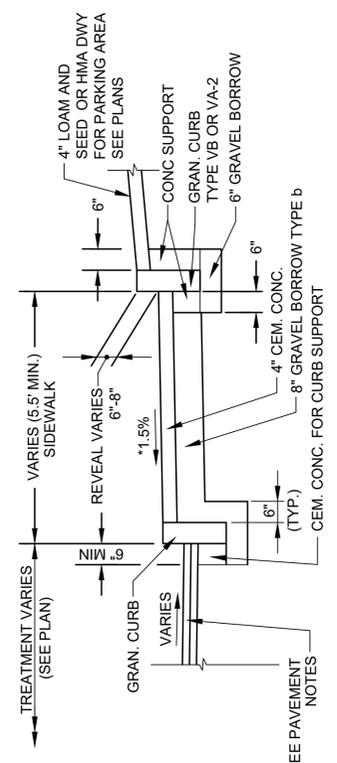


**DETAIL FOR HMA BERM TYPE A (MODIFIED)**  
 NOT TO SCALE

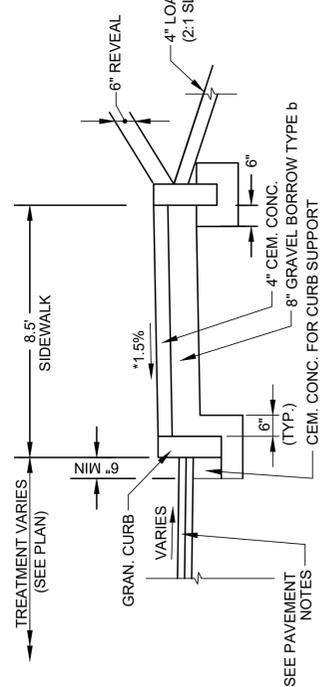


- NOTES:**
1. TOP SURFACE AND SLOPED SURFACE TO BE DRESSED BY SAW. REMAINDER TO BE QUARRY SPLIT.
  2. DRAWING SHOWS TRANSITION CURB FOR ONE HAND. FOR OTHER DIRECTION USE OPPOSITE HAND.

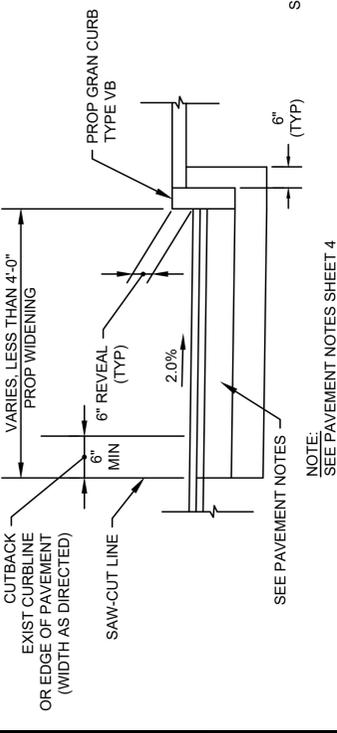
**GRANITE CURB TYPE VA4-SPLAYED END**  
 (ITEM 504.2)



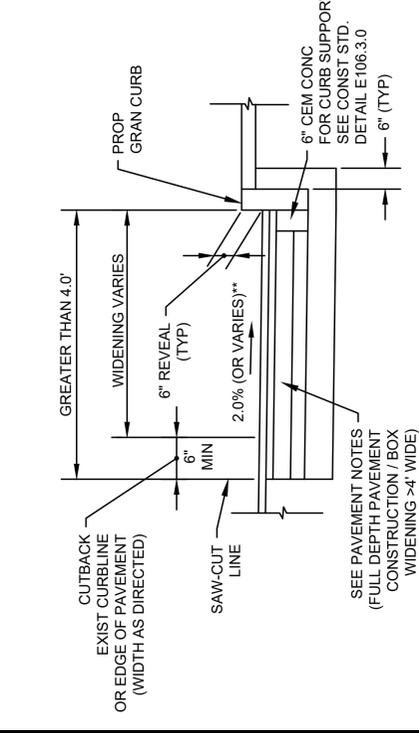
**DETAIL FOR GRANITE CURB AT BACK OF SIDEWALK**  
 NOT TO SCALE



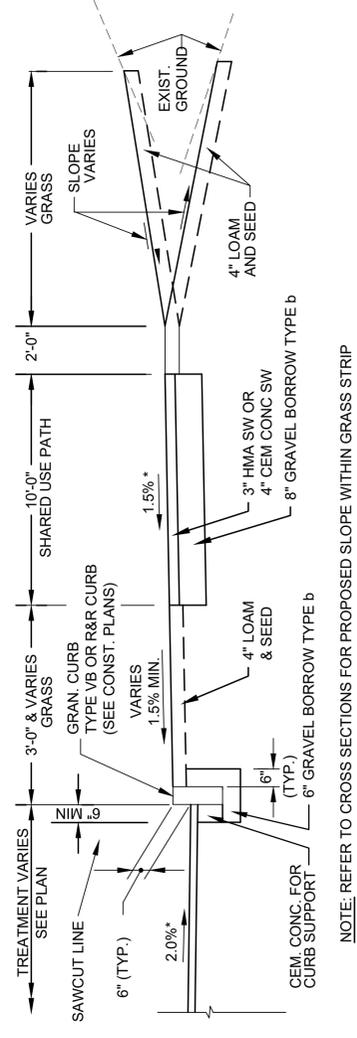
**DETAIL FOR GRANITE CURB AT BACK OF BUS LANDING**  
 (STA 120+26 LT)  
 NOT TO SCALE



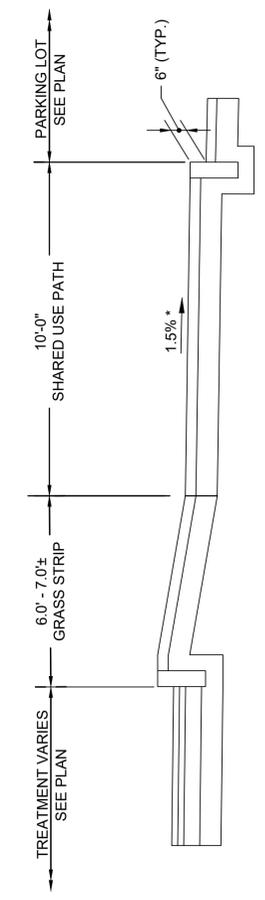
**DETAIL FOR BOX WIDENING 4.0' OR LESS**  
 NOT TO SCALE



**DETAIL FOR BOX WIDENING GREATER THAN 4.0'**  
 NOT TO SCALE



**DETAIL FOR GRANITE CURB WITH SIDEWALK AND GRASS STRIP**  
 STA 121+50± TO 123+00± RT  
 NOT TO SCALE

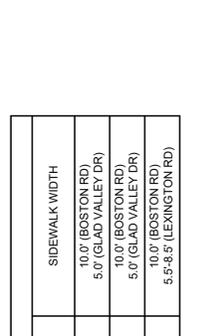
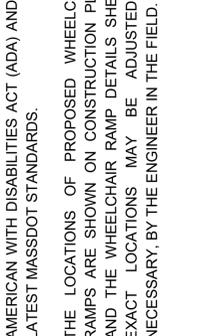
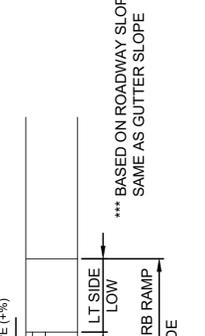
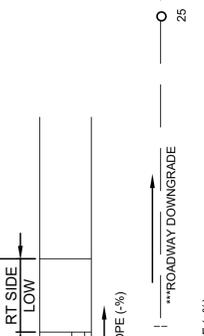
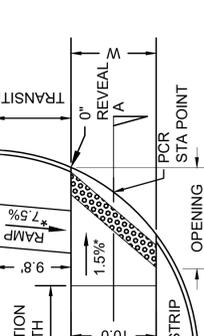
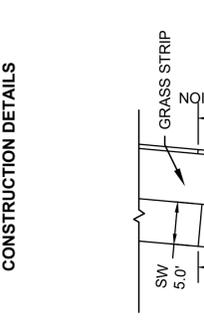


**DETAIL FOR SHARED USE PATH AT STA 117+00 TO 118+50 RT**  
 NOT TO SCALE

\* TOLERANCE FOR CONSTRUCTION ±0.5%

**BILLERICA**  
**BOSTON RD (ROUTE 3A)**  
**AT LEXINGTON RD & GLAD VALLEY DR**

|                         |                    |                      |              |
|-------------------------|--------------------|----------------------|--------------|
| STATE                   | FED. AID PROJ. NO. | SHEET NO.            | TOTAL SHEETS |
| MA                      |                    | 8                    | 30           |
| PROJECT FILE NO. 609250 |                    | CONSTRUCTION DETAILS |              |



PEDESTRIAN CURB RAMP TYPE A DATA

| PCR NO. | LOCATION  | RAMP REFERENCE POINT | STATION | OFFSET | GUTTER PROFILE SLOPE (%) | LENGTH OF PRIMARY RAMP L | WIDTH OF RAMP OPENING W | SIDEWALK WIDTH |
|---------|-----------|----------------------|---------|--------|--------------------------|--------------------------|-------------------------|----------------|
| 9       | BOSTON RD | 146+88.0             | 24.3 L  |        | -1.0%                    | 9.0'                     | 4.0'                    | 5.5'           |
| 10      | BOSTON RD | 147+35.8             | 24.7 L  |        | -0.9%                    | 4.0'                     | 4.0'                    | 5.5'           |
| 17      | BOSTON RD | 138+30.9             | 23.4 L  |        | -4.5%                    | 15.0'                    | 4.0'                    | 5.5'           |
| 18      | BOSTON RD | 139+70.2             | 23.2 R  |        | 2.3%                     | 11.0'                    | 4.0'                    | 5.5'           |

PEDESTRIAN CURB RAMP TYPE B DATA

| PCR NO. | LOCATION  | RAMP REFERENCE POINT | STATION | OFFSET | GUTTER PROFILE SLOPE (%) | LENGTH OF PRIMARY RAMP L | WIDTH OF RAMP OPENING W | SIDEWALK WIDTH |
|---------|-----------|----------------------|---------|--------|--------------------------|--------------------------|-------------------------|----------------|
| 2       | BOSTON RD | 106+94.0             | 26.9 R  |        | 1.0%                     | 6.5'                     | 5.0'                    | 5.0'           |
| 8       | BOSTON RD | 113+64.7             | 31.4 R  |        | 5.5%                     | 6.5'                     | 5.0'                    | 5.0'           |

PEDESTRIAN CURB RAMP TYPE C DATA

| PCR NO. | LOCATION  | RAMP REFERENCE POINT | STATION | OFFSET | GUTTER PROFILE SLOPE (%) | WIDTH OF LEVEL RAMP OPENING W | DEPTH OF LEVEL LANDING (MIN 4.0') | TRANSITION LENGTH |          | SIDEWALK WIDTH |
|---------|-----------|----------------------|---------|--------|--------------------------|-------------------------------|-----------------------------------|-------------------|----------|----------------|
|         |           |                      |         |        |                          |                               |                                   | LEFT              | RIGHT    |                |
| 1       | BOSTON RD | 106+41.6             | 30.7 R  |        | 5.4%                     | 5.0'                          | 5.0'                              | 15.0'             | 15.0'    | 5.5'           |
| 4       | BOSTON RD | 108+17.9             | 28.5 L  |        | -4.1%                    | 5.0'                          | 5.0'                              | 7.5' 3'R          | 6.5'     | 5.5'           |
| 5       | BOSTON RD | 108+84.0             | 20.0 L  |        | -5.7%                    | 5.0'                          | 5.0'                              | 6.5' 4'R          | 6.5' 4'R | 5.5'           |
| 11      | BOSTON RD | 121+06.2             | 29.5 L  |        | 2.5%                     | 5.0'                          | 5.0'                              | 11.0'             | 11.0'    | 5.5'           |
| 16      | BOSTON RD | 123+66.9             | 30.0 L  |        | 4.9%                     | 10.0'                         | 5.0'                              | 15.0'             | 15.0'    | 5.5'           |
| 20      | BOSTON RD | 138+81.23            | 26.7 L  |        | 1.5%                     | 5.0'                          | 5.0'                              | 9.0'              | 9.0'     | 5.5'           |

PEDESTRIAN CURB RAMP TYPE D DATA

| PCR NO. | LOCATION  | RAMP REFERENCE POINT | STATION | OFFSET | GUTTER PROFILE SLOPE (%) | WIDTH OF RAMP OPENING W | DEPTH OF LEVEL RAMP OPENING W | TRANSITION LENGTH |       | SIDEWALK WIDTH |
|---------|-----------|----------------------|---------|--------|--------------------------|-------------------------|-------------------------------|-------------------|-------|----------------|
|         |           |                      |         |        |                          |                         |                               | LEFT              | RIGHT |                |
| 6       | BOSTON RD | 108+84.0             | 20.0 R  |        | 4.7%                     | 5.0'                    | 10.0'                         | 5.0' 2'R          | 6.5'  | 5.0'           |
| 15      | BOSTON RD | 123+67.8             | 34.3 R  |        | -1.8%                    | 10.0'                   | 20.4'                         | 9.0'              | 6.5'  | 10.0'          |

PEDESTRIAN CURB RAMP TYPE E DATA

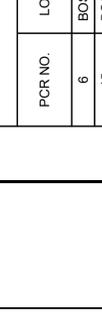
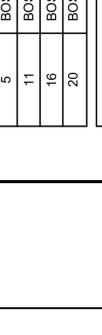
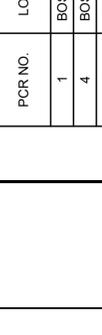
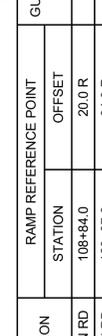
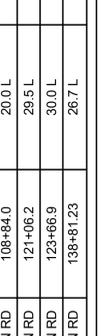
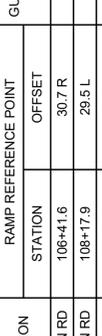
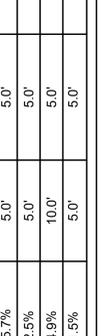
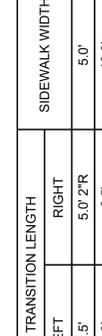
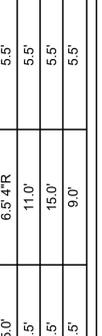
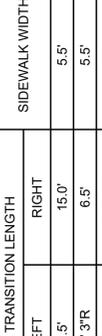
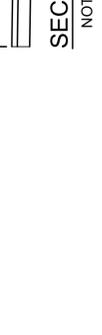
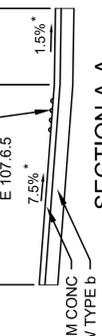
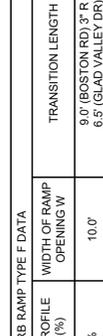
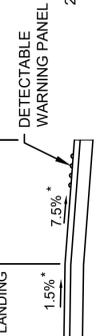
| PCR NO. | LOCATION  | RAMP REFERENCE POINT | STATION | OFFSET | GUTTER PROFILE SLOPE (%) | LENGTH OF PRIMARY RAMP L | WIDTH OF RAMP OPENING W | DEPTH OF LEVEL LANDING (MIN 4.0') | TRANSITION LENGTH |       | SIDEWALK WIDTH                      |
|---------|-----------|----------------------|---------|--------|--------------------------|--------------------------|-------------------------|-----------------------------------|-------------------|-------|-------------------------------------|
|         |           |                      |         |        |                          |                          |                         |                                   | LEFT              | RIGHT |                                     |
| 3       | BOSTON RD | 107+68.4             | 29.0 L  |        | -3.2%                    | 2.6'                     | 5.0'                    | 4.3'                              | 14.0'             | 6.5'  | 5.0' (BOSTON RD)<br>5.5' (TUFTS LN) |

PEDESTRIAN CURB RAMP TYPE G DATA

| PCR NO. | LOCATION  | RAMP REFERENCE POINT | STATION | OFFSET | GUTTER PROFILE SLOPE (%) | LENGTH OF PRIMARY RAMP L | WIDTH OF RAMP OPENING W | DEPTH OF LEVEL LANDING (MIN 4.0') | TRANSITION LENGTH |       | SIDEWALK WIDTH |
|---------|-----------|----------------------|---------|--------|--------------------------|--------------------------|-------------------------|-----------------------------------|-------------------|-------|----------------|
|         |           |                      |         |        |                          |                          |                         |                                   | LEFT              | RIGHT |                |
| 7       | BOSTON RD | 119+14.0             | 34.0 R  |        | 3.4%                     | 3.8'                     | 5.0'                    | 5.0'                              | 4.0'              | 6.5'  | 5.0'           |
| 19      | BOSTON RD | 121+06.6             | 25.5 R  |        | -2.4%                    | 4.0'                     | 4.0'                    | 10.0'                             | 9.0' 3'R          | 6.5'  | 5.0'           |

PEDESTRIAN CURB RAMP TYPE F DATA

| PCR NO. | LOCATION  | RAMP REFERENCE POINT | STATION | OFFSET | GUTTER PROFILE SLOPE (%) | WIDTH OF RAMP OPENING W | TRANSITION LENGTH     | SIDEWALK WIDTH                                |
|---------|-----------|----------------------|---------|--------|--------------------------|-------------------------|-----------------------|---|
|         |           |                      |         |        |                          |                         |                       |   |
| 13      | BOSTON RD | 121+77.9             | 33.2 R  |        | -3.1%                    | 10.0'                   | 6.5' (GLAD VALLEY DR) | 10.0' (BOSTON RD)<br>5.0' (GLAD VALLEY DR)    |
| 14      | BOSTON RD | 123+02.6             | 39.6 R  |        | -0.074                   | 10                      | 16.9' (LEXINGTON RD)  | 10.0' (BOSTON RD)<br>5.5'-8.5' (LEXINGTON RD) |



**NOTES:**

- ALL WHEELCHAIR RAMPS SHALL CONFORM TO THE REQUIREMENTS OF THE MASSACHUSETTS ARCHITECTURAL ACCESS BOARD (AAB) AND THE AMERICAN WITH DISABILITIES ACT (ADA) AND THE LATEST MASSDOT STANDARDS.
- THE LOCATIONS OF PROPOSED WHEELCHAIR RAMPS ARE SHOWN ON CONSTRUCTION PLANS AND THE WHEELCHAIR RAMP DETAILS SHEETS. EXACT LOCATIONS MAY BE ADJUSTED, IF NECESSARY, BY THE ENGINEER IN THE FIELD.

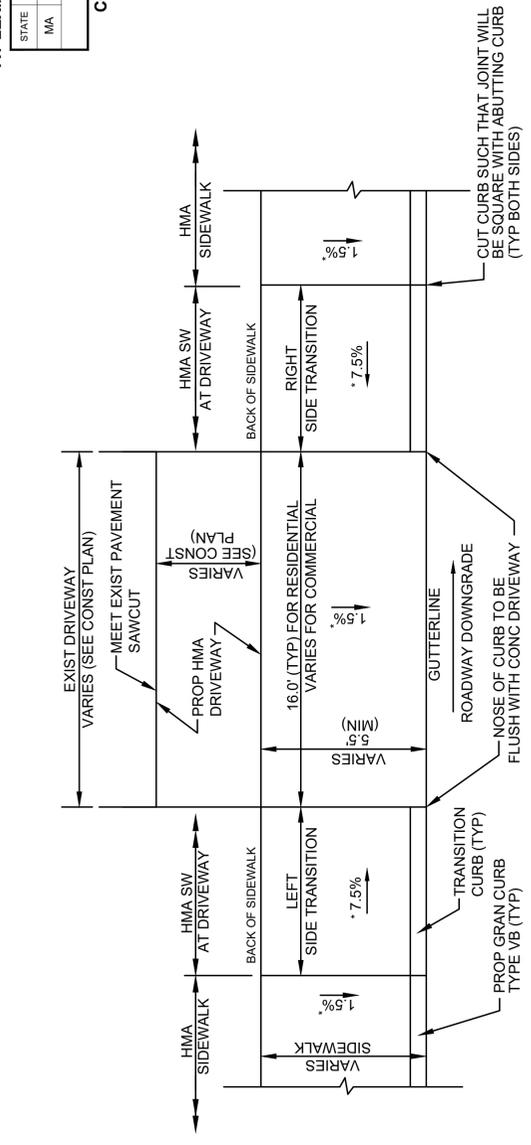
**NOTE: REFER TO GUTTER SLOPE DIAGRAM ON SHEET 8 FOR EXPLANATION OF GUTTER PROFILE SLOPE**

**\* TOLERANCE FOR CONSTRUCTION ±0.5%**

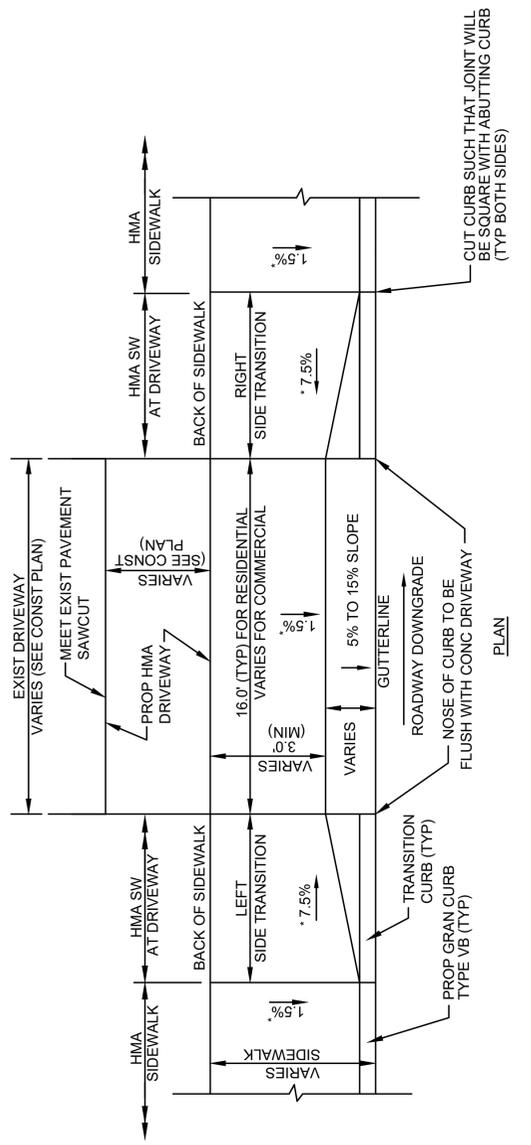
**BILLERICA**  
**BOSTON RD (ROUTE 3A)**  
**AT LEXINGTON RD & GLAD VALLEY DR**

|                         |                    |           |              |
|-------------------------|--------------------|-----------|--------------|
| STATE                   | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
| MA                      | -                  | 9         | 30           |
| PROJECT FILE NO. 609250 |                    |           |              |

**CONSTRUCTION DETAILS**



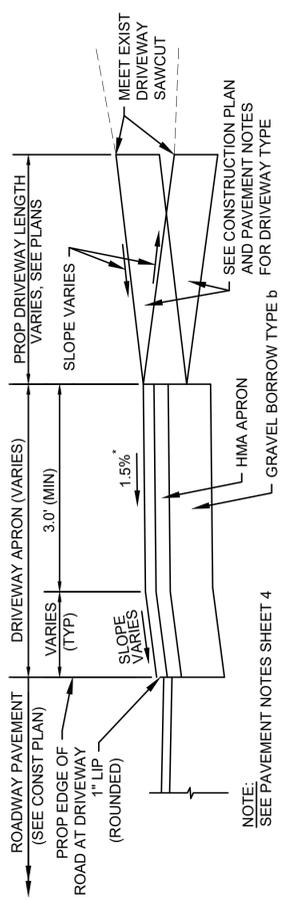
**DETAIL FOR DEPRESSED DRIVEWAY WITH SIDEWALK - TYPE B**  
 NOT TO SCALE



**DETAIL FOR TYPICAL DRIVEWAY WITH SIDEWALK - TYPE A**  
 NOT TO SCALE  
 MASSDOT CONST. STD. DWG. NO. E107.7.0

NOTE:  
SEE DRIVEWAY TABLE ON SHEET 8

NOTE:  
SEE WCR TABLE ON SHEET 7

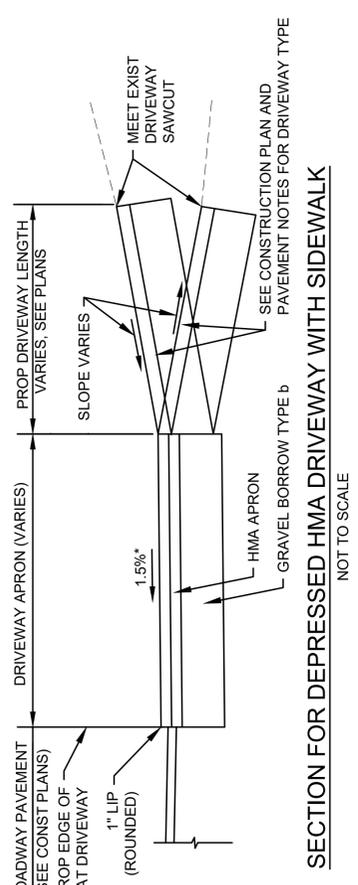


**SECTION FOR TYPICAL HMA DRIVEWAY WITH SIDEWALK**  
 NOT TO SCALE

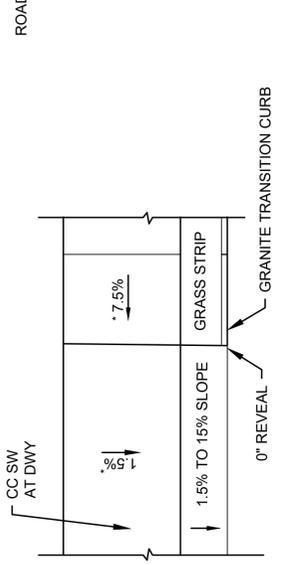
- NOTES:
- ALL WHEELCHAIR RAMPS SHALL CONFORM TO THE REQUIREMENTS OF THE MASSACHUSETTS ARCHITECTURAL ACCESS BOARD (AAB) AND THE AMERICAN WITH DISABILITIES ACT (ADA) AND THE LATEST MASSDOT STANDARDS.
  - THE LOCATIONS OF PROPOSED WHEELCHAIR RAMPS ARE SHOWN ON CONSTRUCTION PLANS AND THE WHEELCHAIR RAMP DETAILS SHEETS. EXACT LOCATIONS MAY BE ADJUSTED, IF NECESSARY, BY THE ENGINEER IN THE FIELD.

| ROADWAY PROFILE GRADE | * HIGH SIDE TRANSITION LENGTH |
|-----------------------|-------------------------------|
| %                     | ENGLISH UNITS                 |
| =0%                   | 6'-6"                         |
| >0% TO 1%             | 7'-8"                         |
| >1% TO 2%             | 9'-0"                         |
| >2% TO 3%             | 11'-0"                        |
| >3% TO 4%             | 14'-0"                        |
| >4% TO 5%             | 15'-0" MAX.                   |

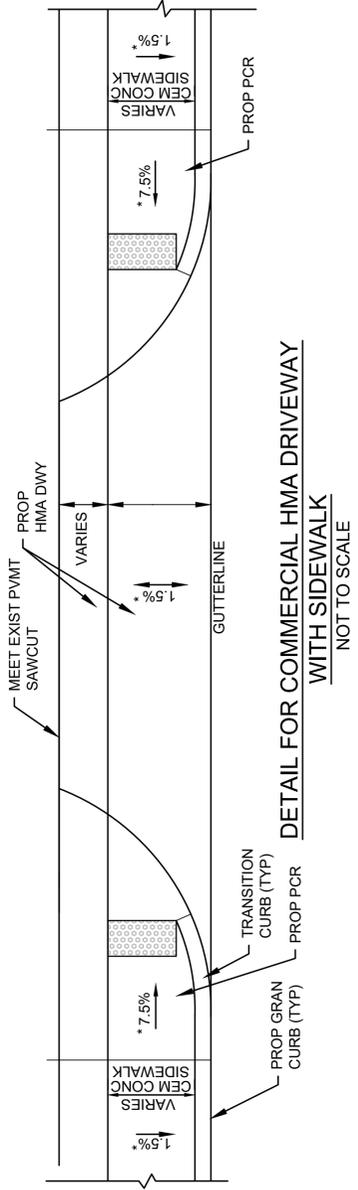
**CURB TRANSITION LENGTH FOR PEDESTRIAN CURB RAMPS**  
 MASSDOT CONST. STD. DWG. NO. E107.9.0  
 \*BASED ON A DESIGN SLOPE OF 7.5% AND A REVEAL OF 6".



**SECTION FOR DEPRESSED HMA DRIVEWAY WITH SIDEWALK**  
 NOT TO SCALE



**DETAIL FOR TYPICAL DRIVEWAY WITH SIDEWALK & GRASS STRIP**  
 NOT TO SCALE



**DETAIL FOR COMMERCIAL HMA DRIVEWAY WITH SIDEWALK**  
 NOT TO SCALE

\* TOLERANCE FOR CONSTRUCTION ±0.5%

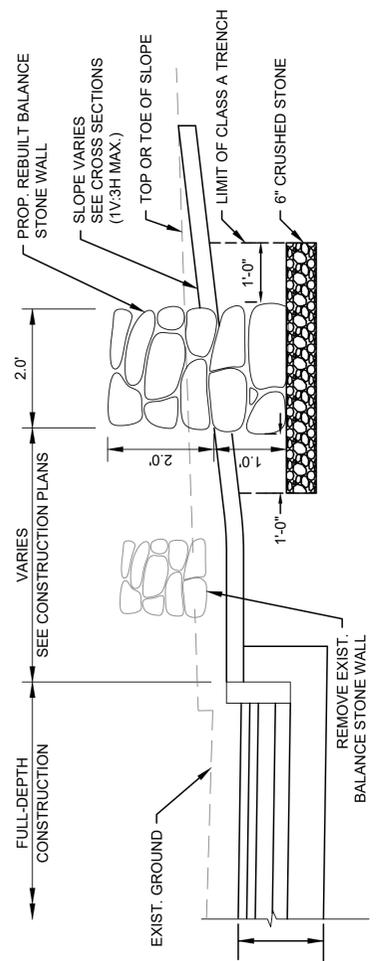
**BILLERICA  
BOSTON RD (ROUTE 3A)  
AT LEXINGTON RD & GLAD VALLEY DR**

|                  |                    |           |              |
|------------------|--------------------|-----------|--------------|
| STATE            | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
| MA               | -                  | 10        | 30           |
| PROJECT FILE NO. |                    | 609250    |              |

**CONSTRUCTION DETAILS**

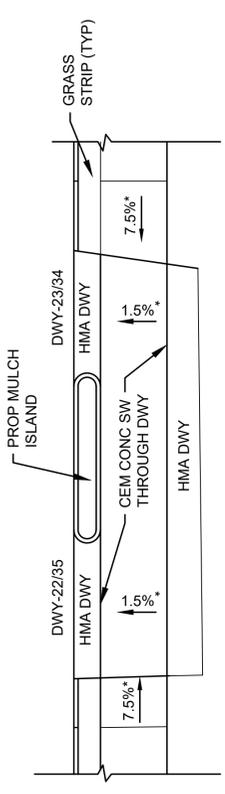
| DWY. NO. | LOCATION     | DRIVEWAY OPENING AT GUTTER |        | GUTTER PROFILE SLOPE (%) | OPENING WIDTH AT GUTTER | DEPTH OF GUTTER TO BACK OF SIDEWALK | PATH OF TRAVEL WIDTH ACROSS DRIVEWAY | TRANSITION LENGTH |       |
|----------|--------------|----------------------------|--------|--------------------------|-------------------------|-------------------------------------|--------------------------------------|-------------------|-------|
|          |              | STATION                    | OFFSET |                          |                         |                                     |                                      | LEFT              | RIGHT |
| 10       | BOSTON RD    | 111+29.9                   | 20.0 L | -6.0%                    | 20.0'                   | 5.5'                                | 3.0'                                 | 15.0'             | 6.5'  |
| 26       | LEXINGTON RD | 21+48.1                    | 25.4 L | 6.0%                     | 25.3'                   | 5.5'                                | 5.5'                                 | 6.5'              | -     |
| 27       | BOSTON RD    | 125+83.3                   | 18.0 R | -4.3%                    | 20.0'                   | 8.0'                                | 3.0'                                 | 15.0'             | 6.5'  |
| 36       | BOSTON RD    | 134+17.8                   | 20.0 R | 0.6%                     | 29.0'                   | 5.5'                                | 5.5'                                 | 6.5'              | 7.7'  |

| DWY. NO. | LOCATION       | DRIVEWAY OPENING AT GUTTER |        | GUTTER PROFILE SLOPE (%) | OPENING WIDTH AT GUTTER | DEPTH OF GUTTER TO BACK OF SIDEWALK | PATH OF TRAVEL WIDTH ACROSS DRIVEWAY | TRANSITION LENGTH |            |
|----------|----------------|----------------------------|--------|--------------------------|-------------------------|-------------------------------------|--------------------------------------|-------------------|------------|
|          |                | STATION                    | OFFSET |                          |                         |                                     |                                      | LEFT              | RIGHT      |
| 1        | BOSTON RD      | 104+43.0                   | 27.0 L | -3.9%                    | 25.0'                   | 9.0'                                | 5.0'                                 | 14.0'             | 7.0'       |
| 2        | BOSTON RD      | 105+79.9                   | 25.9 L | -4.2%                    | 20.0'                   | 9.0'                                | 5.0'                                 | 14.0'             | 6.5'       |
| 3        | BOSTON RD      | 105+89.7                   | 25.4 R | 4.2%                     | 20.0'                   | 9.0'                                | 5.5'                                 | 6.5'              | 15.0'      |
| 4        | BOSTON RD      | 106+55.2                   | 24.1 L | -3.9%                    | 25.0'                   | 9.0'                                | 5.0'                                 | 14.0'             | 6.5'       |
| 5        | BOSTON RD      | 108+49.3                   | 20.0 R | 4.1%                     | 61.3'                   | 10.0'                               | 5.0'                                 | 6.5'              | 15.0'      |
| 6        | BOSTON RD      | 109+41.1                   | 20.0 L | -6.1%                    | 56.0'                   | 5.5'                                | 5.5'                                 | 10.0' (4"R)       | 6.5'       |
| 7        | BOSTON RD      | 109+43.3                   | 20.0 R | 6.4%                     | 61.6'                   | 11.5' ±                             | 5.0'                                 | 6.5'              | 15.0'      |
| 8        | BOSTON RD      | 110+63.5                   | 20.0 R | 5.5%                     | 67.3'                   | 12.5' ±                             | 5.0'                                 | 6.5'              | 15.0'      |
| 9        | BOSTON RD      | 110+73.1                   | 20.0 L | -3.2%                    | 20.0'                   | 5.5'                                | 5.5'                                 | 15.0'             | 6.5'       |
| 11       | BOSTON RD      | 111+84.9                   | 20.0 L | -6.5%                    | 20.0'                   | 5.5'                                | 5.0'                                 | 15.0'             | 6.5'       |
| 12       | BOSTON RD      | 112+31.7                   | 20.0 R | 5.4%                     | 71.7'                   | 13.0'                               | 5.5'                                 | 6.5'              | 15.0'      |
| 13       | BOSTON RD      | 112+43.1                   | 20.0 L | -5.9%                    | 20.0'                   | 5.5'                                | 5.0'                                 | 15.0'             | 6.5'       |
| 14       | BOSTON RD      | 114+17.0                   | 20.0 L | -4.6%                    | 22.0'                   | 5.5'                                | 5.5'                                 | 15.0'             | 6.5'       |
| 15       | BOSTON RD      | 114+97.1                   | 20.0 R | 4.1%                     | 31.8'                   | 14.0'                               | 5.0'                                 | 6.5'              | 15.0'      |
| 16       | BOSTON RD      | 115+70.5                   | 20.0 R | 3.1%                     | 49.8'                   | 14.0'                               | 5.0'                                 | 6.5'              | 14.0'      |
| 17       | BOSTON RD      | 116+44.8                   | 20.0 R | 2.7%                     | 61.0'                   | 14.0'                               | 5.0'                                 | 7.7'              | 6.5'       |
| 18       | BOSTON RD      | 117+12.4                   | 28.8 L | 0.0%                     | 68.5'                   | 5.5'                                | 5.5'                                 | -                 | -          |
| 19       | BOSTON RD      | 117+60.                    | 20.0 R | 0.8%                     | 56.2'                   | 16.0'                               | 10.0'                                | 6.5'              | 6.5'       |
| 20       | BOSTON RD      | 118+74.7                   | 23.8 R | -0.6%                    | 42.1'                   | 15.5' ±                             | 10.0'                                | 7.7'              | 14.0'      |
| 21       | BOSTON RD      | 119+22.7                   | 26.8 L | 1.0%                     | 24.0'                   | 5.5'                                | 5.5'                                 | 6.5'              | 7.7'       |
| 22       | BOSTON RD      | 119+61.0                   | 25.0 R | -1.1%                    | 22.5'                   | 14.0'                               | 10.0'                                | -                 | 6.5'       |
| 23       | BOSTON RD      | 120+04.1                   | 25.0 R | -0.9%                    | 20.5'                   | 14.0'                               | 10.0'                                | 7.7'              | -          |
| 28       | BOSTON RD      | 127+21.9                   | 26.1 L | 5.1%                     | 46.3'                   | 5.5'                                | 5.5'                                 | 6.5'              | 15.0'      |
| 29       | BOSTON RD      | 128+00.1                   | 18.4 R | -3.0%                    | 23.5'                   | 4.3'                                | 4.3'                                 | 14.0'             | 6.5'       |
| 30       | BOSTON RD      | 129+33.3                   | 20.0 L | 3.7%                     | 92.9'                   | 5.5'                                | 5.5'                                 | 6.5'              | 14.0'      |
| 31       | BOSTON RD      | 130+25.7                   | 20.0 L | 2.2%                     | 39.9'                   | 5.5'                                | 5.5'                                 | 11.0'             | 6.5'       |
| 32       | BOSTON RD      | 131+51.3                   | 20.0 R | 1.2%                     | 50.5'                   | 5.5'                                | 5.5'                                 | 7.7'              | 6.5'       |
| 33       | BOSTON RD      | 131+53.2                   | 20.0 L | -1.6%                    | 58.5'                   | 5.5'                                | 5.5'                                 | 6.5'              | 9.0'       |
| 34       | BOSTON RD      | 132+32.5                   | 20.0 L | 0.5%                     | 26.7'                   | 5.5'                                | 5.5'                                 | 6.5'              | 4.0' (3"R) |
| 35       | BOSTON RD      | 132+73.0                   | 20.0 L | 0.9%                     | 30.4'                   | 5.5'                                | 5.5'                                 | 3.3' (3"R)        | 7.7'       |
| 37       | BOSTON RD      | 134+49.9                   | 20.0 L | -1.7%                    | 30.0'                   | 5.5'                                | 5.5'                                 | 7.7'              | 6.5'       |
| 38       | BOSTON RD      | 135+96.7                   | 20.0 L | -6.8%                    | 40.0'                   | 5.5'                                | 5.5'                                 | 15.0'             | 6.5'       |
| 39       | BOSTON RD      | 136+84.9                   | 20.0 R | 4.3%                     | 39.5'                   | 5.5'                                | 5.5'                                 | 6.5'              | 14.0'      |
| 40       | BOSTON RD      | 137+49.9                   | 20 R   | 4.4%                     | 20.0'                   | 5.5'                                | 5.5'                                 | 6.5'              | 15.0'      |
| 41       | BOSTON RD      | 138+31.0                   | 20.0 R | 5.3%                     | 28.0'                   | 5.5'                                | 5.5'                                 | 6.5'              | 15.0'      |
| 42       | BOSTON RD      | 139+05.7                   | 20.0 R | 3.5%                     | 30.0'                   | 5.5'                                | 5.5'                                 | 6.5'              | 15.0'      |
| 25       | LEXINGTON RD   | 22+00.2                    | 13.1 R | -6.9%                    | 20.0'                   | 5.5'                                | 5.5'                                 | -                 | 6.5'       |
| 24       | GLAD VALLEY DR | 10+82.5                    | 16.0 L | -5.3%                    | 18.8'                   | 5.5'                                | 5.5'                                 | 15.0'             | -          |



NOTE: PROVIDE ADDITIONAL FIELD STONE MASONRY (M9.04.4) AS MAY BE NECESSARY TO REBUILD THE STONE WALL TO THE DIMENSIONS SHOWN ABOVE AND ON THE CONSTRUCTION PLANS.

**DETAIL FOR BALANCE STONE WALL REMOVED AND REBUILT**  
NOT TO SCALE



**DRIVEWAY-22/23 AND DRIVEWAY-34/35 DETAIL**  
NOT TO SCALE

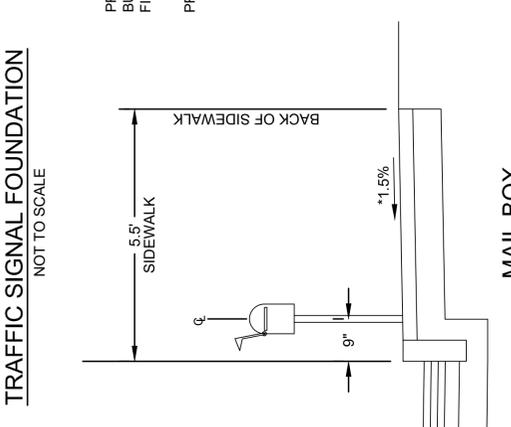
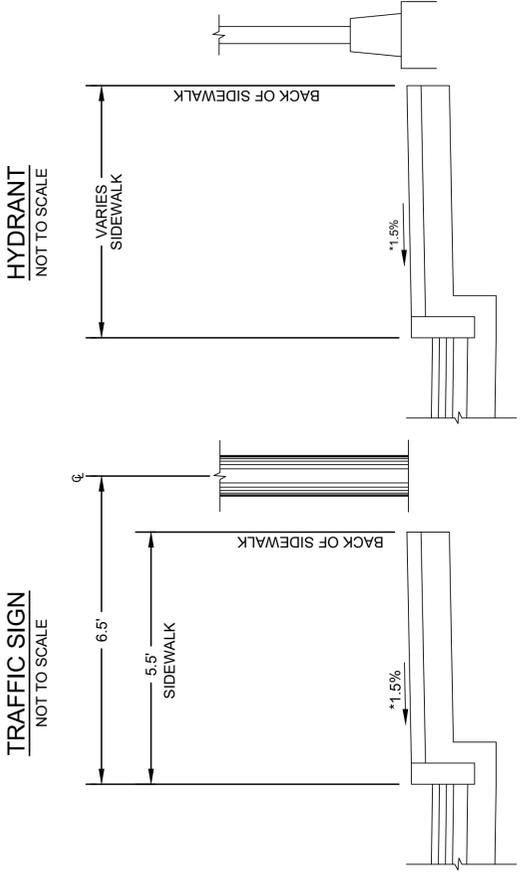
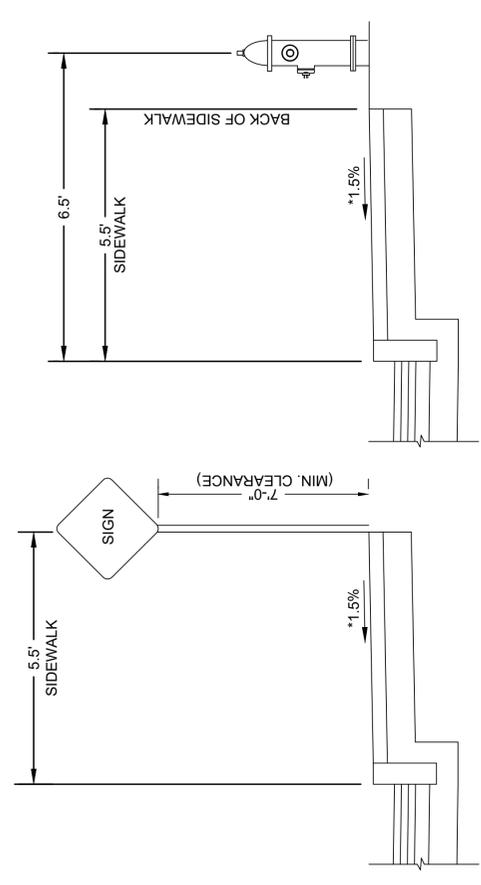
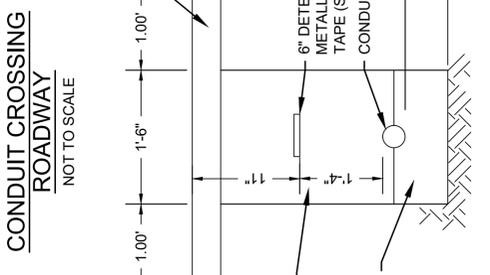
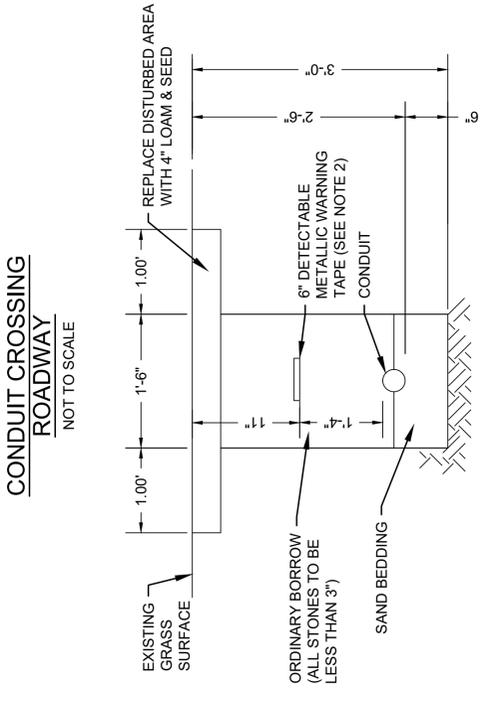
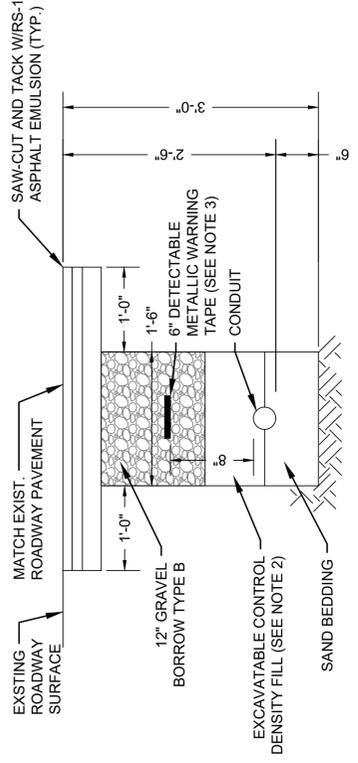
\* TOLERANCE FOR CONSTRUCTION ±0.5%

**BILLERICA**  
**BOSTON RD (ROUTE 3A)**  
**AT LEXINGTON RD & GLAD VALLEY DR**

|                         |                    |           |              |
|-------------------------|--------------------|-----------|--------------|
| STATE                   | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
| MA                      |                    | 11        | 30           |
| PROJECT FILE NO. 609250 |                    |           |              |

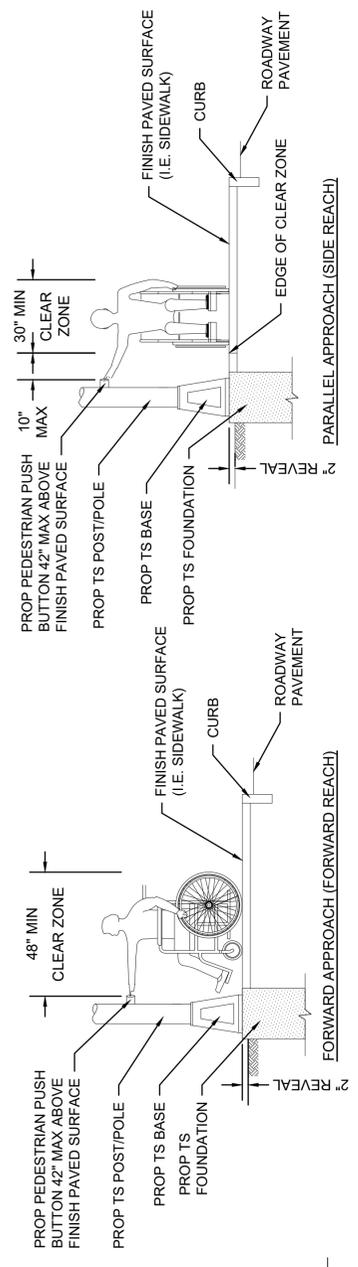
**CONSTRUCTION DETAILS**

- NOTES:**
- SCHEDULE 80 ELECTRICAL CONDUIT TYPE NM-PLASTIC (UL), WITH PULL ROPE UNLESS OTHERWISE APPROVED BY MASSDOT.
  - CONTROL DENSITY FILL SHALL MEET THE REQUIREMENTS OF SUBSECTION M4.08.0 APWA STANDARDS.
  - WARNING TAPE SHALL BE PER CURRENT APWA STANDARDS.

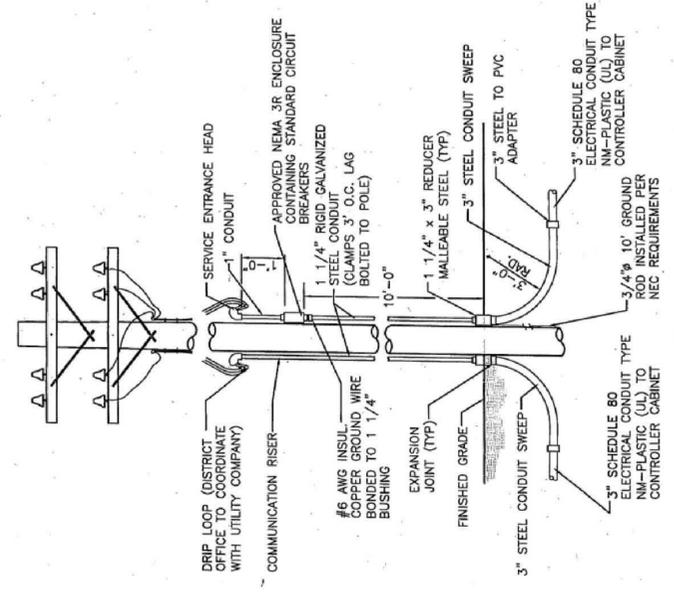


- NOTES:**
- MINIMUM CLEAR PATH ON ALL SIDEWALKS SHALL BE 36 INCHES, EXCLUDING THE CURB.
  - CONTRACTOR SHALL VERIFY LOCATION OF ALL OBJECTS (SIGNS, POLES ETC.) TO BE SET WITHIN SIDEWALK PRIOR TO FINAL PLACEMENT TO PROVIDE A MINIMUM CLEAR PATH OF 36 INCHES NOT INCLUDING CURB. CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY LOCATION WHICH CANNOT MEET THE CLEARANCE REQUIREMENTS.

**DETAILS SHOWING SIDEWALK CLEARANCES**  
 \* TOLERANCE FOR CONSTRUCTION ±0.5%



- NOTE:**
- A CLEAR GROUND SPACE SHALL CONSIST OF A STABLE AND FIRM AREA, COMPLYING WITH 521 CMR 6.5 (FORWARD REACH) OR 521 CMR 6.6 (SIDE REACH) AND SHALL BE PROVIDED AT EACH OF THE PEDESTRIAN PUSH BUTTONS.
    - WHERE A FORWARD APPROACH IS PROVIDED, PEDESTRIAN PUSH BUTTONS SHALL ABUT AND BE CENTERED ON THE CLEAR GROUND SPACE.
    - WHERE A PARALLEL APPROACH IS PROVIDED, PEDESTRIAN PUSH BUTTONS SHALL BE WITHIN TEN INCHES (10") HORIZONTALLY OF AND CENTERED ON THE CLEAR GROUND SPACE.



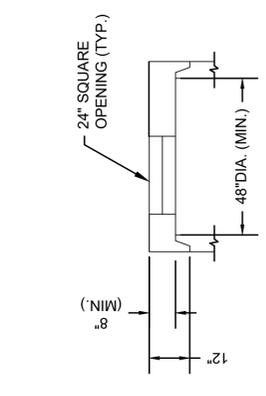
**NOTE:**  
 SPECIFIC ATTACHMENT AND CONNECTION REQUIREMENTS MAY VARY. COORDINATION WITH THE LOCAL UTILITY COMPANY IS REQUIRED BY THE CONTRACTOR.

**TRAFFIC SIGNAL SERVICE CONNECTION - OVERHEAD**  
 NOT TO SCALE

**BILLERICA  
BOSTON RD (ROUTE 3A)  
AT LEXINGTON RD & GLAD VALLEY DR**

|                         |                    |           |              |
|-------------------------|--------------------|-----------|--------------|
| STATE                   | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
| MA                      | -                  | 12        | 30           |
| PROJECT FILE NO. 609250 |                    |           |              |

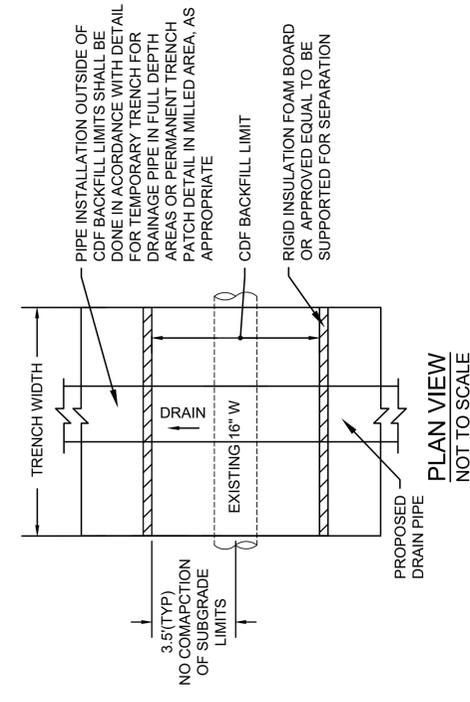
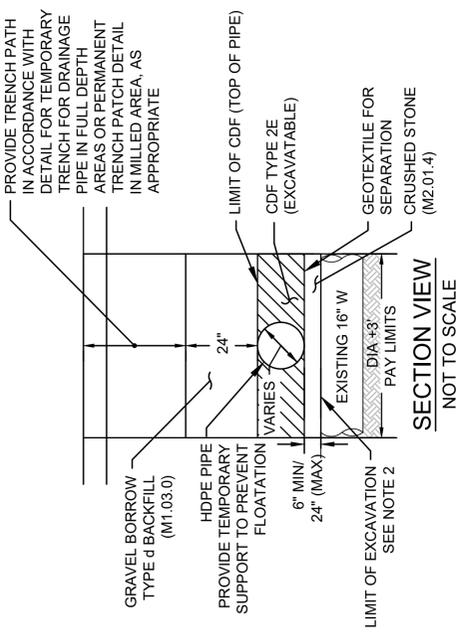
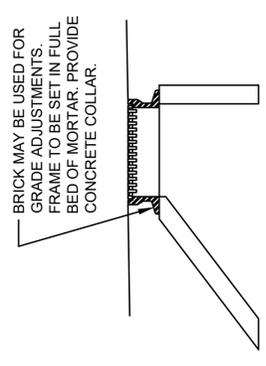
**CONSTRUCTION DETAILS**



**NOTES:**  
1. BASED ON ACTUAL FIELD CONDITIONS. THE CONTRACTOR SHALL DETERMINE WHICH STYLE OF TOP SECTION SHOULD BE USED.

**ALTERNATE ECCENTRIC CONE SECTION FOR CATCH BASIN OR MANHOLE**  
NOT TO SCALE

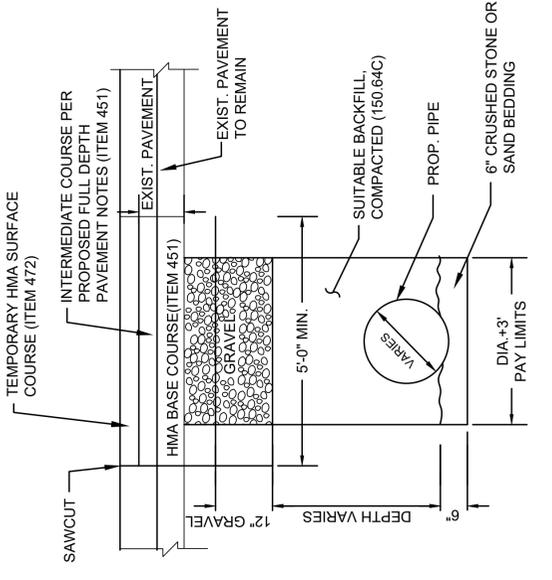
**ALTERNATE TOP SLAB FOR CATCH BASIN OR MANHOLE**  
NOT TO SCALE



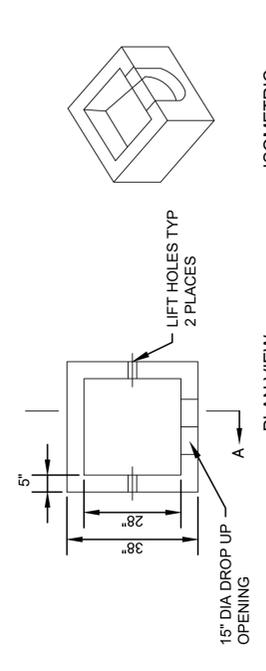
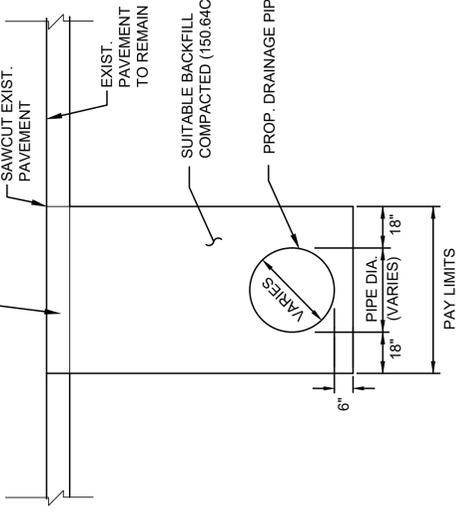
**NOTES:**

- CDF BACKFILL AT SHALLOW DRAINAGE CROSSINGS SHALL ONLY BE USED AT LOCATIONS WHERE SEPARATION BETWEEN THE PROPOSED DRAIN PIPE AND EXISTING WATER MAIN IS LESS THAN 24 INCHES OR AS DIRECTED BY THE ENGINEER IN COORDINATION WITH THE TOWN OF BILLERICA.
- HAND OR OTHER NON-DESTRUCTIVE EXCAVATION SHALL BE PERFORMED WHERE PROPOSED DRAINAGE HAS LESS THAN 2' OF SEPARATION TO EXISTING CONCRETE WATER MAIN AND IS WITHIN NO COMPACTION OF SUBGRADE LIMITS.

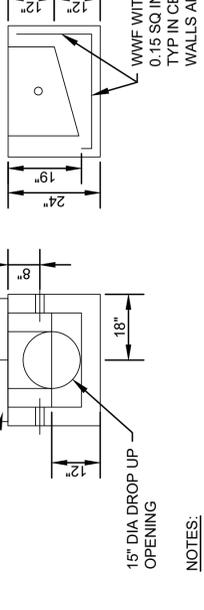
**SHALLOW DRAINAGE CROSSING AT EXISTING CONCRETE WATER MAIN DETAIL**



**DETAIL FOR TEMPORARY PATCH OF DRAINAGE PIPE TRENCH IN FULL DEPTH AREAS**  
NOT TO SCALE



**SPECIAL GUTTER INLET**  
NOT TO SCALE (ITEM 204.11)

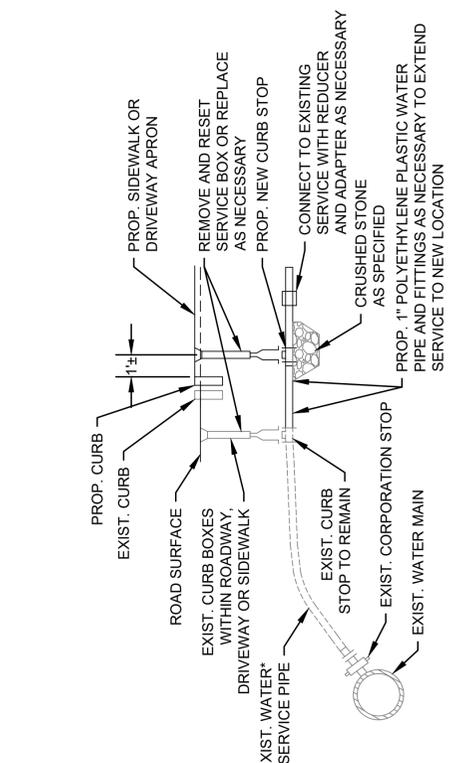


**NOTES:**

- DESIGNED FOR AASHTO HS25-44 LOADING
- CONCRETE STRENGTH  $f_c=4000$  PSI
- REINFORCING STEEL: ASTM A185 (wwf)  $f_y=60,000$  PSI
- CURB INLETS ARE REQUIRED WHEN GUTTER INLETS ARE INSTALLED AGAINST CURBING.

**NOTE:**  
GUTTER INLET SHOULD NOT BE USED DIRECTLY OVER GAS MAINS, TELEPHONE OR ELECTRIC DUCTS.

**CONTINGENCY DETAIL FOR STORM DRAIN LATERAL LINES**  
(USE ONLY IF OBSTRUCTION IS ENCOUNTERED)  
NOT TO SCALE



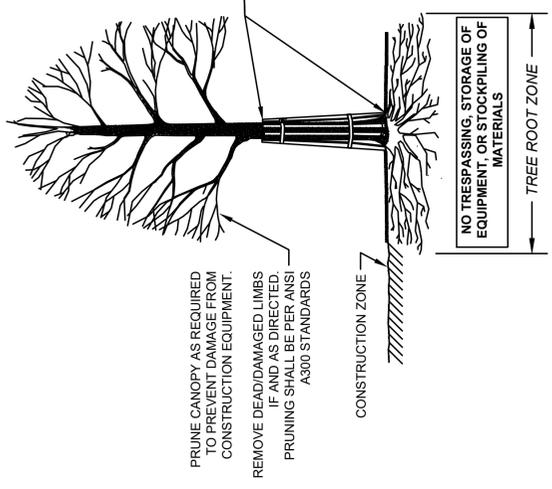
\* IF EXISTING WATER SERVICE LINES IS NOT PLASTIC, CONTRACTOR SHALL INFORM EASTON WATER DEPARTMENT. NO CONNECTION SHALL BE MADE UNTIL THE EASTON WATER DEPARTMENT DETERMINES IF THE EXISTING LINE IS SUITABLE TO BE EXTENDED OR MUST BE REPLACED TO THE MAIN.

**CURB STOP RELOCATION DETAIL**  
NOT TO SCALE

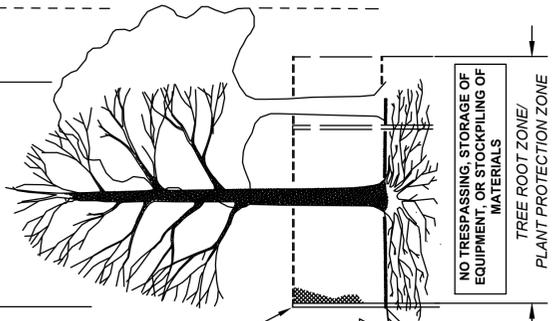
**BILLERICA  
BOSTON RD (ROUTE 3A)  
AT LEXINGTON RD & GLAD VALLEY DR**

|                         |                    |           |              |
|-------------------------|--------------------|-----------|--------------|
| STATE                   | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
| MA                      | -                  | 13        | 30           |
| PROJECT FILE NO. 609250 |                    |           |              |

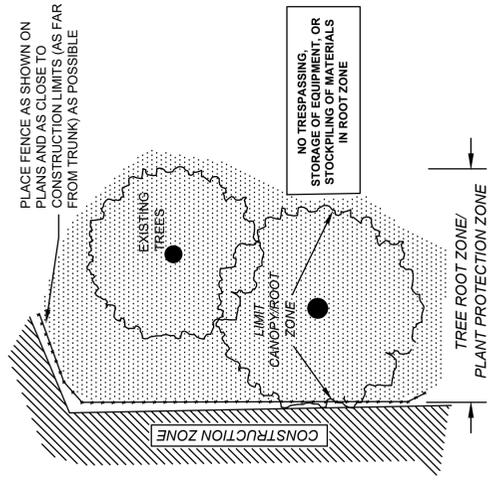
**CONSTRUCTION DETAILS**



**SECTION - TRUNK ARMORING & PRUNING**



**SECTION - FENCE PROTECTION OF ROOT ZONE**



**PLAN VIEW - FENCE PROTECTION OF ROOT ZONE**

PRUNE CANOPY AS REQUIRED TO PREVENT DAMAGE FROM CONSTRUCTION EQUIPMENT.  
REMOVE DEAD/DAMAGED LIMBS IF AND AS DIRECTED. PRUNING SHALL BE PER ANSI A300 STANDARDS.

FENCE AND POST MATERIAL PER SPECIFICATIONS. PLACE FENCE AS SHOWN ON PLANS AND AS CLOSE TO CONSTRUCTION LIMITS (AS FAR FROM TRUNK) AS POSSIBLE.

ARMOR TREES AS SHOWN ON PLANS OR PER ARBORIST. ARMOR FROM BASE OF TREE, INCLUDING ROOT FLARE, TO FIRST BRANCH.

NO TRESPASSING, STORAGE OF EQUIPMENT, OR STOCKPILING OF MATERIALS

TREE ROOT ZONE

CONSTRUCTION ZONE

CONSTRUCTION ZONE

TREE ROOT ZONE/ PLANT PROTECTION ZONE

NO TRESPASSING, STORAGE OF EQUIPMENT, OR STOCKPILING OF MATERIALS

TREE ROOT ZONE/ PLANT PROTECTION ZONE

PLACE FENCE AS SHOWN ON PLANS AND AS CLOSE TO CONSTRUCTION LIMITS (AS FAR FROM TRUNK) AS POSSIBLE

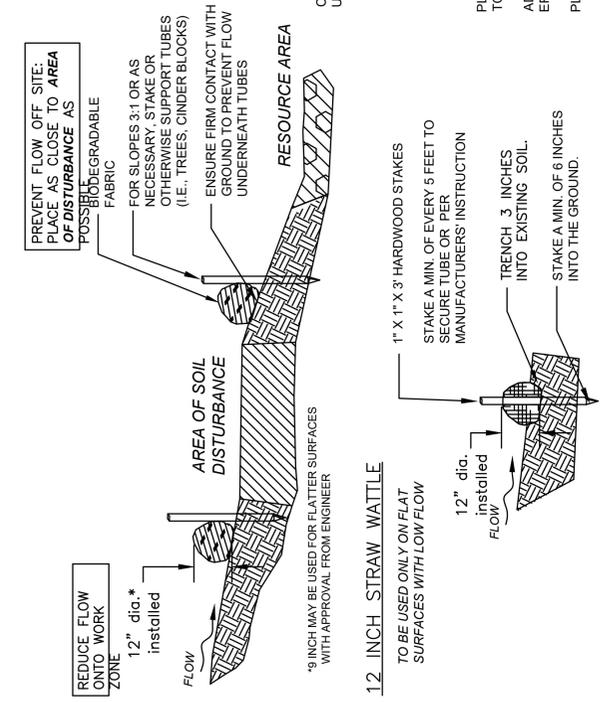
EXISTING TREES

LIMIT CANOPY/ROOT ZONE

TREE ROOT ZONE/ PLANT PROTECTION ZONE

NO TRESPASSING, STORAGE OF EQUIPMENT, OR STOCKPILING OF MATERIALS IN ROOT ZONE

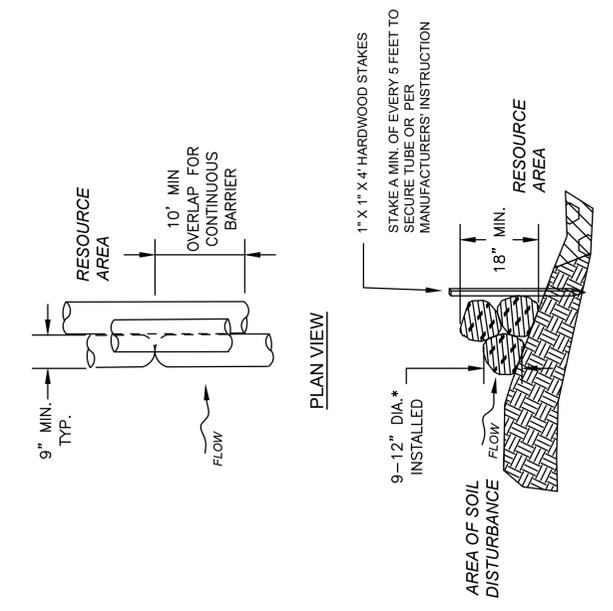
**TREE PROTECTION DETAILS**  
NOT TO SCALE



**SECTION**

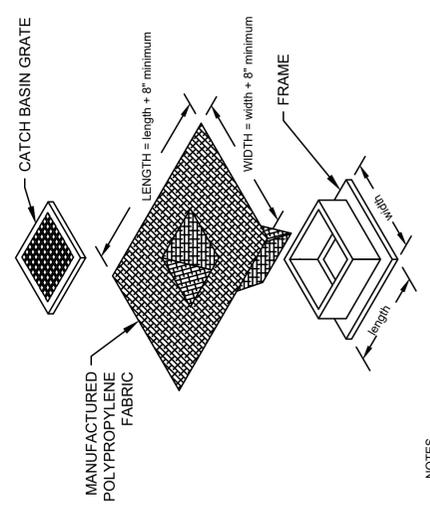
**PLAN VIEW**

**SEDIMENT BARRIERS - COMPOST FILTER TUBES & STRAW WATTLES**  
NOT TO SCALE



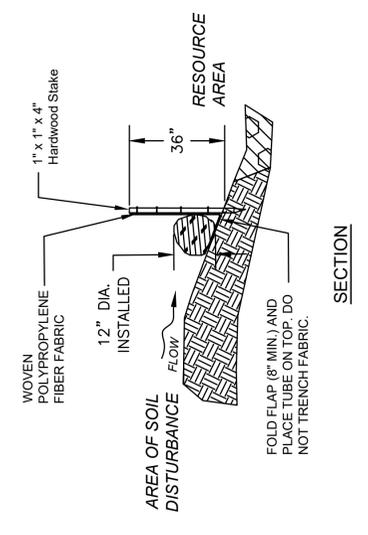
**SECTION**

**COMPOST FILTER TUBE BERM  
(SLOPES 2:1 OR STEEPER)**  
NOT TO SCALE



- NOTES**
1. LENGTH AND WIDTH OF POLYPROPYLENE FABRIC MUST EXCEED EXISTING CATCH BASIN FRAME DIMENSIONS BY A MINIMUM OF 8".
  2. REMOVE CATCH BASIN GRATE AND INSTALL POLYPROPYLENE FABRIC OVER CATCH BASIN FRAME. REPLACE CATCH BASIN GRATE TO SECURE POLYPROPYLENE FABRIC IN PLACE.

**CATCH BASIN EROSION CONTROL PROTECTION (TYP)**  
NOT TO SCALE



**SECTION**

**COMPOST FILTER TUBE & SILT FENCE**  
NOT TO SCALE

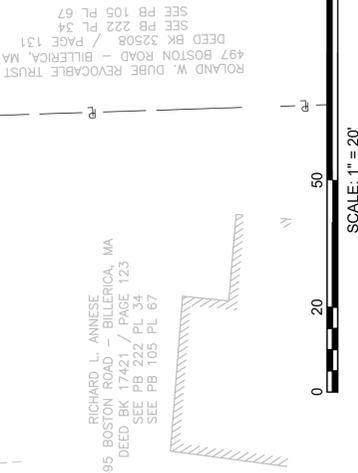
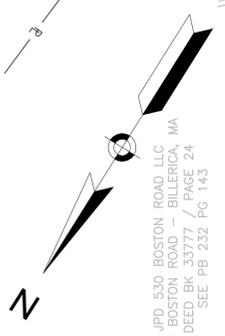
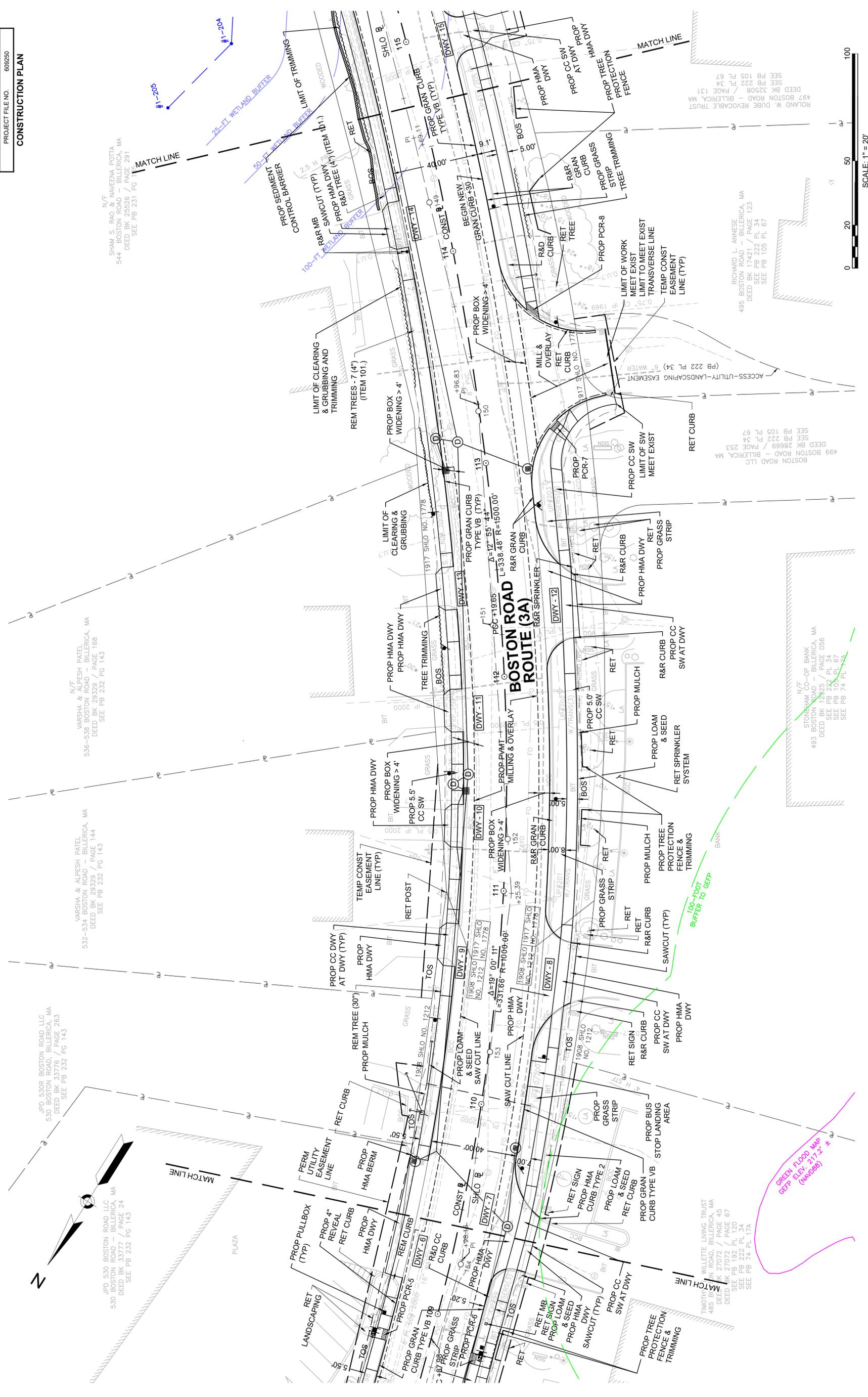




**BILLERICA  
BOSTON RD (ROUTE 3A)  
AT LEXINGTON RD & GLAD VALLEY DR**

|       |                    |           |              |
|-------|--------------------|-----------|--------------|
| STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
| MA    |                    | 16        | 30           |

PROJECT FILE NO. 609250  
**CONSTRUCTION PLAN**



VARSHA & ALPESH PATEL  
532-534 BOSTON ROAD - BILLERICA, MA  
DEED BK 29329 / PAGE 144  
SEE PB 232 PG 143

VARSHA & ALPESH PATEL  
536-538 BOSTON ROAD - BILLERICA, MA  
DEED BK 29329 / PAGE 168  
SEE PB 232 PG 143

N/F  
SHAM S. RAO & NAVEENA POITTA  
544 BOSTON ROAD - BILLERICA, MA  
DEED BK 25526 / PAGE 291  
SEE PB 231 PG 11

WILLETTE LIVING TRUST  
485 BOSTON ROAD - BILLERICA, MA  
DEED BK 27072 / PAGE 45  
SEE PB 192 PL 120  
SEE PB 222 PL 34  
SEE PB 74 PL 17A

TIMOTHY W. DUBE REVOCABLE TRUST  
497 BOSTON ROAD - BILLERICA, MA  
DEED BK 32508 / PAGE 131  
SEE PB 105 PL 67  
SEE PB 222 PL 34  
SEE PB 222 PL 34

BOSTON ROAD LLC  
499 BOSTON ROAD - BILLERICA, MA  
DEED BK 28669 / PAGE 253  
SEE PB 105 PL 67  
SEE PB 222 PL 34

RICHARD L. ANNESE  
495 BOSTON ROAD - BILLERICA, MA  
DEED BK 17421 / PAGE 123  
SEE PB 222 PL 34  
SEE PB 105 PL 67

N/F  
STONHAM CO-OP BANK  
493 BOSTON ROAD - BILLERICA, MA  
DEED BK 12825 / PAGE 056  
SEE PB 222 PL 34  
SEE PB 105 PL 67  
SEE PB 74 PL 17A

N/F  
530 BOSTON ROAD LLC  
530 BOSTON ROAD - BILLERICA, MA  
DEED BK 33776 / PAGE 263  
SEE PB 232 PG 143

N/F  
530 BOSTON ROAD LLC  
530 BOSTON ROAD - BILLERICA, MA  
DEED BK 33777 / PAGE 24  
SEE PB 232 PG 143

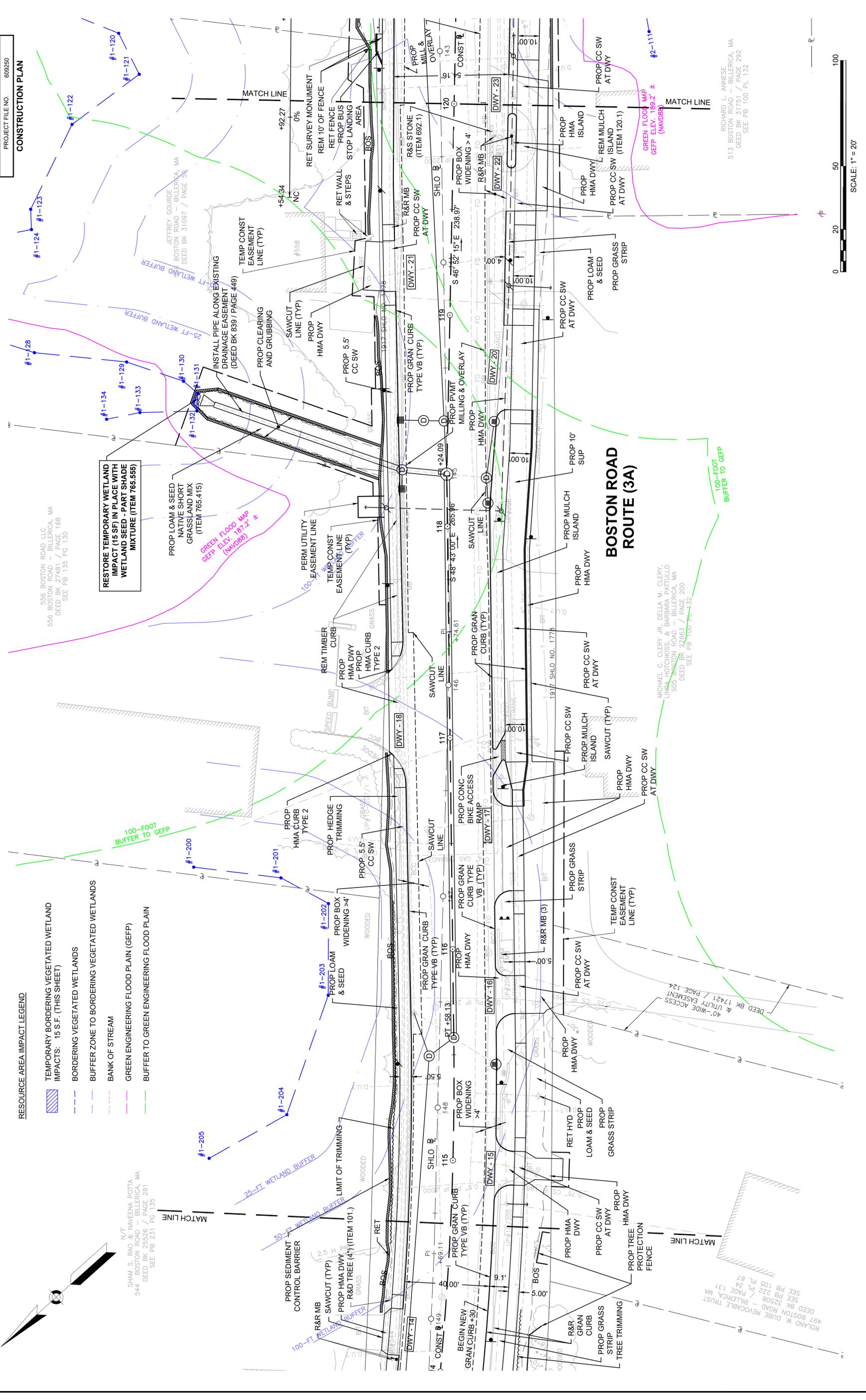
PLAZA

100-FOOT BUFFER TO GEFF

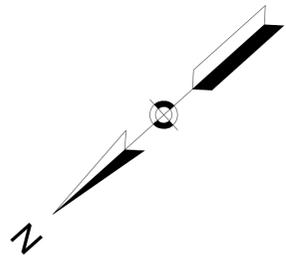
GREEN FLOOD MAP  
GEFF ELEV. 217.2 ±

**BILLERICA  
BOSTON RD (ROUTE 3A)  
AT LEXINGTON RD & GLAD VALLEY DR**

|                         |                    |                   |              |
|-------------------------|--------------------|-------------------|--------------|
| STATE                   | FED. AID PROJ. NO. | SHEET NO.         | TOTAL SHEETS |
| MA                      |                    | 17                | 30           |
| PROJECT FILE NO. 609250 |                    | CONSTRUCTION PLAN |              |



- RESOURCE AREA IMPACT LEGEND**
- TEMPORARY BORDERING VEGETATED WETLAND IMPACTS: 15 S.F. (THIS SHEET)
  - BORDERING VEGETATED WETLANDS
  - BUFFER ZONE TO BORDERING VEGETATED WETLANDS
  - BANK OF STREAM
  - GREEN ENGINEERING FLOOD PLAN (GEFP)
  - BUFFER TO GREEN ENGINEERING FLOOD PLAN



N/F  
SHAM S. RAO & NAVEENA POTTA  
544 BOSTON ROAD - BILLERICA, MA  
DEED BK 26526 / PAGE 291  
SEE PB 231 PG 135

MICHAEL C. CLERY JR., DELIA M. CLERY,  
LINDA HOTCHKISS, & BARBARA PANTULLO  
505 BOSTON ROAD - BILLERICA, MA  
DEED BK 27663 / PAGE 200  
SEE PB 100 PG 32

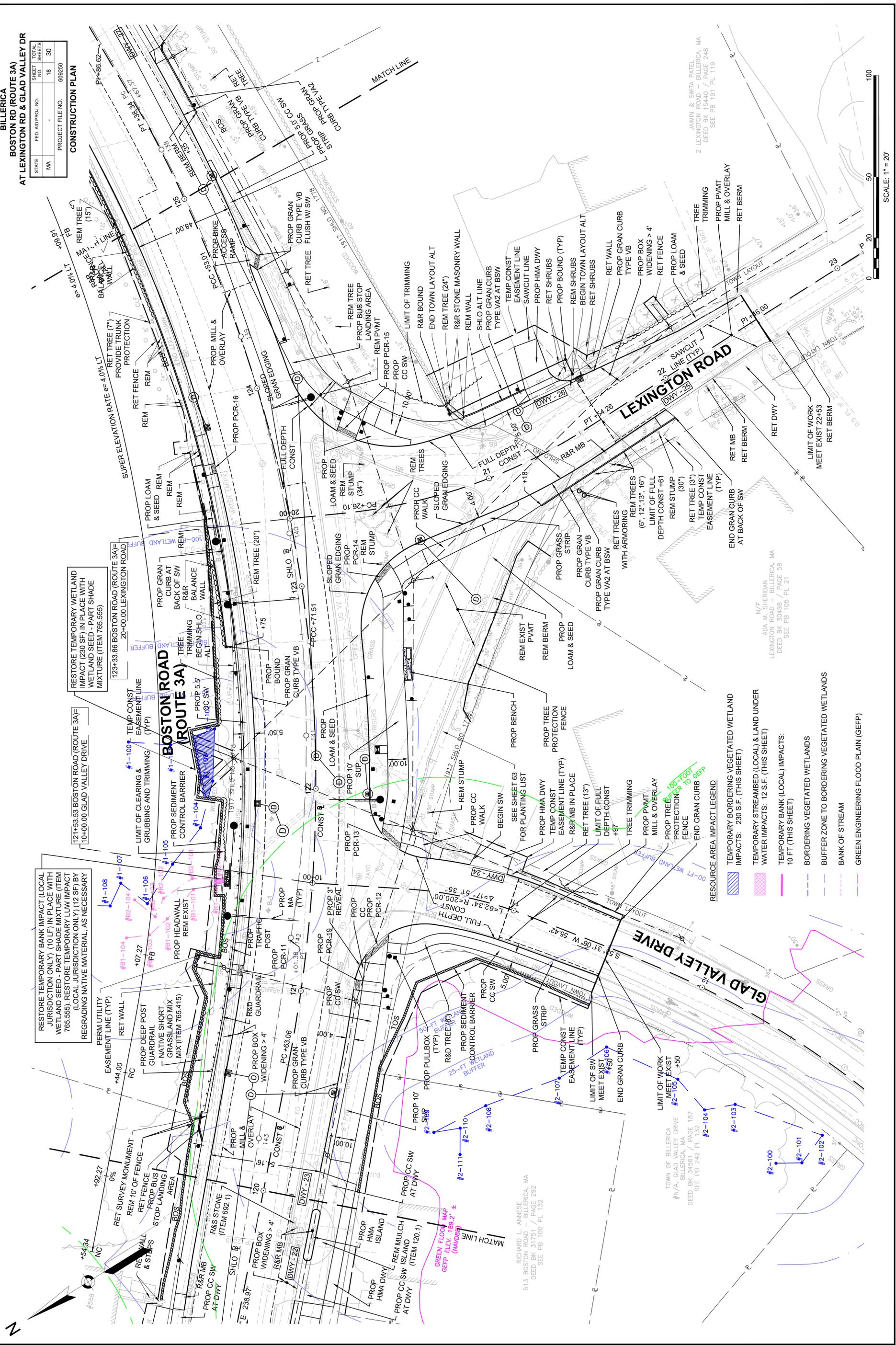
ROLAND W. DUBE REVOCABLE TRUST  
497 BOSTON ROAD - BILLERICA, MA  
DEED BK 32508 / PAGE 131  
SEE PB 222 PL 24  
SEE PB 105 PL 67

RICHARD L. ANNESE  
513 BOSTON ROAD - BILLERICA, MA  
DEED BK 31751 / PAGE 292  
SEE PB 100 PL 132



**BILLERICA  
BOSTON RD (ROUTE 3A)  
AT LEXINGTON RD & GLAD VALLEY DR**

|                         |                    |                          |              |
|-------------------------|--------------------|--------------------------|--------------|
| STATE                   | FED. AID PROJ. NO. | SHEET NO.                | TOTAL SHEETS |
| MA                      |                    | 18                       | 30           |
| PROJECT FILE NO. 609250 |                    | <b>CONSTRUCTION PLAN</b> |              |



RESTORE TEMPORARY WETLAND IMPACT (230 SF) IN PLACE WITH WETLAND SEED - PART SHADE MIXTURE (ITEM 765.555)

RESTORE TEMPORARY BANK IMPACT (LOCAL JURISDICTION ONLY) (10 LF) IN PLACE WITH WETLAND SEED - PART SHADE MIXTURE (ITEM 765.555). RESTORE TEMPORARY LOW IMPACT (LOCAL JURISDICTION ONLY) (12 SF) BY REGRADING NATIVE MATERIAL, AS NECESSARY

RESTORE TEMPORARY WETLAND IMPACT (230 SF) IN PLACE WITH WETLAND SEED - PART SHADE MIXTURE (ITEM 765.555)

- RESOURCE AREA IMPACT LEGEND**
- TEMPORARY BORDERING VEGETATED WETLAND IMPACTS: 230 S.F. (THIS SHEET)
  - TEMPORARY STREAMBED (LOCAL) & LAND UNDER WATER IMPACTS: 12 S.F. (THIS SHEET)
  - TEMPORARY BANK (LOCAL) IMPACTS: 10 FT (THIS SHEET)
  - BORDERING VEGETATED WETLANDS
  - BUFFER ZONE TO BORDERING VEGETATED WETLANDS
  - BANK OF STREAM
  - GREEN ENGINEERING FLOOD PLAIN (GEFP)

TOWN OF BILLERICA  
#N/A. GLAD VALLEY DRIVE  
DEED BK 34563 / PAGE 187  
SEE PB 242 PL 132

RICHARD L. ANNESE  
513 BOSTON ROAD - BILLERICA, MA  
DEED BK 31751 / PAGE 292  
SEE PB 100 PL 132

N/A  
ADA M. SHERIDAN  
LEXINGTON ROAD - BILLERICA, MA  
DEED BK 30488 / PAGE 58  
SEE PB 105 PL 21

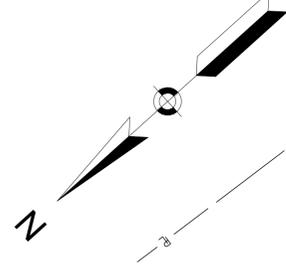
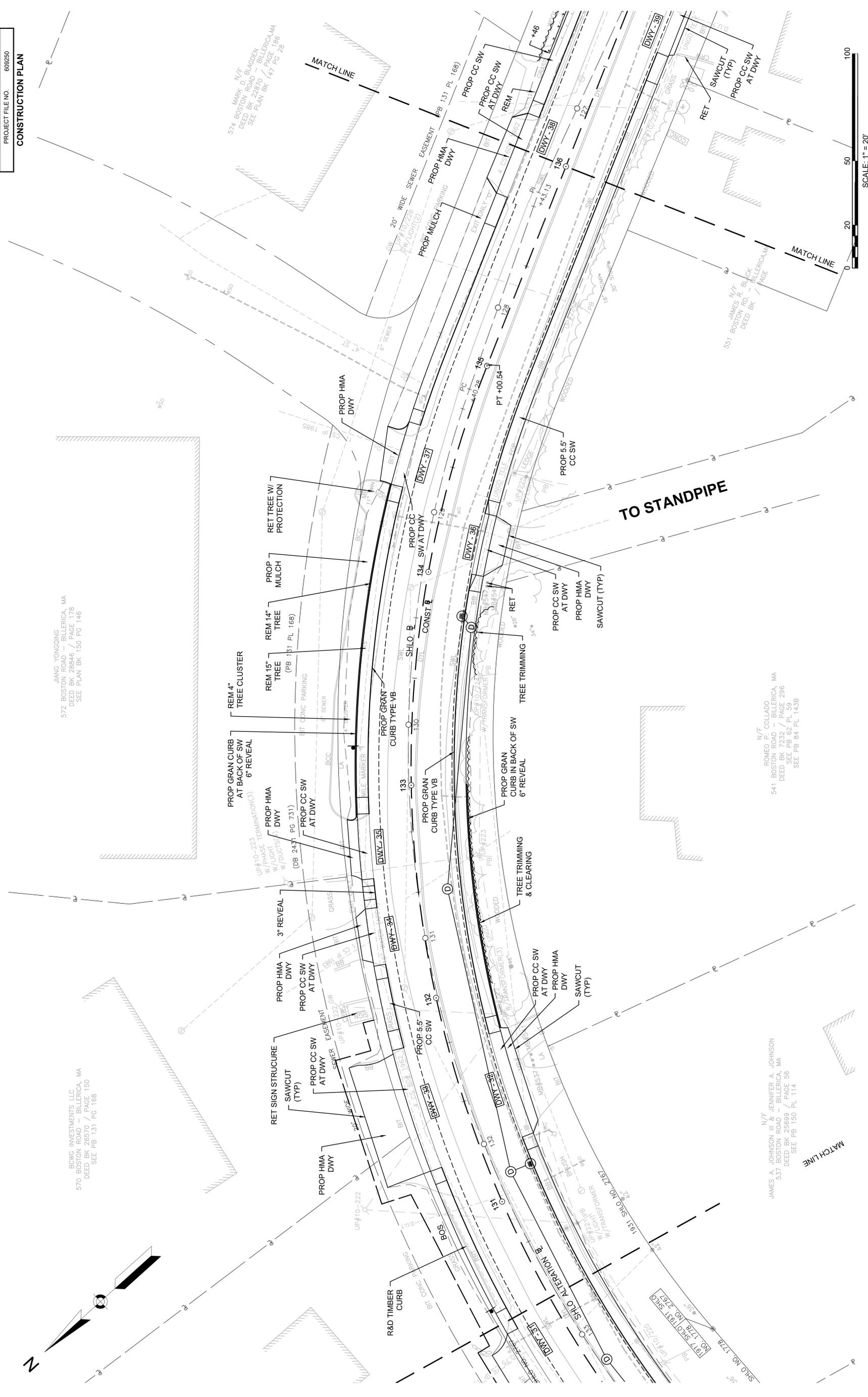
JAMIN & SWITA PATEL  
2 LEXINGTON ROAD - BILLERICA, MA  
DEED BK 15440 / PAGE 248  
SEE PB 191 PL 119





**BILLERICA  
BOSTON RD (ROUTE 3A)  
AT LEXINGTON RD & GLAD VALLEY DR**

|                         |                    |                   |              |
|-------------------------|--------------------|-------------------|--------------|
| STATE                   | FED. AID PROJ. NO. | SHEET NO.         | TOTAL SHEETS |
| MA                      |                    | 20                | 30           |
| PROJECT FILE NO. 609250 |                    | CONSTRUCTION PLAN |              |



JIANG YONGQING  
572 BOSTON ROAD - BILLERICA, MA  
DEED BK. 28846 / PAGE 178  
SEE PLAN BK 150 PG 146

BCWG INVESTMENTS LLC  
570 BOSTON ROAD - BILLERICA, MA  
DEED BK 26570 / PAGE 150  
SEE PB 131 PG 168

MARK V/F  
574 BOSTON ROAD - BILLERICA, MA  
DEED BK 22870 / PAGE 186  
SEE PLAN BK 147 PG 28

N/F  
ROMEO P. COLLADO  
541 BOSTON ROAD - BILLERICA, MA  
DEED BK 7232 / PAGE 286  
SEE PB 84 PL 143B

N/F  
JAMES A. JOHNSON III & JENNIFER A. JOHNSON  
537 BOSTON ROAD - BILLERICA, MA  
DEED BK 25699 / PAGE 56  
SEE PB 150 PL 114

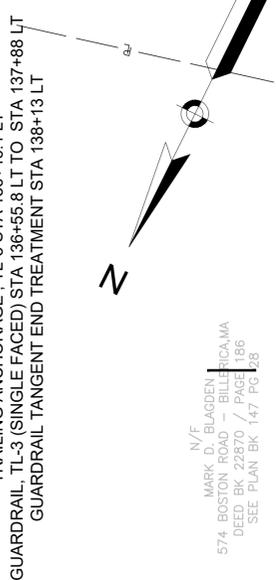
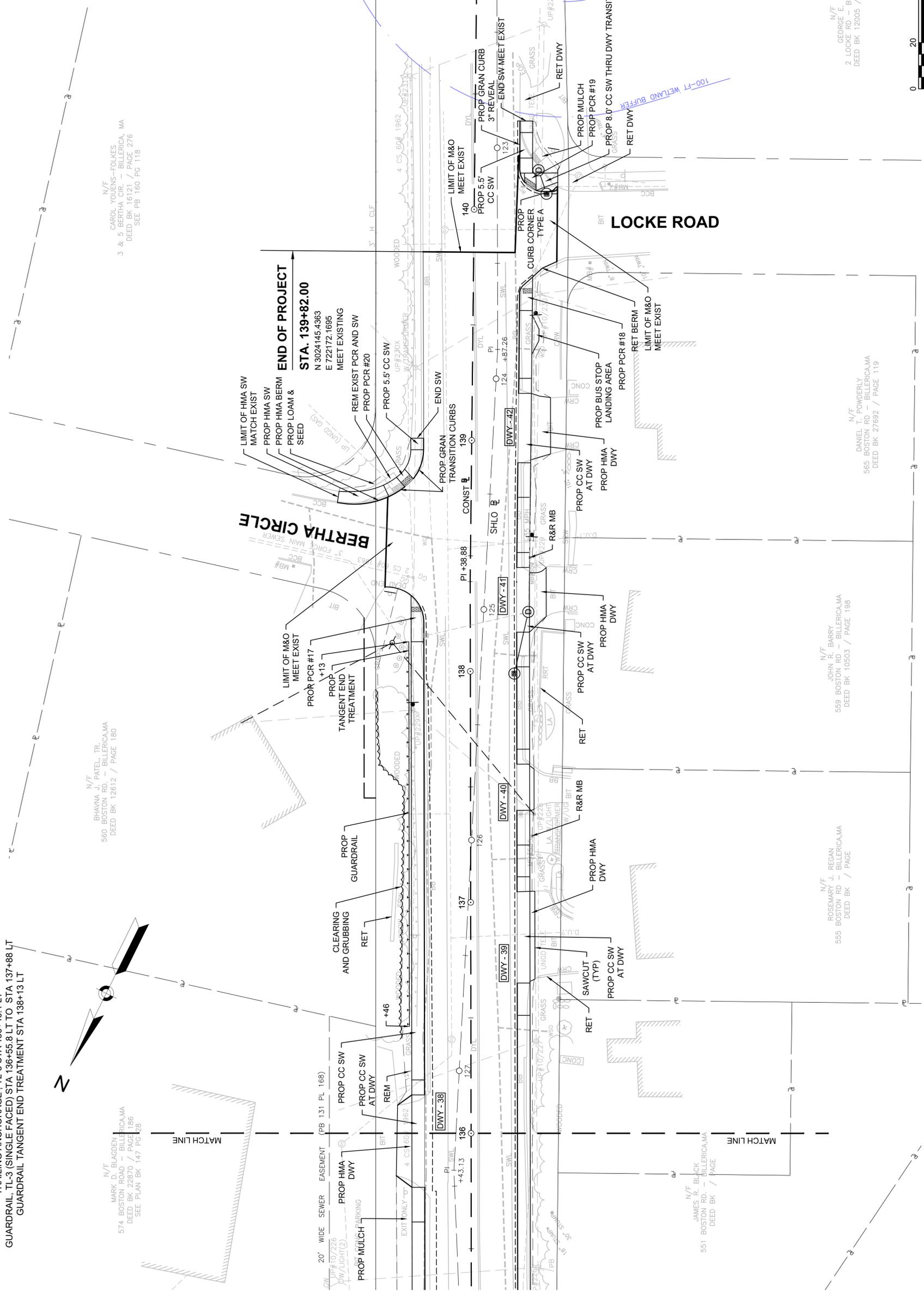
**TO STANDPIPE**

**BILLERICA  
BOSTON RD (ROUTE 3A)  
AT LEXINGTON RD & GLAD VALLEY DR**

|       |                    |           |              |
|-------|--------------------|-----------|--------------|
| STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
| MA    |                    | 21        | 30           |

PROJECT FILE NO. 609250

**CONSTRUCTION PLAN**



N/F  
 GEORGE E. NOEL  
 2 LOCKE RD - BILLERICA, MA  
 DEED BK 12005 / PAGE 018

N/F  
 DANIEL T. POWDERLY  
 565 BOSTON RD - BILLERICA, MA  
 DEED BK 27692 / PAGE 119

N/F  
 JOHN R. BARRY  
 559 BOSTON RD - BILLERICA, MA  
 DEED BK 10503 / PAGE 198

N/F  
 ROSEMARY J. REGAN  
 555 BOSTON RD - BILLERICA, MA  
 DEED BK / PAGE

N/F  
 JAMES B. BLACK  
 551 BOSTON RD - BILLERICA, MA  
 DEED BK / PAGE



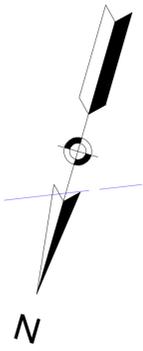
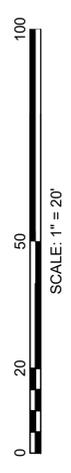
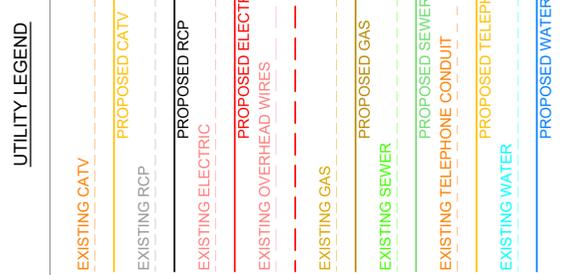
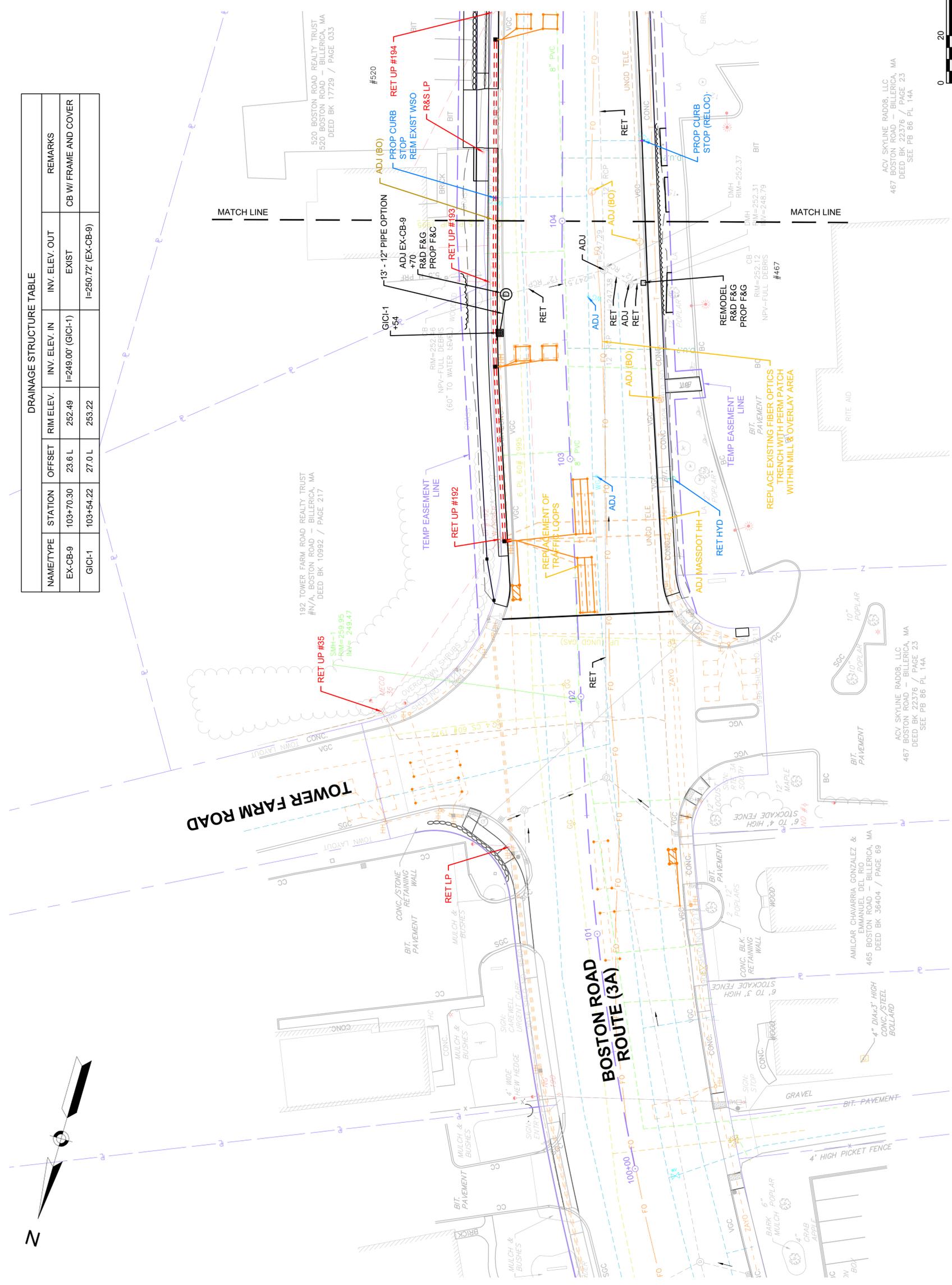
**BILLERICA  
BOSTON RD (ROUTE 3A)  
AT LEXINGTON RD & GLAD VALLEY DR**

|                         |                    |           |              |
|-------------------------|--------------------|-----------|--------------|
| STATE                   | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
| MA                      |                    | 22        | 30           |
| PROJECT FILE NO. 609250 |                    |           |              |

**DRAINAGE & UTILITY PLAN**

**DRAINAGE STRUCTURE TABLE**

| NAME/TYPE | STATION   | OFFSET | RIM ELEV. | INV. ELEV. IN       | INV. ELEV. OUT | REMARKS               |
|-----------|-----------|--------|-----------|---------------------|----------------|-----------------------|
| EX-CB-9   | 103+70.30 | 23.6 L | 252.49    | I=249.00' (GIC-1)   | EXIST          | CB W/ FRAME AND COVER |
| GIC-1     | 103+54.22 | 27.0 L | 253.22    | I=250.72' (EX-CB-9) |                |                       |



**BILLERICA  
BOSTON RD (ROUTE 3A)  
AT LEXINGTON RD & GLAD VALLEY DR**

|                         |                    |           |              |
|-------------------------|--------------------|-----------|--------------|
| STATE                   | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
| MA                      |                    | 23        | 30           |
| PROJECT FILE NO. 609250 |                    |           |              |

**DRAINAGE & UTILITY PLAN**

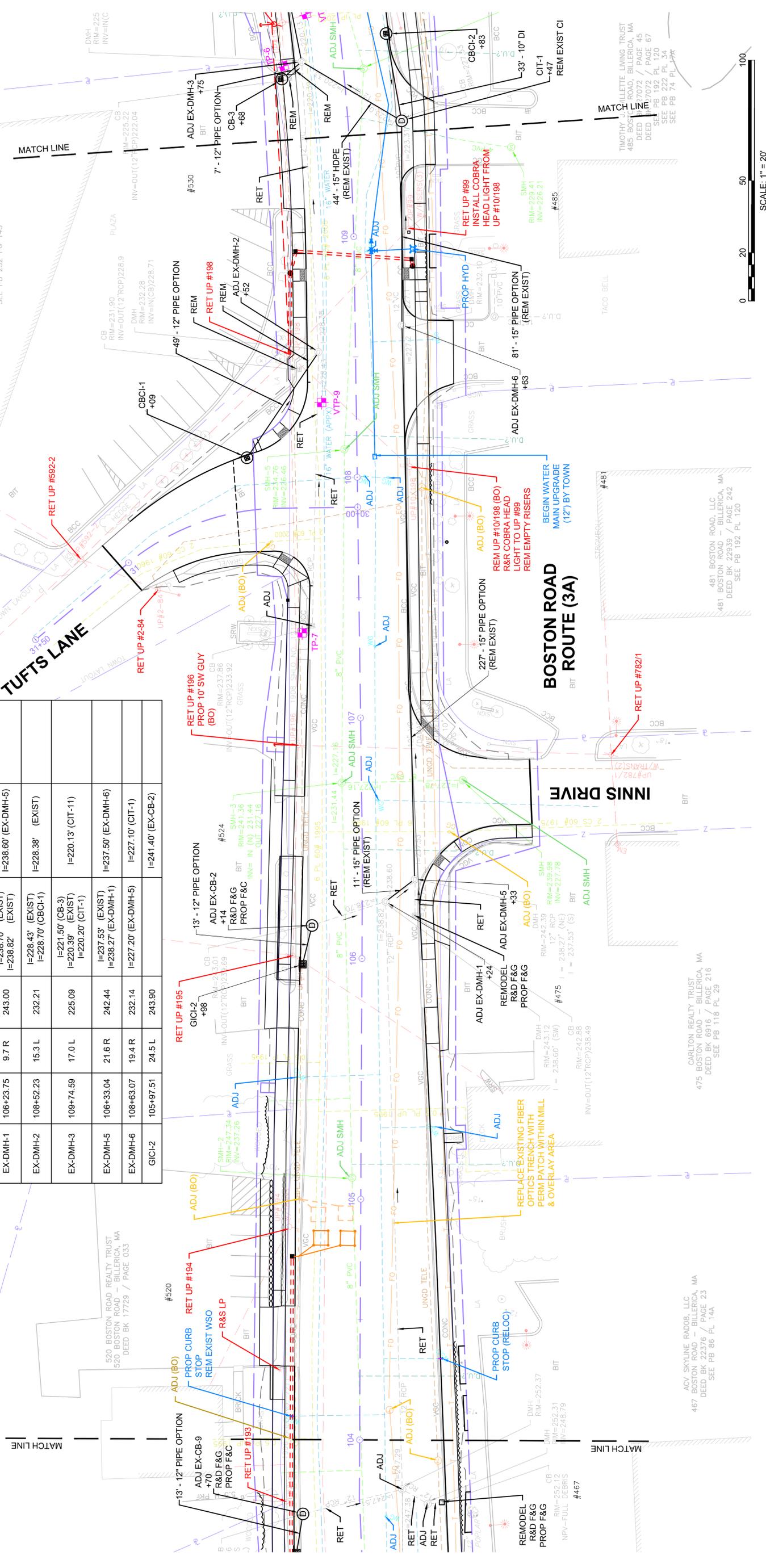
JPD 5309 BOSTON ROAD, LLC  
530 BOSTON ROAD, BILLERICA, MA  
DEED BK 33776 / PAGE 263  
SEE PB 232 PG 143

**LEGEND**

|     |                 |
|-----|-----------------|
| TP  | TEST PIT        |
| VTP | VACUUM TEST PIT |
| WM  | WATER MAIN      |
| G   | GAS             |
| C   | CONDUIT         |
| D   | DRAINAGE        |

| TEST PIT DATA |  |                             |            |
|---------------|--|-----------------------------|------------|
| VTP-#         | TOP OF WATER MAIN/<br>DUCT/GAS ELEVATION | DEPTH BELOW<br>SURFACE (IN) | DATE       |
| VTP-8         | 218.52 (WM)                              | 69.0                        | MAY, 2023  |
| VTP-9         | 228.81 (WM)                              | 57.0                        | MAY, 2023  |
| TP-6          | NOTHING FOUND                            | 54.0                        | JULY, 2022 |
| TP-7          | NOTHING FOUND                            | 54.0                        | JULY, 2022 |

| DRAINAGE STRUCTURE TABLE |           |        |           |  |                |                                      |
|--------------------------|-----------|--------|-----------|--|----------------|--------------------------------------|
| NAME/TYPE                | STATION   | OFFSET | RIM ELEV. | INV. ELEV. IN  | INV. ELEV. OUT | REMARKS                              |
| CB-3                     | 109+88.06 | 25.7 L | 225.60    | I=221.60' (EX-DMH-3)                                       |                | FLAT TOP<br>OFFSET CB                |
| CBCI-1                   | 108+08.72 | 45.5 L | 234.57    | I=231.07' (EX-DMH-2)                                       |                | FLAT TOP                             |
| CBCI-2                   | 109+82.53 | 19.0 R | 225.69    | I=222.90' (CIT-1)  |                | FLAT TOP<br>1 COURSE BRICK           |
| CBCI-3                   | 106+18.05 | 22.3 R | 242.91    | I=238.20' (EXIST)  |                | FLAT TOP<br>OFFSET COVER             |
| CIT-1                    | 109+46.58 | 22.1 R | 227.98    | I=222.70' (EX-DMH-6)<br>I=222.80' (CBCI-2)                 |                | CHANGE-IN-TYPE                       |
| EX-CB-2                  | 106+13.65 | 20.7 L | 243.11    | I=239.70' (GICI-2)   |                | CB W/ FRAME<br>AND COVER<br>FLAT TOP |
| EX-DMH-1                 | 106+23.75 | 9.7 R  | 243.00    | I=238.70' (EXIST)<br>I=238.82' (EXIST)                     |                |                                      |
| EX-DMH-2                 | 108+52.23 | 15.3 L | 232.21    | I=228.43' (EXIST)<br>I=228.70' (CBCI-1)                    |                |                                      |
| EX-DMH-3                 | 109+74.59 | 17.0 L | 225.09    | I=221.50' (CB-3)<br>I=220.39' (EXIST)<br>I=220.20' (CIT-1) |                |                                      |
| EX-DMH-5                 | 106+33.04 | 21.6 R | 242.44    | I=237.53' (EXIST)<br>I=238.27' (EX-DMH-1)                  |                |                                      |
| EX-DMH-6                 | 108+63.07 | 19.4 R | 232.14    | I=227.20' (EX-DMH-5)                                       |                |                                      |
| GICI-2                   | 105+97.51 | 24.5 L | 243.90    | I=241.40' (EX-CB-2)  |                |                                      |



CARLTON REALTY TRUST  
475 BOSTON ROAD - BILLERICA, MA  
DEED BK 6816 / PAGE 216  
SEE PB 118 PL 29

ACV SKYLINE RADD8, LLC  
467 BOSTON ROAD - BILLERICA, MA  
DEED BK 22376 / PAGE 23  
SEE PB 86 PL 14A

481 BOSTON ROAD, LLC  
481 BOSTON ROAD - BILLERICA, MA  
DEED BK 22939 / PAGE 242  
SEE PB 192 PL 120

TIMOTHY J. WILLETTE LIVING TRUST  
485 BOSTON ROAD, BILLERICA, MA  
DEED BK 17072 / PAGE 45  
DEED BK 17072 / PAGE 67  
SEE PB 222 PL 34  
SEE PB 74 PL 14A



**BILLERICA  
BOSTON RD (ROUTE 3A)  
AT LEXINGTON RD & GLAD VALLEY DR**

| STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|-------|--------------------|-----------|--------------|
| MA    |                    | 24        | 30           |

PROJECT FILE NO. 609250

**DRAINAGE & UTILITY PLAN**

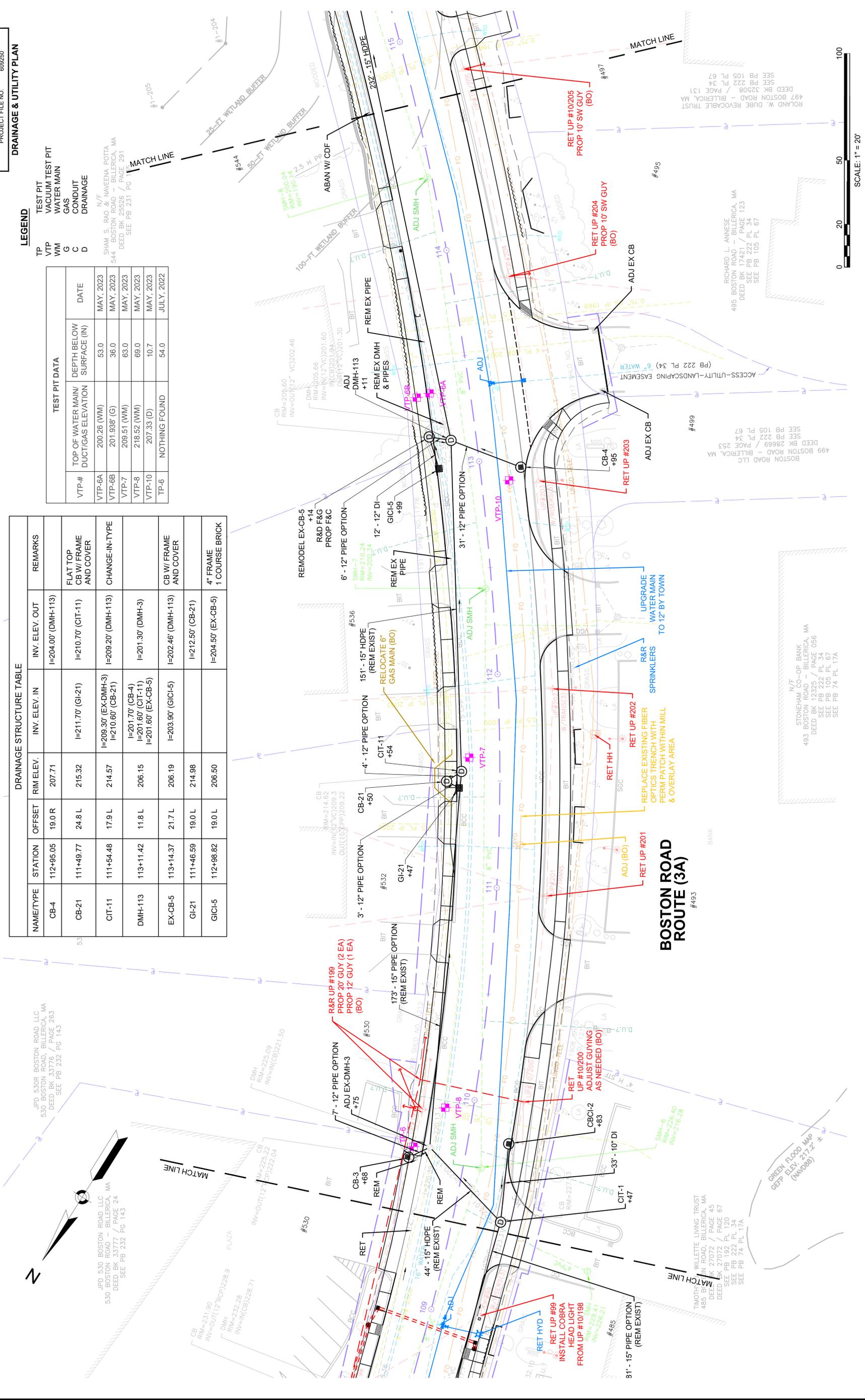
**LEGEND**

|     |                 |
|-----|-----------------|
| TP  | TEST PIT        |
| VTP | VACUUM TEST PIT |
| WM  | WATER MAIN      |
| G   | GAS             |
| C   | CONDUIT         |
| D   | DRAINAGE        |

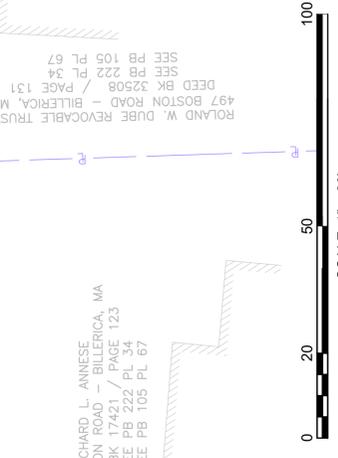
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SHAM S. RAO & NAVEENA POITTA  
544 BOSTON ROAD - BILLERICA, MA  
DEED BK 25526 / PAGE 281  
SEE PB 231 PG 11

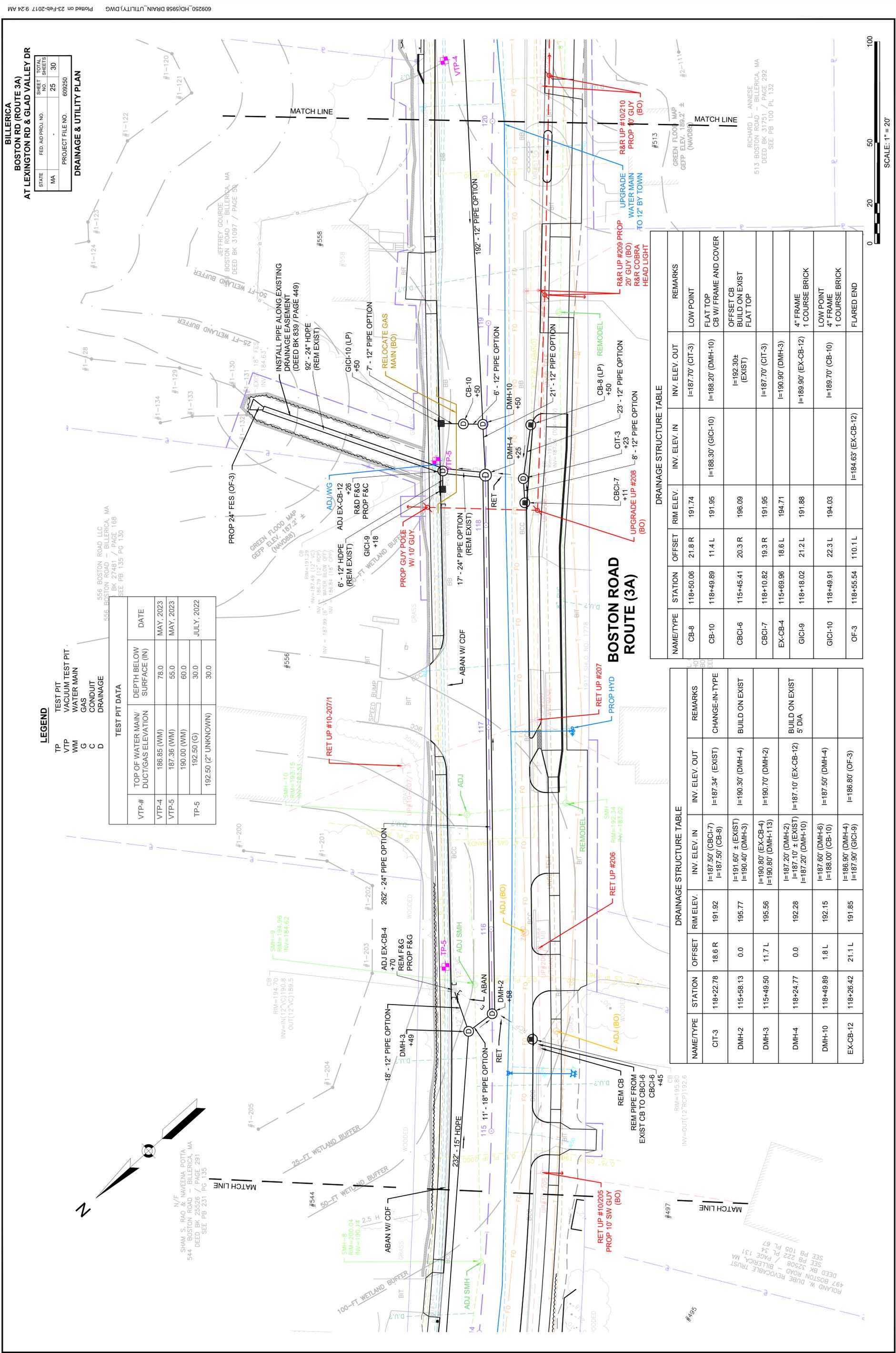
| TEST PIT DATA |  |                             |            |
|---------------|--|-----------------------------|------------|
| VTP-#         | TOP OF WATER MAIN/<br>DUCT/GAS ELEVATION | DEPTH BELOW<br>SURFACE (IN) | DATE       |
| VTP-6A        | 200.26 (WM)                              | 53.0                        | MAY, 2023  |
| VTP-6B        | 201.938 (G)                              | 36.0                        | MAY, 2023  |
| VTP-7         | 209.51 (WM)                              | 63.0                        | MAY, 2023  |
| VTP-8         | 218.52 (WM)                              | 69.0                        | MAY, 2023  |
| VTP-10        | 207.33 (D)                               | 10.7                        | MAY, 2023  |
| TP-6          | NOTHING FOUND                            | 54.0                        | JULY, 2022 |

| DRAINAGE STRUCTURE TABLE |           |        |           |   |                     |                                      |
|--------------------------|-----------|--------|-----------|---|---------------------|--------------------------------------|
| NAME/TYPE                | STATION   | OFFSET | RIM ELEV. | INV. ELEV. IN   | INV. ELEV. OUT      | REMARKS                              |
| CB-4                     | 112+95.05 | 19.0 R | 207.71    | I=204.00' (DMH-113)   |                     |                                      |
| CB-21                    | 111+49.77 | 24.8 L | 215.32    | I=210.70' (GIT-11)  |                     | FLAT TOP<br>CB W/ FRAME<br>AND COVER |
| CIT-11                   | 111+54.48 | 17.9 L | 214.57    | I=209.20' (EX-DMH-3)<br>I=210.60' (CB-21)                     |                     | CHANGE-IN-TYPE                       |
| DMH-113                  | 113+11.42 | 11.8 L | 206.15    | I=201.70' (CB-4)<br>I=201.60' (CIT-11)<br>I=201.60' (EX-CB-5) |                     |                                      |
| EX-CB-5                  | 113+14.37 | 21.7 L | 206.19    | I=203.90' (GIC-5)   |                     | CB W/ FRAME<br>AND COVER             |
| GI-21                    | 111+46.59 | 19.0 L | 214.88    |   | I=212.50' (CB-21)   |                                      |
| GIC-5                    | 112+98.82 | 19.0 L | 206.50    |   | I=204.50' (EX-CB-5) | 4" FRAME<br>1 COURSE BRICK           |



**BOSTON ROAD  
ROUTE (3A)**





**BILLERICA  
BOSTON RD (ROUTE 3A)  
AT LEXINGTON RD & GLAD VALLEY DR**

|                         |                    |                                    |              |
|-------------------------|--------------------|------------------------------------|--------------|
| STATE                   | FED. AID PROJ. NO. | SHEET NO.                          | TOTAL SHEETS |
| MA                      |                    | 25                                 | 30           |
| PROJECT FILE NO. 609250 |                    | <b>DRAINAGE &amp; UTILITY PLAN</b> |              |

**LEGEND**

|     |                 |
|-----|-----------------|
| TP  | TEST PIT        |
| VTP | VACUUM TEST PIT |
| WM  | WATER MAIN      |
| G   | GAS             |
| C   | CONDUIT         |
| D   | DRAINAGE        |

| TEST PIT DATA |  |                             |            |
|---------------|--|-----------------------------|------------|
| VTP #         | TOP OF WATER MAIN/<br>DUCT/GAS ELEVATION | DEPTH BELOW<br>SURFACE (IN) | DATE       |
| VTP-4         | 186.85 (WM)                              | 78.0                        | MAY, 2023  |
| VTP-5         | 187.36 (WM)                              | 55.0                        | MAY, 2023  |
| VTP-5         | 190.00 (WM)                              | 60.0                        | MAY, 2023  |
| TP-5          | 192.50 (G)                               | 30.0                        | JULY, 2022 |
| TP-5          | 192.50 (2\"/>                            |                             |            |

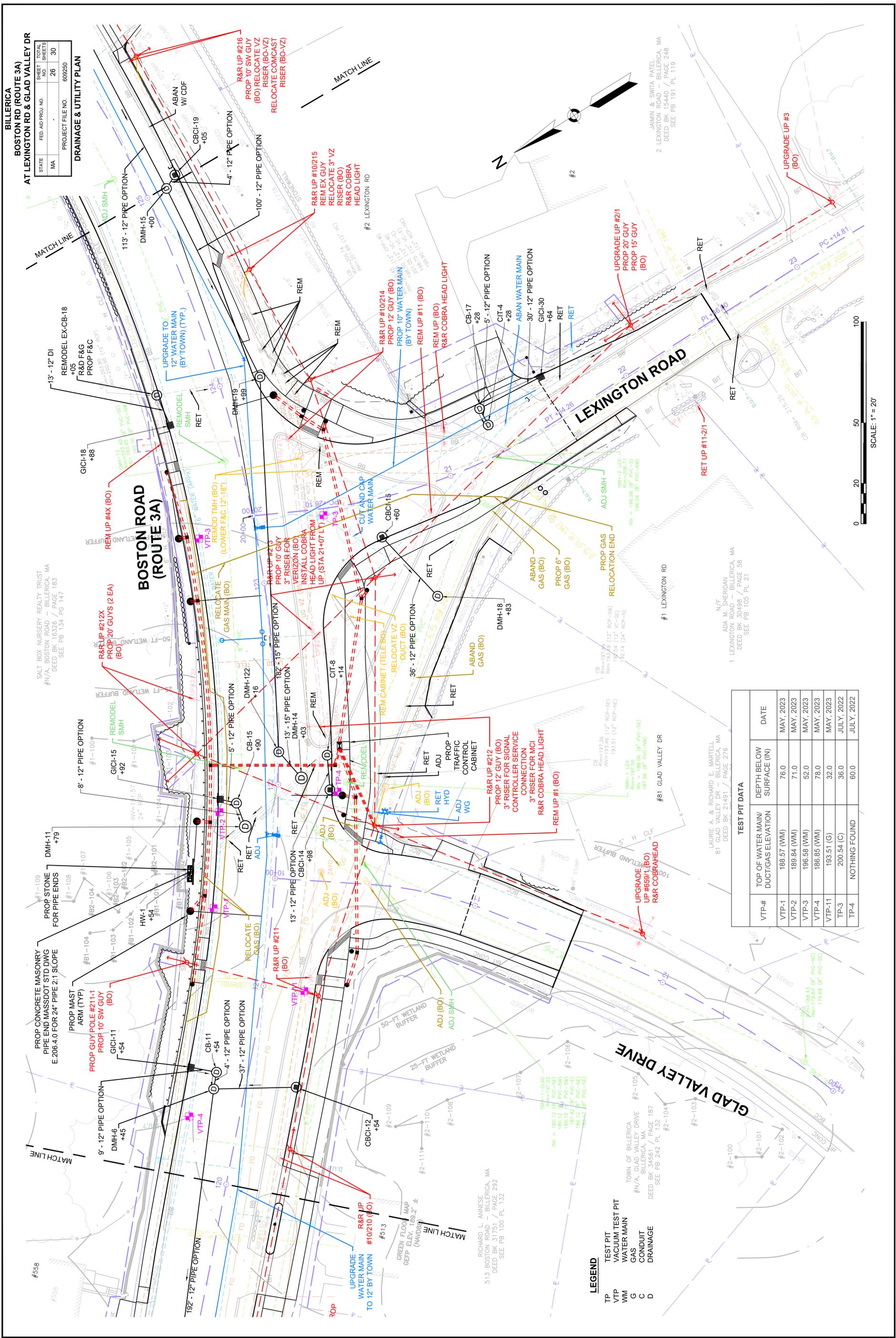
**DRAINAGE STRUCTURE TABLE**

| NAME/TYPE | STATION   | OFFSET | RIM ELEV. | INV. ELEV. IN        | INV. ELEV. OUT       | REMARKS                                 |
|-----------|-----------|--------|-----------|----------------------|----------------------|---|
| CB-8      | 118+50.06 | 21.8 R | 191.74    | I=187.70' (CIT-3)    | I=187.70' (CIT-3)    | LOW POINT                               |
| CB-10     | 118+49.89 | 11.4 L | 191.95    | I=188.30' (GICI-10)  | I=188.20' (DMH-10)   | FLAT TOP<br>CB W/ FRAME AND COVER       |
| CB-6      | 115+45.41 | 20.3 R | 196.09    | I=192.30±<br>(EXIST) | I=192.30±<br>(EXIST) | OFFSET CB<br>BUILD ON EXIST<br>FLAT TOP |
| CB-7      | 118+10.82 | 19.3 R | 191.95    | I=187.70' (CIT-3)    | I=187.70' (CIT-3)    |   |
| EX-CB-4   | 115+69.96 | 18.6 L | 194.71    | I=190.90' (DMH-3)    | I=190.90' (DMH-3)    |   |
| GICI-9    | 118+18.02 | 21.2 L | 191.88    | I=189.90' (EX-CB-12) | I=189.90' (EX-CB-12) | 4\"/>                                   |

**DRAINAGE STRUCTURE TABLE**

| NAME/TYPE | STATION   | OFFSET | RIM ELEV. | INV. ELEV. IN  | INV. ELEV. OUT       | REMARKS                 |
|-----------|-----------|--------|-----------|--|----------------------|-------------------------|
| CIT-3     | 118+22.78 | 18.6 R | 191.92    | I=187.50' (CB-7)<br>I=187.50' (CB-8)                           | I=187.34' (EXIST)    | CHANGE-IN-TYPE          |
| DMH-2     | 115+58.13 | 0.0    | 195.77    | I=191.60' ± (EXIST)<br>I=190.40' (DMH-3)                       | I=190.30' (DMH-4)    | BUILD ON EXIST          |
| DMH-3     | 115+49.50 | 11.7 L | 195.56    | I=190.80' (EX-CB-4)<br>I=190.80' (DMH-113)                     | I=190.70' (DMH-2)    | BUILD ON EXIST          |
| DMH-4     | 118+24.77 | 0.0    | 192.28    | I=187.20' (DMH-2)<br>I=187.10' ± (EXIST)<br>I=187.20' (DMH-10) | I=187.10' (EX-CB-12) | BUILD ON EXIST<br>5\"/> |





**BILLERICA  
BOSTON RD (ROUTE 3A)  
AT LEXINGTON RD & GLAD VALLEY DR**

|                    |    |                  |        |
|--------------------|----|------------------|--------|
| STATE              | MA | PROJECT FILE NO. | 609250 |
| FED. AID PROJ. NO. |    |                  |        |
| SHEET NO.          | 26 | TOTAL SHEETS     | 30     |

**DRAINAGE & UTILITY PLAN**

JAMIN & SWITA PATEL  
2 LEXINGTON ROAD - BILLERICA, MA  
DEED BK 15440 / PAGE 248  
SEE PB 191 PL 119

ADA M. SHERIDAN  
1 LEXINGTON ROAD - BILLERICA, MA  
DEED BK 30498 / PAGE 58  
SEE PB 105 PL 21

LAURIE A. & RICHARD E. MARTELL  
81 GLAD VALLEY DR - BILLERICA, MA  
DEED BK 21491 / PAGE 276

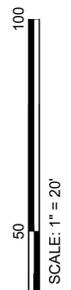
RICHARD L. ANNESE  
513 BOSTON ROAD - BILLERICA, MA  
DEED BK 31751 / PAGE 292  
SEE PB 100 PL 132

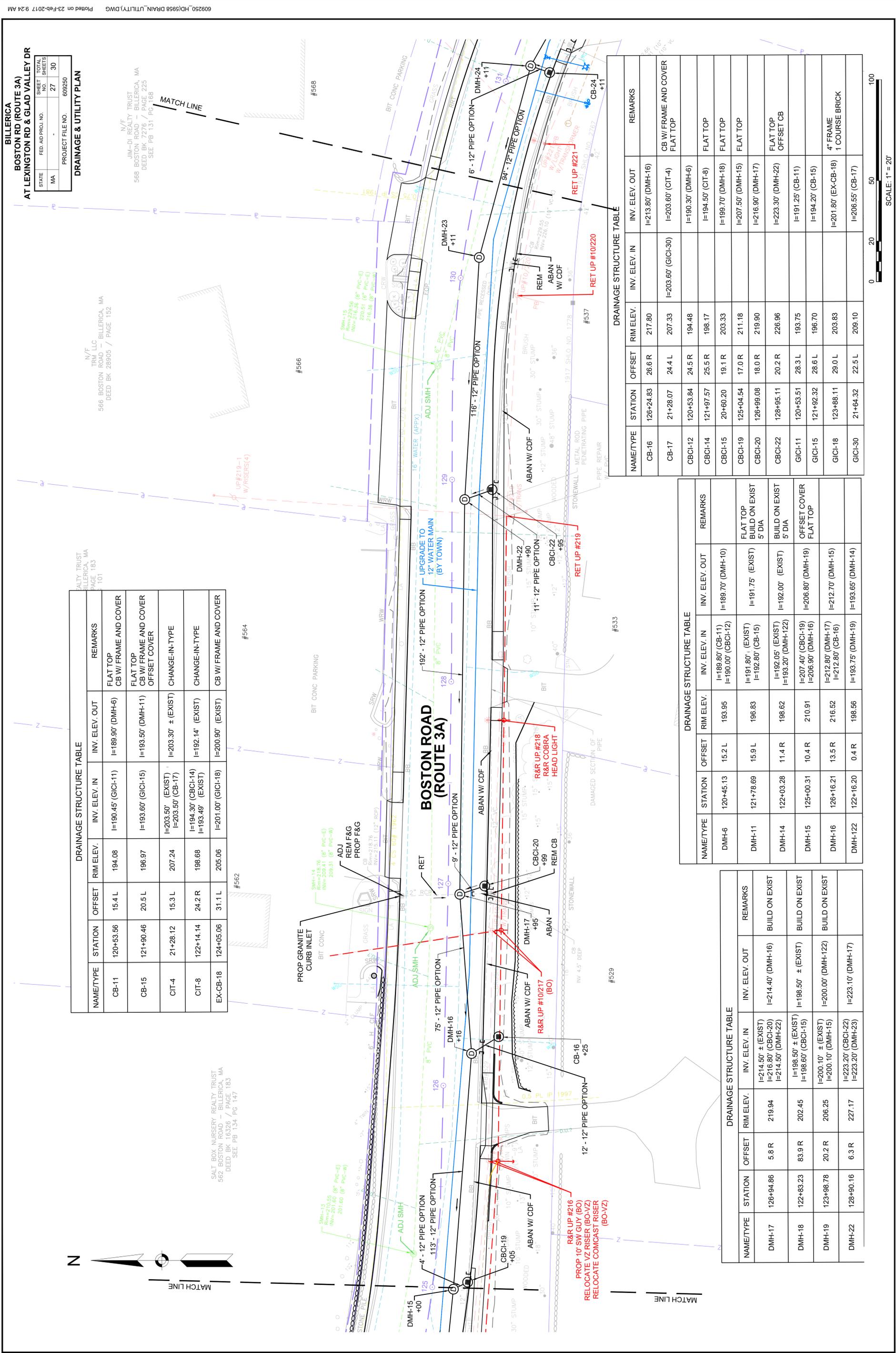
**LEGEND**

|     |                 |
|-----|-----------------|
| TP  | TEST PIT        |
| VTP | VACUUM TEST PIT |
| WM  | WATER MAIN      |
| G   | GAS             |
| C   | CONDUIT         |
| D   | DRAINAGE        |

**TEST PIT DATA**

| VTP-#  | TOP OF WATER MAIN/<br>DUCT/GAS ELEVATION | DEPTH BELOW<br>SURFACE (IN) | DATE       |
|--------|--|-----------------------------|------------|
| VTP-1  | 188.57 (WM)                              | 76.0                        | MAY, 2023  |
| VTP-2  | 189.84 (WM)                              | 71.0                        | MAY, 2023  |
| VTP-3  | 196.58 (WM)                              | 52.0                        | MAY, 2023  |
| VTP-4  | 186.85 (WM)                              | 78.0                        | MAY, 2023  |
| VTP-11 | 193.51 (C)                               | 32.0                        | MAY, 2023  |
| TP-3   | 200.54 (C)                               | 36.0                        | JULY, 2022 |
| TP-4   | NOTHING FOUND                            | 60.0                        | JULY, 2022 |





**BILLERICA  
BOSTON RD (ROUTE 3A)  
AT LEXINGTON RD & GLAD VALLEY DR**

|       |                    |           |              |
|-------|--------------------|-----------|--------------|
| STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
| MA    |                    | 27        | 30           |

PROJECT FILE NO. 609250

**DRAINAGE & UTILITY PLAN**

N/F  
TRM LLC  
566 BOSTON ROAD - BILLERICA, MA  
DEED BK 28905 / PAGE 152

N/F  
JIM-DI REALTY TRUST  
566 BOSTON ROAD - BILLERICA, MA  
DEED BK 27276 / PAGE 223  
SEE PB 131 PG 168

SALTY TRUST  
BILLERICA, MA  
PAGE 183  
101

SALT BOX NURSERY REALTY TRUST  
562 BOSTON ROAD - BILLERICA, MA  
DEED BK 6326 / PAGE 183  
SEE PB 134 PG 147

**DRAINAGE STRUCTURE TABLE**

| NAME/TYPE | STATION   | OFFSET | RIM ELEV. | INV. ELEV. IN                            | INV. ELEV. OUT      | REMARKS   |
|-----------|-----------|--------|-----------|--|---------------------|---|
| CB-11     | 120+53.56 | 15.4 L | 194.08    | I=190.45' (GICI-11)                      | I=189.90' (DMH-6)   | FLAT TOP<br>CB W/ FRAME AND COVER                 |
| CB-15     | 121+90.46 | 20.5 L | 196.97    | I=193.60' (GICH-15)                      | I=193.50' (DMH-11)  | FLAT TOP<br>CB W/ FRAME AND COVER<br>OFFSET COVER |
| CIT-4     | 21+28.12  | 15.3 L | 207.24    | I=203.30' ± (EXIST)                      | I=203.30' ± (EXIST) | CHANGE-IN-TYPE                                    |
| CIT-8     | 122+14.14 | 24.2 R | 198.68    | I=194.30' (CBCI-14)<br>I=193.49' (EXIST) | I=192.14' (EXIST)   | CHANGE-IN-TYPE                                    |
| EX-CB-18  | 124+05.06 | 31.1 L | 205.06    | I=201.00' (GICI-18)                      | I=200.90' (EXIST)   | CB W/ FRAME AND COVER                             |

**DRAINAGE STRUCTURE TABLE**

| NAME/TYPE | STATION   | OFFSET | RIM ELEV. | INV. ELEV. IN        | INV. ELEV. OUT       | REMARKS                           |
|-----------|-----------|--------|-----------|----------------------|----------------------|-----------------------------------|
| CB-16     | 126+24.83 | 26.6 R | 217.80    | I=213.80' (DMH-16)   | I=213.80' (DMH-16)   | CB W/ FRAME AND COVER<br>FLAT TOP |
| CB-17     | 21+28.07  | 24.4 L | 207.33    | I=203.60' (GICI-30)  | I=203.60' (GICI-4)   | CB W/ FRAME AND COVER<br>FLAT TOP |
| CBCH-12   | 120+53.84 | 24.5 R | 194.48    | I=190.30' (DMH-6)    | I=190.30' (DMH-6)    | FLAT TOP                          |
| CBCH-14   | 121+97.57 | 25.5 R | 198.17    | I=194.50' (CIT-8)    | I=194.50' (CIT-8)    | FLAT TOP                          |
| CBCH-15   | 20+60.20  | 19.1 R | 203.33    | I=199.70' (DMH-18)   | I=199.70' (DMH-18)   | FLAT TOP                          |
| CBCH-19   | 125+04.54 | 17.0 R | 211.18    | I=207.50' (DMH-15)   | I=207.50' (DMH-15)   | FLAT TOP                          |
| CBCH-20   | 126+99.08 | 18.0 R | 219.90    | I=216.90' (DMH-17)   | I=216.90' (DMH-17)   | FLAT TOP                          |
| CBCH-22   | 128+95.11 | 20.2 R | 226.96    | I=223.30' (DMH-22)   | I=223.30' (DMH-22)   | FLAT TOP<br>OFFSET CB             |
| GICI-11   | 120+53.51 | 28.3 L | 193.75    | I=191.25' (CB-11)    | I=191.25' (CB-11)    | FLAT TOP                          |
| GICI-15   | 121+92.32 | 28.6 L | 196.70    | I=194.20' (CB-15)    | I=194.20' (CB-15)    | FLAT TOP                          |
| GICI-18   | 123+88.11 | 29.0 L | 203.83    | I=201.80' (EX-CB-18) | I=201.80' (EX-CB-18) | 4" FRAME<br>1 COURSE BRICK        |
| GICI-30   | 21+64.32  | 22.5 L | 209.10    | I=206.55' (CB-17)    | I=206.55' (CB-17)    | FLAT TOP                          |

**DRAINAGE STRUCTURE TABLE**

| NAME/TYPE | STATION   | OFFSET | RIM ELEV. | INV. ELEV. IN                             | INV. ELEV. OUT     | REMARKS                             |
|-----------|-----------|--------|-----------|---|--------------------|-------------------------------------|
| DMH-6     | 120+45.13 | 15.2 L | 193.95    | I=189.80' (CB-11)<br>I=190.00' (CBCI-12)  | I=189.70' (DMH-10) | FLAT TOP<br>BUILD ON EXIST<br>5 DIA |
| DMH-11    | 121+78.69 | 15.9 L | 196.83    | I=191.80' (EXIST)<br>I=192.80' (CB-15)    | I=191.75' (EXIST)  | BUILD ON EXIST<br>5 DIA             |
| DMH-14    | 122+03.28 | 11.4 R | 198.62    | I=192.05' (EXIST)<br>I=193.20' (DMH-122)  | I=192.00' (EXIST)  | BUILD ON EXIST<br>5 DIA             |
| DMH-15    | 125+00.31 | 10.4 R | 210.91    | I=207.40' (CBCI-19)<br>I=206.90' (DMH-16) | I=206.80' (DMH-19) | OFFSET COVER<br>FLAT TOP            |
| DMH-16    | 128+16.21 | 13.5 R | 216.52    | I=212.80' (DMH-17)<br>I=212.80' (CB-16)   | I=212.70' (DMH-15) | FLAT TOP                            |
| DMH-122   | 122+16.20 | 0.4 R  | 198.56    | I=193.75' (DMH-19)                        | I=193.65' (DMH-14) | FLAT TOP                            |

**DRAINAGE STRUCTURE TABLE**

| NAME/TYPE | STATION   | OFFSET | RIM ELEV. | INV. ELEV. IN  | INV. ELEV. OUT      | REMARKS        |
|-----------|-----------|--------|-----------|--|---------------------|----------------|
| DMH-17    | 126+94.86 | 5.8 R  | 219.94    | I=214.50' ± (EXIST)<br>I=216.80' (CBCI-20)<br>I=214.50' (DMH-22) | I=214.40' (DMH-16)  | BUILD ON EXIST |
| DMH-18    | 122+83.23 | 83.9 R | 202.45    | I=198.50' ± (EXIST)<br>I=198.60' (CBCI-15)                       | I=198.50' ± (EXIST) | BUILD ON EXIST |
| DMH-19    | 123+98.78 | 20.2 R | 206.25    | I=200.10' ± (EXIST)<br>I=200.10' (DMH-15)                        | I=200.00' (DMH-122) | BUILD ON EXIST |
| DMH-22    | 128+90.16 | 6.3 R  | 227.17    | I=223.20' (CBCI-22)<br>I=223.20' (DMH-23)                        | I=223.10' (DMH-17)  | BUILD ON EXIST |



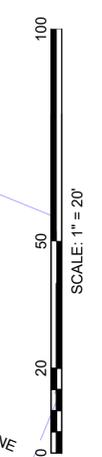
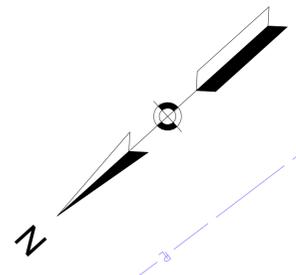
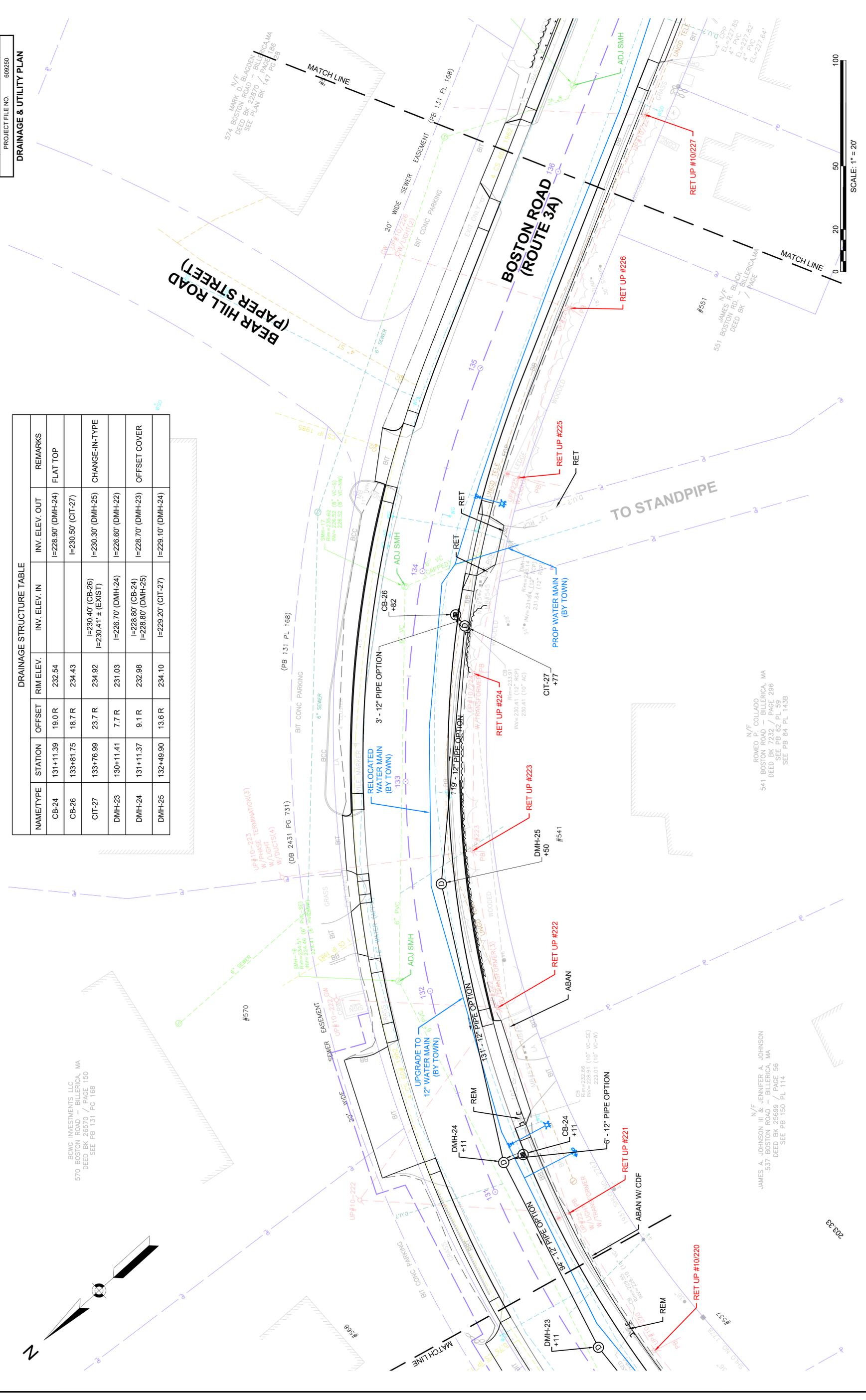
**BILLERICA  
BOSTON RD (ROUTE 3A)  
AT LEXINGTON RD & GLAD VALLEY DR**

|                         |                    |           |              |
|-------------------------|--------------------|-----------|--------------|
| STATE                   | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
| MA                      | -                  | 28        | 30           |
| PROJECT FILE NO. 609250 |                    |           |              |

**DRAINAGE & UTILITY PLAN**

**DRAINAGE STRUCTURE TABLE**

| NAME/TYPE | STATION   | OFFSET | RIM ELEV. | INV. ELEV. IN                            | INV. ELEV. OUT     | REMARKS        |
|-----------|-----------|--------|-----------|--|--------------------|----------------|
| CB-24     | 131+11.39 | 19.0 R | 232.54    | I=228.90' (DMH-24)                       | I=228.90' (DMH-24) | FLAT TOP       |
| CB-26     | 133+81.75 | 18.7 R | 234.43    | I=230.50' (CIT-27)                       | I=230.50' (CIT-27) |                |
| CIT-27    | 133+76.99 | 23.7 R | 234.92    | I=230.40' (CB-26)<br>I=230.41' ± (EXIST) | I=230.30' (DMH+25) | CHANGE-IN-TYPE |
| DMH-23    | 130+11.41 | 7.7 R  | 231.03    | I=226.70' (DMH-24)                       | I=226.60' (DMH-22) |                |
| DMH-24    | 131+11.37 | 9.1 R  | 232.98    | I=228.80' (CB-24)<br>I=228.80' (DMH-25)  | I=228.70' (DMH-23) | OFFSET COVER   |
| DMH-25    | 132+49.90 | 13.6 R | 234.10    | I=229.20' (CIT-27)                       | I=229.10' (DMH-24) |                |



BOWG INVESTMENTS LLC  
570 BOSTON ROAD - BILLERICA, MA  
DEED BK 26570 / PAGE 150  
SEE PB 131 PG 168

MARK D/V/F  
574 BOSTON ROAD - BILLERICA, MA  
DEED BK 22870 / PAGE 86  
SEE PLAN BK 147 PG 28

N/F  
ROMEO P. COLLADO  
541 BOSTON ROAD - BILLERICA, MA  
DEED BK 7232 / PAGE 286  
SEE PB 62 PL 59  
SEE PB 84 PL 143B

N/F  
JAMES A. JOHNSON III & JENNIFER A. JOHNSON  
537 BOSTON ROAD - BILLERICA, MA  
DEED BK 25699 / PAGE 56  
SEE PB 150 PL 114

202.33

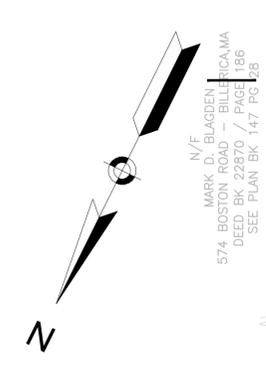
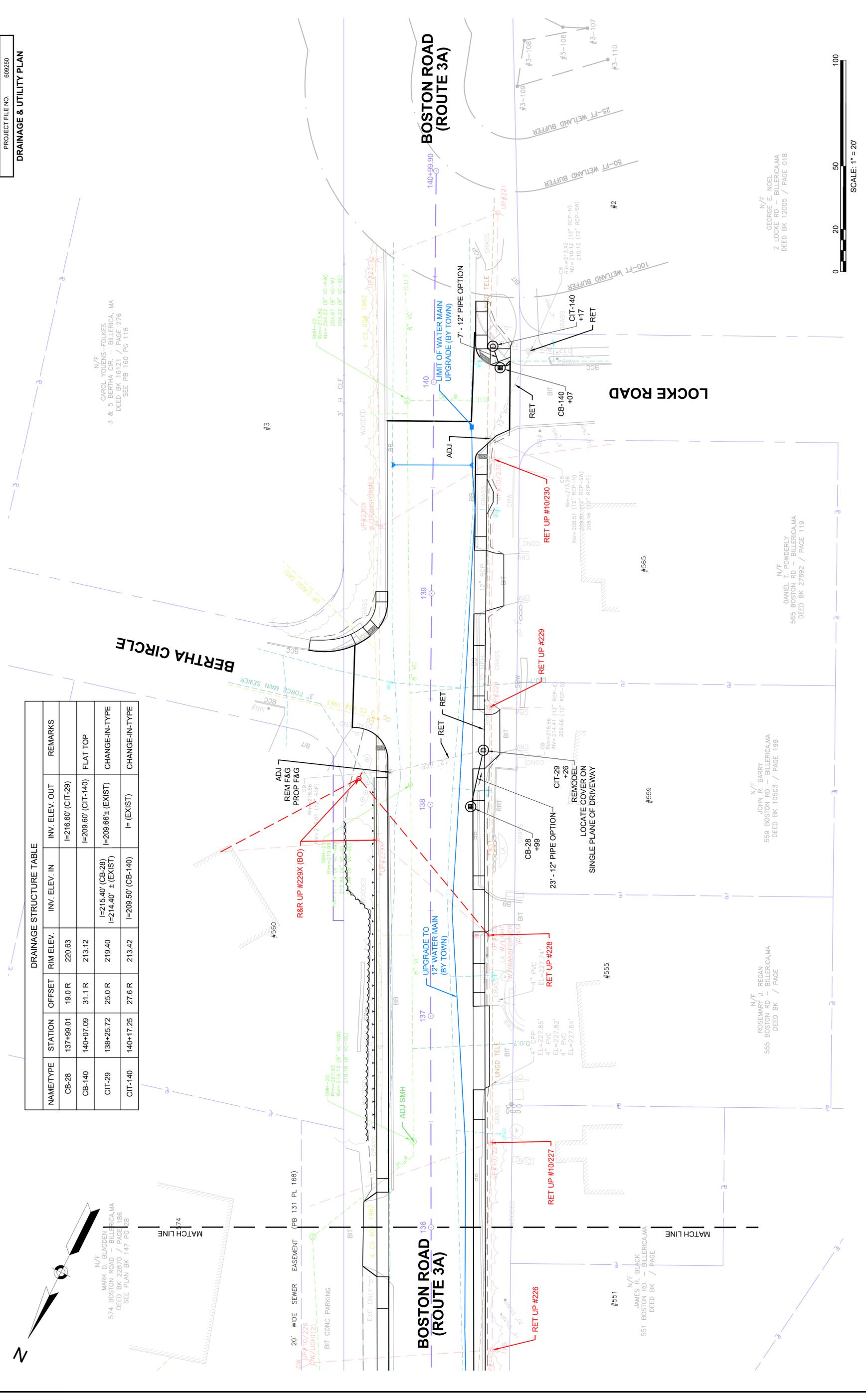
**BILLERICA  
BOSTON RD (ROUTE 3A)  
AT LEXINGTON RD & GLAD VALLEY DR**

|                         |                    |           |              |
|-------------------------|--------------------|-----------|--------------|
| STATE                   | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
| MA                      |                    | 29        | 30           |
| PROJECT FILE NO. 609250 |                    |           |              |

**DRAINAGE & UTILITY PLAN**

**DRAINAGE STRUCTURE TABLE**

| NAME/TYPE | STATION   | OFFSET | RIM ELEV. | INV. ELEV. IN                            | INV. ELEV. OUT      | REMARKS        |
|-----------|-----------|--------|-----------|--|---------------------|----------------|
| CB-28     | 137+99.01 | 19.0 R | 220.63    | I=216.60' (CIT-29)                       | I=216.60' (CIT-29)  |                |
| CB-140    | 140+07.09 | 31.1 R | 213.12    | I=209.60' (CIT-140)                      | I=209.60' (CIT-140) | FLAT TOP       |
| CIT-29    | 138+25.72 | 25.0 R | 219.40    | I=215.40' (CB-28)<br>I=214.40' ± (EXIST) | I=209.68± (EXIST)   | CHANGE-IN-TYPE |
| CIT-140   | 140+17.25 | 27.6 R | 213.42    | I=209.50' (CB-140)                       | I= (EXIST)          | CHANGE-IN-TYPE |



N/F  
CAROL YUENS-FOLKES  
3 & 5 BERTHA CIR. - BILLERICA, MA  
DEED BK 16121 / PAGE 276  
SEE PB 160 PG 118

N/F  
DANIEL T. POWDERLY  
565 BOSTON RD - BILLERICA, MA  
DEED BK 27692 / PAGE 119

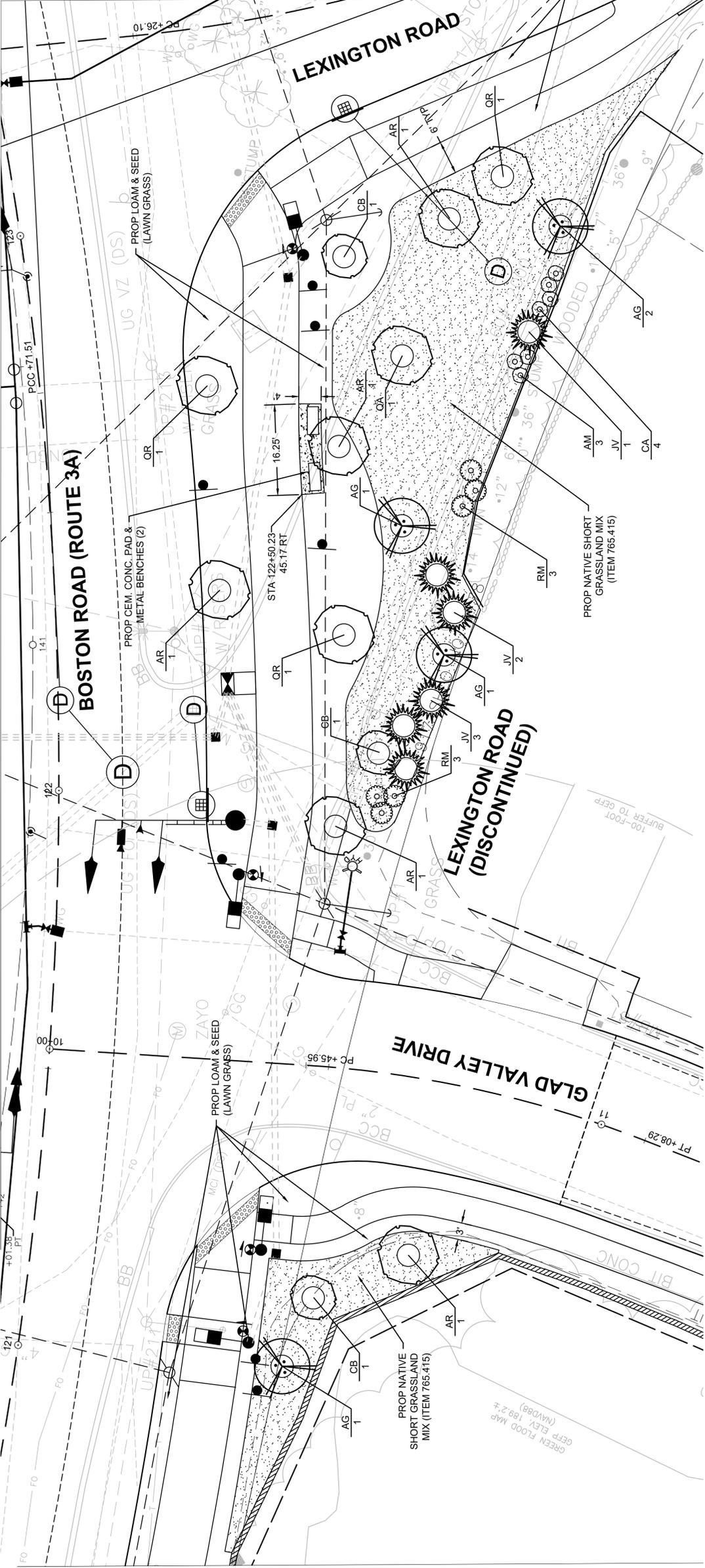
N/F  
JOHN R. BARRY  
559 BOSTON RD - BILLERICA, MA  
DEED BK 10503 / PAGE 198

N/F  
ROSEMARY J. REGAN  
555 BOSTON RD - BILLERICA, MA  
DEED BK / PAGE

N/F  
JAMES R. BLACK  
551 BOSTON RD. - BILLERICA, MA  
DEED BK / PAGE

BILLERICA  
 BOSTON RD (ROUTE 3A)  
 AT LEXINGTON RD & GLAD VALLEY DR

|                         |                    |                |              |
|-------------------------|--------------------|----------------|--------------|
| STATE                   | FED. AID PROJ. NO. | SHEET NO.      | TOTAL SHEETS |
| MA                      |                    | 30             | 30           |
| PROJECT FILE NO. 609250 |                    | LANDSCAPE PLAN |              |

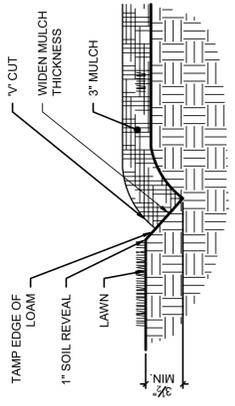


INTERSECTION PLANTING SITE PLAN



PLANT LIST - THIS SHEET

| KEY    | QTY | BOTANICAL NAME                                 | COMMON NAME                          | SIZE             | REMARKS |
|--------|-----|--|--------------------------------------|------------------|---------|
| TREES  |     |  |                                      |                  |         |
| AR     | 5   | Acer rubrum                                    | MAPLE - RED                          | 2-2.5' CAL       |         |
| AG     | 4   | Ameilanchier x grandiflora 'Autumn Brilliance' | SERVICEBERRY - AUTUMN BRILLIANCE     | 7-8 HGT          |         |
| CB     | 3   | Carpinus betulus 'Frans Fontain'               | HORNBEAM - COLUMNAR - FRANS FONTAINE | 2-2.5' CAL       |         |
| JV     | 6   | Juniperus virginiana                           | OAK - WHITE                          | 7-8' HGT         |         |
| OA     | 1   | Quercus alba                                   | OAK - WHITE                          | 2-2.5' CAL       |         |
| OR     | 3   | Quercus rubra                                  | OAK - NORTHERN RED                   | 2-2.5' CAL       |         |
| SHRUBS |     |  |                                      |                  |         |
| AM     | 3   | Aronia melanocarpa 'Viking'                    | CHOKEBERRY - BLACK                   | 2-3' / #3        |         |
| CA     | 4   | Clethra alnifolia 'Compacta'                   | SUMMERSWEET SHRUB - COMPACT          | 3-4' / #3        |         |
| RH     | 6   | Rhododendron maximum 'Roseum'                  | RHODO - ROSEBAY                      | 2-2.5 FT / 3 GAL |         |



NOTE:  
 LOCATE BEDLINE AS SHOWN ON PLAN.

BEDLINE EDGE  
 NOT TO SCALE

# **APPENDIX D – Billerica Variance Request**

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December 22, 2023

William Bulens, Chair  
Billerica Conservation Commission  
365 Boston Road  
Office #211  
Billerica, MA 01821

**Re: Variance Request - Intersection Improvements  
At Boston Road (Route 3A), Lexington Road, and Glad Valley Drive  
Billerica, Massachusetts**

Dear Mr. Bulens and Commissioners:

On behalf of the Town of Billerica, BETA Group, Inc. (BETA) is filing this Variance Request in support of the Notice of Intent submitted for the Intersection Improvements Project at Boston Road, Lexington Road and Glad Valley Drive in Billerica, MA (the Project). The Project, as proposed, will result in impacts to Areas Subject to Jurisdiction under the Town of Billerica Conservation Commission Wetlands Protection Regulations Article XXII and the Massachusetts Wetlands Protection Act and its Regulations at 310 CMR 10.00 (The Act).

Part Three of the Bylaw Regulations is intended to protect resource areas with Performance Standards, Section 3.01, Buffer Zones and Section 3.03. The nature of the roadway Project requires work within Areas Subject to Protection Under the Bylaw, including temporary impacts to Bank, Land Under Water, and BVW, as well as impacts to buffer zones. Proposed activities within these resource areas will meet performance standards to the extent practicable. Where the Project does not fully meet all the standards the design incorporates best management practices, provides additional facilities to improve water quality conditions on the site, applies protection to adjacent resource areas, and restores temporarily impacted areas at the completion of the Project.

Impacts to Buffer Zone will occur within previously disturbed and/or degraded roadside shoulders, as well as vegetated areas. Proposed impacts within the buffer zone include relocating the Lexington Road intersection, construction of a stormwater Best Management Practice (BMP), roadway repaving with hot mix asphalt (HMA), construction of concrete sidewalks with granite curbing, construction of a 10-foot wide shared use path, installation of new traffic signals, and vegetation clearing and pruning.

Due to the location of wetland resource areas and associated buffer zones, the Project design is unable to fully meet the Performance Standards of the Bylaw Regulations and still comply with MassDOT Design Standards and Directives. Therefore, BETA is submitting this Variance Request for relief from standard 3.03.C.3, a and b, of the Bylaw Regulations.

This Variance Request also includes a request for relief from Section 7.1, Notice of Filing, of the Bylaw, which requires notification of abutters within 300 feet of the Project property line. The Applicant requests the Commission allow notification to abutters within 100 feet of the Project property line.

The narrative below provides support of the variance requests.

**Performance Standards**

**Section 3.01. B. Performance Standards Common to All Areas Subject to Protection under the Bylaw**

December 22, 2023

Page 2 of 3

*1. The Commission shall not permit any activity, other than the maintenance of an already existing structure, that will result in the building within or upon, removing, filling, or otherwise altering an Area Subject to Protection Under the By-Law, except for an activity that the Commission allows under a By-Law Permit and, in appropriate circumstances, under a By-Law Determination of Applicability.*

The Project design includes minor temporary impacts to Bordering Vegetated Wetlands (BVW), Bank, and Land Under Water (LUW). Given the constraints of the existing roadway alignment, work within these resource areas is unavoidable. To meet the Healthy Transportation Policy Directive the Project will result in unavoidable impacts to resource areas associated with improved water quality conditions and accommodating utility pole relocation for sidewalk construction.

**Section 3.03 C. Performance Standard 3. No Alteration Zone**

*Section 3.03. C. 3. a. The Commission shall require, when any activity is proposed within the wetland buffer resource area (Buffer Zone) on previously undeveloped lots, or previously developed lots where an existing structure has been or is proposed to be razed, a continuous strip of at least fifty feet in width of undisturbed naturally occurring vegetation between the proposed activity and the wetland resource area.*

The Project site is located along a portion of Boston Road where the wetland resource areas closely abut the road. A continuous strip of at least fifty feet in width of undisturbed naturally occurring vegetation does not exist between the proposed activities and wetland resource areas. However, the Project includes restoration of disturbance and exposed soil by loaming and seeding with native seed mix at the completion of the work. Clearing within 50 feet of the WF1 Series wetland is proposed along Boston Road, from approximately Station 120+75 to 122+25 to install utility poles and traffic lights. This work is required to improve the function and safety of the Boston Road intersections with Glad Valley Drive and Lexington Road.

*Section 3.03 C. 3. b. The Commission shall require, when any activity is proposed within the wetland buffer resource area (Buffer Zone) on lots legally developed as of June 27, 2003 where there is a proposed alteration to an existing structure or a temporary alteration with restoration, a continuous strip of at least twenty-five feet (25ft) in width of naturally occurring vegetation between the proposed activity and the wetland resource.*

The location of adjacent wetland boundaries, within 25 feet of the paved surfaces, limits the ability of the Project to provide a “continuous 25-foot strip of naturally occurring vegetation” between proposed activities and wetlands. Project activities within 25-feet of a wetland resource will occur within previously disturbed areas of roadside shoulders where minimal or disturbed vegetative communities currently exist. The Project will leave a 25-foot strip of vegetation along wetlands where feasible and will restore temporarily impacted areas with native seed mixes. Clearing within 25 feet of the WF1 Series wetland is proposed along Boston Road, from approximately Station 121+10 to 122+25 to install utility poles and traffic lights. Similar to the work in the 50-foot buffer zone, this clearing is required to improve the function and safety of the Boston Road intersections with Glad Valley Drive and Lexington Road.

**Bylaw Section 7 - Administrative Hearing Process**

*Section 7.1 Notice of Filing requires notification of abutters within 300 feet of the project property line.*

The applicant requests relief from the requirement to notify abutters within 300 feet of a Project property. The Project corridor is approximately 2,650-foot in length and includes portions of two sides streets. Since the Project will occur within a roadway right-of-way (ROW), abutters to the ROW boundary will be notified. Given the length of the Project, notification of abutters within 300 feet of the roadway easement line would be costly and burdensome for the Town of Billerica, the applicant, and ultimately the taxpayer.



December 22, 2023

Page 3 of 3

BETA, with approval from the Billerica Conservation Agent, provided notification of direct Project abutters within 100 feet of the roadway easement and an extended length of 1,000 feet at each end of the Project corridor, as required for linear Projects under the Act at 310 CMR 10.05(4).

### Summary of Other Mitigation and Minimization Measures

The design and construction plans were developed to avoid, minimize, and mitigate impacts to wetland resources, buffer zones, wildlife habitat, and other environmentally sensitive areas to the extent practicable. Stormwater improvements include upgrades to the drainage infrastructure and additional pretreatment with deep sump catch basins and construction of a stormwater infiltration basin with a sediment forebay between Lexington Road and Glad Valley Drive.

Best Management Practices for erosion and sedimentation controls will be adhered to for all phases of construction to minimize erosion, sedimentation, and impacts to resource areas.

### Burden of Proof Summary

Since this Project will not fully meet Performance Standards in Section 3.01B, 3.03.C, or NOI notification requirements of the Bylaw, the Applicant requests variances to reduce the burden of 3.01.B.; 3.03.C.3.a.,b.; and Section 7.01. The information provided in this letter supports the Variance Requests criteria of Part 4, Section 4.02, A., as follows:

1. The Project will utilize erosion control BMPs between construction activities and the adjacent wetlands as well as restore degraded buffer zones to improve their ability in protecting the adjacent wetlands, therefore the Project will not result in a significant adverse effect on adjacent wetland values.
2. Given the site constraints, including the location of resource areas and residential development along the Project corridor, there are no practicable and substantially equivalent economic alternatives to the proposed Project with less adverse effects on the protected wetland values.
3. Given the length of the Project corridor, notifying abutters within 100 feet of the limit of work associated with the Project was decided to be suitable based approval by the Conservation Agent.

We trust this letter provides a preponderance of evidence for the Commission to grant variances from the requirements of the Bylaw and its Regulations. Should you have any additional questions, please do not hesitate to contact us.

Very truly yours,  
**BETA Group, Inc.**



Tyler Drew  
Staff Scientist



Laura Krause  
Project Manager

cc: Kelley Conway, P.E., Town of Billerica  
Darshan Jhaveri, P.E., BETA Group, Inc.  
MassDOT – Highway Division  
MassDEP Northeast Regional Office

Job No: 20.05958.00



DOCUMENT A00861

**MASSACHUSETTS**

**DEPARTMENT OF ENVIRONMENTAL PROTECTION**

**ORDER OF CONDITIONS**

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## Billerica Conservation Commission

TOWN HALL, 365 BOSTON ROAD  
BILLERICA, MASSACHUSETTS 01821  
TELEPHONE (978) 671-0966



*Via Hand Delivery*

January 31, 2024

Engineering Division/Billerica DPW  
365 Boston Road  
Billerica, MA 01821  
Attn: Kelley Conway, Town Engineer

Re: **Order of Conditions – MassDEP File No. 109-1551/BBL-1551**  
**Traffic and Safety Improvements - Boston Road (Route 3A) at Lexington Road**  
**& Glad Valley Drive – Billerica**

Dear Ms. Conway,

Enclosed please find the **ORIGINAL** signed Order of Conditions issued by the Billerica Conservation Commission for the above-referenced project. Please review this document carefully as it stipulates conditions on work that must be adhered to before, during and after completion of the project. **The Order, including Attachments A and B, must be recorded at the Middlesex North Registry of Deeds prior to commencing any work.**

Please feel free to contact me or Mike DeVito with any questions or concerns, thank you.

For the Commission,

A handwritten signature in black ink, appearing to read "Isabel S. Tourkantonis".

Isabel S. Tourkantonis, PWS  
Director of Environmental Affairs

cc: MA Department of Environmental Protection, NERO (eDEP)  
Billerica Board of Health  
File



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

Provided by MassDEP:  
 MassDEP File #:109-1551  
 eDEP Transaction  
 #:1668653  
 City/Town:BILLERICA

**A. General Information**

1. Conservation Commission BILLERICA

2. Issuance a.  OOC b.  Amended OOC

3. Applicant Details  
 a. First Name KELLEY b. Last Name CONWAY  
 c. Organization TOWN OF BILLERICA  
 d. Mailing Address 365 BOSTON ROAD  
 e. City/Town BILLERICA f. State MA g. Zip Code 01821

4. Property Owner  
 a. First Name KELLEY b. Last Name CONWAY  
 c. Organization TOWN OF BILLERICA  
 d. Mailing Address 365 BOSTON ROAD  
 e. City/Town BILLERICA f. State MA g. Zip Code 01821

5. Project Location  
 a. Street Address BOSTON RD (TOWER FARM RD TO LOCKE RD) & BOSTON RD AT LEXINGTON RD & GLAD VALLEY DR INTERSECTIONS  
 b. City/Town BILLERICA c. Zip Code 01821  
 d. Assessors Map/Plat# 70 e. Parcel/Lot#66-7  
 f. Latitude 42.54843N g. Longitude 71.26024W

6. Property recorded at the Registry of Deed for:  
 a. County b. Certificate c. Book d. Page  
 NORTHERN MIDDLESEX 34561 187

7. Dates  
 a. Date NOI Filed : 12/22/2023 b. Date Public Hearing Closed: 1/10/2024 c. Date Of Issuance: 1/31/2024

8. Final Approved Plans and Other Documents  
 a. Plan Title: BOSTON ROAD (ROUTE 3A) AT LEXINGTON ROAD & GLAD VALLEY DRIVE TRAFFIC AND SAFETY IMPROVEMENTS, BILLERICA MASSDOT - HIGHWAY DIVISION  
 b. Plan Prepared by: BETA GROUP  
 c. Plan Signed/Stamped by: MATTHEW J. CROWLEY CIVIL NO. 51325  
 d. Revised Final Date: 12/19/2023  
 e. Scale: AS SHOWN ON PLANS



**Massachusetts Department of Environmental Protection**

Bureau of Resource Protection - Wetlands

**WPA Form 5 - Order of Conditions**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File #:109-1551

eDEP Transaction #:1668653

City/Town:BILLERICA

**B. Findings**

**1. Findings pursuant to the Massachusetts Wetlands Protection Act**

Following the review of the the above-referenced Notice of Intent and based on the information provided in this application and presented at the public hearing, this Commission finds that the areas in which work is proposed is significant to the following interests of the Wetlands Protection Act.

Check all that apply:

|   |  |   |
|---|--|---|
| a. <input checked="" type="checkbox"/> Public Water Supply  | b. <input type="checkbox"/> Land Containing Shellfish          | c. <input checked="" type="checkbox"/> Prevention of Pollution        |
| d. <input checked="" type="checkbox"/> Private Water Supply | e. <input checked="" type="checkbox"/> Fisheries               | f. <input checked="" type="checkbox"/> Protection of Wildlife Habitat |
| g. <input checked="" type="checkbox"/> Ground Water Supply  | h. <input checked="" type="checkbox"/> Storm Damage Prevention | i. <input checked="" type="checkbox"/> Flood Control                  |

**2. Commission hereby finds the project, as proposed, is:**

**Approved subject to:**

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

**Denied because:**

b.  The proposed work cannot be conditioned to meet the performance standards set forth in the wetland regulations. Therefore, work on this project may not go forward unless and until a new Notice of Intent is submitted which provides measures which are adequate to protect interests of the Act, and a final Order of Conditions is issued. **A description of the performance standards which the proposed work cannot meet is attached to this Order.**

c.  The information submitted by the applicant is not sufficient to describe the site, the work or the effect of the work on the interests identified in the Wetlands Protection Act. Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides sufficient information and includes measures which are adequate to protect the interests of the Act, and a final Order of Conditions is issued. **A description of the specific information which is lacking and why it is necessary is attached to this Order as per 310 CMR 10.05(6)(c).**

3.  Buffer Zone Impacts: Shortest distance between limit of project disturbance and the wetland resource area specified in 310CMR10.02(1)(a).

                      
a. linear feet

| <b>Inland Resource Area Impacts:(For Approvals Only):</b>                   |                              |                              |                              |                              |
|---|------------------------------|------------------------------|------------------------------|------------------------------|
| Resource Area   | Proposed Alteration          | Permitted Alteration         | Proposed Replacement         | Permitted Replacement        |
| 4. <input checked="" type="checkbox"/> Bank                                 | <u>10</u><br>a. linear feet  | <u>10</u><br>b. linear feet  | <u>10</u><br>c. linear feet  | <u>10</u><br>d. linear feet  |
| 5. <input checked="" type="checkbox"/> Bordering Vegetated Wetland          | <u>245</u><br>a. square feet | <u>245</u><br>b. square feet | <u>245</u><br>c. square feet | <u>245</u><br>d. square feet |
| 6. <input checked="" type="checkbox"/> Land under Waterbodies and Waterways | <u>12</u><br>a. square feet  | <u>12</u><br>b. square feet  | <u>12</u><br>c. square feet  | <u>12</u><br>d. square feet  |



**Massachusetts Department of Environmental Protection**

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|  |                   |                   |                |                |
|--|-------------------|-------------------|----------------|----------------|
|  | 0                 |                   |                |                |
|  | e. c/y dredged    | f. c/y dredged    |                |                |
| 7. <input type="checkbox"/> Bordering Land Subject to Flooding | a. square feet    | b. square feet    | c. square feet | d. square feet |
| Cubic Feet Flood Storage                                       | e. cubic feet     | f. cubic feet     | g. cubic feet  | h. cubic feet  |
| 8. <input type="checkbox"/> Isolated Land Subject to Flooding  | a. square feet    | b. square feet    |                |                |
| Cubic Feet Flood Storage                                       | c. cubic feet     | d. cubic feet     | e. cubic feet  | f. cubic feet  |
| 9. <input type="checkbox"/> Riverfront Area                    |                   |                   |                |                |
| Sq ft within 100 ft  | a. total sq. feet | b. total sq. feet |                |                |
| Sq ft between 100-200 ft                                       | c. square feet    | d. square feet    | e. square feet | f. square feet |
|  | g. square feet    | h. square feet    | i. square feet | j. square feet |

**Coastal Resource Area Impacts:**

| Resource Area  | Proposed Alteration  | Permitted Alteration | Proposed Replacement | Permitted Replacement |
|--|--|----------------------|----------------------|-----------------------|
| 10. <input type="checkbox"/> Designated Port Areas     | Indicate size under Land Under the Ocean, below                |                      |                      |                       |
| 11. <input type="checkbox"/> Land Under the Ocean      | a. square feet   | b. square feet       |                      |                       |
|  | c. c/y dredged   | d. c/y dredged       |                      |                       |
| 12. <input type="checkbox"/> Barrier Beaches           | Indicate size under Coastal Beaches and/or Coastal Dunes below |                      |                      |                       |
| 13. <input type="checkbox"/> Coastal Beaches           | a. square feet   | b. square feet       | c. c/y nourishment   | d. c/y nourishment    |
| 14. <input type="checkbox"/> Coastal Dunes             | a. square feet   | b. square feet       | c. c/y nourishment   | d. c/y nourishment    |
| 15. <input type="checkbox"/> Coastal Banks             | a. linear feet   | b. linear feet       |                      |                       |
| 16. <input type="checkbox"/> Rocky Intertidal Shores   | a. square feet   | b. square feet       |                      |                       |
| 17. <input type="checkbox"/> Salt Marshes              | a. square feet   | b. square feet       | c. square feet       | d. square feet        |
| 18. <input type="checkbox"/> Land Under Salt Ponds     | a. square feet   | b. square feet       |                      |                       |
|  | c. c/y dredged   | d. c/y dredged       |                      |                       |
| 19. <input type="checkbox"/> Land Containing Shellfish |  |                      |                      |                       |



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20.  Fish Runs  
a. square feet b. square feet c. square feet d. square feet  
Indicate size under Coastal Banks, inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above

21.  Land Subject to Coastal Storm Flowage  
c. c/y dredged d. c/y dredged  
a. square feet b. square feet

22.  Restoration/Enhancement (For Approvals Only)  
If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.5.c & d or B.17.c & d above, please entered the additional amount here.

a. square feet of BVW b. square feet of Salt Marsh

23.  Streams Crossing(s)  
If the project involves Stream Crossings, please enter the number of new stream crossings/number of replacement stream crossings.

a. number of new stream crossings b. number of replacement stream crossings

**C. General Conditions Under Massachusetts Wetlands Protection Act**

The following conditions are only applicable to Approved projects

1. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this Order.
2. The Order does not grant any property rights or any exclusive privileges; it does not authorize any injury to private property or invasion of private rights.
3. This Order does not relieve the permittee or any other person of the necessity of complying with all other applicable federal, state, or local statutes, ordinances, bylaws, or regulations.
4. The work authorized hereunder shall be completed within three years from the date of this Order unless either of the following apply:
  - a. the work is a maintenance dredging project as provided for in the Act; or
  - b. the time for completion has been extended to a specified date more than three years, but less than five years, from the date of issuance. If this Order is intended to be valid for more than three years, the extension date and the special circumstances warranting the extended time period are set forth as a special condition in this Order.
5. This Order may be extended by the issuing authority for one or more periods of up to three years each upon application to the issuing authority at least 30 days prior to the expiration date of the Order.
6. If this Order constitutes an Amended Order of Conditions, this Amended Order of Conditions does not exceed the issuance date of the original Final Order of Conditions.
7. Any fill used in connection with this project shall be clean fill. Any fill shall contain no trash, refuse, rubbish, or debris, including but not limited to lumber, bricks, plaster, wire, lath, paper, cardboard, pipe, tires, ashes, refrigerators, motor vehicles, or parts of any of the foregoing.
8. This Order is not final until all administrative appeal periods from this Order have elapsed, or if such an appeal



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- has been taken, until all proceedings before the Department have been completed.
9. No work shall be undertaken until the Order has become final and then has been recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land upon which the proposed work is to be done. In the case of the registered land, the Final Order shall also be noted on the Land Court Certificate of Title of the owner of the land upon which the proposed work is done. The recording information shall be submitted to the Conservation Commission on the form at the end of this Order, which form must be stamped by the Registry of Deeds, prior to the commencement of work..
  10. A sign shall be displayed at the site not less than two square feet or more than three square feet in size bearing the words,
 

" Massachusetts Department of Environmental Protection"  
 [or "MassDEP"]  
 File Number : "109-1551"
  11. Where the Department of Environmental Protection is requested to issue a Superseding Order, the Conservation Commission shall be a party to all agency proceedings and hearings before Mass DEP.
  12. Upon completion of the work described herein, the applicant shall submit a Request for Certificate of Compliance (WPA Form 8A) to the Conservation Commission.
  13. The work shall conform to the plans and special conditions referenced in this order.
  14. Any change to the plans identified in Condition #13 above shall require the applicant to inquire of the Conservation Commission in writing whether the change is significant enough to require the filing of a new Notice of Intent.
  15. The Agent or members of the Conservation Commission and the Department of Environmental Protection shall have the right to enter and inspect the area subject to this Order at reasonable hours to evaluate compliance with the conditions stated in this Order, and may require the submittal of any data deemed necessary by the Conservation Commission or Department for that evaluation.
  16. This Order of Conditions shall apply to any successor in interest or successor in control of the property subject to this Order and to any contractor or other person performing work conditioned by this Order.
  17. Prior to the start of work, and if the project involves work adjacent to a Bordering Vegetated Wetland, the boundary of the wetland in the vicinity of the proposed work area shall be marked by wooden stakes or flagging. Once in place, the wetland boundary markers shall be maintained until a Certificate of Compliance has been issued by the Conservation Commission.
  18. All sedimentation barriers shall be maintained in good repair until all disturbed areas have been fully stabilized with vegetation or other means. At no time shall sediments be deposited in a wetland or water body. During construction, the applicant or his/her designee shall inspect the erosion controls on a daily basis and shall remove accumulated sediments as needed. The applicant shall immediately control any erosion problems that occur at the site and shall also immediately notify the Conservation Commission, which reserves the right to require additional erosion and/or damage prevention controls it may deem necessary. Sedimentation barriers shall serve as the limit of work unless another limit of work line has been approved by this Order.

**NOTICE OF STORMWATER CONTROL AND MAINTENANCE REQUIREMENTS**

19. The work associated with this Order (the "Project") is (1)  is not (2)  subject to the Massachusetts Stormwater Standards. If the work is subject to Stormwater Standards, then the project is subject to the following conditions;
  - a) All work, including site preparation, land disturbance, construction and redevelopment, shall be implemented in accordance with the construction period pollution prevention and erosion and sedimentation control plan and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollutant Discharge Elimination System Construction General Permit as required by Stormwater Standard 8. Construction period



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erosion, sedimentation and pollution control measures and best management practices (BMPs) shall remain in place until the site is fully stabilized.

- b) No stormwater runoff may be discharged to the post-construction stormwater BMPs unless and until a Registered Professional Engineer provides a Certification that: *i.* all construction period BMPs have been removed or will be removed by a date certain specified in the Certification. For any construction period BMPs intended to be converted to post construction operation for stormwater attenuation, recharge, and/or treatment, the conversion is allowed by the MassDEP Stormwater Handbook BMP specifications and that the BMP has been properly cleaned or prepared for post construction operation, including removal of all construction period sediment trapped in inlet and outlet control structures; *ii.* as-built final construction BMP plans are included, signed and stamped by a Registered Professional Engineer, certifying the site is fully stabilized; *iii.* any illicit discharges to the stormwater management system have been removed, as per the requirements of Stormwater Standard 10; *iv.* all post-construction stormwater BMPs are installed in accordance with the plans (including all planting plans) approved by the issuing authority, and have been inspected to ensure that they are not damaged and that they are in proper working condition; *v.* any vegetation associated with post-construction BMPs is suitably established to withstand erosion.
- c) The landowner is responsible for BMP maintenance until the issuing authority is notified that another party has legally assumed responsibility for BMP maintenance. Prior to requesting a Certificate of Compliance, or Partial Certificate of Compliance, the responsible party (defined in General Condition 19(e)) shall execute and submit to the issuing authority an Operation and Maintenance Compliance Statement ("O&M Statement") for the Stormwater BMPs identifying the party responsible for implementing the stormwater BMP Operation and Maintenance Plan ("O&M Plan") and certifying the following: *i.*) the O&M Plan is complete and will be implemented upon receipt of the Certificate of Compliance, and *ii.*) the future responsible parties shall be notified in writing of their ongoing legal responsibility to operate and maintain the stormwater management BMPs and implement the Stormwater Pollution Prevention Plan.
- d) Post-construction pollution prevention and source control shall be implemented in accordance with the long-term pollution prevention plan section of the approved Stormwater Report and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollutant Discharge Elimination System Multi-Sector General Permit.
- e) Unless and until another party accepts responsibility, the landowner, or owner of any drainage easement, assumes responsibility for maintaining each BMP. To overcome this presumption, the landowner of the property must submit to the issuing authority a legally binding agreement of record, acceptable to the issuing authority, evidencing that another entity has accepted responsibility for maintaining the BMP, and that the proposed responsible party shall be treated as a permittee for purposes of implementing the requirements of Conditions 19(f) through 19(k) with respect to that BMP. Any failure of the proposed responsible party to implement the requirements of Conditions 19(f) through 19(k) with respect to that BMP shall be a violation of the Order of Conditions or Certificate of Compliance. In the case of stormwater BMPs that are serving more than one lot, the legally binding agreement shall also identify the lots that will be serviced by the stormwater BMPs. A plan and easement deed that grants the responsible party access to perform the required operation and maintenance must be submitted along with the legally binding agreement.
- f) The responsible party shall operate and maintain all stormwater BMPs in accordance with the design plans, the O&M Plan, and the requirements of the Massachusetts Stormwater Handbook.
- g) The responsible party shall:
  - 1. Maintain an operation and maintenance log for the last three (3) consecutive calendar years of inspections, repairs, maintenance and/or replacement of the stormwater management system or any part thereof, and disposal (for disposal the log shall indicate the type of material and the disposal location);
  - 2. Make the maintenance log available to MassDEP and the Conservation Commission ("Commission")



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upon request; and

3. Allow members and agents of the MassDEP and the Commission to enter and inspect the site to evaluate and ensure that the responsible party is in compliance with the requirements for each BMP established in the O&M Plan approved by the issuing authority.

- h) All sediment or other contaminants removed from stormwater BMPs shall be disposed of in accordance with all applicable federal, state, and local laws and regulations.
- i) Illicit discharges to the stormwater management system as defined in 310 CMR 10.04 are prohibited.
- j) The stormwater management system approved in the Order of Conditions shall not be changed without the prior written approval of the issuing authority.
- k) Areas designated as qualifying pervious areas for the purpose of the Low Impact Site Design Credit (as defined in the MassDEP Stormwater Handbook, Volume 3, Chapter 1, Low Impact Development Site Design Credits) shall not be altered without the prior written approval of the issuing authority.
- l) Access for maintenance, repair, and/or replacement of BMPs shall not be withheld. Any fencing constructed around stormwater BMPs shall include access gates and shall be at least six inches above grade to allow for wildlife passage.

**Special Conditions:**

SEE ATTACHED ATTACHMENT A FOR SPECIAL CONDITIONS ADOPTED UNDER BOTH THE MASSACHUSETTS WETLANDS PROTECTION ACT AND/OR TOWN OF BILLERICA WETLANDS PROTECTION BYLAW.



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**D. Findings Under Municipal Wetlands Bylaw or Ordinance**

1. Is a municipal wetlands bylaw or ordinance applicable?  Yes  No

2. The Conservation Commission hereby (check one that applies):

a.  DENIES the proposed work which cannot be conditioned to meet the standards set forth in a municipal ordinance or bylaw specifically:

1. Municipal Ordinance or Bylaw \_\_\_\_\_

2. Citation \_\_\_\_\_

Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides measures which are adequate to meet these standards, and a final Order of Conditions is issued. Which are necessary to comply with a municipal ordinance or bylaw:

b.  APPROVES the proposed work, subject to the following additional conditions.

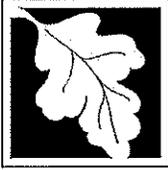
1. Municipal Ordinance or Bylaw BILLERICA WETLANDS PROTECTION BYLAW

2. Citation XXII

3. The Commission orders that all work shall be performed in accordance with the following conditions and with the Notice of Intent referenced above. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, the conditions shall control.

The special conditions relating to municipal ordinance or bylaw are as follows:

SEE ATTACHED ATTACHMENT A FOR SPECIAL CONDITIONS ADOPTED UNDER BOTH THE MASSACHUSETTS WETLANDS PROTECTION ACT AND/OR TOWN OF BILLERICA WETLANDS PROTECTION BYLAW.



Massachusetts Department of Environmental Protection  
Bureau of Resource Protection - Wetlands  
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1668653  
eDEP Transaction #  
Billerica  
City/Town

**E. Signatures**

This Order is valid for three years, unless otherwise specified as a special condition pursuant to General Conditions #4, from the date of issuance.

1/31/2024  
1. Date of Issuance

Please indicate the number of members who will sign this form.

4  
2. Number of Signers

This Order must be signed by a majority of the Conservation Commission.

The Order must be mailed by certified mail (return receipt requested) or hand delivered to the applicant. A copy also must be mailed or hand delivered at the same time to the appropriate Department of Environmental Protection Regional Office, if not filing electronically, and the property owner, if different from applicant.

|                                    |                                       |
|------------------------------------|---------------------------------------|
| <u>[Signature]</u><br>Signature    | <u>JEFF CONNELL</u><br>Printed Name   |
| <u>Jack Bowen</u><br>Signature     | <u>JACK BOWEN</u><br>Printed Name     |
| <u>Paul Hayes</u><br>Signature     | <u>PAUL J. HAYES</u><br>Printed Name  |
| <u>William Bulews</u><br>Signature | <u>WILLIAM BULEWS</u><br>Printed Name |
| _____<br>Signature                 | _____<br>Printed Name                 |
| _____<br>Signature                 | _____<br>Printed Name                 |
| _____<br>Signature                 | _____<br>Printed Name                 |
| _____<br>Signature                 | _____<br>Printed Name                 |

by hand delivery on  
1/31/2024  
Date

by certified mail, return receipt requested, on  
\_\_\_\_\_  
Date



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**E. Signatures**

This Order is valid for three years from the date of issuance, unless otherwise specified pursuant to General Condition #4. If this is an Amended Order of Conditions, the Amended Order expires on the same date as the original Order of Conditions.

1/31/2024  
 1. Date of Original Order

Please indicate the number of members who will sign this form. This Order must be signed by a majority of the Conservation Commission.

4  
 2. Number of Signers

The Order must be mailed by certified mail (return receipt requested) or hand delivered to the applicant. A copy also must be mailed or hand delivered at the same time to the appropriate Department of Environmental Protection Regional Office, if not filing electronically, and the property owner, if different from applicant.

Signatures:

Paul Hayes

Jack Bowen

William Bulens

by hand delivery on

Date

Jeff Connell

by certified mail, return receipt requested, on

Date

**F. Appeals**

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land subject to this Order, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate MassDEP Regional Office to issue a Superseding Order of Conditions. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and a completed Request for Departmental Action Fee Transmittal Form, as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

Any appellants seeking to appeal the Department's Superseding Order associated with this appeal will be required to demonstrate prior participation in the review of this project. Previous participation in the permit proceeding means the submission of written information to the Conservation Commission prior to the close of the public hearing, requesting a Superseding Order, or providing written information to the Department prior to issuance of a Superseding Order.

The request shall state clearly and concisely the objections to the Order which is being appealed and how the Order does not contribute to the protection of the interests identified in the Massachusetts Wetlands Protection Act (M.G.L. c. 131, § 40), and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal ordinance or bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.

**G. Recording Information**

This Order of Conditions must be recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land subject to the Order. In the case of registered land, this Order shall also be noted on the Land Court Certificate of Title of the owner of the land



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subject to the Order of Conditions. The recording information on this page shall be submitted to the Conservation Commission listed below.

BILLERICA  
Conservation Commission

Detach on dotted line, have stamped by the Registry of Deeds and submit to the Conservation Commission.

To:  
BILLERICA  
Conservation Commission

Please be advised that the Order of Conditions for the Project at:

BOSTON RD (TOWER FARM RD TO LOCKE RD) &  
BOSTON RD AT LEXINGTON RD & GLAD VALLEY  
DR INTERSECTIONS 109-1551  
Project Location MassDEP File Number

Has been recorded at the Registry of Deeds of:

County Book Page  
for: Property Owner KELLEY CONWAY

and has been noted in the chain of title of the affected property in:

Book Page

In accordance with the Order of Conditions issued on:

Date

If recorded land, the instrument number identifying this transaction is:

Instrument Number

If registered land, the document number identifying this transaction is:

Document Number

Signature of Applicant

Rev. 4/1/2010

Unless otherwise specified, all findings, documents of record and conditions included in this “Attachment A” are applicable under both the Massachusetts Wetlands Protection Act and/or Town of Billerica Wetlands Protection Bylaw.

## **FINDINGS**

A. The work permitted under this Order of Conditions is part of the *Boston Road (Route3A) at Lexington Road and Glad Valley Drive Traffic and Safety Improvements Project* proposed by the Town of Billerica under the Massachusetts Department of Transportation’s Healthy Transportation Policy Directive. Improvements are proposed to address deficient conditions associated with unsafe intersection conditions, deteriorating sidewalk pavement and the lack of continuous pedestrian and bicycle accommodations. The project includes roadway improvements along an approximately 3,840-foot (0.7 miles) stretch of Boston Road from Tower Farm Road to Locke Road and realigning the Glad Valley Drive and Lexington Road intersections.

Roadway and intersection improvements are described in the Notice of Intent narrative and are summarized below:

- Milling and overlay of Boston Road and side streets within the existing footprint of the road and full depth roadway reconstruction and widening of Boston Road.
- Reconstruct sidewalks including constructing 5-foot-wide cement concrete sidewalks along both sides of Boston Road for the majority of the project corridor with new concrete wheelchair ramps meeting ADA requirements.
- Construct a 10-foot wide shared-use path along the west side of Boston Road from Station 116+80 to Station 124+00.
- Realign the intersection of Glad Valley Drive and Lexington Road with Boston Road, including installation of right and left turn-only lanes and new traffic signals.
- Discontinue/remove the existing connection between Lexington Road and Glad Valley Drive.
- Provide new pavement markings and signs.
- Provide 5-foot buffered bicycle lanes on Boston Road along the project corridor to meet MassDOT’s Healthy Transportation Policy guidelines for bicycle accommodations.
- Replacement of the drainpipe and outfall located 558 Boston Road.
- Replacement of the headwall associated with the unnamed intermittent stream located on the parcel between property numbers 558 and 562 Boston Road.
- Improve and upgrade the existing drainage system and structures, as necessary to address drainage concerns and implement proposed improvements. Improvements include installing deep sump catch basins and providing qualifying pervious area.

- B. The Conservation Commission finds that the following Wetlands Resource Areas protected under the Massachusetts Wetlands Protection Act and/or Town of Billerica Wetlands Protection Bylaw are located within or near the project corridor:
- a. Bordering Vegetated Wetlands (BVW)
  - b. Bank (intermittent stream)
  - c. Land under Waterbodies and Waterways (LUW) (intermittent stream)
  - d. Bordering Land Subject to Flooding (BLSF) (local Bylaw Green Engineering Floodplain)
  - e. Buffer Zone
- C. The Conservation Commission finds that wetlands resources associated with the project corridor are correctly identified on the Plan of Record and correctly demarcated in the field.
- D. One section of the project corridor (area generally between 544 Boston Road and 562 Boston Road) is located adjacent to Wetland Resource Areas. Although the project primarily involves improvements and construction within the existing Right-of-Way for Boston Road, Lexington Road, and Glad Valley Dive; the Conservation Commission finds that the project will temporarily alter approximately 245 square feet of Bordering Vegetated Wetland, 10 linear feet of Bank and 12 square feet Land under Waterbodies and Waterways. The temporary impacts to BVW are associated with installation of sediment controls, replacement of an existing outfall located at 558 Boston Road, and minor clearing required for installation of utility line guy wire. The replacement outfall will be pulled back and located upgradient from the existing outfall with a riprap sediment trap outside BVW. Temporarily impacted BVW will be restored with a wetland seed mix and per the Plan of Record.

Temporary impacts to Bank and LUW are associated with the installation of sediment control barrier and replacement of the outfall between Boston Road and an intermittent stream. The replacement headwall will be placed upgradient from the current location, and a riprap sediment trap will be installed at the discharge point. Temporarily impacted streambed will be restored with native streambed materials and Bank restored and stabilized per the Plan of Record.

Bordering Vegetated Wetland, Bank and Land under Waterbodies are significant to the protection of wetland values. Temporarily impacted wetland resource areas will be restored and stabilized per the Plan of Record. The Conservation Commission finds that the design includes required measures to mitigate temporary and unavoidable impacts to resource areas. Furthermore, the Commission finds the project is conditioned herein to comply with the applicable performance standards and protect the interests of the Act and/or Bylaw.

- E. The Conservation Commission the project is filed as a Limited Project under 310 CMR 10.53(3)(d): *the construction, operation, and maintenance of underground and overhead public utilities, such as electrical distribution or transmission lines, or communication, sewer, water* and 310 CMR 10.53(3)(f): *maintenance and improvement of existing public roadways, but limited to widening less than a single lane, adding shoulders, correcting*

*substandard intersections, and improving inadequate drainage systems*; however the project has been designed to meet applicable performance standards established under the Act and Bylaw. As designed and conditioned herein, the project shall not result in permanent impacts to wetland resource areas.

- F. A Stormwater Checklist and Stormwater Report addressing project compliance with the Massachusetts Stormwater Management Standards were submitted with the Notice of Intent. As described in the Stormwater Report, the project is classified as a redevelopment under “*Maintenance and improvement of existing roadways, including widening less than a single lane, adding shoulders, correcting substandard intersections, improvement existing drainage systems and repaving.*” Based on the information presented during review, the Conservation Commission agrees that the project corridor has significant right-of-way constraints; utility conflicts; presence of private, commercial, and residential features; and soils with limited infiltration capacity and high groundwater which severely restricts the opportunity to install substantial Stormwater Control Measures (SCMs). The project will improve the quality of stormwater discharge by replacing and/or retrofitting existing catch basins with deep sump and hood catch basins throughout the project corridor. Additionally, a portion of the proposed shared use path will be directed to the qualifying pervious area to be created between Boston Road, Glad Valley Drive and Lexington Road. The Conservation Commission finds that the project will improve the quality of stormwater runoff and discharges compared to existing site conditions.
- G. The Conservation Commission grants a variance to Section 3.03.C.3(b) “No Alteration Zone” as work within the overlapping No Alteration Zone (inner 25’ buffer zone setback) is unavoidable. Work will generally be confined to the footprint of existing paved roadways. The limit of work areas will be defined with sediment controls and disturbed roadway shoulders shall be properly stabilized with loam and seed.
- H. The Conservation Commission grants a Variance from Sections 3.01 and 3.03.C.3 (a and b) to allow temporary work within wetland resource areas to replace an outfall and headwall and Section 2.04.B(3) “Notification of Abutters” of the Billerica Wetlands Protection Bylaw Regulations allowing abutter notification for the linear project to be consistent with the abutter notification requirements established under the Massachusetts Wetlands Protection Act.
- I. The Conservation Commission finds that the proposed project must comply with all general and special conditions included on WPA Form 5 and in this “Attachment A” to protect the interests of the Act and/or Bylaw.

**DOCUMENTS OF RECORD:**

- Notice of Intent Application with various attachments including Bylaw Variance Requests, and Stormwater Report and Checklist for the Intersection Improvements at Boston Road (Route 3A), Lexington Road, and Glad Valley Drive Project, Billerica, MA; Prepared by: BETA Group, Inc.; Date: December 22, 2023.
- Notice of Intent attachment: Appendix B – Stormwater Management Report and Checklist for the Boston Road (Route 3A) at Lexington Road and Glad Valley Drive Project with supporting narrative and calculations, Construction Period Pollution Prevention and Erosion and Sediment Control Plan, Stormwater Management System Operation and Maintenance Plan, and Long-Term Pollution Prevention Plan, Billerica, MA; Prepared by BETA Group, Inc.; Date: December 2023.
- **Plan of Record (30 Sheets):** “*Boston Road (Route 3A) at Lexington Road & Glad Valley Drive Traffic and Safety Improvements*, Billerica, MA;” Prepared by: BETA Group, Inc.; Signed and stamped by: Matthew J. Crowley, P.E. Civil No. 51325; Date: August 26, 2022; **Revised December 19, 2023** Scale: As Shown on Plans; See list below:
  - Sheet 1: Title Sheet & Index
  - Sheet 2: Legend & Abbreviations
  - Sheet 3: Key Plan & Boring Log
  - Sheet 4: Typical Sections & Pavement Notes
  - Sheet 5: Typical Sections
  - Sheet 6: General Notes
  - Sheets 7-13: Construction Details
  - Sheets 14-21: Construction Plan
  - Sheets 12-29: Drainage & Utility Plan
  - Sheet 30: Landscape Plan

**PRELIMINARY CONDITIONS:**

20. The “Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan and Stormwater Management Operation and Maintenance Plan” referenced in the Documents of Record above are included as Attachment B. **The Order, including Attachment B, shall be recorded at the Registry of Deeds per General Condition No. 9.**
21. A copy of this Order of Conditions, approved construction plans, and specifications shall be kept on site upon commencement of any work for contractors to view and comply with. It shall be the responsibility of the Applicant, owners of the property, and any successor(s) in title to inform all contractors and subcontractors of the applicable conditions and provisions of this Order concerning their work.
22. Any departures from, or changes made to the plans and other Documents of Record, specifications and submitted data, other than that described in this Order of Conditions shall be approved in writing by the Billerica Conservation Commission prior to implementation. Where the Commission deems that a change is major or substantial, a new public hearing

may be required. All work shall otherwise comply with plans and documents listed as “Documents of Record” in this Attachment A.

23. The Applicant, his site engineer or the general contractor for this project shall notify the Conservation Commission or its agent(s) at least 24 hours in advance of specific times when work will begin in any area covered by this Order of Conditions.
24. Members, agents, and subcontractors of the Billerica Conservation Commission shall have the right to enter and inspect the premises, evaluate, and ensure compliance with the conditions and the performance standards stated in this Order during construction and after final certification of this project. Also, the Conservation Commission Director and/or the Conservation Assistant shall represent the Commission and act as its representative on the construction site in the absence of a Commission member. Said agent may acquire any information, measurements, photographs, observation and/or materials or may require the submittal of any data or information deemed reasonable by this Commission for that evaluation.
25. If unforeseen problems occur during and after construction and certification which affect the statutory interests of the Wetlands Protection Act or the Billerica Wetlands Protection By-law, then upon discovery, the Billerica Conservation Commission shall notify the Applicant or their successor in interest immediately. After notification, a meeting shall be held between the Billerica Conservation Commission, the Applicant and/or his successor in interest, and other concerned parties to determine corrective measure to be required. The Applicant or successor in interest shall then immediately act to correct the problem using the corrective measures specified.
26. **Prior to commencement of work, the Applicant shall complete the following:**
  - a. Record this Order of Conditions at the Northern Middlesex County Registry of Deeds and provide proof with a copy of the receipt and a copy of the first page of the Order of Conditions with the Book, Page, and instrument information (see General Condition No. 9).
  - b. Post a sign with the project File Number in a conspicuous place along the project corridor including the two culvert replacement sites (see General Condition No.10).
  - c. Retain the services of an Environmental Monitor - see Special Condition No. 38; and
  - d. Arrange a pre-construction meeting with the Conservation Commission and/or its agents, the applicant, and the contractors(s) performing the work to ensure the requirements of the Order of Conditions are understood. Arrangements for the meeting shall be made at least five (5) days prior to any activity.

27. Prior to the commencement of any construction, the Applicant shall submit a list of the names and phone numbers of the General Contractor, Project Foreman and/or a project contact person so that the Commission or its agent can notify someone immediately upon discovery of a problem or violation on site or following an emergency.
28. The approved wetlands as flagged shall remain flagged throughout the entire project to facilitate future inspections by the Conservation Commission or its agents.

**INITIAL SITE PREPARATION CONDITIONS: (pre-construction)**

29. Erosion and sediment controls shall be installed as shown on the approved plan(s) and as discussed during the pre-application site visit BEFORE any construction activities commence. **No construction shall commence until said siltation barriers have been inspected and approved by the Conservation Commission or its agent.** Said controls shall be inspected periodically and maintained throughout the project and any damaged or ineffective sections of silt fence, straw wattles, or compost tubes shall be replaced immediately.

Accumulated sediment must be removed periodically to ensure proper effectiveness of said sediment control barriers. Straw wattles and compost tubes shall be a minimum 12-inch diameter size. These siltation control barriers shall remain in place until all disturbed areas are satisfactorily stabilized and approved by the Conservation Commission or its Agent.

30. An adequate reserve of erosion control materials shall be within the project area at all times for emergency or routine replacement and shall include a minimum of the following: **100** linear feet of silt fence material and/or **100** linear feet of haybales and stakes.
31. In the event de-watering is necessary, removed water shall be filtered in an upland area outside the No Alteration Zone (e.g., use of a portable sedimentation tank that removes suspended solids or other means of filtering) to remove sediment prior to discharge.
32. The Contractor(s) shall maintain a spill containment kit (supply of “speedy dry,” oil absorbent pads, or an approved equivalent) with construction equipment always. This material shall be used to contain any accidental release of oil or other petroleum products during construction. Should there be an accidental release, the proper authorities (e.g., MassDEP, Billerica Board of Health, Billerica Conservation Commission, etc.) will be notified in accordance with applicable federal, state, and local laws.
33. Storm drain inlet protection will be provided for all storm drains which will collect runoff from the project area(s). This protection will prevent sediment from entering the storm drain system and being conveyed to wetlands or waterways.

**GENERAL PROJECT CONDITIONS: (construction and post-construction)**

- 34. As discussed during the public hearing, temporary equipment/materials staging and/or stockpiling area(s) shall be reviewed with the Conservation Department and/or Conservation Commission prior to mobilization.**
- 35. Temporary impacts to Wetland Resource Areas including approximately 245 square feet of Bordering Vegetated Wetland, 12 linear feet of Bank, 10 square feet of Land Under Waterbodies, and inner Buffer Zone shall be fully restored and stabilized per the Plan of Record.** The wetland restoration areas shall be identified on the as-built plan required as part of the future Request for Certificate of Compliance.
- 36. As discussed during the public hearing, existing storm drain inlets/catch basins within the project corridor shall be replaced and/or retrofitted to capture floatables (trash, and oil and grease) and sediment. All new catch basins installed along the project corridor shall be deep sump catch basins equipped with hoods.**
- 37. Miscellaneous trash and debris will be removed from roadway shoulders along the project corridor as part of the project.**
- 38. The applicant shall coordinate with the Conservation Department to retain the services of an Environmental Monitor to inspect construction activities within wetland resource areas and Buffer Zone.** The Environmental Monitor must be qualified and pre-approved by the Commission and/or the Director of Environmental Affairs and paid for by the Applicant/Contractor. The role of the Environmental Monitor shall assist the Commission in its oversight of construction activities within local and state jurisdictional areas including: 1) installation of drainage/stormwater management system; 2) work within wetland resource areas and restoration activities; and 3) monitor overall compliance with the conditions of this Order. Specific duties shall include:
  - a) Review Stormwater Pollution Prevention Plan (SWPPP) and make recommendations if necessary to protect wetland resource areas and Buffer Zone.
  - b) Monitor compliance with the Order of Conditions and report any non-compliance to the Commission.
  - c) Attend the Pre-construction Meeting and conduct periodic inspections during: stormwater/drainage construction, wetland and buffer zone restoration activities, and dewatering activities; periodically inspect erosion controls; oversee any emergency placement of controls, and regular inspection or replacement of erosion and sedimentation control devices.
  - d) Provide weekly to bi-weekly monitoring reports/memorandums during the time(s) when work is being conducted within wetland resource areas, including the Buffer Zone, or as directed by the Conservation Commission/Director. Said memos shall include photographic documentation of on-going work activities and summarize work completed, any problems that arise in the Commission's jurisdiction, corrective

- measure(s) made in the field, and any additional corrective measures needed. The Contractor and Applicant will be supplied with all reports submitted by the Environmental Monitor. The Applicant will be expected to make said changes immediately as identified and requested by the Environmental Monitor.
- e) Monitor restoration and stabilization activities within Buffer Zone and (*i.e.*, final grading, stabilization, seeding, installation of plantings, trash and debris removal, etc.).
  - f) Review the As-Built plan associated with the stormwater management system and overall work within wetland resource areas and Buffer Zone.
39. Upon the completion of work, any unstable (exposed soil) or disturbed roadway shoulders shall be raked smooth and seeded with a conservation wildlife seed mix. Sediment control barriers shall remain in place until areas are stabilized and removed in consultation with the Environmental Monitor and/or the Conservation Department.
40. All disturbed areas shall be vegetated for stabilization (loamed and seeded or other approved means) within 30 days of disturbance unless otherwise approved by the Commission or its agents. Also, all disturbed areas shall be graded in such a manner to ensure free flow of surface runoff, and any fill placed in conjunction with this project shall be done so as not to create any pockets of standing water.
41. Excess fill, excavated material, stumps, brush, logs, debris, rocks, and ledge, etc. generated by this project shall not be disposed of within the project area. Dumping or burial of these materials shall be deemed in violation of the Wetlands Protection Act (Massachusetts General Laws Chapter 131, Section 40 as amended), the Billerica Wetlands By-law the Billerica Wetlands By-law, and/or, all other applicable Federal, State, or local statutes, ordinances, bylaws and/or regulations. The Conservation Commission shall be consulted on locations of excess material disposal to assure there will not be a violation of the Wetlands Protection Act or the Billerica Wetlands By-law.
- 42. No fill or construction material shall be stored or stockpiled within 100 feet of any wetland or as directed by the Commission and/or agent thereof. No overnight staging of construction equipment and vehicles shall occur within 100 feet of any wetland.**
43. **Equipment storage and refueling operations during construction shall be situated in an upland area at a distance of at least (100) feet from wetlands resource areas.** If there is a spill or discharge of any pollutant during any phase of construction, the Billerica Conservation Commission (and/or MA DEP as appropriate) shall be notified by the Applicant immediately.
44. Copies of all other local, state (401) or federal (404) permits, easement plans and documents, rights of entry, etc. obtained for this project shall be submitted to the Billerica Conservation Commission for their files. Until the Applicant has complied with this condition, the Certificate of Compliance will be held.

45. This project is subject to the jurisdiction of the State Wetlands Protection Act and the Billerica Wetlands Protection By-Law. Any person with proper legal standing that feels he/she is aggrieved by this Order and who seeks to revise the decision of the Billerica Conservation Commission shall file an Appeal with the Northeast Regional Office of the Department of Environmental Protection (in accordance with 310 CMR 10.05 (7)) AND an Appeal with the Middlesex Superior Court in accordance with the provisions of Mass. General Laws, Chapter 249, Section 4.

46. **The procedure for obtaining a Certificate of Compliance (COC) is as follows:**

- An As-Built Plan shall be prepared, stamped, and signed by a Registered Professional Engineer (PE).
- The Applicant shall submit a letter of request for a Certificate of Compliance when all work is done, and applicable conditions have been met. The Applicant shall also request to be scheduled for the next Regular Meeting of the Conservation Commission.
- Not less than 10 days prior to the Meeting, the Applicant shall submit two (2) complete packets comprised of the following items to the Conservation Department: 1) completed WPA Form 8a; 2) as-built plans(s); 3) **letter from a Registered Engineer certifying that all work was done according to the approved plans with a review and status of key conditions related to stormwater management, restoration and/or replication, visual barrier, etc.** If deviations from the approved plan exist, the PE must describe and state the reasons for the deviations; and 4) a written statement from the Wetlands Specialist certifying compliance with the approved replication plan and/or restoration of inner buffer zone, when applicable and deviations, if any exist.
- Site inspections for COC's shall not be scheduled until the Conservation Department has received a complete package.
- After the Commission and/or its agents inspect the project, a decision shall be made at the next Regular Meeting. Issuance of a Certificate of Compliance or Denial Letter shall occur within 21 days.
- The Certificate and As-Built Plan(s) shall then be recorded at the Registry of Deeds in Lowell.
- The Applicant is responsible for providing the Conservation Commission with proof of recording of the COC.

## **Attachment B**

Order of Conditions

MassDEP File No.109-1551/BBL-1551

Documents for the *Boston Road (Route 3A) at Lexington Road & Glad Valley Drive Traffic and Safety Improvements Project*: Prepared by BETA Group Inc.;  
Date: December 2023.

- Construction Period Pollution Prevention and Erosion and Sediment Control Plan
- Stormwater Management System Operation and Maintenance Plan
- Long-Term Pollution Prevention Plan

Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan

Boston Road (Route 3A) At Lexington Road &amp; Glad Valley Drive

Billerica, Massachusetts

Introduction

The project is anticipated to disturb greater than one acre; therefore, filing a Notice of Intent with EPA and developing of a Stormwater Pollution Prevention Plan (SWPPP) is required. The SWPPP will be provided as part of the construction documents and will be submitted to the Town of Billerica Conservation Commission prior to commencement of construction. The following plan provides general guidance for the prevention of pollution and erosion and sedimentation during construction.

Potential Erosion and Sedimentation

Portions of the project involve soil disturbance in areas upgradient of stormwater collection systems and wetland resources. Site preparation, scheduling, and construction practices need to be carefully planned to prevent construction debris and erosion caused by stormwater runoff over exposed soils from causing degradation of downstream wetland resources. Although it is not always possible to avoid impacts from storm events, the following guidelines shall be followed:

- Minimize land disturbance area and soil exposure to stormwater and wind erosion.
- Minimize time that area is disturbed.
- Avoid routing stormwater runoff or dewatering flows through disturbed areas.
- Inspect and maintain erosion controls until all soils are stabilized.
- Maintain good housekeeping practices.
- Stabilize disturbed soils as soon as possible to limit exposure.

Erosion and Sedimentation Plan

This Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan has been prepared in accordance with the Department of Environmental Protection's Massachusetts Erosion and Sedimentation Guidelines for Urban and Suburban Areas.

Pre-Construction and Site Preparation

- Contractor shall install all erosion control barrier in accordance with the construction documents prior to commencing any land disturbance activity.
- Inspect and maintain erosion controls until all soils are stabilized.
- Monitor weather reports daily and stabilize/prepare site if storm event in excess of the 2-year storm is expected.

Inspection and Maintenance of Erosion Controls during Construction

Inspect erosion controls weekly and after every storm event until all soils are stabilized.

- Catch Basin Inlet Protection: Check for sedimentation accumulation, removing sediments when they reach excessive volumes.
- Erosion Control Barrier: Check for sedimentation accumulation, removing sediments when they reach excessive volumes (approximately 1/3 the height of the barrier). Also remove sediments when runoff ponds for 24 or more hours to prevent potential mosquito breeding habitat. Restake/replace controls as necessary to maintain their effectiveness.
- Street Sweeping: Sweep Boston Road, Lexington Road, Glad Valley Drive, and other roadways in vicinity of the project at the end of each workday. Sweepings to be disposed in a legal manner.

Plans

See construction drawings for locations of all proposed erosion and sedimentation controls.



Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan

Boston Road (Route 3A) At Lexington Road & Glad Valley Drive

Billerica, Massachusetts

Extent of Disturbance

The total area of disturbance is approximately 7.55± acres. The project has been designed to minimize disturbance to existing woodlands and the majority of proposed work is within an existing roadway and its associated right-of-way.

Material Stockpiling

All construction materials shall be stored in designated stockpile areas to be coordinated with the Conservation Commission. Stockpiles shall be surrounded with silt fence, straw wattles, and/or compost filter tubes to mitigate erosion potential. All waste materials shall be removed from the Site or placed in approved receptacles at the conclusion of each workday. Disposal of waste materials shall be in accordance with relevant local, state, and federal regulations.

No excavated soil material shall be stockpiled within one hundred (100) feet of rivers, streams, ponds, or reservoirs.

Potential Construction Site Pollutants

| Pollutant-Generating Activity     | Pollutants or Pollutant Constituents (that could be discharged if exposed to stormwater) | Location on Site                     |
|-----------------------------------|--|--------------------------------------|
| Equipment Re-fueling              | Diesel Fuel, Gasoline  | Laydown Area                         |
| Leaking or Broken Hydraulic Lines | Hydraulic Oil  | Building Work Areas and Laydown Area |
| Minor Equipment Maintenance       | Diesel Fuel, Gasoline, Hydraulic Oil, Motor Oil, Anti-Freeze                             | Laydown Area                         |
| Applying Fertilizer               | Nitrogen, Phosphorous  | Newly Seeded Areas                   |
| Portable Sanitary Toilets         | Bacteria, Parasites and Viruses  | Laydown Area                         |
| Vehicle Accident                  | Diesel Fuel, Gasoline  | Entire Site                          |
| Trash Containers/Dumpsters        | Paper, Plastic, and Food Waste   | Laydown Area                         |

Refer to Long-Term Pollution Prevention Plan, included as part of Appendix B, for measures to be implemented to minimize pollutant discharges.



Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan

Boston Road (Route 3A) At Lexington Road & Glad Valley Drive

Billerica, Massachusetts

Construction Period Grading Activities Log

Record of Major Grading Activities

| Activity #             | Date: | Description of Grading Activity | Notes |
|------------------------|-------|---------------------------------|-------|
|                        |       |                                 |       |
|                        |       |                                 |       |
|                        |       |                                 |       |
|                        |       |                                 |       |
|                        |       |                                 |       |
|                        |       |                                 |       |
|                        |       |                                 |       |
|                        |       |                                 |       |
|                        |       |                                 |       |
| Additional<br>Comments |       |                                 |       |



Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan

Boston Road (Route 3A) At Lexington Road & Glad Valley Drive

Billerica, Massachusetts

Construction Period Precipitation Event Log

Record of Precipitation Events occurring at the Site

| Event #             | Date: | Rainfall Measurement (Inches) | Rainfall Duration (Hours) | Source of Rainfall Data | Notes |
|---------------------|-------|-------------------------------|---------------------------|-------------------------|-------|
|                     |       |                               |                           |                         |       |
|                     |       |                               |                           |                         |       |
|                     |       |                               |                           |                         |       |
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|                     |       |                               |                           |                         |       |
|                     |       |                               |                           |                         |       |
|                     |       |                               |                           |                         |       |
|                     |       |                               |                           |                         |       |
| Additional Comments |       |                               |                           |                         |       |



Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan  
 Boston Road (Route 3A) At Lexington Road & Glad Valley Drive Billerica, Massachusetts

Construction Period SCM Inspection and Maintenance Documentation Form

Inspection No.: \_\_\_\_\_ Date: \_\_\_\_\_ Weather: \_\_\_\_\_

Date & Amount of Last Precipitation Event: \_\_\_\_\_

Inspector Name: \_\_\_\_\_ Inspection Signature: \_\_\_\_\_

| SCM                              | Condition/Stability | Comment & Recommendations | Date Corrected |
|----------------------------------|---------------------|---------------------------|----------------|
| Catch Basin Inlet Protection     |                     |                           |                |
| Erosion Control Barrier          |                     |                           |                |
| Stabilized Construction Entrance |                     |                           |                |
| Street Sweepings                 |                     |                           |                |
| Other                            |                     |                           |                |
| Additional Comments              |                     |                           |                |



Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan  
 Boston Road (Route 3A) At Lexington Road & Glad Valley Drive Billerica, Massachusetts

Construction Period Interruption Event Log

Record of Events in which construction activities temporarily or permanently cease on a portion of the Site

| Event #             | Date Work Ceases | Temporary / Permanent? | Area | Reason for Stoppage | Date Work Resumes |
|---------------------|------------------|------------------------|------|---------------------|-------------------|
|                     |                  |                        |      |                     |                   |
|                     |                  |                        |      |                     |                   |
|                     |                  |                        |      |                     |                   |
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|                     |                  |                        |      |                     |                   |
|                     |                  |                        |      |                     |                   |
|                     |                  |                        |      |                     |                   |
|                     |                  |                        |      |                     |                   |
| Additional Comments |                  |                        |      |                     |                   |



Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan

Boston Road (Route 3A) At Lexington Road & Glad Valley Drive

Billerica, Massachusetts

Construction Period Stabilization Activities Log

Record of Stabilization Measure Initialization

| Activity #          | Date: | Temporary / Permanent Stabilization? | Area of Site Affected | Description of Stabilization Measure | Notes |
|---------------------|-------|--------------------------------------|-----------------------|--------------------------------------|-------|
|                     |       |                                      |                       |                                      |       |
|                     |       |                                      |                       |                                      |       |
|                     |       |                                      |                       |                                      |       |
|                     |       |                                      |                       |                                      |       |
|                     |       |                                      |                       |                                      |       |
|                     |       |                                      |                       |                                      |       |
|                     |       |                                      |                       |                                      |       |
|                     |       |                                      |                       |                                      |       |
|                     |       |                                      |                       |                                      |       |
| Additional Comments |       |                                      |                       |                                      |       |



Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan  
Boston Road (Route 3A) At Lexington Road & Glad Valley Drive Billerica, Massachusetts

Construction Period Periodic Inspection Log

Date: \_\_\_\_\_

Name and Title of Inspection Personnel: \_\_\_\_\_

Inspection Criteria:

1. Is Construction in compliance with the Approved Stormwater Management Plan? \_\_\_\_\_

If not, explain noncompliance:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2. Are there any variations from approved construction specifications? \_\_\_\_\_

If yes, explain variations:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

3. Are there any other variations or violations of the conditions of the approved Stormwater Management Plan? \_\_\_\_\_

If yes, explain variations/violations:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Signature: \_\_\_\_\_



Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan

Boston Road (Route 3A) At Lexington Road & Glad Valley Drive

Billerica, Massachusetts

Erosion Control Inspection Log

Date: \_\_\_\_\_

Name and Title of Inspection Personnel: \_\_\_\_\_

Weather Information since time of last inspection:

| Storm Event Date | Duration | Approximate Rainfall (Inches) | Discharges Occurred? |
|------------------|----------|-------------------------------|----------------------|
|                  |          |                               |                      |
|                  |          |                               |                      |
|                  |          |                               |                      |
|                  |          |                               |                      |

Location of Discharges of Sediment or other Pollutants from the Site:

| Discharge # | Location | Description | Corrective Action Implemented? |
|-------------|----------|-------------|--------------------------------|
|             |          |             |                                |
|             |          |             |                                |
|             |          |             |                                |
|             |          |             |                                |

Location of SCMs that failed to operate as designed or proved inadequate

| SCM Type | Location | Description of Failure/Inadequacy | Corrective Action Implemented? |
|----------|----------|-----------------------------------|--------------------------------|
|          |          |                                   |                                |
|          |          |                                   |                                |
|          |          |                                   |                                |
|          |          |                                   |                                |



Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan

Boston Road (Route 3A) At Lexington Road & Glad Valley Drive

Billerica, Massachusetts

Record of New SCMs added:

| Date of Installation: | SCM Type | Location | Reason for Installation |
|-----------------------|----------|----------|-------------------------|
|                       |          |          |                         |
|                       |          |          |                         |
|                       |          |          |                         |
|                       |          |          |                         |

Required Corrective Action

| Proposed Action | Proposed Location | Reason for Action | Anticipated Implementation Date |
|-----------------|-------------------|-------------------|---------------------------------|
|                 |                   |                   |                                 |
|                 |                   |                   |                                 |
|                 |                   |                   |                                 |
|                 |                   |                   |                                 |

Status of Previous Corrective Actions

| Action | Location | Reason for Action | Corrective Action Successful? |
|--------|----------|-------------------|-------------------------------|
|        |          |                   |                               |
|        |          |                   |                               |
|        |          |                   |                               |

Signature: \_\_\_\_\_



# Boston Road (Route 3A) At Lexington Road & Glad Valley Drive

Stormwater Management System  
Operation and Maintenance Plan and  
Long-Term Pollution Prevention Plan  
Billerica, MA

PREPARED FOR

---



10 Park Plaza  
Boston, MA 02116

PREPARED BY

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BETA Group, Inc.  
315 Norwood Park South  
2<sup>nd</sup> Floor  
Norwood, Massachusetts 02062  
July 28, 2023

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# 1

## Stormwater Management System Operation and Maintenance (O&M) Plan

This Stormwater Management System Operation and Maintenance (O&M) Plan describes the approach for inspection and maintenance of drainage infrastructure and structural stormwater control measures (SCMs) to minimize contaminant loading for the proposed closed drainage system along portions of Boston Road (Route 3A), Glad Valley Drive, and Lexington Road (the "Project") located in Billerica, MA. In general, inspection and maintenance activities will be conducted consistent with the National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer System (MS4) and MassDOT's anticipated NPDES Transportation Separate Storm Sewer System (TS4) Permit.

This document has been prepared per the requirements of Massachusetts Department of Environmental Protection (MassDEP) Regulations 310 CMR 10.05 (6)(k)(9) and satisfies the requirements of Massachusetts Stormwater Standard 9.

### 1.1 Responsible Party

In accordance with MassDOT procedures, the MassDOT District 4 office located in Arlington, MA, is responsible for the maintenance of all stormwater management systems on MassDOT roads within the project area.

Questions or concerns regarding activities associated with this O&M Plan should be addressed to MassDOT's District 4 office located at 519 Appleton Street, Arlington, MA 02476, phone (857)-368-4000, during regular weekday hours, or to MassDOT's Highway Operations Center located in South Boston, MA at (800) 227-0608 during all other times and days, including weekends and holidays.

The Town of Billerica will be responsible for the operation and maintenance of all stormwater management systems within the portion of the project area along Lexington Road and Glad Valley Drive. Questions or concerns regarding activities associated with this O&M Plan should be addressed to the Billerica Department of Public Works located at 365 Boston Road, Billerica, MA 01821, phone (978) 671-0906.

## 1.2 Inspection and Maintenance Measures and Record-Keeping

See Appendix D of the Stormwater Management Report for the proposed stormwater system within the project limits. The stormwater management system covered by this O&M Plan consists of the following measures:

- Deep Sump Catch Basins
- Retained Catch Basins
- Qualifying Pervious Area

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 inspections, including documentation of sediment accumulation, and maintenance will generally occur simultaneously.

MassDOT’s O&M program is data driven. Inspections and maintenance are recorded by personnel using hand-held tablets in the field to document sediment accumulation, maintenance action performed, and follow-up actions needed. Data are recorded in MassDOT’s asset management system which is accessible in the field (mobile) or the office (desktop).

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"> <li>› Catch basins</li> <li>› Outlet control structures</li> </ul>   | <ul style="list-style-type: none"> <li>› Sediment accumulation</li> <li>› Trash/Debris accumulation</li> <li>› Signs of contamination</li> <li>› Frame and grate condition</li> <li>› Overall structure condition</li> </ul>   |
| SCMs                   | <p>Consistent with the MassDOT Stormwater Design Guide (SDG), SCM categories include:</p> <ul style="list-style-type: none"> <li>› Infiltration SCMs</li> <li>› Stormwater wetland SCMs</li> <li>› Bioretention SCMs</li> <li>› Other SCMs</li> </ul> | <ul style="list-style-type: none"> <li>› SCM accessibility</li> <li>› Presence of standing water</li> <li>› Level of erosion</li> <li>› Sediment accumulation</li> <li>› Trash/Debris accumulation</li> <li>› Vegetation condition</li> <li>› Overall SCM condition</li> </ul> |
| Storm Discharge Points | <ul style="list-style-type: none"> <li>› Outlets to SCMs</li> </ul>   | <ul style="list-style-type: none"> <li>› Presence of flow</li> <li>› Signs of contaminated flow</li> <li>› Sediment accumulation</li> <li>› Level of erosion</li> <li>› Pipe condition</li> <li>› Scour protection condition</li> <li>› Overall structure condition</li> </ul> |

Inspection and maintenance records can be made available using the asset management system through request with the MassDOT District 4 Environmental Engineer. Records will be kept for at least three years. Representatives of the Town of Billerica’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.

Maintenance actions will not occur at any set frequency, but rather will be based on condition and impact to functionality. Maintenance to be performed on the stormwater system includes:

| Stormwater Feature                         | Potential Maintenance Actions   |
|--|---|
| Surface SCMs<br>(Qualifying Pervious Area) | <ul style="list-style-type: none"> <li>• Remove and properly dispose of accumulated material (e.g., sediment, trash, leaf litter, debris)</li> <li>• Mow vegetated areas and remove and dispose of grass clippings</li> <li>• Regrade areas that show signs of unwanted ponding and channelization</li> <li>• Stabilize or reconstruct eroded areas and reseed</li> <li>• Replace stones/soil and/or replant vegetation</li> <li>• Remove woody growth</li> <li>• Treat invasive plants according to MassDOT Landscape Design Section</li> <li>• Infiltration and bioretention SCMs only:                             <ul style="list-style-type: none"> <li>○ Address issues of standing water</li> <li>○ Drain and reconstruct SCM</li> <li>○ If rehabilitation is not possible, then retrofit to be a wet SCM while considering safety implications</li> </ul> </li> </ul> |
| Underground SCMs                           | <ul style="list-style-type: none"> <li>• Remove and properly dispose of trash, sediment, debris, and root intrusions</li> <li>• Clean out sumps at an interval to maintain functionality (less than 50% full of sediment)</li> <li>• Jet and repair pipes</li> <li>• Rehabilitate filtering and infiltration materials (e.g., geotextile fabric, crushed stone)</li> <li>• Stabilize and replace deteriorated structures</li> <li>• Perform evaluations (e.g., test pits) to evaluate subsurface conditions</li> </ul>  |
| Inlets and Outlets to SCMs                 | <ul style="list-style-type: none"> <li>• Clear inlet and remove and properly dispose of sediment, trash, leaf litter, debris, and vegetation</li> <li>• Regrade areas that show signs of ponding and channelization</li> <li>• Repair or replace structural components</li> <li>• Repair damaged or eroded areas</li> <li>• Provide or rehabilitate erosion control at the outlet</li> <li>• Regrade and replace the channel materials</li> <li>• Remove woody growth</li> <li>• Stabilize or reconstruct eroded areas</li> <li>• Treat invasive plants according to MassDOT Vegetation Management Plan</li> </ul>  |

Based on the results of the inspection, repairs will be made in accordance with MassDOT standard practices. Maintenance will be prioritized given the urgency of the required maintenance and availability of staff, contracts, etc. Maintenance may require contracting if

existing contracts are unavailable to perform the work. More intensive remedial activities may require permitting and/or an engineering solution.

Inspection, maintenance, and record keeping on Glad Valley Drive and Lexington Road will be performed in conjunction with the Town of Billerica's MS4 compliance requirements.

### 1.3 Erosion and Sediment Control Measures during Maintenance Activities

For maintenance activities that could result in discharges of sediments or other contaminants into wetlands, waterways, or other resource areas regulated under 310 CMR 10.00, the responsible maintenance personnel will employ measures to prevent migration of these sediments/contaminants. Such temporary measures may include, but are not necessarily limited to, the use of siltation barriers, catch basin silt sacks/filter bags, pipe plugs, cofferdams deployed within the stormwater structure, turbidity curtains, or other practices designed to prevent such discharges.

Where maintenance occurs in areas that are confined, with no risk of discharge to adjacent water bodies, no special measures may be needed. Examples include, but are not limited to: (1) cleaning of a forebay under dry conditions when the work can be completed and exposed surfaces stabilized prior to placing it back into service; and (2) catch basin cleaning where the activity is limited to removing material from a sump below the elevation of the outlet pipe.

### 1.4 O&M Budget

MassDOT and the Town of Billerica perform maintenance for stormwater management systems as part of their routine operation and maintenance budget for roadways and bridges. Budgets are managed at the district level and vary by fiscal year, depending on funding sources.

# 2

## Long-Term Pollution Prevention Plan

This Long-Term Pollution Prevention Plan (LTPPP) describes the approach for pollution prevention and related maintenance activities for the proposed closed drainage system along portion of Boston Road (Route 3A), Glad Valley Drive, and Lexington Road (the "Project") located in Billerica, MA. In general, long-term pollution prevention and related maintenance activities will be conducted consistent with:

- The National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer System (MS4),
- 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.

### 2.1 Practices for Long-Term Pollution Prevention

For the facilities covered, long-term pollution prevention includes the following measures.

#### 2.1.1 Litter Pick-up

MassDOT will conduct litter pick-up from the stormwater management facilities in conjunction with routine road maintenance activities.

#### 2.1.2 Inspection and Maintenance of Stormwater Assets

MassDOT will conduct inspection and maintenance of drainage infrastructure and the stormwater control measures (SCMs) in accordance with the O&M Plan, as described in Section 1.

#### 2.1.3 Maintenance of Landscaped Areas

Routine mowing will be conducted according to standard MassDOT practices. SCM basin bottoms and embankments designed to impound water should be mowed as required to prevent establishment of woody vegetation.

Except in rare circumstances, MassDOT does not use fertilizers, herbicides, and pesticides for the maintenance of facilities. Exceptions include using fertilizer to ensure the survival of new

plantings and herbicides to control invasive plants. Use of fertilizers and herbicides is reviewed and approved by the MassDOT Landscape Design Section and District 4 Environmental Engineer prior to application. Local Conservation Commission review may also be required.

#### 2.1.4 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.

#### 2.1.5 Street Sweeping

Routine highway cleaning, with a brush-type street sweeper, will be conducted in accordance with standard MassDOT practices. Sweeping will occur annually in the Spring.

#### 2.1.6 Prohibition of Illicit Discharges

The MassDEP Stormwater Management Standard 10 prohibits illicit discharges to the stormwater management system. Illicit discharges are discharges that do not consist entirely of stormwater, except for certain specified non-stormwater discharges.

In accordance with the existing MS4 permit and anticipated TS4 permit requirements, examples of discharges from the following sources are not considered illicit discharges:

- › Firefighting activities\*
- › Foundation drains
- › Water line flushing
- › Footing drains
- › Landscape irrigation
- › Individual residential car washing
- › Uncontaminated groundwater
- › Rising groundwater
- › Diverted stream flows
- › Flows from riparian habitats/wetlands
- › Potable water sources
- › Dechlorinated swimming pool water
- › Street wash waters
- › Wash water from residential buildings (no detergents)
- › Condensation from air conditioning units
- › Run-on from private driveways caused by precipitation
- › Lawn watering
- › Water from crawl space pumps

\*Water from firefighting activities is allowed and need only be addressed where they are identified as significant sources of pollutants to waters of the United States.

Based on plan review and confirmation in the field, there are no known or proposed illicit connections associated with the Project. Should an interconnection to the stormwater management system be identified, the MassDOT PM will coordinate with the District Permits Engineer to confirm if the connections are authorized. For unauthorized connections, the 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

MassDOT's Illicit Discharge Detection and Elimination (IDDE) program and/or through other agencies.

### 2.1.7 Spill Prevention and Response

The following spill prevention and response measures shall be implemented at the Site:

- Refuel construction equipment off-site.
- Any spills of hazardous materials shall be reported, contained, and removed in accordance with local, State, and Federal regulations.
- Review on-site equipment and activities to ensure no illicit discharges are created.

# MASSACHUSETTS DEPARTMENT OF TRANSPORTATION HIGHWAY DIVISION

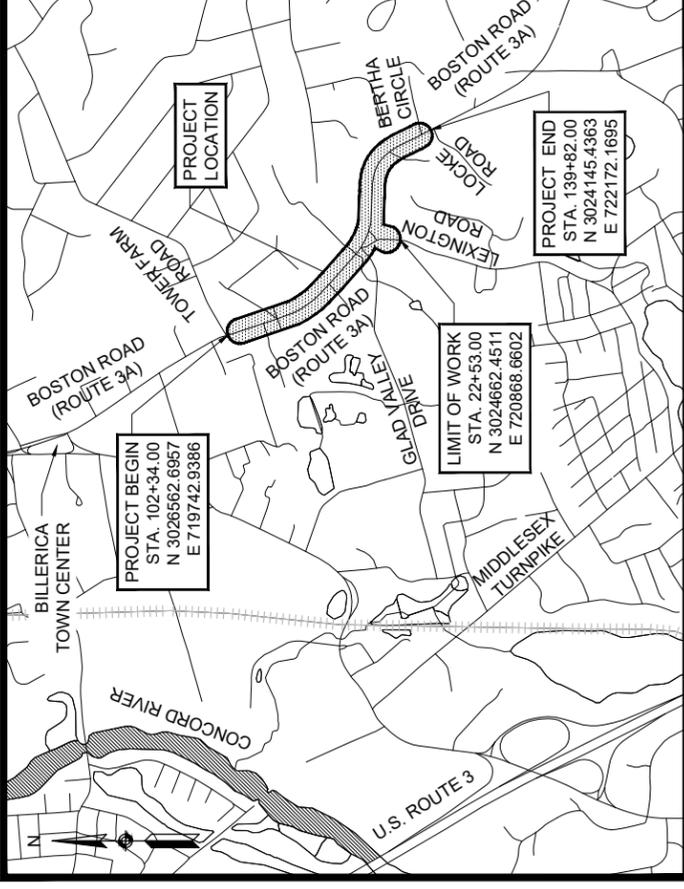
## PLAN AND PROFILE OF BOSTON ROAD (ROUTE 3A) AT LEXINGTON ROAD & GLAD VALLEY DRIVE TRAFFIC AND SAFETY IMPROVEMENTS

IN THE TOWN OF  
**BILLERICA**  
MIDDLESEX COUNTY

FEDERAL AID PROJECT NO. -

# 100% SUBMITTAL

| SHEET NO. | DESCRIPTION                       |
|-----------|-----------------------------------|
| 1         | TITLE SHEET & INDEX               |
| 2         | LEGEND & ABBREVIATIONS            |
| 3         | KEY PLAN & BORING LOG             |
| 4-5       | TYPICAL SECTIONS & PAVEMENT NOTES |
| 6         | GENERAL NOTES                     |
| 7-13      | CONSTRUCTION DETAILS              |
| 14-21     | CONSTRUCTION PLANS                |
| 22-29     | DRAINAGE & UTILITY PLANS          |
| 30        | LANDSCAPE PLAN                    |



PROJECT LOCATION



BOSTON ROAD (ROUTE 3A) LENGTH OF PROJECT = 3,748 FEET = 0.710 MILES

BILLERICA  
BOSTON RD (ROUTE 3A)  
AT LEXINGTON RD & GLAD VALLEY DR

| STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|-------|--------------------|-----------|--------------|
| MA    | -                  | 1         | 38           |

PROJECT FILE NO. 609250

**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 SUPPORTS, THE 1988 STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING, AND THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK.

### DESIGN DESIGNATION

| BOSTON ROAD (ROUTE 3A)    |                          | LEXINGTON ROAD            |                 | GLAD VALLEY DRIVE         |            |
|---------------------------|--------------------------|---------------------------|-----------------|---------------------------|------------|
| DESIGN SPEED              | 40 MPH                   | DESIGN SPEED              | 35 MPH          | DESIGN SPEED              | 35 MPH     |
| ADT (2019)                | 22,100                   | ADT (2019)                | 5,400           | ADT (2019)                | 3,400      |
| ADT (2039)                | 26,970                   | ADT (2039)                | 6,590           | ADT (2039)                | 4,150      |
| K                         | 8.2%                     | K                         | 8.6%            | K                         | 10.0%      |
| D                         | 57% (NB)                 | D                         | 69% (NB)        | D                         | 64% (WB)   |
| T (PEAK HOUR)             | 1.2%                     | T (PEAK HOUR)             | 0.1%            | T (PEAK HOUR)             | 0.0%       |
| T (AVERAGE DAY)           | 0.9%                     | T (AVERAGE DAY)           | 0.4%            | T (AVERAGE DAY)           | 0.5%       |
| DHV                       | 2,212                    | DHV                       | 567             | DHV                       | 415        |
| DDHV                      | 1,261                    | DDHV                      | 392             | DDHV                      | 266        |
| FUNCTIONAL CLASSIFICATION | URBAN PRINCIPAL ARTERIAL | FUNCTIONAL CLASSIFICATION | URBAN COLLECTOR | FUNCTIONAL CLASSIFICATION | LOCAL ROAD |

NOTICE OF INTENT  
PERMIT SET



www.BETA-inc.com  
315 MORWOOD PARK SOUTH  
ANDOVER, MA 01862

APPROVED

CHIEF ENGINEER

DATE

| DATE       | DESCRIPTION    | REV # |
|------------|----------------|-------|
| 12/19/2023 | NOI PERMIT SET | 0     |
| 8/26/2022  | NOI PERMIT SET | 0     |

| GENERAL SYMBOLS |          | DESCRIPTION   |
|-----------------|----------|---|
|                 | EXISTING | JERSEY BARRIER  |
|                 | EXISTING | CATCH BASIN   |
|                 | EXISTING | CATCH BASIN CURB INLET                                    |
|                 | EXISTING | FLAG POLE   |
|                 | EXISTING | GAS PUMP  |
|                 | EXISTING | MAIL BOX  |
|                 | EXISTING | POST SQUARE   |
|                 | EXISTING | POST CIRCULAR   |
|                 | EXISTING | WELL  |
|                 | EXISTING | ELECTRIC HANDHOLE   |
|                 | EXISTING | FENCE GATE POST   |
|                 | EXISTING | GAS GATE  |
|                 | EXISTING | BORING HOLE   |
|                 | EXISTING | MONITORING WELL   |
|                 | EXISTING | TEST PIT  |
|                 | EXISTING | HYDRANT   |
|                 | EXISTING | LIGHT POLE  |
|                 | EXISTING | COUNTY BOUND  |
|                 | EXISTING | GPS POINT   |
|                 | EXISTING | CABLE MANHOLE   |
|                 | EXISTING | DRAINAGE MANHOLE OR CB WITH FRAME AND COVER               |
|                 | EXISTING | DRAINAGE MANHOLE (5' DIAMETER)                            |
|                 | EXISTING | ELECTRIC MANHOLE  |
|                 | EXISTING | MISC MANHOLE  |
|                 | EXISTING | SEWER MANHOLE   |
|                 | EXISTING | TELEPHONE MANHOLE   |
|                 | EXISTING | WATER MANHOLE   |
|                 | EXISTING | MASSACHUSETTS HIGHWAY BOUND                               |
|                 | EXISTING | MONUMENT  |
|                 | EXISTING | STONE BOUND   |
|                 | EXISTING | TOWN OR CITY BOUND  |
|                 | EXISTING | TRAVERSE OR TRIANGULATION STATION                         |
|                 | EXISTING | TROLLEY POLE OR GUY                                       |
|                 | EXISTING | TRANSMISSION POLE   |
|                 | EXISTING | UTILITY POLE W/ FIREBOX                                   |
|                 | EXISTING | UTILITY POLE WITH DOUBLE LIGHT                            |
|                 | EXISTING | UTILITY POLE W/ 1 LIGHT                                   |
|                 | EXISTING | UTILITY POLE  |
|                 | EXISTING | BUSH  |
|                 | EXISTING | TREE  |
|                 | EXISTING | SWAMP / MARSH   |
|                 | EXISTING | WATER GATE  |
|                 | EXISTING | PARKING METER   |
|                 | EXISTING | SIGN  |
|                 | EXISTING | OVERHEAD CABLEWIRE  |
|                 | EXISTING | CURBING   |
|                 | EXISTING | CONTOURS (ON-THE-GROUND SURVEY DATA)                      |
|                 | EXISTING | CONTOURS (PHOTOGRAMMETRIC DATA)                           |
|                 | EXISTING | UNDERGROUND DRAIN PIPE (DOUBLE LINE 24 INCH AND OVER)     |
|                 | EXISTING | UNDERGROUND ELECTRIC DUCT (DOUBLE LINE 24 INCH AND OVER)  |
|                 | EXISTING | UNDERGROUND GAS MAIN (DOUBLE LINE 24 INCH AND OVER)       |
|                 | EXISTING | UNDERGROUND SEWER MAIN (DOUBLE LINE 24 INCH AND OVER)     |
|                 | EXISTING | UNDERGROUND TELEPHONE DUCT (DOUBLE LINE 24 INCH AND OVER) |
|                 | EXISTING | UNDERGROUND WATER MAIN (DOUBLE LINE 24 INCH AND OVER)     |
|                 | EXISTING | BALANCED STONE WALL                                       |
|                 | EXISTING | GUARD RAIL - STEEL POSTS                                  |
|                 | EXISTING | GUARD RAIL - WOOD POSTS                                   |
|                 | EXISTING | CHAIN LINK OR METAL FENCE                                 |
|                 | EXISTING | WOOD FENCE  |
|                 | EXISTING | SEDIMENT CONTROL BARRIER                                  |
|                 | EXISTING | TREE LINE   |
|                 | EXISTING | SAWCUT LINE   |
|                 | EXISTING | TOP OR BOTTOM OF SLOPE                                    |
|                 | EXISTING | LIMIT OF EDGE OF PAVEMENT OR COLD PLANE AND OVERLAY       |
|                 | EXISTING | BANK OF RIVER OR STREAM                                   |
|                 | EXISTING | BORDER OF WETLAND   |
|                 | EXISTING | 100 FT WETLAND BUFFER                                     |
|                 | EXISTING | 200 FT RIVERFRONT BUFFER                                  |
|                 | EXISTING | STATE HIGHWAY LAYOUT                                      |
|                 | EXISTING | TOWN OR CITY LAYOUT                                       |
|                 | EXISTING | COUNTY LAYOUT   |
|                 | EXISTING | RAILROAD SIDELINE   |
|                 | EXISTING | TOWN OR CITY BOUNDARY LINE                                |
|                 | EXISTING | PROPERTY LINE OR APPROXIMATE PROPERTY LINE                |
|                 | EXISTING | EASEMENT  |

| PAVEMENT MARKINGS AND SIGNING SYMBOLS |          | DESCRIPTION   |
|---------------------------------------|----------|---|
|                                       | PROPOSED | CROSSWALK, 2 - 12" WHITE LINES (8" WIDTH)                 |
|                                       | PROPOSED | STOP LINE - 12" WHITE LINE 4" BEHIND CW (TYP.)            |
|                                       | PROPOSED | SOLID WHITE CHANNELIZING LINES - 12" (SPACING NOTED)      |
|                                       | PROPOSED | SOLID WHITE GORE LINE 12" @ 45°, (SPACING NOTED)          |
|                                       | PROPOSED | SOLID WHITE PARKING LINE - 6"                             |
|                                       | PROPOSED | BROKEN WHITE LINE - 6" (10' LINE & 30' GAP)               |
|                                       | PROPOSED | DOTTED YELLOW LANE EXTENSION LINE - 6" (2' LINE & 6' GAP) |
|                                       | PROPOSED | DOTTED YELLOW LANE EXTENSION LINE - 6" (2' LINE & 6' GAP) |
|                                       | PROPOSED | BROKEN YELLOW LINE - 6"                                   |
|                                       | PROPOSED | DOUBLE YELLOW LINE - 2 - 6" LINES                         |
|                                       | PROPOSED | SOLID YELLOW LINE - 6"                                    |
|                                       | PROPOSED | SOLID YELLOW GORE LINE 12" @ 45°, (SPACING NOTED)         |
|                                       | PROPOSED | SCHOOL ZONE - WHITE                                       |
|                                       | PROPOSED | ACCESSIBILITY SYMBOL - WHITE                              |
|                                       | PROPOSED | PAVEMENT ARROW - WHITE                                    |
|                                       | PROPOSED | LEGEND "ONLY" - WHITE                                     |

| TRAFFIC SIGNAL SYMBOLS |          | DESCRIPTION  |
|------------------------|----------|--|
|                        | PROPOSED | CONTROL CABINET GROUND MOUNTED WITH FOUNDATION                       |
|                        | PROPOSED | CONTROL CABINET POLE MOUNTED   |
|                        | PROPOSED | CONTROLLER PHASE   |
|                        | PROPOSED | MAST ARM, SHAFT & BASE (ARM LENGTH AS NOTED)                         |
|                        | PROPOSED | VEHICULAR SIGNAL HEAD (ALPHA-NUMERIC DESIGNATION AS NOTED)           |
|                        | PROPOSED | VEHICULAR SIGNAL HEAD, OPTICALLY PROGRAMMED                          |
|                        | PROPOSED | VEHICULAR SIGNAL HEAD (REMOVED & RESET)                              |
|                        | PROPOSED | FLASHING BEACON  |
|                        | PROPOSED | PEDESTRIAN SIGNAL HEAD   |
|                        | PROPOSED | PEDESTRIAN SIGNAL HEAD, OPTICALLY PROGRAMMED                         |
|                        | PROPOSED | PULL BOX 12"x12" OR HANDHOLE   |
|                        | PROPOSED | LOOP DETECTOR  |
|                        | PROPOSED | PEDESTRIAN PUSH BUTTON, SIGN (DIRECTIONAL ARROW AS SHOWN) AND SADDLE |
|                        | PROPOSED | PRE-EMPTION DETECTOR   |
|                        | PROPOSED | PRE-EMPTION CONFIRMATION STROBE                                      |
|                        | PROPOSED | SIGNAL CONDUIT (SINGLE RUN)  |
|                        | PROPOSED | SIGNAL CONDUIT (DOUBLE RUN)  |
|                        | PROPOSED | SIGNAL POST & BASE   |
|                        | PROPOSED | MAGNETIC DETECTOR  |
|                        | PROPOSED | SCHOOL ZONE SPEED LIMIT SIGN   |
|                        | PROPOSED | MICROWAVE OR ULTRASONIC DETECTOR                                     |
|                        | PROPOSED | VIDEO DETECTION CAMERA   |
|                        | PROPOSED | VIDEO DETECTION ZONE   |

| TRAFFIC SIGNAL SYSTEMS |   | DESCRIPTION |
|------------------------|---|-------------|
| R                      | STEADY CIRCULAR RED                                   |             |
| Y                      | STEADY CIRCULAR AMBER                                 |             |
| G                      | STEADY CIRCULAR GREEN                                 |             |
| FR                     | FLASHING CIRCULAR RED                                 |             |
| FY                     | FLASHING CIRCULAR AMBER                               |             |
| +FY                    | FLASHING YELLOW LEFT ARROW                            |             |
| R-                     | STEADY RED RIGHT ARROW                                |             |
| Y-                     | STEADY AMBER RIGHT ARROW                              |             |
| G+                     | STEADY GREEN RIGHT ARROW                              |             |
| +R                     | STEADY RED LEFT ARROW                                 |             |
| +G                     | STEADY GREEN LEFT ARROW                               |             |
| W                      | STEADY WALK (PERSON WALKING) - LUNAR WHITE            |             |
| DW                     | STEADY DON'T WALK (HAND) - PORTLAND ORANGE            |             |
| FDW                    | FLASHING DON'T WALK (FLASHING HAND) - PORTLAND ORANGE |             |

**BILLERICA**  
**BOSTON RD (ROUTE 3A)**  
**AT LEXINGTON RD & GLAD VALLEY DR**

|       |                    |           |              |
|-------|--------------------|-----------|--------------|
| STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
| MA    | -                  | 2         | 30           |

PROJECT FILE NO. 609250

**LEGEND & ABBREVIATIONS**

**ABBREVIATIONS (cont.)**

**GENERAL**

|                  |                                   |
|------------------|-----------------------------------|
| PT               | POINT OF TANGENCY                 |
| PVC              | POINT OF VERTICAL CURVATURE       |
| PVI              | POINT OF VERTICAL INTERSECTION    |
| PVT              | POINT OF VERTICAL TANGENCY        |
| PVMT             | PAVEMENT                          |
| 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&R              | REMOVE AND RESET                  |
| REMOVE AND STACK | 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         |
| SUP              | SHARED USE PATH                   |
| SIDEWALK         | 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              | VARIES                            |
| VERT             | VERTICAL                          |
| VC               | VERTICAL CURVE                    |
| WG               | WATER GATE                        |
| WIP              | WROUGHT IRON PIPE                 |
| WM               | WATER METER/WATER MAIN            |
| X-SECT           | CROSS SECTION                     |

**TRAFFIC SIGNAL**

|                 |                                |
|-----------------|--------------------------------|
| PWW             | PAVED WATER WAY                |
| CAB.            | CABINET                        |
| CCVE            | CLOSED CIRCUIT VIDEO EQUIPMENT |
| DW              | STEADY DON'T WALK              |
| FDW             | FLASHING DON'T WALK            |
| FR              | FLASHING CIRCULAR RED          |
| FRL             | FLASHING RED LEFT ARROW        |
| FRR             | FLASHING RED RIGHT ARROW       |
| FY              | FLASHING CIRCULAR AMBER        |
| FYL             | FLASHING AMBER LEFT ARROW      |
| FYR             | FLASHING AMBER RIGHT ARROW     |
| G               | STEADY CIRCULAR GREEN          |
| GL              | STEADY GREEN LEFT ARROW        |
| GR              | STEADY GREEN RIGHT ARROW       |
| GSL             | STEADY GREEN SLASH LEFT ARROW  |
| GSR             | STEADY GREEN SLASH RIGHT ARROW |
| GV              | STEADY GREEN VERTICAL ARROW    |
| OL              | OVERLAP                        |
| PED             | PEDESTRIAN                     |
| PAN. TILE. ZOOM | PAN. TILE. ZOOM                |
| PTZ             | STEADY CIRCULAR RED            |
| R               | STEADY RED LEFT ARROW          |
| RL              | STEADY RED RIGHT ARROW         |
| RR              | TRAFFIC SIGNAL CONDUIT         |
| TR SIG          | TRAFFIC SIGNAL                 |
| TSC             | TRAFFIC WALK                   |
| W               | STEADY CIRCULAR AMBER          |
| Y               | STEADY AMBER LEFT ARROW        |
| YL              | STEADY AMBER LEFT ARROW        |

**ABBREVIATIONS**

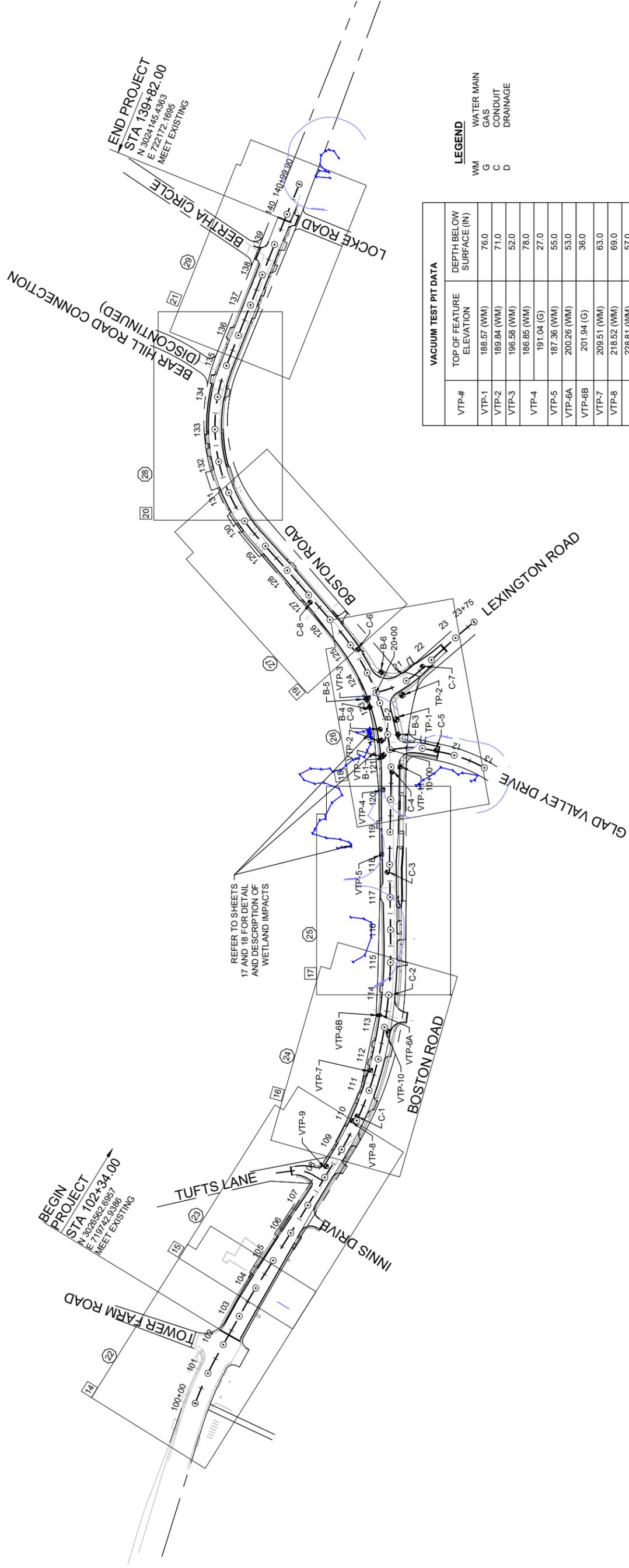
**GENERAL**

|              |                                      |
|--------------|--------------------------------------|
| AAADT        | ANNUAL AVERAGE DAILY TRAFFIC         |
| ABAN         | ABANDON                              |
| ADJ          | ADJUST                               |
| APPROX.      | APPROXIMATE                          |
| A.C.         | ASPHALT CONCRETE                     |
| ACCM PIPE    | ASPHALT COATED CORRUGATED METAL PIPE |
| BB           | BITUMINOUS BERM                      |
| BIT.         | BITUMINOUS                           |
| BC           | BOTTOM OF CURB                       |
| BD.          | BOUND                                |
| BL           | BUILDING                             |
| 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                     |
| CLO          | CLEANOUT                             |
| 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                    |
| DU           | DESTINATION UNKNOWN                  |
| DW           | STEADY DON'T WALK - PORTLAND ORANGE  |
| DWY          | DRIVEWAY                             |
| ELEV (or EL) | ELEVATION                            |
| EMB          | EMBANKMENT                           |
| EOP          | EDGE OF PAVEMENT                     |
| EXIST        | 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          | GUARD                                |
| HDW          | HEADWALL                             |
| HMA          | HOT MIX ASPHALT                      |
| HOR          | HORIZONTAL                           |
| HYD          | HYDRANT                              |
| INV          | INVERT                               |
| JCT          | JUNCTION                             |
| L            | LENGTH OF CURVE                      |
| LA           | LANDSCAPING                          |
| 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          |
| PCR          | PEDESTRIAN CURB RAMP                 |
| P.G.L.       | PROFILE GRADE LINE                   |
| PI           | POINT OF INTERSECTION                |
| POC          | POINT ON CURVE                       |
| POT          | POINT ON TANGENT                     |
| PRC          | POINT OF REVERSE CURVATURE           |
| PROJ         | PROJECT                              |
| PSB          | PLANTABLE SOIL BORROW                |

**BILLERICA**  
**BOSTON RD (ROUTE 3A)**  
**AT LEXINGTON RD & GLAD VALLEY DR**

|                  |                    |           |              |
|------------------|--------------------|-----------|--------------|
| STATE            | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
| MA               | -                  | 3         | 83           |
| PROJECT FILE NO. |                    | 609250    |              |

**KEY PLAN & BORING LOG**



**BEGIN PROJECT**  
 STA 102+34.00  
 N 307263892.6987  
 E 7197421.8986  
 MEET EXISTING

**END PROJECT**  
 STA 139+82.00  
 N 3024145.4363  
 E 722172.1695  
 MEET EXISTING

REFER TO SHEETS  
 17 AND 18 FOR DETAIL  
 AND DESCRIPTION OF  
 WETLAND IMPACTS

| VTP-#  | TOP OF FEATURE ELEVATION | DEPTH BELOW SURFACE (IN) |
|--------|--------------------------|--------------------------|
| VTP-1  | 188.57 (WM)              | 76.0                     |
| VTP-2  | 189.84 (WM)              | 71.0                     |
| VTP-3  | 196.56 (WM)              | 52.0                     |
| VTP-4  | 186.85 (WM)              | 78.0                     |
| VTP-5  | 191.04 (G)               | 27.0                     |
| VTP-6A | 187.36 (WM)              | 55.0                     |
| VTP-6B | 200.26 (WM)              | 53.0                     |
| VTP-6B | 201.94 (G)               | 36.0                     |
| VTP-7  | 209.51 (WM)              | 63.0                     |
| VTP-8  | 218.52 (WM)              | 69.0                     |
| VTP-9  | 228.81 (WM)              | 57.0                     |
| VTP-10 | 230.60 (D)               | 33.0                     |
| VTP-10 | 207.33 (C)               | 10.7                     |
| VTP-11 | 193.51 (G)               | 32.0                     |

**LEGEND**

WM WATER MAIN  
 G GAS  
 C CONDUIT  
 D DRAINAGE

**SHEET NUMBER LEGEND**

XX CONSTRUCTION PLAN  
 (X) DRAINAGE & UTILITY PLAN

C-# PAVEMENT CORES (SEE DATA IN SPECIAL PROVISIONS)  
 B-# BORING LOG (SEE DATA IN SPECIAL PROVISIONS)  
 VTP-# VACUUM TEST PIT  
 TP-# TEST PIT (SEE DATA ON UTILITY PLANS)

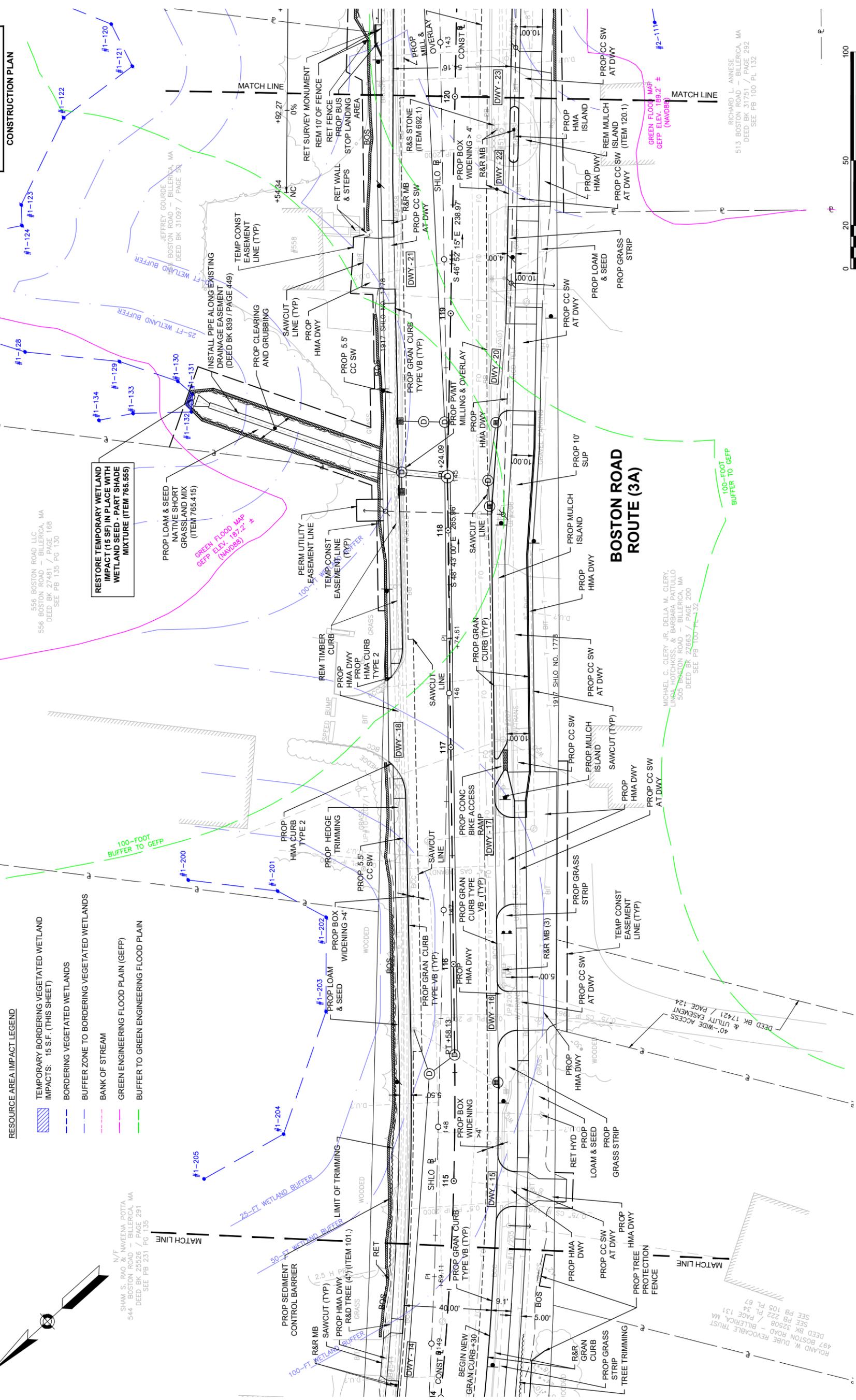


609250.HD(958 CONST).DWG  
 Plotted on 23-Feb-2017 9:24 AM

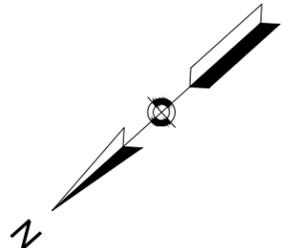
**BILLERICA  
 BOSTON RD (ROUTE 3A)  
 AT LEXINGTON RD & GLAD VALLEY DR**

| FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
|--------------------|-----------|--------------|
| MA -               | 17        | 30           |

PROJECT FILE NO. 609250  
**CONSTRUCTION PLAN**



- RESOURCE AREA IMPACT LEGEND**
- TEMPORARY BORDERING VEGETATED WETLAND IMPACTS: 15 S.F. (THIS SHEET)
  - BORDERING VEGETATED WETLANDS
  - BUFFER ZONE TO BORDERING VEGETATED WETLANDS
  - BANK OF STREAM
  - GREEN ENGINEERING FLOOD PLAIN (GEFP)
  - BUFFER TO GREEN ENGINEERING FLOOD PLAIN



N/F  
 SHAM S. RAO & NAVEENA POTTA  
 544 BOSTON ROAD - BILLERICA, MA  
 DEED BK 25526 / PAGE 291  
 SEE PB 231 PG 135

ROLAND W. DUBE REVOCABLE TRUST  
 497 BOSTON ROAD - BILLERICA, MA  
 DEED BK 32508 / PAGE 131  
 SEE PB 105 PL 67  
 SEE PB 222 PL 34

MICHAEL C. CLERY JR., DELIA M. CLERY,  
 LINDA M. MANNING, BARBARA PATRULLO  
 506 BOSTON ROAD - BILLERICA, MA  
 DEED BK 27663 / PAGE 200  
 SEE PB 100 PL 32

556 BOSTON ROAD LLC  
 556 BOSTON ROAD - BILLERICA, MA  
 DEED BK 27481 / PAGE 168  
 SEE PB 135 PG 130

RESTORE TEMPORARY WETLAND  
 IMPACT (15 SF) IN PLACE WITH  
 WETLAND SEED - PART SHADE  
 MIXTURE (ITEM 765.555)

INSTALL PIPE ALONG EXISTING  
 DRAINAGE EASEMENT  
 (DEED BK 839 / PAGE 449)

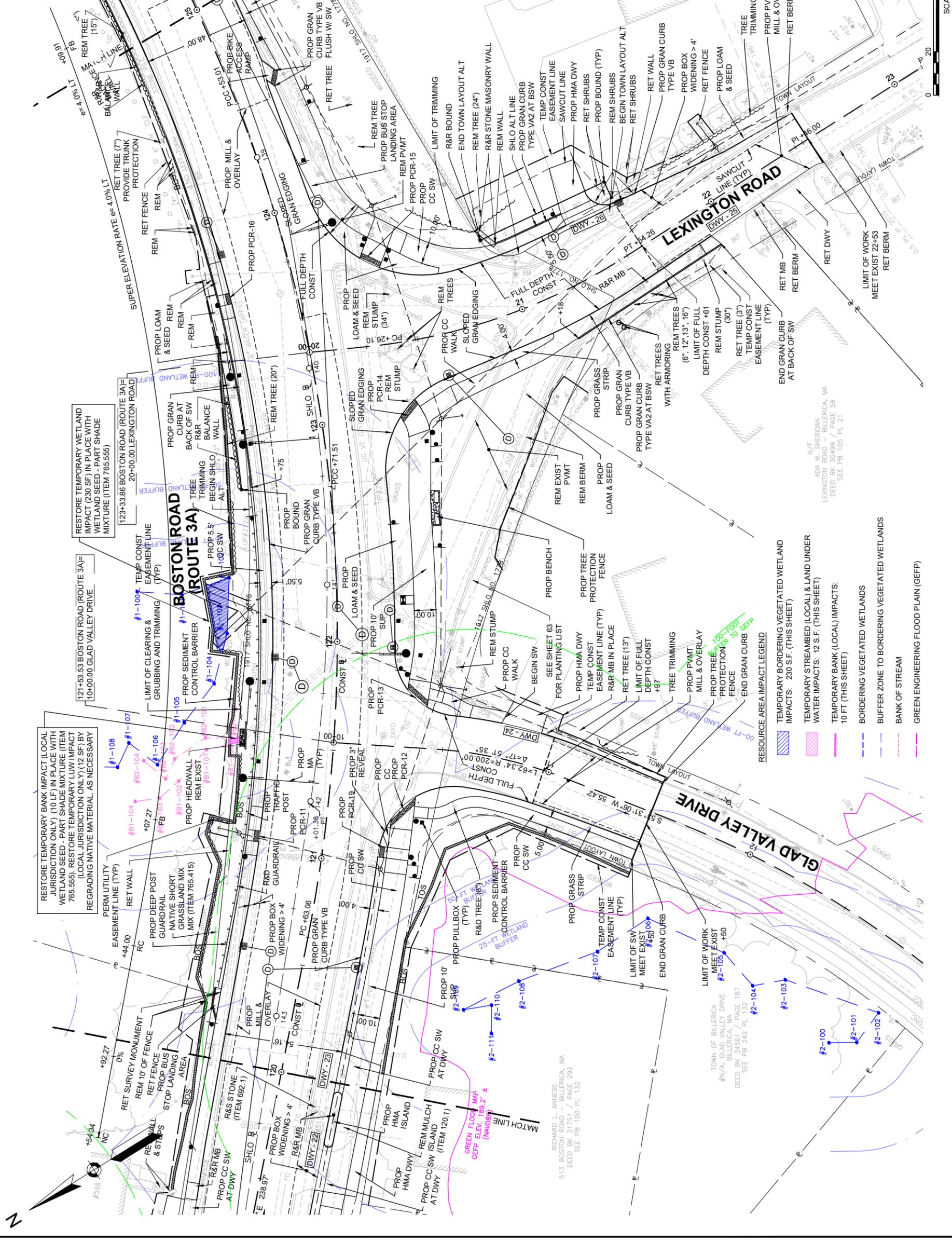
RICHARD L. ANNISE  
 513 BOSTON ROAD - BILLERICA, MA  
 DEED BK 31751 / PAGE 292  
 SEE PB 100 PL 132



**BILLERICA  
BOSTON RD (ROUTE 3A)  
AT LEXINGTON RD & GLAD VALLEY DR**

|                         |           |              |
|-------------------------|-----------|--------------|
| FED. AID PROJ. NO.      | SHEET NO. | TOTAL SHEETS |
| MA                      | 18        | 30           |
| PROJECT FILE NO. 609250 |           |              |

**CONSTRUCTION PLAN**



- RESOURCE AREA IMPACT LEGEND**
- TEMPORARY BORDERING VEGETATED WETLAND IMPACTS: 230 S.F. (THIS SHEET)
  - TEMPORARY STREAMBED (LOCAL) & LAND UNDER WATER IMPACTS: 12 S.F. (THIS SHEET)
  - TEMPORARY BANK (LOCAL) IMPACTS: 10 FT (THIS SHEET)
  - BORDERING VEGETATED WETLANDS
  - BUFFER ZONE TO BORDERING VEGETATED WETLANDS
  - BANK OF STREAM
  - GREEN ENGINEERING FLOOD PLAIN (GEFF)



**BILLERICA  
BOSTON RD (ROUTE 3A)  
AT LEXINGTON RD & GLAD VALLEY DR**

|       |                    |           |              |
|-------|--------------------|-----------|--------------|
| STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
| MA    |                    | 25        | 30           |

PROJECT FILE NO. 609250

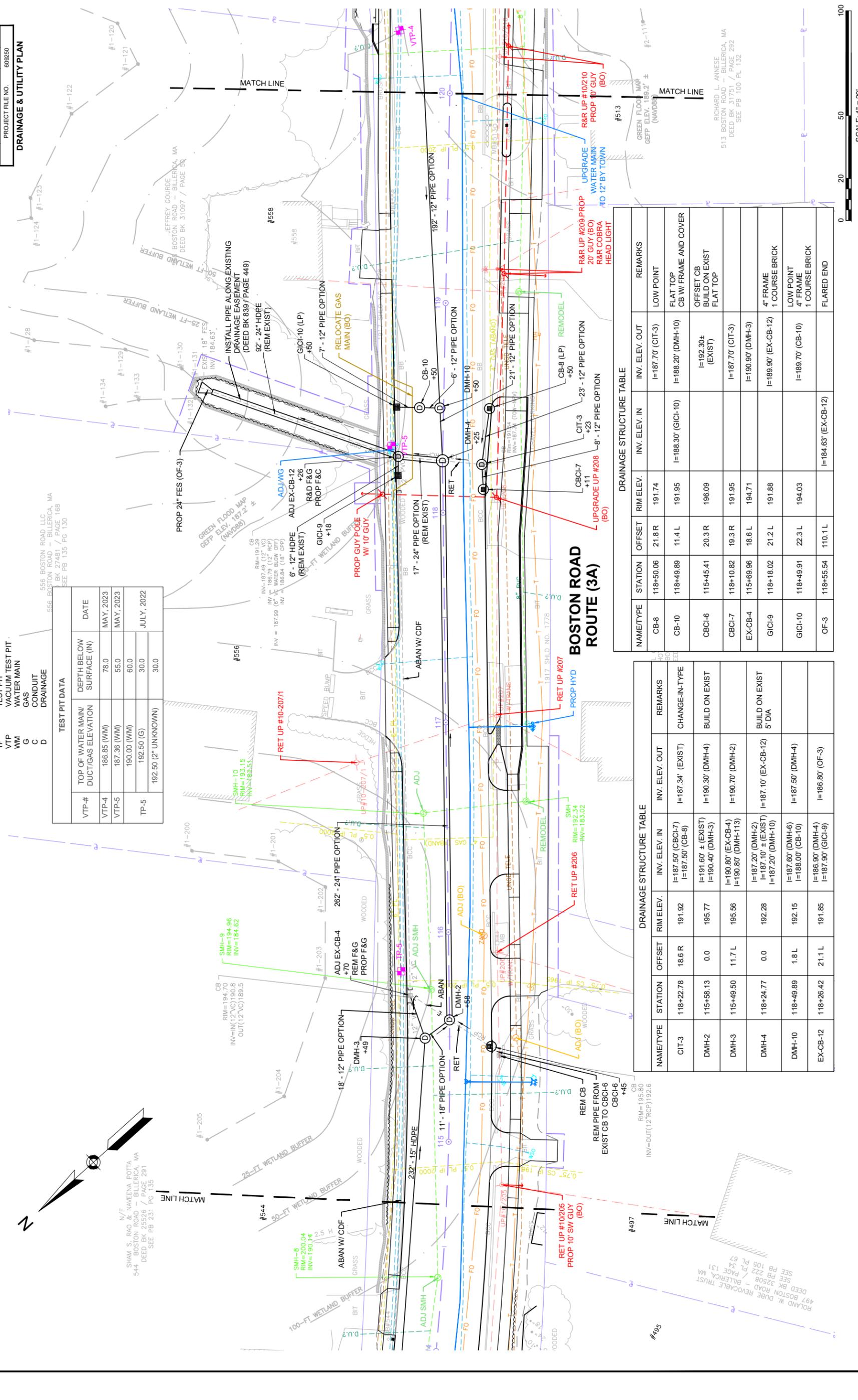
**DRAINAGE & UTILITY PLAN**

**LEGEND**

|     |                 |
|-----|-----------------|
| TP  | TEST PIT        |
| VTP | VACUUM TEST PIT |
| WM  | WATER MAIN      |
| G   | GAS             |
| C   | CONDUIT         |
| D   | DRAINAGE        |

**TEST PIT DATA**

| VTP-# | TOP OF WATER MAIN/ DUCT/GAS ELEVATION | DEPTH BELOW SURFACE (IN) | DATE       |
|-------|---------------------------------------|--------------------------|------------|
| VTP-4 | 186.85 (WM)                           | 78.0                     | MAY, 2023  |
| VTP-5 | 187.36 (WM)                           | 55.0                     | MAY, 2023  |
|       | 190.00 (WM)                           | 60.0                     |            |
| TP-5  | 192.50 (G)                            | 30.0                     | JULY, 2022 |
|       | 192.50 (2" UNKNOWN)                   | 30.0                     |            |

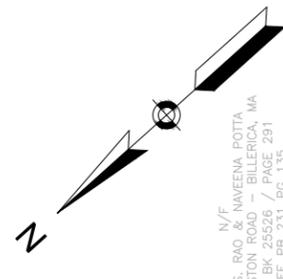


**DRAINAGE STRUCTURE TABLE**

| NAME/TYPE | STATION   | OFFSET  | RIM ELEV. | INV. ELEV. IN       | INV. ELEV. OUT       | REMARKS                                 |
|-----------|-----------|---------|-----------|---------------------|----------------------|---|
| CB-8      | 118+50.06 | 21.8 R  | 191.74    | I=187.70' (CIT-3)   | I=187.70' (CIT-3)    | LOW POINT                               |
| CB-10     | 118+48.89 | 11.4 L  | 191.95    | I=188.30' (GICI-10) | I=188.20' (DMH-10)   | FLAT TOP<br>CB W/ FRAME AND COVER       |
| CB-6      | 115+45.41 | 20.3 R  | 196.09    |                     | I=192.30± (EXIST)    | OFFSET CB<br>BUILD ON EXIST<br>FLAT TOP |
| CB-7      | 118+10.82 | 19.3 R  | 191.95    |                     | I=187.70' (CIT-3)    |   |
| EX-CB-4   | 115+68.96 | 18.6 L  | 194.71    |                     | I=190.90' (DMH-3)    |   |
| GICI-9    | 118+18.02 | 21.2 L  | 191.88    |                     | I=189.90' (EX-CB-12) | 4" FRAME<br>1 COURSE BRICK              |
| GICI-10   | 118+49.91 | 22.3 L  | 194.03    |                     | I=189.70' (CB-10)    | LOW POINT<br>4" FRAME<br>1 COURSE BRICK |
| OF-3      | 118+55.54 | 110.1 L |           |                     | I=184.63' (EX-CB-12) | FLARED END                              |

**DRAINAGE STRUCTURE TABLE**

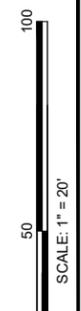
| NAME/TYPE | STATION   | OFFSET | RIM ELEV. | INV. ELEV. IN  | INV. ELEV. OUT       | REMARKS                  |
|-----------|-----------|--------|-----------|--|----------------------|--------------------------|
| CIT-3     | 118+22.78 | 18.6 R | 191.92    | I=187.50' (CB-7)<br>I=187.50' (CB-8)                           | I=187.34' (EXIST)    | CHANGE-IN-TYPE           |
| DMH-2     | 115+58.13 | 0.0    | 195.77    | I=191.60' ± (EXIST)<br>I=190.40' (DMH-3)                       | I=190.30' (DMH-4)    | BUILD ON EXIST           |
| DMH-3     | 115+49.50 | 11.7 L | 195.56    | I=190.80' (EX-CB-4)<br>I=190.80' (DMH-113)                     | I=190.70' (DMH-2)    | BUILD ON EXIST           |
| DMH-4     | 118+24.77 | 0.0    | 192.28    | I=187.20' (DMH-2)<br>I=187.10' ± (EXIST)<br>I=187.20' (DMH-10) | I=187.10' (EX-CB-12) | BUILD ON EXIST<br>5" DIA |
| DMH-10    | 118+49.89 | 1.8 L  | 192.15    | I=187.60' (DMH-6)<br>I=188.00' (CB-10)                         | I=187.50' (DMH-4)    |                          |
| EX-CB-12  | 118+26.42 | 21.1 L | 191.85    | I=186.90' (DMH-4)<br>I=187.90' (GICI-9)                        | I=186.80' (OF-3)     |                          |

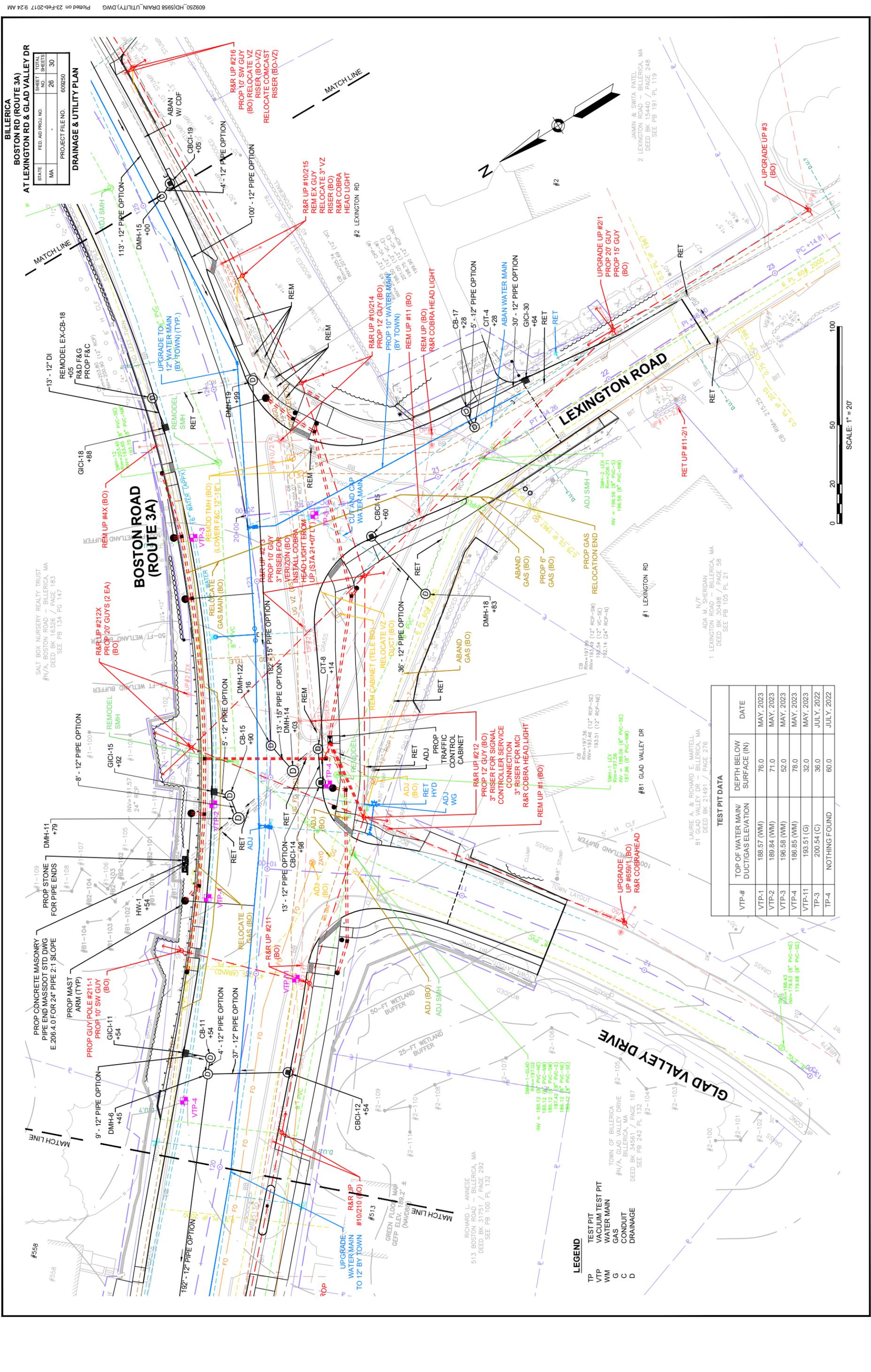


N/F  
SHAM S. RAO & NAVEENA POTTA  
544 BOSTON ROAD - BILLERICA, MA  
DEED BK 25526 / PAGE 291  
SEE PB 231 PG 135

ROUND W. DUBE REVOCABLE TRUST  
497 BOSTON ROAD - BILLERICA, MA  
DEED BK 32508 / PAGE 131  
SEE PB 105 PL 67  
SEE PB 222 PL 34  
SEE PB 222 / PAGE 131

RICHARD L. ANNISE  
513 BOSTON ROAD - BILLERICA, MA  
DEED BK 31751 / PAGE 292  
SEE PB 100 PL 132





**BILLERICA  
BOSTON RD (ROUTE 3A)  
AT LEXINGTON RD & GLAD VALLEY DR**

|       |                   |           |              |
|-------|-------------------|-----------|--------------|
| STATE | FED. AD PROJ. NO. | SHEET NO. | TOTAL SHEETS |
| MA    |                   | 26        | 30           |

PROJECT FILE NO. 609250

**DRAINAGE & UTILITY PLAN**

**TEST PIT DATA**

| VTP#   | TOP OF WATER MAIN DUCT/GAS ELEVATION | DEPTH BELOW SURFACE (IN) | DATE       |
|--------|--------------------------------------|--------------------------|------------|
| VTP-1  | 188.57 (WM)                          | 76.0                     | MAY, 2023  |
| VTP-2  | 189.84 (WM)                          | 71.0                     | MAY, 2023  |
| VTP-3  | 196.58 (WM)                          | 52.0                     | MAY, 2023  |
| VTP-4  | 186.85 (WM)                          | 78.0                     | MAY, 2023  |
| VTP-11 | 193.51 (G)                           | 32.0                     | MAY, 2023  |
| TP-3   | 200.54 (C)                           | 36.0                     | JULY, 2022 |
| TP-4   | NOTHING FOUND                        | 60.0                     | JULY, 2022 |

**LEGEND**

|     |                 |
|-----|-----------------|
| TP  | TEST PIT        |
| VTP | VACUUM TEST PIT |
| WM  | WATER MAIN      |
| WM  | WATER MAIN      |
| C   | CONDUIT         |
| D   | DRAINAGE        |

SCALE: 1" = 20'

609250\_HD(5958 DRAIN, UTILITY).DWG Plotted on 23-Feb-2017 9:24 AM

SALT BOX NURSERY REALTY TRUST  
#N/A, BOSTON ROAD - BILLERICA, MA  
DEED BK 1634 / PAGE 183  
SEE PB 134 PG 147

PROF CONCRETE MASONRY  
PIPE END MASSDOT STD DWG  
E.206.4.0 FOR 24" PIPE 2:1 SLOPE

RICHARD L. ANWESE  
513 BOSTON ROAD - BILLERICA, MA  
DEED BK 100 PL 132

TOWN OF BILLERICA  
#N/A, GLAD VALLEY DRIVE - BILLERICA, MA  
DEED BK 34561 / PAGE 187  
SEE PB 242 PL 132

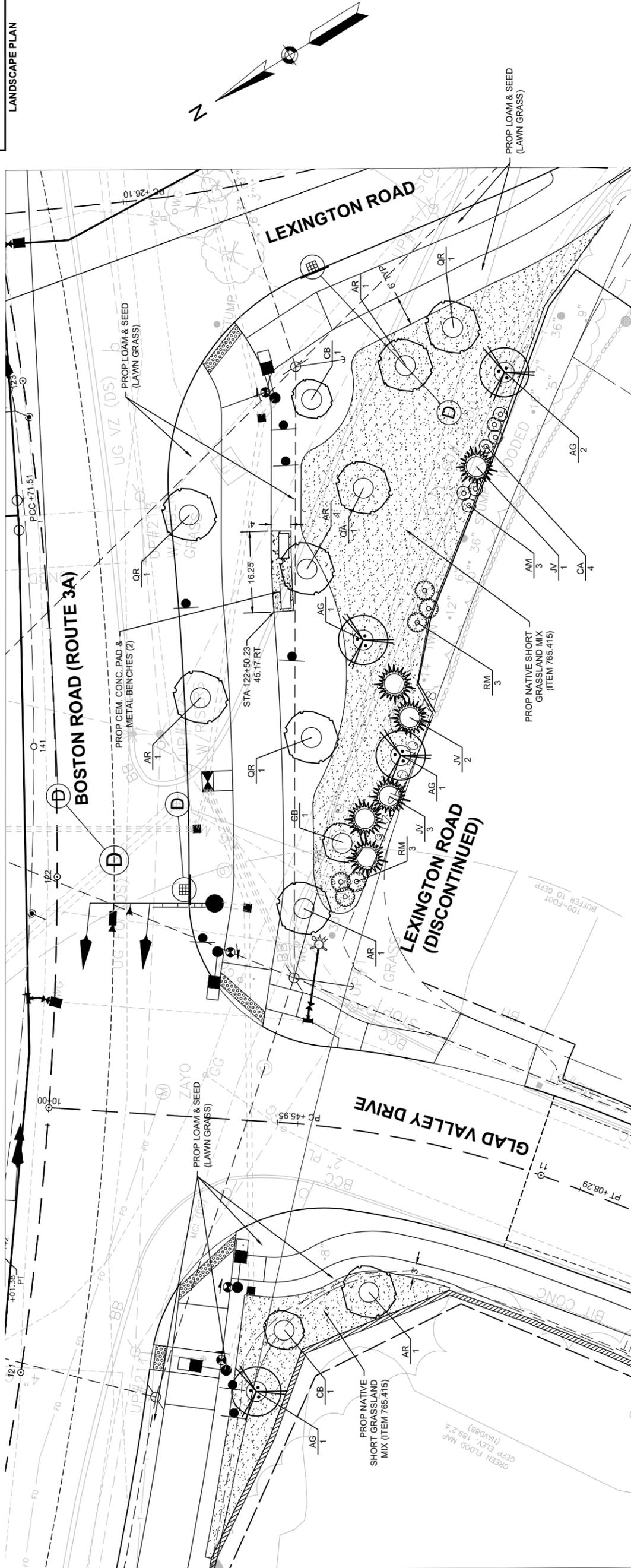
LAURIE A. & RICHARD E. MARTELL  
81 GLAD VALLEY DR - BILLERICA, MA  
DEED BK 21491 / PAGE 276

JAMIN & SWITA PATEL  
2 LEXINGTON ROAD - BILLERICA, MA  
DEED BK 15440 / PAGE 248  
SEE PB 191 PL 119

**BILLERICA**  
**BOSTON RD (ROUTE 3A)**  
**AT LEXINGTON RD & GLAD VALLEY DR**

|                  |                    |           |              |
|------------------|--------------------|-----------|--------------|
| STATE            | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS |
| MA               | -                  | 30        | 30           |
| PROJECT FILE NO. |                    | 609250    |              |

**LANDSCAPE PLAN**

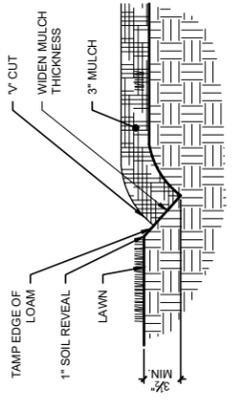


INTERSECTION PLANTING SITE PLAN



PLANT LIST - THIS SHEET

| KEY           | QTY | BOTANICAL NAME                                       | COMMON NAME                          | SIZE             | REMARKS |
|---------------|-----|--|--------------------------------------|------------------|---------|
| <b>TREES</b>  |     |  |                                      |                  |         |
| AR            | 5   | <i>Acer rubrum</i>                                   | MAPLE - RED                          | 2-2.5' CAL       |         |
| AG            | 4   | <i>Amelanchier x grandiflora</i> 'Autumn Brilliance' | SERVICEBERRY - AUTUMN BRILLIANCE     | 7-8 HGT          |         |
| CB            | 3   | <i>Carpinus betulus</i> 'Frans Fontain'              | HORNBEAM - COLUMNAR - FRANS FONTAINE | 2-2.5' CAL       |         |
| JV            | 6   | <i>Juniperus virginiana</i>                          | CEDAR - RED                          | 7-8' HGT         |         |
| QA            | 1   | <i>Quercus alba</i>                                  | OAK - WHITE                          | 2-2.5' CAL       |         |
| QR            | 3   | <i>Quercus rubra</i>                                 | OAK - NORTHERN RED                   | 2-2.5' CAL       |         |
| <b>SHRUBS</b> |     |  |                                      |                  |         |
| AM            | 3   | <i>Arcenia melanocarpa</i> 'Viking'                  | CHOKEBERRY - BLACK                   | 2-3' / #3        |         |
| CA            | 4   | <i>Celtis occidentalis</i> 'Compacta'                | SUMMERSWEET SHRUB - COMPACT          | 3-4' / #3        |         |
| RH            | 6   | <i>Rhododendron maximum</i> 'Roseum'                 | RHODO - ROSEBAY                      | 2-2.5 FT / 3 GAL |         |



NOTE: LOCATE BEDLINE AS SHOWN ON PLAN.

**BEDLINE EDGE**  
 NOT TO SCALE

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DOCUMENT A00870

**UNITED STATES DEPARTMENT OF THE INTERIOR  
FISH AND WILDLIFE SERVICE**

**CONSISTENCY LETTER**

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## United States Department of the Interior



FISH AND WILDLIFE SERVICE  
New England Ecological Services Field Office  
70 Commercial Street, Suite 300  
Concord, NH 03301-5094  
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To:

August 25, 2023

Project code: 2023-0121560

Project Name: 609250 BILLERICA- INTERSECTION IMPROVEMENTS AT BOSTON RD  
(ROUTE 3A), LEXINGTON ST AND GLAD VALLEY RD

Subject: Consistency letter for the '609250 BILLERICA- INTERSECTION IMPROVEMENTS AT BOSTON RD (ROUTE 3A), LEXINGTON ST AND GLAD VALLEY RD' project under the amended February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion (dated March 23, 2023) for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat (NLEB).

To whom it may concern:

The U.S. Fish and Wildlife Service (Service) has received your request dated August 25, 2023 to verify that the **609250 BILLERICA- INTERSECTION IMPROVEMENTS AT BOSTON RD (ROUTE 3A), LEXINGTON ST AND GLAD VALLEY RD** (Proposed Action) may rely on the amended February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion (dated March 23, 2023) 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 will have no effect on the endangered Indiana bat (*Myotis sodalis*) or the endangered northern long-eared bat (*Myotis septentrionalis*). If the Proposed Action is not modified, **no consultation is required for these two species**. 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.

**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 and/or NLEB use or occupancy, yet later detected 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 within 2 working days of the incident. In these

instances, potential incidental take of Indiana bats and/or NLEBs may be exempted provided that the take is reported to the Service.

If the Proposed Action may affect any other federally-listed or proposed species and/or 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 advise the lead Federal action agency accordingly.

The following species may occur in your project area and **are not** covered by this determination:

- Monarch Butterfly *Danaus plexippus* Candidate

## **PROJECT DESCRIPTION**

The following project name and description was collected in IPaC as part of the endangered species review process.

### **NAME**

609250 BILLERICA- INTERSECTION IMPROVEMENTS AT BOSTON RD (ROUTE 3A), LEXINGTON ST AND GLAD VALLEY RD

### **DESCRIPTION**

609250 BILLERICA- INTERSECTION IMPROVEMENTS AT BOSTON ROAD (ROUTE 3A), LEXINGTON STREET AND GLAD VALLEY ROAD

The Boston Road (Route 3A) at Lexington Road and Glad Valley Drive intersection improvements include the installation of a traffic signal and realignment of both Lexington Road and Glad Valley Drive. Lexington Road will be realigned to form a more conventional three-legged signalized intersection at Boston Road. Glad Valley Drive will also be realigned to meet Boston Road in a similar three legged signalized intersection, with both realigned intersections operating under one controller. This traffic signal reconfiguration will improve safety and operations for this curved section of Boston Road.

Monarch Butterfly: Candidate Species only, no conservation measures at this time



## DETERMINATION KEY RESULT

Based on the information you provided, you have determined that the Proposed Action will have no effect on the endangered Indiana bat and/or the endangered northern long-eared bat.

Therefore, no 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 for these two species.

## QUALIFICATION INTERVIEW

1. Is the project within the range of the Indiana bat<sup>[1]</sup>?

[1] See [Indiana bat species profile](#)

**Automatically answered**

No

2. Is the project within the range of the northern long-eared bat<sup>[1]</sup>?

[1] See [northern long-eared bat species profile](#)

**Automatically answered**

Yes

3. [Semantic] Does your proposed action intersect an area where Indiana bats and northern long-eared bats are not likely to occur?

**Automatically answered**

Yes

## **DETERMINATION KEY DESCRIPTION: FHWA, FRA, FTA PROGRAMMATIC CONSULTATION FOR TRANSPORTATION PROJECTS AFFECTING NLEB OR INDIANA BAT**

This key was last updated in IPaC on July 27, 2023. 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 endangered **northern long-eared bat** (NLEB) (*Myotis septentrionalis*).

This decision key should only be used to verify project applicability with the Service's [amended February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion \(dated March 23, 2023\) 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: Trevor Burns

Address: 10 Park Plaza

City: Boston

State: MA

Zip: 02116

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## **LEAD AGENCY CONTACT INFORMATION**

Lead Agency: Federal Highway Administration

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DOCUMENT A00871

# **BAT PRESENCE/PROBABLE ABSENCE ACOUSTIC SURVEY REPORT**

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November 4, 2024

Dave Paulson  
 Wildlife and Endangered Species Program Supervisor  
 Massachusetts Department of Transportation – Highway Division  
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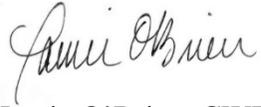
|                          |  |
|--------------------------|--|
| Project                  | Bat Presence/Probable Absence Acoustic Survey  |
| MassDOT Project #        | 609250   |
| MassDOT Project Title    | Intersection Improvements at Boston Road (Route 3A), Lexington Street and Glad Valley Road |
| Town                     | Billerica, Massachusetts   |
| Surveyor Name/Firm       | <i>Emma Baron, Colleen Claussen, &amp; Kaitlin Houle / Normandeau Associates, Inc.</i>     |
| Detector Operation Dates | June 12-20, 2024   |
| Acoustic Survey Results  | <b>NLEB NOT DETECTED</b>   |
| Acoustic Survey Results  | <b>PESU NOT DETECTED</b>   |
| Acoustic Survey Results  | <b>MYLU NOT DETECTED</b>   |
| Acoustic Survey Results  | <b>MYLE NOT DETECTED</b>   |

Dear Mr. Paulson,

This report contains the results of the Massachusetts Department of Transportation (MassDOT) bat summer presence/probable absence survey performed for the MassDOT Project #609250, *Intersection Improvements at Boston Road (Route 3A), Lexington Street and Glad Valley Road*, in Billerica, Massachusetts. Acoustic detectors deployed by *Normandeau Associates, Inc.* detected the following species:

- *Did not* detect the presence of federally endangered northern long-eared bat (*Myotis septentrionalis*, hereafter NLEB) as 0 calls were classified and confirmed via qualitative assessment.
- *Did not* detect the presence of federally proposed endangered and state endangered tri-colored bat (*Perimyotis subflavus*) as 0 calls were confirmed as such during our qualitative assessment.
- *Did not* detect the presence of state endangered little brown bat (*Myotis lucifugus*) as 0 calls were confirmed as such during our qualitative assessment.
- *Did not* detect the presence of state endangered eastern small-footed bat (*Myotis leibei*) as 0 calls were confirmed as such during our qualitative assessment.

Sincerely,

A handwritten signature in cursive script that reads "Jamie O'Brien".

Jamie O'Brien, CWB®  
Project Manager

Attachments: Bat Survey Report for Billerica 609250

# Bat Presence/Probable Absence Acoustic Survey MassDOT Project District 4

#609250, Intersection Improvements at Boston Road (Route 3A), Lexington Street  
and Glad Valley Road

Billerica, MA

**Prepared For**

Dave Paulson

Wildlife and Endangered Species Program Supervisor  
Massachusetts Department of Transportation – Highway Division  
10 Park Plaza, Room 7360  
Boston, MA 02116-3973

**Prepared By**

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**November 4, 2024**

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## Summary

An ultrasonic acoustic survey was conducted to inventory the federally and state endangered northern long-eared bat (NLEB; *Myotis septentrionalis*, or MYSE), tricolored bat (TCB; *Perimyotis subflavus*, or PESU), proposed for federal listing, and other state listed bat species within the proposed limits of work for the Massachusetts Department of Transportation (MassDOT) project #609250, Intersection improvements at Boston Road (Route 3A), Lexington Street and Glad Valley Road, located in the Town of Billerica, MA. The survey was designed specifically to sample for NLEB and TCB in accordance with the United States Fish and Wildlife Service (USFWS) Range-wide Indiana Bat and Northern Long-eared Bat Survey Guidelines, and one detector was placed in one location along the project corridor between June 12 and June 20, 2024. Zero bat passes were identified by the Kaleidoscope Pro software package with high certainty of probable presence for the NLEB during its auto-identification. Less than 10 call passes per site night were identified by analysis software as TCB and the Maximum-Likelihood Estimator (MLE) value was  $> 0.05$  for all site nights; therefore, per USFWS guidelines, no manual review of the call data was required for TCB. Bat species potentially or likely present, based on Kaleidoscope Pro (KPro) auto-identification results that met the MLE threshold (prior to review by an analyst), consisted of big brown bat (*Eptesicus fuscus*), eastern red bat (*Lasiurus borealis*), hoary bat (*Lasiurus cinereus*), silver-haired bat (*Lasionycteris noctivagans*), eastern small-footed bat (*Myotis leibii*, or MYLE), and little brown bat (*Myotis lucifugus*, or MYLU). Additionally, MassDOT requested review of state listed species call passes (MYSE, MYLE, MYLU, and PESU). **The following species were confirmed as present during our qualitative analysis: eastern red bat.** Lower frequency call passes typical of big brown bat, hoary bat, silver-haired bat, and some eastern red bat calls were not specifically reviewed by the acoustic analyst.

## 1 Project Overview

Project #609250, Intersection Improvements at Boston Road (Route 3A), Lexington Street and Glad Valley Road, located in the Town of Billerica, MA, involves improving pedestrian curbs and ramps, pavement milling and overlays, and box widening at Boston Road (Route 3A), Lexington Street, and Glad Valley Road (Project). These activities could involve the clearing of about 0.20 acres and 13 trees. The total length of the Project is approximately 1.04 kilometers (km; 0.65 miles).

The Project is within the range of the federally and state endangered NLEB, which encompasses all of Massachusetts. The Project is also within the anticipated range of the TCB, which has been proposed for listing under the federal Endangered Species Act and is a state endangered species. These tree-roosting bat species use forested habitats during their active season, from April 15 through October 31. The Project has the potential to affect these species through clearing tree clearing and limbing.

Normandeau Associates, Inc. (Normandeau) identified the portion(s) of the Project area that required a presence/probable absence survey based on presence of suitable habitat and then conducted acoustic surveys in this location as described below. All habitat assessments and presence/ probable absence surveys conducted were consistent with the USFWS' [2024 Range-wide Indiana Bat & Northern Long-eared Bat Survey Guidelines](#)<sup>1</sup> (Guidelines). The protocols for NLEB summer surveys are described in the Guidelines, which explicitly include the NLEB and provide NLEB-specific guidance. The Guidelines indicate that the same NLEB guidance can be used for TCB. Results of the surveys are summarized below, and these results include all elements required from Appendices C and F of the Guidelines. The Project does not occur within the known summer range of the Indiana bat (*Myotis sodalis*), the only other federally listed (endangered) species in the northeast region.

## 2 Methods

The survey was conducted in conformance with the methods and approach outlined in the Guidelines. The field survey and the data analysis were conducted by personnel trained and qualified to conduct their respective tasks. Staff resumes are included in Appendix F.

### Habitat Assessment

The general habitat suitability on this site was assessed by examining recent aerial photography (Google Earth™) prior to deploying the detector. In the field, habitat characteristics were examined to confirm suitability in the location where the acoustic detector was placed. The desktop assessment of the vegetation within the Project area was conducted by Emma Baron, Environmental Scientist, and quality assurance of this location was verified by Jamie O'Brien, Certified Wildlife Biologist® (CWB®). On-site characteristics and detector deployment were

<sup>1</sup> [https://www.fws.gov/sites/default/files/documents/2024-04/final\\_usfws\\_rangewide\\_ibat-nleb\\_survey\\_guidelines\\_508-compliant\\_.pdf](https://www.fws.gov/sites/default/files/documents/2024-04/final_usfws_rangewide_ibat-nleb_survey_guidelines_508-compliant_.pdf)

conducted by Emma Baron. Characteristics of the overall habitat within the Project area are presented in Section 3.1.

### Detector Deployment

Normandeau conducted surveys using equipment from Wildlife Acoustics, Inc. This included 1) Song Meter SM4BAT Recorders, full-spectrum ultrasonic acoustic detectors; and 2) SMM-U2 Ultrasonic receivers, omnidirectional microphones designed specifically for ultrasonic monitoring and analysis. No weatherproofing was used on the microphone.

As defined by the Guidelines, the Project was categorized as a linear project, and required four detector nights (e.g., one detector deployed for four nights) of survey effort per kilometer (0.62 miles) of Project length. The approximately 1 km Project was surveyed using one detector that was placed in suitable roosting habitat within the proposed limits of work. The acoustic detector was left in place to collect data on at least four nights with suitable weather conditions as described in the Guidelines. This provided the minimum four total successful detector nights needed for the Project.

The sampling location was selected based on a combination of factors including access, minimizing potential for human interference, an open cone of detection for the microphone to sample, and apparent bat habitat quality (e.g., mature trees, snags, hollows and crevices, and wetland and/or foraging habitat). The detector set-up adhered to specifications detailed in the 2024 Guidelines, which include deployment of microphones: a) at least 10 feet (3 meters) in any direction from vegetation or other obstructions; b) in areas without, or with minimal, vegetation within 100 feet (30 meters) of highly directional microphones or 33 feet (10 meters) from other microphones; c) parallel to woodland edges; and d) at least 49 feet (15 meters) from known or suitable roosts (e.g., trees/snags, buildings, bridges, bat houses, cave or mine portal entrances). Photos of this location are provided in Appendix C and a field data sheet is presented in Appendix D.

To ensure that the detector was 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 microphone was checked for proper recording of sounds and archiving of data onto the internal drive/SDXC (SD cards); and 2) the program settings including recording times and acoustic range were verified.

### Call Analysis

Each full spectrum acoustic file was processed as required by the 2024 Guidelines using Kaleidoscope Pro version 5.4.7 (KPro) and the Bats of North America 5.4.0 classifier with -1 More Sensitive (Liberal) setting, which is one of the USFWS-approved automated bat call classification software packages and settings for full spectrum calls<sup>2</sup>. The software analyzes bat call passes and uses a multinomial likelihood-ratio test known as maximum-likelihood estimator

<sup>2</sup> <https://www.fws.gov/media/automated-acoustic-bat-id-software-programs>

(MLE) to determine the probability of presence (P-value) of a certain bat species. Any MLE  $p < 0.05$  is considered a statistically significant value and is interpreted to mean that a species was detected for that site night, with a likelihood greater than 95%. Any site night that meets the MLE standard for NLEB presence is required to be manually reviewed by an acoustic analyst according to the Guidelines. Additionally, for linear projects, if the MLE is  $> 0.05$  for all site nights and ten or more call passes are auto classified as potentially belonging to TCB at any site night, manual review of TCB call passes are required or TCB presence is assumed. Furthermore, MassDOT requested manual review of state listed species as follows:

1. If there are between 1 and 10 auto classified call passes of an individual species per site night, manually review and confirm all call passes.
2. If there are between 11 and 100 auto classified call passes of an individual species per site night, manually review at least 10 call passes and until at least one call pass is confirmed.
3. If there are more than 100 auto classified call passes of an individual species per site night, manually review and confirm at least 10 percent of the call passes and until at least one call pass is confirmed.

The analyst can use a combination of programs to assess the call pass and call characteristics to make their determination of species. Analook W Version 4.5z by Titley Scientific can be used to identify NLEB presence based on minimum slope parameters of zero cross calls, when call quality allows.

Acoustic analyst Dr. Eran Amichai conducted the manual review. Results of the manual review are in Appendix E. Dr. Amichai's resume is provided in Appendix F.

Particular call characteristics are used to make a determination regarding species identification. Specifically, the myotis call characteristics are as follows:

- a) MYLU calls are identified by the following characteristics: a characteristic frequency ( $F_c$ ) of 38-41 kilohertz (kHz), minimum frequency ( $F_{min}$ ) 27-43 kHz, longer duration and a curved look (average characteristic slope [ $Sc$ ] 60-110), a maximum frequency ( $F_{max}$ ) usually below 80 kHz and the presence of a Myotis tail;
- b) MYLE calls are identified by the following characteristics: an  $F_c$  of 40-45 kHz,  $F_{min}$  31-44 kHz, shorter duration and near vertical in slope, a maximum frequency of 95 kHz and a slightly different look near  $F_c$  than other Myotis species and the presence of a Myotis tail;
- c) MYSE calls are identified by the following characteristics: an  $F_c$  of 38-47 kHz,  $F_{min}$  25-50 kHz, shortest duration ( $< 5$  ms) with the most vertical pulse ( $> 75$  kHz), slight or no slope to pulse ( $Sc$  210+), a maximum frequency above 105 kHz, the presence of a Myotis tail and usually quieter than other Myotis. A call with minimum slope of  $> 200$  octaves per second (OPS) in Analook W was also considered diagnostic.

Call characteristics specific to tricolored bats include:

- a) PESU calls are identified by the following characteristics: an Fc of 40-43 kHz, Fmin 34-46 kHz, and a steady Fmin across the call sequence. The narrowband (flat) calls have a higher frequency (40 kHz) than other species calls that have a taller call at the same frequency.

### 3 Results

#### 3.1 Overall Habitat Assessment

The Project area, depicted in Figure A-1, Appendix A, contains moderate residential and commercial development with scattered woods and fields within one thousand feet of the Project. The on-site trees consisted primarily of Norway maple (*Acer platanoides*) and red oak (*Quercus rubra*) with several other species in less abundance such as red maple (*Acer rubrum*) cottonwood (*Populus deltoides*), and American elm (*Ulmus americana*). Details of the habitat at the detector location are described in Section 3.2.

#### 3.2 Deployment Details

One acoustic detector was deployed facing south along Boston Road. The detector was programmed to run from 19:32 EDT until 6:01 EDT the following morning for each night of deployment. This recording range was selected as it encompasses approximately one hour prior to official sunset and after official sunrise times across New England for the duration of the acoustic survey season (May 15 through August 15). The detector was placed in one location along the Project corridor (Figure A-1, Appendix A). Details of the survey for each of the recording nights are summarized in Table 1 and specifications of the detector and microphone used are summarized in Table 2. Kaleidoscope Pro Software Settings are presented in Table 3.

The hourly weather conditions from Bedford, Laurence G Hanscom Field Airport (KBED), the NOAA weather reporting station nearest to the Town of Billerica, MA, are presented in Appendix B for each of the survey nights.

**Table 1. Deployment Details, Project #609250, Intersection Improvements at Boston Road (Route 3A), Lexington Street and Glad Valley Road (Billerica)**

| Deployment Date | Begin | End  | Sunset | Hi Temp (°F) <sup>a</sup> | Low Temp (°F) <sup>a</sup> | Max wind (mph) <sup>b</sup> | Precipitation (in) <sup>c</sup> | Weather <sup>a</sup> |
|-----------------|-------|------|--------|---------------------------|----------------------------|-----------------------------|---------------------------------|----------------------|
| 06/12/2024      | 19:32 | 6:01 | 20:23  | 69.1                      | 55.9                       | 6                           | 0.00                            | Fair                 |
| 06/13/2024      | 19:32 | 6:01 | 20:23  | 77.0                      | 66.9                       | 10 G22                      | 0.00                            | Fair                 |
| 06/14/2024      | 19:32 | 6:01 | 20:24  | 69.1                      | 66.9                       | 14                          | 0.15                            | Cloudy, Light rain   |
| 06/15/2024      | 19:32 | 6:01 | 20:24  | 68.0                      | 48.9                       | 9 G18                       | 0.00                            | Fair                 |
| 06/16/2024      | 19:32 | 6:01 | 20:25  | 64.9                      | 59.0                       | 8                           | 0.00                            | Fair                 |
| 06/17/2024      | 19:32 | 6:01 | 20:25  | 75.0                      | 66.9                       | 9                           | 0.00                            | Fair                 |
| 06/18/2024      | 19:32 | 6:01 | 20:25  | 84.0                      | 73.9                       | 9                           | 0.00                            | Fair                 |
| 06/19/2024      | 19:32 | 6:01 | 20:25  | 84.0                      | 73.9                       | 9                           | 0.00                            | Fair                 |

Note: Cells highlighted in gray did not meet weather requirements listed in the Guidelines (Temperatures fall below 50°F (10°C) during first five hours of survey period; Precipitation, including rain and/or fog, that exceeds 30 minutes or continues intermittently during the first five hours of the survey period; Sustained wind speeds greater than 9 miles/hour (4 meters/second; 3 on Beaufort scale) for 30 minutes or more during the first five hours of the survey period).

Source: Sunset times are from Sunrisesunset.com, weather information is from weather.gov

a High temp, low temp, max wind speed, and weather within the first five hours of survey. NOAA records values hourly, and this table summarizes conditions across those five values.

b NOAA reports wind speeds hourly; "Max Wind" is the highest speed reported over the first 5 hours of the survey period. The Guidelines specify no wind speeds of >9mph for >30 minutes during this period. If a maximum wind speed >9 mph was reported during the first or last hour of the survey, survey start time (i.e. sunset time) was used to determine if the wind speed lasted 30 minutes or more.

c Precipitation is a cumulative total of inches recorded during the first five hour increments of the survey period.

**Table 2. Acoustic Monitoring Equipment Settings**

| Detector Setting | Specification | Microphone Setting  | Specification                              |
|------------------|---------------|---------------------|--|
| Amplifier Gain   | 12 dB         | Recording format    | Single-channel<br>16-bit PCM, Differential |
| 16k High Filter  | off           |                     |  |
| Sample Rate      | 384 kHz       | Sample rates        | Full spectrum (256kHz)                     |
| Min Duration     | 1.5 ms        | Directional pattern | Cardioid                                   |
| Max Duration     | none          |                     |  |
| Min Trig Freq    | 16 kHz        |                     |  |
| Trigger Level    | 12 dB         |                     |  |
| Trigger Window   | 3 seconds     |                     |  |
| Max Length       | 00m:15s       |                     |  |
| Compression      | None          |                     |  |

**Table 3. Kaleidoscope Pro Software Settings**

| System and Batch Settings |  | Signal Parameters                                  |       |
|---------------------------|--|--|-------|
| Version                   | 5.4.7  | Minimum and maximum frequency range (kHz)          | 8-120 |
| Classifier                | NA 5.4.0 (Deselected Indiana Bat per current range map <sup>3</sup> and USFWS communication) | Minimum and maximum length of detected pulses (ms) | 2-500 |
| Settings                  | "-1" sensitivity   | Maximum inter-syllable gap (ms)                    | 500   |
| Call Type                 | Full spectrum  | Minimum number of pulses                           | 2     |

<sup>3</sup> <https://www.fws.gov/species/indiana-bat-myotis-sodalis/map>

A habitat description at the detector location follows below, and photos of the detector set-up and surrounding area are presented in Appendix C.

- **Segment 1** – The detector was deployed facing south approximately 112 degrees, approximately 3 meters from living vegetation, and 2 meters from a dead branch, which was located behind the detector. The vertical orientation of the microphone was 5 degrees (nearly parallel with the ground), and the detector height was 12 ft (3.6 m). The detector was deployed near moderate residential development in all directions. The height of the surrounding ground level vegetation was approximately 2 meters. The surrounding land use observed during deployment included stream/riparian and forested. The following habitat features were present within the adjacent deployment area that would be suitable for NLEB and/or TCB: adjacent to forest/woodland, forest edge, exfoliating bark, cracks, crevices, or cavities, forest canopy openings, near water, individual tree with suitable roost features (cracks, cavities, etc.) or within 1,000 ft of other forest/woodland, and live and dead leaf clusters (i.e. not conifers). The tree species observed near the detector included Norway maple, red maple, cottonwood, Northern red oak, and American elm. The diameter at breast height (DBH) of the Norway maple and red maple was approximately 6 inches, the cottonwood DBH was about 20 inches, red oak 10 inches, and American elm approximately 4 inches. The average DBH of all trees near the detector was approximately 6 inches. The Norway maple, cottonwood, and red oak had vines which could serve as potential roost features. The other tree species lacked obvious roosting features. Norway maple and red oak were dominant species on site.

### 3.3 Survey Results

Upon retrieval from the field, all SD cards were backed up to an external drive for long term storage. A copy of these files was saved to a separate external drive for processing through KPro, and the SD cards were erased for use on future projects. Prior to KPro processing, a separate folder was created for call passes recorded during microphone testing at deployment, battery changes, and retrieval. Additionally, the log files were examined to ensure the detector was functioning properly for the duration of the survey. All survey files were run through KPro using nightly subdirectories with the Bats of North America classifier and -1 sensitivity setting. Massachusetts was selected as Region and Indiana bat was deselected, resulting in bat calls being assigned to one of eight remaining Massachusetts bat species. Noise files were deleted and WAV files as well as zero cross files were output to a new directory using a Time Expansion Factor of 1. All output files from KPro processing were saved to the Normandeau network drive for additional backup. KPro processing was completed by Jamie O'Brien, CWB®.

The number of call passes recorded by species and location is presented in Table 4. Blue cells are those with likelihood of presence values <0.05 and correspond to species considered by KPro to be present. Calls from six species, consisting of big brown bat, eastern red bat, hoary bat, silver-haired bat, eastern small-footed bat, and little brown bat were recorded with p-values of less than 0.05.

**Table 4. Acoustic Survey Results by Date, Site, and Species for Project #609250, Intersection Improvements at Boston Road (Route 3A), Lexington Street and Glad Valley Road (Billerica)**

| Location                 | Detector Night | EPFU     | LABO     | LACI     | LANO     | MYLE     | MYLU     | MYSE | PESU     |
|--------------------------|----------------|----------|----------|----------|----------|----------|----------|------|----------|
| Number of calls recorded |                |          |          |          |          |          |          |      |          |
| Segment 1                | 20240612       | 34       | 12       | 21       | 6        |          | 8        |      | 4        |
|                          | 20240613       | 46       | 6        | 23       | 17       |          | 1        |      | 1        |
|                          | 20240614       | 29       | 10       | 7        | 15       |          | 9        |      | 2        |
|                          | 20240615       | 15       | 10       | 19       | 11       |          | 11       |      | 2        |
|                          | 20240616       | 20       | 6        | 20       | 9        | 1        | 5        |      | 1        |
|                          | 20240617       | 59       | 14       | 34       | 30       |          | 6        |      |          |
|                          | 20240618       | 40       | 19       | 72       | 34       | 2        | 4        |      | 6        |
|                          | 20240619       | 56       | 10       | 66       | 48       | 1        | 6        |      |          |
| Presence P-Value         |                |          |          |          |          |          |          |      |          |
| Segment 1                | 20240612       | 0        | 0        | 0        | 1        | 1        | 0.08538  | 1    | 0.991527 |
|                          | 20240613       | 0        | 2E-07    | 0        | 0.879862 | 1        | 1        | 1    | 1        |
|                          | 20240614       | 0        | 0        | 0.120734 | 0.135852 | 1        | 0.010076 | 1    | 1        |
|                          | 20240615       | 1.27E-05 | 0        | 0        | 0.470874 | 1        | 0.001128 | 1    | 1        |
|                          | 20240616       | 0        | 1.44E-05 | 0        | 0.981641 | 0.151121 | 0.085951 | 1    | 1        |
|                          | 20240617       | 0        | 0        | 0        | 0.166175 | 1        | 0.252619 | 1    | 1        |
|                          | 20240618       | 0        | 0        | 0        | 0.156061 | 0.005377 | 1        | 1    | 0.995534 |
|                          | 20240619       | 0        | 0        | 0        | 0.00186  | 0.177754 | 0.09259  | 1    | 1        |

Note: 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 that did not meet suitable weather conditions as described in the Guidelines. Cells highlighted in blue are species calls/MLE considered by KPro to be present.

Detector nights beyond the required four passing weather nights are due to transportation logistics.

## 4 Appendices

### Appendix A. Figures

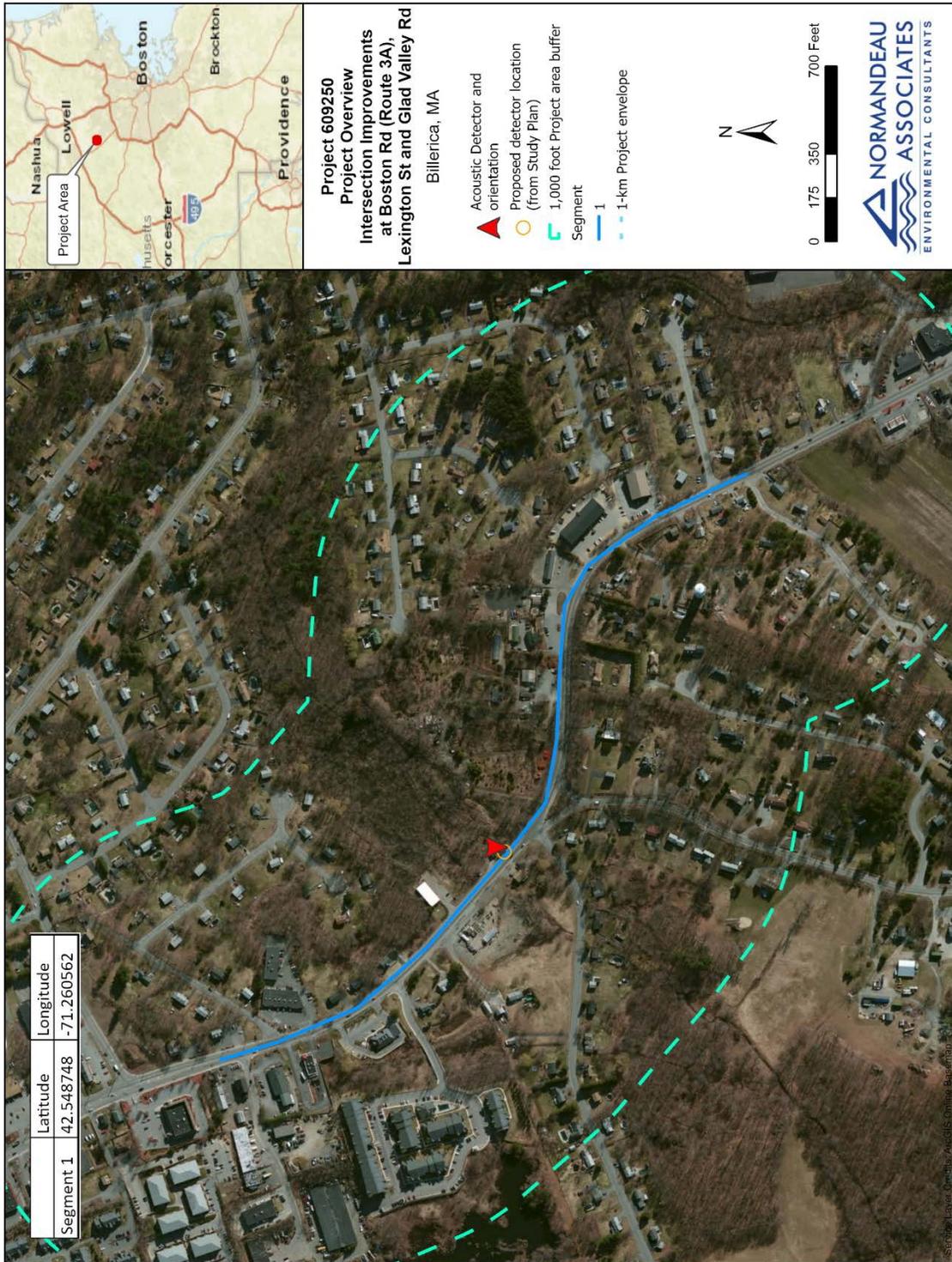


Figure A-1 Overview of Project area showing 1-km survey segment for Project #609250, Intersection Improvements at Boston Road (Route 3A), Lexington Street and Glad Valley Road (Billerica)

## Appendix B. Weather Data

| Date             | Time (edt) | Wind (mph) | Vis. (mi.) | Weather       | Sky Cond <sup>a</sup> | Temperature (°F) |      |             | Relative Humidity | Wind Chill (°F) | Heat Index (°F) | Pressure |                | Precipitation (in.) |      |      |
|------------------|------------|------------|------------|---------------|-----------------------|------------------|------|-------------|-------------------|-----------------|-----------------|----------|----------------|---------------------|------|------|
|                  |            |            |            |               |                       | Air              | Dwpt | 6 hour Max. |                   |                 |                 | Min      | Altimeter (in) | sea level (mb)      | 1 hr | 3 hr |
| <b>6/12/2024</b> |            |            |            |               |                       |                  |      |             |                   |                 |                 |          |                |                     |      |      |
| 12               | 18:51      | E 9        | 10         | Partly Cloudy | SCT095                | 73               | 57.9 |             | 59%               |                 |                 | 29.92    | 1014.3         |                     |      |      |
| 12               | 19:51      | E 5        | 10         | Partly Cloudy | SCT100                | 69.1             | 57.9 | 80.1        | 68%               |                 |                 | 29.92    | 1014.3         |                     |      |      |
| 12               | 20:51      | Calm       | 10         | Partly Cloudy | SCT055                | 66.9             | 57.9 |             | 73%               |                 |                 | 29.93    | 1014.7         |                     |      |      |
| 12               | 21:51      | Calm       | 10         | Fair          | CLR                   | 62.1             | 57.9 |             | 86%               |                 |                 | 29.95    | 1015.3         |                     |      |      |
| 12               | 22:51      | W 6        | 10         | Fair          | CLR                   | 60.1             | 57.9 |             | 93%               |                 |                 | 29.96    | 1015.6         |                     |      |      |
| 12               | 23:51      | W 6        | 10         | Fair          | CLR                   | 60.1             | 57   |             | 90%               |                 |                 | 29.97    | 1016           |                     |      |      |
| 13               | 0:51       | Calm       | 10         | Fair          | CLR                   | 59               | 55   |             | 87%               |                 |                 | 29.97    | 1016           |                     |      |      |
| 13               | 1:51       | Calm       | 10         | Fair          | CLR                   | 55.9             | 55   | 70          | 97%               |                 |                 | 29.96    | 1015.7         |                     |      |      |
| 13               | 2:51       | Calm       | 10         | Fair          | CLR                   | 55               | 53.1 |             | 93%               |                 |                 | 29.96    | 1015.5         |                     |      |      |
| 13               | 3:51       | W 6        | 10         | Fair          | CLR                   | 55               | 53.1 |             | 93%               |                 |                 | 29.96    | 1015.7         |                     |      |      |
| 13               | 4:51       | W 7        | 10         | Fair          | CLR                   | 54               | 52   |             | 93%               |                 |                 | 29.97    | 1016           |                     |      |      |
| 13               | 5:51       | W 6        | 10         | Fair          | CLR                   | 55               | 53.1 |             | 93%               |                 |                 | 29.99    | 1016.7         |                     |      |      |
| 13               | 6:51       | W 7        | 10         | Fair          | CLR                   | 59               | 54   |             | 83%               |                 |                 | 30       | 1017.2         |                     |      |      |
| <b>6/13/2024</b> |            |            |            |               |                       |                  |      |             |                   |                 |                 |          |                |                     |      |      |
| 13               | 18:51      | SW 9       | 10         | Fair          | CLR                   | 81               | 54   |             | 39%               |                 | 81              | 29.9     | 1013.7         |                     |      |      |
| 13               | 19:51      | S 10       | 10         | Fair          | CLR                   | 77               | 60.1 | 84          | 77                |                 | 79              | 29.91    | 1014           |                     |      |      |
| 13               | 20:51      | SW 10 G 22 | 10         | Fair          | CLR                   | 75               | 57.9 |             | 55%               |                 | 78              | 29.92    | 1014.2         |                     |      |      |
| 13               | 21:51      | SW 9       | 10         | Fair          | CLR                   | 73               | 57   |             | 57%               |                 |                 | 29.93    | 1014.5         |                     |      |      |
| 13               | 22:51      | SW 6       | 10         | Fair          | CLR                   | 71.1             | 55.9 |             | 59%               |                 |                 | 29.91    | 1013.9         |                     |      |      |
| 13               | 23:51      | SW 6       | 10         | Fair          | CLR                   | 69.1             | 55   |             | 61%               |                 |                 | 29.91    | 1013.9         |                     |      |      |
| 14               | 0:51       | SW 8       | 10         | Fair          | CLR                   | 68               | 55   |             | 63%               |                 |                 | 29.9     | 1013.4         |                     |      |      |
| 14               | 1:51       | SW 7       | 10         | Fair          | CLR                   | 66.9             | 55.9 | 77          | 68%               |                 |                 | 29.88    | 1013           |                     |      |      |
| 14               | 2:51       | SW 7       | 10         | Fair          | CLR                   | 66               | 57.9 |             | 75%               |                 |                 | 29.86    | 1012.3         |                     |      |      |
| 14               | 3:51       | SW 9       | 10         | Fair          | CLR                   | 64.9             | 57.9 |             | 78%               |                 |                 | 29.85    | 1011.9         |                     |      |      |
| 14               | 4:51       | SW 6       | 10         | Fair          | CLR                   | 64.9             | 59   |             | 81%               |                 |                 | 29.86    | 1012.1         |                     |      |      |
| 14               | 5:51       | S 8        | 10         | Fair          | CLR                   | 64.9             | 59   |             | 81%               |                 |                 | 29.86    | 1012.2         |                     |      |      |

| Date             | Time (edt) | Wind (mph)  | Vis. (mi.) | Weather       | Sky Cond <sup>a</sup>      | Temperature (°F) |      |             | Relative Humidity | Wind Chill (°F) | Heat Index (°F) | Pressure |                | Precipitation (in.) |      |      |
|------------------|------------|-------------|------------|---------------|----------------------------|------------------|------|-------------|-------------------|-----------------|-----------------|----------|----------------|---------------------|------|------|
|                  |            |             |            |               |                            | Air              | Dwpt | 6 hour Max. |                   |                 |                 | Min      | Altimeter (in) | sea level (mb)      | 1 hr | 3 hr |
| 14               | 6:51       | S 9         | 10         | Fair          | CLR                        | 68               | 60.1 |             | 76%               |                 |                 | 29.85    | 1011.9         |                     |      |      |
| <b>6/14/2024</b> |            |             |            |               |                            |                  |      |             |                   |                 |                 |          |                |                     |      |      |
| 14               | 18:51      | W 3         | 10         | Mostly Cloudy | SCT026<br>SCT030<br>BKN042 | 71.1             | 68   |             | 90%               |                 |                 | 29.82    | 1011           | 0.01                |      |      |
| 14               | 19:51      | SW 7        | 10         | Partly Cloudy | SCT095                     | 69.1             | 64.9 | 75          | 68                |                 |                 | 29.81    | 1010.4         |                     |      | 0.05 |
| 14               | 20:51      | SW 7        | 10         | Fair          | CLR                        | 66.9             | 63   |             | 87%               |                 |                 | 29.82    | 1010.9         |                     |      |      |
| 14               | 21:51      | SW 7        | 10         | Mostly Cloudy | BKN100                     | 66.9             | 63   |             | 87%               |                 |                 | 29.84    | 1011.6         |                     |      |      |
| 14               | 22:51      | S 5         | 10         | Mostly Cloudy | BKN095                     | 66.9             | 64   |             | 91%               |                 |                 | 29.82    | 1010.7         |                     |      |      |
| 14               | 23:51      | S 14        | 10         | Light Rain    | SCT075<br>OVC095           | 69.1             | 66   |             | 90%               |                 |                 | 29.84    | 1011.4         | 0.07                |      |      |
| 15               | 0:51       | SW 3        | 7          | Light Rain    | OVC110                     | 66.9             | 66   |             | 97%               |                 |                 | 29.84    | 1011.5         | 0.02                |      |      |
| 15               | 1:51       | Calm        | 10         | Overcast      | OVC100                     | 66.9             | 64.9 | 69.1        | 66                |                 |                 | 29.82    | 1011.1         | 0.06                |      | 0.15 |
| 15               | 2:51       | W 3         | 8          | Overcast      | OVC100                     | 66               | 64.9 |             | 96%               |                 |                 | 29.82    | 1010.8         | 0.01                |      |      |
| 15               | 3:51       | NW 6        | 10         | Mostly Cloudy | SCT085<br>BKN120           | 64               | 61   |             | 90%               |                 |                 | 29.83    | 1011.4         |                     |      |      |
| 15               | 4:51       | NW 7        | 10         | Partly Cloudy | SCT055<br>SCT085           | 63               | 60.1 |             | 90%               |                 |                 | 29.84    | 1011.7         | 0.01                |      |      |
| 15               | 5:51       | NW 7        | 10         | Partly Cloudy | SCT060                     | 62.1             | 57.9 |             | 86%               |                 |                 | 29.87    | 1012.7         |                     |      |      |
| 15               | 6:51       | NW 7        | 10         | Mostly Cloudy | BKN070                     | 64               | 59   |             | 84%               |                 |                 | 29.9     | 1013.5         |                     |      |      |
| <b>6/15/2024</b> |            |             |            |               |                            |                  |      |             |                   |                 |                 |          |                |                     |      |      |
| 15               | 18:51      | N 7         | 10         | Fair          | CLR                        | 72               | 43   |             | 35%               |                 |                 | 29.99    | 1016.8         |                     |      |      |
| 15               | 19:51      | N 9<br>G 18 | 10         | Fair          | CLR                        | 68               | 41   | 77          | 68                |                 |                 | 30.02    | 1017.7         |                     |      |      |
| 15               | 20:51      | N 3         | 10         | Fair          | CLR                        | 63               | 42.1 |             | 47%               |                 |                 | 30.05    | 1018.7         |                     |      |      |
| 15               | 21:51      | N 3         | 10         | Fair          | CLR                        | 61               | 42.1 |             | 50%               |                 |                 | 30.08    | 1019.7         |                     |      |      |
| 15               | 22:51      | N 6         | 10         | Fair          | CLR                        | 57.9             | 43   |             | 58%               |                 |                 | 30.1     | 1020.5         |                     |      |      |
| 15               | 23:51      | N 7         | 10         | Fair          | CLR                        | 55.9             | 43   |             | 62%               |                 |                 | 30.12    | 1021.2         |                     |      |      |
| 16               | 0:51       | NW 7        | 10         | Fair          | CLR                        | 54               | 43   |             | 67%               |                 |                 | 30.14    | 1021.6         |                     |      |      |
| 16               | 1:51       | Calm        | 10         | Fair          | CLR                        | 48.9             | 44.1 | 68          | 48.9              |                 |                 | 30.16    | 1022.4         |                     |      |      |
| 16               | 2:51       | Calm        | 10         | Fair          | CLR                        | 48               | 45   |             | 89%               |                 |                 | 30.17    | 1022.9         |                     |      |      |

| Date             | Time (edt) | Wind (mph) | Vis. (mi.) | Weather       | Sky Cond <sup>a</sup> | Temperature (°F) |      |             |            | Relative Humidity | Wind Chill (°F) | Heat Index (°F) | Pressure       |                | Precipitation (in.) |      |      |
|------------------|------------|------------|------------|---------------|-----------------------|------------------|------|-------------|------------|-------------------|-----------------|-----------------|----------------|----------------|---------------------|------|------|
|                  |            |            |            |               |                       | Air              | Dwpt | 6 hour Max. | 6 hour Min |                   |                 |                 | Altimeter (in) | sea level (mb) | 1 hr                | 3 hr | 6 hr |
| 16               | 3:51       | Calm       | 10         | Fair          | CLR                   | 46               | 44.1 |             |            | 93%               |                 |                 | 30.17          | 1022.9         |                     |      |      |
| 16               | 4:51       | Calm       | 10         | Fair          | CLR                   | 46               | 43   |             |            | 89%               |                 |                 | 30.19          | 1023.5         |                     |      |      |
| 16               | 5:51       | Calm       | 10         | Fair          | CLR                   | 46               | 44.1 |             |            | 93%               |                 |                 | 30.21          | 1024.4         |                     |      |      |
| 16               | 6:51       | Calm       | 10         | Fair          | CLR                   | 53.1             | 48.9 |             |            | 86%               |                 |                 | 30.24          | 1025.3         |                     |      |      |
| <b>6/16/2024</b> |            |            |            |               |                       |                  |      |             |            |                   |                 |                 |                |                |                     |      |      |
| 16               | 18:51      | SE 10      | 10         | Fair          | CLR                   | 66.9             | 45   |             |            | 45%               |                 |                 | 30.19          | 1023.7         |                     |      |      |
| 16               | 19:51      | SE 8       | 10         | Fair          | CLR                   | 64.9             | 46   | 73.9        | 64.9       | 51%               |                 |                 | 30.2           | 1023.9         |                     |      |      |
| 16               | 20:51      | S 6        | 10         | Fair          | CLR                   | 64.9             | 50   |             |            | 59%               |                 |                 | 30.2           | 1023.9         |                     |      |      |
| 16               | 21:51      | S 8        | 10         | Fair          | CLR                   | 64               | 48.9 |             |            | 58%               |                 |                 | 30.21          | 1024.3         |                     |      |      |
| 16               | 22:51      | S 7        | 10         | Fair          | CLR                   | 62.1             | 51.1 |             |            | 67%               |                 |                 | 30.21          | 1024.1         |                     |      |      |
| 16               | 23:51      | S 8        | 10         | Fair          | CLR                   | 61               | 51.1 |             |            | 70%               |                 |                 | 30.2           | 1024           |                     |      |      |
| 17               | 0:51       | SW 8       | 10         | Fair          | CLR                   | 60.1             | 51.1 |             |            | 72%               |                 |                 | 30.2           | 1024           |                     |      |      |
| 17               | 1:51       | SW 3       | 10         | Fair          | CLR                   | 59               | 52   | 64.9        | 59         | 78%               |                 |                 | 30.21          | 1024.2         |                     |      |      |
| 17               | 2:51       | SW 5       | 10         | Fair          | CLR                   | 57.9             | 51.1 |             |            | 78%               |                 |                 | 30.21          | 1024.2         |                     |      |      |
| 17               | 3:51       | S 3        | 10         | Fair          | CLR                   | 55.9             | 51.1 |             |            | 84%               |                 |                 | 30.21          | 1024.2         |                     |      |      |
| 17               | 4:51       | SE 3       | 10         | Fair          | CLR                   | 54               | 51.1 |             |            | 90%               |                 |                 | 30.22          | 1024.6         |                     |      |      |
| 17               | 5:51       | S 3        | 10         | Fair          | CLR                   | 55.9             | 53.1 |             |            | 90%               |                 |                 | 30.21          | 1024.1         |                     |      |      |
| 17               | 6:51       | Calm       | 10         | Fair          | CLR                   | 59               | 55.9 |             |            | 90%               |                 |                 | 30.22          | 1024.6         |                     |      |      |
| <b>6/17/2024</b> |            |            |            |               |                       |                  |      |             |            |                   |                 |                 |                |                |                     |      |      |
| 17               | 18:51      | S 10       | 10         | Fair          | CLR                   | 78.1             | 61   |             |            | 56%               | 80              |                 | 30.1           | 1020.5         |                     |      |      |
| 17               | 19:51      | SW 9       | 10         | Fair          | CLR                   | 75               | 59   | 82          | 75         | 58%               | 77              |                 | 30.12          | 1021           |                     |      |      |
| 17               | 20:51      | SW 8       | 10         | Partly Cloudy | SCT100                | 72               | 59   |             |            | 64%               |                 |                 | 30.13          | 1021.4         |                     |      |      |
| 17               | 21:51      | SW 7       | 10         | Fair          | CLR                   | 70               | 59   |             |            | 68%               |                 |                 | 30.13          | 1021.5         |                     |      |      |
| 17               | 22:51      | SW 6       | 10         | Fair          | CLR                   | 69.1             | 59   |             |            | 70%               |                 |                 | 30.14          | 1021.5         |                     |      |      |
| 17               | 23:51      | S 7        | 10         | Fair          | CLR                   | 68               | 60.1 |             |            | 76%               |                 |                 | 30.13          | 1021.4         |                     |      |      |
| 18               | 0:51       | SW 7       | 10         | Fair          | CLR                   | 66.9             | 59   |             |            | 76%               |                 |                 | 30.13          | 1021.3         |                     |      |      |
| 18               | 1:51       | SW 6       | 10         | Fair          | CLR                   | 66.9             | 60.1 | 75          | 66         | 79%               |                 |                 | 30.13          | 1021.4         |                     |      |      |
| 18               | 2:51       | SW 7       | 10         | Fair          | CLR                   | 66               | 60.1 |             |            | 81%               |                 |                 | 30.13          | 1021.2         |                     |      |      |

| Date             | Time (edt) | Wind (mph) | Vis. (mi.) | Weather | Sky Cond <sup>a</sup> | Temperature (°F) |      |             | Relative Humidity | Wind Chill (°F) | Heat Index (°F) | Pressure |                | Precipitation (in.) |      |      |
|------------------|------------|------------|------------|---------|-----------------------|------------------|------|-------------|-------------------|-----------------|-----------------|----------|----------------|---------------------|------|------|
|                  |            |            |            |         |                       | Air              | Dwpt | 6 hour Max. |                   |                 |                 | Min      | Altimeter (in) | sea level (mb)      | 1 hr | 3 hr |
| 18               | 3:51       | SW 5       | 10         | Fair    | CLR                   | 66               | 61   |             | 84%               |                 |                 | 30.13    | 1021.4         |                     |      |      |
| 18               | 4:51       | SW 3       | 10         | Fair    | CLR                   | 64.9             | 61   |             | 87%               |                 |                 | 30.15    | 1021.9         |                     |      |      |
| 18               | 5:51       | SW 3       | 10         | Fair    | CLR                   | 66               | 62.1 |             | 87%               |                 |                 | 30.17    | 1022.5         |                     |      |      |
| 18               | 6:51       | SW 6       | 10         | Fair    | CLR                   | 69.1             | 63   |             | 81%               |                 |                 | 30.18    | 1023.2         |                     |      |      |
| <b>6/18/2024</b> |            |            |            |         |                       |                  |      |             |                   |                 |                 |          |                |                     |      |      |
| 18               | 18:51      | S 10       | 10         | Fair    | CLR                   | 88               | 70   |             | 55%               |                 | 93              | 30.16    | 1022.3         |                     |      |      |
| 18               | 19:51      | S 7        | 10         | Fair    | CLR                   | 84               | 71.1 | 93.9        | 84                |                 | 89              | 30.17    | 1022.7         |                     |      |      |
| 18               | 20:51      | SW 9       | 10         | Fair    | CLR                   | 82               | 70   |             | 67%               |                 | 86              | 30.19    | 1023.3         |                     |      |      |
| 18               | 21:51      | SW 8       | 10         | Fair    | CLR                   | 80.1             | 70   |             | 71%               |                 | 83              | 30.21    | 1024           |                     |      |      |
| 18               | 22:51      | SW 8       | 10         | Fair    | CLR                   | 78.1             | 69.1 |             | 74%               |                 | 80              | 30.21    | 1024.1         |                     |      |      |
| 18               | 23:51      | SW 8       | 10         | Fair    | CLR                   | 75.9             | 68   |             | 77%               |                 | 77              | 30.22    | 1024.4         |                     |      |      |
| 19               | 0:51       | SW 7       | 10         | Fair    | CLR                   | 75               | 68   |             | 79%               |                 | 76              | 30.23    | 1024.6         |                     |      |      |
| 19               | 1:51       | SW 7       | 10         | Fair    | CLR                   | 73.9             | 66   | 84          | 73.9              |                 |                 | 30.22    | 1024.4         |                     |      |      |
| 19               | 2:51       | SW 7       | 10         | Fair    | CLR                   | 73               | 64.9 |             | 76%               |                 |                 | 30.23    | 1024.8         |                     |      |      |
| 19               | 3:51       | S 7        | 10         | Fair    | CLR                   | 72               | 63   |             | 73%               |                 |                 | 30.24    | 1025.1         |                     |      |      |
| 19               | 4:51       | SW 9       | 10         | Fair    | CLR                   | 70               | 61   |             | 73%               |                 |                 | 30.26    | 1025.6         |                     |      |      |
| 19               | 5:51       | SW 6       | 10         | Fair    | CLR                   | 70               | 60.1 |             | 71%               |                 |                 | 30.28    | 1026.2         |                     |      |      |
| <b>6/19/2024</b> |            |            |            |         |                       |                  |      |             |                   |                 |                 |          |                |                     |      |      |
| 19               | 18:51      | SW 8       | 10         | Fair    | CLR                   | 84.9             | 73.9 |             | 70%               |                 | 92              | 30.23    | 1024.8         |                     |      |      |
| 19               | 19:51      | SW 9       | 10         | Fair    | CLR                   | 84               | 73.9 | 95          | 84                |                 | 91              | 30.24    | 1024.9         |                     |      |      |
| 19               | 20:51      | SW 8       | 10         | Fair    | CLR                   | 81               | 72   |             | 74%               |                 | 85              | 30.23    | 1024.7         |                     |      |      |
| 19               | 21:51      | SW 6       | 10         | Fair    | CLR                   | 80.1             | 71.1 |             | 74%               |                 | 84              | 30.25    | 1025.4         |                     |      |      |
| 19               | 22:51      | SW 6       | 10         | Fair    | CLR                   | 79               | 71.1 |             | 77%               |                 | 82              | 30.26    | 1025.6         |                     |      |      |
| 19               | 23:51      | W 7        | 10         | Fair    | CLR                   | 78.1             | 70   |             | 76%               |                 | 80              | 30.24    | 1025           |                     |      |      |
| 20               | 0:51       | SW 5       | 10         | Fair    | CLR                   | 75.9             | 70   |             | 82%               |                 | 77              | 30.23    | 1024.7         |                     |      |      |
| 20               | 1:51       | SW 5       | 10         | Fair    | CLR                   | 73.9             | 69.1 | 84          | 73.9              |                 |                 | 30.23    | 1024.5         |                     |      |      |
| 20               | 2:51       | SW 3       | 10         | Fair    | CLR                   | 73.9             | 68   |             | 82%               |                 |                 | 30.23    | 1024.5         |                     |      |      |
| 20               | 3:51       | SW 6       | 10         | Fair    | CLR                   | 73.9             | 64.9 |             | 74%               |                 |                 | 30.22    | 1024.3         |                     |      |      |

| Date | Time (edt) | Wind (mph) | Vis. (mi.) | Weather | Sky Cond <sup>a</sup> | Temperature (°F) |      |             | Relative Humidity | Wind Chill (°F) | Heat Index (°F) | Pressure   |                | Precipitation (in.) |      |      |
|------|------------|------------|------------|---------|-----------------------|------------------|------|-------------|-------------------|-----------------|-----------------|------------|----------------|---------------------|------|------|
|      |            |            |            |         |                       | Air              | Dwpt | 6 hour Max. |                   |                 |                 | 6 hour Min | Altimeter (in) | sea level (mb)      | 1 hr | 3 hr |
| 20   | 4:51       | SW 6       | 10         | Fair    | CLR                   | 72               | 63   |             | 73%               |                 |                 | 30.22      | 1024.4         |                     |      |      |
| 20   | 5:51       | SW 5       | 10         | Fair    | CLR                   | 72               | 62.1 |             | 71%               |                 |                 | 30.23      | 1024.5         |                     |      |      |
| 20   | 6:51       | SW 5       | 10         | Fair    | CLR                   | 75               | 63   |             | 66%               | 77              |                 | 30.24      | 1025.1         |                     |      |      |

Note: NA is a National Weather Service designation and is believed to refer to values that are negligible and/or below the detection limit for the given parameter

Source: Weather.gov

<sup>a</sup> CLR: Sky clear; FEW: Few, 1/8-2/8 of sky covered; SCT: Scattered, 3/8-4/8 of sky covered BKN: Broken, 5/8-7/8 of sky covered; OVC: Sky completely covered; Three digits represent the height of the cloud layer in hundreds of feet

## Appendix C. Photos of Detector Set-up & Habitat



Figure C-1. Project 609250, Segment 1: Detector Set up



Figure C-2. Project 609250, Segment 1: Cone of Detection



Figure C-3. Project 609250, Segment 1: Detector Facing North



Figure C-4. Project 609250, Segment 1: Detector Facing East



**Figure C-5. Project 609250, Segment 1: Detector Facing South**



**Figure C-6. Project 609250, Segment 1: Detector Facing West**



**Figure C-7. Project 609250, Segment 1: Vegetative border next to detector**

## Appendix D. Field Data Sheet

## Field Notes – Project #609250, Segment 1 (June 12, 2024)

### Deployment Details

|                  |  |                   |        |
|------------------|--|-------------------|--------|
| Observers:       | Emma Baron, Kaitlin Houle, Colleen Clausen                           | Project Number:   | 609250 |
| Deployment Date: | June 12, 2024  | Segment/Location: | 1      |
| Deployment Time: | 12:14  |                   |        |
| Comments:        | Habitat overgrown with invasives (Japanese knotweed) and poison ivy. |                   |        |

### Equipment Details

|                          |                              |
|--------------------------|------------------------------|
| Detector Number:         | 01                           |
| Detector Type:           | SM4 Bat FS (omnidirectional) |
| Mic Number:              | 02                           |
| Mic Type:                | SMM-U2 Ultrasonic Microphone |
| SD Card number (Slot A): | 19                           |
| SD Card number (Slot B): | 16                           |
| Approximate Latitude:    | 42.548763505223              |
| Approximate Longitude:   | -71.2605895568349            |



### Detector placement details

|   |   |  |     |
|---|---|--|-----|
| Detector Height:  | 12 ft (3.6 m)                                 | Detector Horizontal Orientation:                         | 180 |
| Height of ground-level vegetation (m):                      | 2   | Detector vertical orientation (0= parallel with ground): | 0   |
| Horizontal distance to nearest vegetation/ obstruction (m): | 10  | Is detector parallel to woodland edge?                   | Yes |
| Is detector 10+ ft from clutter?                            | Yes   | Clutter explanation, if applicable:                      |     |
| Is detector 49+ ft from potential roost(s)?                 | Yes   | Roost explanation, if applicable:                        |     |
| Is detector 200+ m from other detectors?                    | Yes   | Spacing explanation, if applicable:                      |     |
| Is detector location consistent with study plan?            | Yes   | Study plan explanation, if applicable:                   |     |
| Weatherproofing used?                                       | No  |  |     |
| Ambient noise considered during placement?                  | Yes, but there is traffic noise.              |  |     |
| Excessive noise observed or suspected at deployment?        | Suspected, particularly during daylight hours |  |     |
| Source of excessive background noise?                       | Interstate or major state route               |  |     |
| Call reflections considered during deployment?              | Yes, No call reflections anticipated.         |  |     |

### Habitat Details

|   |  |
|---|--|
| Surrounding habitat/land use:                     | Forested, Developed roadways, Commercial, Medium density residential   |
| Suitable habitat present for NLEB/TCB?            | Adjacent to forest/woodland, Forest edge, Potential roosts (trees > 3" DBH), Forest canopy openings, TCB - Live and dead leaf clusters (i.e. not conifers) |
| Average DBH for tree strata (within approx. 100') | 6  |

| Tree Species                              | Tree Features | Tree DBH | Dominant species? |
|---|---------------|----------|-------------------|
| Norway maple ( <i>Acer platanoides</i> )  | Vines         | 6        | Yes               |
| Red maple ( <i>Acer rubrum</i> )          | None          | 6        | No                |
| Cottonwood ( <i>Populus deltoides</i> )   | Vines         | 20       | No                |
| Northern red oak ( <i>Quercus rubra</i> ) | Vines         | 10       | Yes               |
| American elm ( <i>Ulmus americana</i> )   | None          | 4        | No                |

## Appendix E. Summary of Call Analyst's Findings

This appendix summarizes the findings of the manual call analysis, by location. As required by the USFWS Guidelines, if KPro indicates probable presence of NLEB with high levels of certainty (MLE/p-value(s) <0.05) for any site night, all high frequency (>35 kHz) call passes recorded for that site night at that location are required to be examined by a qualified call analyst.

Additionally, if the MLE is >0.05 for all site nights and ten or more passes are auto identified as potentially belonging to TCB at any site night, manual vetting is necessary for linear projects or presence for TCB should be assumed. Manual review confirms or refutes species identified by KPro when the call quality allows for such determinations. Some call passes, however, are determined by the analyst as 'Unkn HiFreq' 'Multi\_Unkn', or 'No ID'. These passes are generally of poor quality and/or contain characteristics for multiple species of interest. Because of this ambiguity, these call passes cannot be ruled out as belonging to state and/or federally listed species. Additionally, call sequences should be identified during search phase. However, often, the call passes collected are only in approach phase or show a feeding buzz. In these instances, the call parameters can meet certain criteria but may not accurately represent the species that made the call. Ultimately, presence of federal species as indicated by the guidelines requires visual confirmation, therefore, unless the acoustic analyst can make a definitive identification of the species through its call sonogram(s) the species is considered not present within the Project area. In the following table, the call passes confirmed through manual review as state listed species calls (MYLE, MYLU, and PESU) are highlighted in green. Call passes confirmed as federally listed species (NLEB) are highlighted in orange. Zero site nights meeting MLE standards for probable presence of NLEB were auto-identified by Kaleidoscope Pro software. State listed species calls were reviewed as requested by MassDOT according to the parameters in Section 2.

**Table E-1. Summary of the call analyst’s findings at Segment 1 for Project #609250, Intersection Improvements at Boston Road (Route 3A), Lexington Street and Glad Valley Road (Billerica)**

| <b>Date, Time</b>   | <b>Kpro ID</b> | <b>Analyst ID</b> | <b>Analyst Notes, Conclusions</b> |
|---------------------|----------------|-------------------|-----------------------------------|
| 06/12/2024 19:47:51 | MYLU           | Noise             |                                   |
| 06/12/2024 20:00:41 | PESU           | Noise             |                                   |
| 06/12/2024 20:10:21 | MYLU           | Noise             |                                   |
| 06/12/2024 20:22:26 | MYLU           | Noise             |                                   |
| 06/12/2024 20:33:21 | MYLU           | Noise             |                                   |
| 06/12/2024 22:19:51 | PESU           | Noise             |                                   |
| 06/12/2024 22:23:28 | MYLU           | Noise             |                                   |
| 06/12/2024 23:02:30 | MYLU           | Noise             |                                   |
| 06/12/2024 23:51:29 | MYLU           | Noise             |                                   |
| 06/13/2024 00:03:08 | MYLU           | LABO              |                                   |
| 06/13/2024 00:44:27 | PESU           | Noise             |                                   |
| 06/13/2024 02:38:52 | PESU           | PESU/LABO         |                                   |
| 06/13/2024 20:10:48 | PESU           | Noise             |                                   |
| 06/13/2024 20:20:47 | MYLU           | Noise             |                                   |
| 06/14/2024 19:38:19 | MYLU           | Noise             |                                   |
| 06/14/2024 19:48:30 | MYLU           | Noise             |                                   |
| 06/14/2024 20:11:42 | MYLU           | Noise             |                                   |
| 06/14/2024 20:14:52 | MYLU           | Noise             |                                   |
| 06/14/2024 20:32:09 | MYLU           | Noise             |                                   |
| 06/14/2024 20:42:54 | PESU           | Noise             |                                   |
| 06/14/2024 20:44:58 | PESU           | Noise             |                                   |
| 06/14/2024 20:53:17 | MYLU           | Noise             |                                   |
| 06/14/2024 21:06:12 | MYLU           | Noise             |                                   |
| 06/14/2024 21:29:32 | MYLU           | Noise             |                                   |
| 06/14/2024 22:09:44 | MYLU           | Noise             |                                   |
| 06/15/2024 19:43:38 | PESU           | Noise             |                                   |
| 06/15/2024 19:47:19 | MYLU           | Noise             |                                   |
| 06/15/2024 19:58:12 | MYLU           | Noise             |                                   |
| 06/15/2024 20:07:44 | MYLU           | Noise             |                                   |
| 06/15/2024 20:32:01 | MYLU           | Noise             |                                   |
| 06/15/2024 21:30:45 | MYLU           | Noise             |                                   |
| 06/15/2024 22:09:56 | MYLU           | Noise             |                                   |
| 06/15/2024 22:48:21 | MYLU           | Noise             |                                   |
| 06/15/2024 22:50:05 | MYLU           | LABO              |                                   |
| 06/15/2024 23:13:56 | MYLU           | Noise             |                                   |
| 06/15/2024 23:35:44 | MYLU           | Noise             |                                   |
| 06/15/2024 23:37:40 | PESU           | Noise             |                                   |
| 06/16/2024 01:30:10 | MYLU           | Noise             |                                   |
| 06/16/2024 20:28:05 | MYLU           | Noise             |                                   |
| 06/16/2024 20:30:25 | PESU           | Noise             |                                   |

| Date, Time          | Kpro ID | Analyst ID | Analyst Notes, Conclusions |
|---------------------|---------|------------|----------------------------|
| 06/16/2024 21:26:39 | MYLU    | Noise      |                            |
| 06/16/2024 22:05:53 | MYLU    | Noise      |                            |
| 06/16/2024 22:30:05 | MYLU    | Noise      |                            |
| 06/17/2024 04:35:19 | MYLU    | Noise      |                            |
| 06/17/2024 05:30:42 | MYLE    | Noise      |                            |
| 06/17/2024 19:45:24 | MYLU    | Noise      |                            |
| 06/17/2024 21:04:13 | MYLU    | Noise      |                            |
| 06/17/2024 22:29:19 | MYLU    | Noise      |                            |
| 06/18/2024 00:19:52 | MYLU    | Noise      |                            |
| 06/18/2024 00:24:58 | MYLU    | Noise      |                            |
| 06/18/2024 01:01:05 | MYLU    | Noise      |                            |
| 06/18/2024 19:33:29 | PESU    | Noise      |                            |
| 06/18/2024 20:48:57 | MYLU    | Noise      |                            |
| 06/18/2024 20:59:52 | MYLU    | Noise      |                            |
| 06/18/2024 21:03:57 | PESU    | Noise      |                            |
| 06/18/2024 21:05:56 | MYLU    | Noise      |                            |
| 06/18/2024 22:41:16 | PESU    | Noise      |                            |
| 06/19/2024 00:30:08 | MYLU    | Noise      |                            |
| 06/19/2024 01:44:44 | PESU    | LABO       |                            |
| 06/19/2024 01:46:13 | PESU    | LABO       |                            |
| 06/19/2024 05:41:47 | PESU    | Noise      |                            |
| 06/19/2024 05:44:48 | MYLE    | Noise      |                            |
| 06/19/2024 05:56:12 | MYLE    | Noise      |                            |
| 06/19/2024 19:32:38 | MYLU    | Noise      |                            |
| 06/19/2024 19:35:37 | MYLU    | Noise      |                            |
| 06/19/2024 19:43:58 | MYLU    | Noise      |                            |
| 06/19/2024 20:46:46 | MYLU    | Noise      |                            |
| 06/19/2024 21:55:33 | MYLE    | Noise      |                            |
| 06/20/2024 03:09:59 | MYLU    | LABO       |                            |
| 06/20/2024 04:30:42 | MYLU    | LABO       |                            |

## Appendix F. Resumes

## ERAN AMICHAÏ, Ph.D. Senior Bat Biologist

Dr. Amichai is an expert in bat biology and conservation, bioacoustics, field study design, and animal behavior. He is experienced with various survey techniques of bats, birds, terrestrial mammals, and reptiles. His research focuses on bioacoustics and other sensory biology tools to understand animal behavior and movement ecology. In addition to research, Dr. Amichai has more than 10 years of experience in bat conservation on a national scale in Israel, including monitoring and policy advising and planning for conservation and wind energy mitigation policies. His extensive skill set includes studying bats in the offshore wind energy environment using acoustics, thermal imagery, and visual identification.

### REPRESENTATIVE PROJECT EXPERIENCE

**Coastal Virginia Offshore Wind Bird and Bat Acoustic and Thermographic Offshore Monitoring, Dominion Energy (2023–Present).** Collaborated with a diverse team of scientists to analyze bat data collected with the latest version of ATOM™ (Acoustic and Thermographic Offshore Monitoring), a remote bird and bat detection system designed for the harsh offshore environment. In addition to the previous version’s acoustic and thermographic detectors, the new system includes a fisheye visible light camera, and a MOTUS antenna for detecting birds fitted with a NanoTag. The system records birds and bats 24 hours/day during the detection period, and data is remotely transmitted to our offices for analysis and reporting. Senior Bat Biologist.

**Bat Use of Buildings Survey in Saint Gaudens National Historic Park (2023).** Planned physical and acoustic surveys of bat presence in and use of historic buildings scheduled for maintenance in a National Historic Park. Managed a team of scientists and prepared a report for the NPS. Principal Scientist, Project Manager.

**Manual Vetting of Bat Recordings, Illinois (2023).** Manual ID of federally listed bat species from acoustic recordings for the NPS following USFWS guidelines for listed species and using a variety of approved, cutting-edge software to verify the presence of listed and candidate species in the Great Lakes area. Principal Scientist, Project Manager.

**Manual Vetting of Bat Recordings, Massachusetts (2023).** Manual ID of federally listed bat species from acoustic recordings for the Department of Transportation following USFWS guidelines for listed species and using a variety of approved, cutting-edge software to verify the presence of listed and candidate species in Massachusetts. Principal Scientist.

**New Hampshire Department of Energy: Deployment of Offshore Wind in the Gulf of Maine – New Hampshire Impact Assessment (2022–present).** Bats section: risk assessment and current state of knowledge with regards to bats and offshore wind energy in New England. Scientific literature review and dissemination to be used by BOEM for offshore wind area siting. Senior Bat Biologist.

**Israel’s Long-Term National Bat Monitoring and Conservation Program (2013–2018).** Planning of nation-wide, annual (open-ended) bat monitoring strategy: site prioritization, government rangers training, multi-year

### EDUCATION

Ph.D., Zoology, Tel Aviv University, Tel Aviv, Israel

M.Sc., Ecology & Environmental Quality, Tel Aviv University, Tel Aviv, Israel

B.Sc., Biology, Tel Aviv University, Tel Aviv, Israel

### PROFESSIONAL EXPERIENCE

2022–Present Normandeu Associates

2019–2023 Dartmouth College

2009–2019 Tel Aviv University, Israel

2009–2019 The Society for the Protection of Nature in Israel

### PROFESSIONAL AFFILIATIONS

- North American Society of Bat Research
- The Wildlife Society
- Ecological Society of America
- Animal Behavior Society
- New York Academy of Sciences
- International Society of Neuroethology
- Zoological Society of Israel

scheduling, creation of work practices and protocols, formalizing reporting structure and derivative conservation strategies. Acoustic Analyst, Data Scientist, Project Manager, Author.

**Anthropogenic Effects in the Dead Sea Region: Bats as Bioindicators (2015–2017).** Project manager, study design, acoustic analyst, data scientist, final report author

**Israel Taxonomic Initiative: An Attempt to Resolve Bat Taxonomy (2009–2011).** Field work manager, study design, data collection, final report author

## REPRESENTATIVE RELEVANT EXPERIENCE: BATS AND WIND ENERGY

**NYSDA Metocean Buoys.** Offshore buoy and boat-based bat acoustic recordings in the Hudson Bay Area: familiarity with data, application of data for dissemination of knowledge.

**Dominion Energy ATOM Project.** Offshore wind turbine acoustic recordings and thermal imagery of bats off the Virginia coastline: image identification, familiarity with data, application of data for dissemination of knowledge.

**Various Wind Energy Projects in Israel (2010–2018).** Terrestrial wind energy facilities: preconstruction impact assessment surveys (acoustic, physical, & literature) planning, performing, and reporting.

## SELECTED PEER-REVIEWED PUBLICATIONS

**Amichai, E.,** Boerma, D. B., Page, R. A., Swartz, S. M. & ter Hofstede, H. (2023). By a whisker: the sensory role of vibrissae in hovering flight in nectarivorous bats. *Proceedings of the Royal Society B* 290, 20222085, <http://doi.org/10.1098/rspb.2022.2085>

**Amichai, E.,** & Yovel, Y. (2021). Echolocating bats rely on an innate time reference. *Proceedings of the National Academy of Sciences* 118 (19), <https://doi.org/10.1073/pnas.2024352118>

Boonman, A.\*, Rieger, I.\*, **Amichai, E.\***, Greif, S.\*, Eitan, O., Goldshtein, A. & Yovel, Y. (2020). Echolocating bats adjust sensory acquisition based on internal cues. *BMC Biology*. 18, 166, <https://doi.org/10.1186/s12915-020-00904-2> \*equal first authorship

Hoyt, J. R., [et al, including **Amichai, E.**] (2020). Environmental reservoir dynamics predict global infection patterns and population impacts for the fungal disease white-nose syndrome. *Proceedings of the National Academy of Sciences* 117, 7255-7262, <https://doi.org/10.1073/pnas.1914794117>

**Amichai, E.,** Kronfeld-Schor, N. (2019). Artificial light at night promotes activity throughout the night in nesting common swifts (*Apus apus*). *Scientific Reports* 9, 11052, <https://doi.org/10.1038/s41598-019-47544-3>

**Amichai, E.,** Blumrosen, G. & Yovel, Y. (2015). Calling louder and longer: how bats use biosonar under severe acoustic interference from other bats. *Proceedings of the Royal Society B* 282, 1821, <https://doi.org/10.1098/rspb.2015.2064>

**Amichai, E.,** Levin, E., Kronfeld-Schor, N., Roll, U. & Yom-Tov, Y. (2013). Natural history, physiology and energetic strategies of *Asellia tridens* (Chiroptera). *Mammalian Biology* 78, 94-103, <https://doi.org/10.1016/j.mambio.2012.06.006>

## SELECTED TECHNICAL REPORTS

**Amichai, E.,** Taub, M., Talmon, I., & Yedvab, S. **Anthropogenic effects on the Dead Sea region ecology-bats as bioindicators.** Commissioned by the Israel Ministry for Environmental Protection & the Israel Nature and Parks Authority. (2018) [English abstract](#) [Hebrew full text](#)

**Amichai, E., Yedvab, S., Dolev, A., et al. National Monitoring Plan for Israel's Bat Species: Insectivorous bat survey in Israel 2014.** Commissioned by the Israel Nature and Parks Authority. (2015) [Full text with English abstract](#)

**Amichai, E. & Dolev, A. Insectivorous bat survey in the Judean Hills.** Commissioned by the Israel Nature and Parks Authority (2013).

## JAMIE L. O'BRIEN, NH CWS, CWB®

### Senior Wetland Scientist/Wildlife Biologist

Ms. O'Brien is a certified wetland scientist and certified wildlife biologist® with over ten years of professional experience in wildlife research, conservation, and natural resource management and permitting throughout New England. Her projects have emphasized protecting and managing threatened and endangered species, assessing environmental impacts, regulating and managing natural resources and wildlife, and ensuring Federal Endangered Species Act compliance. Ms. O'Brien is adept at using visual and auditory clues to identify species and is certified at Level III for track and sign. In addition to her field skills, Ms. O'Brien possesses a strong foundation in project planning and implementation, project management and organization, and data analysis and quality control. She is a GIS Analyst and SAS Programmer, competent in working with and running analysis on large datasets. She is skilled at quality control procedures that involve the integrity and quality of data and the generation of final data deliverables.

#### REPRESENTATIVE PROJECT EXPERIENCE

##### **MaineDOT bat acoustic vetting, Statewide, ME (2023-present).**

The Maine Department of Transportation contracted with Normandeau to perform manual vetting of bat acoustic calls consistent with the United States Fish and Wildlife Service 2023 Range-wide Indiana Bat and Northern Long-eared Bat Survey Guidelines, which require review of all high frequency call files from any site night analysis software identified northern long-eared bat presence was likely. Ms. O'Brien coordinated file transfer, call review, and reporting. Project manager.

**NHDOT Wetlands On-Call Services. Bat Acoustic Surveys. Statewide (2023-present).** NHDOT contracted with Normandeau under their Wetlands On-call Services agreement to perform bat acoustic surveys for five projects during 2023. Ms. O'Brien oversaw reporting, manual vetting of calls, and submittal of deliverables for these projects. Biologist.

**MassDOT Statewide Northern Long-eared Bat Surveys, Parsons Brinkerhoff, MA (2016-present).** In support of over 70 MassDOT projects, Normandeau has conducted acoustic surveys every year since 2016 for the state and federally listed northern long-eared bat Ms. O'Brien is assisting with Northern long-eared bat surveys, which involve deployment and retrieval of acoustic detectors, weather recording, habitat characterization, and reporting. She is also coordinating field efforts and project logistics as well as report writing and deliverables. Project Manager.

**National Park Service. Saint-Gaudens National Historic Park. Cornish, NH (2023).** Ms. O'Brien conducted bat acoustic surveys and visual tree inspection surveys for bat presence in and around historic buildings scheduled for maintenance in a National Historic Park. Tree inspections were performed on seven trees scheduled for removal or limbing to accommodate building maintenance. Biologist.

#### EDUCATION

M.S.E.S., Applied Ecology, Indiana University, Bloomington

M.P.A., Environmental Policy and Natural Resource Management, Indiana University, Bloomington

B.A., (cum laude) Biology, Saint Anselm College

#### PROFESSIONAL EXPERIENCE

2013-Present Normandeau Associates  
2011-2013 USFWS, Umbagog NWR  
2012 Ducks Unlimited, Inc.  
U.S. Great Lakes Region

2009-2011 Office of Sustainability,  
Indiana University,  
Bloomington

Fall 2011 USFWS, Big Oaks NWR

Summer 2008 Office of Sustainability,  
Dickinson College

#### PROFESSIONAL CERTIFICATIONS

- NH Certified Wetland Scientist #329
- Certified Wildlife Biologist®
- CyberTracker Level III Track and Sign – Maine DIFW Credentialed Vernal Pool Observer
- NH Qualified Biologist

#### PROFESSIONAL AFFILIATIONS

- New Hampshire Audubon
- New Hampshire Association of Natural Resource Scientists

**Vermont Agency of Transportation (VTrans), Acoustic Bat Surveys, Burlington-Winooski, VT (2023).** DuBoise & King subcontracted with Normandeau to support VTrans with bat acoustic surveys near Winooski bridge. Ms. O'Brien ran preliminary data results, oversaw reporting, manual vetting of calls, and submittal of deliverables. Biologist.

**NHDOT Bridge Preservation of Manchester and Hooksett Bridges. HNTB Corporation. Manchester, NH (2019-2023).** This Project includes preliminary design, public involvement process, final design, and associated environmental and cultural services for the bridge preservation of five bridges in Manchester and Hooksett, NH. Environmental efforts are needed to prepare and complete all appropriate environmental documentation including cultural resource investigations and permitting, to satisfy NEPA and state requirements. Ms. O'Brien performed wetland delineations, GIS mapping, bridge surveys for roosting bats, and CE documentation for both the northbound and southbound portions of this project. Additionally, she oversaw bat acoustic survey manual vetting and project reporting. Biologist/GIS Analyst.

**Errol Hydroelectric Dam Relicensing, Gomez and Sullivan Engineers, NH and ME (2018-2021).** Normandeau is providing natural resource support for a hydroelectric relicensing project at the Errol Dam in Errol, NH. Ms. O'Brien is preparing cost proposals, study plans, reports, and figures, and writing sections and completing analysis for the Botanical Resource Assessment, Leonard Marsh and Harper's Meadow vegetation study, and Bat Acoustic study. She completed cover type mapping based on aerial imagery for the study area, focusing on emergent and submerged aquatic vegetation cover types and conducted some of the field analysis for the Leonard Marsh and Harper's Meadow vegetation study. Assistance Project Manager.

**Blacks Nook In-lake Restoration Project, City of Cambridge Water Department, Cambridge, MA (2020).** Once a cove connected to Fresh Pond, Black's Nook is now a separate, shallow two acre pond with a heavily forested wetland border. Over the years, work has been done to minimize inflow of golf-course runoff and improve ecosystem functionality in the directly surrounding watershed. Normandeau was contracted to execute an existing conditions assessment, and develop and execute an in-lake restoration plan that slows cultural eutrophication, keeps Black's Nook an open water body, and ultimately supports downgrading its Category 5 status as an impaired waterbody on the State's 303(d) list. Ms. O'Brien conducted acoustic surveys for bats and a nesting bird survey. Biologist.

**Seacoast Reliability Project – F107 Line. Eversource Energy, Seacoast Region, NH (2014-2020).** Normandeau is providing permitting assistance and construction oversight monitoring to the Public Service of New Hampshire for a proposed 115 kW, 13-mile transmission project that is sited along an existing right-of-way and includes a one-mile submarine crossing of Little Bay. Ms. O'Brien performed mitigation calculations for wetland impacts and wrote the SAS code for error checking raw data and for processing data into final deliverables for report analysis and production. Additionally, she conducted Northern long-eared bat surveys along the project corridor, performed post-construction vegetation assessments, and was responsible for post-processing data collected from water quality monitoring. Biologist/Data Analyst.

**Acoustic Bat Surveys, Lamprey River Advisory Committee, Lamprey River Watershed, NH (2018).** Normandeau conducted Northern long-eared bat surveys throughout the Lamprey River Watershed. Ms. O'Brien conducted the surveys, which involved coordination with property owners and advisory committee members, deployment and retrieval of acoustic detectors, habitat analysis of detector sites, and reporting. Biologist.

**NHDOT Route 16 Bridge over Ellis River, Greenman-Pedersen, Inc., Jackson, NH (2018).** The NH Department of Transportation proposes to rehabilitate the historic stone-faced bridge that carries NH Route 16 over the Ellis River in Jackson, New Hampshire. The historic structure, built in 1938, accommodates one lane of traffic in each

direction and currently has narrow sidewalks that parallel each lane. In support of this project, Ms. O'Brien conducted a bridge assessment for roosting bats. Biologist.

**Balsams Ski Resort Expansion, Dixville LLC, Dixville, NH (2015-2017).** Normandeau was retained to undertake natural resources surveys and provide permitting support for the revival and expansion of the Balsams Grand Resort and Wilderness Ski Area. Ms. O'Brien played a large role in the 2015 Northern long-eared bat surveys, where, in addition to deployment and retrieval of detectors, she coordinated site access and field crew schedules, and was responsible for data reporting and habitat assessments. Biologist.

**Blackstone River Northern Long-eared Bat Surveys, New England Hydropower Company, LLC, Lincoln/Cumberland, RI (2016).** Normandeau conducted Northern long-eared bat surveys for proposed bridge repairs and upgrades along the Blackstone River. Ms. O'Brien conducted the surveys, which involved deployment and retrieval of acoustic detectors, habitat analysis of detector sites, and reporting. Biologist.

**Philips Exeter Academy Northern Long-eared Bat Surveys, Altus Engineering, Inc., Exeter, NH (2016).** Normandeau conducted Northern long-eared bat surveys for a proposed drain outfall replacement project at Philips Exeter Academy. Ms. O'Brien conducted the Northern long-eared bat surveys, which involved deployment and retrieval of acoustic detectors, habitat analysis of detector sites, and reporting. Biologist.

**Kinder Morgan, Northeast Energy Direct Pipeline, PA, NY, MA, CT, NH (2014-2016).** This natural gas pipeline project runs from the Marcellus Shale fields across Pennsylvania, New York, Massachusetts and New Hampshire. Ms. O'Brien was involved with various aspects of this project, including wetlands and mitigation in a fatal flaw analysis, map revisions in ArcGIS, wetland compensatory mitigation research and ARM fund numbers. Ms. O'Brien also provided GPS support for delineated wetland boundaries, and participating in natural resource surveys including vernal pools and rare species surveys for turtles, snakes, Northern Harriers, and bat hibernacula. Biologist.

**Pike Industries Northern Long-eared Bat Surveys, Hooksett, New Hampshire (2015).** Normandeau was hired to perform Northern long-eared bat surveys for a proposed quarry expansion. Ms. O'Brien conducted the surveys, which involved deployment and retrieval of acoustic detectors, habitat analysis of detector sites, and reporting. Biologist.

**Socha Companies at Hidden Oak, Hooksett, New Hampshire (2015).** Normandeau provided delineation and natural resource survey work for a proposed apartment complex. Ms. O'Brien participated in Northern long-eared bat surveys, which involved the deployment and retrieval of acoustic detectors. Biologist.

**Bat Monitoring, U.S. Fish & Wildlife Service, Umbagog National Wildlife Refuge, NH/ME (2011- 2013).** Ms. O'Brien evaluated resident bat populations adjacent to Lake Umbagog. Monitoring activities included conducting maternity roost emergence surveys and acoustic driving transect surveys. Coordinating volunteer efforts, completing required documentation following each survey, maintaining and preserving accurate records, and updating database records was also practiced. Biological Technician.

## REPRESENTATIVE PRESENTATIONS

Geoghegan, P., J. O'Brien, C. W. Walker, M. Heagy, and S. A. Bottger. 2022. *Long-term trend in the occurrence of disseminated neoplasia in a population of softshell clam (Mya arenaria) from a New Hampshire estuary.* Presented at the 2022 annual meeting of the New England Estuarine Research Society, June 2-4, 2022, Salem, MA.

Current Distribution of Bats in New Hampshire. S. Barnum, J. O'Brien, J. Collins. Joint Bat Working Group Meeting (Roanoke, VA) and Northeast Fish and Wildlife Conference (Burlington, VT). 2018.

Loons on Lake Umbagog. Umbagog Lake State Park. Errol, NH. 2011

STARS Reporting, Campus Metrics, and Sustainability Dashboard. Indiana University Office of Sustainability Academic Year Sustainability Symposium. Bloomington, IN. 2011

Glycerol options: Soap, Compost, and Anaerobic Digestion. Biodiesel Collective Conference. Golden, CO. 2011

Pilot Study of Dimorphic Interaction Behaviors in *Plethodon cinereus*. Saint Anselm College Science Symposium. Manchester, NH. 2009

## REPRESENTATIVE PEER-REVIEWED ARTICLES AND PUBLICATIONS

Geoghegan, P., J. O'Brien, C. W. Walker, M. Heagy, and S. A. Bottger. 2021. *Long-term Trends in the Occurrence of Hemic Neoplasia in a Population of Mya arenaria L. (Softshell Clams) from a New Hampshire Estuary, USA*. Northeast Naturalist 28(2).

## SPECIAL TRAINING

Motor Boat Operator Certification (Department of the Interior), 2010

Defensive Driving (Department of the Interior), 2010

CPR/AED (American Red Cross), valid through 02/2025

SAS System programming

ArcGIS and ArcPro

Normandeau's in-house 40 hour acoustic bat survey training

Vesper Bat Detection Service's Echolocation 101 & Best Practices Course

Vesper Bat Detection Service's Acoustic ID of Eastern Species Course

Track and Sign Evaluation, CyberTracker, Tamworth, NH (2024)

## EMMA J. BARON

### Biologist

Ms. Baron is a Biologist with water quality and natural resource experience. Her fieldwork experience includes surface water and groundwater quality monitoring, landfill gas monitoring, bat habitat assessments and acoustic surveys, electrofishing, benthic sampling, and dredge fisheries monitoring. She also has experience assisting in vernal pool surveys, vegetation plots, and wetland surveys. Ms. Baron has proficiency in GIS, Phase 1 Environmental Site Assessment, environmental data analysis, and reporting. In addition, Ms. Baron has laboratory experience in processing bivalve larvae, Ichthyoplankton, and benthos samples as well as taxonomic identification of benthic species.

### REPRESENTATIVE PROJECT EXPERIENCE

**Cutler Facility Infrastructure Maintenance/Design Support, Cutler, ME (2023-Present).** Normandeau is supporting design and permitting of infrastructure improvements for the Naval Facilities Engineering Command Mid-Atlantic. Projects require inland and coastal wetland delineation and assessment; assistance with alternatives analyses; wetland, stream and Essential Wildlife Habitat impact evaluation; Essential Fish Habitat and Endangered Species habitat evaluations; and permitting support. Ms. Baron assisted with field assessments. Field Scientist.

**Weston Rangely Rangeley SERE School Infrastructure Maintenance/Design Support, Rangeley, ME (2023 - Present).** Normandeau is supporting design and permitting of infrastructure improvements for the Naval Facilities Engineering Command Mid-Atlantic. Projects require inland wetland delineation and assessment; assistance with alternatives analyses; wetland, stream and wildlife habitat impact evaluation; Essential Fish Habitat and Endangered Species habitat evaluations; and permitting support. Ms. Baron assisted with field assessments. Field Scientist.

**NHDOT NH Route 49 Bridge Over the Mad River Rehabilitation Project, Thornton, NH (2023- Present).** Normandeau has been tasked with overseeing environmental services support and preparing NHDES Wetland Permits, NHDOT Environmental Review documentation, field delineations, wildlife habitat input, and other support services for the proposed bridge rehabilitation along the Mad River in Thornton, New Hampshire. Ms. Baron oversaw the bat acoustic survey for state and federally listed northern long-eared bats, which involved deployment and retrieval of acoustic detectors, weather recording, habitat characterization, and bridge survey. Task Manager.

**Whitefield 41852, NH Department of Transportation (NHDOT), Whitefield NH (2023-Present).** Normandeau was contracted to provide natural resource surveys associated with infrastructure improvements along Route 3 in Whitefield, New Hampshire. Ms. Baron oversaw the bat acoustic survey for state and federally listed northern long-eared bats, which involved deployment and retrieval of acoustic detectors, weather recording, habitat characterization, and bridge survey. In addition, Ms. Baron assisted with wetland delineation including identification of natural resources, as well as characterization of all wetlands and streams located within the study area. Task Manager/ Field Scientist.

**NH Department of Transportation (NHDOT) Statewide On-Call Wetlands Services, NHDOT, NH (2022– Present).** Normandeau has a three-year contract to provide wetland and related natural resource services for

### EDUCATION

B.S., Biology, Plymouth State University, (*Cum Laude*). Minor in Chemistry.

### PROFESSIONAL EXPERIENCE

2019-Present Normandeau Associates

### PROFESSIONAL CERTIFICATIONS

- Protected Species Observer: NOAA National Marine Fisheries
- Maine DIFW Credentialed Vernal Pool Observer

### PROFESSIONAL AFFILIATIONS

- New Hampshire Association of Natural Resource Scientists

NHDOT projects around the state. Projects have included stream and wetland delineation, rare plant surveys, northern black racer surveys, stream and bank restoration monitoring, and USFWS-compliant acoustic bat surveys and habitat assessments. Ms. Baron conducted Northern long-eared bat surveys, which involve proposals, deployment and retrieval of acoustic detectors, weather recording, habitat characterization, data management, and reporting. In addition, Ms. Baron assisted with stream and wetland delineation and stream and bank restoration monitoring. Project Scientist.

**Massachusetts Statewide Northern Long-eared Bat Surveys, MassDOT, MA (2020-Present).** Conducted USFWS-compliant acoustic bat surveys and habitat assessments targeting the state and federally threatened northern long-eared bat for MassDOT roadway projects throughout Massachusetts for over 70 projects since 2016. Tasks include evaluating project areas for habitat suitability per USFWS guidance, survey design and planning, data collection, data QA/QC, manual call vetting as required by USFWS guidance, and managing the reporting effort. Ms. Baron conducted Northern long-eared bat surveys, which involve deployment and retrieval of acoustic detectors, weather recording, habitat characterization, reporting, and coordinating field efforts, and training personnel. Project Scientist.

**Errol Dam Relicensing, Brookfield White Pine Hydro, NH-ME (2020-Present).** In support of Brookfield relicensing of 2 MW hydroelectric project through FERC's Integrated Licensing Process. Normandeau provided terrestrial services for wetland mapping, rare and invasive plant species surveys, bats, odonates (dragonflies), mussels, and incidental wildlife observations on project-affected lands surrounding Lake Umbagog, its tributaries, and the tailwaters in the Androscoggin River. A quantitative vegetation survey compared existing conditions to a long-term data set at two fens/floating bogs. Ms. Baron conducted bat surveys and reporting in accordance with USFWS guidance. Project Scientist.

**Seacoast Reliability Project, Eversource Energy, Seacoast Region, NH (2019-Present).** Normandeau provided siting, permitting, and environmental monitoring services to Eversource for a new 115kV line proposed between the Madbury and Sudbury substations. The line is approximately 13 miles, predominantly within existing ROW, but includes overhead, submarine, and underground segments. Sensitive resources include a 1-mile water crossing through Little Bay, thus within the Great Bay NWR, several significant cultural resources, and the Pease Air Force Base. Normandeau and sub-contractors (Vicky Bunker, Inc.; AHS, Inc.; Landworks; and GEI) will provide field investigations of natural and cultural resources, State and Federal permitting, and SEC application preparation and testimony. Ms. Baron assisted in water quality monitoring for event-based cross-sectional water quality surveys and post-construction invasive plant and vegetation surveys within the ROW. Ms. Baron also processed the benthic samples as a Laboratory Technician. Field Scientist.

**Millis Massachusetts Bat Surveys, Emerson, Millis, MA (2022).** Conduct USFWS-compliant acoustic bat surveys and habitat assessments targeting the state and federally threatened northern long-eared bat for subdivision development in Massachusetts. Tasks include evaluating project areas for habitat suitability per USFWS guidance, survey design and planning, data collection, data QA/QC, manual call vetting as required by USFWS guidance, and managing the reporting effort. Ms. Baron conducted Northern long-eared bat surveys, which involve deployment and retrieval of acoustic detectors, weather recording, habitat characterization, reporting, and training field personnel. Project Scientist.

**NE Solar: Bat Survey, GSSG New Hampshire LLC (GSSG), Conway NH (2021).** Conducted USFWS-compliant acoustic bat surveys and habitat assessments targeting the state and federally threatened northern long-eared bat for the GSSG NE Solar project on 8 acres of land in Conway, NH. Tasks include evaluating project areas for habitat suitability per USFWS guidance, survey design and planning, data collection, data QA/QC, manual call vetting as required by USFWS guidance, and managing the reporting effort. Ms. Baron conducted Northern

long-eared bat surveys, which involve deployment and retrieval of acoustic detectors, weather recording, habitat characterization, and reporting. Project Scientist.

### **SPECIAL TRAINING**

Adult First Aid / CPR / AED Red Cross Certified

New Hampshire Commercial Boating License

40-Hour OSHA Hazardous Waste Operations and Emergency Response

Vesper Bat Detection Service's Echolocation 101 & Best Practices Course

Vesper Bat Detection Service's Acoustic ID of Eastern Species Course

Wildlife Acoustics Using Kaleidoscope Pro for Bat Auto-ID Course

Wildlife Acoustics How to Start a General Survey with Kaleidoscope Pro Course

Wildlife Acoustics How to Find Target Sounds with Kaleidoscope Pro Course

Wildlife Acoustics Signal Extraction in Kaleidoscope Lite Course

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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**

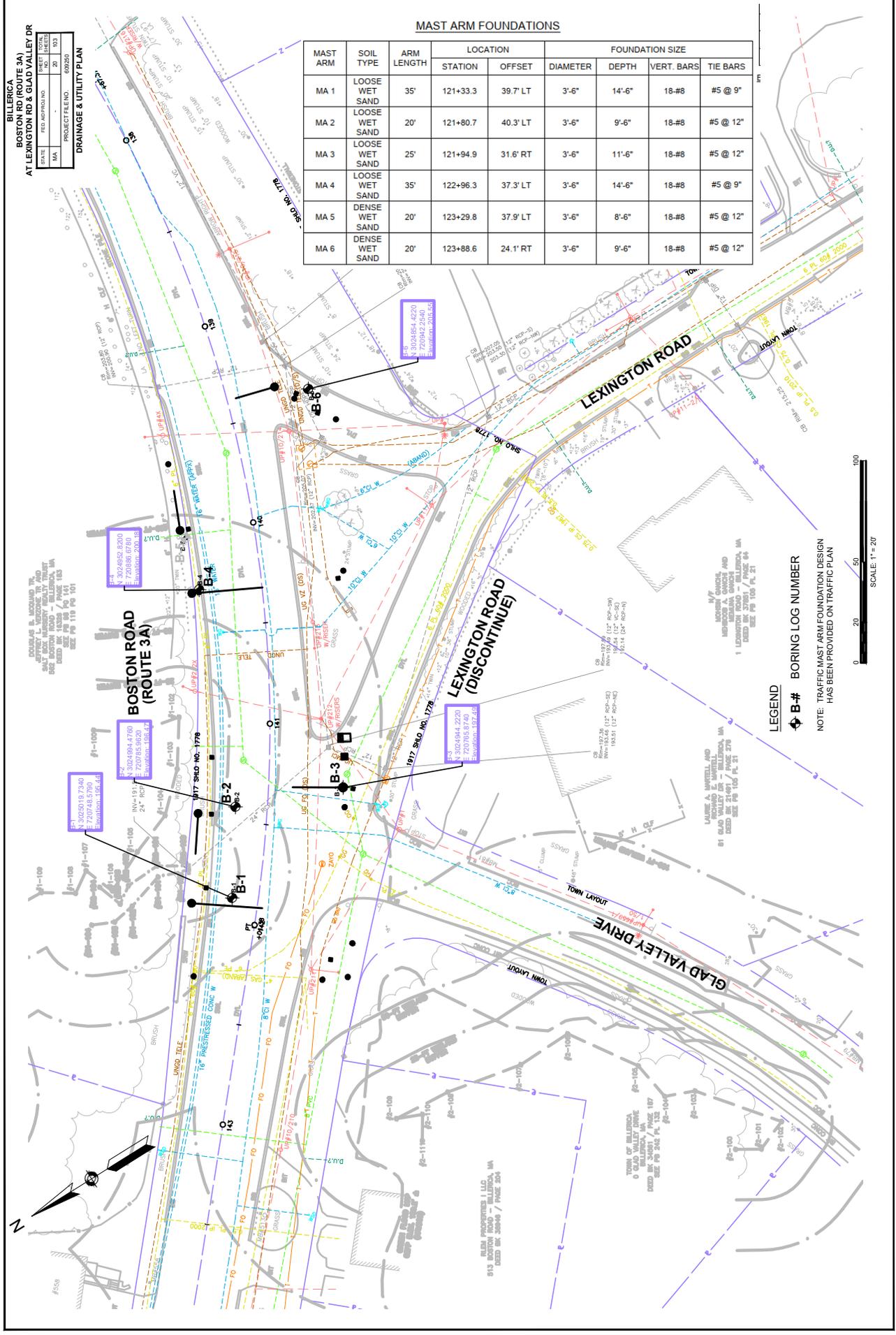
Equipment and materials being used for active construction operations and located within the work zone of the construction contract are exempt from this permit requirement, provided they do not interfere with the safety or operation of the roadway or the work zone. Examples of these types of exempt uses 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 A00880

## **BORING LOGS**

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**BILLERICA**  
**BOSTON RD (ROUTE 3A)**  
**AT LEXINGTON RD & GLAD VALLEY DR**

|                  |        |
|------------------|--------|
| STATE            | MA     |
| FED. PROJ. NO.   | 000250 |
| SHEET NO.        | 20     |
| TOTAL SHEETS     | 103    |
| PROJECT FILE NO. | 609250 |

**DRAINAGE & UTILITY PLAN**

| MAST ARM | SOIL TYPE      | ARM LENGTH | LOCATION |          | FOUNDATION SIZE |        |            |          |
|----------|----------------|------------|----------|----------|-----------------|--------|------------|----------|
|          |                |            | STATION  | OFFSET   | DIAMETER        | DEPTH  | VERT. BARS | TIE BARS |
| MA 1     | LOOSE WET SAND | 35'        | 121+33.3 | 39.7' LT | 3'-6"           | 14'-6" | 18-#8      | #5 @ 9"  |
| MA 2     | LOOSE WET SAND | 20'        | 121+80.7 | 40.3' LT | 3'-6"           | 9'-6"  | 18-#8      | #5 @ 12" |
| MA 3     | LOOSE WET SAND | 25'        | 121+94.9 | 31.6' RT | 3'-6"           | 11'-6" | 18-#8      | #5 @ 12" |
| MA 4     | LOOSE WET SAND | 35'        | 122+96.3 | 37.3' LT | 3'-6"           | 14'-6" | 18-#8      | #5 @ 9"  |
| MA 5     | DENSE WET SAND | 20'        | 123+29.8 | 37.9' LT | 3'-6"           | 8'-6"  | 18-#8      | #5 @ 12" |
| MA 6     | DENSE WET SAND | 20'        | 123+88.6 | 24.1' RT | 3'-6"           | 9'-6"  | 18-#8      | #5 @ 12" |

**LEGEND**  
**B-#** BORING LOG NUMBER

NOTE: TRAFFIC MAST ARM FOUNDATION DESIGN HAS BEEN PROVIDED ON TRAFFIC PLAN

SCALE: 1" = 20'

|   |   |  |
|---|---|--|
| <b>Geologic - Earth Exploration, Inc.</b> | CLIENT: <u>BETA Group, Inc.</u>           | BORING #:<br>B-1                             |
|   | PROJECT: <u>Boston &amp; Lexington Rd</u> | PAGE   |
| 7 Sherwood Drive<br>TEL 5083844434        | Norfolk, MA 02056<br>FAX                  | LOCATION: <u>Billerica, MA</u><br><br>1 OF 1 |

|                                |        |             |              |                            |
|--------------------------------|--------|-------------|--------------|----------------------------|
| File #: <u>23078</u>           | CASING | SAMPLER     | CORE BARREL  | Surface Elevation: _____   |
| Date Started: <u>6/9/23</u>    | TYPE   | <u>HW 4</u> | <u>SS</u>    | Station: _____             |
| Date Completed: <u>6/9/23</u>  | SIZE   | <u>140"</u> | <u>1 3/8</u> | Groundwater level readings |
| Driller: <u>J. Martinelli</u>  | HAMMER | <u>30#</u>  | <u>140#</u>  | <b>Not Recorded</b>        |
| Site Rep.: <u>Not Recorded</u> | FALL   | <u>140"</u> | <u>30"</u>   |                            |

| Depth ft | Sample |           |         |         |             | Strata Change ft | Sample Description   |
|----------|--------|-----------|---------|---------|-------------|------------------|--|
|          | No.    | Depth ft  | Pen. in | Rec. in | Blows/6"    |                  |  |
| 5        |        |           |         |         |             |                  | B-1<br>N 3025019.7340<br>E 720748.5790<br>Elevation: 195.44' |
| 10       | S-1    | 9.0-11.0  | 24      | 14      | 1-1-2-2     |                  | S-1 Moist loose dark brown fine SAND and SILT                |
| 15       | S-2    | 14.0-16.0 | 24      | 16      | 18-21-27-16 |                  | S-2 Wet dense light brown fine SAND, some Gravel and Silt    |
| 20       | S-3    | 19.0-21.0 | 24      |         | 15-15-15-18 |                  | S-3 Wet medium dense light brown fine SAND, some Gravel      |
|          |        |           |         |         |             | 23.0             | Possible top of rock @ 23', roller bit to 24'                |
| 25       | S-4    | 24.0-24.0 | 0       | 0       | 50/0"       | 26.0             | S-4 No recovery, Boulder 24' to 26'                          |
| 30       |        |           |         |         |             |                  | Bottom of exploration at 26.0'                               |

| Ground Surface to _____ used _____ then _____ |           |                                  |           |       |         |                                  |         |                   |
|---|-----------|----------------------------------|-----------|-------|---------|----------------------------------|---------|-------------------|
| Proportions Used                              |           | Cohesive Consistency<br>Blows/ft |           |       |         | Cohesionless Density<br>Blows/ft |         | Sample Type       |
| Trace   | 0 to 10%  | 0-2                              | Very Soft | 9-15  | Stiff   | 0-10                             | Loose   | UP = Fixed Piston |
| Little  | 10 to 20% | 3-4                              | Soft      | 16-30 | V-Stiff | 10-30                            | M-Dense | UT = Shelby Tube  |
| Some  | 20 to 35% | 5-8                              | M-Stiff   | 31+   | Hard    | 30-50                            | Dense   | OE = Open End Rod |
| And   | 35 to 50% |                                  |           |       |         | 50+                              | V-Dense | * = 300# hammer   |

**Notes:** 1. The stratification lines represent the approximate boundary between soil types. The transition may be gradual.  
 2. Water level readings were made in the drill hole during or at the completion of drilling. The water level may fluctuate over time.

**Remarks:** All soil descriptions are made in the field by the Drilling Foreman. No laboratory analyses were performed for this purpose.

BL ALL BETA BILLERICA MA G.P.J. GEOLOGIC.GDT 7/28/23

|   |   |   |
|---|---|---|
| <b>Geologic - Earth Exploration, Inc.</b> | CLIENT: <u>BETA Group, Inc.</u>           | BORING #:<br>B-2                            |
|   | PROJECT: <u>Boston &amp; Lexington Rd</u> | PAGE  |
| 7 Sherwood Drive<br>TEL 5083844434        | Norfolk, MA 02056<br>FAX                  | LOCATION: <u>Billerca, MA</u><br><br>1 OF 1 |

|                                |        |             |              |                            |
|--------------------------------|--------|-------------|--------------|----------------------------|
| File #: <u>23078</u>           | CASING | SAMPLER     | CORE BARREL  | Surface Elevation: _____   |
| Date Started: <u>6/8/23</u>    | TYPE   | <u>HW 4</u> | <u>SS</u>    | Station: _____             |
| Date Completed: <u>6/8/23</u>  | SIZE   | <u>140"</u> | <u>1 3/8</u> | Groundwater level readings |
| Driller: <u>J. Martinelli</u>  | HAMMER | <u>30#</u>  | <u>140#</u>  | <b>Not Recorded</b>        |
| Site Rep.: <u>Not Recorded</u> | FALL   | <u>140"</u> | <u>30"</u>   |                            |

| Depth ft | Sample |           |         |         |                     | Sample Description   |
|----------|--------|-----------|---------|---------|---------------------|--|
|          | No.    | Depth ft  | Pen. in | Rec. in | Blows/6"            |  |
| 5        |        |           |         |         |                     | B-2<br>N 3024994.4760<br>E 720785.9620<br>Elevation: 196.47' |
| 10       | S-1    | 9.0-11.0  | 24      | 16      | 11-15-20-21         | S-1 Moist dense light brown fine SAND, little Gravel         |
| 15       | S-2    | 14.0-16.0 | 24      | 10      | 15-21-25-24         | S-2 Moist dense light brown fine SAND, trace Silt and Gravel |
| 20       | S-3    | 19.0-20.8 | 21      | 8       | 55-48-67<br>-100/3" | S-3 Wet very dense brown fine SAND, little Silt, some Gravel |
| 25       | S-4    | 24.0-26.0 | 24      | 10      | 48-35-66-61         | S-4 Wet very dense brown fine SAND, some Gravel, trace Silt  |
| 30       |        |           |         |         |                     | Bottom of exploration at 26.0'                               |

| Ground Surface to _____ used _____ then _____ |           |                                  |           |       |                                  |       |             |                   |
|---|-----------|----------------------------------|-----------|-------|----------------------------------|-------|-------------|-------------------|
| Proportions Used                              |           | Cohesive Consistency<br>Blows/ft |           |       | Cohesionless Density<br>Blows/ft |       | Sample Type |                   |
| Trace   | 0 to 10%  | 0-2                              | Very Soft | 9-15  | Stiff                            | 0-10  | Loose       | UP = Fixed Piston |
| Little  | 10 to 20% | 3-4                              | Soft      | 16-30 | V-Stiff                          | 10-30 | M-Dense     | UT = Shelby Tube  |
| Some  | 20 to 35% | 5-8                              | M-Stiff   | 31+   | Hard                             | 30-50 | Dense       | OE = Open End Rod |
| And   | 35 to 50% |                                  |           |       |                                  | 50+   | V-Dense     | * = 300# hammer   |

**Notes:** 1. The stratification lines represent the approximate boundary between soil types. The transition may be gradual.  
 2. Water level readings were made in the drill hole during or at the completion of drilling. The water level may fluctuate over time.

**Remarks:** All soil descriptions are made in the field by the Drilling Foreman. No laboratory analyses were performed for this purpose.

BL ALL BETA BILLERICAD MA.GPJ.GEOLOGIC.GDT 7/28/23

|   |   |                               |
|---|---|-------------------------------|
| <b>Geologic - Earth Exploration, Inc.</b> | CLIENT: <u>BETA Group, Inc.</u>           | BORING #:<br>B-3              |
|   | PROJECT: <u>Boston &amp; Lexington Rd</u> |                               |
| 7 Sherwood Drive<br>TEL 5083844434        | Norfolk, MA 02056<br>FAX                  | LOCATION: <u>Billerca, MA</u> |
|   |   | PAGE<br>1 OF 1                |

|                                |                   |              |             |                            |
|--------------------------------|-------------------|--------------|-------------|----------------------------|
| File #: <u>23078</u>           | CASING            | SAMPLER      | CORE BARREL | Surface Elevation: _____   |
| Date Started: <u>6/9/23</u>    | TYPE <u>HW 4</u>  | <u>SS</u>    | _____       | Station: _____             |
| Date Completed: <u>6/9/23</u>  | SIZE <u>140"</u>  | <u>1 3/8</u> | _____       | Groundwater level readings |
| Driller: <u>J. Martinelli</u>  | HAMMER <u>30#</u> | <u>140#</u>  | <u>---</u>  | Not Recorded               |
| Site Rep.: <u>Not Recorded</u> | FALL <u>140"</u>  | <u>30"</u>   | <u>---</u>  |                            |

| Depth ft | Sample |           |         |         |             | Sample Description   |
|----------|--------|-----------|---------|---------|-------------|--|
|          | No.    | Depth ft  | Pen. in | Rec. in | Blows/6"    |  |
| 5        |        |           |         |         |             | <div style="border: 1px solid purple; padding: 5px; color: purple;">                     B-3<br/>                     N 3024944.2220<br/>                     E 720765.8740<br/>                     Elevation: 197.49'                 </div> |
| 10       | S-1    | 9.0-11.0  | 24      | 6       | 15-20-18-21 | S-1 Dry dense brown fine SAND, trace Gravel  |
| 15       | S-2    | 14.0-16.0 | 24      | 16      | 10-22-30-58 | S-2 Wet very dense brown fine SAND, some Gravel  |
| 20       | S-3    | 19.0-19.1 | 1       | 0       | 100/1"      | S-3 No recovery  |
| 25       | S-4    | 24.0-26.0 | 24      | 8       | 35-36-63-58 | S-4 Wet very dense brown find SAND, little Gravel  |
| 30       |        |           |         |         |             | Bottom of exploration at 26.0'   |

| Ground Surface to _____ used _____ then _____ |           |                                  |           |       |                                  |       |             |                   |
|---|-----------|----------------------------------|-----------|-------|----------------------------------|-------|-------------|-------------------|
| Proportions Used                              |           | Cohesive Consistency<br>Blows/ft |           |       | Cohesionless Density<br>Blows/ft |       | Sample Type |                   |
| Trace   | 0 to 10%  | 0-2                              | Very Soft | 9-15  | Stiff                            | 0-10  | Loose       | UP = Fixed Piston |
| Little  | 10 to 20% | 3-4                              | Soft      | 16-30 | V-Stiff                          | 10-30 | M-Dense     | UT = Shelby Tube  |
| Some  | 20 to 35% | 5-8                              | M-Stiff   | 31+   | Hard                             | 30-50 | Dense       | OE = Open End Rod |
| And   | 35 to 50% |                                  |           |       |                                  | 50+   | V-Dense     | * = 300# hammer   |

**Notes:** 1. The stratification lines represent the approximate boundary between soil types. The transition may be gradual.  
 2. Water level readings were made in the drill hole during or at the completion of drilling. The water level may fluctuate over time.

**Remarks:** All soil descriptions are made in the field by the Drilling Foreman. No laboratory analyses were performed for this purpose.

BL ALL BETA BILLERICA MA G.P.J. GEOLOGIC.GDT 7/28/23

|   |   |  |
|---|---|--|
| <b>Geologic - Earth Exploration, Inc.</b> | CLIENT: <u>BETA Group, Inc.</u>           | BORING #:<br>B-4                             |
|   | PROJECT: <u>Boston &amp; Lexington Rd</u> | PAGE   |
| 7 Sherwood Drive<br>TEL 5083844434        | Norfolk, MA 02056<br>FAX                  | LOCATION: <u>Billerica, MA</u><br><br>1 OF 1 |

|                                |                   |              |             |                            |
|--------------------------------|-------------------|--------------|-------------|----------------------------|
| File #: <u>23078</u>           | CASING            | SAMPLER      | CORE BARREL | Surface Elevation: _____   |
| Date Started: <u>6/8/23</u>    | TYPE <u>HW 4</u>  | <u>SS</u>    | _____       | Station: _____             |
| Date Completed: <u>6/8/23</u>  | SIZE <u>140"</u>  | <u>1 3/8</u> | _____       | Groundwater level readings |
| Driller: <u>J. Martinelli</u>  | HAMMER <u>30#</u> | <u>140#</u>  | <u>---</u>  | Not Recorded               |
| Site Rep.: <u>Not Recorded</u> | FALL <u>140"</u>  | <u>30"</u>   | <u>---</u>  |                            |

| Depth ft | Sample |           |         |         |              | Sample Description  |
|----------|--------|-----------|---------|---------|--------------|---|
|          | No.    | Depth ft  | Pen. in | Rec. in | Blows/6"     |   |
| 5        |        |           |         |         |              | B-4<br>N 3024952.8200<br>E 720886.6780<br>Elevation: 200.18'    |
| 10       | S-1    | 9.0-11.0  | 24      | 12      | 16-15-12-12  | S-1 Wet medium dense brown fine SAND, little Gravel             |
| 15       | S-2    | 14.0-16.0 | 24      | 10      | 19-18-22-20  | S-2 Wet dense brown fine SAND, little Gravel                    |
| 20       | S-3    | 19.0-21.0 | 24      | 8       | 19-24-35-37  | S-3 Wet very dense brown fine SAND, some Gravel                 |
| 25       | S-4    | 24.0-25.3 | 15      | 8       | 47-50-100/3" | S-4 Wet very dense light brown fine to coarse SAND, some Gravel |
| 30       |        |           |         |         |              | Bottom of exploration at 26.0'                                  |

| Ground Surface to _____ used _____ then _____ |           |                                  |           |       |         |                                  |         |                   |
|---|-----------|----------------------------------|-----------|-------|---------|----------------------------------|---------|-------------------|
| Proportions Used                              |           | Cohesive Consistency<br>Blows/ft |           |       |         | Cohesionless Density<br>Blows/ft |         | Sample Type       |
| Trace   | 0 to 10%  | 0-2                              | Very Soft | 9-15  | Stiff   | 0-10                             | Loose   | UP = Fixed Piston |
| Little  | 10 to 20% | 3-4                              | Soft      | 16-30 | V-Stiff | 10-30                            | M-Dense | UT = Shelby Tube  |
| Some  | 20 to 35% | 5-8                              | M-Stiff   | 31+   | Hard    | 30-50                            | Dense   | OE = Open End Rod |
| And   | 35 to 50% |                                  |           |       |         | 50+                              | V-Dense | * = 300# hammer   |

**Notes:** 1. The stratification lines represent the approximate boundary between soil types. The transition may be gradual.  
 2. Water level readings were made in the drill hole during or at the completion of drilling. The water level may fluctuate over time.

**Remarks:** All soil descriptions are made in the field by the Drilling Foreman. No laboratory analyses were performed for this purpose.

BL ALL BETA BILLERICA MA G.P.J. GEOLOGIC.GDT 7/28/23

|  |              |                 |                 |                                     |                      |   |
|--|--------------|-----------------|-----------------|-------------------------------------|----------------------|---|
| <b>Northern Drill Service, Inc.</b>          |              |                 |                 | Client: BETA Group, Inc.            |                      | Boring #  |
| 130 East Main Street, Northborough, MA 01532 |              |                 |                 | Project: Boston Rd Mast Arm Borings |                      | B-5   |
| TEL 508-393-6900 FAX 508-393-6901            |              |                 |                 | Location: Boston Rd, Billerica, MA  |                      | Page 1 OF 1   |
| File #:                                      |              |                 |                 | CASING                              | SAMPLER              | CORE BARREL   |
| Date Started: 8/1/22                         |              |                 |                 | TYPE                                | HW                   | S/S   |
| Date Completed: 8/1/22                       |              |                 |                 | SIZE                                | 4"                   | 2"  |
| Driller: Tyler Kennedy                       |              |                 |                 | HAMMER                              |                      | 140   |
| Site Rep.: n/a                               |              |                 |                 | FALL                                |                      | 30"   |
| Northing: 3024940.476                        |              |                 |                 | Elevation: 200.73'                  |                      |   |
| Easting: 720912.535                          |              |                 |                 | Ground Water level: 10'             |                      |   |
| <b>SAMPLE</b>                                |              |                 |                 |                                     |                      |   |
| <b>No.</b>                                   | <b>Depth</b> | <b>Pen. In.</b> | <b>Rec. In.</b> | <b>Blows/6"</b>                     | <b>Strata Change</b> | <b>SAMPLE DESCRIPTION</b>   |
| Asphalt                                      |              |                 |                 |                                     |                      | Asphalt Thickness: 11.5"  |
| S-1  | 0-5'         |                 |                 | N/A                                 |                      | S-1: Brown, Fine to coarse sand and gravel some large boulders.                             |
| S-2  | 5' - 7'      | 24"             | 17"             | 6-5-23-28                           |                      | S-2: Med. Dense, tan, coarse sand and gravel, some fine sand, trace silt.                   |
| S-3  | 9' - 11'     | 24"             | 13"             | 13-11-11-12                         |                      | S-3: Med. Dense, tan, fine sand, some coarse gravel, trace coarse sand, trace silt.         |
| S-4  | 14' - 16'    | 24"             | 16"             | 26-29-25-27                         |                      | S-4: Very Dense, tan, fine sand, some fine to coarse gravel, trace coarse sand, trace silt. |
| S-5  | 19' - 21'    | 24"             | 17"             | 20-26-25-28                         |                      | S-5: Very dense, tan, fine sand, some fine to coarse gravel, trace coarse sand, trace silt. |
| S-6  | 24' - 26'    | 24"             | 19"             | 18-21-82-60                         |                      | S-6: Very dense, gray, coarse sand and medium to coarse gravel, some fine sand, trace silt. |
| Bottom of Exploration = 26'                  |              |                 |                 |                                     |                      |   |

Cohesionless Density Blows/ft: 0-10 Loose 10-30 Medium-Dense 30-50 Dense 50+ Very Dense

|   |   |  |
|---|---|--|
| <b>Geologic - Earth Exploration, Inc.</b> | CLIENT: <u>BETA Group, Inc.</u>           | BORING #:<br>B-6                             |
|   | PROJECT: <u>Boston &amp; Lexington Rd</u> | PAGE   |
| 7 Sherwood Drive<br>TEL 5083844434        | Norfolk, MA 02056<br>FAX                  | LOCATION: <u>Billerica, MA</u><br><br>1 OF 1 |

|                                |        |             |              |                            |
|--------------------------------|--------|-------------|--------------|----------------------------|
| File #: <u>23078</u>           | CASING | SAMPLER     | CORE BARREL  | Surface Elevation: _____   |
| Date Started: <u>6/12/23</u>   | TYPE   | <u>HW 4</u> | <u>SS</u>    | Station: _____             |
| Date Completed: <u>6/12/23</u> | SIZE   | <u>140"</u> | <u>1 3/8</u> | Groundwater level readings |
| Driller: <u>J. Martinelli</u>  | HAMMER | <u>30#</u>  | <u>140#</u>  | <b>Not Recorded</b>        |
| Site Rep.: <u>Not Recorded</u> | FALL   | <u>140"</u> | <u>30"</u>   |                            |

| Depth ft | Sample |           |         |         |             | Sample Description   |   |
|----------|--------|-----------|---------|---------|-------------|--|---|
|          | No.    | Depth ft  | Pen. in | Rec. in | Blows/6"    |  |   |
| 5        |        |           |         |         |             | <div style="border: 1px solid purple; padding: 5px; color: purple;">                     B-6<br/>                     N 3024854.4220<br/>                     E 720942.2540<br/>                     Elevation: 205.55'                 </div> |   |
| 10       | S-1    | 9.0-11.0  | 24      | 16      | 16-22-28-33 |  | S-1 Wet very dense brown fine SAND                |
| 15       | S-2    | 14.0-16.0 | 24      | 0       | 50/0"       |  | S-2 No recovery                                   |
| 20       | S-3    | 19.0-21.0 | 24      | 14      | 30-23-19-26 |  | S-3 Wet dense light brown fine SAND, trace Gravel |
| 25       | S-4    | 24.0-26.0 | 24      | 12      | 22-28-32-32 | S-4 Wet very dense brown fine SAND, trace Gravel   |   |
| 30       |        |           |         |         |             | Bottom of exploration at 26.0'   |   |

Ground Surface to \_\_\_\_\_ used \_\_\_\_\_ then \_\_\_\_\_

| Proportions Used | Cohesive Consistency<br>Blows/ft |     |           | Cohesionless Density<br>Blows/ft |         | Sample Type   |                   |
|------------------|----------------------------------|-----|-----------|----------------------------------|---------|---------------|-------------------|
| Trace            | 0 to 10%                         | 0-2 | Very Soft | 9-15                             | Stiff   | 0-10 Loose    | UP = Fixed Piston |
| Little           | 10 to 20%                        | 3-4 | Soft      | 16-30                            | V-Stiff | 10-30 M-Dense | UT = Shelby Tube  |
| Some             | 20 to 35%                        | 5-8 | M-Stiff   | 31+                              | Hard    | 30-50 Dense   | OE = Open End Rod |
| And              | 35 to 50%                        |     |           |                                  |         | 50+ V-Dense   | * = 300# hammer   |

**Notes:** 1. The stratification lines represent the approximate boundary between soil types. The transition may be gradual.  
 2. Water level readings were made in the drill hole during or at the completion of drilling. The water level may fluctuate over time.

**Remarks:** All soil descriptions are made in the field by the Drilling Foreman. No laboratory analyses were performed for this purpose.

BL ALL BETA BILLERICA MA G.P.J. GEOLOGIC.GDT 7/28/23

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DOCUMENT A00881

## **PAVEMENT LOGS**

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**Briggs Engineering & Testing**  
 A DIVISION OF PK ASSOCIATES, INC.

October 4, 2019

Briggs# 30808  
 Lab# M-30980  
 Page 1 of 2

BETA Group, Inc.  
 315 Norwood Park South  
 2<sup>nd</sup> Floor  
 Norwood, MA 02062

Attn. Mr. Darshan Jhaveri, P.E.

**CORE AVERAGE THICKNESS**  
**Boston Road-Billerica**

| <b>Core #1</b>       |                | <b>Core #2</b>       |                |
|----------------------|----------------|----------------------|----------------|
| <u>Material Type</u> | <u>Average</u> | <u>Material Type</u> | <u>Average</u> |
| 12.5 mm              | 1.250          | 12.5 mm              | 1.375          |
| 19 mm                | 2.125          | 19 mm                | 5.625          |
| 19 mm                | 3.375          | 37.5 mm              | 3.375          |
| 19 mm                | 1.125          |                      |                |
| <b>Total</b>         | <b>7.875"</b>  | <b>Total</b>         | <b>9.375"</b>  |

| <b>Core #3</b>       |                | <b>Core #4</b>       |                |
|----------------------|----------------|----------------------|----------------|
| <u>Material Type</u> | <u>Average</u> | <u>Material Type</u> | <u>Average</u> |
| 12.5 mm              | 2.250          | 9.5 mm               | 1.375          |
| 19 mm                | 3.125          | 19 mm                | 4.375          |
| 37.5 mm              | 3.625          | 37.5 mm              | 2.375          |
| <b>Total</b>         | <b>9.000"</b>  | <b>Total</b>         | <b>8.125"</b>  |

| <b>Core #5</b>       |                | <b>Core #6</b>       |                |
|----------------------|----------------|----------------------|----------------|
| <u>Material Type</u> | <u>Average</u> | <u>Material Type</u> | <u>Average</u> |
| 12.5 mm              | 1.750          | 9.5 mm               | 1.500          |
| 12.5 mm              | 1.250          | 12.5 mm              | 3.125          |
| 12.5 mm              | 1.625          | 19 mm                | 2.875          |
| 12.5 mm              | 1.125          | 37.5 mm              | 4.000          |
| <b>Total</b>         | <b>5.750"</b>  | <b>Total</b>         | <b>11.500"</b> |



**Briggs Engineering & Testing**  
*A DIVISION OF PK ASSOCIATES, INC.*

Briggs# 30808  
 Lab# M-30980  
 Page 2 of 2

**Core #7**

| <u>Material Type</u> | <u>Average</u> |
|----------------------|----------------|
| 9.5 mm               | 1.375          |
| 19 mm                | 4.875          |
| <b>Total</b>         | <b>6.250"</b>  |

**Core #8**

| <u>Material Type</u> | <u>Average</u> |
|----------------------|----------------|
| 9.5 mm               | 0.625          |
| 19 mm                | 6.500          |
| <b>Total</b>         | <b>7.125"</b>  |

**Core #9**

| <u>Material Type</u> | <u>Average</u> |
|----------------------|----------------|
| 9.5 mm               | 1.625          |
| 12.5 mm              | 3.875          |
| 19 mm                | 1.625          |
| 9.5 mm               | 2.375          |
| <b>Total</b>         | <b>9.500"</b>  |

If you have any questions or if I can be of further service please contact me at your convenience.

**BRIGGS ENGINEERING & TESTING**  
*A Division of PK Associates, Inc.*

Sean Skorohod  
 Director of Testing Services  
 Construction Technology Division



















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DOCUMENT B00420

PROPOSAL

BILLERICA

For: **Intersection Improvements at Boston Road (Route 3A), Lexington Street  
and Glad Valley Road**

COMMONWEALTH OF MASSACHUSETTS

LOCATION

The work referred to herein is in the Town of BILLERICA in Middlesex 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:

**Boston Road (Route 3A)**

**Beginning – Station 102+34.00 +/-  
Ending –Station 139+82.00 +/-**

**Lexington Street**

**Limit of Work – Station 22+53.00 +/-**

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 **797 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 15<sup>th</sup>.

The Work of this project is described by the following Items and quantities.

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| Project # 609250   |          | Contract # 129975  |            |        |
|--|----------|--|------------|--------|
| Location : BILLERICA   |          |  |            |        |
| Description : Intersection Improvements at Boston Road (Route 3A), Lexington Street and Glad Valley Road |          |  |            |        |
| ITEM #   | QUANTITY | ITEM WITH UNIT BID PRICE<br>WRITTEN IN WORDS                       | UNIT PRICE | AMOUNT |
| 101.   | 0.2      | CLEARING AND GRUBBING<br><br>AT _____<br>PER ACRE                  |            |        |
| 102.2  | 1        | TREE TRIMMING<br><br>AT _____<br>LUMP SUM                          |            |        |
| 102.511  | 5        | TREE PROTECTION - ARMORING AND PRUNING<br><br>AT _____<br>EACH     |            |        |
| 102.521  | 600      | TREE AND PLANT PROTECTION FENCE<br><br>AT _____<br>PER FOOT        |            |        |
| 102.55   | 16       | ARBORIST<br><br>AT _____<br>PER HOUR                               |            |        |
| 103.   | 11       | TREE REMOVED - DIAMETER UNDER 24 INCHES<br><br>AT _____<br>EACH    |            |        |
| 104.   | 2        | TREE REMOVED - DIAMETER 24 INCHES AND OVER<br><br>AT _____<br>EACH |            |        |
| 105.   | 5        | STUMP REMOVED<br><br>AT _____<br>EACH                              |            |        |
| 120.1  | 6,500    | UNCLASSIFIED EXCAVATION<br><br>AT _____<br>PER CUBIC YARD          |            |        |

**Project # 609250 Contract # 129975**

**Location : BILLERICA**

**Description : Intersection Improvements at Boston Road (Route 3A), Lexington Street and Glad Valley Road**

| ITEM # | QUANTITY | ITEM WITH UNIT BID PRICE<br>WRITTEN IN WORDS   | UNIT PRICE | AMOUNT |
|--------|----------|--|------------|--------|
| 141.   | 50       | CLASS A TRENCH EXCAVATION<br><br>AT _____<br>PER CUBIC YARD                          |            |        |
| 141.1  | 150      | TEST PIT FOR EXPLORATION<br><br>AT _____<br>PER CUBIC YARD                           |            |        |
| 141.11 | 3        | TEST PIT FOR EXPLORATION - VACUUM EXCAVATION<br><br>AT _____<br>PER DAY              |            |        |
| 142.   | 1,600    | CLASS B TRENCH EXCAVATION<br><br>AT _____<br>PER CUBIC YARD                          |            |        |
| 144.   | 200      | CLASS B ROCK EXCAVATION<br><br>AT _____<br>PER CUBIC YARD                            |            |        |
| 145.   | 1        | DRAINAGE STRUCTURE ABANDONED<br><br>AT _____<br>EACH                                 |            |        |
| 146.   | 11       | DRAINAGE STRUCTURE REMOVED<br><br>AT _____<br>EACH                                   |            |        |
| 151.   | 4,850    | GRAVEL BORROW<br><br>AT _____<br>PER CUBIC YARD                                      |            |        |
| 151.2  | 700      | GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES<br><br>AT _____<br>PER CUBIC YARD |            |        |

**Project # 609250 Contract # 129975**

**Location : BILLERICA**

**Description : Intersection Improvements at Boston Road (Route 3A), Lexington Street and Glad Valley Road**

| ITEM # | QUANTITY | ITEM WITH UNIT BID PRICE<br>WRITTEN IN WORDS   | UNIT PRICE | AMOUNT |
|--------|----------|--|------------|--------|
| 156.   | 95       | CRUSHED STONE<br><br>AT _____<br>PER TON   |            |        |
| 160.2  | 70       | CONTROLLED LOW-STRENGTH MATERIAL - MECHANICAL<br>EXCAVATABLE (101-300 PSI)<br><br>AT _____<br>PER CUBIC YARD |            |        |
| 170.   | 13,000   | FINE GRADING AND COMPACTING - SUBGRADE AREA<br><br>AT _____<br>PER SQUARE YARD                               |            |        |
| 180.01 | 1        | ENVIRONMENTAL HEALTH AND SAFETY PROGRAM<br><br>AT _____<br>LUMP SUM  |            |        |
| 180.02 | 25       | PERSONAL PROTECTION LEVEL C UPGRADE<br><br>AT _____<br>PER HOUR  |            |        |
| 180.03 | 25       | LICENSED SITE PROFESSIONAL SERVICES<br><br>AT _____<br>PER HOUR  |            |        |
| 181.11 | 6,300    | DISPOSAL OF UNREGULATED SOIL<br><br>AT _____<br>PER TON  |            |        |
| 181.12 | 2,100    | DISPOSAL OF REGULATED SOIL - IN-STATE FACILITY<br><br>AT _____<br>PER TON                                    |            |        |
| 181.13 | 730      | DISPOSAL OF REGULATED SOIL - OUT-OF-STATE FACILITY<br><br>AT _____<br>PER TON                                |            |        |

**Project # 609250                      Contract # 129975**

**Location : BILLERICA**

**Description : Intersection Improvements at Boston Road (Route 3A), Lexington Street and Glad Valley Road**

| ITEM # | QUANTITY | ITEM WITH UNIT BID PRICE<br>WRITTEN IN WORDS                    | UNIT PRICE | AMOUNT |
|--------|----------|---|------------|--------|
| 181.14 | 140      | DISPOSAL OF HAZARDOUS WASTE<br><br>AT _____<br>PER TON          |            |        |
| 182.1  | 1        | INSPECTION AND TESTING FOR ASBESTOS<br><br>AT _____<br>LUMP SUM |            |        |
| 182.2  | 10       | REMOVAL OF ASBESTOS<br><br>AT _____<br>PER FOOT                 |            |        |
| 184.1  | 15       | DISPOSAL OF TREATED WOOD PRODUCTS<br><br>AT _____<br>PER TON    |            |        |
| 201.   | 28       | CATCH BASIN<br><br>AT _____<br>EACH                             |            |        |
| 202.   | 17       | MANHOLE<br><br>AT _____<br>EACH                                 |            |        |
| 202.15 | 4        | MANHOLE - 5 FOOT DIAMETER<br><br>AT _____<br>EACH               |            |        |
| 204.11 | 11       | GUTTER INLET - SPECIAL<br><br>AT _____<br>EACH                  |            |        |
| 220.   | 63       | DRAINAGE STRUCTURE ADJUSTED<br><br>AT _____<br>EACH             |            |        |

**Project # 609250 Contract # 129975**

**Location : BILLERICA**

**Description : Intersection Improvements at Boston Road (Route 3A), Lexington Street and Glad Valley Road**

| ITEM # | QUANTITY | ITEM WITH UNIT BID PRICE<br>WRITTEN IN WORDS                                | UNIT PRICE | AMOUNT |
|--------|----------|---|------------|--------|
| 220.2  | 10       | DRAINAGE STRUCTURE REBUILT<br><br>AT _____<br>PER FOOT                      |            |        |
| 220.3  | 7        | DRAINAGE STRUCTURE CHANGE IN TYPE<br><br>AT _____<br>EACH                   |            |        |
| 220.5  | 3        | DRAINAGE STRUCTURE REMODELED<br><br>AT _____<br>EACH                        |            |        |
| 220.6  | 10       | SANITARY STRUCTURE REBUILT<br><br>AT _____<br>PER FOOT                      |            |        |
| 220.7  | 18       | SANITARY STRUCTURE ADJUSTED<br><br>AT _____<br>EACH                         |            |        |
| 220.8  | 5        | SANITARY STRUCTURE REMODELED<br><br>AT _____<br>EACH                        |            |        |
| 221.   | 44       | FRAME AND COVER<br><br>AT _____<br>EACH                                     |            |        |
| 222.1  | 40       | FRAME AND GRATE - MASSDOT CASCADE TYPE<br><br>AT _____<br>EACH              |            |        |
| 223.2  | 41       | FRAME AND GRATE (OR COVER) REMOVED AND<br>DISCARDED<br><br>AT _____<br>EACH |            |        |

**Project # 609250                      Contract # 129975**

**Location : BILLERICA**

**Description : Intersection Improvements at Boston Road (Route 3A), Lexington Street and Glad Valley Road**

| ITEM #  | QUANTITY | ITEM WITH UNIT BID PRICE<br>WRITTEN IN WORDS                             | UNIT PRICE | AMOUNT |
|---------|----------|--|------------|--------|
| 224.010 | 1        | 10 INCH HOOD<br><br>AT _____<br>EACH                                     |            |        |
| 224.012 | 35       | 12 INCH HOOD<br><br>AT _____<br>EACH                                     |            |        |
| 227.3   | 20       | REMOVAL OF DRAINAGE STRUCTURE SEDIMENT<br><br>AT _____<br>PER CUBIC YARD |            |        |
| 227.31  | 650      | REMOVAL OF DRAINAGE PIPE SEDIMENT<br><br>AT _____<br>PER FOOT            |            |        |
| 227.4   | 20       | MASONRY PLUG<br><br>AT _____<br>PER SQUARE FOOT                          |            |        |
| 234.12  | 1,750    | 12 INCH DRAINAGE PIPE - OPTION<br><br>AT _____<br>PER FOOT               |            |        |
| 234.15  | 750      | 15 INCH DRAINAGE PIPE - OPTION<br><br>AT _____<br>PER FOOT               |            |        |
| 234.18  | 25       | 18 INCH DRAINAGE PIPE - OPTION<br><br>AT _____<br>PER FOOT               |            |        |
| 234.24  | 300      | 24 INCH DRAINAGE PIPE - OPTION<br><br>AT _____<br>PER FOOT               |            |        |

**Project # 609250 Contract # 129975**

**Location : BILLERICA**

**Description : Intersection Improvements at Boston Road (Route 3A), Lexington Street and Glad Valley Road**

| ITEM # | QUANTITY | ITEM WITH UNIT BID PRICE<br>WRITTEN IN WORDS                        | UNIT PRICE | AMOUNT |
|--------|----------|---|------------|--------|
| 238.10 | 45       | 10 INCH DUCTILE IRON PIPE<br><br>AT _____<br>PER FOOT               |            |        |
| 238.12 | 40       | 12 INCH DUCTILE IRON PIPE<br><br>AT _____<br>PER FOOT               |            |        |
| 238.16 | 20       | 16 INCH DUCTILE IRON PIPE<br><br>AT _____<br>PER FOOT               |            |        |
| 242.12 | 1        | 12 INCH REINFORCED CONCRETE PIPE FLARED END<br><br>AT _____<br>EACH |            |        |
| 252.12 | 25       | 12 INCH CORRUGATED PLASTIC PIPE<br><br>AT _____<br>PER FOOT         |            |        |
| 252.15 | 400      | 15 INCH CORRUGATED PLASTIC PIPE<br><br>AT _____<br>PER FOOT         |            |        |
| 252.24 | 100      | 24 INCH CORRUGATED PLASTIC PIPE<br><br>AT _____<br>PER FOOT         |            |        |
| 258.   | 15       | STONE FOR PIPE ENDS<br><br>AT _____<br>PER SQUARE YARD              |            |        |
| 271.1  | 350      | DRAINAGE PIPE REMOVED AND DISCARDED<br><br>AT _____<br>PER FOOT     |            |        |

**Project # 609250 Contract # 129975**

**Location : BILLERICA**

**Description : Intersection Improvements at Boston Road (Route 3A), Lexington Street and Glad Valley Road**

| ITEM # | QUANTITY | ITEM WITH UNIT BID PRICE<br>WRITTEN IN WORDS                                | UNIT PRICE | AMOUNT |
|--------|----------|---|------------|--------|
| 302.06 | 230      | 6 INCH DUCTILE IRON WATER PIPE (RUBBER GASKET)<br><br>AT _____<br>PER FOOT  |            |        |
| 302.08 | 160      | 8 INCH DUCTILE IRON WATER PIPE (RUBBER GASKET)<br><br>AT _____<br>PER FOOT  |            |        |
| 302.10 | 180      | 10 INCH DUCTILE IRON WATER PIPE (RUBBER GASKET)<br><br>AT _____<br>PER FOOT |            |        |
| 302.12 | 3,300    | 12 INCH DUCTILE IRON WATER PIPE (RUBBER GASKET)<br><br>AT _____<br>PER FOOT |            |        |
| 309.   | 6,300    | DUCTILE IRON FITTINGS FOR WATER PIPE<br><br>AT _____<br>PER POUND           |            |        |
| 316.2  | 23       | CUT AND CAP EXISTING WATER MAIN<br><br>AT _____<br>EACH                     |            |        |
| 346.6  | 7,200    | 6 INCH TEMPORARY BYPASS<br><br>AT _____<br>PER FOOT                         |            |        |
| 347.1  | 700      | 1 INCH COPPER TUBING TYPE K<br><br>AT _____<br>PER FOOT                     |            |        |
| 347.2  | 100      | 2 INCH COPPER TUBING TYPE K<br><br>AT _____<br>PER FOOT                     |            |        |

**Project # 609250 Contract # 129975**

**Location : BILLERICA**

**Description : Intersection Improvements at Boston Road (Route 3A), Lexington Street and Glad Valley Road**

| ITEM # | QUANTITY | ITEM WITH UNIT BID PRICE<br>WRITTEN IN WORDS                          | UNIT PRICE | AMOUNT |
|--------|----------|---|------------|--------|
| 350.06 | 12       | 6 INCH GATE AND GATE BOX<br><br>AT _____<br>EACH                      |            |        |
| 350.08 | 4        | 8 INCH GATE AND GATE BOX<br><br>AT _____<br>EACH                      |            |        |
| 350.10 | 3        | 10 INCH GATE AND GATE BOX<br><br>AT _____<br>EACH                     |            |        |
| 350.12 | 14       | 12 INCH GATE AND GATE BOX<br><br>AT _____<br>EACH                     |            |        |
| 352.06 | 5        | 6 INCH GATE AND GATE BOX REMOVED AND DISPOSED<br><br>AT _____<br>EACH |            |        |
| 352.08 | 1        | 8 INCH GATE AND GATE BOX REMOVED AND DISPOSED<br><br>AT _____<br>EACH |            |        |
| 358.   | 15       | GATE BOX ADJUSTED<br><br>AT _____<br>EACH                             |            |        |
| 359.1  | 7        | GATE BOX REMOVED AND DISPOSED<br><br>AT _____<br>EACH                 |            |        |
| 363.1  | 21       | 1 INCH CORPORATION COCK<br><br>AT _____<br>EACH                       |            |        |

**Project # 609250                      Contract # 129975**

**Location : BILLERICA**

**Description : Intersection Improvements at Boston Road (Route 3A), Lexington Street and Glad Valley Road**

| ITEM # | QUANTITY | ITEM WITH UNIT BID PRICE<br>WRITTEN IN WORDS                       | UNIT PRICE | AMOUNT |
|--------|----------|--|------------|--------|
| 363.2  | 2        | 2 INCH CORPORATION COCK<br><br>AT _____<br>EACH                    |            |        |
| 376.   | 9        | HYDRANT<br><br>AT _____<br>EACH                                    |            |        |
| 377.1  | 140      | HYDRANT ASSEMBLY REMOVED AND DISPOSED<br><br>AT _____<br>PER FOOT  |            |        |
| 381.   | 24       | SERVICE BOX<br><br>AT _____<br>EACH                                |            |        |
| 381.3  | 2        | SERVICE BOX ADJUSTED<br><br>AT _____<br>EACH                       |            |        |
| 381.4  | 24       | SERVICE BOX REMOVED AND DISPOSED<br><br>AT _____<br>EACH           |            |        |
| 384.   | 26       | CURB STOP<br><br>AT _____<br>EACH                                  |            |        |
| 390.01 | 200      | IRRIGATION SYSTEM REMOVED AND RESET<br><br>AT _____<br>PER FOOT    |            |        |
| 402.1  | 1,300    | DENSE GRADED CRUSHED STONE FOR SUB-BASE<br><br>AT _____<br>PER TON |            |        |

**Project # 609250 Contract # 129975**

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**Description : Intersection Improvements at Boston Road (Route 3A), Lexington Street and Glad Valley Road**

| ITEM # | QUANTITY | ITEM WITH UNIT BID PRICE<br>WRITTEN IN WORDS  | UNIT PRICE | AMOUNT |
|--------|----------|---|------------|--------|
| 415.2  | 15,500   | PAVEMENT FINE MILLING<br><br>AT _____<br>PER SQUARE YARD                              |            |        |
| 431.   | 300      | HIGH EARLY STRENGTH CEMENT CONCRETE BASE<br>COURSE<br><br>AT _____<br>PER SQUARE YARD |            |        |
| 440.   | 10,000   | CALCIUM CHLORIDE FOR ROADWAY DUST CONTROL<br><br>AT _____<br>PER POUND                |            |        |
| 443.   | 20       | WATER FOR ROADWAY DUST CONTROL<br><br>AT _____<br>PER 1000 GALLONS                    |            |        |
| 450.23 | 2,700    | SUPERPAVE SURFACE COURSE - 12.5 (SSC - 12.5)<br><br>AT _____<br>PER TON               |            |        |
| 450.32 | 1,000    | SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC - 19.0)<br><br>AT _____<br>PER TON          |            |        |
| 450.42 | 1,700    | SUPERPAVE BASE COURSE - 37.5 (SBC - 37.5)<br><br>AT _____<br>PER TON                  |            |        |
| 451.   | 1,100    | HMA FOR PATCHING<br><br>AT _____<br>PER TON   |            |        |
| 452.   | 1,800    | ASPHALT EMULSION FOR TACK COAT<br><br>AT _____<br>PER GALLON                          |            |        |

**Project # 609250 Contract # 129975**

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**Description : Intersection Improvements at Boston Road (Route 3A), Lexington Street and Glad Valley Road**

| ITEM # | QUANTITY | ITEM WITH UNIT BID PRICE<br>WRITTEN IN WORDS                             | UNIT PRICE | AMOUNT |
|--------|----------|--|------------|--------|
| 453.   | 13,500   | HMA JOINT SEALANT<br><br>AT _____<br>PER FOOT                            |            |        |
| 470.21 | 20       | HOT MIX ASPHALT BERM, TYPE A - MODIFIED<br><br>AT _____<br>PER FOOT      |            |        |
| 472.   | 1,000    | TEMPORARY ASPHALT PATCHING<br><br>AT _____<br>PER TON                    |            |        |
| 482.5  | 5,900    | SAWCUTTING ASPHALT PAVEMENT FOR BOX WIDENING<br><br>AT _____<br>PER FOOT |            |        |
| 502.   | 190      | GRANITE CURB TYPE VA2 - STRAIGHT<br><br>AT _____<br>PER FOOT             |            |        |
| 502.1  | 25       | GRANITE CURB TYPE VA2 - CURVED<br><br>AT _____<br>PER FOOT               |            |        |
| 504.2  | 8        | GRANITE CURB TYPE VA4 - SPLAYED END<br><br>AT _____<br>EACH              |            |        |
| 506.   | 4,500    | GRANITE CURB TYPE VB - STRAIGHT<br><br>AT _____<br>PER FOOT              |            |        |
| 506.1  | 410      | GRANITE CURB TYPE VB - CURVED<br><br>AT _____<br>PER FOOT                |            |        |

**Project # 609250 Contract # 129975**

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| ITEM # | QUANTITY | ITEM WITH UNIT BID PRICE<br>WRITTEN IN WORDS  | UNIT PRICE | AMOUNT |
|--------|----------|---|------------|--------|
| 509.   | 750      | GRANITE TRANSITION CURB FOR PEDESTRIAN CURB<br>RAMPS - STRAIGHT<br><br>AT _____<br>PER FOOT |            |        |
| 509.1  | 380      | GRANITE TRANSITION CURB FOR PEDESTRIAN CURB<br>RAMPS - CURVED<br><br>AT _____<br>PER FOOT   |            |        |
| 511.1  | 100      | GRANITE EDGING TYPE SB - STRAIGHT<br><br>AT _____<br>PER FOOT                               |            |        |
| 514.   | 15       | GRANITE CURB INLET - STRAIGHT<br><br>AT _____<br>EACH                                       |            |        |
| 570.2  | 110      | HOT MIX ASPHALT CURB TYPE 2<br><br>AT _____<br>PER FOOT                                     |            |        |
| 580.   | 1,600    | CURB REMOVED AND RESET<br><br>AT _____<br>PER FOOT  |            |        |
| 594.   | 600      | CURB REMOVED AND DISCARDED<br><br>AT _____<br>PER FOOT                                      |            |        |
| 620.13 | 380      | GUARDRAIL, TL-3 (SINGLE FACED)<br><br>AT _____<br>PER FOOT                                  |            |        |
| 627.1  | 2        | TRAILING ANCHORAGE<br><br>AT _____<br>EACH  |            |        |

Project # 609250 Contract # 129975

Location : BILLERICA

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| ITEM # | QUANTITY | ITEM WITH UNIT BID PRICE<br>WRITTEN IN WORDS  | UNIT PRICE | AMOUNT |
|--------|----------|---|------------|--------|
| 627.83 | 2        | GUARDRAIL TANGENT END TREATMENT, TL-3<br><br>AT _____<br>EACH                         |            |        |
| 630.2  | 265      | HIGHWAY GUARD REMOVED AND DISCARDED<br><br>AT _____<br>PER FOOT                       |            |        |
| 670.   | 165      | FENCE REMOVED AND RESET<br><br>AT _____<br>PER FOOT                                   |            |        |
| 690.1  | 10       | STONE MASONRY WALL REMOVED AND REBUILT DRY<br><br>AT _____<br>PER CUBIC YARD          |            |        |
| 691.   | 250      | BALANCE STONE WALL REMOVED AND REBUILT<br><br>AT _____<br>PER FOOT                    |            |        |
| 692.1  | 5        | STONE REMOVED AND STACKED<br><br>AT _____<br>PER CUBIC YARD                           |            |        |
| 697.1  | 50       | SILT SACK<br><br>AT _____<br>EACH   |            |        |
| 698.4  | 15       | GEOTEXTILE FABRIC FOR PERMANENT EROSION<br>CONTROL<br><br>AT _____<br>PER SQUARE YARD |            |        |
| 701.   | 3,500    | CEMENT CONCRETE SIDEWALK<br><br>AT _____<br>PER SQUARE YARD                           |            |        |

**Project # 609250 Contract # 129975**

**Location : BILLERICA**

**Description : Intersection Improvements at Boston Road (Route 3A), Lexington Street and Glad Valley Road**

| ITEM # | QUANTITY | ITEM WITH UNIT BID PRICE<br>WRITTEN IN WORDS                              | UNIT PRICE | AMOUNT |
|--------|----------|---|------------|--------|
| 701.1  | 1,220    | CEMENT CONCRETE SIDEWALK AT DRIVEWAYS<br><br>AT _____<br>PER SQUARE YARD  |            |        |
| 701.2  | 400      | CEMENT CONCRETE PEDESTRIAN CURB RAMP<br><br>AT _____<br>PER SQUARE YARD   |            |        |
| 702.   | 350      | HOT MIX ASPHALT SIDEWALK OR DRIVEWAY<br><br>AT _____<br>PER TON           |            |        |
| 706.3  | 5        | CONCRETE PAVER WALK REMOVED AND RELAID<br><br>AT _____<br>PER SQUARE YARD |            |        |
| 707.11 | 2        | METAL BENCH<br><br>AT _____<br>EACH                                       |            |        |
| 710.3  | 4        | BOUND - LETTERED GRANITE<br><br>AT _____<br>EACH                          |            |        |
| 710.4  | 2        | BOUND - PLAIN GRANITE<br><br>AT _____<br>EACH                             |            |        |
| 711.   | 2        | BOUND REMOVED AND RESET<br><br>AT _____<br>EACH                           |            |        |
| 715.   | 10       | RURAL MAIL BOX REMOVED AND RESET<br><br>AT _____<br>EACH                  |            |        |

**Project # 609250 Contract # 129975**

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**Description : Intersection Improvements at Boston Road (Route 3A), Lexington Street and Glad Valley Road**

| ITEM #  | QUANTITY | ITEM WITH UNIT BID PRICE<br>WRITTEN IN WORDS  | UNIT PRICE  | AMOUNT      |
|---------|----------|---|-------------|-------------|
| 722.1   | 1        | SCHEDULE OF OPERATIONS (TYPE A) - FIXED PRICE<br>\$66000<br><br>AT Sixty Six Thousand Dollars<br>LUMP SUM | \$66,000.00 | \$66,000.00 |
| 740.    | 26.5     | ENGINEER'S FIELD OFFICE AND EQUIPMENT (TYPE A)<br><br>AT _____<br>PER MONTH                               |             |             |
| 748.    | 1        | MOBILIZATION<br><br>AT _____<br>LUMP SUM  |             |             |
| 751.1   | 600      | LOAM FOR LAWNS<br><br>AT _____<br>PER CUBIC YARD  |             |             |
| 751.8   | 15       | LOAMY SAND BORROW<br><br>AT _____<br>PER CUBIC YARD   |             |             |
| 755.45  | 30       | WETLAND RESTORATION<br><br>AT _____<br>PER SQUARE YARD  |             |             |
| 755.75  | 150      | WETLAND SPECIALIST<br><br>AT _____<br>PER HOUR  |             |             |
| 755.761 | 1        | WETLAND AND CONSTRUCTION MONTORING REPORTS<br><br>AT _____<br>LUMP SUM                                    |             |             |
| 756.    | 1        | NPDES STORMWATER POLLUTION PREVENTION PLAN<br><br>AT _____<br>LUMP SUM                                    |             |             |

**Project # 609250                      Contract # 129975**

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| ITEM #  | QUANTITY | ITEM WITH UNIT BID PRICE<br>WRITTEN IN WORDS                        | UNIT PRICE | AMOUNT |
|---------|----------|---|------------|--------|
| 765.    | 3,700    | SEEDING<br><br>AT _____<br>PER SQUARE YARD                          |            |        |
| 765.415 | 5        | NATIVE SHORT GRASSLAND MIX<br><br>AT _____<br>PER POUND             |            |        |
| 765.555 | 30       | WETLAND SEED - PART SHADE MIX<br><br>AT _____<br>PER SQUARE YARD    |            |        |
| 765.635 | 420      | NATIVE SEEDING AND ESTABLISHMENT<br><br>AT _____<br>PER SQUARE YARD |            |        |
| 767.121 | 1,100    | SEDIMENT CONTROL BARRIER<br><br>AT _____<br>PER FOOT                |            |        |
| 767.6   | 120      | AGED PINE BARK MULCH<br><br>AT _____<br>PER CUBIC YARD              |            |        |
| 769.    | 450      | PAVEMENT MILLING MULCH UNDER GUARD RAIL<br><br>AT _____<br>PER FOOT |            |        |
| 772.337 | 6        | CEDAR - RED 7-8 FEET<br><br>AT _____<br>EACH                        |            |        |
| 772.377 | 5        | MAPLE - RED 2-2.5 INCH CALIPER<br><br>AT _____<br>EACH              |            |        |

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| ITEM #  | QUANTITY | ITEM WITH UNIT BID PRICE<br>WRITTEN IN WORDS                                  | UNIT PRICE | AMOUNT |
|---------|----------|---|------------|--------|
| 777.262 | 3        | OAK - NORTHERN RED 2-2.5 INCH CALIPER<br><br>AT _____<br>EACH                 |            |        |
| 777.328 | 1        | OAK - WHITE 2-2.5 INCH CALIPER<br><br>AT _____<br>EACH                        |            |        |
| 781.301 | 3        | HORNBEAM – FRANS FONTAINE 2-2.5 INCH CALIPER<br><br>AT _____<br>EACH          |            |        |
| 783.044 | 4        | SERVICEBERRY - AUTUMN BRILLIANCE 7-8 FEET<br><br>AT _____<br>EACH             |            |        |
| 787.082 | 6        | RHODO - ROSEBAY 2-2.5 FEET / #3<br><br>AT _____<br>EACH                       |            |        |
| 789.901 | 3        | CHOKEBERRY – BLACK – VIKING 2-3 FOOT / #3<br><br>AT _____<br>EACH             |            |        |
| 794.737 | 4        | SUMMERSWEET SHRUB 3-4 FEET / #3<br><br>AT _____<br>EACH                       |            |        |
| 804.3   | 1,200    | 3 INCH ELECTRICAL CONDUIT TYPE NM - PLASTIC -(UL)<br><br>AT _____<br>PER FOOT |            |        |
| 811.22  | 3        | ELECTRIC HANDHOLE - SD2.022<br><br>AT _____<br>EACH                           |            |        |

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| ITEM #  | QUANTITY | ITEM WITH UNIT BID PRICE<br>WRITTEN IN WORDS   | UNIT PRICE | AMOUNT |
|---------|----------|--|------------|--------|
| 811.23  | 1        | ELECTRIC HANDHOLE - SD2.023<br><br>AT _____<br>EACH  |            |        |
| 811.31  | 12       | PULL BOX 12 X 12 INCHES - SD2.031<br><br>AT _____<br>EACH  |            |        |
| 815.2   | 1        | TRAFFIC CONTROL SIGNAL LOCATION NO. 2<br><br>AT _____<br>LUMP SUM                                |            |        |
| 816.01  | 1        | TRAFFIC SIGNAL RECONSTRUCTION LOCATION NO. 1<br><br>AT _____<br>LUMP SUM                         |            |        |
| 823.71  | 1        | HIGHWAY LIGHTING POLE AND LUMINAIRE REMOVED AND STACKED<br><br>AT _____<br>EACH                  |            |        |
| 823.73  | 7        | COBRA HEAD LIGHT REMOVED AND RESET<br><br>AT _____<br>EACH                                       |            |        |
| 824.211 | 1        | RECTANGULAR RAPID FLASHING BEACON (AC POWER)<br><br>AT _____<br>LUMP SUM                         |            |        |
| 831.    | 30       | ROADSIDE GUIDE SIGN (D6/D8) - ALUMINUM PANEL (TYPE A)<br><br>AT _____<br>PER SQUARE FOOT         |            |        |
| 832.    | 350      | WARNING-REGULATORY AND ROUTE MARKER - ALUMINUM PANEL (TYPE A)<br><br>AT _____<br>PER SQUARE FOOT |            |        |

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| ITEM # | QUANTITY | ITEM WITH UNIT BID PRICE<br>WRITTEN IN WORDS   | UNIT PRICE | AMOUNT |
|--------|----------|--|------------|--------|
| 841.1  | 1        | SUPPORTS FOR GUIDE SIGN (D6 W/ D8-5 INCH TUBULAR POST) STEEL<br><br>AT _____<br>EACH |            |        |
| 847.1  | 61       | SIGN SUP (N/GUIDE)+RTE MKR W/1 BRKWAY POST ASSEMBLY - STEEL<br><br>AT _____<br>EACH  |            |        |
| 848.1  | 3        | SIGN SUP (N/GUIDE)+RTE MKR W/2 BRKWAY POST ASSEMBLIES-STEEL<br><br>AT _____<br>EACH  |            |        |
| 850.41 | 80       | ROADWAY FLAGGER<br><br>AT _____<br>PER HOUR  |            |        |
| 851.1  | 150      | TRAFFIC CONES FOR TRAFFIC MANAGEMENT<br><br>AT _____<br>PER DAY                      |            |        |
| 852.   | 750      | SAFETY SIGNING FOR TRAFFIC MANAGEMENT<br><br>AT _____<br>PER SQUARE FOOT             |            |        |
| 852.11 | 500      | TEMPORARY PEDESTRIAN BARRICADE<br><br>AT _____<br>PER FOOT                           |            |        |
| 852.12 | 4        | TEMPORARY PEDESTRIAN CURB RAMP<br><br>AT _____<br>EACH                               |            |        |
| 853.1  | 4        | PORTABLE BREAKAWAY BARRICADE TYPE III<br><br>AT _____<br>EACH                        |            |        |

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| ITEM #  | QUANTITY | ITEM WITH UNIT BID PRICE<br>WRITTEN IN WORDS  | UNIT PRICE | AMOUNT |
|---------|----------|---|------------|--------|
| 853.8   | 15       | TEMPORARY ILLUMINATION FOR WORK ZONE<br><br>AT _____<br>PER DAY                           |            |        |
| 854.016 | 37,400   | TEMPORARY PAVING MARKINGS - 6 INCH (PAINTED)<br><br>AT _____<br>PER FOOT                  |            |        |
| 854.036 | 1,650    | TEMPORARY PAVING MARKINGS - 6 INCH (TAPE)<br><br>AT _____<br>PER FOOT                     |            |        |
| 854.1   | 720      | PAVEMENT MARKING REMOVAL<br><br>AT _____<br>PER SQUARE FOOT                               |            |        |
| 856.    | 480      | ARROW BOARD<br><br>AT _____<br>PER DAY  |            |        |
| 856.12  | 120      | PORTABLE CHANGEABLE MESSAGE SIGN<br><br>AT _____<br>PER DAY                               |            |        |
| 859.    | 22,500   | REFLECTORIZED DRUM<br><br>AT _____<br>PER DAY   |            |        |
| 859.1   | 180      | REFLECTORIZED DRUMS WITH SEQUENTIAL FLASHING<br>WARNING LIGHTS<br><br>AT _____<br>PER DAY |            |        |
| 864.02  | 60       | PAVEMENT ARROW AND LEGENDS - TAPE<br><br>AT _____<br>PER SQUARE FOOT                      |            |        |

Project # 609250 Contract # 129975

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| ITEM #  | QUANTITY | ITEM WITH UNIT BID PRICE<br>WRITTEN IN WORDS  | UNIT PRICE | AMOUNT |
|---------|----------|---|------------|--------|
| 864.04  | 1,000    | PAVEMENT ARROWS AND LEGENDS REFLECTORIZED<br>WHITE (THERMOPLASTIC)<br><br>AT _____<br>PER SQUARE FOOT |            |        |
| 868.106 | 15,700   | 6 INCH DURABLE RECESSED WET REFLECTIVE WHITE<br>LINE (THERMOPLASTIC)<br><br>AT _____<br>PER FOOT      |            |        |
| 868.112 | 5,600    | 12 INCH DURABLE RECESSED WET REFLECTIVE WHITE<br>LINE (THERMOPLASTIC)<br><br>AT _____<br>PER FOOT     |            |        |
| 869.106 | 11,350   | 6 INCH DURABLE RECESSED WET REFLECTIVE YELLOW<br>LINE (THERMOPLASTIC)<br><br>AT _____<br>PER FOOT     |            |        |
| 869.112 | 425      | 12 INCH DURABLE RECESSED WET REFLECTIVE YELLOW<br>LINE (THERMOPLASTIC)<br><br>AT _____<br>PER FOOT    |            |        |
| 874.    | 18       | STREET NAME SIGN<br><br>AT _____<br>EACH  |            |        |
| 874.45  | 6        | MISCELLANEOUS SIGNS REMOVED AND RESET<br><br>AT _____<br>EACH   |            |        |
| 874.51  | 29       | MISCELLANEOUS SIGNS REMOVED AND DISCARDED<br><br>AT _____<br>EACH                                     |            |        |
| 874.7   | 4        | MISCELLANEOUS SIGNS REMOVED AND STACKED<br><br>AT _____<br>EACH                                       |            |        |

| <b>Project # 609250</b>   |                 | <b>Contract # 129975</b>  |                   |               |
|---|-----------------|---|-------------------|---------------|
| <b>Location : BILLERICA</b>   |                 |   |                   |               |
| <b>Description : Intersection Improvements at Boston Road (Route 3A), Lexington Street and Glad Valley Road</b> |                 |   |                   |               |
| <b>ITEM #</b>   | <b>QUANTITY</b> | <b>ITEM WITH UNIT BID PRICE<br/>WRITTEN IN WORDS</b>                              | <b>UNIT PRICE</b> | <b>AMOUNT</b> |
| 901.  | 10              | 4000 PSI, 1.5 INCH, 565 CEMENT CONCRETE<br><br>AT _____<br>PER CUBIC YARD         |                   |               |
| 903.  | 65              | 3000 PSI, 1.5 INCH, 470 CEMENT CONCRETE<br><br>AT _____<br>PER CUBIC YARD         |                   |               |
| 910.1   | 100             | STEEL REINFORCEMENT FOR STRUCTURES - EPOXY<br>COATED<br><br>AT _____<br>PER POUND |                   |               |
| <b>Total Qty:</b>   |                 | 239,211.7   |                   |               |

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DOCUMENT B00853

SCHEDULE OF PARTICIPATION BY DISADVANTAGED BUSINESS ENTERPRISES (DBES)

PRIME BIDDER: \_\_\_\_\_

DATE OF BID OPENING: \_\_\_\_\_ PROJECT NO.: 609250

FEDERAL AID PROJECT NO. STP-0034(025)X

PROJECT LOCATION: BILLERICA

| Name, Address, and Phone Number(s) of DBE | Name of Activity             | (a)†<br>DBE Contractor Activity Amount<br><i>Construction Work</i> | (b)<br>DBE Other Business Amount<br><i>Services, Supplies, Material</i> | (c)<br>Total amount eligible for credit under rules in Section 6 of Document 00719 - DBE Special Provisions |
|---|------------------------------|--|---|---|
|   |                              |  |   |   |
|   |                              |  |   |   |
|   |                              |  |   |   |
|   |                              |  |   |   |
| Total Bid Amount                          | TOTALS:                      | \$   | \$  | \$  |
| \$  | DBE Percentage of Total Bid: | %  | %   | %   |

†Column (a) must be at least one-half of the DBE participation goal. Attach additional sheets as necessary.

Is MassDOT Document B00855 (Joint Check Approval) being submitted for any of the above?  Yes  No  
 Not Known at This Time

Will any of the contractors listed above be using a third party (i.e. manufacturer) to deliver materials or perform any portion of work by a third party?  Yes  No

**CERTIFICATION:** I HEREBY DECLARE, TO THE BEST OF MY KNOWLEDGE, THAT I HAVE READ THE SPECIAL PROVISIONS FOR PARTICIPATION BY DISADVANTAGED BUSINESS ENTERPRISES - DOCUMENT 00719. BOTH THIS SCHEDULE AND THE RELEVANT AND ACCOMPANYING LETTER(S) OF INTENT ARE IN FULL COMPLIANCE WITH THE PROVISIONS OF, AND IN ACCORDANCE WITH, TITLE 49 CODE OF FEDERAL REGULATIONS, PART 26 (49 CFR Part 26).

SIGNATURE: \_\_\_\_\_ DATE \_\_\_\_\_

NAME AND TITLE (PRINT): \_\_\_\_\_

EMAIL ADDRESS: \_\_\_\_\_ TEL NO.: \_\_\_\_\_

\*\*\* END OF DOCUMENT \*\*\*

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DOCUMENT B00854

DISADVANTAGED BUSINESS ENTERPRISES (DBE) PARTICIPATION  
LETTER OF INTENT

(To be completed by the DBE – Page 1 of 2)

TO: \_\_\_\_\_ (Prime Bidder)

FROM: \_\_\_\_\_ (DBE Firm)

RE: PROJECT NO.: 609250 FEDERAL AID PROJECT NO.: STP-0034(025)X

PROJECT LOCATION: BILLERICA

DATE OF BID OPENING: \_\_\_\_\_

I, \_\_\_\_\_, *Print Name* authorized signatory of the above-referenced DBE firm hereby declare:

1. My company is currently certified as a Disadvantaged Business Enterprise (DBE) by the Massachusetts Supplier Diversity Office (“SDO”), formerly known as the State Office of Minority and Women Business Assistance (SOMWBA), as a: (check all applicable, see Section 1 of the Special Provisions For Participation By Disadvantaged Business Enterprises, MassDOT Document 00719 additional guidance is available at Title 49, Code of Federal Regulations, Part 26.55 (49 CFR Part 26.55)):

- CONTRACTOR       REGULAR DEALER       BROKER
- MANUFACTURER       TRUCKING OPERATIONS       PROFESSIONAL SERVICES

2. My firm has the ability to manage, supervise and perform the activity described on page 2 of this Letter of Intent. If you are awarded the contract, my company intends to enter into a contract with your firm to perform the items of work or other activity described on the following sheet for the prices indicated.

3. There have been no changes affecting the ownership, control or independence of my company since my last certification review on \_\_\_\_\_, 20\_\_\_. If any such change is planned or occurs prior to my company's completion of this proposed work, I will give prior written notification to your firm and to the Massachusetts Department of Transportation (“MassDOT”) Office of Civil Rights and SDO.

4. I have read the MassDOT proposal for the Project which may be entitled “Project Contract Documents and Special Provisions” or the draft “Contract” which includes MassDOT Document 00719, and acknowledge that my company will comply with that document and the requirements of 49 CFR Part 26.

5. For the purpose of obtaining subcontractor approval from MassDOT, my firm will provide to you:

**A. The following construction work:**

- (i) a resume, stating the qualifications and experience, of the superintendent or foreperson who will supervise on site-work;
- (ii) a list of equipment owned or leased by my firm for use on this project; and
- (iii) a list of all projects (public or private) upon which my firm is currently performing, is committed to perform, or intends to make a commitment to perform. I shall also include, for each project: the name and telephone number of a contact person for the contracting authority, person, or organization; the dollar value of the work; a description of the work; and my firm's work schedule for the project.

**B. The following services, materials or supplies:**

- (i) a written agreement and invoices for the materials or supplies, and any other documents evidencing the terms of providing such items;
- (ii) information concerning brokers fees and commissions for providing services or materials; and
- (iii) a statement concerning whether my firm intends or will be required to use a joint check arrangement; and any other documents that may be required by MassDOT.

\_\_\_\_\_  
*DBE Company Authorized Signature*

Date \_\_\_\_\_

**DISADVANTAGED BUSINESS ENTERPRISES (DBE) PARTICIPATION  
LETTER OF INTENT**  
(To be completed by the DBE – Page 2 of 2)

DATE OF BID OPENING: \_\_\_\_\_

PROJECT NUMBER: 609250

FEDERAL AID PROJECT NUMBER: STP-0034(025)X

PROJECT LOCATION: BILLERICA

PRIME BIDDER: \_\_\_\_\_

DBE COMPANY NAME: \_\_\_\_\_

| <u>Item number</u><br>if applicable | <u>NAICS</u><br><u>Code</u> | <u>Description of Activity</u><br>with notations such as Services, or Brokerage, Installation Only,<br>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: \_\_\_\_\_

\*\*\* END OF DOCUMENT \*\*\*

Rev'd 9/20/19

DOCUMENT B00855

DBE JOINT CHECK ARRANGEMENT APPROVAL FORM

(to be submitted by Prime Contractor)

Contract No: 129975 Project No. 609250 Federal Aid No.: STP-0034(025)X

Location: BILLERICA Bid Opening Date:

Project Description: Intersection Improvements at Boston Road (Route 3A), Lexington Street and Glad Valley Road

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<br>(number) | Firm 2<br>(number) | Joint Venture<br>(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 \*\*\*